

Environmental Assessment Scoping Report for

November 2023

*Establishment of the Flexible
Land Tenure Scheme in
Ndama-South Informal
Settlement in Rundu, Kavango-
East Region.*

APP-002498

Prepared for: Rundu Town Council
Private Bag 2128, Rundu
Contact Number: +264 66 266 400
Fax Number: +264 66 256 718
Contact Person: Adriano Abraham
Email: adriano@Rundutown.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"> Establishment of the Flexible Land Tenure Scheme in Ndama-South Informal Settlement in Rundu, Kavango-East Region. 		
Report Status	Final		
SPC Reference	Rundu-FLTS		
Proponent	Rundu Town Council Private Bag 2128, Rundu Contact Person: Adriano Abraham Contact Number: +264 66 266 400 Email: adriano@Rundutown.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
Authors	Elina SP Vakuwile		November 2023
Reviewer	Magnus van Rooyen		November 2023

LEGAL NOTICE

This report or any portion thereof and any associated documentation remain the property of SPC until the mandator effects payment of all fees and disbursements due to SPC in terms of the SPC Conditions of Contract and Project Acceptance Form. Notwithstanding the aforesaid, any reproduction, duplication, copying, adaptation, editing, change, disclosure, publication, distribution, incorporation, modification, lending, transfer, sending, delivering, serving or broadcasting must be authorised in writing by SPC.

EXECUTIVE SUMMARY

Introduction

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

- **Establishment of the Flexible Land Tenure Scheme in Ndama-South Informal Settlement in Rundu, Kavango-East Region.**
- **Creation of block erven and streets within the Flexible Land Tenure Scheme Boundaries of Ndama-South Informal Settlement.**
- **Provision of associated bulk services.**

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 Ministry of Agriculture, Water and Land Reform (MAWLR) is implementing the Flexible Land Tenure System (FLTS) in various Local Authorities around Namibia. The implementation is conducted in line with the provisions of the Flexible Land Tenure Act, 2012 (Act 4 of 2012) (FLTA) and its Regulations of May 2018. The objectives of the FLTA are:

- a) To create alternative forms of land title that are simpler and cheaper to administer than existing forms of land title.
- b) To provide security of title for persons who live in informal settlements or who are provided with low-income housing.
- c) To empower the persons concerned economically by means of these rights.

The Rundu Town Council in conjunction with the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ), has commissioned an Environmental Impact Assessment (EIA) for the establishment of a Flexible Land Tenure Scheme in Rundu, Kavango-East Region. An Environmental Impact Assessment (EIA) is being conducted in terms of EMA for the creation of block erven and streets as well as the provision of associated Municipal bulk services within the Flexible Land Tenure Scheme Boundaries of Ndama-South Informal Settlement. The aim is to address the housing deficit and tenure insecurities that the Rundu town currently faces. This initiative is supported by the Ministry of Urban and Rural Development (MURD) and the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) through their Inclusive and Sustainable Urban Development Project (ISUD) which aims to support the co-creation of functional and resilient neighbourhoods through the upgrading of informal settlements.

The Rundu Town Council has earmarked the Ndama-South Informal Settlement which is the largest and densely populated informal residential area in Rundu for the implementation of the FLTS in terms of the Flexible Land Tenure Act, 2012 (Act 4 of 2012). The Flexible Land Tenure Act (FLTA) was passed in 2012, and the Regulations were published in 2018. The FLTS was born from a need for a land delivery system that can make security of tenure affordable to those living in informal settlements around the country. Thus, the FLTS is intended to function largely in parallel to existing legislation with the surveying and registration of land administered through a Land Rights Office. The basis for all Flexible Land Tenure Schemes is the creation of a block erf, depicting the outside boundaries of a settlement. Within the block erf the system allows the creation of starter or land hold schemes.

The Flexible Land Tenure Act, 2012 (Act No.4 of 2012), creates new tenure system for land in urban areas by establishing two new forms of land title:

- A. Starter Title
- B. Land Hold Title

It should be noted that separate EIAs will be conducted by the developers for the activities intended on the individual erven should they trigger listed activities as per the Environmental Management Act and its EIA regulations.

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 **28 September 2023**;
- Notices were placed in the New Era newspapers and the Namibian newspapers dated **28 September 2023 and 05 October 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**);

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 **19 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 **10 November 2023 until the 24 November 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 7**, 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 7**, none of the negative operational phase impacts were deemed to have a high significance impact on the environment. The operational impacts were assessed to a **Medium (negative)** significance, without mitigation measures. With the implementation of the recommended mitigation measures in Chapter 7 as well as in the EMP, the significance of the construction phase impacts is likely to be reduced to a **Low (negative)**.

It is recommended that this project be authorised because should the development not proceed the subject area will remain in its current state and upgrading of Ndama-South Informal settlement will not be done. 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 Rundu are further expected to benefit from the upgrading of the informal settlements 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.

TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	PROJECT BACKGROUND	1
1.2	PROJECT LOCATION	2
1.3	LAND USE	3
1.4	OWNERSHIP	3
1.5	TERMS OF REFERENCE AND SCOPE OF PROJECT	5
1.6	ASSUMPTIONS AND LIMITATIONS	5
1.7	CONTENT OF ENVIRONMENTAL ASSESSMENT REPORT	5
2	LEGAL FRAMEWORK	8
2.1	LEGISLATION RELEVANT TO THE PROPOSED DEVELOPMENT	8
3	ENVIRONMENTAL BASELINE DESCRIPTION	16
3.1	SOCIAL ENVIRONMENT	16
3.1.1	Socio-Economic Context	16
3.1.2	Archaeological and Heritage Context	16
3.2	BIO-PHYSICAL ENVIRONMENT	17
3.2.1	Climate	17
3.2.2	Topography, Geology and Soils	18
3.2.3	Hydrology and Hydrogeology	19
3.3	TERRESTRIAL ECOLOGY	20
3.3.1	Flora and Fauna	20
4	PROJECT DESCRIPTION	22
4.1	PROJECT COMPONENTS	22
4.2	ALTERNATIVES	22
4.2.1	No – Go Alternative	22
4.3	THE PROPOSED DEVELOPMENT	22
4.3.1	Project Background	22
4.3.2	Project Description	24
4.3.3	Flexible Land Tenure Process	25
4.3.4	The Rundu Flexible Land Tenure Scheme	26
4.3.5	Layouts of the Proposed Development	29
4.3.6	Engineering Services and Access Provision	29
5	PUBLIC PARTICIPATION PROCESS	31
5.1	PUBLIC PARTICIPATION REQUIREMENTS	31
5.1.1	Environmental Assessment Phase 2	32
6	ASSESSMENT METHODOLOGY	33

6.1	MITIGATION MEASURES	35
7	ASSESSMENT OF POTENTIAL IMPACTS AND POSSIBLE MITIGATION MEASURES	37
7.1	INTRODUCTION	37
7.2	PLANNING AND DESIGN PHASE IMPACTS	37
7.2.1	Traffic Impacts	37
7.2.2	Existing Service Infrastructure Impacts	37
7.3	CONSTRUCTION PHASE IMPACTS ON THE BIOPHYSICAL ENVIRONMENT	38
7.3.1	Flora and Fauna Impacts (Biodiversity)	38
7.3.2	Surface and Ground Water Impacts	39
7.3.3	Soil Erosion Impacts	39
7.4	CONSTRUCTION PHASE IMPACTS ON THE SOCIO-ECONOMIC ENVIRONMENT	39
7.4.1	Heritage impacts	39
7.4.2	Health, Safety and Security Impacts	39
7.4.3	Traffic Impacts	39
7.4.4	Noise Impacts	40
7.4.5	Dust and Emission Impacts	40
7.4.6	Municipal Services	40
7.4.7	Storage and Utilisation of Hazardous Substances	40
7.4.8	Waste Impacts	41
7.5	OPERATIONAL PHASE IMPACTS	41
7.5.1	Visual and Sense of Place Impacts	41
7.5.2	Noise Impacts	41
7.5.3	Emission Impacts	41
7.5.4	Waste Impacts	41
7.5.5	Social Impacts	41
7.6	CUMULATIVE IMPACTS	42
7.7	ENVIRONMENTAL MANAGEMENT PLAN	42
7.8	SUMMARY OF POTENTIAL IMPACTS	42
8	CONCLUSION	55
8.1	CONSTRUCTION PHASE IMPACTS	55
8.2	OPERATIONAL PHASE	55
8.3	LEVEL OF CONFIDENCE IN ASSESSMENT	55
8.4	MITIGATION MEASURES	56
8.5	OPINION WITH RESPECT TO THE ENVIRONMENTAL AUTHORISATION	56
8.6	WAY FORWARD	56
9	REFERENCES	57

LIST OF FIGURES

Figure 1: Locality Map of Rundu	3
Figure 2: Locality Map of Ndama-South Informal Settlement in Rundu	4
Figure 3: EIA flow Diagram.....	15
Figure 4: Annual average temperature.....	17
Figure 5: Average annual Rainfall	18
Figure 6: Geology of Namibia.....	19
Figure 7: Hydrography of Namibia: Rivers, basins, pans and lakes	20
Figure 8: Biomes of Namibia).....	21
Figure 9: Population of Ndama-South Informal Settlement.....	27
Figure 10: Population of Ndama-South Informal Settlement.....	27
Figure 11: Population of Bonya Informal Settlement.	27
Figure 12: Mitigation Hierarchy	35

LIST OF TABLES

Table 1: List of triggered activities identified in the EIA Regulations which apply to the proposed project.....	1
Table 2: Contents of the Scoping / Environmental Assessment Report	5
Table 3: Legislation applicable to the proposed development.....	8
Table 4: Statistics of the Rundu Urban Constituency (Namibia Statistics Agency, 2011).....	16
Table 5:Table of Public Participation Activities.....	31
Table 6: Impact Assessment Criteria.....	33
Table 7: Summary of the significance of the potential impacts	43
Table 8: Proposed mitigation measures for the planning and design phase.....	48
Table 9: Proposed mitigation measures for the construction phase.....	48
Table 10: Proposed mitigation measures for the operational phase	53

LIST OF ANNEXURES

Annexure A:	Proof of Site Notices/ Posters
Annexure B:	Proof of Advertisements
Annexure C:	Public Participation process I&AP Database & Registered List Proof of Meetings Attendance register Emails sent of BID Emails sent of DESR Comments if any
Annexure D:	Consent Letter
Annexure E:	Curriculum Vitae of Environmental Assessment Practitioner
Annexure F:	Environmental Management Plan

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
RTC	Rundu Town Council
I&AP	Interested and Affected Party
IUCN	International Union for Conservation of Nature
LA	Local Authority
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 Rundu Town Council hereinafter referred to as the proponent intends to undertake the following activities:

- **Establishment of the Flexible Land Tenure Scheme in Ndama-South Informal Settlement in Rundu, Kavango-East Region.**
- **Creation of block erven and streets within the Flexible Land Tenure Scheme Boundaries of Ndama-South Informal Settlement.**
- **Provision of associated bulk services.**

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

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

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

Activity description and No(s):	Description of relevant Activity	The portion of the development as per the project description that relates to the applicable listed activity
Activity 5.1 (d) Land Use and Development Activities	The rezoning of land from use for nature conservation or zoned open space to any other land use.	The proposed project involves the rezoning of land from nature conservation to various land uses.
Activity 5.2 Land Use and Development Activities	The establishment of land resettlement schemes	The proposed project involves the establishment of land resettlement schemes
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

The town of Rundu is located in central north-eastern part of Namibia as depicted in **Figure 2** below. It lies on the south bank of the Okavango River, which forms the border between Angola and Namibia.

The Ndama-South Informal Settlement is located south of Rundu town, adjacent to the formalized Ndama Township Extensions which are located directly south of the B8 Main Road to Katima Mulilo as indicated in **Figure 2** below.

According to the settlement analysis conducted by the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) in 2021/2022, the size of the settlement is estimated to be approximately **299.94ha** in extent.

1.3 LAND USE

Town and Townlands areas owned by a Local Authority are normally reserved for future town expansion purposes. The Rundu Town Council has earmarked the Ndama-South Informal Settlement which is the largest and densely populated informal residential area in Rundu for the implementation of the FLTS in terms of the Flexible Land Tenure Act, 2012 (Act 4 of 2012).

1.4 OWNERSHIP

The Ndama-South Informal Settlement is located within the urban areas owned by the Rundu Town Council and are under the administration of the Rundu Town Council. Furthermore, the RTC as the registered owner of the land on which the Ndama-South Informal Settlement is located has legal rights to establish the FLTS on the earmarked settlement and administer any form of development that aim to sustainably uplift the social and economic standards of the area.

Figure 1: Locality of Rundu at the National and Regional context

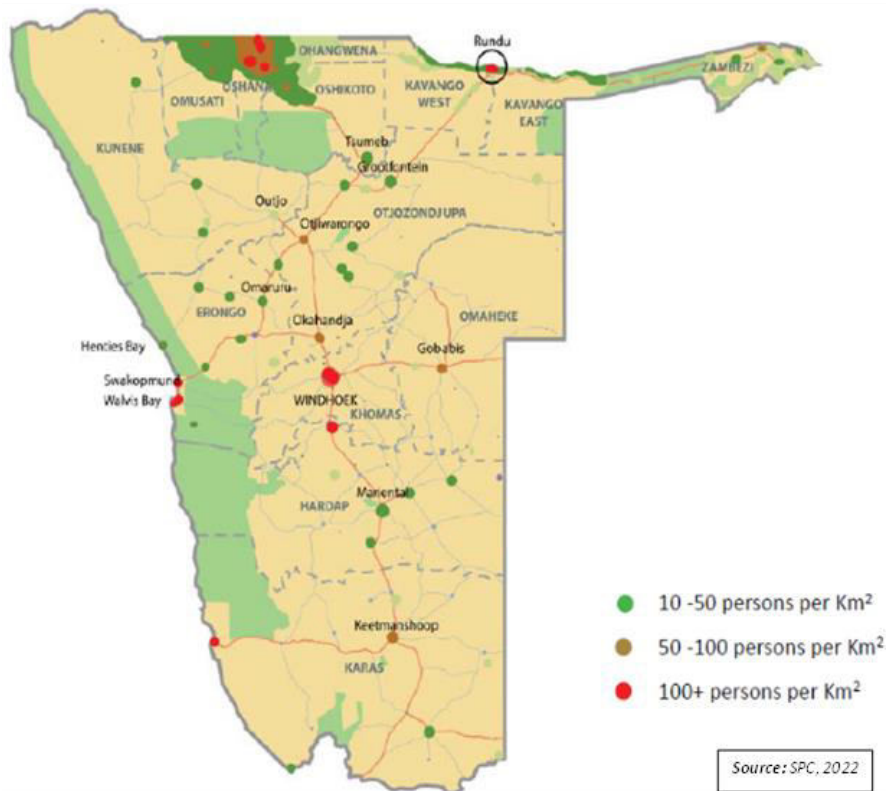


Figure 1: Locality Map of Rundu

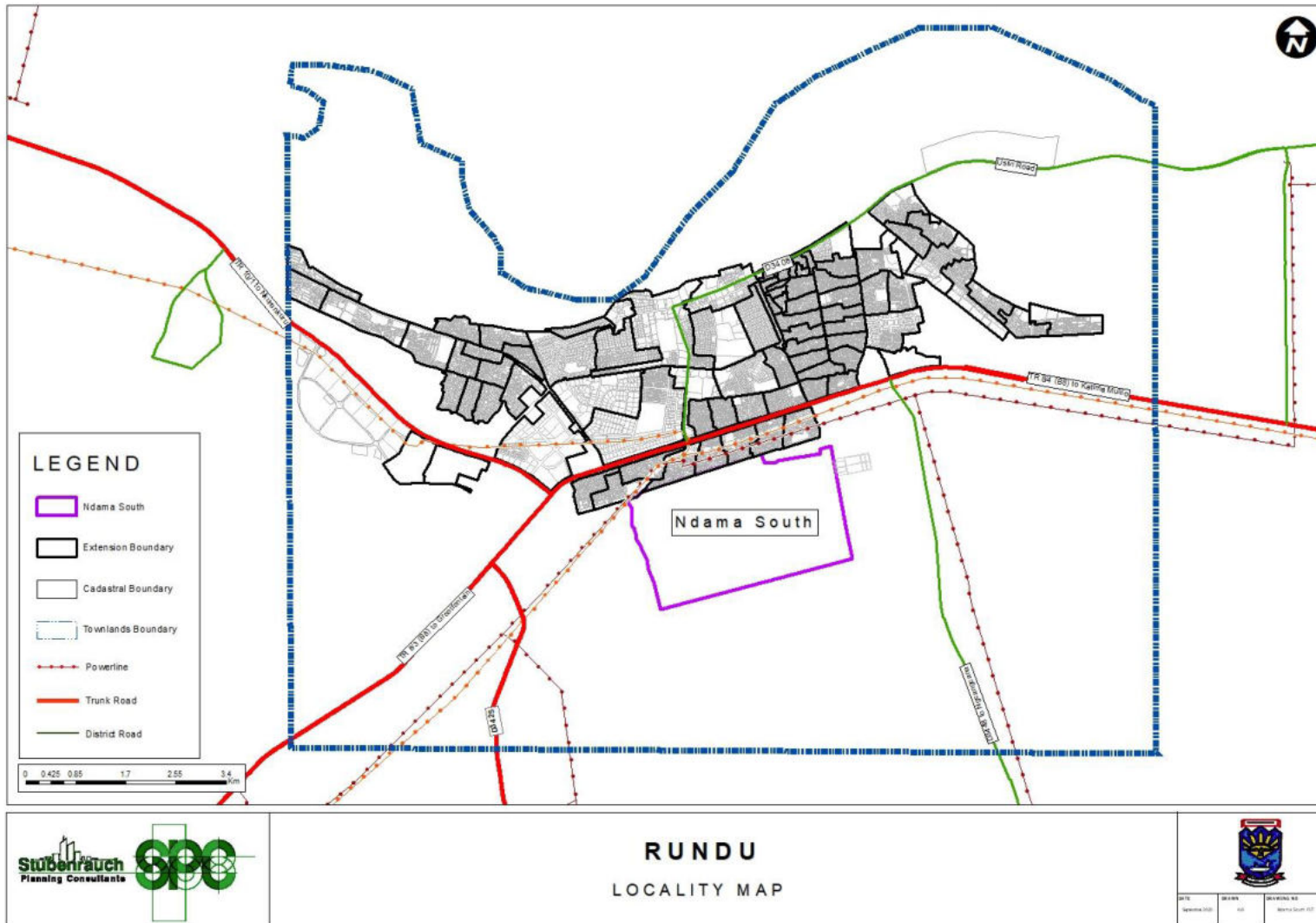


Figure 2: Locality Map of Ndama-South Informal Settlement in Rundu

1.5 TERMS OF REFERENCE AND SCOPE OF PROJECT

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

- **Establishment of the Flexible Land Tenure Scheme in Ndama-South Informal Settlement in Rundu, Kavango-East Region.**
- **Creation of block erven and streets within the Flexible Land Tenure Scheme Boundaries of Ndama-South Informal Settlement.**
- **Provision of associated bulk services.**

1.6 ASSUMPTIONS AND LIMITATIONS

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

- Assumes the information provided by the proponent is accurate and discloses all information available.
- The limitation that no alternative except for the preferred subject areas and the 'no-go' option was considered during this assessment. The unique character and appeal of Rundu were however taken into consideration with the design perspective.
- There is 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.

1.7 CONTENT OF ENVIRONMENTAL ASSESSMENT REPORT

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

Table 2: Contents of the Scoping / Environmental Assessment Report

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

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

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

2 LEGAL FRAMEWORK

2.1 LEGISLATION RELEVANT TO THE PROPOSED DEVELOPMENT

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

Table 3: Legislation applicable to the proposed development

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
The Constitution of the Republic of Namibia as Amended	Article 91 (c) provides for duty to guard against “the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia.” Article 95(l) deals with the “maintenance of ecosystems, essential ecological processes and biological diversity” and sustainable use of the country’s natural resources.	Sustainable development should be at the forefront of this development.
Environmental Management Act No. 7 of 2007 (EMA)	Section 2 outlines the objective of the Act and the means to achieve that. Section 3 details the principle of Environmental Management	The development should be informed by the EMA.
EIA Regulations GN 28, 29, and 30 of EMA (2012)	GN 29 Identifies and lists certain activities that cannot be undertaken without an environmental clearance certificate. GN 30 provides the regulations governing the environmental assessment (EA) process.	Activity 5 .1 (d) Land Use and Development Activities Activity 5.2 Land Use and Development Activities 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	The EA process should incorporate the aspects outlined in the guidelines.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
	should be considered by the proponent in the scoping process.	
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	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
	townships; to provide for the subdivision and consolidation of land; to provide for the alteration, 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	Contractors and users of the proposed development are to

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
	public and environmental health system in Namibia. It covers notification, prevention and control of diseases and sexually transmitted 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).	comply with these legal requirements.
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

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
		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 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.	Protected tree and plant species as per the Forest Act No 12 of 2001 and Forest Regulations of 2015 may not be removed without a permit from the Ministry of Agriculture, Water and Forestry.
Atmospheric Pollution Prevention Ordinance No 45 of 1965	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.	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).

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.
Flexible Land Tenure Act of 2012 (Act No. 4 of 2012)	provides that “the relevant authority may on its own motion, or on application by the owner of a piece of land or one or more persons who reside on a piece of land, consider the establishment of a starter title scheme or a land hold title scheme on that land”	The development must comply with provisions of the Flexible Land Tenure Act.

LEGISLATION/POLICIES	RELEVANT PROVISIONS	RELEVANCE TO PROJECT
The Compensation Policy Guidelines for Communal Land (2009)	provide for compensation arrangements for communal landholders where land is incorporated into a townland jurisdiction or taken over for public sector purposes.	RUNDU to consult the compensation list to avoid double compensations for homesteads within development boundaries.

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.

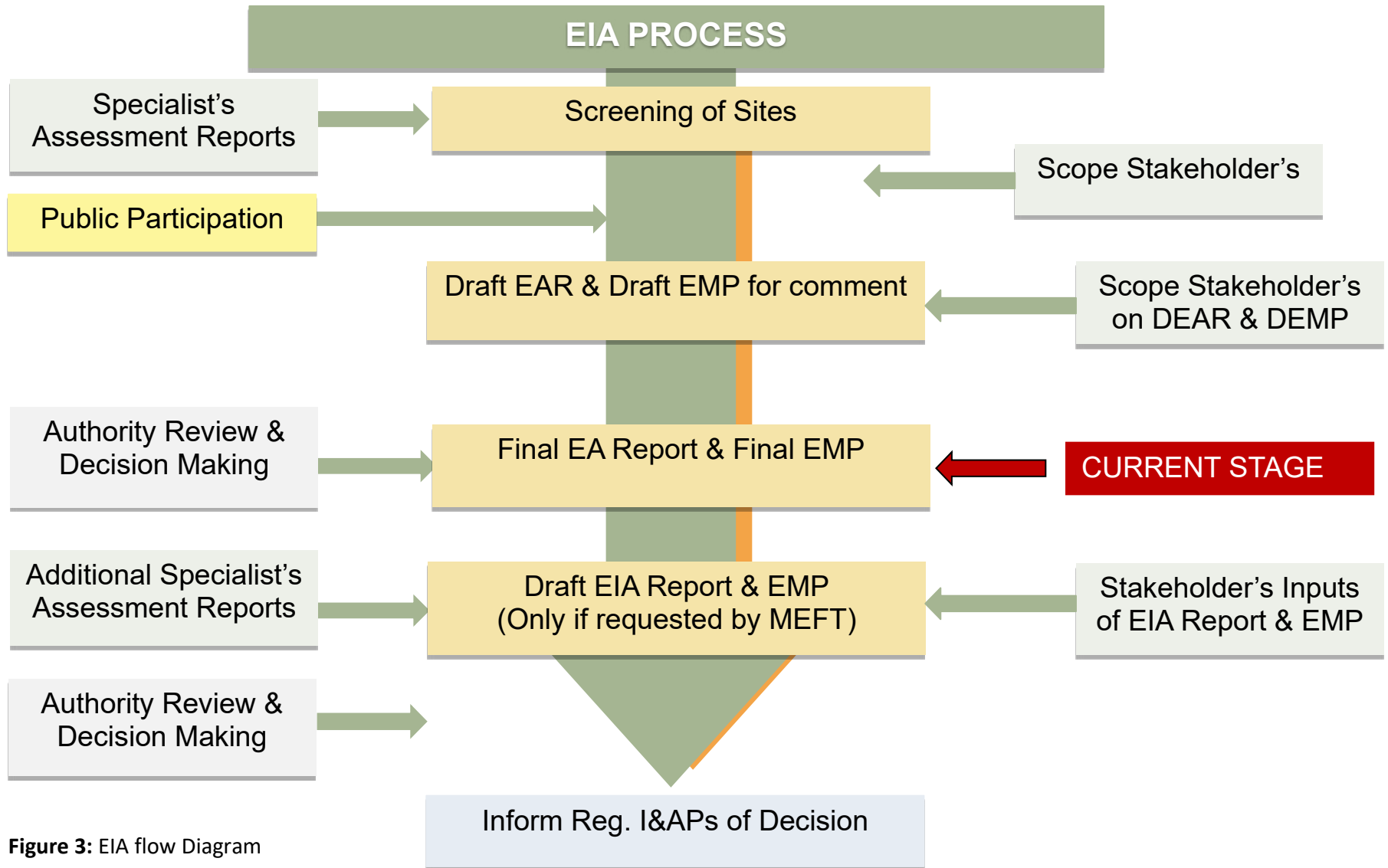


Figure 3: EIA flow Diagram

3 ENVIRONMENTAL BASELINE DESCRIPTION

3.1 SOCIAL ENVIRONMENT

3.1.1 Socio-Economic Context

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

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

RUNDU URBAN CONSTITUENCY	
Population	20,676
Females	11,562
Males	9,114
Population under 5 years	12%
Population aged 5 to 14 years	17%
Population aged 15 to 59 years	66%
Population aged 60 years and above	5%
Female: male ratio	100:79
Literacy rate of 15 years old and above	98%
People above 15 years who have never attended school	5%
People above 15 years who are currently attending school	20%
People above 15 years who have left school	72%
People aged 15 years and up who belong to the labour force	68%
Population employed	55%
Homemakers	3%
Students	73%
Severely disabled, retired or old age income recipients	24%
Income from pension	10%
Income from business and non-farming activities	25%
Income from farming	6%
Income from cash remittance	5%
Wages and salaries	48%

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

Rundu has a humid subtropical climate with hot summers and relatively mild winters (with warm days and chilly to cool nights). The average annual temperature as indicated in Figure 3 below is above 22°C.

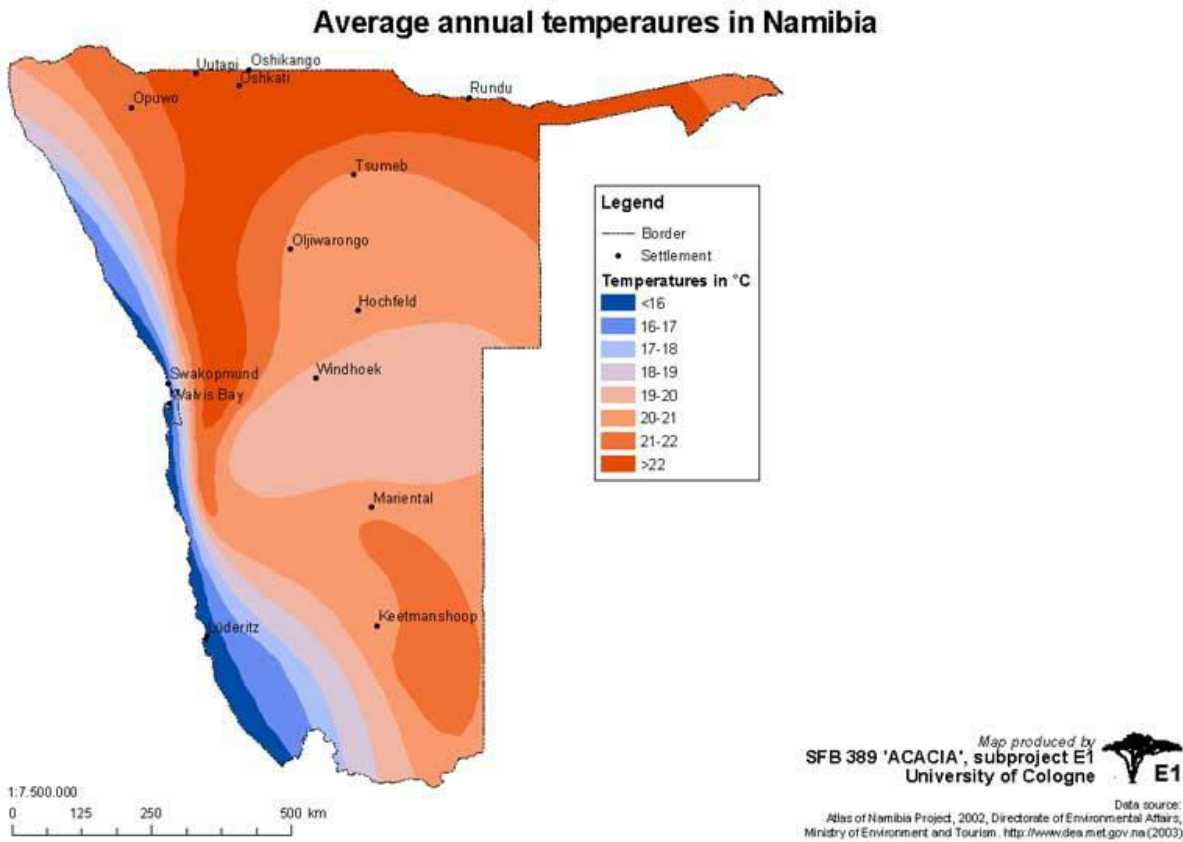


Figure 4: Annual average temperature (http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/e1_download_climate_e.htm#temperature_annual)

Rainfall is usually expected during the summer months and on average 95% of this rainfall is experienced from November to April. Rundu receives an average annual precipitation of above 600 mm per year as indicated in **Figure 4** below. No rain of any significance falls from May to September, and the chance of rain increases progressively from October until January, the month with the highest total on average, and then decreases again until April.

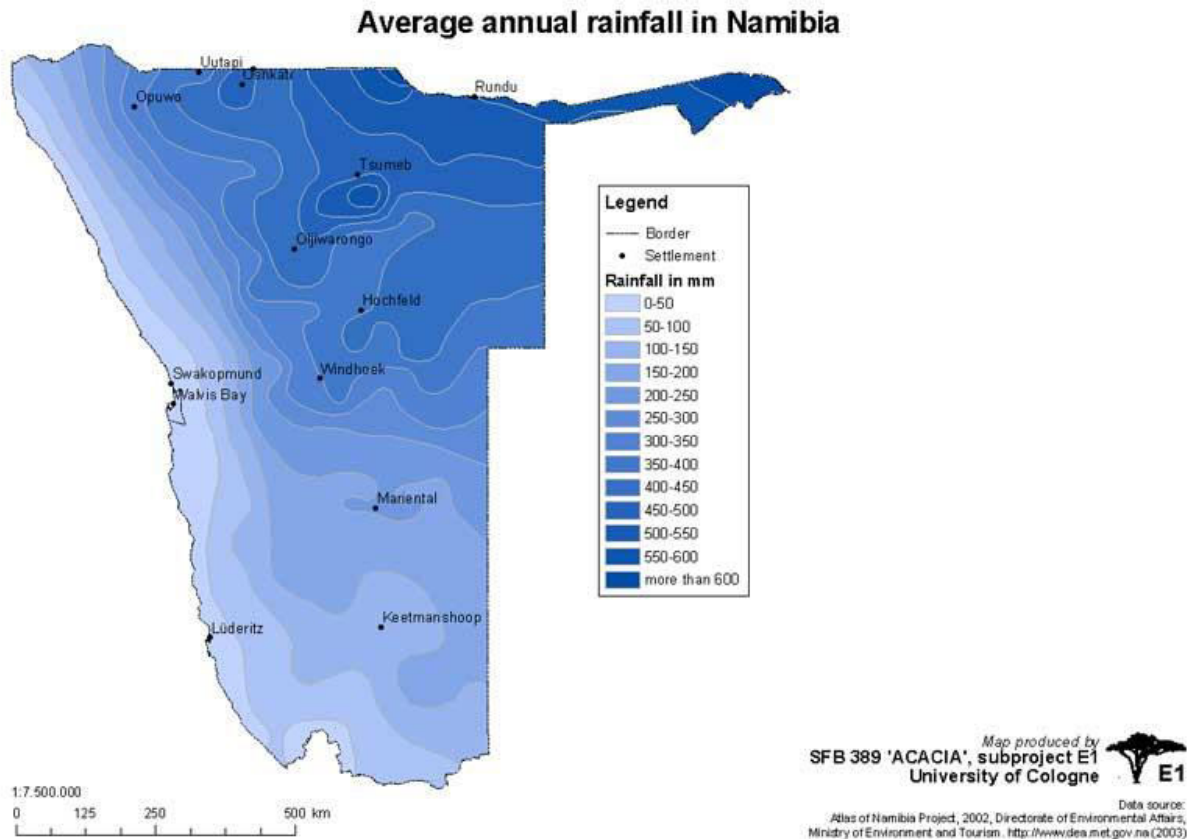


Figure 5: Average annual Rainfall (http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/climate/rainfall-annual.jpg)

3.2.2 Topography, Geology and Soils

The Rundu area is characterised by the Kalahari Group geological division as depicted in **Figure 5** below. The dominant soil group in the area is characterised as Ferralic Arenosols which contains a high content of combined oxides of iron and aluminium and is formed by windblown sand (Mendelsohn, Jarvis, Roberts, *et al.*, 2002).

The topography of the Kavango Region is noticeably flat and is mostly made up of swamps, floodplains, wetlands and woodlands.

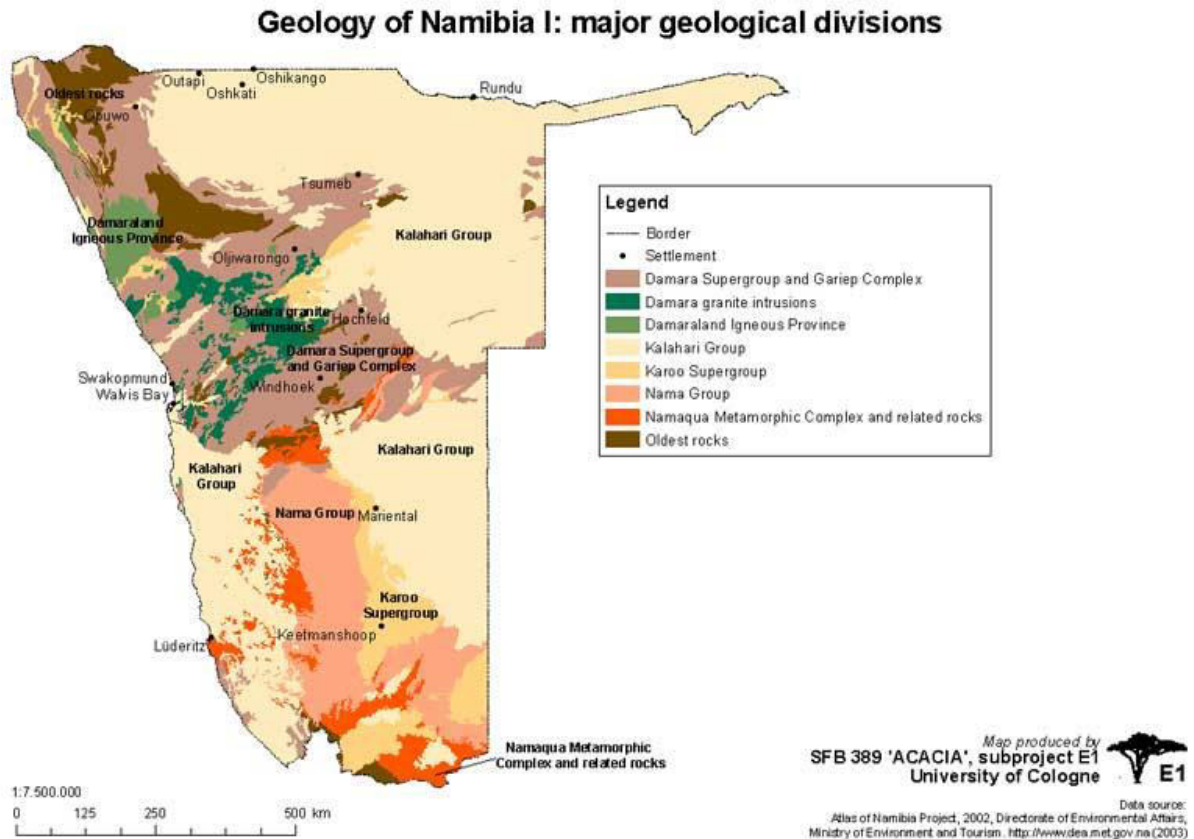


Figure 6: Geology of Namibia (http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/physical/geology.jpg)

3.2.3 Hydrology and Hydrogeology

The main hydrological feature of the Kavango Region is the Kavango River as seen on **Figure 6** below. The Cuito River, a tributary, joins the Kavango River from Angola at Dirico, so flow volumes are greater downstream of this point. The Kavango River at Rundu experiences its highest water from January to May with the peak in April, in response to summer rain falling in the upstream catchment and making its way downstream. Water in the Cuito is delayed by a longer period and peaks in about May (Mendelsohn & el Obeid, 2004).

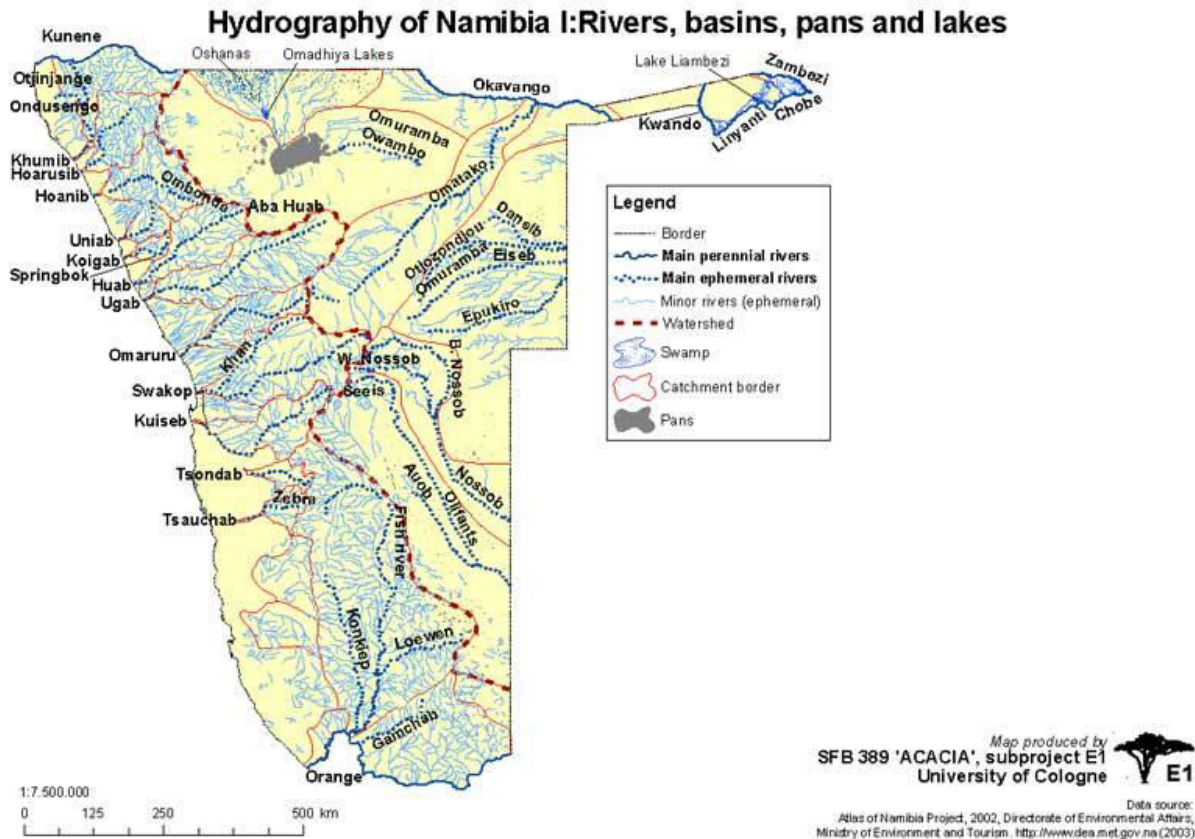


Figure 7: Hydrography of Namibia: Rivers, basins, pans and lakes (http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/physical/hydrography_1.jpg)

Rundu is situated in an area characterised by a productive porous aquifer. About 40 boreholes were drilled before Namibia’s Independence within a 15 km radius of Rundu. The water levels range from 12 to 45 m depth with yields varying from 3 to 14 m³/h. The original water supply for Rundu was by means of 2 boreholes that were drilled in the early 1950s near the government offices of Rundu (Stubenrauch Planning Consultants, 2013). Water is currently supplied to the town via distribution from the Rundu and Nkarapamwe Water Supply Schemes which are managed by NamWater. Water is abstracted from the Kavango River and transported to the two purification plants after which it is distributed to consumers.

3.3 TERRESTRIAL ECOLOGY

3.3.1 Flora and Fauna

Rundu falls within the Broadleaved Tree-and-Savanna biome as depicted in **Figure 7** below. Plant life in this biome is dominated by several species of tall trees that can form a moderately thick canopy.

The vegetation type is characterised as the Okavango Valley which is dominated by floodplain grasslands or woodlands (Mendelsohn *et al.*, 2002). The subject site is vegetated and thus it should be ensured that should any protected plant species occur on site that they are accommodated within the proposed layouts and may not be removed without a valid permit from the local Department of Forestry.

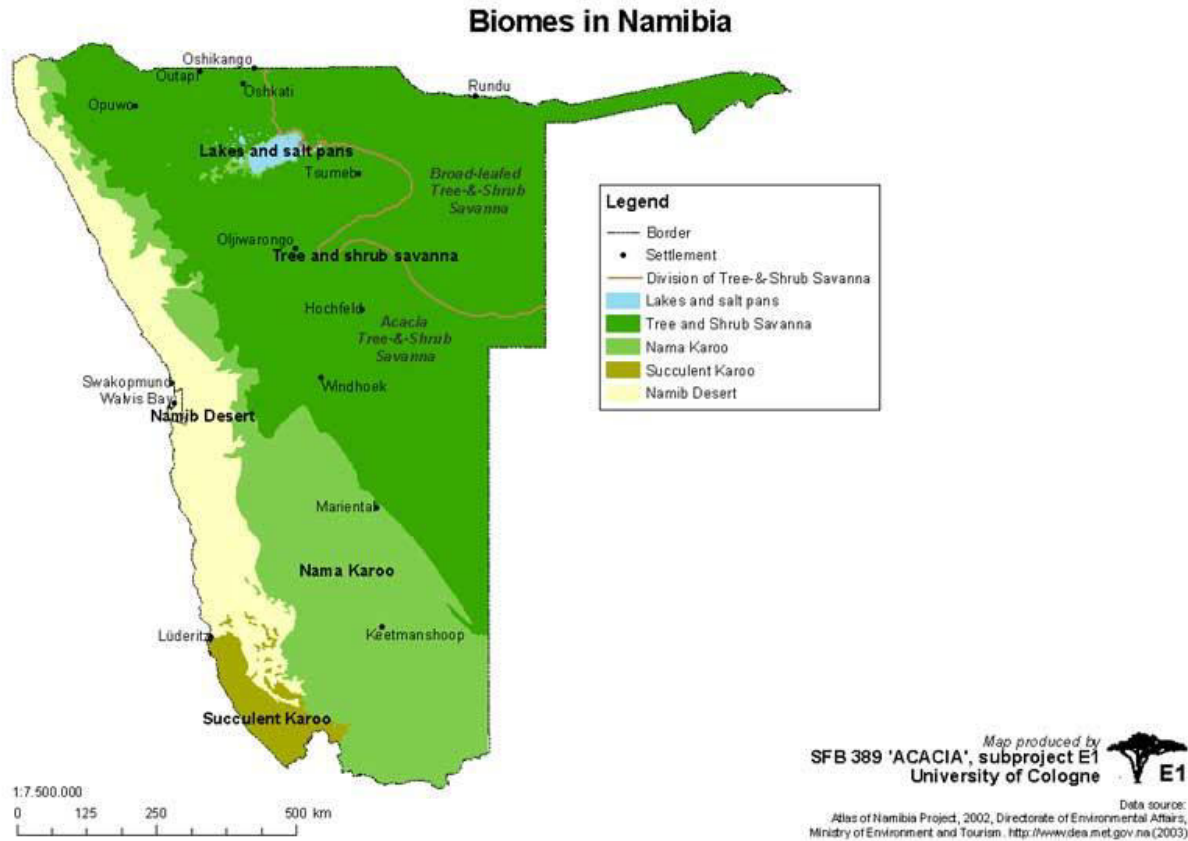


Figure 8: Biomes of Namibia (http://www.uni-koeln.de/sfb389/e/e1/download/atlas_namibia/pics/living_resources/biomes.jpg)

4 PROJECT DESCRIPTION

4.1 PROJECT COMPONENTS

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

- **Establishment of the Flexible Land Tenure Scheme in Ndama-South Informal Settlement in Rundu, Kavango-East Region.**
- **Creation of block erven and streets within the Flexible Land Tenure Scheme Boundaries of Ndama-South Informal Settlement.**
- **Provision of associated bulk services.**

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 in its current state. Thus, the Rundu 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

Namibia experiences a daunting housing backlog, a situation that calls for accelerated housing development efforts. Namibia is classified as a lower to middle-income country. However, the most recent estimate of income distribution showed that Namibia still is one of the most skewed in the world (as per Gini-coefficient inequality measure) NHP 2009. A large proportion of the population therefore lives in poverty and lacks access to essential services. This is mainly caused by the influx of

people to urban areas in search for jobs and better livelihoods. However, as people flock to urban areas, they mostly settle informally on any available piece of land as most of them cannot afford fully serviced urban land, consequently increasing the footprint of the urban informality. This has resulted in many urban dwellers occupying land without having obtained approval from the landowners and without having any form of tenure security, thereby exposing themselves to high chances of being evicted by the relevant authorities.

In terms of poverty and inequality, Namibia is characterized by extremely high, although slightly decreasing, income inequality. It is then noted that Namibia remains at the top of the list in terms of the GINI Index. Furthermore, 88% of households in Namibia have a monthly household income of less than N\$ 10,000, and even employees in Namibia's public service sector who are considered middle income, including nurses, teachers, police officers, and military personnel experience difficulties in accessing adequate housing (NHP 2022).

The town of Rundu is located in the central north-eastern part of Namibia as depicted in **Figure 1** below. It lies on the south bank of the Okavango River, which forms the border between Angola and Namibia. The Rundu town was founded by the South African government and served as an administrative Centre for the Kavango Region since 1963. Rundu is the main urban settlement in the Kavango East Region and the second largest town in Namibia by population. The town is recognized as a Town Council in terms of the Local Authorities Act, 1992 (Act No 23 of 1992).

Rundu, the capital of the Kavango-East Region with an estimated population of about **63 431** (Rundu Structure Plan 2013 - 2040) and an area measuring **164.1** kilometres, is experiencing a backlog in the provision of affordable housing. According to the report on the economic profile of Rundu compiled by First Capital Namibia in 2018, the backlog in the provision of affordable housing in Rundu is estimated at a total demand of around **12,460** houses. The report further highlighted that Rundu is the town with the highest number of shacks after Windhoek, whereby about **8150** families in Rundu live in informal settlements (August 2018). The mushrooming of informal settlements in Rundu results from the rapid in-migration of people in search of better opportunities and livelihoods.

Although Rundu is the administrative Centre of the Kavango-East, it is still largely serving the Kavango-West Region. The town is the main and only commercial Centre of both regions and the rapid influx of people from the rural areas to the town of Rundu results in accelerated demand for social and municipal services which places the town administration under enormous pressure and financial strain.

The town of Rundu comprises of six (**6**) urban areas: Kasote and Sauyemwa in the west, Rundu and Kehemu in the central area, Kaisosi to the east and Ndama in the south with settlements and villages in the outskirts of the urban area. The six urban areas are all governed by the Rundu Town Council that consists of seven (**7**) politically elected and appointed Councilors and the Chief Executive Officer.

There are approximately **22,677** planned erven falling within **94** Township extensions in Rundu, while approximately 15,544 informal structures are erected on unplanned and un-serviced land within Kasosi (**2,790**), Kasote (**3,790**) and Ndama (**8,957**) (Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), 2021).

The geographical footprint which falls under the administration of the Rundu Town Council comprises of approximately **15,517.72ha** in extent, most of which is currently occupied by traditional homesteads and is being utilized for seasonal subsistence agricultural farming by the residing communities.

The Rundu Town Council generates their income from the rates and taxes which the Council charges on formalized and planned townships and registered erven. Within the informal areas no property rates and taxes are charged. Another source of income is from the land sales, land leases, water sales and Business Fitness charges. To ensure that there is adequate funding for service provision, the Rundu Town Council reserves additional funding from the line ministry.

The town of Rundu has grown into a multilingual and multicultural city, however dominated by the vaKavango people under the traditional administration of five kingdoms, namely, the Kwangali, Mbunza, Shambyu, Gciriku and Mbukushu Kingdoms.

4.3.2 Project Description

The Ministry of Agriculture, Water and Land Reform (MAWLR) is implementing the Flexible Land Tenure System (FLTS) in various Local Authorities around Namibia. The implementation is conducted in line with the provisions of the Flexible Land Tenure Act, 2012 (Act 4 of 2012) (FLTA) and its Regulations of May 2018. The objectives of the FLTA are:

- a) To create alternative forms of land title that are simpler and cheaper to administer than existing forms of land title.
- b) To provide security of title for persons who live in informal settlements or who are provided with low-income housing.
- c) To empower the persons concerned economically by means of these rights.

The Rundu Town Council in conjunction with the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ), has commissioned an Environmental Impact Assessment (EIA) for the establishment of a Flexible Land Tenure Scheme in Rundu, Kavango-East Region. An Environmental Impact Assessment (EIA) is being conducted in terms of EMA for the creation of block erven and streets as well as the provision of associated Municipal bulk services within the Flexible Land Tenure Scheme Boundaries of Ndama-South Informal Settlement. The aim is to address the housing deficit and tenure insecurities that the Rundu town currently faces. This initiative is supported by the Ministry of Urban and Rural Development (MURD) and the Deutsche Gesellschaft für Internationale

Zusammenarbeit GmbH (GIZ) through their Inclusive and Sustainable Urban Development Project (ISUD) which aims to support the co-creation of functional and resilient neighbourhoods through the upgrading of informal settlements.

4.3.3 Flexible Land Tenure Process

The Rundu Town Council has earmarked the Ndama-South Informal Settlement which is the largest and densely populated informal residential area in Rundu for the implementation of the FLTS in terms of the Flexible Land Tenure Act, 2012 (Act 4 of 2012). The Flexible Land Tenure Act (FLTA) was passed in 2012, and the Regulations were published in 2018. The FLTS was born from a need for a land delivery system that can make security of tenure affordable to those living in informal settlements around the country. Thus, the FLTS is intended to function largely in parallel to existing legislation with the surveying and registration of land administered through a Land Rights Office. The basis for all Flexible Land Tenure Schemes is the creation of a block erf, depicting the outside boundaries of a settlement. Within the block erf the system allows the creation of starter or land hold schemes.

The Flexible Land Tenure Act, 2012 (Act No.4 of 2012), creates new tenure system for land in urban areas by establishing two new forms of land title:

a) Starter Title

Starter title rights (STRS):

- More simple level of tenure security;
- Provides the holder with the right to occupy an undefined site within a block erf in perpetuity and to erect a dwelling at this location;
- Cannot be mortgaged and cannot be subjected to a right of way or servitudes;
- The title holder can transfer, bequeath or lease the right - subject to restrictions by the group's constitution or conditions imposed by the local authority;
- No person may hold more than one starter title right;
- No person may acquire a starter title right if he or she is the owner of any immovable property or a land hold title right in Namibia.

b) Land Hold Title

Land hold title rights (LHTS):

- Provides the owner with the right to occupy a defined and demarcated site (plot) within a blockerf in perpetuity;
- The holder of a land hold title right has all the rights to the plot concerned that an owner freehold rights have;
- The holder may perform all the juristic acts in respect of the plot concerned that an owner of freehold rights may perform in respect of his or her erf under Namibia's common law (freehold).
- The holder has undivided share in the common property;
- Land hold title right holders are allowed to transfer, to bequeath or to lease the right - subject to restrictions by the group's constitution or conditions imposed by the local authority.
- The land hold title right may also be used as a collateral for a mortgage or any other form of security for a debt;
- It can be subject to a right of way or servitudes relating to the provision of public services;
- The plots will be surveyed and demarcated on the ground by a land measurer of the Land Rights Office who has to establish a land hold plan to be filed as record in the respective Land Rights Office.

4.3.4 The Rundu Flexible Land Tenure Scheme

Rundu Town Council, hereafter referred to as the proponent is of the intention to establish the Flexible Land Tenure Scheme for the following identified area:

- Ndama-South Informal Settlement

Description of Identified Area

4.3.4.1 Description of Ndama-South Informal Settlement

- The area on which Ndama-South is located has been previously used for subsistence agricultural production and farming, mainly for household consumptions.
- The residents of Ndama-South do not have any form of ownership of the land they are currently residing on.

- The area is not yet surveyed, nor serviced and it is currently being formalized and registered.
- Has limited to no access to services and facilities that are necessary for the efficient functioning of a settlement.
- The size of the settlement is estimated to be approximately 299.94ha in extent, with a number of households estimated to be over 5000.
- Only 48.8% of the households in Ndama-South have access to toilet facilities which are self-built and not connected to the municipal sewer reticulation system. Many residents often resort to open defecation, risking the health and wellbeing of the residents as well as the natural and urban environment of Rundu.
- Not all the households within the Ndama-South settlement have access to individual water taps as only 36% of the household have their own taps. The ones who do not have own private taps either get water from other available water sources such as public taps, tanker trucks (when made available), the river or from the neighbors who have private water taps.
- The area does not have proper road infrastructure and movement networks.
- The population of Ndama-South is estimated to be approximately 10374, comprising of various age groups as depicted in **Figure 10** below.

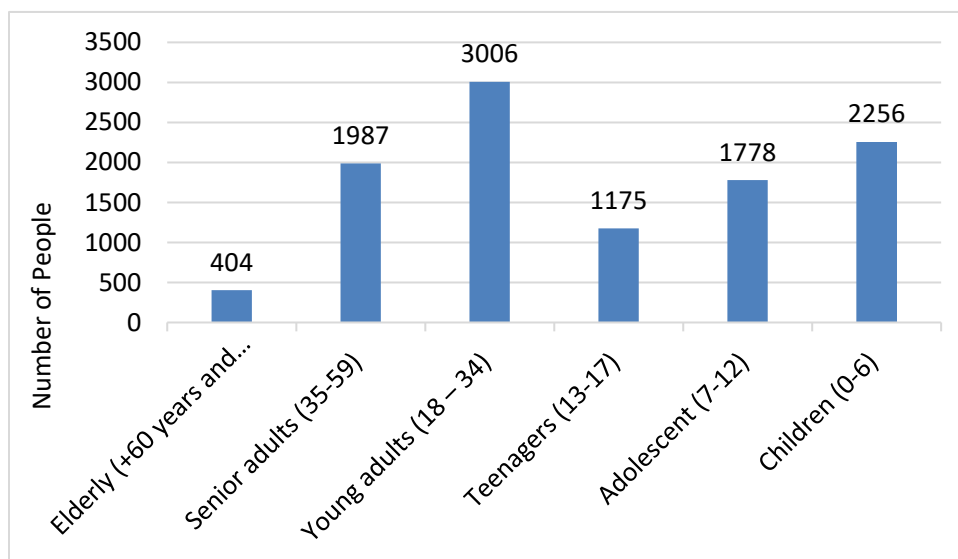


Figure 10: Population of Ndama-South Informal Settlement.

4.3.4.2 Infrastructure, amenities and livelihood of the Ndama-South Informal Settlement

The Ndama-South Informal Settlement does not have proper roads infrastructure and movement networks. The residents navigate their ways through the settlement via the narrow paths with deep sand that they have created within the settlement.

The lack of proper movement networks makes it impossible for service vehicles such as the fire trucks and ambulances to navigate efficiently through the settlements in a time of need and it is also challenging for individuals with small vehicles to drive through the settlement due to the heavy deep sand.

The subject area has limited to no access to services and facilities that are necessary for the efficient functioning of a settlement.

According to the settlement analysis conducted by the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ) in 2021/2022 in the subject area of Ndama-South Informal Settlement, exposed that most of the residents do not have adequate access to steady income generating opportunities as most of them are either self-employed, informally employed or unemployed. This issue poses a threat to the living standards of the residents as they are likely unable to afford the daily basic human needs.

It further exposed that most of the residents are self-employed and most of them earn an income between N\$500 – N\$1500 per month which is mostly spent on food.

4.3.5 Layouts of the Proposed Development

There are no specific details of the exact design and layout of the proposed development at present since the entire project is still in the design phase. The block layout plans to be designed for both settlements will have to make provision for all land uses that are necessary for the efficient functioning of a community.

The Ndama-South settlement area is challenged by the dense urban form where the informal structures are erected within close proximity to one another which not only poses a health and safety risk on the one hand while the current urban form prevents the development of proper access routes and the installation of municipal services on the other hand.

The Rundu Town Council will be required to appoint a professional Land Surveyor to conduct the surveying of the block even as the surveying of the internal layout will be conducted by the land measurer who is employed by the Ministry of Agriculture, Water and Land Reform who are the custodian of the Flexible Land Tenure Scheme. The costs involved in the provision of engineering services within the scheme areas will be borne by the respective community members, subsidised by the Rundu as necessary. The servicing process will be under the technical guidance of the Rundu; and it will be conducted incrementally as the funds become available.

Should the size of the subject areas be modified and/or extended to a different area, it is recommended that a different EIA be done for the probable new location.

4.3.6 Engineering Services and Access Provision

The FLTA does not require that municipal services are to be installed at a starter title scheme nor does it specify that such must be of a certain standard or quality. Hence the installation of services can be phased by the respective communities as the funds become available; while also benefitting from the possibility to install services which would normally not be approved under the conventional planning process (CPP) development initiative.

The implementation of the FLTS in Ndama-South settlement will be conducted through the informal settlement upgrading process which reduces the pressure of engineering cost on the LA by allowing for community members to undertake the servicing of the project themselves. Typically, this would mean that the community would save until they have the appropriate funding after which they would then start with the construction of the priority services with the guidance of the relevant service providers and Rundu Engineering Department, and incrementally upgrade the services as the funding becomes available.

Further, the installation of engineering services by the community themselves would seem to be less costly as the cost for labour can be excluded since the community will provide labour at no or at reduced cost to the project.

The reticulation systems of engineering services of water, sewer and electricity provided within the Rundu town boundaries have adequate capacity to be extended to and accommodate the Ndama-South settlement once they have been formalised accordingly.

Once the subject area formalized, the Council will appoint a civil engineer to attend to the design and installation of the municipal services within the area. The design for the water and sewer services will be done in accordance and to the satisfaction of the Engineering and Technical Services Department of the Rundu Town Council. The electricity connection to the Ndama-South settlement will be done in accordance and to the satisfaction of NORED which currently provides electrical power to the town of Rundu.

No detailed engineering designs have been carried out for the development of the associated services infrastructure (roads, potable water, storm water, sewerage and electrical reticulations).

Access to the Ndama South Informal settlement is obtained from the B8 National Road in Rundu town to the south.

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 5** below for the activities undertaken as part of the public participation process. The I&APs were given time to comment from **28 September 2023 to 19 October 2023**.

Table 5:Table of Public Participation Activities

ACTIVITY	REMARKS
Placement of site notice/poster in Rundu	See Annexure A
Placing advertisements in local newspapers namely the New Era and the Namibian newspaper (28 September 2023 and 05 October 2023).	See Annexure B
Written notice to surrounding property owners and Interested and Affected Parties via Email (28 September 2023)	See Annexure C

Public were informed about the project and participated in the household surveys conducted by GIZ 2022. In 2022, GIZ conducted household surveys in Ndama-South Informal Settlement to analyse the current social and economic status of the residents within the Rundu Informal settlements and identified the area that require urgent interventions which is the Ndama-South Informal Settlement. In its quest to upgrade the Ndama-South Informal settlement and provide the respective residents with tenure security, the Rundu Town Council with the assistance of GIZ introduced the FLTS to the residents as an alternative and affordable form of tenure security. The residents were then informed that upon approval of the proposed FLTS, they will have an option to choose their preferred form of title depending on their level of affordability, which will then be registered in the Land Rights Office in accordance with the FLTA. Thus far, the Ndama-South residents have demonstrated keen interest in obtaining land rights through the proposed FLTS.

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 **10 November 2023**. An Executive Summary of the DESR was included in the letters to the registered I&APs. I&APs had until **24 November** 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 9**.

Table 6: 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>

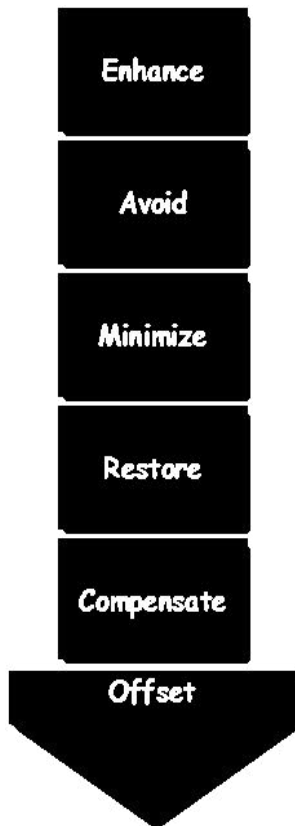
*NOTE: Where applicable, the magnitude of the impact has to be related to the relevant standard (threshold value specified and source referenced). The magnitude of impact is based on specialist knowledge of that particular field.

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 12** below). These cover avoidance, minimization, restoration and compensation. It is possible and considered sought after to enhance the environment by ensuring that positive gains are included in the proposed activity or project. If negative impacts occur, then the hierarchy indicates the following steps.



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

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

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

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

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

Figure 12: 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 Rundu Town Council as the managing authority has committed itself to support the implementation and operation of the proposed FLTS in Ndama-South Informal Settlement to ensure the provision of tenure security for the respective residents. The initiative is also fully supported by GIZ through its ISUD by committing themselves to provide the necessary technical and financial assistance to ensure the successful implementation of the FLTS. The costs involved in the provision of engineering services within the scheme areas will be borne by the respective community members,

subsidised by the Rundu Town Council as necessary. The servicing process will be under the technical guidance of the Rundu Town Council; 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 area is covered by trees, a few Camel Thorn Trees (*Acacia erioloba*), which is a protected species, and grass that may provide a habitat for common mammal, reptile and bird species. From a biodiversity point of view, the site is degraded. The density of people in the region, existing infrastructure such as roads and homesteads in the area has resulted in a migration of conservation worthy species from the area. Rundu has a low endemism but high diversity of birds, amphibians, plants, and large mammals. The town of Rundu is situated on the wall of the Okavango River in the Okavango valley. The area is known to be of Namibia's most densely vegetated areas composed of floodplain grasslands and lush woodlands. The specific area earmarked for the development, however, represents a small fraction of the overall ecosystem in the surrounding environment (GCS, 2016).

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

Rundu 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 Rundu 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 Rundu 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 Rundu 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 area 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 7**. The **Tables 8 – 10** 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 7: 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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 Rundu	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 8: 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 settlement into the main storm water channels to prevent damages to the properties.

Table 9: 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. • Where the blocks are along the main stormwater channels, then the Block layout plan 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 Rundu and will be leased out to individuals or group thereof to help generate revenues for the Rundu.
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 10: 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.

OPERATIONAL PHASE IMPACTS	
Impact	Mitigation Measures
	<ul style="list-style-type: none"> • Continuous monitoring of noise levels should be conducted to make sure the noise levels does not exceed acceptable limits. • No activity having a potential noise impact should be allowed after 18:00 hours if possible.
Emissions	<ul style="list-style-type: none"> • Consider tarring of the internal road network. • Manage activities that generate emissions.
Waste	<ul style="list-style-type: none"> • Solid waste will be collected from site regularly. • Waste should be disposed of at an appropriate local land fill, in consultation with the local authority. • No waste may be buried or burned.
Social Impacts	<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 Ndama-South 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 Ndama-South will comprise of both freehold land, starter title and land hold rights to cater to individuals in various income categories • The Rundu to encourage and assist the residents of the affected settlement 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 FESR and describe the way forward.

8.1 CONSTRUCTION PHASE IMPACTS

With reference to **Table 7**, 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 Rundu (Ndama South) are expected to benefit from the upgrading of the settlement. 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 upgrading of the settlement and the construction of bulk services in Rundu 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 DESR 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 DESR 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 Rundu 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

Mendelsohn, J. & el Obeid, S. 2004. The flow of a lifeline.

Mendelsohn, J., Jarvis, A., Roberts, C. & Roberston, T. 2002. Atlas of Namibia.

Namibia Statistics Agency. 2011. Namibia 2011 Population & Housing Census - Main Report. 214. [Online], Available: [http://www.nsa.org.na/files/downloads/Namibia 2011 Population and Housing Census Main Report.pdf](http://www.nsa.org.na/files/downloads/Namibia%2011%20Population%20and%20Housing%20Census%20Main%20Report.pdf).

Namibia Statistics Agency. 2013. 2011 Population and Housing Census Kavango Regional Profile.

Stubenrauch Planning Consultants. 2022. Rundu Structure Plan.

Tamayo et al., 2011. Flood Risk Management Plan <http://www.theeis.com/data/literature/Flood%20Risk%20Management%20Plan.pdf>