Environmental Impact Assessment (EIA) Study: Scoping Report

The Proposed Construction and Operation of a New Telecommunication Guyed Mast Tower (Epinga Site) and Associated Activities in the Ohangwena Region - Application for Environmental Clearance Certificate (ECC)

ECC Application No.:	**APP-005633**
Document Type:	**Scoping Report**
Version:	**Final for Submission**
Proponent:	**Mobile Telecommunications Limited** **P. O. Box 23051 Windhoek, Namibia**

April 2025

DOCUMENT INFORMATION

Title: Environmental Impact Assessment (EIA) Study for the Proposed Construction and Operation of a New Telecommunication Guyed Mast Tower (Epinga Site) and Associated Activities in the Ohangwena Region – Application for Environmental Clearance Certificate (ECC)

Prepared by:

Author / Environmental Assessment Practitioner (EAP):	Fredrika N. Shagama
Qualifications:	Ph.D. Student: Civil Engineering (Geotechnics & Environmental Hydrogeology), VSB - Technical University of Ostrava, Czech Republic; Post Graduate Diploma in Environmental Studies, International University of Management (IUM), Namibia; MSc. Geological Engineering (*cum laude*) with a focus in Hydrogeology, VSB - Technical University of Ostrava, Czech Republic; BSc. Geological Engineering, VSB - Technical University of Ostrava, Czech Republic
Professional Affiliations:	Environmental Assessment Professionals of Namibia (EAPAN) - Practitioner (Membership No. 183); Geoscience Council of Namibia (GSCN) – Geoscientist, Registration No. GSCN/G-057; International Association of Hydrogeologists (IAH) - Full Member, Membership No.139790; Namibian Hydrogeological Association (NHA) – Member
Contact Details:	Mobile No.: +264 81 749 9223; eias.public@serjaconsultants.com Postal Address: P.O. Box 27318 Windhoek, Namibia
Signature:	
Date:	07/04/2025
PROPONENT DETAILS	
Proponent:	Mobile Telecommunications Limited
Name of Representative & Role:	Tuhafeni Erastus Coordinator: Site Sharing and Network Development
Contact details:	+264 81 3251726 TErastus@mtc.com.na
Signature:	
Date:	07/04/2025

SERJA'S STATEMENT OF INDEPENDENCE

As the Appointed Environmental Consultant to undertake the EIA Study for the Proposed Construction and Operation of a New Telecommunication Guyed Mast Tower (Epinga Site) and Associated Activities in the Ohangwena Region, Serja Hydrogeo-Environmental Consultants cc declares that we:

- do not have, to our knowledge, any information or relationship with Mobile Telecommunications Limited (*MTC Namibia* or Proponent) or the Ministry of Environment, Forestry and Tourism (MEFT)'s Department of Environmental Affairs and Forestry (DEAF) that may reasonably have potential of influencing the outcome of this EIA Study and the subsequent Environmental Clearance Certificate (ECC) applied for.
- have knowledge of and experience in conducting environmental assessments, the Environmental Management Act (EMA) No. 7 of 2007, and its 2012 Environmental Impact Assessment (EIA) Regulation, as well as other relevant national and international legislation, guidelines, policies, and standards that govern the proposed project as presented herein.
- have performed work related to the ECC application in an objective manner, even if the results in views and findings, or some of these may not be favorable to the Proponent.
- have complied with the EMA and other relevant regulations, guidelines and other applicable laws as listed in this document.
- declare that we do not have and will not have any involvement or financial interest in the undertaking/implementation of the proposed project, other than remuneration (professional fees) for work performed to conduct the EIA and apply for the ECC in terms of the EIA Regulations' requirement as an Environmental Assessment Practitioner (EAP).

Disclaimer: Serja Hydrogeo-Environmental Consultants will not be held responsible for any omissions and inconsistencies that may result from information that was not available at the time this document was prepared and submitted for evaluation.

……

Signature:

Fredrika N. Shagama: Principal Environmental Assessment Practitioner & Hydrogeologist

Date: 04 April 2025

EXECUTIVE SUMMARY

Mobile Telecommunications Limited (hereinafter referred to as MTC Namibia or the Proponent) proposes to construct and operate a 60m high guyed mast telecommunication tower in Epinga Village in the Ohangwena Region (the project site). The site is internally referred to by MTC as *Epinga Tower Site*.

The proposed tower is planned for a 9m x 9m project site (footprint) located at Epinga village, about 12km northeast of Eenhana Town in the Omundaungilo Constituency, Ohangwena Region (coordinates: -17.41079° 16.43748), under the Oukwanyama Traditional Authority.

Proposed Project Activities

The anticipated project phases for the proposed tower establishment and operation are as follows:

- Planning and Design: The structure proposed for the Epinga site is a 60m high guyed structure that will host 3x dual-band antennae and 1x microwave dish. According to the Proponent, the selection of the tower site was based on radio access network rural coverage for both voice and data services. Access to the site will be limited to authorised personnel only.
  The structure will be mounted to a concrete foundation and will require supporting cables, which is typical for guyed structures. The physical assembling of the network structure and the construction of the foundations will take place on the site by using manual labour as far as possible. To protect the network structure from lightning, it will be earthed.
- Site Preparation and Construction: Construction works for this project will include excavation, concrete civil works, and tower rigging. There will be minimal earthworks required to prepare the sites for the tower construction and installation. The construction of the concrete foundation for the tower will take place onsite by using manual labor as far as possible. The construction work is anticipated to take 2 to 3 months, and the construction activities will be limited to normal working hours, i.e., 08h00 and 17h00.
- For security purposes, the tower site will be fenced off to restrict access to authorized personnel (such as the maintenance team) only and prevent vandalism. A contractor will be appointed to carry out the tower construction/installation.
  The appointed contractor will have to make arrangements for the logistics (including accommodation and transport to the construction site) of their workforce. MTC and their appointed contractor for construction will be required to adhere to health, safety, and environmental requirements for construction and operation (as well as maintenance) to be presented in the Draft EMP for the project.
- Operations and Maintenance Phase: During this phase, the tower is operational and providing telecommunication signals to the communities of Epinga and the surrounding areas that can be serviced by the new tower.

Telecommunication sites (towers) usually require very little maintenance; for instance, any software upgrading will be done mainly from MTC's head offices in Windhoek. For the upgrading of hardware (when required), this will be done on site by the MTC maintenance team/department according to maintenance schedules, when and as necessary. A minimum of two people will be required to carry out hardware maintenance onsite, particularly for tower climbing (safety concerns such as fall arrest). MTC is required to adhere to environmental, health, and safety measures to be provided in the Draft EMP.

Communication with I&APs, and Means of Consultation Employed

Communication with I&APs with regards to the proposed development was facilitated through the following means and in this order:

- A Background Information Document (BID) containing brief information about the proposed project was compiled and hand delivered to the Ministry of Environment, Forestry and Tourism (MEFT) accompanying the ECC application, and uploaded on the MEFT (ECC) Portal for project registration and shared with registered Interested and Affected parties (I&APs).
- A Background Information Document (BID) containing brief information about the proposed project was compiled, uploaded on the MEFT (ECC) Portal for project registration, and circulated to the registered stakeholders/Interested and Affected parties (I&APs).
- A Stakeholders' (I&AP) List was developed and updated as new I&APs register for the EIA. The BID was shared with the pre-identified key stakeholders from national to local levels via email alongside the invitation to the consultation meeting.
- Project Environmental Assessment notices were published for two consecutive weeks in the *New Era* and *Windhoek Observer* (on the 10th and 17th of April 2025). The consultation period ran from the 10th of March 2025 to the 17th of April 2025.
- A3-size poster for public notice was compiled and pasted in the area (in Epinga) and the Ohangwena Regional Council office notice board in Eenhana.
- One-on-one engagements were done at selected public services institutions such as the Epinga Clinic, and with the Epinga Village headmen, Shimbode Combined School, as well as some Ohangwena Regional Council representatives, on the 31st of March 2025. Forty-eight (48) people were engaged and consulted (the BID was explained to them), and the attendance register was signed by these I&APs.

Impact identification and assessment: Some key potential positive and negative impacts were identified by the Environmental Consultant based on project experience (since there were no comments or issues raised by I&APs during the consultation period). The potential impacts were described and assessed in this Report and mainly have a medium rating of significance pre-implementation of mitigation measures. The management and mitigation measures to the impacts have been provided in the Draft EMP (in the form of

action measures) for implementation by the Proponent, their contractors, and workers to avoid and/or minimize their significance on the environmental and social components. The effective implementation of the recommended management and mitigation measures, accompanied by monitoring, will particularly see the reduction in the significance of adverse impacts that cannot be avoided completely (from slightly high to medium rating and then low rating until negligible level) as follows:

- Physical disturbance to the site soils (during construction): pre-mitigation – medium and post-mitigation – low,
- Environmental pollution (littering): *pre-mitigation – medium rating and post-mitigation – low rating*,
- Occupational and community health and safety risks (during construction and maintenance): *pre-mitigation – medium rating and post-mitigation – low rating*,
- Health and safety issues related to Electromagnetic Radiation emitted from the tower antennae may affect human health: pre-mitigation – *medium to slightly high rating, and post-mitigation – medium rating* and eventually *low rating* (upon effective implementation of measures),
- Civil Aviation impact: *pre-mitigation – medium rating and post-mitigation – low rating*,
- Visual and aesthetic: *pre-mitigation – medium rating and post-mitigation – low rating*,
- Noise from construction activities: *pre-mitigation – medium rating and post-mitigation – low rating*, and
- Archaeological and Heritage resources: *pre-mitigation – medium rating and post-mitigation – low rating*.

The Scoping assessment of the EIA Study was deemed sufficient and concluded that no further detailed assessments are required for the ECC application for the proposed tower.

Serja Consultants are confident that the potential negative impacts associated with the proposed project can be managed and mitigated by the effective implementation of the recommended management and mitigation measures, and with more effort and commitment put on monitoring the implementation of these measures.

It is therefore recommended that the proposed tower be granted an ECC, and provided that:

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, licenses, and approvals for the proposed activities should be obtained as required and ensuring compliance with associated specific legal requirements.
- Transparency in communication and continued engagement with the stakeholders, specifically the respective land owner/custodian as well as other key stakeholders, should be maintained before and throughout the project.

- The Proponent, their project workers or appointed contractors, comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.
- Site areas where earthworks are carried out should be rehabilitated, as far as practicable. This includes the levelling of stockpiled topsoil, backfilling of construction trenches and pits.
- The EMP implementation should be checked and done by the responsible team member onsite (Environmental Control Officer (ECO) or Health, Safety & Environmental (HSE) Officer) and audited by an Independent Environmental Consultant on an annual basis to compile Environmental Monitoring (Audit) Reports. These reports are to be submitted to the DEAF as it will be required by the Environmental Commissioner (as part of the ECC conditions).

It can be concluded that some of the identified negative impacts may be significant, particularly during the operational phase, but they would not hinder the proposed tower implementation. However, the recommended measures should be effectively implemented and monitored. This is to ensure that the significance of adverse impacts is reduced to acceptable ratings, i.e., from high to medium and then low, or from medium to low, and eventually to a negligible significance rating. The effectiveness of the implementation of the management and mitigation measures and EMP compliance will be assessed by a responsible Officer and audited by an Independent Environmental Consultant on an annual basis. This is done so that recommended measures can be tracked via Bi-Annual Environmental Monitoring exercises and documented in the monitoring reports to the Environmental Commissioner.

The monitoring of EMP implementation will not only be done to ensure that the impact's significance is reducing and or maintaining a low significance rating, but also to ensure that all potential impacts that might arise during implementation are properly identified in time and addressed immediately.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

Appendix A: Draft Environmental Management Plan (EMP)

Appendix B: Curriculum Vitae (CV) of the responsible Environmental Assessment Practitioner (EAP)

Appendix C: Proof of Stakeholder Consultation and Engagement

C1 – Email communication (BID) and meeting invitation sent to the stakeholders/I&APs

C2 - EIA Notification in the newspapers (*New Era* and *Windhoek Observer*)

C3 – Original A3 Public Notice pasted in Epinga and Eenhana (Ohangwena Regional Council)

C4 - Consultation and Engagement register with stakeholders / I&APs

Appendix D: Land Use Consent letter issued by the relevant authority

LIST OF ABBREVIATIONS

Abbreviation	Meaning
3G/4G	Third and Fourth Generation of Wireless Mobile Telecommunications Technology
AC	Alternating Current
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
BID	Background Information Document
BTS	Base Transceiver Station
CRAN	Communications Regulatory Authority of Namibia
DEAF	Department of Environmental Affairs and Forestry
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner

Abbreviation	Meaning
EAPAN	Environmental Assessment Professionals of Namibia
ECC	Environmental Clearance Certificate
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMF OR EME	Electromagnetic Fields or Electromagnetic Emission
EMP	Environmental Management Plan
GG	Government Gazette
GN	Government Notice
I&APs	Interested and Affected Parties
ICAO	International Civil Aviation Organisation
ICNIRP	International Commission on Non-Ionizing Radiation Protection
MEFT	Ministry of Environment, Forestry and Tourism
MHSS	Ministry of Health and Social Services
MICT	Ministry of Information and Communication Technology
MTC Namibia	Mobile Telecommunications of Namibia
NAC	Namibia Airports Company
NCAA	Namibia Civil Aviation Authority
NHC	National Heritage Council (NHC) of Namibia
NORED	The Northern Regional Electricity Distributor
NRPA	National Radiation Protection Authority of Namibia
PPE	Personal Protective Equipment
Reg, S	Regulation, Section
RF	Radio Frequency
SAR	Specific Energy Absorption Rate
SHE	Safety, Health & Environment
WHO	World Health Organization

GLOSSARY (KEY TERMS)

Term	Definition
Alternative	A possible course of action, in place of another that would meet the same purpose and need of the proposal.
Base Transceiver Station (BTS)	A fixed radio transceiver in any mobile network. The BTS connects mobile devices to the network. It sends and receives radio signals to mobile devices and converts them to digital signals that it passes on the network to route to other terminals in the network or to the Internet (https://www.gartner.com/en/information-technology/glossary/bts-base-transceiver-station). A base station system consists of a collection of equipment (transceivers, controllers, etc)
Baseline	Work done to collect and interpret information on the condition/trends of the existing environment.
Biophysical	The part of the environment that does not originate with human activities (e.g., biological, physical, and chemical processes).
Cumulative Impacts / Effects Assessment	Concerning an activity, it means the impact of an activity that may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.
Decision-maker	The person(s) entrusted with the responsibility for allocating resources or granting approval to a proposal
Ecological Processes	Processes that play an essential part in maintaining ecosystem integrity. Four fundamental ecological processes are the cycling of water, the cycling of nutrients, the flow of energy, and biological diversity (as an expression of evolution).
Environment	As defined in Environmental Management Act - the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water, and air; all organic and inorganic matter and living organisms and (b) the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values.
Environmental Management Plan (Draft EMP)	As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environmental effects are to be mitigated, controlled, and monitored.

Term	Definition
Guyed mast towers	These types of towers are made of straight rods arranged in a triangular shape, but they are supported by wires at all angles. These types of towers are very tall/high and can reach up to 600m and are used to hold antennae high above ground so that there is a stronger signal and better mobile reception. In dense forest or mountainous/hilly areas, guyed towers are high to overcome vegetation height and help transmit the signal over a wide area above the tree canopy/vegetation (where vegetation can be thick and obstruct signal transmission).
Interested and Affected Party (I&AP)	In terms of the assessment of a listed activity includes - (a) any person, group of persons, or organization interested in or affected by an activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity.
Fauna and Flora	The animals and plants found in an area.
Mitigate	Practical measures to reduce adverse impacts.
Mitigation	The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment
Monitoring	Activity involving repeated observation, according to a pre-determined schedule, of one or more elements of the environment to detect their characteristics (status and trends).
Network or cell towers	Also known as cell sites, they are where electric communications equipment and antennae are mounted, allowing the surrounding area to use wireless communication devices like telephones and radios. Cell towers are usually built by a tower company or a wireless carrier when they expand their network coverage or capacity, providing a better reception signal in that area (https://millmanland.com/company-news/what-is-a-cell-tower-and-how-does-a-cell-tower-work/).
Proponent	Organization (private or public sector) or individual intending to implement a development proposal. As defined in the Environmental Management Act, the Proponent is a person who proposes to undertake a listed activity.
Public Consultation/Involvement	A range of techniques can be used to inform, consult, or interact with stakeholders affected by the proposed activities.
Protected Area	Refers to a protected area that is proclaimed in the Government Gazette according to the Nature Conservation Ordinance number 4 of 1975, as amended.

Term	Definition
Scoping	An early and open activity to identify the impacts that are most likely to be significant and require specialized investigation during the EIA work. Can also be used to identify alternative project designs/sites to be assessed, obtain local knowledge of the site and surroundings, and prepare a plan for public involvement. The results of scoping are frequently used to prepare a Terms of Reference for the specialized input into a full EIA.
Significant impact	Means an impact that, by its magnitude, duration, intensity, or probability of occurrence, may have a notable effect on one or more aspects of the environment

1 INTRODUCTION

1.1 Project Background and Location

Mobile Telecommunications Limited (hereinafter referred to as MTC Namibia or the Proponent) proposes to construct and operate a 60m high guyed mast telecommunication tower in Epinga Village in the Ohangwena Region (the project site). The site is internally referred to by MTC as *Epinga Tower Site*.

The proposed tower is planned for a 9m x 9m project site (footprint) located at Epinga village, about 12km northeast of Eenhana Town in the Omundaungilo Constituency, Ohangwena Region (coordinates: -17.41079° 16.43748), under the Oukwanyama Traditional Authority. The locality map and land use map are shown in Figure 1-1 and Figure 1-2, respectively.

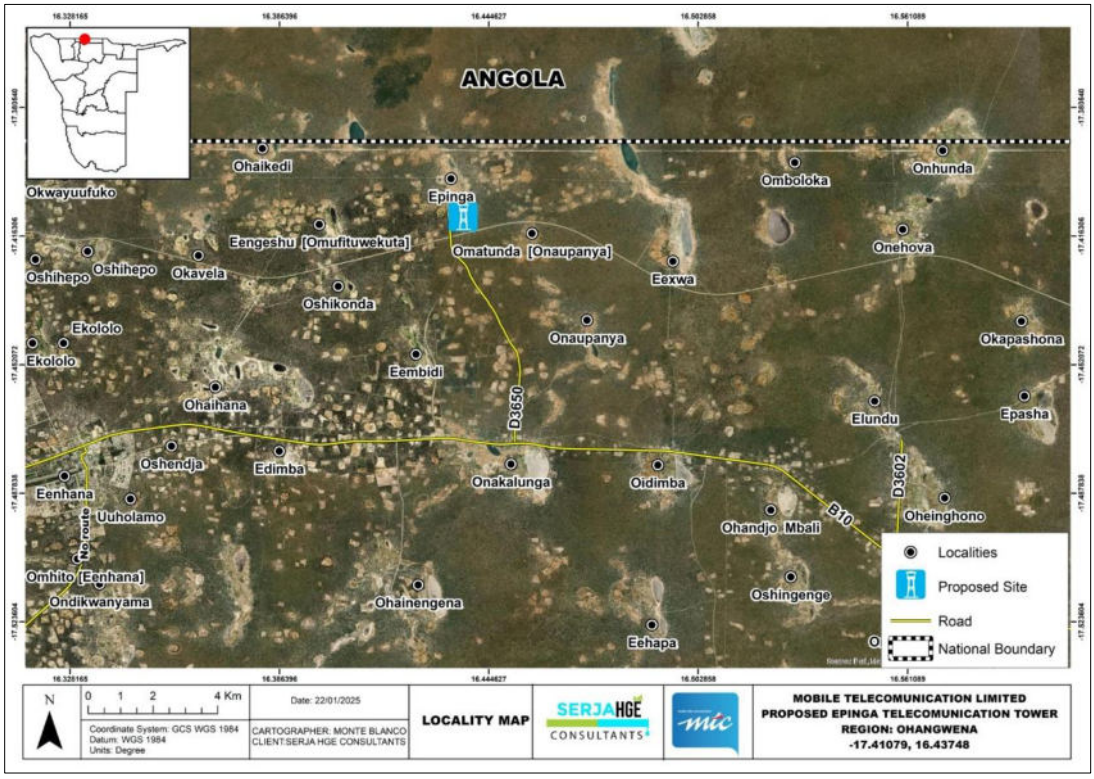

Figure 1-1: Locality map of the proposed MTC Epinga Tower

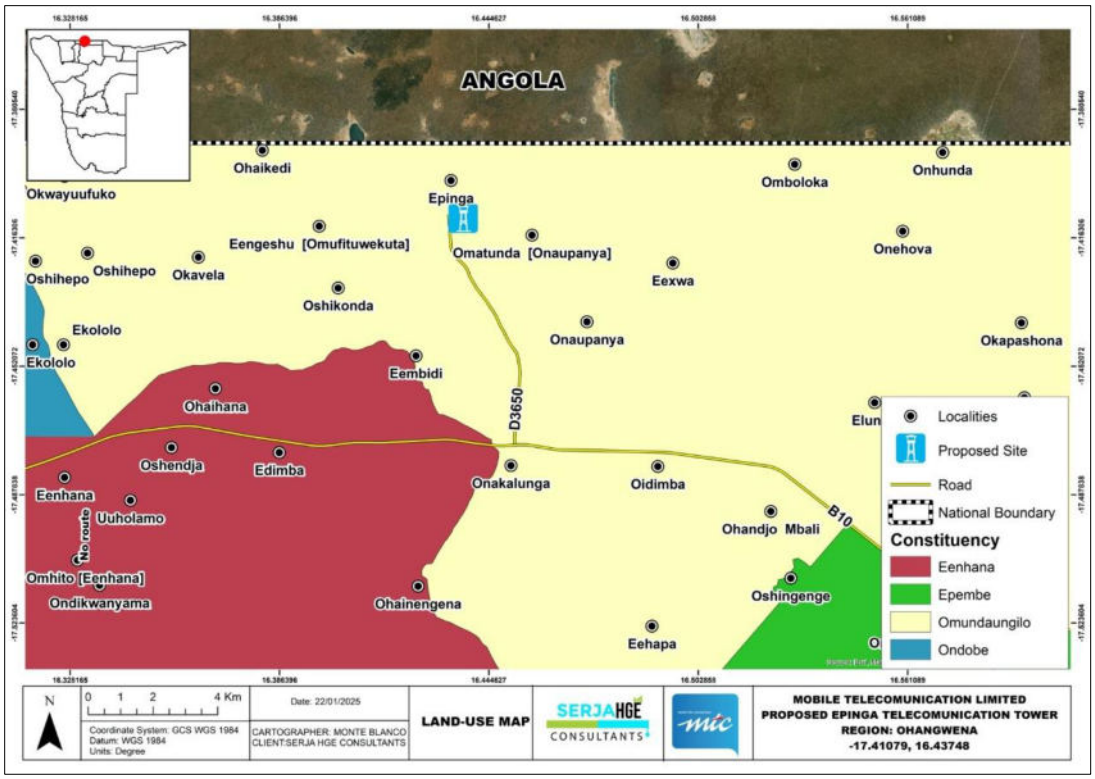

Figure 1-2: Epinga Site land use map

1.2 The Need and Desirability of the Proposed Project

MTC Namibia is committed to providing reliable telecommunication services to its clients (businesses, residents, and travellers) both in urban and rural areas of Namibia. Furthermore, modern society heavily relies on telecommunications from telephones, cellphones, and other electronic devices for information sharing and connections. Thus, to ensure that mobile connection services run smoothly and conveniently, the service infrastructure needs to be up to standard to provide better quality coverage to the mobile users.

The need for the tower is also aimed at providing additional capacity, thus reducing the congestion problems and improving the coverage in the area.

1.3 The Need for an EIA and Environmental Clearance Certificate (ECC)

Telecommunication structures and related infrastructures are among the listed activities that may not be undertaken without an ECC under the Environmental Management Act (EMA) (2007) and its 2012 Environmental Impact Assessment (EIA) Regulations. The relevant listed activities as per EIA regulations are:

- *Listed Activity 10: Infrastructure 10.1 The construction of-*
  (g) Communication networks including towers, telecommunication, and marine telecommunication lines and cables;

(j) Masts of any material or type and any height, including those used for telecommunication, broadcasting, and radio transmission, but excluding - (i) flag poles; and (ii) lightning conductor poles.

The EIA process will entail a baseline assessment of the biophysical & social environment and public consultation. The findings of the EIA process are then incorporated into an EIA Scoping Report, and a Draft EMP will also be developed for the proposed project activities.

The ECC application is submitted to and registered with the Ministry of Environment, Forestry and Tourism (MEFT) as the environmental regulatory authority. Once the ECC is issued by the Environmental Commissioner, the Proponent will plan for the activities and thereafter commence with the tower construction activities and subsequently, its operations and maintenance.

The purpose of the EIA Study and subsequent issuance of the ECC is therefore to ensure that the proposed project activities are undertaken in an environmentally & socially friendly and sustainable manner, through the effective implementation of recommended environmental management measures to minimize the adverse identified impacts while maximizing the positive impacts.

1.4 Appointed Independent Environmental Consultant

To comply with the EMA and its Regulations and ensure environmental management, protection, and sustainability, the Proponent appointed Serja Hydrogeo-Environmental Consultants CC, Independent Environmental Consultants, to apply for the ECC and conduct the required Environmental Assessment Process, which includes Public Consultation and prepare the Scoping Report and EMP (Appendix A).

The EIA process (stakeholder / public consultation and engagement, including consultation meeting facilitation) and environmental mapping were conducted and done by Mr. Stefanus Johannes, respectively. Mr. Johannes is an experienced Environmental Assessment Practitioner (EAP) and qualified and experienced GIS Specialist/Cartographer with over 4 years of experience in Natural Resources Management Consulting and Mapping (Geospatial Analysis). The EIA Scoping, EMP, and associated documents were compiled by Ms. Fredrika Shagama. Ms. Shagama is a qualified and experienced Hydrogeologist and Environmental Assessment Practitioner by training and experienced with over 10 years of experience in Groundwater and Environmental Management Consulting. The CVs of the two Environmental Assessment Practitioners are attached to this Report as Appendix B.

1.5 Application for the Environmental Clearance Certificate

The application for the ECC process was done as follows:

- Preparation of prepared Background Information Document (BID) for the proposed project,
- Launching of the ECC application on the ECC Portal of the Ministry of Environment, Forestry and Tourism (MEFT) with the Proponent details (accompanied by the BID) for project registration purposes and obtaining a MEFT application/reference number (APP-005633),

- Completion of Form 1 (Section 32) with the required project and Proponent information,
- Submission of the printed hard copy of the ECC application (with affixed NAD300 revenue stamps as application fees attached hereto) is submitted to the MEFT. The MEFT's date-stamped copy of the ECC application is uploaded on the ECC Portal as proof of application and payment.

The next component of the ECC application was to undertake an EIA process, which entails a baseline assessment of the biophysical and social environments as well as public/stakeholder consultation and engagement. The findings of the EIA process are then incorporated into a Scoping Report, and a Draft EMP is also developed for the mitigation of potential adverse impacts anticipated from the proposed project activities. These documents are then submitted to the Environmental Commissioner at MEFT's Department of Environmental Affairs and Forestry (DEAF) for evaluation and consideration of the ECC.

1.6 Scope of Work and Report Contents

This Study has been conducted according to the EMA No. 7 of 2007, and its 2012 EIA Regulations as mentioned in the preceding subsections, i.e., the proposed project may not be undertaken without an ECC. Therefore, the process has been undertaken as required and guided by the Regulations. This Report has been compiled as a required output of an environmental assessment process. The EIA Report, together with the EMP and all its appendices, will be submitted to the DEAF.

The document (Report) covers the following chapters or sections, in addition to the introductory chapter:

- Project description and associated activities - (Chapter 2).
- Project alternatives considered (the environmentally friendly and technically feasible) - Chapter 3.
- The legal requirements governing the project and its related activities, i.e., the legislation that the project activities must comply with (Chapter 4).
- The environmental and social baseline of the project area - Chapter 5.
- The Public consultation and engagement process was undertaken to inform, invite, and engage the public (stakeholders and interested & affected parties) on the project activities - Chapter 6.
- The assessment of identified potential impacts associated with the project activities (Chapter 7) - This chapter presents both the positive, negative, and cumulative impacts, assessment methodology, and the assessment of the negative impacts. The mitigation measures in the form of management action plans, with a timeframe and implementation responsibilities, are in the EMP.
- The recommendations and conclusions of the environmental assessment are presented in Chapter 8. The data sources consulted for the assessment are listed under Chapter 9.

Based on the information provided by the Proponent and the EAP's experience, a description of the project activities is presented in the next chapter.

2 DESCRIPTION OF THE PROPOSED PROJECT ACTIVITIES

The project phases anticipated for the proposed tower establishment and operation are presented below.

2.1 Planning and Design

2.1.1 Proposed Design and Network Structure

The structure proposed for the Epinga site is a 60m high guyed structure that will host 3x dual-band antennae and 1x microwave dish. According to the Proponent, the selection of the tower site was based on radio access network rural coverage for both voice and data services. Access to the site will be limited to authorised personnel only.

The structure will be mounted to a concrete foundation and will require supporting cables, which is typical for guyed structures. The physical assembling of the network structure and the construction of the foundations will take place on the site by using manual labour as far as possible. To protect the network structure from lightning, it will be earthed. The typical examples of guyed structures proposed for the Epinga site are shown in Figure 2-1 below, while the design details of the proposed site are in Table 2-1.

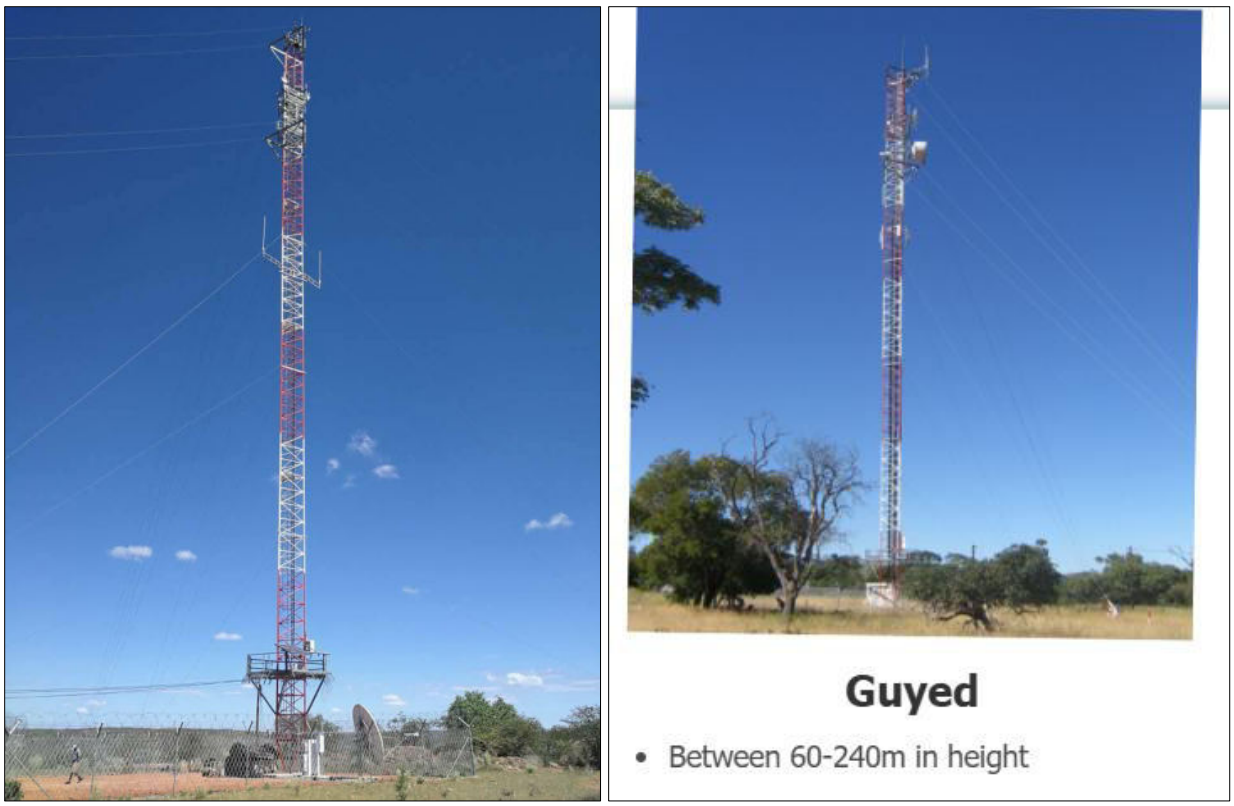

Figure 2-1: Typical red and white painted guyed mast tower structures in Namibia (source: MTC Namibia and https://powercom.na/)

Table 2-1: Design details for the Epinga Tower Site

Site	Tower Height	Antenna Type	Azimuth	Planned Power Output
Epinga	60m	3x Panels (the tower will have microwave dishes for transmission)	90/180/270 Degrees	G9, L8 20W, 40W

2.1.2 Antennae

Telecommunication antennae come in different shapes and sizes, depending on the specific need. As mentioned above, the tower will host 3x dual-band antennae and 1x microwave dish.

The three antennae will be attached to the lattice structure and are designed to operate in the 900MHz, 1800MHz, and 2100MHz frequency bands and are typically mounted approximately 15 to 50m from the ground on masts. Each antenna is between 20 to 30cm wide and approximately 160cm high and contains two feeders that relay Radio Frequency (RF) signals to and from the antenna. The typical antenna panel is as shown in Figure 2-2.

Figure 2-2: Different types of panel-type antennae

2.1.3 Site Selection Criteria

MTC selected this site to provide reliable network coverage in this part of the Ohangwena Region's Omundaungilo Constituency.

2.1.4 Sharing of Sites (Structures)

In compliance with the Communications Act of 2009, which encourages or requires service providers to consider sharing existing infrastructure in the area first before constructing new structures. The sharing of infrastructure by service providers reduces the uncontrolled construction of infrastructure, and the cost of construction and operation can be shared between service providers. The Proponent has considered sharing infrastructure in the area, however, there is no other network structure within the intended site's proximity to meet the need. Thus, a need to erect a completely new structure in the area.

2.2 Site Preparation and Construction

Construction works for this project will include excavation, concrete civil works, and tower rigging. There will be minimal earthworks required to prepare the sites for the tower construction and installation. The construction of the concrete foundation for the tower will take place onsite by using manual labor as far as possible. The construction work is anticipated to take 2 to 3 months, and the construction activities will be limited to normal working hours, i.e., 08h00 and 17h00.

For security purposes, the tower site will be fenced off to restrict access to authorized personnel (such as the maintenance team) only and prevent vandalism. A contractor will be appointed to carry out the tower construction/installation.

The appointed contractor will have to make arrangements for the logistics (including accommodation and transport to the construction site) of their workforce.

MTC and their appointed contractor for construction will be required to adhere to health, safety, and environmental requirements for construction and operation (as well as maintenance) to be presented in the Draft EMP for the project.

2.2.1 Required Resources and Services

The following services and infrastructure, as provided below, will be required for the project activities:

2.2.1.1 Human Resources and Accommodation

The number of workers required for the construction of the tower and all logistics related to the workers will be determined by the contractor to be appointed for construction works, should the ECC be issued.

The construction contractor will be responsible for their private accommodation off-site.

2.2.1.2 Water and Power Supply

Although an insignificant amount of water is required during tower construction, minimal water will still be needed for in-situ concrete mixture (foundation casting) as well as drinking. This water will be sourced from the nearest water point, either by purchasing from the host premises or upon agreement with the nearest town or village Council.

Electricity is not required during the construction stage of the tower, but only during the operational phase. There is a 33kV NORED powerline within 100m distance, therefore, MTC will connect the tower to the grid. However, consideration might be made to use solar, should the cost of connecting to the grid be found to be higher.

2.2.1.3 Fuel Supply (Machinery and Equipment)

There will be no onsite refueling of project vehicles, as this will be required to be done at the nearest fuel service stations.

2.2.1.4 Site Accessibility (Roads)

The site is accessible via routes north of the D3650 road.

2.2.1.5 Waste Management

The different waste will be handled as follows:

- Sewage: A portable toilet will be provided on-site and emptied according to the manufacturer's instructions.
- General and domestic waste: Solid waste containers will be made available onsite for waste storage and later proper disposal at the nearest certified Waste Disposal site.
- Hazardous waste: All vehicles, machinery, and fuel-consuming equipment on site will be provided with drip trays to capture potential fuel spills and waste oils. The waste fuel/oils will be carefully stored in a standardized container to be disposed of at the nearest approved hazardous waste management facility.

2.2.1.6 Health and Safety

Adequate and appropriate Personal Protective Equipment (PPE) will be provided to all project personnel while on and working at the site. A fully-equipped first aid kit will be readily available on-site.

2.2.1.7 Potential Accidental Fire Outbreaks

A minimum of two well-serviced fire extinguishers will be readily available on-site throughout the project.

2.3 Operations and Maintenance Phase

During this phase, the tower is operational and providing telecommunication signals to the communities of Epinga and the surrounding areas that can be serviced by the new tower.

Telecommunication sites (towers) usually require very little maintenance; for instance, any software upgrading will be done mainly from MTC's head offices in Windhoek. For the upgrading of hardware (when required), this will be done on site by the MTC maintenance team/department according to maintenance schedules, when and as necessary. A minimum of two people will be required to carry out hardware maintenance onsite, particularly for tower climbing (safety concerns such as fall arrest).

MTC is required to adhere to environmental, health, and safety measures to be provided in the Draft EMP.

2.4 Decommissioning and Rehabilitation of Disturbed Areas Onsite

Once construction works are completed, the contractor will be required to ensure that the site is left in a responsible and environmentally friendly state. Therefore, the contractor will do the following:

- Dismantle and remove all infrastructures from the project site that will no longer be needed for operations.
- Carry away all construction equipment and vehicles.

- Clean up of site working areas and remove all generated solid waste to the nearest waste management facility (as per agreement with the nearest municipality/local authority with an approved waste management facility).
- Backfill of all trenches excavated as part of construction activities and no longer required further, thus ensuring that they do not pose a risk to both people onsite, and
- Level stockpiled topsoil to ensure that the disturbed land sites are left as close to their original state as possible.

It is not anticipated that the tower will be decommissioned in the future due to the constant need to have access to good network coverage in the area.

The next chapter is the presentation different and relevant alternatives considered for the project activities.

3 PROJECT ALTERNATIVES

Alternatives are defined as the “different means of meeting the general purpose and requirements of the activity” (EMA, 2007). This section will highlight the different ways in which the project can be undertaken and identify the alternative that will be the most practical, but least damaging to the environment is identified.

Once the alternatives have been established, these are examined by asking the following three questions:

- *What alternatives are technically and economically feasible?*
- *What are the environmental effects associated with the feasible alternatives?*
- *What is the rationale for selecting the preferred alternative?*

The alternatives considered for the proposed project are discussed below.

3.1 The "No-go" Alternative

The “No-go” alternative is the option of not proceeding with the activity, which typically implies a continuation of the status quo. In this case, this would mean, the status quo of the proposed tower in the Epinga area remains unchanged, with poor network/communication connection. If the tower construction is to be discontinued, there will be no improvement in the network coverage in the area, thus affecting local socio-economic development, in terms of telecommunications services for business in the area to flourish with effective and reliable communication.

In considering the proposed activity and its benefits to the part of the Region, the no-go option is not a preferred option.

3.2 Location of the Tower

The site was selected due to poor network coverage identified in this part of the Region and based on the results of technical site optimization conducted for the area. The tower site is within proximity of the services, such as an existing road for easy accessibility.

3.3 Alternative for the Type of Structure

There are three common network towers, and these are installed or considered depending on the need and availability of shared structures. These structure types are as follows (also shown in Figure 3-1):

- Lattice towers - self-supporting structures that are generally made out of steel (selected type for the proposed tower).
- Monopole towers consist of a single tubular mast and seldom exceed heights of 60m.
- Guyed towers or structures have guyed ropes to stabilize them because of their height. These towers normally exceed heights of 80m and can go up to 600m.

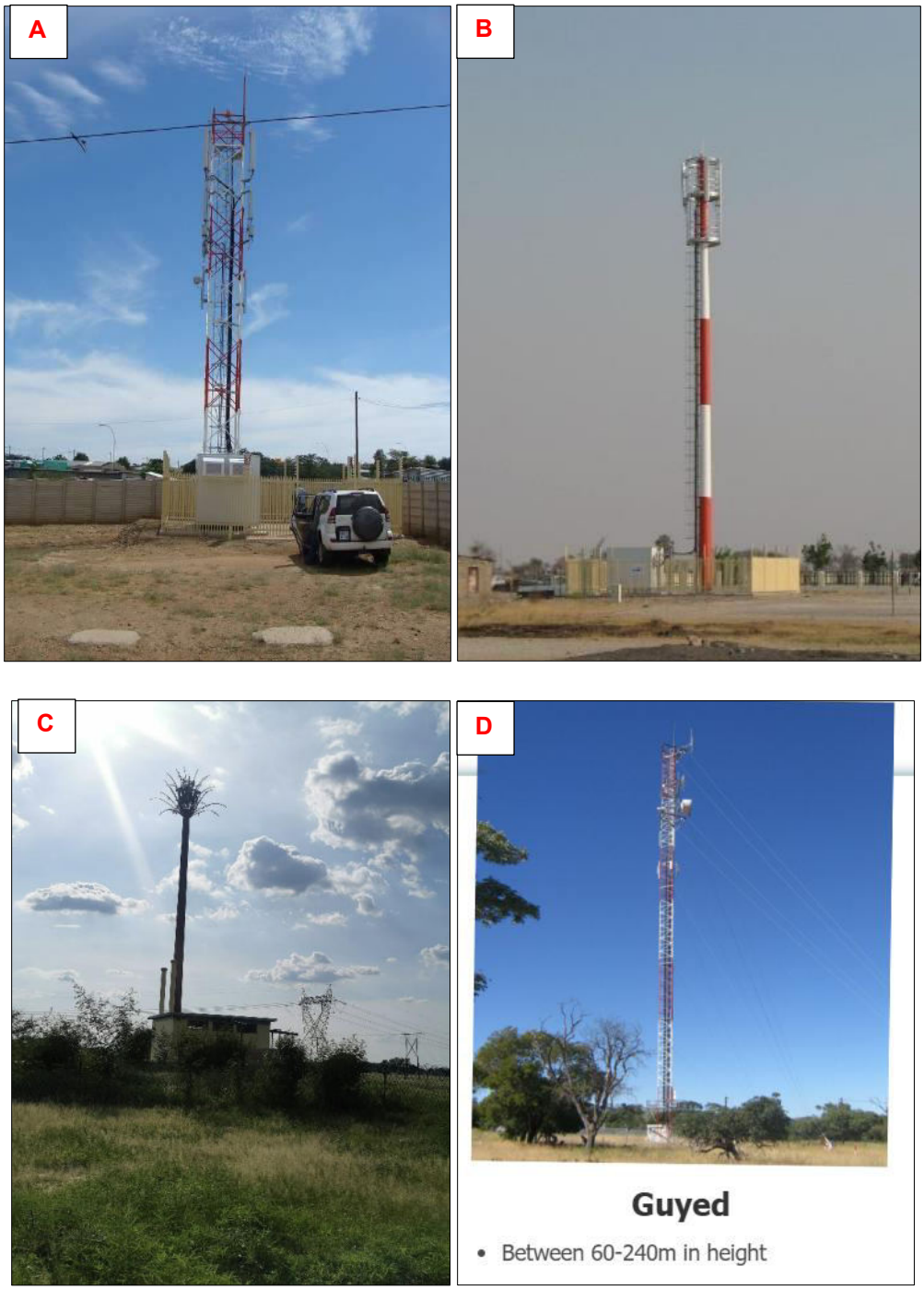

Figure 3-1: Types of network structures: A - Lattice, B - Monopole, C - Camouflage, and D – Guyed

The guyed mast structures are the preferred option for this project as they are more suitable for achieving greater heights compared to other towers. Moreover, guyed mast towers are generally less expensive to build and install than other towers, such as lattice towers. This is because guyed towers require less steel and material for the structure itself, as they rely on guy wires to provide stability.

3.4 Structure sharing as per the Communications Act No. 8 of 2009

The Communications Act No. 8 of 2009 requires that service providers consider sharing existing infrastructure in the area first, before constructing new structures to avoid cumulative impacts. There is no network in proximity of the proposed site to consider sharing of infrastructure (to just add (mount) antennae to it for the area). Therefore, sharing with existing structures will not be feasible to align with the Communications Act regarding the sharing/using of existing structures in this instance.

It is for this reason that the new structure (tower) needs to be constructed so that it can be potentially used (shared) in the future with similar service providers, thus promoting infrastructure sharing as per the Communications Act.

3.5 Site Accessibility

The site is accessible via routes south of the D3407 road and enclosed between D3444 to the west and D3427 to the east. Thus, providing good access to the proposed site during the construction and operations as well and maintenance phases.

3.6 Services Infrastructure

Alternatives were considered for different supporting infrastructures to ensure that the most feasible options were selected. The technological, economic, and environmental limitations were considered to select the most feasible option. The alternatives considered in this regard are presented in Table 3-1 below.

Table 3-1: The presentation of service infrastructure alternatives considered for the project activities

Category of Infrastructure	Alternatives Considered and challenges (limitations)	Justification for the selected option
Roads	The construction of access roads in rural areas entails the physical destruction of habitats for the required footprint of the road. Where access will be required to a proposed site from the national proclaimed public road network, an access permit will be obtained from the Roads Authority of Namibia.	There will be a need for an access road, possibly from the D3610 Road or east of the B1, and then using the local single-track road to access the road. The access road will be utilized for the project and gain access to the site.
Power supply (Cost/km or installation)	Solar infrastructure: -Approximately N$980,000.00 per Installation **Challenge/limitations** -Batteries need to be maintained every 4-6 months. -Overcast conditions cause power cuts. -Failures of the system cause technical problems.	The tower is located in a remote area. However, there is a nearby 33kV grid about 100m from the tower site. Therefore, compared to the solar installation cost, connecting to the power line is preferred for consideration.

Category of Infrastructure	Alternatives Considered and challenges (limitations)	Justification for the selected option
	Tap off from a power line: N$100,000.00 per km **Challenge/limitations** -This option can only tap off from powerlines less than 33kV. -Maximum 10km, otherwise too expensive.	
	Buried powerline: **Challenge/limitations** -Up to 3 times more expensive per km than a powerline	
Water supply	-Use water from the Epinga Village water supply.	The contractor will obtain water from the Village water supply by purchasing from the community water supply, upon agreement with the local leadership.
	-Tank water from elsewhere (purchased elsewhere)	

The following chapter presents the national and international legal requirements that are applicable and relevant to the project.

4 APPLICABLE LEGAL FRAMEWORK

The project's activities or some of them may be regulated and governed by certain legal policies. Therefore, it is necessary to review and consider these legislations and legal requirements. These legal requirements are either on a local (institutional), national (Namibian), or international legislation, policies, guidelines, etc. This review serves to inform the project Proponent, Interested and Affected Parties, and the decision-makers at the DEAF of the requirements and expectations, as laid out in terms of these instruments, to be fulfilled to establish the proposed tower construction and operations activities.

4.1 National and Local Legal Framework and Policies

4.1.1 Environmental Management Act No. 7 of 2007

The Environmental Management Act No.7 of 2007 and its 2012 EIA Regulations aims to ensure that the potential impacts of the development on the environment are considered carefully and in good time; that all interested and affected parties have a chance to participate in the environmental assessments and that the findings of the environmental assessments are fully considered before any decisions are made about activities which might affect the environment.

This scoping assessment was carried out according to the EMA and the 2012 EIA Regulations (GG No. 4878 GN No. 30). The Act requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). It also details principles that are to guide all EAs.

The EMA has stipulated requirements to complete the required documentation to obtain an Environmental Clearance Certificate (ECC) for permission to undertake certain / the following activities:

- Listed Activity 10.1 (g) the construction of masts of any material or type and any height, including those used for telecommunication, broadcasting, and radio transmission.
- (j) Masts of any material or type and any height, including those used for telecommunication, broadcasting, and radio transmission, but excluding - (i) flag poles; and (ii) lightning conductor poles.

The EIA Regulations GN 28-30 (GG 4878) detail requirements for:

- Public consultation within a given environmental assessment process (GN 30 S21).
- What should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).

4.1.2 Communications Act No. 8 of 2009

The Act provides for the regulation of telecommunications services and networks, broadcasting, postal services and the use and allocation of radio spectrum; for that purpose, the establishment of an independent Communications Regulatory Authority of Namibia; to make provision for its powers and functions; the

granting of special rights to telecommunications licensees; the creation of an Association to manage the ".na" internet domain name space and for matters connected therewith.

Applicability to the Proposed Project: The Proponent is required to comply with the relevant Sections and Parts of the Act, and of importance is Part 5 of the Act. This Part (Special Rights of Carriers) states the following concerning the project:

- ''*Applicability of this Part: Section 59(1) The rights granted by this Part are granted to all holders of technology and service neutral licences and to other licensees to whom and in so far as it has been made applicable to them in terms of section 38(12) or 38(13).*
- *(3) Subject to subsection (4) and (5), the rights granted by this Part, to install telecommunications facilities, only relate to wires, fibres, or any other form of telecommunication's line as well as facilities used to protect or support such wires, fibres or lines (including poles, stays, ducts and pipes), but do not relate to masts, antennas, towers, pay telephones and other similar equipment.*
- *Entry upon and construction of lines across any land: Section 60 A carrier may, for provision of telecommunications services, enter upon any land, including any street, road, footpath or land reserved for public purposes, and any railway, and construct and maintain a telecommunications facility upon, under, over, along or across any land, street, road, footpath or waterway or any railway, and alter or remove the same, and may for that purpose attach wires, stays or any other kind of support to any building or other structure.*
- *Fences: Section 64(1) If any fence erected or to be erected on land over which a telecommunications facility, pipe, tunnel or tube is constructed or is to be constructed by a carrier, renders or would render it impossible or inconvenient for the carrier to obtain access to that land the carrier may at its own expense erect and maintain gates in that fence and must provide duplicate keys therefor, one of which must be handed to the owner or occupier of the land.*
- *Section 64(2) Any person intending to erect any such fence must give not less than six weeks' notice in writing to the carrier of his or her intention.*
- *Height or depth of cables and facilities (66(1) Aerial telecommunication wires or cables along any railway or public or private street, road, footpath, or land must be at the prescribed height above the surface of the ground.*
- *Section 66(2) Underground telecommunication facilities, pipes, tunnels, and tubes must be placed by a carrier at the prescribed depth below the surface of the ground*
- *Section 66(3) If the owner of any private land is obstructed in the free use of his or her land because of the insufficient height or depth of any telecommunications wire, cable or other facility, pipe, tunnel or tube constructed by that carrier, the carrier must take such steps as are necessary for giving relief to that owner''.*

Other applicable legal frameworks and policies relevant to the proposed project are presented in Table 4-1.

Table 4-1: List of applicable legislation for the proposed tower and associated activities

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
The Constitution of the Republic of Namibia, 1990, as amended	The Constitution of the Republic of Namibia (1990 as amended) addresses matters relating to environmental protection and sustainable development. Article 91(c) defines the functions of the Ombudsman to include: "…the duty to investigate complaints concerning the over-utilisation of living natural resources, the irrational exploitation of non-renewable resources, the degradation and destruction of ecosystems and failure to protect the beauty and character of Namibia…" Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at: "…Natural resources situated in the soil and on the subsoil, the internal waters, in the sea, in the continental shelf, and in the exclusive economic zone are property of the State."	By implementing the environmental management plan, the establishment will be in conformant with the constitution in terms of environmental management and sustainability. Ecological sustainability will be the main priority for the proposed development.
The Regional Councils Act (No. 22 of 1992)	This Act sets out the conditions under which Regional Councils must be elected and administer each delineated region. From a land use and project planning point of view, their duties include, as described in section 28 "to undertake the planning of the development of the region for which it has been established with a view to physical, social and economic characteristics, urbanization patterns, natural resources, economic development potential, infrastructure, land utilization pattern and sensitivity of the natural environment.	The relevant Regional Councils are I&APs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Ohangwena Regional Council and the Omundaungilo Constituency.
Traditional Authority Act (Act No. 25 of 2000):	The Act also stipulates that Traditional Authorities (TAs) should ensure that natural resources are used on a sustainable basis that conserves the ecosystem. This Act implies that TAs must be fully involved in the planning of land use and development for their area. It is the responsibility of the TAs' customary leadership, the Chiefs, to exercise control on behalf of the state and the residents in their designated area.	The site falls within the Oukwanyama Traditional Authority. Therefore, the TA representative who issued the consent letter should be engaged throughout the project.

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
Communal Land Reform Act 5 of 2002	To provide for the allocation of rights in respect of communal land; to establish Communal Land Boards; to provide for the powers of Chiefs and Traditional Authorities and boards about communal land; and to make provision for incidental matters	
Electricity Act 4 of 2007	To provide for the requirements and conditions for obtaining licenses for the provision of electricity; to provide for the powers and obligations of licensees.	The tower will be supplied with electricity from the existing power grid in the area. Therefore, the Proponent needs to ensure that arrangements are made with the Northern Regional Electricity Distributor (NORED) to supply the site.
Atomic Energy and Radiation Protection Act, Act 5 of 2005	To provide for adequate protection of the environment and of people in current and future generations against the harmful effects of radiation by controlling and regulating the production, processing, handling, use, holding, storage, transport, and disposal of radiation sources and radioactive materials, and controlling and regulating prescribed non-ionising radiation sources. The Act also serves to establish an Atomic Energy Board and to provide for its composition and functions; to establish a National Radiation Protection Authority; to amend the Hazardous Substances Ordinance, 1974 (Ordinance No. 14 of 1974); and to provide for related matters. Under Section 43(1) of the Act, the Non-ionising Radiation Regulations were made in 2019.	The Proponent should comply with the Regulations and requirements of the Act throughout the project life cycle. The “safe distance” around the site should be determined.
The Aviation Act, Act 74 of 1962 (height implications in aerodrome areas)	Gives effect to certain International Aviation Conventions and makes provision for the control, regulation, and encouragement of flying within the Republic of Namibia and for other matters incidental thereto.	Provides the regulations for setting up cellular as well as other mast structures in Namibia.

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
Civil Aviation Act No. 6 of 2016	''……; to establish the Air Navigation Services in the Authority; to provide for a civil aviation regulatory and control framework for maintaining, enhancing and promoting the safety and security of civil aviation for ensuring the implementation of international aviation agreements; to establish the Directorate of Aircraft Accident and Incident Investigations. Section 6(1) The Minister may, by issuing a directive, require the removal of any building structure, tree or other object whatsoever on any land or water which, in the opinion of the Minister on the advice of the Executive Director, may constitute a danger to aircraft flying following normal aviation practice. In terms of tower heights, the Civil Aviation Authority (Namibia Civil Aviation Authority (NCAA)) and Civil Aviation Standards of the ICAO dictate that all obstructions to be erected within 15km and 8km from an airport/aerodrome reference point, respectively, should be authorized.	The applicable part of the Act is the establishment of the Directorate of Aircraft Accident and Incident Investigations, and provides for its powers and functions. The height of the proposed tower would be a threat to the nearest aerodrome site (if the height is more than 45m, according to the Namibia Civil Aviation Regulations (NAMCARS)). However, despite the tower height being 80m, the proposed site is over 150km from the Ondangwa Airport (broader area). Therefore, the approval from the Namibia Airports Company (NAC) will not be required. The recommended international restriction distance from aerodromes is 15km. Thus, no approval is required.
National Heritage Act No. 27 of 2004	To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.	The necessary management measures and related permitting requirements must be taken. This is done by informing the National Heritage Council of Namibia. A Chance Finds Procedure provided to the Draft EMP should be implemented upon discovery of archaeological and heritage resources.
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	
Soil Conservation Act (No 76 of 1969)	The Act makes provision for the prevention and control of soil erosion and the protection, improvement, and conservation of soil, vegetation, and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP.
Forestry Act (Act No. 12 of 2001	The Act provides for the management and use of forests and forest products.	If there is a need to remove protected species, such as trees that are onsite, the Proponent will need to apply for the relevant permit under this Act. The permit should be applied for from the nearest Forestry Directorate office (MEFT).

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
	Section 22. (1) provides: "Unless otherwise authorized by this Act, or by a license issued under subsection (3), no person shall on any land which is not part of a surveyed erven of a local authority area as defined in section 1 of the Local Authorities Act, 1992 (Act No. 23 of 1992) cut, destroy or remove - (a) vegetation which is on a dune or drifting sand or a gully unless the cutting, destruction or removal is done to stabilize the sand or gully; or (b) any living tree, bush or shrub growing within 100 m of a river, stream or watercourse."	
Nature Conservation Amendment Act, No. 3 of 2017	National Parks are established and gazetted per the Nature Conservation Ordinance, 1975 (4 of 1975), as amended. The Ordinance provides a legal framework concerning the permission to enter a state-protected area, as well as requirements for individuals damaging objects (geological, ethnological, archaeological, and historical) within a protected area. Although the Ordinance does not specifically refer to mining as an activity within a protected area (PA) or recreational area (RA), it does restrict access to PAs and prohibit certain acts therein, as well as the purposes for which permission to enter game parks and nature reserves may be granted.	The Proponent, through their appointed contractor, will be required to enhance the conservation of biodiversity and the maintenance of the ecological integrity of protected areas and other State land.
The Parks and Wildlife Management Bill of 2008	Aims to provide a regulatory framework for the protection, conservation, and rehabilitation of species and ecosystems, the sustainable use and sustainable management of Indigenous biological resources, and the management of protected areas, to conserve biodiversity and contribute to national development.	
Public Health Act (No. 36 of 1919)	Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	The Proponent and all its employees should ensure compliance with the provisions of these legal instruments.
Public and Environmental Health Act No. 1 of 2015	The Act serves to protect the public from nuisance and states that no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health.	

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding the health and safety of labourers.	
Atmospheric Pollution Prevention Ordinance (1976)	This ordinance provides for the prevention of air pollution and is affected by the Health Act 21 of 1988. Under this ordinance, the entire area of Namibia, apart from East Caprivi, is proclaimed as a controlled area for section 4(1) (a) of the ordinance.	The proposed project and related activities should be undertaken in such a way that they do not pollute or compromise the surrounding air quality.
Hazardous Substance Ordinance, No. 14 of 1974	The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal, and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.	The Proponent should handle and manage the use of hazardous substances onsite so that they do not harm or compromise the site environment.
National Solid Waste Management Strategy	The Strategy ensures that the future directions, regulations, funding, and action plans to improve solid waste management are properly coordinated and consistent with national policy, and to facilitate cooperation between stakeholders. Waste disposal is the main problem with the current solid waste management in Namibia. The top priority is to reduce risks to the environment and public health from current waste disposal sites and illegal dumping in many areas of Namibia.	The construction of the services infrastructure can potentially generate a significant amount of solid waste (stockpiles, soil remains, rubble) that might need proper management by contractors to avoid pollution. Waste management plans should be generated and implemented before the commencement of civil works and during project operations. Contractors and proponents should reduce the risk of solid waste to the environment and the surroundings of the project area.
Road Traffic and Transport Act, No. 22 of 1999	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto.	Mitigation measures should be provided for if the roads and traffic impact cannot be avoided.

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
Labour Act (No. 6 of 1992)	The Ministry of Labour, Industrial Relations and Employment Creation is aimed at ensuring harmonious labour relations through promoting social justice, occupational health and safety, and enhanced labour market services for the benefit of all Namibians. This ministry ensures the effective implementation of the Labour Act No. 6 of 1992.	The Proponent should ensure that the proposed activities do not compromise the safety and welfare of workers.

4.2 International Policies, Principles, Standards, Treaties, and Conventions

The other international statutes, such as policies, standards, and conventions that may govern the project activities, are provided under Table 4-2 below.

Table 4-2: Other international treaties and conventions governing the proposed tower activities

Statue	Relevant Provisions	Implications for the project / Requirements
Convention on International Civil Aviation, Annex 14	-Annex 14 to the Convention on International Civil Aviation. -Chapter 4: Obstacle restrictions and removal -Chapter 6: Visual aids and overcoming obstacles	The proposed new structure may pose obstacles to some aerodromes in Namibia. Generally, these structures that are close to existing aerodromes need to be assessed per the document. Visual aids to the new structures to make them visible to aircraft need to be applied per this Convention.
"Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300GHz)" (April 1998 developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP).	Provides international standards and guidelines for limiting the adverse effects of non-ionising radiation on human health and well-being, and, where appropriate, provides scientifically based advice on non-ionising radiation protection, including the provision of guidelines on limiting exposure. ICNIRP exposure limits for non-ionizing radiation are 4.5W/m².	Justifies the need for assessing the impact of electromagnetic radiation from the tower on the nearby residents or businesses.
Stockholm Declaration on the Human Environment, Stockholm (1972)	It recognizes the need for: "a common outlook and common principles to inspire and guide the people of the world in the preservation and enhancement of the human environment.	Protection of natural resources and prevention of any form of pollution.

In addition to the project description, alternatives, and legal framework, it is also important to note that the proposed project activities will be undertaken in a specific environment, in terms of the receiving environment. Therefore, understanding these existing environmental features before the project activities is crucial for the assessment of the potential impacts stemming from the project activities on the features.

5 THE RECEIVING ENVIRONMENT

The proposed tower will be constructed and operated in in specific environment. Therefore, understanding the pre-project conditions of the environment will aid in describing the status quo of environmental conditions before project implementation. The baseline information also aids in identifying the sensitive environmental features and how the best suitable management and mitigation measures can be recommended for implementation. The selected baseline environment information of the site area is provided below.

The baseline information presented below is sourced from a site visit (done on the 28th of March 2025), online sources ranging from old reports, books, as well as other relevant research information in the broader area. The project baseline that is deemed necessary for the project activities is as follows.

5.1 Fauna and Flora

The project site is in a rural area where subsistence farming is practised with crops such as maize, sorghum, beans, and mahangu. On livestock, the communities keep goats, sheep, cattle, and donkeys for their own consumption and income generation. In terms of flora (vegetation), the vegetation of the site and its surroundings is mainly characterized by grassland and surrounded by woodland structure, as shown on the vegetation map in Figure 5-1.

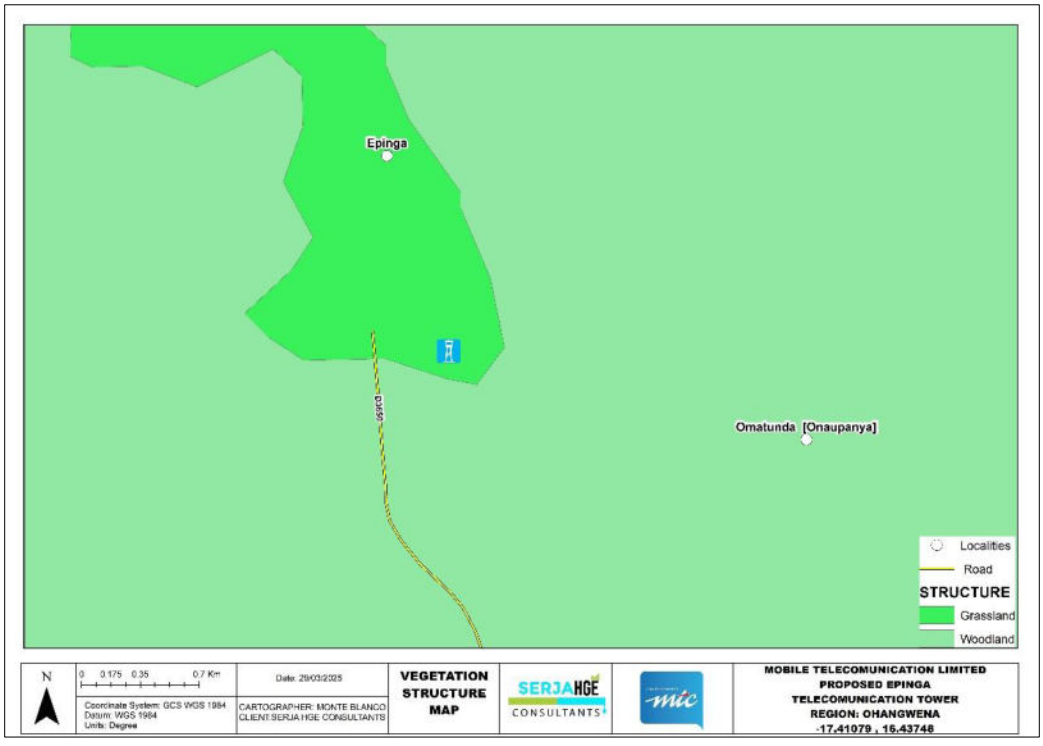

Figure 5-1: The vegetation structure of the site area

The observed vegetation in the area is moderately to densely distributed grasses, shrubs and young trees. Most of the area is dominated by shrubs and young trees of Mopani (*Colophospermum mopane*), Marula trees (*Sclerocarya birrea*), Red-bark acacia, red thorn (*Vachellia reficiens*), etc. Some of the vegetation observed during the site visit is shown in Figure 5-2.

Figure 5-2: Some young trees and shrubs around the site

5.2 Climate

The climatic conditions of northern Namibia are classified as semi-arid, and these are summarized below:

- Rainfall and Precipitation: The average rainfall in the area is between 350 and 400mm per year. The variation I rainfall is averaged to be between 40-50% per year. The high summer rains are experienced in February. The storm events occur between October and April, and they are irregular, unpredictable, unpredictable, high intensity, and highly localised.
- Evaporation: The average evaporation is between 2,800-3,200 mm per year.
- Temperatures: The area has the highest temperatures measured in December, with an average daily maximum of 31°C and minimum of 17.3°C. The coldest temperatures are measured in July with an average daily maximum of 20.4°C and a minimum of 6.4°C.

5.3 Landscape and Topography

According to Mendelsohn et al. (2002), the landscape of the site and its surroundings is characterized by the Kalahari sediments, hence Kalahari Sandveld, as shown in Figure 5-3. This landscape is found in much of the northern and eastern Namibia, dominated by Savanna woodlands growing on sands deposited by wind over the last 70-63 million years ago. The landscape is particularly flat (elevations ranging between 951 and 1,216 meters above sea level), although the sands have been molded into dunes in some areas.

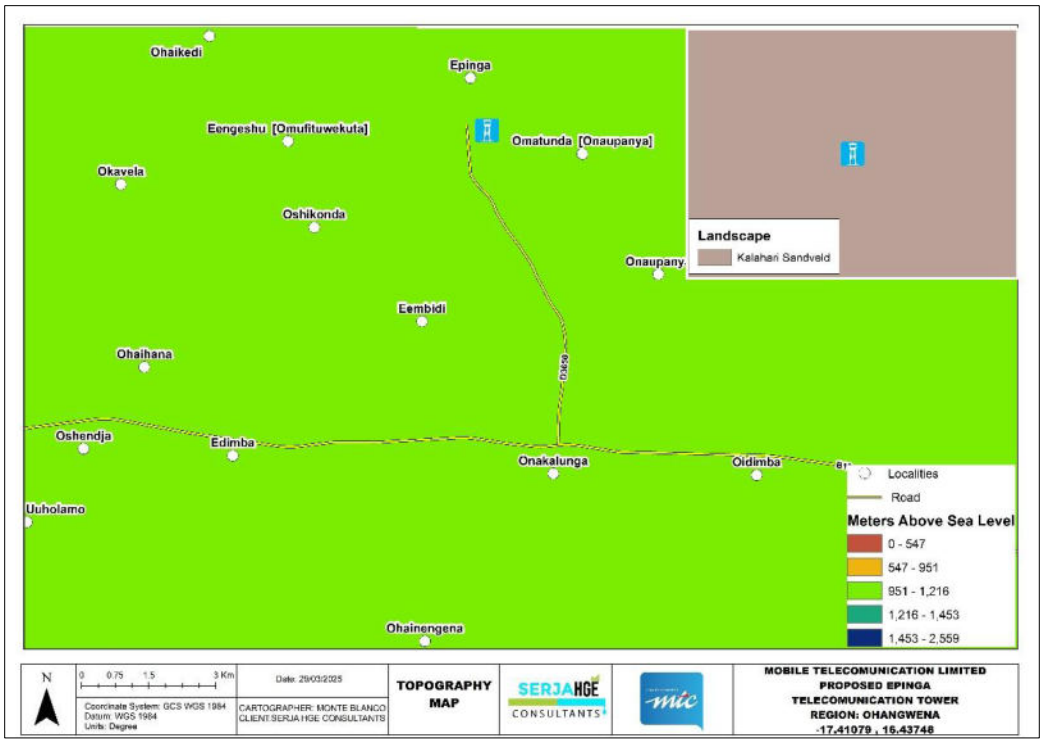

Figure 5-3: The topography and landscape of the area

5.3.1 Geology and Soils

The northern regions, including the Ohangwena Region, form part of the greater Kalahari Basin, which covers most of the northern and eastern parts of Namibia and extends across the Namibian border into Botswana and Angola. The bedrock underlying the basin is filled with Kalahari Sequence deposits consisting of basal rocks of the Damara Sequence, followed by the Karoo Sequence sediments, overlain and intruded by volcanics of Karoo age. The unconsolidated to semi-consolidated clay, sand, and gravel of the Kalahari Sequence fill the Basin, which thickens from the northeast towards the northwest, from 0 to >400 m along the north-west trending basin axis (Bittner, 2002).

The geology of the project area is characterized by the Kalahari sands (Mendelsohn et al., 2002). Based on the site-specific geology map in Figure 5-4, the project site is underlain by the sand, calcrete, and gravel of the Kalahari Group.

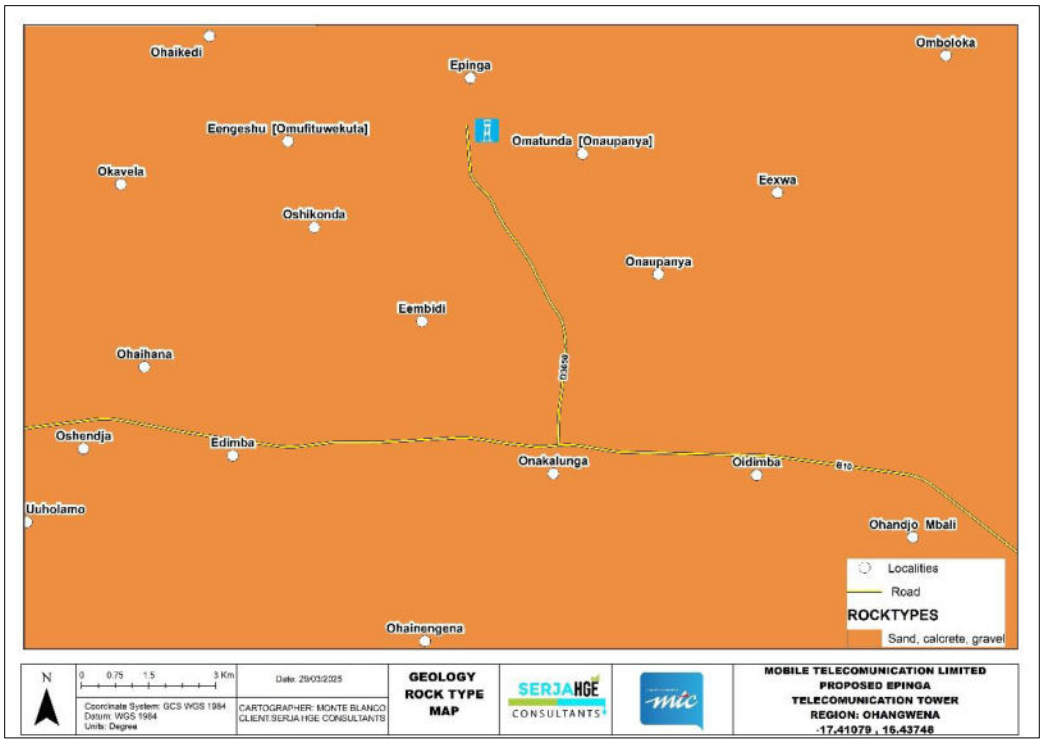

Figure 5-4: The geology of the site area

In terms of soils, the site is overlain by ferralic arenosols, as shown on the soil map in Figure 5-5. According to Mendelsohn et al (2002), ferralic soils are defined as soils with high contents of combined oxides of iron and aluminium. Arenosols are formed from wind-blown sand and usually extend to a depth of at least one meter, with sand generally making up more than 70% of the soil (Mendelsohn et. al, 2002).

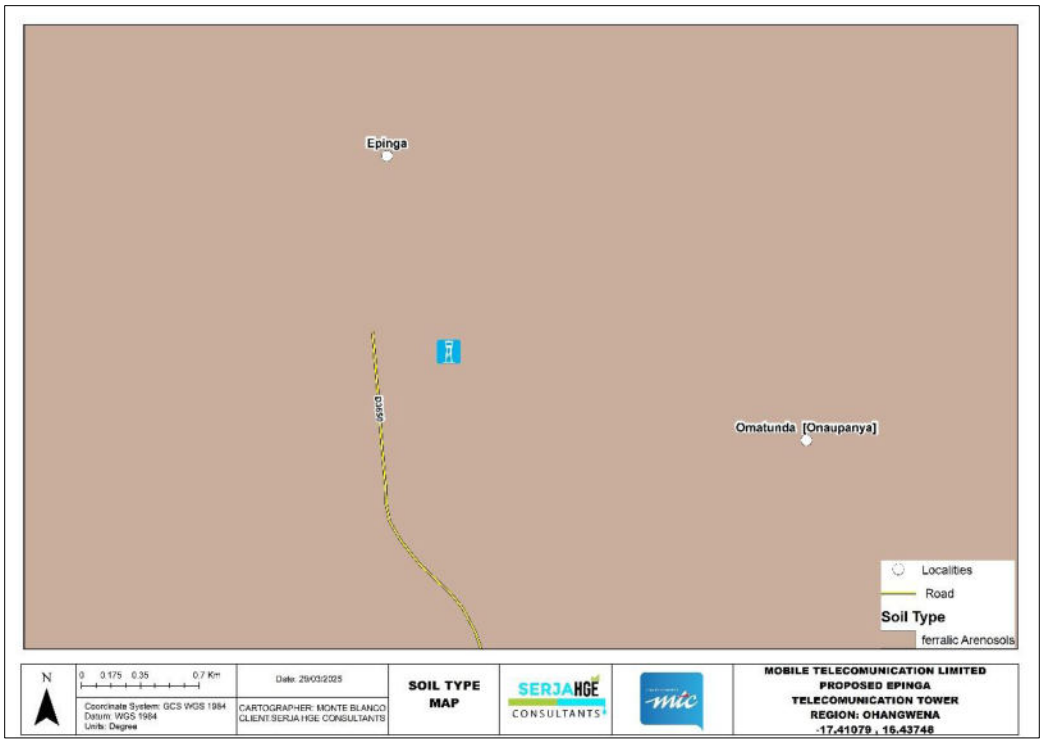

Figure 5-5: The dominant soil types around the site

5.4 Social and Economic Environment

5.4.1 Demography

According to the Namibia Statistics Agency (2014), the Ohangwena Region has a total population of 337,729 as per the 2023 National Population and Housing Census. Of the total population, 159,701 were males and 178,028 females (Namibia Statistics Agency (NSA), 2023). The regional population density is 31.7 persons per square kilometer (km^2), with a 14.5 and 85.5 persons/km^2 in urban and rural areas, respectively. The site is in Omundaungilo Constituency, which has a population of 15,009 [1] and population density of 18.9 persons per square kilometer (km^2).

The Ohangwena Region has a high literacy rate of 84.6%. The early childhood development (age 0 to 5) stands at 22.3%, while for the population of 15+ years of age, 14.8% have never attended school, 24.2% is the population that is currently at school, and 57.7% have left school (NSA, 2023). Furthermore, NSA (2023) indicates that the population of 3 years and above has access to the internet (14.0%), and the population that owns cellphones is at 41.8%.

[1]https://nsa.org.na/census/ohangwena-region/

5.4.2 Economic Activities

According to the NSA (2023), the main source of income in households in the Region is farming (22.1%), wages and salaries (24.9%), old age pension (23.8%), as well as business and non-farming (10.5%).

5.5 Infrastructure and Services

In terms of infrastructure, the Ohangwena Region is well equipped with good infrastructure and services such as roads (tarred and gravel), water supply, powerlines, and telecommunications. In terms of the site area, this is a rural area with quite some good infrastructure, such as access roads and single-track roads, solar energy, and water supply. The map of services and infrastructures near the proposed tower site and the broader area is shown in Figure 5-6.

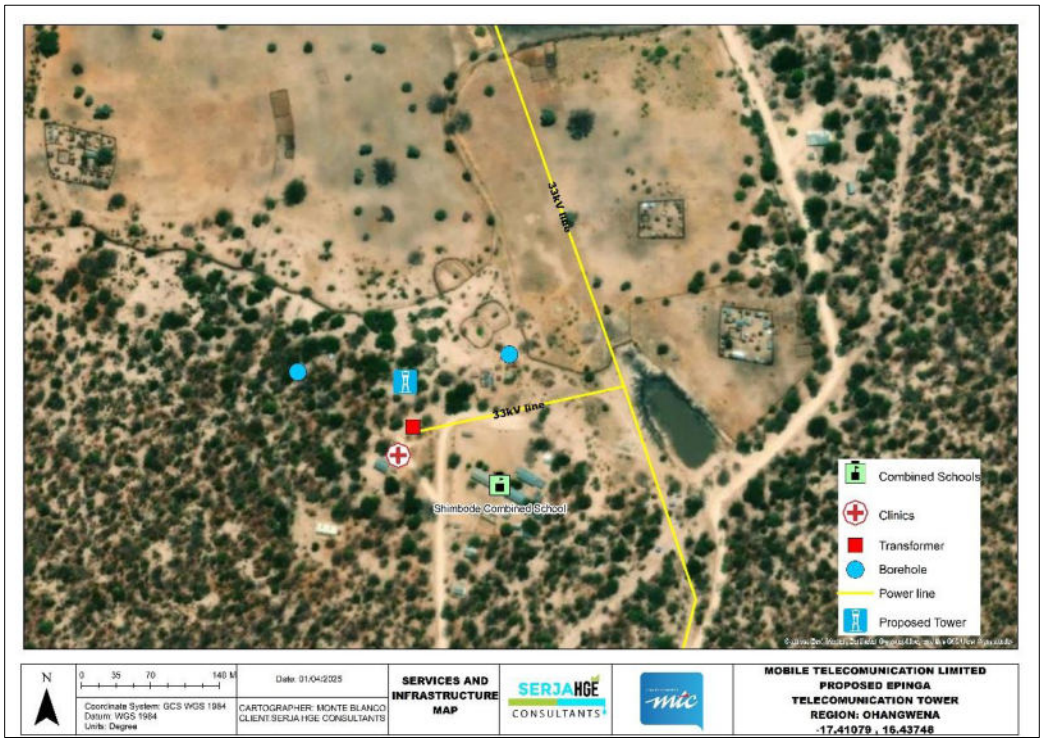

Figure 5-6: The infrastructure map of the site area

The public consultation and engagement process and the means employed for the EIA Study are presented under Chapter 6.

6 PUBLIC CONSULTATION AND PARTICIPATION PROCESS

Public consultation and participation form an important component of an EIA process. It provides potential Interested and Affected Parties (I&APs) and stakeholders with an opportunity to comment on and raise any issues relevant to the project for consideration as part of the assessment process. The EIA consultation greatly assists the EAP to thoroughly identify and record potential impacts and to determine what extent further investigations are necessary. Public consultation can also aid in the process of identifying possible mitigation measures. The consultation for this project has been done under the EMA and its EIA Regulations, and as per the following subsections.

6.1 Pre-identified and Registered Interested and Affected Parties (I&APs)

Relevant and applicable national, regional, and local authorities, and other interested members of the public were identified. Pre-identified I&APs were contacted directly, while other parties who contacted the Consultant after project advertisement notices in the newspapers were registered as I&APs upon their request.

6.2 Communication with I&APs and Means of Consultation Employed

Regulation 21 of the EIA Regulations details the steps to be taken during a public consultation process, and these have been used in guiding this process. Communication with I&APs with regards to the proposed development was facilitated through the following means and in this order:

- A Background Information Document (BID) containing brief information about the proposed project was compiled, uploaded on the MEFT (ECC) Portal for project registration, and circulated to the registered stakeholders/Interested and Affected parties (I&APs).
- A Stakeholders' (I&AP) List was developed and updated as new I&APs register for the EIA. The BID was shared with the pre-identified key stakeholders from national to local levels via email alongside the invitation to the consultation meeting – Appendix C1.
- Project Environmental Assessment notices were published for two consecutive weeks in the *New Era* and *Windhoek Observer* (on the 10th and 17th of April 2025) – Appendix C2. The consultation period ran from the 10th of March 2025 to the 17th of April 2025.
- A3 size poster for public notice (Appendix C3) was compiled and pasted in Epinga and the Ohangwena Regional Council office notice board in Eenhana (Figure 6-1):

Figure 6-1: Public notice posters in the Epinga and Ohangwena Regional Council in Eenhana

- One-on-one engagements were done at selected public services institutions such as the Epinga Clinic, with the Village headmen, Shimbode Combined School, and some representatives at the Ohangwena Regional Council in Eenhana on the 31st of March 2025 -- Figure 6-2. Forty-eight (48) people were engaged and consulted (the BID was explained to them), and the attendance register was signed by these I&APs (Appendix C4).

Figure 6-2: One-on-one engagements in Epinga and Eenhana on the 31st of March 2025

Furthermore, as part of the consultation and engagement process and in obtaining land use consent requirements, a letter of consent was issued to the Proponent by the key land user (stakeholder), the Oukwanyama Traditional Authority - Appendix D.

6.3 Feedback and Issues Raised by the Stakeholders (I&APs)

No significant comments were received during the consultations and face-to-face engagement (meeting), nor after the consultation. The community wholeheartedly welcomes the development and looks forward.

The next chapter is the presentation of potential impacts identified, the assessment methodology, impact description, and their assessment.

7 IMPACTS IDENTIFICATION, ASSESSMENT, AND MEASURES

7.1 Identification of Potential Impacts

The proposed project and its associated activities are usually associated with different potential positive and negative impacts. For an environmental assessment, the focus is placed mainly on the negative impacts that are likely to affect the host environment and social features. The assessment is done to ensure that these impacts are sufficiently addressed, and adequate mitigation measures are recommended thereto for implementation so that the impact's significance is brought under control, while maximizing the positive impacts. The potential positive and negative impacts that have been identified from the tower activities are listed as follows:

7.1.1 Positive Impacts (benefits)

- Creation of temporary jobs during the tower installation phase.
- Increase access to telecommunications by enhancing communications capacity in the area
- Promotes technical expansion of businesses and institutions such as schools and local services in the area due to improved access to reliable communication services
- Contributes to local economic development through increased access to telecommunications services for local amenities and social infrastructure in the area.

7.1.2 Adverse (Negative) Impacts

- Physical land/soil disturbance resulting in compaction and erosion
- Environmental pollution (littering)
- Potential health and safety risks associated with the mishandling of construction and operations (and maintenance) equipment.
- Health and safety issues related to Electromagnetic Radiation emitted from the antennae of cellular structures may affect human health.
- Civil aviation concerns may arise regarding the height of the tower and the position and stability of transmitters concerning any civil aviation facilities in the tower's vicinity.
- Visual impact associated with the presence of the tower in the surroundings may be a nuisance to locals.
- Impact on archaeological and cultural heritage resources in the case of any archaeological and heritage finds onsite (inadvertent unearthing during site preparation/excavations).

7.2 Impact Assessment Methodology

The Environmental Assessment process primarily ensures that potential impacts that may occur from project activity are identified and addressed with environmentally cautious approaches and legal compliance. The impact assessment method used for this project is per Namibia's Environmental Management Act (No. 7 of 2007) and its Regulations of 2012, as well as the International Finance Corporation (IFC) Performance Standards.

The identified impacts were assessed in terms of scale/extent (spatial scale), duration (temporal scale), magnitude (severity), and probability (likelihood of occurring), as presented in Table 7-1.

To enable a scientific approach to the determination of the environmental significance, a numerical value is linked to each rating scale. This methodology ensures uniformity and that potential impacts can be addressed in a standard manner so that a wide range of impacts are comparable. It is assumed that an assessment of the significance of a potential impact is a good indicator of the risk associated with such an impact. The following process will be applied to each potential impact:

- Provision of a brief explanation of the impact,
- Assessment of the pre-mitigation significance of the impact, and
- Description of recommended mitigation measures.

The recommended mitigation measures prescribed for each of the potential impacts contribute towards the attainment of environmentally sustainable operational conditions of the project for various features of the biophysical and social environment. The following criteria (in Table 7-1) were applied in this impact assessment:

Table 7-1: Criteria used for impact assessment (extent, duration, intensity and probability)

The Criteria used to assess the potential negative impacts.				
Extent or (spatial scale) - extent is an indication of the physical and spatial scale of the impact.				
Low (1)	**Low/Medium (2)**	**Medium (3)**	**Medium/High (4)**	**High (5)**
Impact is localised within the site boundary: Site only	Impact is beyond the site boundary: Local	Impacts felt within adjacent biophysical and social environments: Regional	Impact widespread far beyond the site boundary: Regional	Impact extends beyond National or international boundaries
Duration- Duration refers to the timeframe over which the impact is expected to occur, measured concerning the lifetime of the project				
Low (1)	**Low/Medium (2)**	**Medium (3)**	**Medium/High (4)**	**High (5)**

The Criteria used to assess the potential negative impacts.				
Immediate mitigating measures, immediate progress	Impact is quickly reversible, short-term impacts (0-5 years)	Reversible over time; medium term (5-15 years)	Impact is long-term	Long term, beyond closure, permanent, irreplaceable, or irretrievable commitment of resources
Intensity, Magnitude/severity - Intensity refers to the degree or magnitude to which the impact alters the functioning of an element of the environment. This is a qualitative type of criterion.				
H-(10)	**M/H-(8)**	**M-(6)**	**M/L-(4)**	**L-(2)**
Very high deterioration, high quantity of deaths, injury of illness / total loss of habitat, total alteration of ecological processes, extinction of rare species	Substantial deterioration, death, illness or injury, loss of habitat/diversity or resource, severe alteration, or disturbance of important processes	Moderate deterioration, discomfort, partial loss of habitat/biodiversity or resource, moderate alteration	Low deterioration, slight noticeable alteration in habitat and biodiversity. Little loss in species numbers	Minor deterioration, nuisance or irritation, minor change in species/habitat/diversity or resource, no or very little quality deterioration.
Probability of occurrence - Probability describes the likelihood of the impacts occurring. This determination is based on previous experience with similar projects and/or based on professional judgment.				
Low (1)	**Medium/Low (2)**	**Medium (3)**	**Medium/High (4)**	**High (5)**
Improbable; low likelihood; seldom. No known risk or vulnerability to natural or induced hazards.	Likely to occur from time to time. Low risk or vulnerability to natural or induced hazards	Possible, distinct possibility, frequent. Low to medium risk or vulnerability to natural or induced hazards.	Probable if mitigating measures are not implemented. Medium risk of vulnerability to natural or induced hazards.	Definite (regardless of preventative measures), highly likely, continuous. High risk or vulnerability to natural or induced hazards.

7.3 Impact Significance

Impact significance is determined through a synthesis of the above impact characteristics. The significance of the impact “without mitigation” is the main determinant of the nature and degree of mitigation required. As stated in the introduction to this chapter, for this assessment, the significance of the impact without prescribed mitigation actions was measured.

Once the above factors (Table 7-1) have been ranked for each potential impact, the impact significance of each is assessed using the following formula:

SP = (magnitude + duration + scale) x probability

The maximum value per potential impact is 100 significance points (SP). Potential impacts were rated as high, moderate, or low significance, based on the following significance rating scale (Table 7-2).

Table 7-2: Impact significance rating scale

Significance	Environmental Significance Points	Colour Code
High (positive)	>60	H
Medium (positive)	30 to 60	M
Low (positive)	<30	L
Neutral	0	N
Low (negative)	>-30	L
Medium (negative)	-30 to -60	M
High (negative)	>-60	H

For an impact with a significance rating of high, mitigation measures are recommended to reduce the impact to a low or medium significance rating, provided that the impact with a medium significance rating can be sufficiently controlled with the recommended mitigation measures. To maintain a low or medium significance rating, monitoring is recommended for a period to enable the confirmation of the significance of the impact as low or medium and under control.

The assessment of the project phases is done for both pre-mitigation (before implementing any mitigation) and post-mitigation (after mitigations are implemented). The objective of the mitigation measures is to firstly avoid the risk, and if the risk cannot be avoided, mitigation measures to minimize the impact are recommended. Once the mitigation measures have been applied, the identified risk will be of low significance.

7.1 Description and Assessment of Potential Impacts

The potential impacts of the proposed project activities are described and assessed in Table 7-3. The management and mitigation measures in the form of management action plans are provided in the Draft EMP.

Table 7-3: The Description and Assessment of the impacts of the tower construction and operations activities on the environment

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
Positive Impacts											
Employment creation and income	Although temporary, the project activities will add to the income of the construction contractor and their team (employed staff), which will continue to support themselves and their families.	L / M-2	L / M - 2	L / M - 4	L / M - 2	L - 16	M - 3	M / H - 4	L / M - 4	M / H - 4	M - 44
Accessibility to a better network signal	Increase access to telecommunications by enhancing communications capabilities in the area.	L / M - 2	L / M - 2	L / M - 4	L - 1	L - 8	M / H - 4	H - 5	M - 6	H - 5	H - 75
	Promotes the technical expansion of investments due to improved access to reliable communication services	L / M - 2	L / M - 2	L / M - 4	L - 1	L - 8	M / H - 4	H - 5	M - 6	H - 5	H - 75
Socio-economic development	Contributes to local economic development through increased access to telecommunications services for local amenities and social infrastructure in the area.	L / M-2	L / M - 2	L / M - 4	L - 1	L - 8	M - 3	M / H - 4	L / M - 4	M / H - 4	M - 44
Negative (Adverse) Impacts											
Physical disturbance to the site soils (during construction)	The land clearing and excavations to enable the erection of structures, installation of infrastructure, and movement of vehicles will potentially result in soil	M - 3	M / H - 4	L / M - 4	M / H - 4	M – 44	L/M - 2	L/M - 2	L - 2	L/M - 2	L - 12

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	disturbance, leading to compaction of site soils. This will, however, be a short-term and localized impact.										
Environmental pollution (littering)	Solid and hazardous waste may be generated on-site during construction and operational activities. If the generated waste is not disposed of in a responsible way, this may lead to environmental pollution may occur on and around the site.	M: -3	M: -3	M / L: -4	M / H: 4	M: -40	L / M - 2	L / M - 2	L - 2	L / M - 2	L - 12
Occupational and Community Health and Safety Risks	Potential health and safety risks associated with the mishandling of construction and maintenance) equipment. Project personnel (workers) involved in construction activities may be particularly exposed to health and safety risks. These would happen if heavy vehicles, equipment are not properly secured to prevent any harm or injury to the project personnel and people moving within the site premises. The use of heavy equipment, especially during excavation and erection of the tower structures,	M - 3	M - 3	M - 6	M / H - 4	M – 48	L / M: - 2	L / M: -2	L / M: -4	L / M: 2	L: -16

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	may result in accidental tripping and falling of such structures. This could pose a safety risk to the project personnel, equipment, and vehicles. The use of heavy equipment, especially, may result in accidental fire outbreaks. This could pose a safety risk to the project personnel and locals.										
Health and safety issues related to Electromagnetic Radiation emitted from the tower antennas may affect human health.	Electromagnetic radiation is emitted from electrical appliances commonly used in most homes today, such as televisions, radios, cell phones, microwaves, computers, etc. Studies showed that transceiver base stations emit weaker electromagnetic radiation than most household daily appliances, i.e. microwave or a cell phone used close to your body (Carstens and Kuliwoye, 2012). The health authorities around the world, including the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the World	M – 3	H – 5	M/H – 8	M/H – 4	M: -64	L / M - 2	L / M - 2	L - 2	L / M - 2	L - 12

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	Health Organization (WHO), have examined the scientific evidence regarding possible health effects from signal transmitting towers. Current research indicates that there are no established health effects from the low radio frequency electromagnetic emission (RF EME) exposure encountered by the public from broadcast towers (Australian Radiation Protection and Nuclear Safety Agency, 2015). Despite the above information from ARPANSA, the International Commission on Non-Ionizing Radiation Protection (ICNRP) guides protecting against the adverse health effects associated with EMF or EME. These guidelines are based on short-term, immediate health effects such as stimulation of peripheral nerve muscles, shocks, and burns caused by touching conducting objects, and elevated tissue temperatures resulting from										

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	absorption of energy during exposure to EMF/EME. **Short-term Radiation exposure**: The basic restrictions on the effects of exposure are based on established health effects. Different scientific bases were used in the development of basic exposure restrictions for various frequency ranges. Depending on the frequency, the physical quantities used to specify the basic restrictions on exposure to EMF are current density, SAR (Specific Energy Absorption Rate), and power density. For further information on the short-term effect. **Long-term Radiation exposure**: In the case of potential long-term health effects of exposure, such as an increased risk of cancer, ICNIRP concluded that the available data are insufficient to provide a basis for this setting exposure restriction. Thus, the ICNRIP guidelines alone should not be used as a basis for protection										

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	against non-thermal effects or long-term biological effects. The significance of this impact is considered medium to high because the long-term effect is unknown. In the context of the above, a cautionary approach is adopted, and the Precautionary Principle, which states that if an action or policy has a suspected risk of causing harm to the public or the environment, in the absence of scientific consensus that the action or policy is harmful, the burden of proof that it is not harmful falls on those taking the action. The effective implementation of measures, the impact significance can be significantly reduced to medium and eventually low. Therefore, ICNIRP uses a reduction factor of 10 to derive occupational limits for workers and a factor of about 50 to arrive at exposure limits for the public. This factor serves as a precautionary buffer to compensate for uncertainties in										

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	the research. By adhering to the threshold levels of ICNIRP, the precautionary measures should be sufficient to adequately address this impact. However, the risk will not be abolished, and it is recommended that the MTC Namibia keep up to date with regards to any new literature published by ICNIRP (Carstens and Kuliwoye, 2012).										
Civil Aviation impact	The operation of the tower (height and position-wise) may pose a risk to nearby civil aviation infrastructures. The unmarked and improper design (poor visibility and height) and installation of the tower may also pose a risk to airplanes flying over the area. Without proper mitigation measures, the impact can be considered medium to slightly high, but upon effective implementation of these measures, the significance of the impact can be reduced to low and eventually negligible.	M - 3	M - 3	M - 6	M / H - 4	M – 48	L / M: -2	L / M: -2	L / M: -4	L / M: 2	L: -16
Visual and aesthetic	The presence of the tower in the area may be a nuisance to locals	L/M - 2	L/M - 2	M - 6	M/H - 3	M - 30	L - 1	L / M - 2	L - 2	L / M -2	L - 10

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	and or travelers. However, the site is in a vegetated area, where direct visibility is limited owing to vegetation cover. Therefore, the impact significance is low.										
Noise from construction activities	Potential for noise from earthwork activities and vehicles during construction, which may be a nuisance to locals and possibly wildlife (the site is within a conservancy). Excessive noise without any protective measures in place can also be a health risk to workers on site. The construction equipment is of medium size, and the noise level is bound to be limited to the site boundaries only.	L/M - 2	L/M - 2	M - 6	M/H - 3	M - 30	L - 1	L / M - 2	L - 2	L / M -2	L - 10
Archaeological and Heritage resources	The earthworks for the tower erection may result in the inadvertent uncovering of buried archaeological objects onsite. The impact is considered low due to the small footprint of the site. Therefore, upon implementation of the measures, the impact significance will be reduced to a negligible level.	M - 3	M - 3	M - 6	M / H - 4	M – 48	L / M - 2	L / M - 2	L - 2	L / M - 2	L - 12

The recommendations and conclusion to the tower establishment EIA are presented in the next chapter.

8 RECOMMENDATIONS AND CONCLUSIONS

The EIA Study for the proposed tower was undertaken per the EMA and its 2012 EIA Regulations (Sections 21 to 24 of the EIA Regulations) as follows:

- A Background Information Document (BID) containing brief information about the proposed project was compiled, uploaded on the MEFT (ECC) Portal for project registration, and circulated to the registered stakeholders/Interested and Affected parties (I&APs).
- A Stakeholders' (I&AP) List was developed and updated as new I&APs register for the EIA. The BID was shared with the pre-identified key stakeholders from national to local levels via email alongside the invitation to the consultation meeting.
- Project Environmental Assessment notices were published for two consecutive weeks in the *New Era* and *Windhoek Observer* (on the 10th and 17th of April 2025). The consultation period ran from the 10th of March 2025 to the 17th of April 2025.
- A3-size poster for public notice was compiled and pasted in the area (in Epinga) and the Ohangwena Regional Council office notice board in Eenhana.
- One-on-one engagements were done at selected public services institutions such as the Epinga Clinic, with the Village headmen, Shimbode Combined School, and some representatives at the Ohangwena Regional Council in Eenhana on the 31st of March 2025. Forty-eight (48) people were engaged and consulted (the BID was explained to them), and the attendance register was signed by these I&APs.

Impact identification and assessment: Some key potential positive and negative impacts were identified by the Environmental Consultant based on project experience (since there were no comments or issues raised by I&APs during the consultation period). The potential impacts were described and assessed in this Report and mainly have a medium rating of significance pre-implementation of mitigation measures. The management and mitigation measures to the impacts have been provided in the Draft EMP (in the form of action measures) for implementation by the Proponent, their contractors, and workers to avoid and/or minimize their significance on the environmental and social components. The effective implementation of the recommended management and mitigation measures, accompanied by monitoring, will particularly see the reduction in the significance of adverse impacts that cannot be avoided completely (from slightly high to medium rating and then low rating until negligible level) as follows:

- Physical disturbance to the site soils (during construction): pre-mitigation – medium and post-mitigation – low,
- Environmental pollution (littering): *pre-mitigation – medium rating and post-mitigation – low rating*,

- Occupational and community health and safety risks (during construction and maintenance): *pre-mitigation – medium rating and post-mitigation – low rating*,
- Health and safety issues related to Electromagnetic Radiation emitted from the tower antennae may affect human health: pre-mitigation – *medium to slightly high rating, and post-mitigation – medium rating* and eventually *low rating* (upon effective implementation of measures),
- Civil Aviation impact: *pre-mitigation – medium rating and post-mitigation – low rating*,
- Visual and aesthetic: *pre-mitigation – medium rating and post-mitigation – low rating*,
- Noise from construction activities: *pre-mitigation – medium rating and post-mitigation – low rating*, and
- Archaeological and Heritage resources: *pre-mitigation – medium rating and post-mitigation – low rating*.

The Scoping assessment of the EIA Study was deemed sufficient and concluded that no further detailed assessments are required for the ECC application for the proposed tower.

Serja Consultants are confident that the potential negative impacts associated with the proposed project can be managed and mitigated by the effective implementation of the recommended management and mitigation measures, and with more effort and commitment put on monitoring the implementation of these measures.

It is therefore recommended that the proposed tower be granted an ECC, and provided that:

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, licenses, and approvals for the proposed activities should be obtained as required and ensuring compliance with associated specific legal requirements.
- Transparency in communication and continued engagement with the stakeholders, specifically the respective land owner/custodian as well as other key stakeholders, should be maintained before and throughout the project.
- The Proponent, their project workers or appointed contractors, comply with the legal requirements governing their project and its associated activities and ensure that project permits and or approvals required to undertake specific site activities are obtained and renewed as stipulated by the issuing authorities.
- Site areas where earthworks are carried out should be rehabilitated, as far as practicable. This includes the levelling of stockpiled topsoil, backfilling of construction trenches and pits.
- The EMP implementation should be checked and done by the responsible team member onsite (Environmental Control Officer (ECO) or Health, Safety & Environmental (HSE) Officer) and audited by an Independent Environmental Consultant on an annual basis to compile Environmental

Monitoring (Audit) Reports. These reports are to be submitted to the DEAF as it will be required by the Environmental Commissioner (as part of the ECC conditions).

It can be concluded that some of the identified negative impacts may be significant, particularly during the operational phase, but they would not hinder the proposed tower implementation. However, the recommended measures should be effectively implemented and monitored. This is to ensure that the significance of adverse impacts is reduced to acceptable ratings, i.e., from high to medium and then low, or from medium to low, and eventually to a negligible significance rating. The effectiveness of the implementation of the management and mitigation measures and EMP compliance will be assessed by a responsible Officer and audited by an Independent Environmental Consultant on an annual basis. This is done so that recommended measures can be tracked via Bi-Annual Environmental Monitoring exercises and documented in the monitoring reports to the Environmental Commissioner.

The monitoring of EMP implementation will not only be done to ensure that the impact's significance is reducing and or maintaining a low significance rating, but also to ensure that all potential impacts that might arise during implementation are properly identified in time and addressed immediately.

9 LIST OF REFERENCES

1. Carstens, E. and Kuliwoye, E. (2012). Environmental Scoping Report and Management Plan for the proposed construction of an MTC Base Transceiver Station in Goreangab Extension 3, Windhoek. Windhoek: Unpublished.
2. GCS Water & Environmental Consultants. (2017). Environmental Assessment for the Proposed Base Transmitter Station (BTS) at Finkenstein Windhoek, Khomas Region. Windhoek: Unpublished.
3. Mendelsohn J., Jarvis A., Roberts C., and Robertson T. (2002). Atlas of Namibia: A Portrait of the Land and Its People. Cape Town: David Philip Publishers.
4. Namibia Statistics Agency (NSA). (2024). Namibia 2023 Population & Housing Census Main Report. Windhoek. NSA.

APPENDIX A: DRAFT ENVIRONMENTAL MANAGEMENT PLAN (EMP)