

**Environmental Impact Assessment (EIA) Study:**

**The Proposed Construction of a New Guyed Mast Telecommunication Tower Site  
(Onampombo/Site 8) in the Onampombo Village, Oshikoto Region - Application for  
Environmental Clearance Certificate (ECC)**



**ECC Application No.:**

**APP-006950**

**Document Type:**

**Scoping Report**

**Version:**

**Final for Submission**

**Proponent:**

**Mobile Telecommunications Limited  
P. O. Box 23051 Windhoek, Namibia**

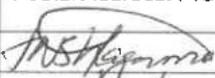


**February 2026**

**DOCUMENT INFORMATION**

Title: Environmental Impact Assessment (EIA) Study for the Proposed Construction of a New Guyed Mast Telecommunication Tower Site (Onampombo/Site 8) in the Onampombo Village, Oshikoto Region – Application for Environmental Clearance Certificate

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**SERJA'S STATEMENT OF INDEPENDENCE**

As the Appointed Environmental Consultant to undertake the EIA Study for the Proposed Construction of a New Guyed Mast Telecommunication Tower Site (Onampombo/Site 8) in the Onampombo Village, Oshikoto 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 favourable 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:** February 2026

## EXECUTIVE SUMMARY

Mobile Telecommunications Limited (*MTC Namibia or the Proponent*) proposes to construct and operate an 80m-high guyed mast telecommunications tower in Onampombo Village. The site (Onampombo/Site 8) is located at these GPS coordinates -17.869845° 16.600610°, and about 70km east of Ondangwa and 60km north of Omuthiya. The proposed tower will be on a 1-hectare (1ha) land will host 3x dual-band antennas and 1x microwave dish. The proposed tower site falls within the Okankolo Constituency of the Oshikoto Region.

### 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 Onampombo site is an 80m high guyed mast network 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 urban coverage for both voice and data services. Access to the site will be limited to authorised personnel only. 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 on-site by using manual labour 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: 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 and theft. A contractor will be appointed to carry out the tower construction/installation.

The construction semi-skilled and unskilled workforce will be commuting from their homes. Given the distance from the nearest Town to project area, the out-of-area specialised personnel (workers) will either set up a campsite on-site with the permission of the Ondonga Traditional Authority (Onampombo Village headman), or commute from existing nearest accommodation facilities in the Region.

- Operations and Maintenance Phase: During this phase, the tower is operational and providing telecommunication signals to the community in this part of Onampombo 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 EMP.

### **Communication with I&APs and Means of Consultation Employed**

Communication with I&APs concerning the proposed project 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 submit comments and the invitation to the meeting.
- Project Environmental Assessment notices were published for two consecutive weeks in the *New Era* and *Windhoek Observer* (on the 30<sup>th</sup> of January, 06<sup>th</sup> & 09<sup>th</sup> of February 2026). The consultation period ran from the 30<sup>th</sup> of January 2026 to the 05<sup>th</sup> of March 2026.
- A3-size poster for public notice was compiled and pasted in Omuthiya (at the Oshikoto Regional Council), and in Onampombo Village.
- The meeting consultation communication was sent out via emails (including to the Oshikoto Regional Council and in Onampombo Village on the 05<sup>th</sup> of February 2026. The meeting was held in in Onampombo Village at the Headman's residence on the 12<sup>th</sup> of February 2026, and it was attended by ninety (90) people, including two EAPs from Serja Consultants. Meeting minutes were taken alongside the attendance registers.

### **The key comments and issues raised during the consultation period (community and stakeholder consultation meeting) are as follows:**

- The community needed the information of the network coverage radius of the proposed tower.
- The recruitment process and requirement (eligibility for employment on this project) and if the names potential workers have been selected already.
- Potential effects of the radiation of the tower have on the community.
- The community needed to know about responsibility of taking care of this tower post-construction.

- The reception of towers sometimes is worse when closer to a network tower, but improve further away.
- The community needed to know if the transformer to supply the tower would allow the community to tap from it to their homes/community.
- The community members express gratitude for this project and the Environmental Consultant's efforts to come that far to have the engagement with them.
- The community was a bit concerned about the nearest power lines being far from the site, which would affect the tower operations and local network signal.

**Impact identification and assessment:** Some key potential positive and negative impacts were identified by the Environmental Consultant based on project experience and from comments made 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 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,*
- Impact on biodiversity through the clearing of trees 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 into 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).

To conclude, 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.

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**LIST OF ABBREVIATIONS**

<b>Abbreviation</b>	<b>Meaning</b>
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

Abbreviation	Meaning
CRAN	Communications Regulatory Authority of Namibia
DEAF	Department of Environmental Affairs and Forestry
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
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 ( <a href="https://www.gartner.com/en/information-technology/glossary/bts-base-transceiver-station">https://www.gartner.com/en/information-technology/glossary/bts-base-transceiver-station</a> ). 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 (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.
Guyed mast towers	These types of towers are made of straight rods arranged in a triangular shape, but wires at all angles support them. 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 forests or mountainous/hilly areas, guyed towers are tall to overcome vegetation height and help transmit the signal over a wide area above the tree canopy (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 (fauna) and plants (flora) found in an area.

Term	Definition
Lattice Tower	A framework structure composed of interconnected steel or aluminium members, typically used to support overhead power lines, antennas, or observation platforms. These towers are characterized by their open, truss-like design, which provides strength and stability while minimizing weight and wind resistance.
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 ( <a href="https://millmanland.com/company-news/what-is-a-cell-tower-and-how-does-a-cell-tower-work/">https://millmanland.com/company-news/what-is-a-cell-tower-and-how-does-a-cell-tower-work/</a> ).
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.
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. The scoping phase 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 (*MTC Namibia or the Proponent*) proposes to construct and operate an 80m-high guyed mast telecommunications tower in Onampombo Village. The site (Onampombo/Site 8) is located at these GPS coordinates  $-17.869845^{\circ}$   $16.600610^{\circ}$ , and about 70km east of Ondangwa and 60km north of Omuthiya - refer to the locality map in Figure 1-1. The proposed tower will be on a 1-hectare (1ha) land will host 3x dual-band antennas and 1x microwave dish. The proposed tower site falls within the Okankolo Constituency of the Oshikoto Region, as shown on the constituency map in Figure 1-2

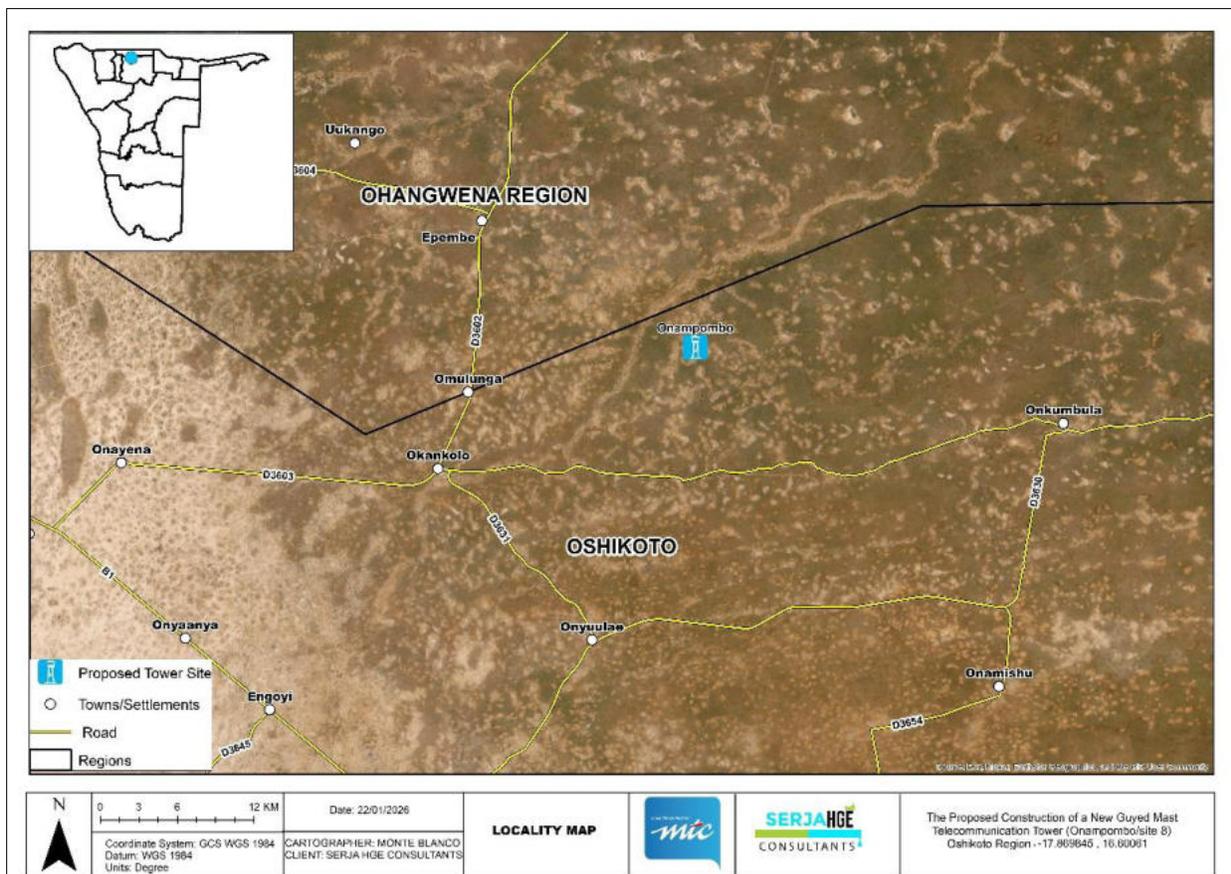


Figure 1-1: Locality map of the proposed MTC Onampombo Site (Site 8) in Onampombo Village, Oshikoto Region

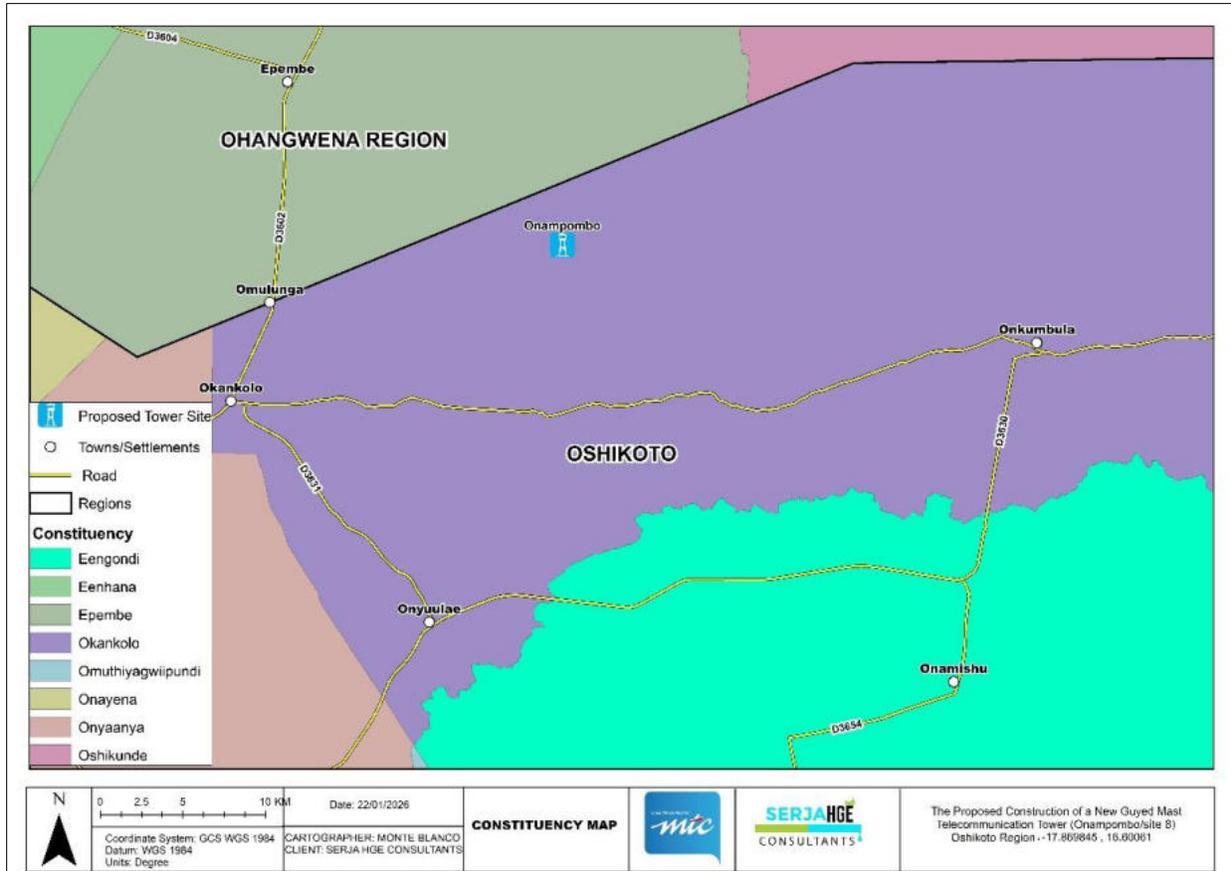


Figure 1-2: The Onampombo Site position on the constituency map (in the Okankolo Constituency)

### 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 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 an 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 5 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 EAP, with over 10 years of experience in Groundwater and Environmental Management Consulting. The CVs of the two EAPs 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-006950),

- 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 to 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 an 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 Onampombo site is an 80m-high guyed mast telecommunication 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 urban 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 not require any supporting cables. 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. The typical examples of guyed structures proposed for the Onampombo site are shown in Figure 2-1.

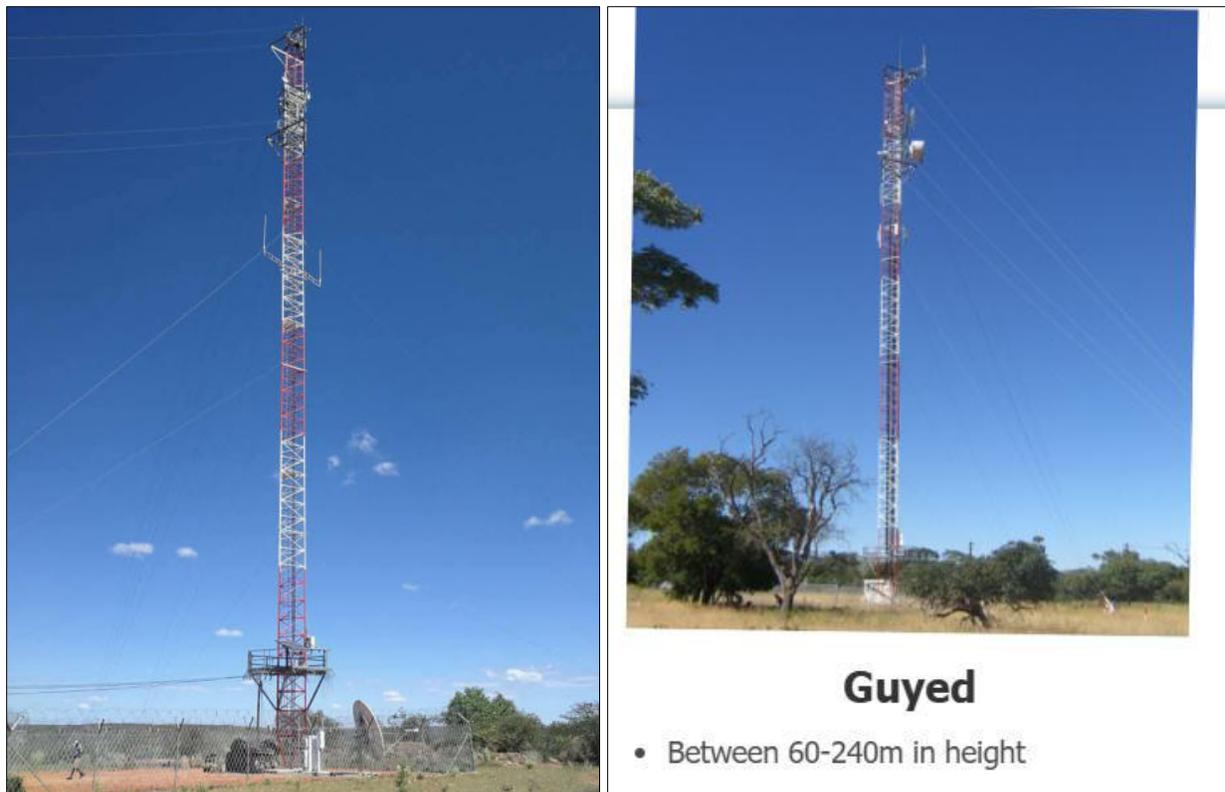


Figure 2-1: Typical red and white painted guyed mast tower structures in Namibia (source: MTC Namibia and <https://powercom.na/>)

The design details of the proposed site are in Table 2-1.

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

Site	Tower Height	Antenna Type	Power supply during operation
Onampombo	80m	3x Panels (the tower will have a microwave dish for transmission)	3-phase alternating current (AC) power from the NORED power grid

**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 guyed mast 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 approximately 20 to 30cm wide and 160cm high, and contains two feeders that relay Radio Frequency (RF) signals to and from the antenna. The typical antenna panel is 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 Onampombo Village and the surrounding areas.

**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

A contractor will be appointed to carry out the tower construction/installation. 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 and theft. A contractor will be appointed to carry out the tower construction/installation.

The appointed contractor will have to make arrangements for their logistics (including transportation of workers and materials to the site). The locals (from the community) will be commuting to work from their homes. The out-of-area specialised personnel will either set up a campsite on-site with the permission of the Ondonga Traditional Authority (Onampombo Village headman), or commute from existing nearest accommodation facilities in the Region.

MTC and its 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 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 semi-skilled and unskilled workforce will be commuting from their homes. Given the distance from the nearest Town to project area, the out-of-area specialised personnel (workers) will either set up a campsite on-site with the permission of the Ondonga Traditional Authority (Onampombo Village headman), or commute from existing nearest accommodation facilities in the Region.

#### 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.

The project's water will be sourced from the nearest water point in the Village, either by purchasing from the property owner's premises (upon getting consent or reaching an agreement to supply water) or the contractor will opt to bring their own water.

Electricity is not required during the construction stage of the tower, but only during the operational phase. There is a NORED power line from the northern side of the site (at Omuhongo Clinic) being the closest. Therefore, the tower will be connected to this NORED power grids for the operational phase.

#### **2.2.1.3 Fuel Supply (Machinery and Equipment)**

There will be no on-site refueling of project vehicles, as this will be required to be done at fuel service stations in Ondangwa or Omuthiya, or a nearby place with a fuel station.

#### **2.2.1.4 Site Accessibility (Roads)**

Access to the site can be made from the D3602 on the western side of the site, and use the existing sandy-track road to Onampombo Village.

#### **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 Omuthiya or Ondangwa Town Council solid waste dumpsite (as the nearest town to the 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 an approved hazardous waste management facility (such as the facility in Windhoek).

#### **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 in this part of Onampombo (both business and residents, as well as social services) 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).

Similar to the construction phase, MTC is required to adhere to environmental, health, and safety measures during the operational phase as provided in the 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 Omuthiya or Ondangwa Town Council 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 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 presents 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.

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 that the status quo of the proposed tower in the proposed area of Onampombo Village remains unchanged, with a 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 businesses 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 the preferred option.

#### 3.2 Location of the Tower

The site was selected due to poor network coverage identified in this part of the Village and surrounding areas, 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. Furthermore, given the dense and high vegetation in this part of the Oshikoto Region, the 80m guyed tower is a suitable tower structure to overcome the vegetation height and enable easy transmission of the network signal to intended users in the area.

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/use 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

Access to the site can be made from the D3602 on the western side of the site, and use the existing sandy-track road to Onampombo Village. 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 choose 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	<p>The construction of access roads in undisturbed areas entails the physical destruction of habitats for the required footprint of the road.</p> <p>Access to the site can be made from the D3602 on the western side of the site, and use the existing sandy-track road to Onampombo Village.</p>	-Access to the site can be made from the D3602 on the western side of the site, and use the existing sandy-track road to Onampombo Village.
Power supply (Cost/km or installation)	<p>Solar infrastructure:</p> <p>-Approximately N\$980,000.00 per Installation</p> <p><b>Challenge/limitations</b></p> <p>-Batteries need to be maintained every 4-6 months.</p> <p>-Overcast conditions cause power cuts.</p>	The tower is located close to a NORED power line (within 2km distance). Therefore, compared to the solar installation cost, connecting to the power line is preferred.

Category of Infrastructure	Alternatives Considered and challenges (limitations)	Justification for the selected option
	<p>-Failures of the system cause technical problems.</p> <hr/> <p>Tap off from a power line: N\$100,000.00 per km</p> <p><b><u>Challenge/limitations</u></b></p> <p>-This option can only tap off from powerlines less than 33kV. -Maximum 10km, otherwise too expensive.</p> <hr/> <p>Buried powerline: <b><u>Challenge/limitations</u></b></p> <p>-Up to 3 times more expensive per km than a powerline</p>	
<b>Water supply</b>	<p>-Use water from the Town Council water supply. -Water supply from the site supply</p> <hr/> <p>-Tank water from elsewhere (purchased elsewhere)</p>	<p>The construction contractor will obtain/purchase water from the nearest water supply in Onampombo Village or the nearby area, upon agreement with the community. Alternatively, the contractor will bring their own water to the site.</p>
<b>Accommodation for workers</b>	<p>-Erect permanent structures on-site -Establishing a campsite for construction phase only -Commuting from homes or nearest town with established accommodation facilities.</p>	<p>-Locals will be commuting from homes, while the specialized workers from outside the Village will be commuting from nearest town (Omuthiya or Ondangwa) with established accommodation facilities to site or option to set up a campsite on site, upon obtaining permission from the Village leadership.</p>

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 this legislation and the 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 aim 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
<p>The Constitution of the Republic of Namibia, 1990, as amended</p>	<p>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:</p> <p>“...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...”</p> <p>Article 95(l) commits the state to actively promoting and maintaining the welfare of the people by adopting policies aimed at:</p> <p>“...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.”</p>	<p>By implementing the environmental management plan, the establishment will comply with the constitution in terms of environmental management and sustainability.</p> <p>Ecological sustainability will be the main priority for the proposed development.</p>
<p>Traditional Authority Act (Act No. 25 of 2000):</p>	<p>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.</p>	<p>The site falls within a communal land of the Ondonga Traditional Authority (Onampombo Village). Therefore, the Village Headman who issued the consent letter should be engaged throughout the project.</p>
<p>The Regional Councils Act (No. 22 of 1992)</p>	<p>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.</p>	<p>The relevant Regional Councils are I&amp;APs and must be consulted during the Environmental Assessment (EA) process. The project site falls under the Oshikoto Regional Council and the Okankolo Constituency.</p>

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
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	<p>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.</p> <p>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.</p> <p>Under Section 43(1) of the Act, the Non-ionising Radiation Regulations were made in 2019.</p>	<p>The Proponent should comply with the Regulations and requirements of the Act throughout the project life cycle.</p> <p>The “safe distance” around the site should be determined.</p>
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.
Civil Aviation Act No. 6 of 2016	<p>“.....; 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, <u>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</u> following normal aviation practice.</p>	The applicable part of the Act is the establishment of the Directorate of Aircraft Accident and Incident Investigations, and it provides for its powers and functions.

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
	<p>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.</p>	<p>The height of the proposed tower would be a threat to the nearest aerodrome site (if the height is more than 45m, which is 80m for the tower), according to the Namibia Civil Aviation Regulations (NAMCARS). Therefore, approval is not required. The proposed site is over 60km east of the Ondangwa and about 50km southeast of the Eenhana aerodrome. Therefore, approval from the Namibia Airports Company (NAC) is not required for the distance. Similarly, the recommended international restriction distance from aerodromes is 15km. Thus, approval will not be required as the Airport is more than 15km from the site.</p>
<p>National Heritage Act No. 27 of 2004</p>	<p>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.</p>	<p>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 EMP should be implemented upon discovery of archaeological and heritage resources.</p>
<p>The National Monuments Act (No. 28 of 1969)</p>	<p>The Act enables the proclamation of national monuments and protects archaeological sites.</p>	
<p>Soil Conservation Act (No 76 of 1969)</p>	<p>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.</p>	<p>Duty of care must be applied to soil conservation, and management measures must be included in the EMP.</p>
<p>Forestry Act (Act No. 12 of 2001</p>	<p>The Act provides for the management and use of forests and forest products.</p> <p>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."</p>	<p>The proposed site is highly vegetated as it is covered by thick vegetation. Therefore, if there is a need to remove protected tree species that are on-site, 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) in the Region (Onankali Forestry Office). However, large trees should be avoided as far as possible.</p>

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
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.	
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 on-site so that they do not harm or compromise the site environment.
National Solid Waste Management Strategy	<p>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 facilitates cooperation between stakeholders.</p> <p>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.</p>	<p>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.</p> <p>Contractors and proponents should reduce the risk of solid waste to the environment and the surroundings of the project area.</p>

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
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 if the roads and traffic impact cannot be avoided.
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**

Statute	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/m <sup>2</sup> .	Justifies the need for assessing the impact of electromagnetic radiation from the tower on the nearby residents or businesses.

<b>Statue</b>	<b>Relevant Provisions</b>	<b>Implications for the project / Requirements</b>
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 a 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 in Onampombo (done on the 12<sup>th</sup> of February 2026), online sources ranging from old reports, books, and 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. 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 is mainly characterized by woodland and a trend of grassland area extending from the northwest to the northeast, as shown on the vegetation structure map in Figure 5-1.

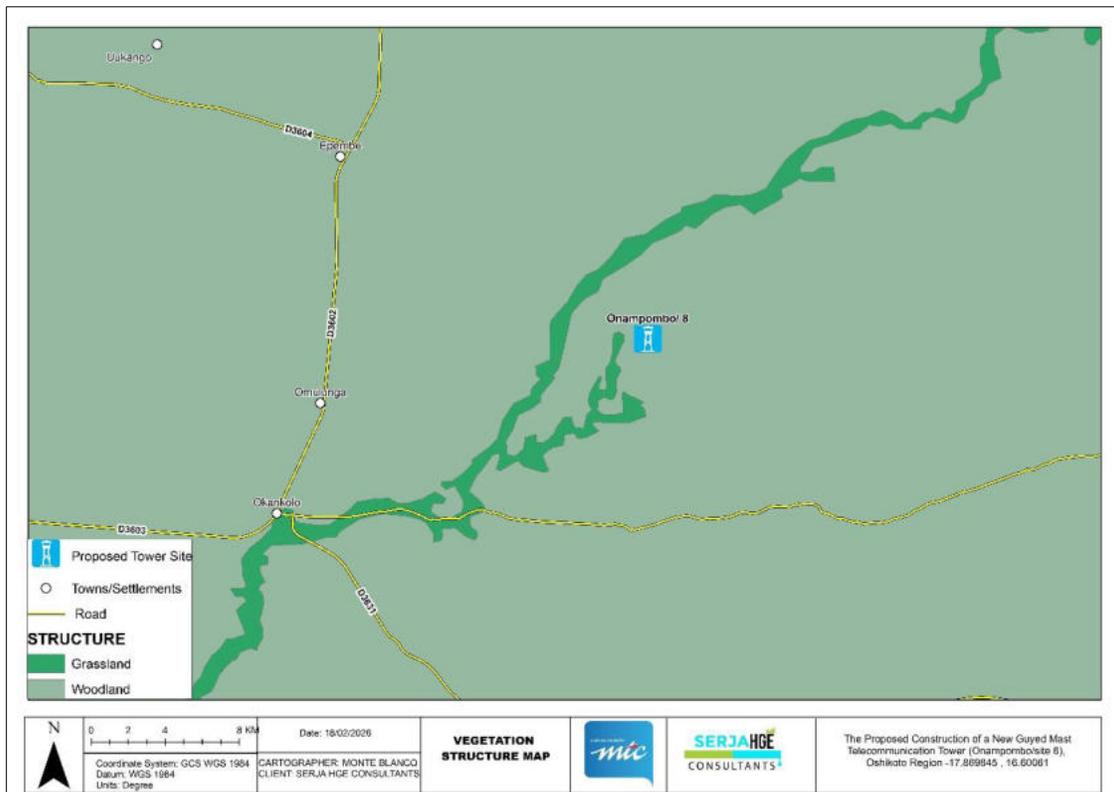


Figure 5-1: The vegetation structure of the site area

The vegetation encountered and observed on and around the project site is shown in Figure 5-2.



Figure 5-2: Some shrubs and trees on and around the project 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 in 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, 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 a 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 (Shagama, 2025).

### 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 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.

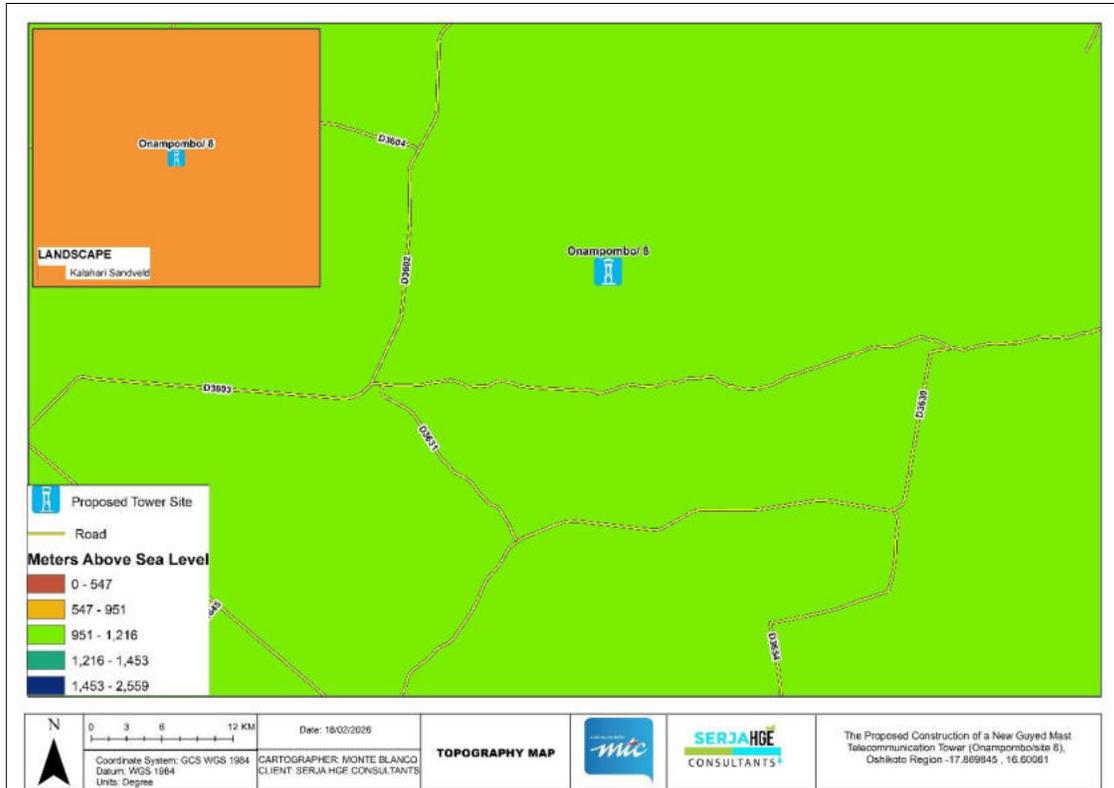
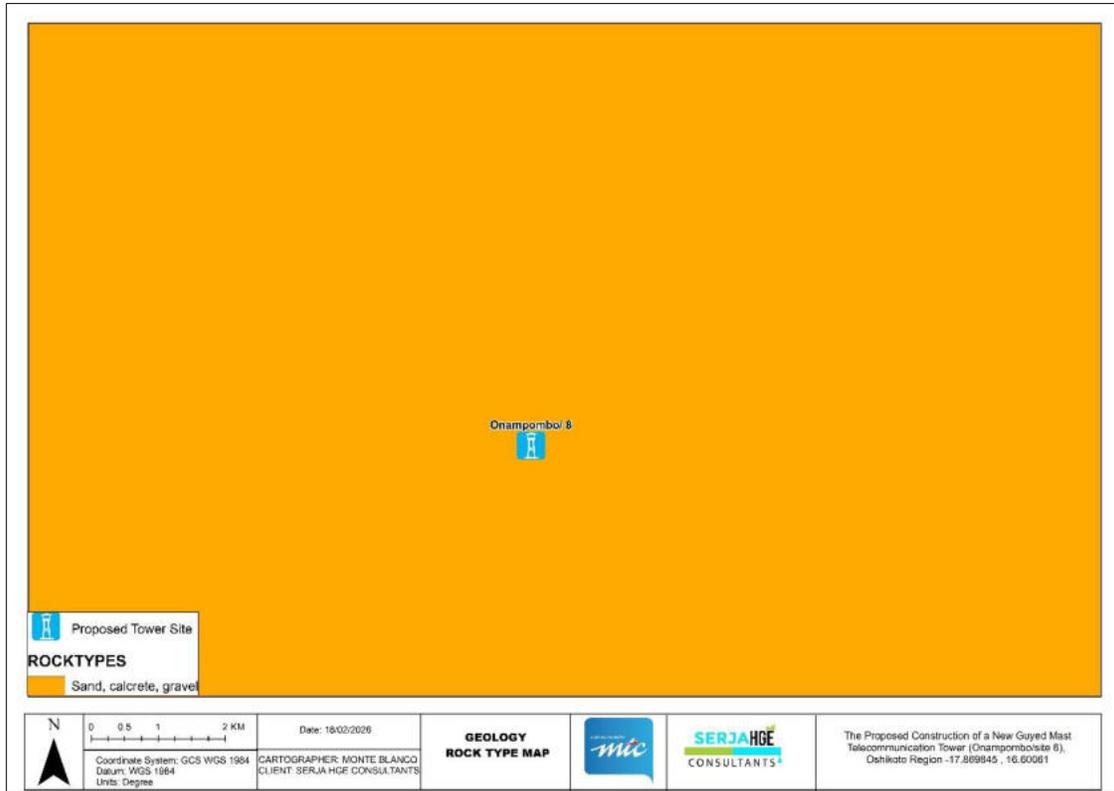


Figure 5-3: The topography and landscape of the area

#### 5.3.1 Geology and Soils

The 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**

Based on the soil type data, the site soils are classified as ferric arenosols (as per the soil map in Figure 5-6). Mendelsohn et al (2002) describe ferralic as soils with high contents of combined oxides of iron and aluminium. According to the Atlas of Namibia Team (2022), arenosols, in most areas, are deep windblown sands consisting largely of quartz. Their sandy texture and loose, porous consistency mean that arenosols have a low capacity to store water and nutrients. Arenosols are predominantly in the Namib Sand Sea, Kunene dune fields, and most of the Kalahari in eastern and northeastern Namibia.

The trend of grassland area extending from the northwest to the northeast overlooking the site the south is characterized by petric calcisols. Petric soils are soils with a solid layer at a shallow depth that remains hard even when wet (Mendelsohn, et al. 2002). Calcisols mainly found in arid and semi-arid environments that have distinct dry seasons. They form in alluvial, colluvial and aeolian deposits that are rich in calcium and magnesium. Significant amounts of calcium carbonate (lime) form below the surface where the soil is alternately dampened by rain and dried by evaporation, which concentrates the calcium carbonate into soft masses or layers of hard calcrete (Atlas of Namibia Team, 2022).

The site is overlain by light grey soils (Figure 5-5) that support a dense amount of vegetation.



Figure 5-5: The light brown soils on and around the site

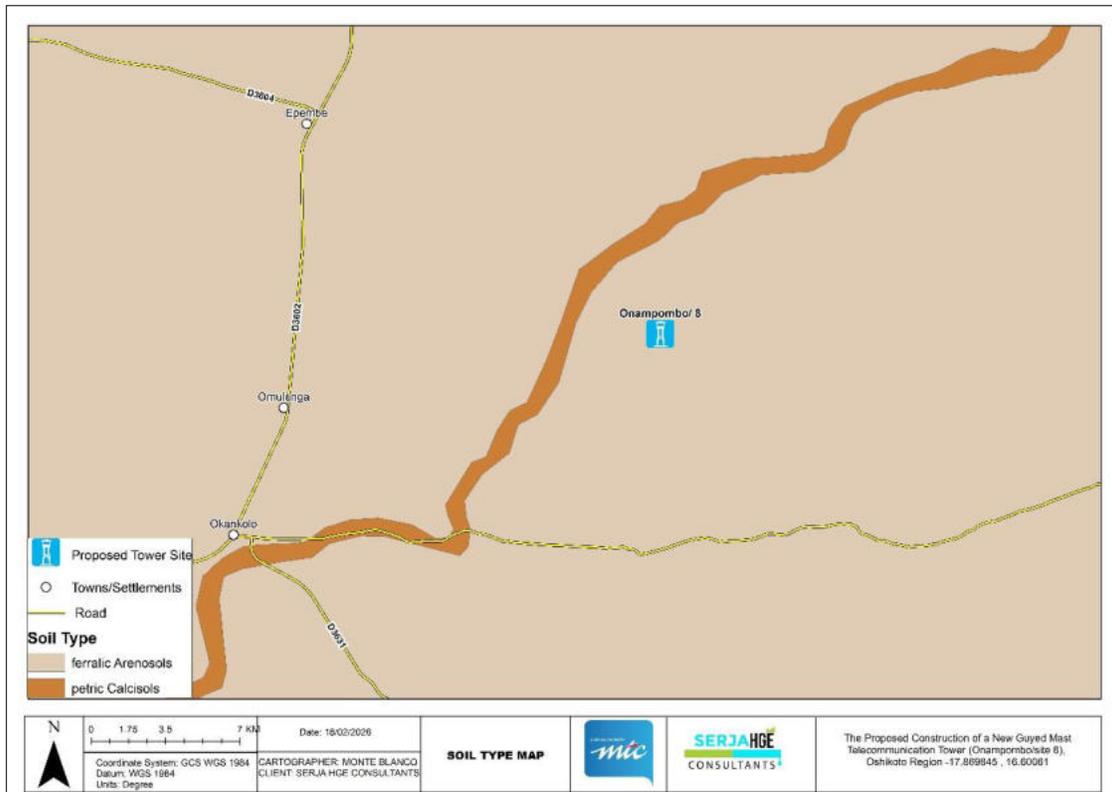


Figure 5-6: The dominant soil types on and around the site

## 5.4 Social and Economic Environment

### 5.4.1 Demography

Oshikoto Region has a total population of 257,302 as per the 2023 National Population and Housing Census. Of the total population, 127,374 were males and 129,928 females (Namibia Statistics Agency (NSA), 2024a), with a population density of 6.7 persons per square kilometer (km<sup>2</sup>). The site is in the Okankolo, which has a population of 17,988, and a population density of 10.9 persons/km<sup>2</sup> (NSA, 2024b).



## 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 about 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 (Appendix C4). The BID was shared with the pre-identified key stakeholders from national to local levels via email, alongside the invitation to submit comments and the invitation to the meeting – Appendix C1.
- Project Environmental Assessment notices were published for two consecutive weeks in the *New Era* and *Windhoek Observer* (on the 30<sup>th</sup> of January 2026, 06<sup>th</sup> & 09<sup>th</sup> of February 2026) – Appendix C2. The consultation period ran from the 30<sup>th</sup> of January 2026 to the 05<sup>th</sup> of March 2026.
- A3-size poster for public notice was compiled and pasted in Omuthiya (at the Oshikoto Regional Council), and in Onampombo Village – see Figure 6-1 to Figure 6-2. The original EIA poster is appended hereto as Appendix C3.



Figure 6-1: EIA Public notice posters at the Oshikoto Regional Council in Omuthiya



Figure 6-2: EIA Public notice posters at the site in Onampombo Village

- The meeting consultation communication was sent out via emails (including to the Oshikoto Regional Council and in Onampombo Village on the 05<sup>th</sup> of February 2026. The meeting was held in in Onampombo Village at the Headman’s residence on the 12<sup>th</sup> of February 2026, and it was attended by ninety (90) people, including two EAPs from Serja Consultants (Figure 6-3). Meeting minutes were taken and are attached hereto alongside the attendance registers as Appendix D.



**Figure 6-3: The consultation meeting photos on the 12<sup>th</sup> of February 2026 in Onampombo Village**

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 land custodian, the Onampombo Village Headman, under the Ondonga Traditional Authority (see Appendix E).

### **6.3 Feedback and Comments Raised by the Stakeholders (I&APs)**

Some key comments made in the consultation meetings are as follows:

- The community needed the information of the network coverage radius of the proposed tower.
- The recruitment process and requirement (eligibility for employment on this project) and if the names potential workers have been selected already.
- Potential effects of the radiation of the tower have on the community.
- The community needed to know about responsibility of taking care of this tower post-construction.
- The reception of towers sometimes is worse when closer to a network tower, but improve further away.
- The community needed to know if the transformer to supply the tower would allow the community to tap from it to their homes/community.
- The community members express gratitude for this project and the Environmental Consultant's efforts to come that far to have the engagement with them.
- The community was a bit concerned about the nearest power lines being far from the site, which would affect the tower operations and local network signal.

There were no other further major comments or issues received during the consultations or after the consultations. The rest of the comments made in the meeting are as provided in the meeting minutes.

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

## 7 IMPACTS IDENTIFICATION, DESCRIPTION, AND ASSESSMENTS

### 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 capabilities in the area.
- Promotes the technical expansion of businesses and institutions such as schools, health centres, and other local social services due to improved access to reliable communication services in this part of the Onampombo Village and surrounding areas.
- Contributes to local economic development through increased access to telecommunications services for local amenities and social infrastructure in the area
- The payment of land use fees to the local leadership will contribute to the positive growth of the community through established projects to empower communities.

#### 7.1.2 Adverse (Negative) Impacts

- Physical land/soil disturbance resulting in compaction and erosion.
- Impact on biodiversity (fauna and flora) through the destruction of habitat (vegetation) and loss of species (through clearing, illegal harvesting of wild flora).
- 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 in line with Namibia’s Environmental Management Act No. 7 of 2007 and its 2012 EIA Regulations, 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 in terms of 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
<b>Intensity, Magnitude/severity</b> - 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.				
<b>H-(10)</b>	<b>M/H-(8)</b>	<b>M-(6)</b>	<b>M/L-(4)</b>	<b>L-(2)</b>
Very high deterioration, high quantity of deaths, injury or 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.
<b>Probability of occurrence</b> - Probability describes the likelihood of the impacts occurring. This determination is based on previous experience with similar projects and/or based on professional judgment.				
<b>Low (1)</b>	<b>Medium/Low (2)</b>	<b>Medium (3)</b>	<b>Medium/High (4)</b>	<b>High (5)</b>
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 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
<b>Positive Impacts</b>											
Employment creation and income	Although temporary, the project activities will add to the income of the construction contractor and their team (employed staff), who 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
Access 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
Payment of land use fees	The payment of land use fees to the local leadership will contribute to the positive growth of the community through established projects to empower communities.	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
<b>Negative (Adverse) Impacts</b>											

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
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 disturbance, leading to compaction of site soils. This will, however, be a short-term and localized impact.	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 on the Biodiversity: Wild Fauna and Flora	The vegetation in the area would be impacted through land clearing to create the access road to the site during construction, setting up project equipment and infrastructure as well as illegal harvesting of vegetation. This would potentially have an impact on biodiversity, such as habitat loss and species destruction. However, the clearing of vegetation, where deemed necessary, will be limited to the site footprint (of 1ha) and the site access route from the existing local roads. The disturbance will avoid protected tree species as much as possible. Therefore, the	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
	impact will be localized and site-specific.										
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	<p>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 and equipment are not properly secured to prevent any harm or injury to the project personnel and people moving within the site premises.</p> <p>The use of heavy equipment, especially during excavation and erection of the tower structures, may result in accidental tripping and falling of such structures. This could pose a safety risk to</p>	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
	<p>the project personnel, equipment, and vehicles.</p> <p>The use of heavy equipment, especially, may result in accidental fire outbreaks. This could pose a safety risk to the project personnel and locals.</p>										
<p>Health and safety issues related to Electromagnetic Radiation emitted from the tower antennas may affect human health.</p>	<p>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., a microwave or a cell phone used close to your body (Carstens and Kuliwoye, 2012).</p> <p>The health authorities around the world, including the Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the World Health Organization (WHO), have examined the scientific evidence regarding possible health effects from signal-</p>	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
	<p>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).</p> <p>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 absorption of energy during exposure to EMF/EME.</p> <p><b><u>Short-term Radiation exposure:</u></b> The basic restrictions on the effects of exposure are</p>										

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	<p>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.</p> <p><b><u>Long-term Radiation exposure:</u></b> 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 ICNIRP guidelines alone should not be used as a basis for protection against non-thermal effects or long-term biological effects.</p> <p>The significance of this impact is considered medium to high because the long-term effect is unknown. In the context of the</p>										

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	<p>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.</p> <p>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 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 MTC Namibia keep up to date with any</p>										

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	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 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.	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
Noise from construction activities	Potential for noise from earthwork activities and vehicles during construction, which 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
	(neighboring homes and or businesses). 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.										
Archaeological and Heritage resources	The earthworks for the tower erection may result in the inadvertent uncovering of buried archaeological objects on-site. 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 / L: -4	M / H: 4	M: -40	L - 1	L / M - 2	L - 2	L / M - 2	L - 10

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 in Onampombo Village 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 submit comments and the invitation to the meeting.
- Project Environmental Assessment notices were published for two consecutive weeks in the *New Era* and *Windhoek Observer* (on the 30<sup>th</sup> of January, 06<sup>th</sup> & 09<sup>th</sup> of February 2026). The consultation period ran from the 30<sup>th</sup> of January 2026 to the 05<sup>th</sup> of March 2026.
- A3-size poster for public notice was compiled and pasted in Omuthiya (at the Oshikoto Regional Council), and in Onampombo Village.
- The meeting consultation communication was sent out via emails (including to the Oshikoto Regional Council and in Onampombo Village on the 05<sup>th</sup> of February 2026. The meeting was held in in Onampombo Village at the Headman's residence on the 12<sup>th</sup> of February 2026, and it was attended by ninety (90) people, including two EAPs from Serja Consultants. Meeting minutes were taken alongside the attendance registers.

**The key comments and issues raised during the consultation period (community and stakeholder consultation meeting) are as follows:**

- The community needed the information of the network coverage radius of the proposed tower.
- The recruitment process and requirement (eligibility for employment on this project) and if the names potential workers have been selected already.
- Potential effects of the radiation of the tower have on the community.
- The community needed to know about responsibility of taking care of this tower post-construction.
- The reception of towers sometimes is worse when closer to a network tower, but improve further away.
- The community needed to know if the transformer to supply the tower would allow the community to tap from it to their homes/community.
- The community members express gratitude for this project and the Environmental Consultant's efforts to come that far to have the engagement with them.

- The community was a bit concerned about the nearest power lines being far from the site, which would affect the tower operations and local network signal.

**Impact identification and assessment:** Some key potential positive and negative impacts were identified by the Environmental Consultant based on project experience and from comments made 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 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 rating and post-mitigation – low,*
- Impact on biodiversity through the clearing of trees 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 into 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).

To conclude, 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

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# **APPENDIX A: ENVIRONMENTAL MANAGEMENT PLAN (EMP)**