

## Environmental Impact Assessment (EIA) Study

The Proposed Construction and Operation of a New Telecommunication Lattice Tower and associated activities in Okahandja Town, Otjozondjupa Region - Application for Environmental Clearance Certificate (ECC)



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**Proponent:**

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




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Title: Environmental Impact Assessment (EIA) Study for the Proposed Construction and Operation of a New Telecommunication Lattice Tower and associated activities in Okahandja Town, Otjozondjupa Region – Application for Environmental Clearance Certificate (ECC)

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## **SERJA' STATEMENT OF INDEPENDENCE**

As the Appointed Environmental Consultant to undertake the EIA Study for the proposed construction and Operation of a New Telecommunication Lattice Tower and associated activities in Okahandja Town, Otjozondjupa Region, Serja Hydrogeo-Environmental Consultants cc declare that we:

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

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



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**Signature:**

Fredrika N. Shagama: Principal Environmental Assessment Practitioner & Hydrogeologist

**Date:** 20 February 2024

## EXECUTIVE SUMMARY

Mobile Telecommunications Limited (hereinafter referred to as MTC Namibia or the Proponent) proposes to construct and operate a 25m high lattice telecommunication tower in Okahandja Town of the Otjozondjupa Region (the project site). The site is internally referred by MTC as Okahandja Industrial).

The 9m x 9m project site (footprint) is located on the premises of the Ministry Agriculture, Water and Land Reform (MAWLR) Otjozondjupa South Regional Services in the Industrial North Street (GPS coordinates -21.96939 16.90089).

### Proposed Project Activities

The project will be carried out using two groups of techniques:

- Planning and Design: The structure proposed for the Okahandja Industrial site is a 25m high lattice 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 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. To protect the network structure from lightning, it will be earthed. Lattice tower are self-supporting structures that are generally made out of steel and usually painted in red and white colour.
- 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 and its will take place onsite by using manual labour as far as possible.  
The construction works 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 maintenance team) only, and prevent vandalism. A contractor will be appointed to carry out the tower construction/installation. The appointed contractor will have and make arrangements for the logistics (including accommodation) of their own workforce but not onsite. MTC and their appointed contractor for construction, will be required to adhere to health, safety and environment requirements for construction and operation (as well as maintenance) to be presented in the Draft EMP for the project.
- Operations and Maintenance Phase: During this phase, the tower is operational and providing telecommunication signals to residents and businesses in the Town.

Telecommunication sites (towers) usually requires very little maintenance, for instance for any software upgrading, this will be done mainly from MTC' 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 falls arrest).

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

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

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

- A Background Information Document (BID) containing brief information about the proposed project was compiled and hand delivered to the Ministry of Environment, Forestry and Tourism (MEFT) accompanying the ECC application, and uploaded on the MEFT (ECC) Portal for project registration and shared with registered Interested and Affected parties (I&APs).
- The Stakeholders' (I&AP) List was developed and updated as new I&APs register for the EIA. The BID shared with the pre-identified key stakeholders from national to local levels, via email alongside the invitation to the consultation meeting.
- The EIA Study notices were published for two consecutive weeks in the *New Era* (on the 01<sup>st</sup> and 07<sup>th</sup> of February 2024) and Market Watch's *Die Republikein, Namibian Sun & Allegmeine Zeitung* (on the 01<sup>st</sup> and 08<sup>th</sup> of February 2024). The consultation period ran from the 01<sup>st</sup> of February to the 29<sup>th</sup> of February 2024.
- The A3 size poster for public notice was compiled and pasted in Okahandja Town on the 06<sup>th</sup> of February 2024 at the Okahandja Municipality, Okahandja Woermann Brock, MAWLR' Otjozondjupa South Regional Service Office (site), and Shoprite Mall Okahandja.
- A consultation meeting was scheduled to be held in Okahandja on the 13<sup>th</sup> of February 2024 -. Invitations was sent to stakeholders including the identified neighbours to the site. However, only three people showed up at the meeting venue, comprising one EAP from Serja Consultants, an MTC representative and one personnel from the Okahandja Municipality. The meeting purpose and project description were explained to the Municipal personnel in attendance. No comment was made or issue was raised nor recorded from the meeting.
- Face-to-face engagements were conducted with the available neighbours to the site (MAWLR – Otjozondjupa South Regional Services office). The engagements entailed the explanation of the EIA process, description of the proposed project and purpose of engagements. The BID copies

were also distributed to the consulted representatives who were requested to sign the BID receipt register too.

**Impact identification and assessment:** Some key potential positive and negative impacts were identified by the Environmental Consultant based on project experience (since there no comments nor issues raised by I&APs during the consultation period). The potential impacts were described and assessed in this Report and mainly have a medium rating significance pre-implementation of mitigation measures. The management and mitigation measures to the impacts have been provided in the Draft EMP (in a form of action measure) for implementation by the Proponent, their contractors, and workers to avoid and/or minimize their significance on the environmental and social components. The effective implementation of the recommended management and mitigation measures accompanied by monitoring will particularly see the reduction in the significance of adverse impacts that cannot be avoided completely (from slightly high to medium rating and then low rating until negligible level) as follows:

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

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

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

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

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, licenses and approvals for the proposed activities should be obtained as required and ensuring compliance with associated specific legal requirements.
- Transparency in communication and continued engagement with the stakeholders, specifically the landowner (MAWLR) as well as other key stakeholders should be maintained before and throughout the project.
- The Proponent, their project workers or 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 – This will be required by the Environmental Commissioner (as part of the ECC conditions).

It can be concluded that some of the identified negative impacts may be significant, particularly during the operational phase, but, they would not hinder the proposed tower. 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 and 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 done 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 impacts significance is reducing and or maintain low significance rating but to also ensure that all potential impacts that might arise during implementation are properly identified in time and addressed immediately.

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C1 – Background Information Document (BID)

C2 – Email communication (BID) and meeting invitation sent to the stakeholders/I&APs

C3 - EIA Notification in the newspapers (*New Era* and *Market Watch's Die Republikein*, *Namibian Sun* and *Allegmeine Zeitung*)

C4 – Original A3 Public Notice pasted in Okahandja

C5 - Consultation and Engagement registers with stakeholders / I&APs

**Appendix D:** Land Use Consent letter issued by Ministry of Agriculture, Water and Land Reform's Otjozondjupa South Regional Services

## LIST OF ABBREVIATIONS

Abbreviation	Meaning
3G/4G	Third and Fourth Generation of Wireless Mobile Telecommunications Technology
AC	Alternating Current

Abbreviation	Meaning
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
BID	Background Information Document
BTS	Base Transceiver Station
CRAN	Communications Regulatory Authority of Namibia
DEAF	Department of Environmental Affairs and Forestry
EA	Environmental Assessment
EAP	Environmental Assessment Practitioner
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
MAWLR	Ministry of Agriculture, Water and Land Reform
MEFT	Ministry of Environment, Forestry and Tourism
MHSS	Ministry of Health and Social Services
MICT	Ministry of Information and Communication Technology
NAC	Namibia Airports Company
NCAA	Namibia Civil Aviation Authority
NHC	National Heritage Council (NHC) of Namibia
NRPA	National Radiation Protection Authority of Namibia
PPE	Personal Protective Equipment

Abbreviation	Meaning
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	In relation to an activity, means the impact of an activity that in it 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 which 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).

Term	Definition
Environment	As defined in Environmental Management Act - the complex of natural and anthropogenic factors and elements that are mutually interrelated and affect the ecological equilibrium and the quality of life, including – (a) the natural environment that is land, water, and air; all organic and inorganic matter and living organisms and (b) the human environment that is the landscape and natural, cultural, historical, aesthetic, economic and social heritage and values.
Environmental Management Plan (Draft EMP)	As defined in the EIA Regulations (Section 8(j)), a plan that describes how activities that may have significant environments effects are to be mitigated, controlled, and monitored.
Interested and Affected Party (I&AP)	In relation to the assessment of a listed activity includes - (a) any person, group of persons or organization interested in or affected by an activity; and (b) any organ of state that may have jurisdiction over any aspect of the activity.
Fauna and Flora	The animals and plants found in an area.
Mitigate	Practical measures to reduce adverse impacts.
Mitigation	The purposeful implementation of decisions or activities that are designed to reduce the undesirable impacts of a proposed action on the affected environment
Monitoring	Activity involving repeated observation, according to a pre-determined schedule, of one or more elements of the environment to detect their characteristics (status and trends).
Network or cell towers	Also known as cell sites, 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 that can be used to inform, consult or interact with stakeholders affected by the proposed activities.

Term	Definition
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. Can, also be used to identify alternative project designs/sites to be assessed, obtain local knowledge of 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 full EIA.
Significant impact	Means an impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment

# 1 INTRODUCTION

## 1.1 Project Background and Location

Mobile Telecommunications Limited (hereinafter referred to as MTC Namibia or the Proponent) proposes to construct and operate a 25m high lattice telecommunication tower in Okahandja Town of the Otjozondjupa Region (the project site). The site is internally referred by MTC as *Okahandja Industrial*).

The 9m x 9m project site (footprint) is located on the premises of the Ministry Agriculture, Water and Land Reform (MAWLR)'s Otjozondjupa South Regional Services in the Industrial North Street (GPS coordinates -21.96939 16.90089). The locality map is shown in Figure 1-1 below.



Figure 1-1: Locality map of the 25m MTC lattice tower in Okahandja Town

## 1.2 The Need and Desirability of the Proposed Project

The Proponent is committed to provide reliable telecommunication services to its clients (businesses, residents and travellers). Furthermore, the 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 runs smoothly and conveniently, the service infrastructure needs to be up to standard to provide better and quality coverage to the mobile users.

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

Based on the engagement done with some of the stakeholders on the 13<sup>th</sup> of February 2024 at Colas, the Environmental Consultant asked one personnel from a direct neighbouring property / stakeholder to the site (Colas) about the network reception in the area. The personnel response was that “*the network signal strength is acceptable*”, to which the Consultant can confirm that there is indeed a need to improve the connection in the area.

Therefore, by constructing a base transceiver station (BTS) structure as proposed, the added capacity by this tower could relieve the pressure or load from the nearest site (tower), thus, bringing total connection improvement to the businesses, travellers and possible, residents in the industrial area and immediate neighbours.

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

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



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

The purpose of the EIA Study and subsequent issuance of the ECC is therefore to ensure that the proposed project activities are undertaken in an environmentally & socially friendly and sustainably manner, through the effective implementations 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 Environmental Assessment Report and Environmental Management Plan (EMP) – Appendix A.

The EIA process, including public consultation and engagement as well as compilation of the associated documents were conducted and compiled by Ms. Fredrika Shagama. Ms. Shagama is a qualified and experienced Hydrogeologist and EAPAN registered Environmental Assessment Practitioner (EAP) by training and experienced with over 7 years' experience in Groundwater and Environmental Management Consulting. Her CV is 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-002731),
- Completion of the Form 1 (Section 32) of the EIA Regulations with the required project and Proponent information,
- Submission of the printed hard copy of the ECC application (with affixed NAD300 revenue stamps as application fees attached hereto) is submitted to the MEFT. The MEFT's date stamped copy of the ECC application is uploaded on the ECC Portal as proof of application and payment.

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

## **1.6 Scope of Work and Report Contents**

This Study has been conducted according to the EMA No. 7 of 2007, and its 2012 EIA Regulations as mentioned in the preceding subsections, i.e., the proposed project may not be undertaken without an ECC. Therefore, the process has been undertaken as required and guided by the Regulations.

This Report has been compiled as a required output of an environmental assessment process. The EIA Report, together with the EMP and all its appendices will be submitted to the DEAF.

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

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

Based on the information provided by the Proponent and the EAP's experience, description of the project activities is presented under 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 Okahandja Industrial site is a 25m high lattice 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 (Mobile Telecommunications Limited, 2023). Access to 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. To protect the network structure from lightning, it will be earthed. The typical lattice antennae is shown in Figure 2-1 below. Lattice tower are self-supporting structures that are generally made out of steel and usually painted in red and white colour.



Figure 2-1: A typical red and white painted lattice tower structure

### 2.1.2 Antennae

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

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



Figure 2-2: Panel type antennae

### 2.1.3 Site Selection Criteria

MTC selected this site to provide reliable network coverage in this part of Okahandja Town.

### 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, it 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 proximity to meet the need. Thus, the need to erect a completely new structure.

## 2.2 Site Preparation and Construction

Construction works for this project will include excavation, concrete civil works and tower rigging. There will be minimal earthworks required to prepare the sites for the tower construction and installation. The construction of the concrete foundation for the tower and its will take place onsite by using manual labour as far as possible.

The construction works is anticipated to take 2 to 3 months and the construction activities will be limited to normal working hours, i.e., 08h00 and 17h00 (from 08am to 5pm).

For security purposes, the tower site will be fenced off to restrict access to authorized personnel (such as maintenance team) only, and prevent vandalism. A contractor will be appointed to carry out the tower construction/installation. The appointed contractor will have and make arrangements for the logistics (including accommodation) of their own workforce but not onsite. MTC and their appointed contractor for construction, will be required to adhere to health, safety and environment requirements for construction and operation (as well as maintenance) to be presented in the Draft EMP for the project.

### 2.2.1 Required Resources and Services

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

#### 2.2.1.1 Human resources and Accommodation

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

The construction contractor will be responsible for their own private accommodation, but offsite.

#### 2.2.1.2 Water and Power Supply

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

Electricity is not required during the construction stage of the tower, but only during the operational phase. Therefore, the tower will be connected to the 3 Phase AC power from Okahandja Municipality upon engagement between the two parties (MTC and Municipality).

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

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

#### 2.2.1.4 Site Accessibility (Roads)

The site is accessible off the tarred road of the Industrial North Street in Okahandja Industrial area.

### **2.2.1.5 Waste Management**

The different waste will be handled as follows:

- Sewage: A temporary and chemical portable toilet will be provided onsite for the construction workers so that they have their own facilities and not rely on the MAWLR facility. The toilet will be emptied according to its manufacturers' instructions.
- General and domestic waste: Solid waste containers will be made available onsite for waste storage and later proper disposal at the Okahandja Municipal solid waste management site.
- Hazardous waste: All vehicles, machinery and fuel consuming equipment onsite will be provided with drip trays to capture potential fuel spills and waste oils.
- Waste fuel/oils will be carefully stored in a standardized container to be disposed of at the nearest approved hazardous waste management facility.

### **2.2.1.6 Health and Safety**

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

### **2.2.1.7 Potential Accidental Fire Outbreaks**

A minimum of two well-serviced fire extinguishers will be readily available onsite.

## **2.3 Operations and Maintenance Phase**

During this phase, the tower is operational and providing telecommunication signals to residents and businesses in the Town.

Telecommunication sites (towers) usually requires very little maintenance, for instance for any software upgrading, this will be done mainly from MTC' 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 falls arrest).

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

## **2.4 Decommissioning and Rehabilitation of Disturbed Areas Onsite**

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

- Dismantle and remove all infrastructures from the project site that will no longer be needed for operations,

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

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

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

### 3 PROJECT ALTERNATIVES

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

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

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

The alternatives considered for the proposed project are discussed below.

#### 3.1 The "No-go" Alternative

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

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

#### 3.2 Location of the Tower

The site was selected due to poor network coverage identified in this part of the Town and based on the results of technical site optimization. The tower site is within proximity of the services such as existing electricity line and road for power and easy accessibility, respectively.

#### 3.3 Type of Structure

There are three common network towers and these are installed or considered depending on the need and availability of sharing 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 exceeds heights of 60m.
- Guyed towers or structures have guyed ropes to stabilize it because of its height. These towers normally exceed heights of 80m.

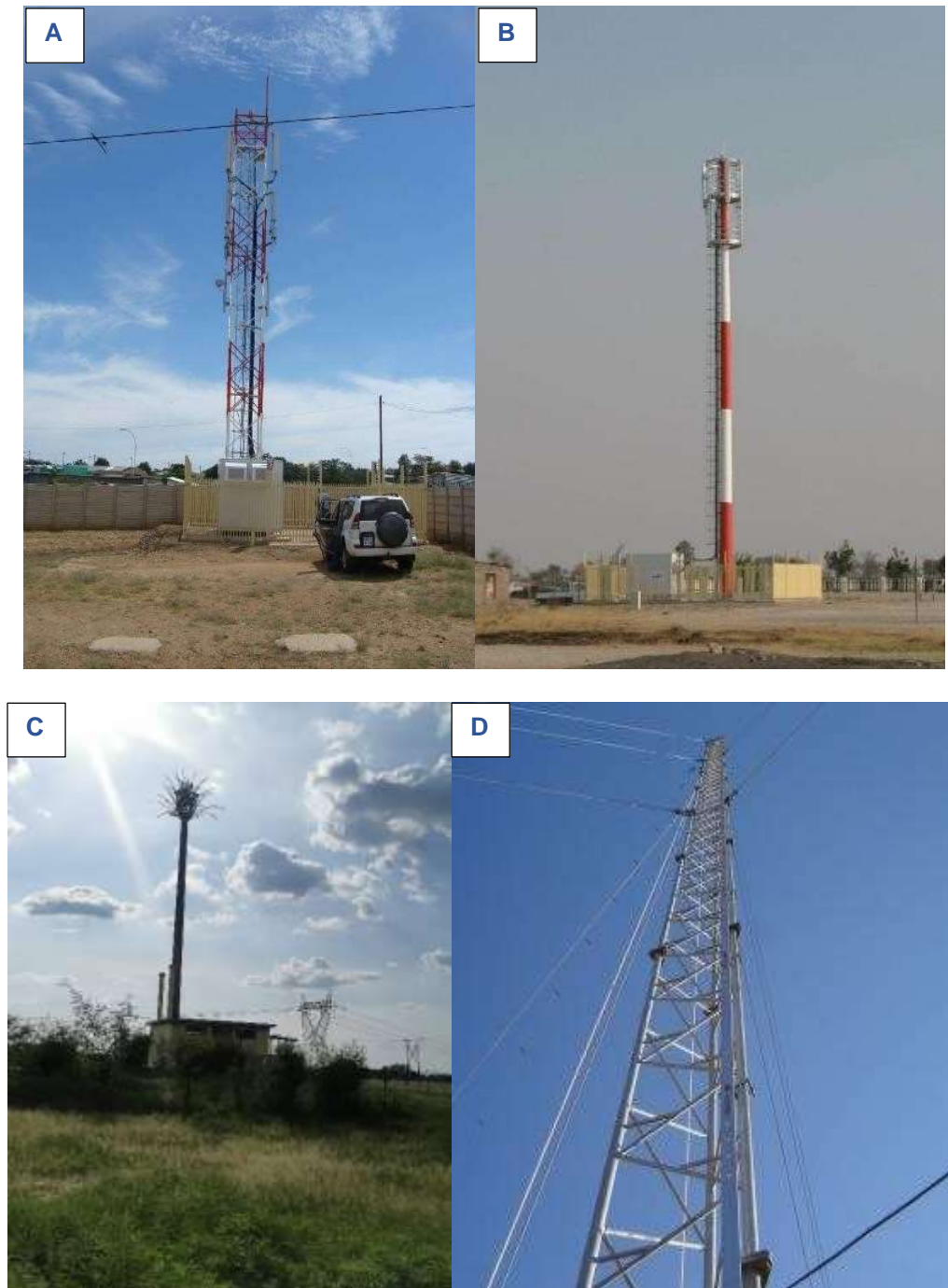


Figure 3-1: The types of network structures: A - Lattice, B - Monopole, C - Camouflage and D - guyed

### 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 one tower within 1km south of the proposed site. However, it could be that this tower does not have capacity nor feasible to just add (mount) antennae to it for the area. Another reason could also be that the existing tower requires that another tower is erected at another place such as the proposed site to fully service the community in the area. Thus, sharing with existing structures will not be feasible to align with the Communications Act regarding the sharing/using of existing structures in this instance.

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

### 3.5 Site Accessibility

The proposed tower sites can be accessed both on foot and by vehicle when turning off from the North Industrial Street into the MAWLR Okahandja premises. Thus, providing excellent access to the proposed site during the construction and operations as well as maintenance phase.

### 3.6 Services Infrastructure

Alternatives were considered for different supporting infrastructures to ensure that the most feasible options were selected. The technological, economic, and environmental limitations were considered to select the most feasible option. The alternative 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 selected option
<b>Roads</b>	The construction of access roads in the rural areas entails the physical destruction of habitats for the required footprint of the road.  Where access will be required to a proposed site from the national proclaimed public road network, an access permit will be obtained from the Roads Authority of Namibia.	There is no need for an additional road. Therefore, no need for Roads Authority access permit. The existing turn off into the MAWLR premises from the industrial north street will be utilized for the project and gain access to the site inside.
	Solar infrastructure:  -Approximately N\$980,000.00 per Installation	Tapping from the existing Municipal line is the recommended option to

Category of Infrastructure	Alternatives Considered and challenges (limitations)	Justification for selected option
<b>Power supply (Cost / km or installation)</b>	<u><b>Challenge/limitations</b></u> -Batteries need to be maintained every 4-6 months. -Overcast conditions causes power cuts. -Failures of system causes technical problems.	supply to site. In other words, the tower will be connected to a 3 Phase AC power from Okahandja Municipality upon engagement between the two parties (MTC and Municipality).
	Tap off from a powerline: N\$100,000.00 per km <u><b>Challenge/limitations</b></u> -This option can only tap-off from powerlines less than 33kV. -Maximum 10km otherwise too expensive.	
	Buried powerline: <u><b>Challenge/limitations</b></u> -Up to 3 times more expensive per km than a powerline	
<b>Water supply</b>	-Use water from the MAWLR facilities	The contractor will obtained water from the Town, either by purchasing from the host (MAWLR) premises or upon agreement with the Okahandja Municipality.
	-Tank water from elsewhere (purchased elsewhere)	

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

## 4 APPLICABLE LEGAL FRAMEWORK

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

### 4.1 National and Local Legal Framework and Policies

#### 4.1.1 Environmental Management Act No. 7 of 2007

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

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

- Listed Activity 10.1 (g) the construction of masts of any material or type and of any height, including those used for telecommunication, broadcasting, and radio transmission.
- (j) Masts of any material or type and of 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) details 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 in relation to 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 the purposes of 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 by reason 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 framework and policies relevant to the proposed project are presented in Table 4-1.

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

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
The Constitution of the Republic of Namibia, 1990 as amended	<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 the:</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 be in conformant to the constitution in terms of environmental management and sustainability.</p> <p>Ecological sustainability will be main priority for the proposed development.</p>
Atomic Energy and Radiation Protection Act, Act 5 of 2005	To provide for adequate protection of the environment and of people in current and future generations against the harmful effects of radiation by controlling and regulating the production, processing, handling, use, holding, storage, transport and disposal of radiation sources and radioactive materials, and controlling and regulating prescribed non-ionising radiation sources.	<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>

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
	<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 have been made in 2019.</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 masts 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> in accordance with normal aviation practice.</p> <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 applicable part of the Act is the establishment of the Directorate of Aircraft Accident and Incident Investigations and to provide for its powers and functions.</p> <p>The height of the proposed tower would be a threat to a nearest aerodrome site (if the height is more than 45m, according to the Namibia Civil Aviation Regulations (NAMCARS)). The tower height is 25m, therefore, compliant with the Regulations.</p>

Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
		The proposed site (obstruction) is within 8km from the Okahandja Airport (FYON). Therefore, the approval from the Namibia Airports Company (NAC) will be required, thus will be applied for. The Osona Airstrip located about 17km from site is outside both the local (of 8km) and international (15km) distance restriction from an aerodrome point. Thus, no approval is required.
National Heritage Act No. 27 of 2004	To provide for the protection and conservation of places and objects of heritage significance and the registration of such places and objects; to establish a National Heritage Council; to establish a National Heritage Register; and to provide for incidental matters.	The necessary management measures and related permitting requirements must be taken. This done by informing the National Heritage Council of Namibia. A Chance Finds Procedure provided to the Draft EMP should be implemented upon discovery of archaeological and heritage resources.
The National Monuments Act (No. 28 of 1969)	The Act enables the proclamation of national monuments and protects archaeological sites.	
Soil Conservation Act (No 76 of 1969)	The Act makes provision for the prevention and control of soil erosion and the protection, improvement and conservation of soil, vegetation and water supply sources and resources, through directives declared by the Minister.	Duty of care must be applied to soil conservation and management measures must be included in the EMP.
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.



Legislation / Policy / Guideline	Relevant Provisions	Implications for the project activities
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 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 the purposes of section 4(1) (a) of the ordinance.	The proposed project and related activities should be undertaken in such a way that they do not pollute or compromise the surrounding air quality.
Hazardous Substance Ordinance, No. 14 of 1974	The ordinance provides for the control of toxic substances. It covers manufacture, sale, use, disposal and dumping as well as import and export. Although the environmental aspects are not explicitly stated, the ordinance provides for the importing, storage, and handling.	The Proponent should handle and manage the use of hazardous substances onsite so that they do not harm or compromise the site environment
Road Traffic and Transport Act, No. 22 of 1999	The Act provides for the establishment of the Transportation Commission of Namibia; for the control of traffic on public roads, the licensing of drivers, the registration and licensing of vehicles, the control and regulation of road transport across Namibia's borders; and for matters incidental thereto.	Mitigation measures should be provided for, if the roads and traffic impact cannot be avoided.
Labour Act (No. 6 of 1992)	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 insures 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 donating of obstacles	The proposed new structure may be obstacles to some aerodromes in Namibia.  Generally, these structures that are close to existing aerodromes need to be assessed in accordance with the document. Visual aids to the new structures to make them visible to aircraft need to be applied in accordance with 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 is 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.
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 receiving environment. Therefore, understanding these existing environmental features before the project activities, is crucial for the assessment of the potential impacts stemming from the project activities on the features.

## 5 THE RECEIVING ENVIRONMENT

The proposed tower will be constructed and operated in in specific environment. Therefore, understanding the pre-project conditions of the environment will aid in describing the status quo of environmental conditions prior to project implementation. The baseline information also aids in identifying the sensitive environmental features and how 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 site visit (done on the 13<sup>th</sup> of February 2024), online sources ranging from old reports, books and publishing as well as other relevant research information in the broader area. The project baseline that is deemed necessary to the project activities are as follows.

### 5.1 Flora

The vegetation structure of the site and its surrounding is mainly characterized by dense shrub as shown on the vegetation map in Figure 5-1.



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

The observed vegetation in the area are scattered shrubs and young trees of black-thorn camelthorns (*Vachellia mellifera*) as well as grass cover. The vegetation observed during the site visit in February 2024 are shown in Figure 5-2.



Figure 5-2: Camelthorn trees, shrubs and grass cover on and around the site

## 5.2 Climate

Being in the semi-arid country as Namibia, Okahandja is considered to have a desert climate. Okahandja's temperatures do not fluctuate, like many of the coastal towns in the country, but rather remain relatively average throughout the year. Average annual temperatures are usually more than 16 °C, with average maximum temperatures between 21 °C and 25 °C and average minimum temperatures between 9 °C and 16 °C<sup>1</sup>.

Okahandja area receives an annual rainfall ranging between 150mm and 300mm (Mendelsohn *et al.*, 2002).

## 5.3 Landscape and Topography

The site area is characterized by the Central-Western Plains as shown in Figure 5-3. According to Mendelsohn *et al.*, (2002), this landscape stretches back from the coast and this broad area of plains extends inland for about 450km in places.

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<sup>1</sup> [http://154.0.202.226/screening/2511\\_23\\_0692\\_fesr\\_poultry\\_farm.pdf](http://154.0.202.226/screening/2511_23_0692_fesr_poultry_farm.pdf)

The plains were largely formed by erosion cutting back into higher ground and carving out the catchment areas of several major rivers, such as the Khan, Omaruru, Swakop and Ugab. The site is relatively flat with elevations from 1,216 to 1,453 meters above sea level (masl) as shown on the topographic map in in Figure 5-3 below.

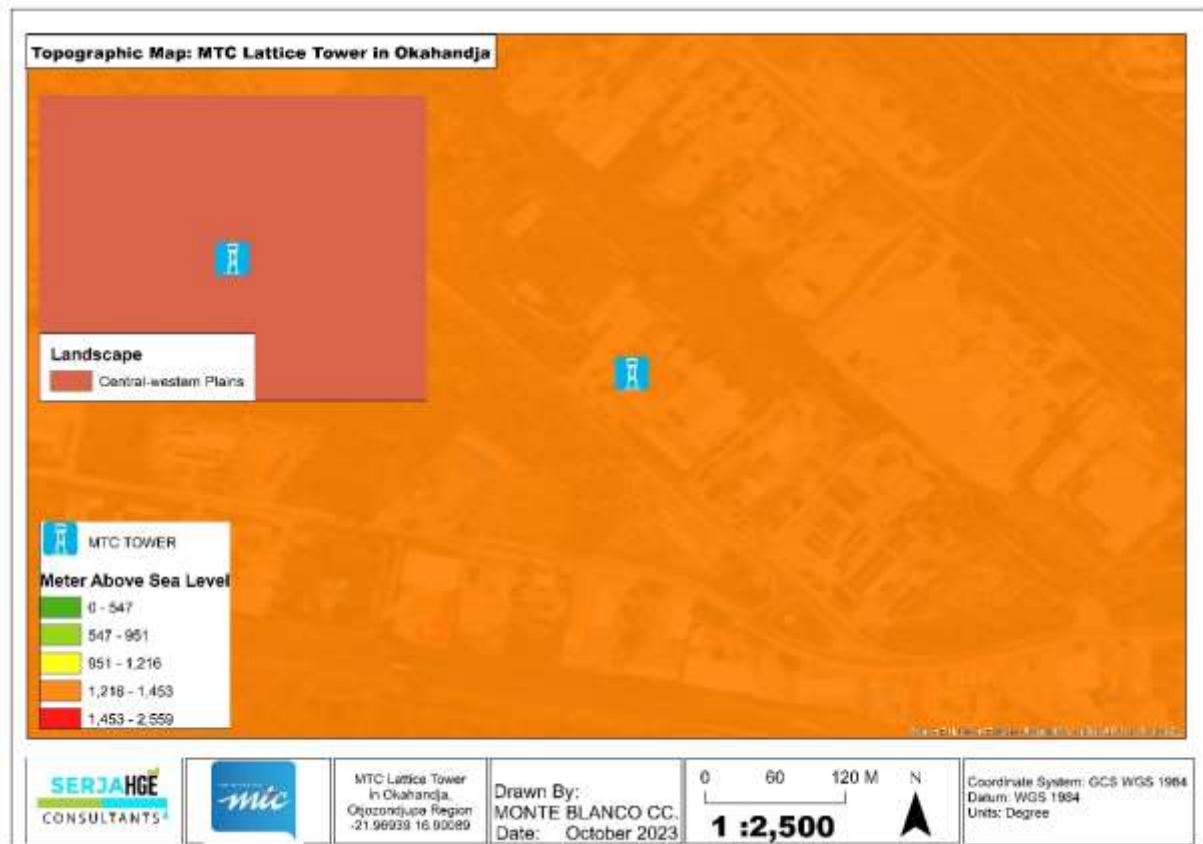


Figure 5-3: The topography and landscape of the area

### 5.3.1 Geology

The site area is covered by unconsolidated sediments comprising sand and gravel. The bedrock comprises of mica and graphitic schist, marble, and minor quartzite as shown on the geology map in Figure 5-4.

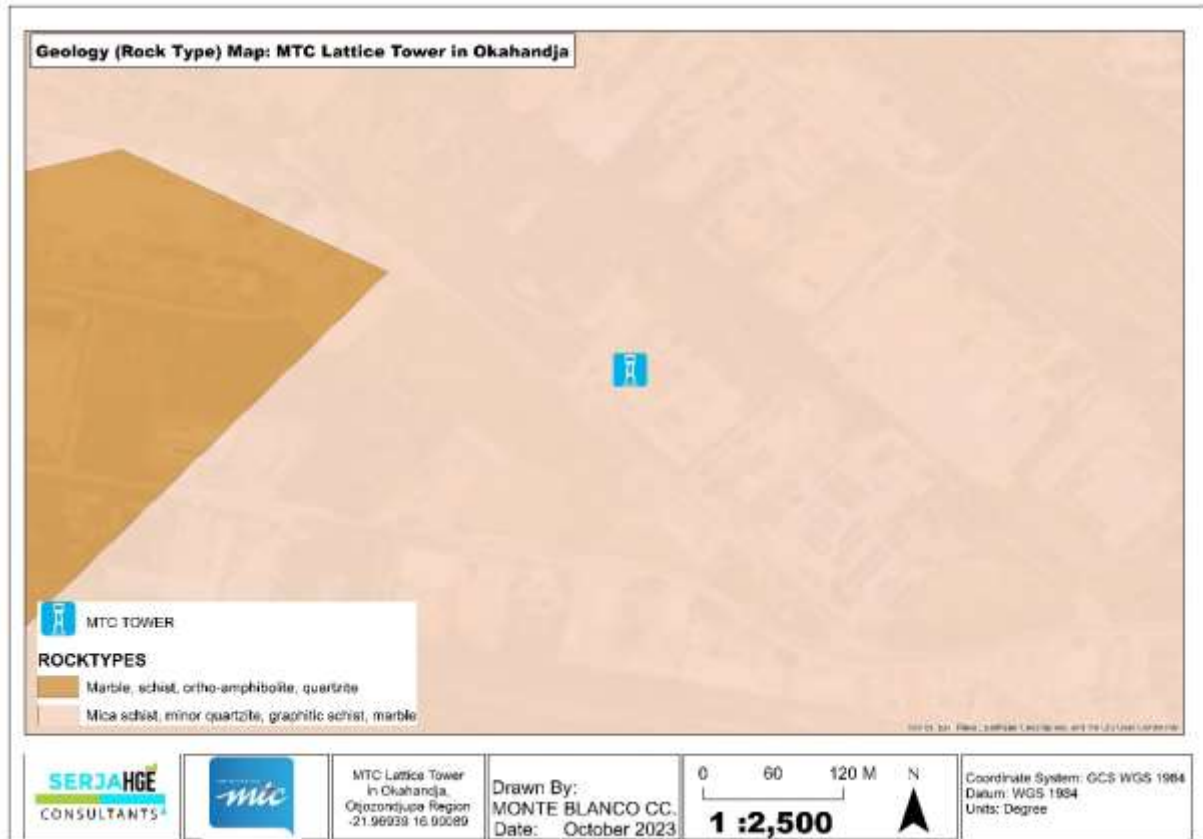
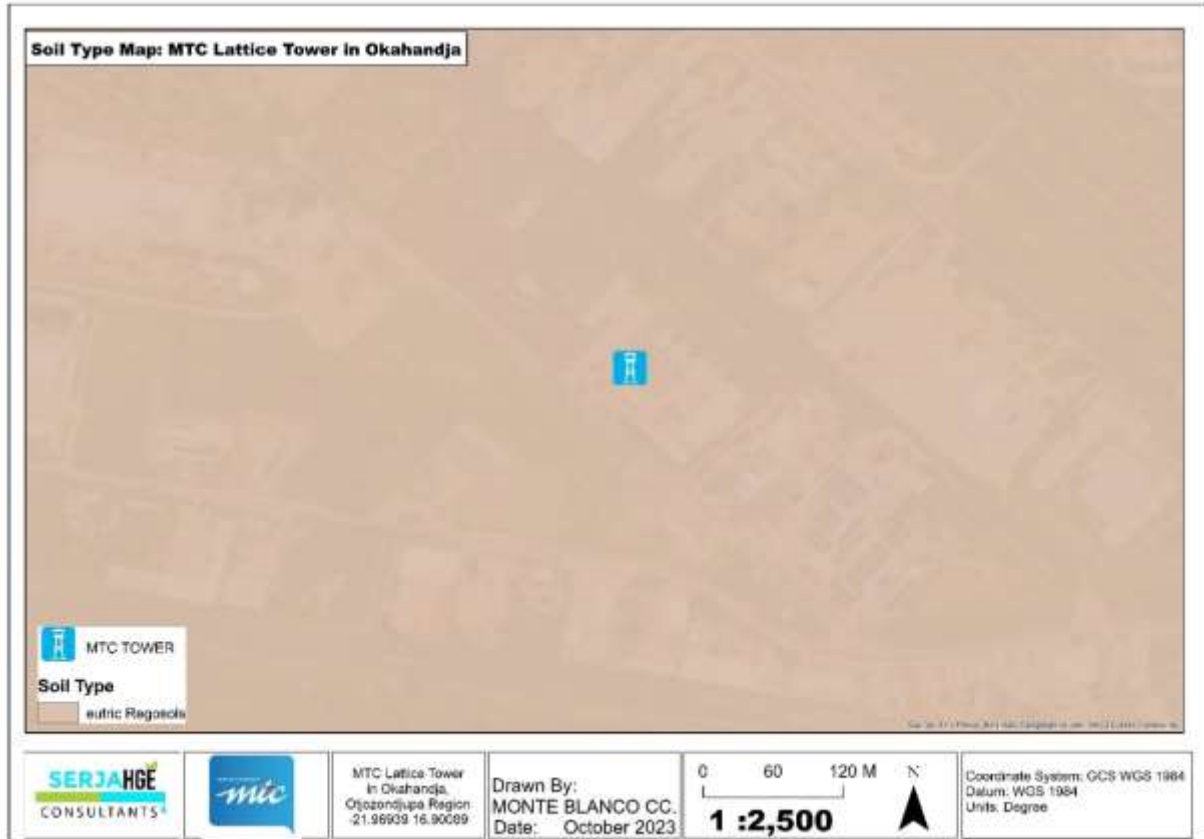


Figure 5-4: The geology of the site area

### 5.3.2 Site Soils

The site is overlain by eutric regosols as shown on the soil map in Figure 5-5. These type of soils are defined by Mendelsohn et al, (2002) as medium or fined textured soils of actively eroding landscape, especially in the thin layers lying directly above the rock surfaces from which they formed. Although not as shallow as the leptosols, these soils never reach depths of more than 50cm. The central regions of the country are dominated by regosols, which are especially susceptible to erosion where there is any degree of slope. The vegetation cover on these thin soils is generally sparse because they cannot provide most plants with sufficient water or nutrients. The areas with eutric regosols can support low-density stock farming or wildlife.





**Figure 5-5: The dominant soil types found within and around the site**

The soils observed are light-brown and grey sandy-loam soils with some gravel covered by grass. However, the site soils are influenced by anthropogenic activities as shown in Figure 5-6 below.



**Figure 5-6: The observed soils on and around the site**

## 5.4 Social and Economic Environment

### 5.4.1 Demography

According to the Namibia Statistics Agency (2014), the Otjozondjupa Region has a total population of 143,903 as per the 2011 National Population and Housing Census. Of the total population, 70,001 were females and 73,902 were males (Namibia Statistics Agency, 2014).

The site is in Okahandja which falls under the Okahandja Constituency has a population of 24,451 (12,352 females and 12,099 males). The constituency has a high literacy rate of 91%, with 52% having left school. Approximately 74% of the inhabitants in the constituency are economically active of which 60% are formally employed and 40% unemployed (Namibia Statistics Agency, 2014).

### 5.4.2 Economic Activities

According to the Namibia Statistics Agency (2014), the main source of income in households in the Okahandja Constituency is farming (10%), wages and salaries (60%), cash remittance (6%), business and non-farming (10%) and pension (9%).

According to Otjozondjupa Regional Council (2023), Okahandja has a strong economic base industry mainly in the constituency's capital, Okahandja Town, where all industries, factories and other related activities are. There are businesses such as plastic manufacturers of water pipes, water tanks; Okahandja Shopping mall and wood carvers market, diamond polishing company, wooden windows and door frames Prestige, Meatco abattoir for slaughtering cattle for local and international markets, industrial park, poultry farms, agricultural plots that produce vegetable for locals and Namibia at large, Namibian finest biltong is manufacturers are based in Okahandja. The Town is also home to several vegetable and flower farms that surrounds the towns. This produce is consumed locally and nationally and the rest are exported to South Africa and Europe. The newest edition to the industrial sector is Castle Brewing Namibia producing Castle Lager beer.

Furthermore, there is a good exhibition for marketing the tow as tourism and business trade hub. The exposition also provides networking opportunity for local, national and regional to visit and trade in Okahandja. On the other hand, the manganese mine is providing much needed employment to the highly unemployed population of Okahandja. In addition there are various small mining activities around the town that are also contributing economically to the town and constituency (Otjozondjupa Regional Council, 2023).

## 5.5 Surrounding Neighbours

The site (MAWLR property) is bordered to the immediate east by Colas Company which is further bordered by Namibia Plastic Converters. To the west of the site is the neighbor to AB-InBev Brewery, and to the



further south by Closwa Biltong Factory. To the north of the MAWLR property Northern Fuel Distributors- Okahandja which is bordered by Feinkost Foods further behind the site. Figure 5-7 shows photos of some of these neighboring properties to the site.



**Figure 5-7: Some of neighbouring properties to the site**

## 5.6 Infrastructure and Services

In terms of infrastructure, the Okahandja Town is well equipped with different good infrastructure and services and they are as follows (according to Otjozondjupa Regional Council, 2023):

- Road network: the Town is accessed by the main roads (B1) that connects the Okahandja to the northern and southern parts of the country. There are good street roads within the town that provide access to different economic institutions and public services. The local roads also connects the Town to surrounding areas via the B1 or local gravel roads.
- Electricity supply: the Central North Regional Electricity Distributor (CENORED) provides electricity infrastructure in both urban area, private farms and some tourism related facilities and in some part of communal areas in collaboration with the Rural Electrification.
- Water Supply: portable water is supplied by Namwater through pipeline to the town and nearby area while in some part of the rural areas such as Rudenau and those that are on the outskirts of Okahandja town depends mainly on borehole infrastructure.
- Sewage management: sanitation network is only provided in the formalized neighborhoods of the town and not in rural areas which are mainly the Rudenau and commercial farms.
- Telecommunication services: telecommunication facilities and infrastructure include NamPost, radio and TV coverage, mobile networks are good especially in the Town and nearby places.
- Aerodromes (airports/strips): there is an airport (Okahandja Airport (FYON) located about 6km south of the site (still needs to be renovated to regional standards). There is also an Osona Airstrip located about 17km south of the proposed site.
- Railway: There is a railway line passing through the Town and behind the site.
- Education and health services: there are four primary schools, two secondary school with one hostel for both girls and boys, two private schools, one police station, one hospital and one clinic and many of the government ministries. Furthermore, there is one private clinic, magistrate court, financial institutions, ministry of gender, military school, parastatals, churches, NamWater training institution, National Institute for Educational Development (NIED), Military Museum, library and many private institutions.

The main infrastructure near the site include the tarred road of the industrial north street that passes at the MAWLR gate towards the AB-InBev Brewery, tarred road that provide access to the site, railway line behind the MAWLR premises (property), powerline along the north industrial street passing at MAWLR premises (Figure 5-8).

The map of services and infrastructures near the proposed tower site and broader Town is shown in Figure 5-9.





Figure 5-8: The powerline and telephone line passing near the site area

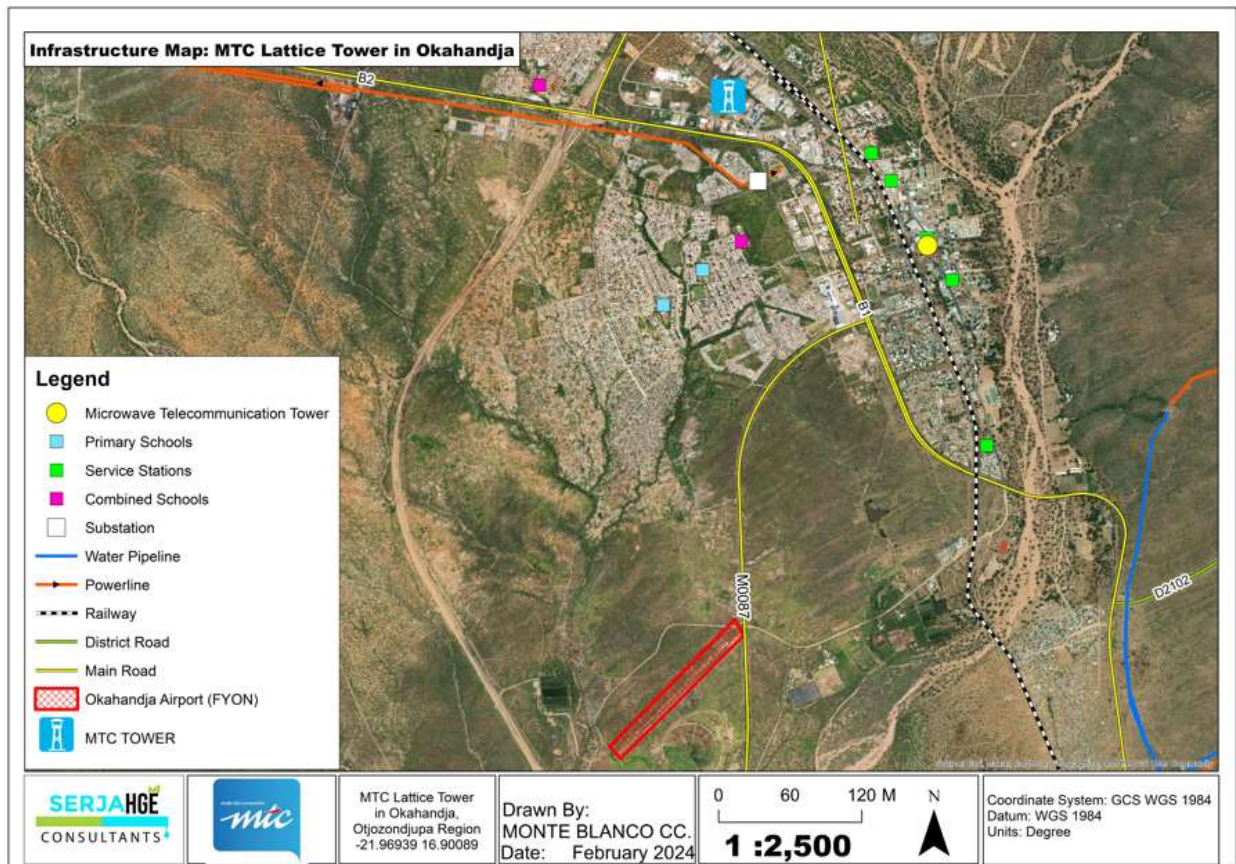


Figure 5-9: The infrastructure map of the site area

Further from the site (southwest) is the B1 road and one existing tower within 500m of the proposed site.

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

## 6 PUBLIC CONSULTATION AND PARTICIPATION PROCESS

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

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

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

### 6.2 Communication with I&APs, and Means of Consultation Employed

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

- A Background Information Document (BID) containing brief information about the proposed project was compiled and hand delivered to the MEFT accompanying the ECC application, and uploaded on the MEFT (ECC) Portal for project registration and shared with registered Interested and Affected parties (I&APs). The BID is attached hereto as Appendix C1.
- A Stakeholders' (I&AP) List was developed and updated as new I&APs register for the EIA. The BID was shared with the pre-identified key stakeholders from national to local levels via email alongside the invitation to the consultation meeting – Appendix C2.
- Project Environmental Assessment notices were published for two consecutive weeks in the *New Era* (on the 01<sup>st</sup> and 07<sup>th</sup> of February 2024) and Market Watch's *Die Republikein, Namibian Sun & Allegmeine Zeitung* (on the 01<sup>st</sup> and 08<sup>th</sup> of February 2024) – Appendix C3. The consultation period ran from the 01<sup>st</sup> of February to the 29<sup>th</sup> of February 2024.
- A3 size poster for public notice (Appendix C4) was compiled and pasted in Okahandja Town on the 06<sup>th</sup> of February 2024 at the following places (Figure 6-1 to Figure 6-4):

- Okahandja Municipality
- Okahandja Woermann Brock
- MAWLR' Otjozondjupa South Regional Service Office (site)
- Shoprite Mall Okahandja.



Figure 6-1: Public notice poster at the Municipality notice board in Okahandja

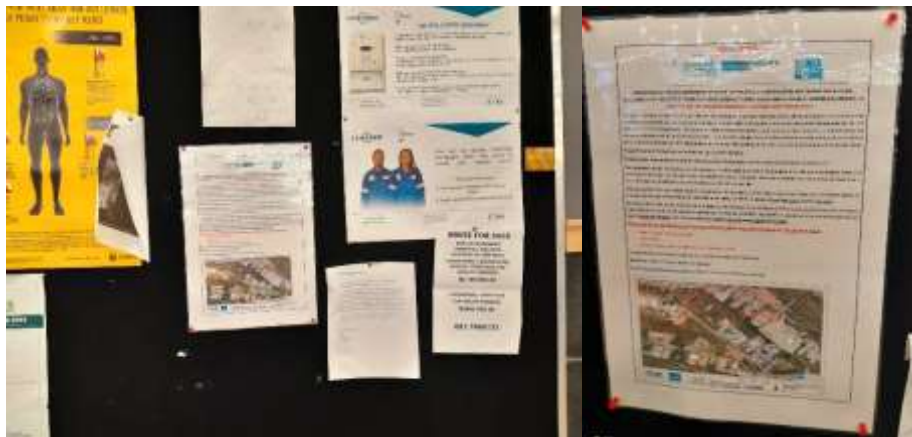
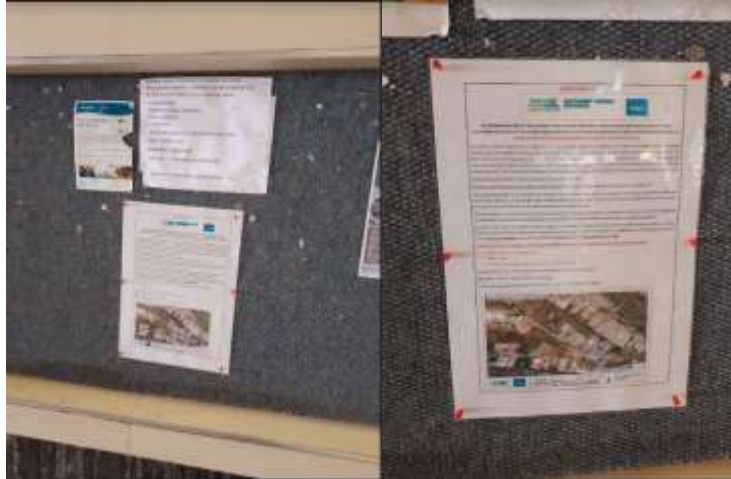


Figure 6-2: Public notice poster at Woermann Brock notice board in Okahandja



Figure 6-3: Public notice poster at the MAWLR Office (site) notice board in Okahandja





**Figure 6-4: Public notice poster at the Shoprite Mall community board in Okahandja**

- A consultation meeting was scheduled to be held in Okahandja on the 13<sup>th</sup> of February 2024 -. Invitations was sent to stakeholders including the identified neighbours to the site. However, only three people showed up at the meeting venue, comprising one EAP from Serja Consultants, an MTC representative and one personnel from the Okahandja Municipality as shown in Figure 6-5 below. The meeting purpose and project description were explained to the Municipal personnel in attendance. No comment was made or issue was raised nor recorded from the meeting.



**Figure 6-5: Consultation meeting in Okahandja on the 13<sup>th</sup> of February 2024**

- Face-to-face engagements were conducted with the available neighbours to the site (MAWLR – Otjozondjupa South Regional Services office). The engagements entailed the explanation of the EIA process, description of the proposed project and purpose of engagements. The BID copies were also distributed to the consulted representatives who were requested to sign the BID receipt register too – please refer to some photos that were taken with consent as shown in Figure 6-6.



**Figure 6-6: Face-to-face engagement with the available representatives of the neighbouring properties to the site on the 13<sup>th</sup> of February 2024 (A: Namibia Plastic Converters, B: Colas Namibia, C: Closwa Biltong Factory and D: AB-InBev Brewery)**

The attendance registers from the meeting and face-to-face engagements are attached as Appendix C5.

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 MAWLR – see Appendix D.

### **6.3 Feedback and Issues raised by the Stakeholders (I&APs)**

The consultation period ran from the 01<sup>st</sup> of February to the 29<sup>th</sup> of February 2024. No comments were received during the consultations and face-to-face engagements nor after the consultation.

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

## 7 IMPACTS IDENTIFICATION, ASSESSMENT AND MEASURES

### 7.1 Identification of Potential Impacts

The proposed project and its associated activities are usually associated with different potential positive and negative impacts. For an environmental assessment, the focus is placed mainly on the negative impacts that are likely to affect the host environmental 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 an 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 follow:

#### 7.1.1 Positive impacts (although temporary)

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

#### 7.1.2 Adverse (Negative) impacts

- Physical land / soil disturbance resulting in compaction and erosion
- Environmental pollution (littering).
- Potential health and safety risks associated with 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.
- Noise from construction activities.
- Civil Aviation concerns may arise regarding the height of the tower and the position and stability of transmitters, in relation to any civil aviation facilities in the tower's vicinity.
- Visual impact associated with the presence of the tower in the surrounding 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 accordance with Namibia's Environmental Management Act (No. 7 of 2007) and its Regulations of 2012, as well as the International Finance Corporation (IFC) Performance Standards.

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

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

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

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

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

The Criteria used to assess the potential negative impacts				
<b>Extent or (spatial scale)</b> - 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 site boundary: Regional	Impact extend National or over international boundaries
<b>Duration-</b> Duration refers to the timeframe over which the impact is expected to occur, measured in relation to 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 a qualitative type of criteria				
<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 of illness / total loss of habitat, total alteration of ecological processes, extinction of rare species	Substantial deterioration, death, illness or injury, loss of habitat / diversity or resource, severe alteration, or disturbance of important processes	Moderate deterioration, discomfort, partial loss of habitat / biodiversity or resource, moderate alteration	Low deterioration, slight noticeable alteration in habitat and biodiversity. Little loss in species numbers	Minor deterioration, nuisance or irritation, minor change in species / habitat / diversity or resource, no or very little quality deterioration.
<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:

$$\text{SP} = (\text{magnitude} + \text{duration} + \text{scale}) \times \text{probability}$$

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

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

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
<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) which will continue to support themselves and their families.	L / M - 2	L / M - 2	L / M - 4	L / M - 2	L - 16	M - 3	M / H - 4	L / M - 4	M / H - 4	M - 44
Accessibility to 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 technical expansion of businesses/industries 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
<b>Negative (Adverse) Impacts</b>											
Physical disturbance to the site soils (during construction)	The land clearing and excavations to enable the erection of structures, installation of infrastructure and movement of vehicles will potentially result in soil	M - 3	M / H - 4	L / M - 4	M / H - 4	M - 44	L / M - 2	L / M - 2	L - 2	L / M - 2	L - 12

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	disturbance leading to compaction of site soils. This will, however, be a short-term and localized impact.										
Environmental pollution (littering)	Solid and hazardous waste may be generated onsite 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 Health and Safety Risks	Potential health and safety risks associated with mishandling of construction and maintenance) equipment. Project personnel (workers) involved in construction activities, particularly may be exposed to health and safety risks. These would happen if heavy vehicle, equipment are not properly secured to prevent any harm or injury to the project personnel and people moving within the site premises.  The use of heavy equipment, especially during excavation, and erection of the tower	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>structures may result in accidental tripping and falling of such structures. This could pose a safety risk to 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>										
Health and safety issues related to Electromagnetic Radiation emitted from the tower antennae may affect human health	<p>Electromagnetic radiation is emitted from electrical appliances commonly used in most homes today, such as televisions, radios, cell phones, microwave, computers, etc. Studies showed that transceiver base stations emit weaker electromagnetic radiation than most household daily appliances i.e. microwave or cell phone used close to your body (Carstens and Kuliwoye, 2012).</p> <p>The health authorities around the world, including Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) and the World</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>Health Organization (WHO), have examined the scientific evidence regarding possible health effects from signal transmitting towers. Current research indicates that there are no established health effects from the low radio frequency electromagnetic emission (RF EME) exposure encountered by the public from broadcast towers (Australian Radiation Protection and Nuclear Safety Agency, 2015).</p> <p>Despite the above information from ARPANSA, the International Commission on Non-Ionizing Radiation Protection (ICNRP) provides guidance on 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 burn caused by touching conducting objects, and elevated tissue temperatures resulting from absorption of</p>										

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	<p>energy during exposure to EMF/EME.</p> <p><b>Short-term Radiation exposure:</b> the basic restrictions on the effects of exposure are based on established health effects. Different scientific bases were used in the development of basic exposure restrictions for various frequency ranges. Depending on the frequency, the physical quantities used to specify the basic restrictions on exposure to EMF are current density, SAR (Specific Energy Absorption Rate), and power density. For further information on the short-term effect.</p> <p><b>Long-term Radiation exposure:</b> in the case of potential long-term health effects of exposure, such as an increased risk of cancer, ICNIRP conducted 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</p>										



Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	<p>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 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 to 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 at 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</p>										

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

Impact	Impact Description	Impact Assessment									
		Pre-mitigation Rating					Post-mitigation Rating				
		Extent	Duration	Intensity	Probability	Significance	Extent	Duration	Intensity	Probability	Significance
	and or the road users driving along the industrial street.										
Noise from construction activities	There is a potential of noise from earthwork activities and vehicles for the tower foundation during construction, which may be a nuisance to locals within the site promises. Excessive noise without any protective measures in place can be also a health risk to workers on site. The construction equipment is of medium size and the noise level is bound to be limited to the site boundaries only.	L/M - 2	L/M - 2	M - 6	M/H - 3	M - 30	L - 1	L / M - 2	L - 2	L / M - 2	L - 10
Archaeological and Heritage resources	The earthworks to prepare the site for the tower erection may result in inadvertent uncovering of buried archaeological objects onsite. The impact is considered low due to the small footprint of the site. Therefore, upon implementation of the measures, the impact significance will be reduced to a negligible level.	M - 3	M - 3	M - 6	M / H - 4	M - 48	L / M - 2	L / M - 2	L - 2	L / M - 2	L - 12

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

## 8 RECOMMENDATIONS AND CONCLUSIONS

The EIA Study for the proposed tower was undertaken in accordance with the EMA and its 2012 EIA Regulations (Section 21 to 24 of the EIA Regulations) as follows:

- The EIA Study notices were published for two consecutive weeks in the *New Era* (on the 01<sup>st</sup> and 07<sup>th</sup> of February 2024) and Market Watch's *Die Republikein, Namibian Sun & Allegmeine Zeitung* (on the 01<sup>st</sup> and 08<sup>th</sup> of February 2024). The consultation period ran from the 01<sup>st</sup> of February to the 29<sup>th</sup> of February 2024.
- The A3 size posters were compiled and pasted in Okahandja Town on the 06<sup>th</sup> of February 2024 at the Okahandja Municipality, Okahandja Woermann Brock, MAWLR' Otjozondjupa South Regional Service Office (site), and Shoprite Mall Okahandja.
- A consultation meeting was scheduled to be held in Okahandja on the 13<sup>th</sup> of February 2024 -. Invitations was sent to stakeholders including the identified neighbours to the site. However, only three people showed up at the meeting venue, comprising one EAP from Serja Consultants, an MTC representative and one personnel from the Okahandja Municipality. The meeting purpose and project description were explained to the Municipal personnel in attendance. No comment was made or issue was raised nor recorded from the meeting.
- Face-to-face engagements were conducted with the available neighbours to the site (MAWLR – Otjozondjupa South Regional Services office). The engagements entailed the explanation of the EIA process, description of the proposed project and purpose of engagements. The BID copies were also distributed to the consulted representatives who were requested to sign the BID receipt register too.

**Impact identification and assessment:** Some key potential positive and negative impacts were identified by the Environmental Consultant based on project experience (since there no comments nor issues raised by I&APs during the consultation period). The potential impacts were described and assessed in this Report and mainly have a medium rating significance pre-implementation of mitigation measures. The management and mitigation measures to the impacts have been provided in the Draft EMP (in a form of action measure) for implementation by the Proponent, their contractors, and workers to avoid and/or minimize their significance on the environmental and social components. The effective implementation of the recommended management and mitigation measures accompanied by monitoring will particularly see the reduction in the significance of adverse impacts that cannot be avoided completely (from slightly high to medium rating and then low rating until negligible level) as follows:

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

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

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

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

- All the management and mitigation measures provided herein are effectively and progressively implemented.
- All required permits, licenses and approvals for the proposed activities should be obtained as required and ensuring compliance with associated specific legal requirements.
- Transparency in communication and continued engagement with the stakeholders, specifically the landowner (MAWLR) as well as other key stakeholders should be maintained before and throughout the project.
- The Proponent, their project workers or 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 – This will be required by the Environmental Commissioner (as part of the ECC conditions).

It can be concluded that some of the identified negative impacts may be significant, particularly during the operational phase, but, they would not hinder the proposed tower. 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 and 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 done 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 impacts significance is reducing and or maintain low significance rating but to also 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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