ENVIRONMENTAL IMPACT ASSESSMENT FOR THE PROPOSED TELECOMMUNICATION TOWER AT LISIKILI, ZAMBEZI, REGION- NAMIBIA.

ENVIRONMENTAL SCOPING REPORT

DATE: JAN 2025

REFERENCE NUMBER: 241019004900

D&P ENGINEERS
AND ENVIRONMENTAL CONSULTANTS
"Purpose with Passion"

PowerCom
(PTY) LTD



Proposed Construction & Operation of Lisikili Telecommunication Tower – Zambezi Region: Namibia

Environmental Scoping Report Prepared for:

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DEFINITIONS

TERMS	DEFINITION
BID	Background Information Document
EAP	Environmental Assessment Practitioners
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA (R)	Environmental Impact Assessment (Report)
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
EMPr	Environmental Management Plan Report
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&APs	Interested and Affected Parties
MET: DEA	Ministry of Environment and Tourism's Directorate of Environmental Affairs
NHC	National Heritage Council
NEMA	Namibia Environmental Management Act
ToR	Terms of Reference
UNFCCC	United Nations Framework Convention on Climate Change

i. Purpose of This Environmental Impact Assessment Report

This Environmental Scoping Report (ESR) follows the Scope of Work delineated by POWERCOM Pty Ltd. Existing information and input from commenting authorities, Interested and Affected Parties (I&APs) was used to identify and evaluate potential environmental impacts (both social and biophysical) associated with the proposed project.

Environmental flaws associated with the proposed project were identified through the ESR. A conscious decision was made based on the recommendations and guidelines of the Directorate of Environmental Affairs EIA guidelines to assess both significant and less significant environmental impacts proposed by the development. The developed Environmental Management Plan (EMP) for this proposed activity will have to be effectively implemented by the client, to ensure that adverse environmental impacts are avoided or brought to acceptable limits.

A detailed assessment of the anticipated impacts was undertaken by the Environmental Assessment Practitioner (EAP) to highlight any areas of concern regarding the proposed project during its construction, operation and decommissioning phase. In addition, an independent sensitivity mapping analysis was also undertaken to highlight the proposed development site's significant environmental aspects while noting the site's suitable and unsuitable (no-go) development footprint areas. This action guided the final footprint of the telecommunication tower.

This report will also be used to motivate and define the previously identified project alternatives (i.e. site, technology, and layout) based on the findings of the environmental baseline study and the suitability of the site to the type of development. This EIAR has been compiled in accordance with the regulatory requirements stipulated in the EIA Regulations (2012), promulgated in terms of the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007))

The ESR aims to:

- Provide an overall assessment of the social, physical, and biophysical environments of the area affected by the proposed establishment of the tower;
- Undertake a detailed environmental assessment, in terms of environmental criteria and impacts (direct, indirect, and cumulative), and recommend a preferred location for the proposed telecommunication tower (based on environmental sensitivity);
- Identify and recommend appropriate mitigation measures for potentially significant environmental impacts; and
- Undertake a fully inclusive Public Participation Process (PPP)
- GIS sensitivity mapping was conducted to identify potential impacts, propose mitigation and inform the sensitivity analysis.

ii. Assumptions And Limitations

The following assumptions and limitations underpin the approach to this EIA study:

- The information received from the stakeholders, desktop surveys, and baseline assessments are current and valid at the time of the study;
- A precautionary approach was adopted in instances where baseline information was insufficient or unavailable;
- Mandatory timeframes will apply to the review and adjudication of the reports by the competent authority and other government departments; and
- No land claims have been registered for the proposed site at the onset and registration of the study.

NB: The EAP does not accept any responsibility in the event that additional information comes to light at a later stage of the process. All data from unpublished research utilised for the purposed of this project is valid and accurate. The scope of this investigation is limited to assessing the potential biophysical, social and cultural impacts associated with the proposed project.

1. CHAPTER ONE: INTRODUCTION

1.1. Project background

Over the years Namibia has been witnessing a swift growth in mobile communication services, driving increased local demand for the expansion of telecommunications infrastructure. POWERCOM (PTY) LTD, hereafter referred to as the proponent, has identified various areas in Namibia requiring enhanced communication solutions due to population growth and increased economic activities. To address this need for improved telecommunication connectivity, POWERCOM has been commissioned by its sister company, Telecom Namibia, to establish telecommunication towers across multiple locations nationwide, including one at Lisikili village. This initiative aims to enhance connectivity, alleviate network congestion, and promote ICT development in rural and peri-urban areas. decongest connectivity and promote ICT in rural and peri-urban environments.

Telecommunication tower and related infrastructure developments are among listed activities that may not be undertaken without an Environmental Clearance Certificate (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:

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.

As the construction of telecommunication towers requires prior consent from interested and affected parties, as well as obtaining an Environmental Clearance Certificate, to fulfil these requirements, the Proponent has appointed D&P Engineers and Environmental Consultants cc, an independent team of Environmental Consultants to conduct the required Environmental Scoping Assessment (ESA) and compile this ESA Report and its draft Environmental Management Plan (EMP) in compliance with the Environmental Management Act No. 7 of 2007 and the Namibian Environmental Impact Assessment Regulations of 2012 for the telecommunication infrastructure development.

1.2. Project Location

The proposed site is located in the Lisikili area in Imukusi Wanyambe Sub-Khuta, Zambezi Region (17°33'01.9"S, 24°26'28.7''E) as shown in **Figure 1**, satellite image. The site is located in the Kabbe North Constituency under the Mafwe Royal Authority. It can be accessed from Katima Mulilo through the B8 road to Bukalo. The site is about 22km from Katima Mulilo and 36km to Bukalo via the B8 road via the Brendan Simbwaye road.

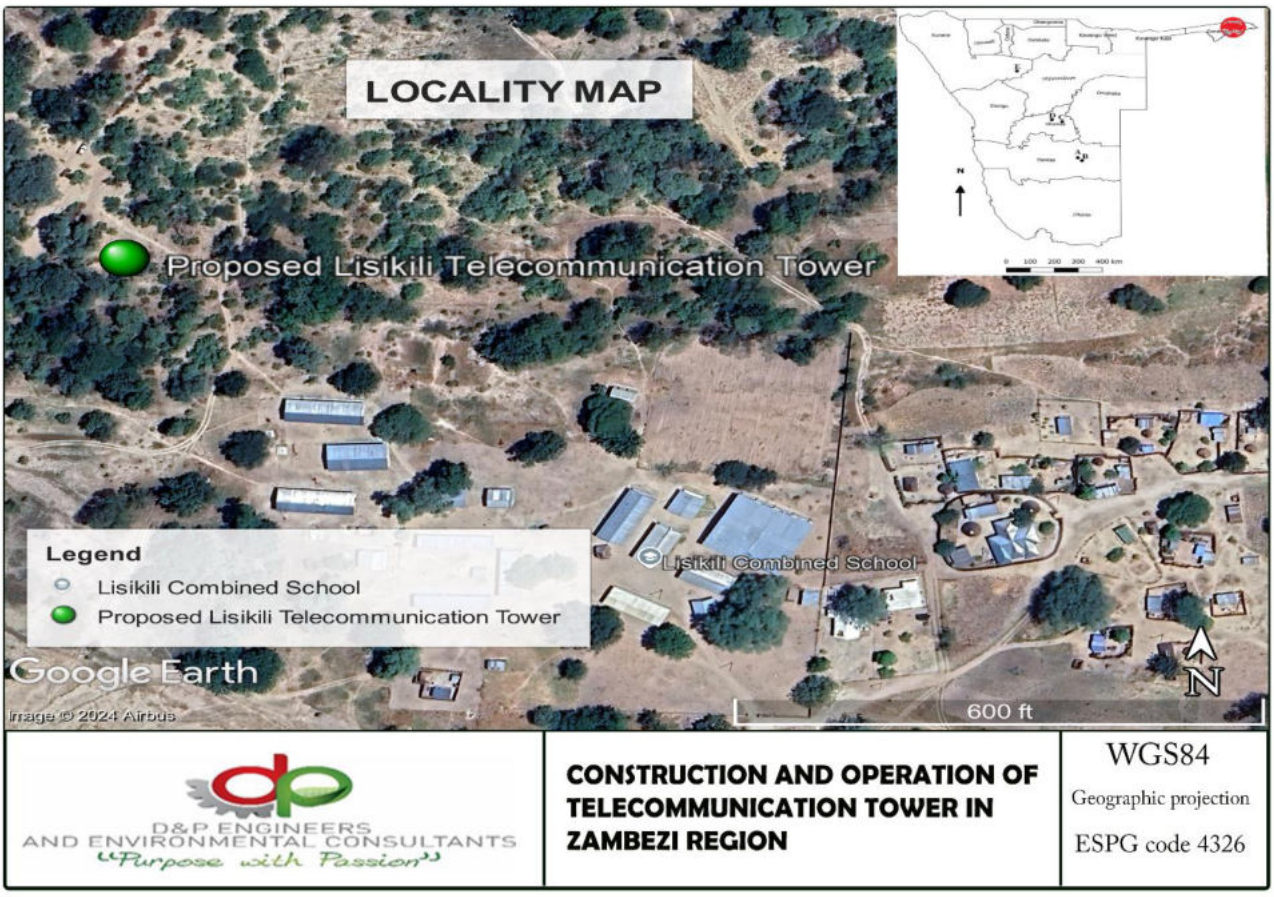

Figure 1: Satellite image of the Proposed telecommunication Tower, Lisikili Combined School, Zambezi Region

1.3. Development and Site Specification

POWERCOM (Pty) Ltd, a subsidiary of TELECOM Namibia, is spearheading a nationwide initiative to construct telecommunication towers. This effort aims to enhance internet and voice connectivity, expand the company's footprint and asset base, while providing ready-to-use infrastructure for telecommunication service providers. By targeting underserved areas with weak or no network coverage, POWERCOM plans to develop several telecommunication towers across the country, including a proposed site in Lisikili village in Zambezi region. Refer to **Appendix A** for locality Map and Layout of the towers).

The telecommunication tower development in Lisikili will include the following:

- Construction of a 80m lattice tower with a footprint size of a 14m x 14m area including network support structures;
- The site is to accommodate TN Mobile service and other service providers.
- The structure will be fenced to limit public access to it and it will be electrified to prevent vandalism.
- Access to the area will be strictly controlled through a locked gate as illustrated in the image below.

Figure 2: Typical Guyed lattice telecommunication tower structure (for visual purposes only) with guyed anchors for stability.

1.4. Proposed Site Ownership

The site is easily accessible from the B8 road Katima Mulilo – Bukalo road, 22km from town. From the B8 main road, the site can be accessed through the Brenden Simbwaye access road to the Lisikili village about 8km from the B8 road turn off junction. The actual site falls under the Kabbe North Constituency in the Mafwe Royal Establishment area. The selection of this site was driven by anticipated network shortfalls affecting mobile users in this area and its surrounding. Furthermore, several selection criteria's were used to identify the most suitable location for this tower in this village. As the site falls under the Kabbe North Rural Constituency, prior engagements have been made with the local authority and the Imukusi Wanyambe Sub-Khuta to request for leasehold agreement, which was later granted to the proponent to use the land for the tower construction. Approval for the tower was formally granted to Telecom Namibia in a letter dated 22 April 2023 **(Appendix C).** Location details are provided in Table 1 below.

Table 1 : Details of the proposed tower's localities

Site Name	LISIKILI
GPS Coordinates	17°33'01.9"S, 24°26'28.7''E
Local Authority	Kabbe North Constituency
Regional Administration	ZAMBEZI REGION

1.5. Terms of Reference (TOR) and Scope of Work

This Environmental Scoping Assessment (ESA) was conducted in accordance with the Environmental Management Act (EMA) (No. 7 of 2007) and its 2012 Environmental Impact Assessment (EIA) Regulations. Guided by the project's Terms of Reference, the scope of work included:

- Assessing the suitability of the proposed site for tower construction and identifying alternative sites if necessary.
- Conducting the required Environmental Scoping Assessment (ESA).

- Consulting all relevant interested and affected parties (I&APs).
- Preparing an ESA report and a draft Environmental Management Plan (EMP).
- Securing an Environmental Clearance Certificate for the proposed tower.

The primary objectives of the ESA are to:

- Identify, analyse, and assess the biophysical and socio-economic impacts of the proposed activity.
- Develop management action plans, detailed in the draft EMP, to help the Proponent and/or their contractors minimize negative impacts where avoidance is not possible and enhance positive outcomes.

1.6. The need for the Proposed Project

The ongoing growth of mobile communication services in Namibia has led to increasing demand and expansion of the communications network. PowerCom has identified the need for a new structure within the Zambezi region, Lisikili village to address this demand. The planned telecommunication tower will enhance network capacity, alleviate congestion, and improve coverage in the area. This development aims to ensure better service quality for telecommunication users in the region. Further criteria were also considered to validate the desirability and placement of this telecommunication tower, these included:

- Network voids/gaps: the tower site is strategically placed to cater the gaps in the network coverage
- Coverage and proximity to nearby tower: tower is said to cover a 30KM radius providing sufficient connectivity to residents of Lisikili village and beyond
- Land suitability: The site is easily accessible by road, well placed to serve local services such as the school, local authority office, church, clinic, residential area and other businesses. The site is also well placed close to an electrical connection (grid) to power the tower components.
- Etc.

Based on the above, the preferred site was selected. Consequently, no additional site location alternatives were considered as part of the Environmental Impact Assessment (EIA) process.

1.7. Appointed environmental Assessment Practitioner

To comply with the requirements of the Environmental Management Act (EMA) and its 2012 Environmental Impact Assessment (EIA) Regulations, the Proponent engaged an independent team of Environmental Consultants from D&P Engineers and Environmental Consultants cc (hereinafter referred to as, the Consultant, or Environmental Assessment Practitioner (EAP) to undertake the required ESA process on their behalf. The findings of the ESA process are documented in this Report. The ESA Report, along with the Draft Environmental Management Plan (EMP) and supporting documents, will be submitted as part of an application for an Environmental Clearance Certificate (ECC) to the Environmental Commissioner at the Department of Environmental Affairs and Forestry (DEAF).

The ESA project is led by Mr. Tendai Kasinganeti, a qualified and experienced Environmental Assessment Practitioner (EAP). The ESA process, this Report, and the Draft EMP were compiled by Ms. Erikka Mokanya. The EAP's curriculum vitaes are included in **Appendix E.**

2. CHAPTER TWO: PROJECT DESCRIPTION AND PROPOSED ACTIVITIES

2.1. Planning and Design Phase

All contractors venturing in the development of telecommunication towers in Namibia are required to take into account some planning and design factors. Proponent was guided by the Communications Act No. 8 of 2009 to seek all necessary licencing and regulatory compliances. All necessary permits and approvals from all relevant authorities such as the Communication Regulatory Authority of Namibia (CRAN), Ministry of Environment, Forestry and Tourism and the Ministry of Information and Communication Technology (MICT) supported by consents from interested and affected parties (I&APs) through an EIA process were sought. A comprehensive EIA study was also conducted as per the Environmental Act. No. 7 of 2007 and its regulations to ensure that potential impacts on biodiversity, soil, water, and air quality are assessed and mitigated. The assessment also provided an opportunity to ascertain that all alternatives to minimizing environmental footprint are considered and negative impacts are controlled by following the developed Environmental management Plan (EMP).

Site selection and zoning was another important factor that the proponent considered during this phase. To ensure tower security, a suitable location for this tower was selected taking into account land-use and zoning regulations. Prior consultations with the local authority offices were also done to obtain consent over the use of the land. This process also includes the consultation of I&APs, which includes local communities, government authorities and other relevant stakeholders. This process was key in addressing potential concerns (health, anaesthetics, property value etc) related to the proposed development, security of land access and use including lease and ownership rights.

In terms of the technical aspects, the proponent took into account the technical requirements for optimal coverage and capacity, including tower height, antennae type, and power supply.. To minimize infrastructure overload, co-location of equipment was considered to minimize the number of towers, reduce costs, and mitigate visual and environmental impacts, however due to lack of available infrastructures a new tower was proposed for development. The proposed tower is 80m high, with a footprint of 14m^2 which will cater for the tower and its associated accessories.

2.2. Construction Phase

Typically the construction of the tower is expected to take about one month, and minimal earthworks will be required to prepare the site. The site will be cleared, levelled, and marked for the tower's foundation. During this time a fence will be demarcated around the construction area to secure the area and to ensure that access to the tower is only limited to authorised personnel. Fencing will also prevent vandalism of the tower and it associated accessories. The tower's foundation will be constructed using reinforced concrete to ensure structural stability and proper grounding (earthing) will be integrated into the foundation to protect it against lightning strikes.

The tower structure will be assembled on-site, often using manual labour. All technical work will be carried out by an appointed contractor, who will work during weekdays, preferably between the hours of 08h00 and 17h00. The number of workers expected for this work will depend on the local contractors appointed and their standard human capacity for development of the project. Preference for the construction works will be given to locals, i.e. contractors from Zambezi Region whenever possible. All non-skilled labour will also be given to local residents

(from Lisikili village). No workers will be housed on site, necessary accommodation (where needed) will be arranged for all workers. For safety reasons, the appointed contractor will be responsible for providing appropriate Personal Protective Equipment (PPE) to all workers during construction.

2.3. Project input and Resource Requirements

2.3.1 Project Personnel and Accommodation

The exact number of workers required for the tower's construction will be determined by the appointed contractor after the Environmental Clearance Certificate (ECC) is issued. The workforce will include skilled, semi-skilled, and unskilled personnel as needed. Priority for unskilled labour will be given to local residents, preferably those living near the tower site in Lisikili village.

2.3.2 Waste Management

Construction waste, such as packaging, scrap metal, and concrete debris, will be properly managed and disposed of according to environmental regulations. All hazardous materials, if any, will be handled with special care. The proponent will enforce the availability of portable toilets for the construction team, during the duration of the construction phase. Chemical toilets with sealed septic tanks will be used as ablution facilities and the sewage waste handled according to the manufacturer's instructions of the facility provided.

2.3.3 Water Supply

A minimal amount of water will be required during construction, primarily for drinking and for use in the in-situ concrete mixture. The water will mainly be utilized during the foundation casting phase. The water will be sourced from the rural water supply points (borehole and/or other water infrastructures) subjected to an agreement with the local communities and other relevant local water management committee bodies.

2.3.4 Power Supply

No electricity is required during the construction of the tower. However, it will be required during the operational maintenance phase of the tower. This tower is strategically placed close to a local transformer and to which it will be connected to ensure power will be available for operational maintenance of the tower.

2.3.5 Health and Safety

All project and construction personnel will be provided with adequate and appropriate Personal Protective Equipment (PPE) while working on site. For safety purposes a first aid kit will be readily available at the site for emergency purposes. Basic fire-fighting equipment such as fire extinguisher will be available on site and in all construction vehicles.

2.3.6 Site Access (Roads)

The site is located in Lisikili village, close to the Lisikili Combined School. The site can be reached through the Brenden Simbwaye road a connecting road from the B8 Katima Mulilo-Bukalo road. The site is about 22 km south east of the Katima Mulilo town. The site can be accessed through the Brenden Simbwaye tarred road and a local dirt road that leads up to the Lisikili Combined School. From the Lisikili Combined school, the proposed site is about 200m away from the school in the northern direction from the school. Local existing roads that serve current services such as education, health and other basic services will be used by the construction team.

2.3.7 Fencing

For safety and security reasons, the tower site will be fenced off. This will also be done to ensure that access to the tower is limited to authorized personnel (such as maintenance team) only and to prevent vandalism of the tower and their associated accessories/structures.

2.4 Site rehabilitation (post construction) and decommission phase

Once construction phase has been completed, the associated works will be ceased, and site cleaned up in preparation for the next phase (operations). The Proponent will need to properly decommission the construction works and rehabilitate disturbed site. The aim is to ensure that the project related disturbed site areas are left close to their pre-work state as much as possible.

The activities to be carried out to clean up and rehabilitate the site post-construction are as Follows::

- Dismantling and removal of all temporary infrastructures and structures (erected or set up to support construction) that will no longer be required for the operational and maintenance phases. These will be transported to designated storage facilities offsite.
- Removal of all construction related vehicles, machinery, and equipment from site to designated parking and storage site off site, respectively.
- Carrying away the waste storage containers and disposal of waste to the designated local approved waste management site in Windhoek.
- If any, closure of all onsite access roads that may have been created for the construction phase and no longer required for operational phase.
- Levelling of all stockpiled topsoil and where possible, backfilling of all construction excavated pits and trenches, respectively.

(Detailed information is captured in the EMP)

Decommissioning of the network tower is not anticipated given the demand of mobile communication and other associated services. In the case of decommissioning recommendations will be provided in the impact assessment chapter and EMP.

2.5 Operational and Maintenance Phase

This is the phase during which the tower and its associated infrastructure will be operational and providing telecommunication signal to the residents of Lisikili and other neighbour villages. Maintenance of the tower is to be carried out by the Proponent's Maintenance Department, as and when required. No onsite accommodation will be required during this phase, as the maintenance works are not expected to last for more than a day. In the event that maintenance works are lasting more than one day, accommodation arrangements are to be made by the Proponent for their maintenance team. The Proponent is to ensure that all employees carrying out maintenance works on site are provided with appropriate Personal Protective Equipment (PPE).

3. CHAPTER THREE: TOWER INFRASTRUCTURE ALTERNATIVES

The EAP took time to assess the project alternatives for this site. Both technical, economical, and environmental factors including the rationale for choosing the preferred tower were considered. For this very site a 80m lattice tower was chosen considering both technical, economic and environmental factors. While there may be several other types of telecommunication towers design and forms, this particular tower was selected to make sure network connectivity in the Lisikili area and its surroundings is good and does not overshoot.

Below were alternatives that were considered for the proposed project in Lisikili village:

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 site remains unchanged with poor to no network/communication signal. Should the proposed project be discontinued, the poor to no network coverage in Lisikili will continue and there will be no improvement in local socio-economic development, in terms of communications services in this area.

Taking this into account, and the anticipated benefits that the proposed project will have on the local communities, the no-go option is not a preferred option.

3.2 Tower Location

Prior to the EIA process consultations were made with the local authority and the Imukusi Wanyambe Sub-Khuta community by Telecom Namibia to engage them on suitable spots and areas for the network placement. Before this, potential site were already identified by Telecom Namibia by using radio planning tools which PowerCom then applied for to construct this tower. The sites were selected looking at the network coverage and how the tower would address any network coverage issues in this part of Lisikili. The community expressed their approval of the tower through a consent letter directed to Telecom **(See Appendix C).** During the EA process, the local community expressed its gratitude on the location of the tower stating that it would serve the school and other key services in the area.

3.3 Tower sharing

As per the Communications Act No. 8 of 2009 service providers are required to share existing telecommunication infrastructures before new ones can be constructed. This is so that minimal damage to the environment is done and existing infrastructures are used to their full potential, thus minimizing costs. In Lisikili, network coverage has been a challenge as noted from I&APs during the EIA process and stability has been a challenge. Therefore, the lack of existing telecommunication infrastructure in the proposed area calls for a new telecommunication tower. It is for this reason that the proposed tower (new structure) need to be erected (constructed) so that they can be potentially used (or shared) in future with similar services providers, thus promoting infrastructure sharing as per the Communications Act.

Taking the above factors into consideration, the preceding alternative analysis and options, the project will go ahead and will ensure maximum environmental and safety performance systems are enforced during all phases of the project.

4. CHAPTER FOUR: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

4.1. Overview

An important part of the EIA is identifying and reviewing the administrative, policy, and legislative frameworks concerning the proposed activity, to inform the proponent about the requirements to be fulfilled in undertaking the proposed project. This section looks at the legislative framework within which the proposed development will conform; the focus is on compliance with the legislation during the planning, construction, and operational phases. All relevant legislations, policies, and international statutes applying to the project are highlighted in the table below as specified in the Environmental Management Act, 2007 (Act No.7 of 2007) and the regulations for Environmental Impact Assessment as set out in the Schedule of Government Notice No. 30 (2012).

Table 2: Policy, Legal and Administrative Framework

LEGISLATION/POLICY/GUIDING DOCUMENT	RELEVANT PROVISION	PROJECT IMPLICATION
The Constitution of the Republic of Namibia (1990)	The articles 91(c) and 95(i) commits the state to actively promote and sustain the environmental welfare of the nation by formulating and institutionalizing policies to accomplish the sustainable objectives which include: • Guarding against overutilization of biological natural resources, • Limiting over-exploitation of non-renewable resources, • Ensuring ecosystem functionality, • Maintain biological diversity.	Through the implementation of the environmental management plan, the proposed development will be conformant to the constitution in terms of environmental management and sustainability, by bringing development in an environmentally sensitive way.
Vision 2030 and National Development Plans	Namibia's overall Development ambitions are articulated in the Nations Vision 2030. At the operational level, five-yearly national development plans (NDP's) are prepared in extensive consultations led by the National Planning Commission in the Office of the President. Currently the Government has so far launched a 4th NDP which pursues three overarching goals for the Namibian nation: high and sustained economic growth; increased income equality; and employment creation.	The proposed project is an important element in the propelling and connectivity in the country.
Environmental Assessment Policy of Namibia 1994	The Environmental Assessment Policy of Namibia requires that all projects, policies, Programmes, and plans that have detrimental effect on the environment must be accompanied by an EIA. The policy provides a definition to the term "Environment" broadly interpreted to include biophysical, social, economic, cultural,	The construction and operation of the tower will only commence after being awarded an environmental clearance certificate, thus by abiding to the requirements of the Environmental Assessment Policy of Namibia. The EIA and EMP will cater for the sustainable management of biophysical environment.

	historical and political components and provides reference to the inclusion of alternatives in all projects, policies, programmes and plans.	
Environmental Management Act No. 07 of 2007	The Act aims at • Promoting the sustainable management of the environment and the use of natural resources by establishing principles for decision-making on matters affecting the environment; • To provide for a process of assessment and control of projects which may have significant effects on the environment; • The Act gives legislative effect to the Environmental Impact Assessment Policy. Moreover, the act also provides procedure for adequate public participation during the environmental assessment process.	This document is compiled in a nature that project implementation is in line with the objectives of the EMA. EIA guiding procedures developed by MEFT were also used in the course of this project.
Electricity Act 4 of 2007	• Requires that any generation and or distribution complies with laws relating to health, safety and environmental standards (s 18(4)(b) • In the event that exemption from acquiring a license is granted, the Minister may impose conditions relating to public health safety or the protection of the environment.	Obliges Powercom to comply with all relevant provisions of the EMA and its regulations when installing electrical connections to the tower.
The Atomic Energy and Radiation Protection Act, Act 5 of 2005:	Provides for the adequate protection of the environment and of people 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 according to the standards set out by the ICNIRP.	To determine the "safe distance" around the site. Installation of the network transmitter will be done in accordance with the safety protocols required for non-ionizing radiation protection.
Hazardous Substances Ordinance 14 of 1974 Regulations Made In Terms Of Hazardous Substances Ordinance 14 of 1974 sections 3 and 27	To provide for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; to provide for the division of such substances into groups in relation to the degree of danger; to provide for the prohibition and control of the importation, manufacture, sale, use, operation,	Powercom will have to conform to this Act and its regulations through application for relevant licenses with the relevant bodies highlighted thereto.

	application, modification, disposal or dumping of such substances; and to provide for matters connected therewith.	
Civil Aviation Act No. 74 of 1962	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.
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 structures may be obstacles to some aerodromes in Namibia. Those 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.	Cell phone towers and other antenna installations are usually located on rooftops, towers, and utility poles. Cell phone towers operate at a higher power than cell phones but the radiofrequency EMF they emit is much further away from your body. This means your exposure from such antennas is usually much lower than the exposure level from using a cell phone.
Soil Conservation Act 76 of 1969	The objectives of this Act are to: • Make provisions for the combating and prevention of soil erosion, • Promote the conservation, protection and improvement of the soil, vegetation, sources and resources of the Republic.	The project will have a rather localized impact on soils and the soil through clearance for the tower platform. Soil protection measures will be employed and preservation of trees as much as possible.
Protected Areas and Wildlife Management Bill	This bill, when it comes into force, will replace the Nature Conservation Ordinance 4 of 1975. The bill recognizes that biological diversity must be maintained, and where necessary, rehabilitated and that essential ecological processes and life support systems be maintained. It protects all indigenous species and control the exploitation of all plants and wildlife.	Environmental recommendations and considerations on this project have ensured that the proposed activities will not fall within the boundaries of any protected area and that the project will not affect heavily endangered vegetation and animals on its site.

Forest Act, 2001 (Act No. 12 of 2001)	The Act gives provision for the protection of various plant species through the Ministry of Agriculture, Water and Forestry (MAWF), Directorate of Forestry).	The site has a few palm trees which will not be removed to pave way for development.
National Rangeland Policy and Strategy, 2012	The policy aims at enabling resource users (farmers and managers) to manage their rangeland resources in a sustainable manner and sustainable in that they are economically viable, socially acceptable, environmentally friendly and politically conducive.	This proposed project will ensure that the local community benefits both economically and socially from the project, this in line with the recently declared Harambee Prosperity Plan and NDP 4&5.
National Biodiversity Strategy and Action Plan (NBSAP2)	The action plan was operationalised in a bid to make aware the critical importance of biodiversity conservation in Namibia putting together management of matters to do with ecosystems protection, biosafety, biosystematics protection on both terrestrial and aquatic systems.	The project proponent has been advised by DPEE and recognises the need for ecosystem protection to manage the changing climatic environment. This project is one of the drivers to reduce the rate of global environmental change given its contribution, to decreased use of burning fossil fuels for energy generation.
Wetland Policy, 2004	The policy provides a platform for the conservation and wise use of wetlands, thus promoting inter-generational equity regarding wetland resource utilization. Furthermore, it facilitates the Nation's efforts to meet its commitments as a signatory to the International Convention on Wetlands (Ramsar) and other Multinational Environmental Agreements (MEA's).	In compliance to this Policy, the development will ensure a standard environmental planning such that it does not affect any wetlands within its locale through recognition of wetlands to promote the conservation and wise utilization of wetlands resources. There is an existing water channel within 500m radius of the proposed project site.
Water Resources Management Act, 2013 (Act No. 11 of 2013)	This Act provides for the management, protection, development, use and conservation of water resources. This also forms the regulation and monitoring of water resources.	The proposed development will get water from the existing water infrastructure.
National Heritage Act 27 of 2004	Heritage resources to be conserved in development.	During the project implementation as soon as objects of cultural and heritage interests are observed such as graves, artefacts and any other object believed to be order than 50 years, all measures will be taken protect these objects until the National Heritage Council of Namibia have been informed, and approval to proceed with the operations granted accordingly by the Council.
National Monuments Act of Namibia (No. 28 of 1969) as amended until 1979	"No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: (a) any meteorite or fossil; or	The proposed site of development is not within any known monument site both movable or immovable as specified in the Act, however in such an instance that any material or sites or archeologic importance are identified, it will be the responsibility of the developer to take the required route and notify the relevant commission.

	(b) any drawing or painting on stone or a petroglyph known or commonly believed to have been executed by any people who inhabited or visited Namibia before the year 1900 AD; or (c) any implement, ornament or structure known or commonly believed to have been used as a mace, used or erected by people referred to in paragraph (b); or (d) the anthropological or archaeological contents of graves, caves, rock shelters, middens, shell mounds or other sites used by such people; or (e) any other archaeological or palaeontological finds, material or object; except under the authority of and in accordance with a permit issued under this section.	
Pollution Control and Waste Management Bill	This bill has not come into force. Amongst others, the bill aims to "prevent and regulate the discharge of pollutants to the air, water and land" Of particular reference to the Project is: Section 21 "(1) Subject to sub-section (4) and section 22, no person shall cause or permit the discharge of pollutants or waste into any water or watercourse." Section 55 "(1) No person may produce, collect, transport, sort, recover, treat, store, dispose of or otherwise manage waste in a manner that results in or creates a significant risk of harm to human health or the environment."	To control air, water and land pollution as agitated by the Act the project proponent will ensure that the development will prevent pollution in all forms during construction and operation phases.
Regional Council Act (NO. 22 OF 1992)	This Act sets out the conditions under which Regional Councils must be elected and administer each delineated region. From a land use and project planning point of view, their duties include, as described in section 28 "to undertake the planning of the	The relevant Regional Councils are considered to be Interested & Affected Parties and must be consulted during the Environmental Assessment (EA) process. The project site fall under the Zambezi Regional Council; therefore, they should be consulted.

	development of the region for which it has been established with a view to physical, social, and economic characteristics, urbanisation patterns, natural resources, economic development potential, infrastructure, land utilisation pattern and sensitivity of the natural environment. The main objective of this Act is to initiate, supervise, manage, and evaluate development.	
Public Health Act (No. 36 of 1919)	Section 119 states that "no person shall cause a nuisance or shall suffer to exist on any land or premises owned or occupied by him or of which he is in charge any nuisance or other condition liable to be injurious or dangerous to health."	The Proponent and all its employees or contractors should ensure compliance with the provisions of these legal instruments.
Health and Safety Regulations GN 156/1997 (GG 1617)	Details various requirements regarding health and safety of labourers.	
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.	The Proponent and their contractors should ensure that the project infrastructure, vehicles, equipment, and machinery are designed and operated in a way that is safe, or not injurious or dangerous to public health and that the noise which could be considered a nuisance remain at acceptable levels. The Proponent should ensure that the public as well as the environmental health is preserved and remain uncompromised.
Communications Act, 2009 (Act No. 8 of 2009)	• (10) The Authority may impose specific obligations and requirements on a licensee regarding to masts,	As a pre requisite, telecommunication towers would require environmental clearance certificates and, in this respect, Powercom authorised this EIA to obtain such.

	towers or other facilities including requirements relating to the • environmental or aesthetic impact of such facilities;	
Communication Bill 2009	• Provide for the regulation of telecommunication activities. The bill provides licencing and enforcement of conditions, and the approval or equipment and technical standards to ensure public health and safety.	As per relevant spectrum, network equipment should be as per licenses.
Convention on Biological Diversity (CBD)	• Namibia is a signatory of the Convention on Biological Diversity and thus is obliged to conserve its biodiversity.	The project will preserve tree species on as part of their plans for greed and sustainable development.
United Nations Convection to combat Desertification	Namibia is bound to prevent excessive land degradation that may threaten livelihoods.	It will be the responsibility of the proponent to conserve vegetation on and around the area, to avoid encroachment of the desert environs in the area.
Local Authorities Act No. 23 of 1992	To provide for the determination, for purposes of local government, of local authority councils; the establishment of such local authority councils; and to define the powers, duties and functions of local authority councils; and to provide for incidental matters.	The Windhoek Municipality is the Local Authority responsible for the project site. Therefore, the Municipality should ensure that the network tower establishment activities are in compliance with the Act and its Regulations, as relevant to the proposed project
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. Should the Proponent wish to undertake activities involving road transportation or access onto existing roads, the relevant permits will be required.	Mitigation measures should be provided for since the project activities will make use of the public roads.

5. CHAPTER FIVE: ENVIRONMENTAL BASELINE

In this chapter, the findings of the EIA Team on baseline surveys, public consultation, and desk reviews are undertaken with respect to the ecology, society, economy, and geo-political setup of the proposed project area. The geological makeup and meteorology of the project site will also be discussed in this chapter to give an in-depth understanding of the project area in question.

5.1. Socio-Economic status

Population: Lisikili is a settlement in Zambezi Region, located approximately 22 kilometers southeast of the regional capital, Katima Mulilo. According to available data, Lisikili has a population of around 2,000 resident.

Land uses: Lisikili has a mix of land uses that reflect the rural setting and agricultural focus of the region. The main land uses in Lisikili Village typically include subsistence Farming. A significant portion of the land is used for small-scale farming, where local residents grow crops such as maize, millet, and vegetables for personal consumption and sale. Livestock such as cattle, goats, and chickens are kept by many households. This type of farming is crucial for the livelihoods of the community. Residential areas are spread throughout the village, with basic housing structures made from local materials like wood, brick, and thatch. These are often clustered near roads and water sources. Given its location in the Zambezi Region, parts of Lisikili are near wetland areas and floodplains which are important for the local ecosystem. These areas may not be used for farming year-round due to seasonal flooding but support diverse flora and fauna. The surrounding environment consists of **savannas**, **woodlands**, and **grasslands**, providing natural resources for fuel, construction materials, and grazing land for livestock.

Service infrastructure: Land in Lisikili is also used for community infrastructure like schools and health posts, though these services are often limited in rural areas. In terms of roads and access routes, there is land allocated for essential infrastructure, including roads, to connect the village with Katima Mulilo and other parts of the region.

Figure 3: Lisikili Primary School and a transformer sighted next to the school

5.2. Climate

Zambezi region in general has a subtropical climate characterized by distinct wet and dry seasons. The wet seasons runs from November to March with rainfall averages between 600 mm and 1,000 mm annually, making this region one of the wettest in Namibia. The region has a high humidity levels supporting agriculture and the growth of lush vegetation. The dry Season of the region runs between April to October with warm, sunny days and cooler nights. Temperatures ranges from 10°C during cooler nights to 35°C on hot days. This season sees minimal rainfall and is more arid compared to the wet season. The climate is generally humid, especially during the wet season when rainfall is frequent, leading to high levels of moisture in the air. During the dry season, the humidity decreases, and the region can experience dry, dusty conditions. Wind patterns are generally calm, with occasional breezes during the hotter months. However, during the wet season, thunderstorms can bring more intense winds. This climate fosters a unique ecosystem, supports subsistence farming, and makes the Zambezi Region distinct from the drier regions of Namibia.

Lisikili Village experiences a tropical climate with distinct wet and dry seasons. The climate is influenced by its proximity to the Zambezi River and its location in the northeastern part of Namibia. The village has hot temperatures year-round, with the hottest months being October through December. During these months, daytime temperatures can reach 30°C to 35°C or higher. Cooler months occur between May and August, with daytime temperatures ranging from 20°C to 25°C. Nights can get chilly during the cooler months, dropping to around 10°C. Lisikili experiences a seasonal rainfall pattern, typical of the Zambezi Region. The wet season typically runs from November to April, with the heaviest rains occurring between December and March. During this time, the village can receive significant rainfall, with annual rainfall ranging from 600 mm to 1,000 mm. The dry season spans from May to October, with minimal rainfall, and is characterized by hot, dry conditions.

5.3. Topography

The Zambezi Region and Linyanti within it are characterized by diverse and unique topographical features that contribute to the region's ecological and cultural significance. Zambezi Region has flat and expansive floodplains formed by the Zambezi, Kwando, Linyanti, and Chobe Rivers. These rivers create a network of wetlands, swamps, and channels. The floodplains are critical for agriculture and wildlife, especially during the wet season. The region's elevation ranges from 950 to 1,100 meters above sea level, giving it relatively low-lying terrain compared to other parts of Namibia. Beyond the floodplains, the region transitions into wooded savannas and grasslands, with gentle undulations and occasional sandy ridges.

Lisikili village has a relatively flat topography, typical of the region's floodplains and low-lying areas. The key features of the topography in Lisikili include: Floodplains and Wetlands. The village is located within the Kwando River Basin and is part of the larger Zambezi River system, which significantly influences the village's topography. Further, the area is characterized by seasonal floodplains and wetlands, where water levels rise during the rainy season, especially from December to March. This flooding creates fertile ground for agriculture and supports local ecosystems. The elevation in Lisikili is generally close to 1,000 meters above sea level. This flatness is common in the Zambezi Region, which is part of the larger Kalahari Basin. The terrain is relatively level, with few pronounced hills or valleys. The area around Lisikili consists of woodlands and savannas, providing important natural resources such as firewood, building materials, and grazing land for livestock. These areas are also part of the broader topographical landscape. Lisikili lies near the Kwando River, which is an essential geographical feature of the area. The riverbanks influence the landscape, creating marshy zones and alluvial deposits in nearby areas.

5.4. Fauna

Zambezi region is home to a diverse array of fauna due to its rich ecosystems, which include wetlands, savannas, woodlands, and riverine environments. The Zambezi Region is known for its significant populations of African elephants, particularly in the Kavango-Zambezi Transfrontier Conservation Area (KAZA TFCA). Elephants can be found in the Linyanti area and the surrounding woodlands and floodplains. Both Cape buffalo and smaller herds of buffalo roam the area, particularly near the floodplains and wetlands of the Kwando and Zambezi Rivers. The Linyanti area, in particular, is known for its lion populations, often found in the game reserves and national parks in the region. Big cats such as leopards and cheetahs are present in the savanna and woodland areas of the region, particularly around protected areas near Linyanti and Mafuta. Other animals such as impala, kudu, and wildebeest are common in all areas, including Mafuta and Gunkwe, where they are typically found in mixed savanna and woodland habitats. While, spotted hyenas and African wild dogs are found throughout the region, including in Linyanti and surrounding areas. The region, especially in Linyanti and surrounding areas, includes conservation areas that protect endangered species such as the African wild dog, rhinos, and cheetahs.

Even though there were no presence of wild animals observed on-site or surrounding areas, the site is a common track for domestic animals owned by farmers in the nearby residents. Furthermore, the site has a presence of big Burkea African and Terminalia Sericea trees which could be a habitat for birds and other smaller wild animals. While the project will have minimum impact on the fauna due to no or little interaction with the fauna it is advised that care is taken when clearing the area for this development and minimal damage is done to the landscape. The disturbed area should be rehabilitated following the Environmental Management Plan (EMP) to limit the project's impacts on the environment.

5.5. Avifauna

The Mahango area of Bwabwata, specifically, has the highest concentration of 12 of the greatest diversity of birds in Namibia. This led to it being registered as a Ramsar Wetland of International Importance (MET, Bwabwata National Park Profile, 2014 (a)). Other species of conservation priority in Bwabwata include pangolin, African Clawless Otter, Sitatunga, reedbuck, and bushbuck. The birds, mainly breeding herds follow routes north of Khaudum and west of Bwabwata in Namibian

It is imperative to understand that, despite these trends, no avifauna or bird nests were observed on the site. However, due to the locomotion of birds and tree diversity in the surrounding area, bird species may be found in the surrounding. Therefore, the project will have minimal or no impacts on the Avifauna due to no or little interaction.

5.6. Flora

Lisikili village's flora is influenced by its location in a tropical savanna climate with proximity to the Zambezi River. The area is rich in biodiversity, with various types of vegetation, ranging from riverine forests to savanna grasslands and wetlands. The general landscape around Lisikili consists of savanna woodlands, characterized by a mix of grasslands and scattered trees. The flora supports both human livelihoods and wildlife, providing important resources such as food, shelter, and medicinal plants. Common species found in these areas include: Acacia species, which includes Acacia mellifera (Black Thorn) and Acacia erioloba (Camel Thorn), (Faidherbia albida), Baobab tree (Adansonia digitata), Combretum species, Terminalia sericea (Silver Terminalia).

From the site assessment, the area is mainly dominated by large trees of Terminalia sericea, Burkea Africana, Albizia versicolor, and combretum species. No red data or endangered species were noted/recorded during the site visit. Therefore it was decided that it is not necessary to include an ecological specialist study in the report. But the removal of any vegetation in the surrounding area should still be done in a properly managed, planned and responsible manner to avoid the destruction of unnecessary ground cover or protected species. The rehabilitation of disturbed areas is important and should be done in accordance with the Environmental Management Plan (EMP) hence the project will have minimal impacts on the environment.

Figure 4: Vegetation found around the proposed project site, Lisikili Village

5.7. Hydrology

The hydrology of Lisikili village is primarily influenced by its proximity to the Zambezi River and the region's seasonal rainfall patterns. The hydrological characteristics of Lisikili are shaped by surface water, groundwater, and the interactions between these systems. Key hydrological features of Lisikili village includes: its proximity to the Zambezi River. Lisikili is situated near the Zambezi River, which is one of the primary water sources for the area. The river plays a significant role in both surface water availability and groundwater recharge. It serves as a vital resource for the community and surrounding ecosystems, providing water for domestic, agricultural, and livestock use. Surface Water. The Zambezi River and its tributaries flow through the region, influencing the hydrology of Lisikili. During the rainy season, the river often experiences seasonal flooding, which affects the surrounding floodplains and wetlands. This flooding replenishes surface water resources and provides nutrient-rich soil for agriculture. In addition to the river, small seasonal streams and tributaries may contribute to local surface water resources, especially during periods of high rainfall. The Zambezi River's hydrology significantly impacts local groundwater levels. In floodplain areas like Lisikili, groundwater tends to be closer to the surface due to regular inundation from the river. The alluvial soils along the riverbanks allow for the formation of shallow aquifers, which are important for providing drinking water and supporting irrigation needs during dry periods. Although the proposed site is not in a flood prone area, care needs to be taken during construction to minimize contamination to surface and underground water sources.

5.8. Pedology & Geology

The geology of Lisikili is characterized by a diverse geological landscape influenced by ancient geological processes, river systems, and more recent sediment deposition. The geology of Lisikili village is primarily composed of sedimentary rocks, which were deposited during the Cenozoic era, particularly in the Quaternary period. These sediments are typically alluvial deposits, accumulated by the Zambezi River and its tributaries over thousands of years. This is evident in the floodplains and river valleys surrounding the village. The soil in the area is a mixture of sand, silt, and clay, which makes it ideal for agriculture, especially in floodplain areas where soil is enriched by periodic flooding. Loamy and clay soils are common, providing fertile ground for crops such as maize, millet, and vegetables.

While the alluvial and sedimentary nature of the region's geology is advantageous for fertility, flooding can pose risks, especially during the rainy season when the Zambezi River overflows its banks. The erosion of riverbanks and floodplains, especially near watercourses, can also lead to the loss of fertile soil, which affects agricultural productivity. Proper management of water and land resources is essential to reduce soil erosion. The footprint of the construction area must therefore be kept as small as possible and existing access roads are to be utilized at all times to avoid off-road tracks. The project footprint area should not be cleared entirely and the site should be rehabilitated after the construction phase.

5.9. Archaeology and Heritage

There are no declared heritage sites by the National Heritage Council of Namibia at the project site at Lisikili Combined School. However, an accidental find procedure must be implemented during construction, excavation, or development activities to manage the discovery of unexpected items of cultural, historical, archaeological, or paleontological significance. This is to ensure that such finds are handled in compliance with legal and ethical standards while minimizing disruption to the project.

5.10. Alien Plant Assessment

The alien plants were considered during the botanical assessment. It was found that no alien plant species were found on site.

6. CHAPTER SIX: PUBLIC CONSULTATION

Public and Stakeholder involvement is a key component of the EA process. The public consultation process, as set out in Section 21 of Regulation No 30 of EMA, has been followed during this assessment, and the details thereof are documented below. The public consultation process assisted the Environmental Assessment Practitioner (EAP) in identifying all potential impacts and to what extent further investigations are needed. Public consultation can also aid in the process of identifying possible mitigation measures.

6.1. Registered Interested and Affected Parties (I&APs)

The Consultant identified relevant and applicable national, regional, and local authorities, local leaders, and other interested members of the public. Pre-identified IAPs were contacted directly, while other parties who contacted the Consultant after project advertisement notices in the newspapers, were registered as IAPs upon their request. Newspaper notices of the proposed tower construction activities were placed in two widely read national newspapers in the region (The Villager and Confidente). The project advertisement/announcement ran for two consecutive weeks inviting members of the public to register as IAPs and submit their comments. The summary of pre-identified and registered IAPs is listed in the table below. A full stakeholder list is listed under **Appendix D.**

Table 3: Summary of pre-identified Interested and Affected Parties (I&APs)

National - Ministries and State Owned Enterprises
Mistry of Environment, Forestry and Tourism
Ministry of Information and Communication Technology
Ministry of Urban and Rural Development
Ministry of Works and Transport
Ministry of Health and Social Services
Ministry of Agriculture, Water and Land Reform
National Radiation Protection Authority
Roads Authority
Namibia Civil Aviation Authority
CRAN
Regional & Local
Zambezi Regional Council
Kabbe North Constituency
Imukusi Wanyambe Sub-Khuta, Mafwe Royal Establishment
General Public
Interested members of the public / communities

6.2. Communication with I&APs

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:

6.2.1. Background Information Document

A Background Information Document (BID) was drafted at the onset of the EA process to act as a useful information handout about the proposed project development. In addition, the BID provided details on the public consultation process with contact details for further information. This document was advertised for availability through various means of newspaper articles, Public meetings, and electronic mail; see **Appendix B** of this document

6.2.2. Newspaper Advertisements & Articles

Newspaper notices about the proposed project and related Environmental Assessment processes were circulated in two newspapers for two weeks. These notices appeared in the “Confidente” and “The Villager” newspapers, shown in **Appendix B.**

6.2.3. Public Site Notices

A site notice (A3) were placed at the local entertainment establishment and the Lisikili Combined School Gate which are close to the site, to inform members of the public of the EIA process and register as I&APs, as well as submit comments. The notices also provided information about the project and related EIA process while providing contact details of the project team.

Figure 5: Site Notification, Lisikili Combined School

6.3. Public Consultation Meeting and feedback

6.3.1. Stakeholder Meetings & Key Conversations

A public meeting is one of the most important component of public consultation process as it brings the consultant and affected members of the public (particularly from the affected site area) together. The meeting is usually done in an interactive session form so that the community members or members of the public can Public consultation feedback. A public meeting was scheduled on Saturday, 21 December 2024 at Lisikili Combined School, and the meeting was well attended by all stakeholders. Appendix B has a detailed list of the attendance register. The consultant administered questionnaires during the meeting to all members who attended the meeting.

Figure 6: Community engagement meeting conducted at Lisikili Combined School

6.3.2. Comments and review period

From the onset of the public consultation process and the initial information sharing through the BID, newspaper, and site notices, various stakeholders were given a chance to registered and provide their comments. However, no comments were received from I&APs apart from those noted at the public meeting. During the public meeting all comments were noted and captured in the minutes. All the individuals in attendance gave the project a go ahead noting the need for continued network coverage in the area. Questionnaires and proof of stakeholder engagement are attached in **Appendix B** of this EAR.

7. CHAPTER SEVEN: IMPACT IDENTIFICATION, ASSESSMENT AND MITIGATION

7.1 Identification of Potential Impacts

The proposed activities are usually associated with potential positive and negative impacts. For an environmental assessment, the focus is mainly placed on the negative impacts. This is done to ensure that these impacts are addressed by providing adequate mitigation measures such that an impact's significance is brought under control, while maximizing the positive impacts of the project to promote sustainable development and environmental and social protection. The potential positive and negative impacts that have been identified are listed as follow:

Positive impacts:

- **Telecommunications convenience:** Current and future residents (mobile users) will have an improved infrastructure and will not have to struggle with network coverage.
- **Employment creation:** Creation of a few temporary jobs during the construction of the tower.
- **General contribution to local economic development** through reliable communications services.

Negative impacts:

- **Physical land / soil disturbance:** excavation activities to erect the tower could potentially lead to site soils' disturbance.
- **Noise:** During tower' construction, the presence of the construction team and movement of heavy vehicles and machinery may disturb the immediate neighbours to the site.
- **Visual impact:** The presence of the tower in the neighbourhood may be a nuisance to locals.
- **Impacts to Human Health**: Electromagnetic Radiation emitted from the antennae of cellular structures may affect human health.
- **Potential occupational health and safety risks** associated with mishandling of construction and operations equipment.
- **Civil Aviation concerns:** The proposed site designs and location need to be verified to ensure that it meets the approval of the Directorate of Civil Aviation regarding the height of the masts and the position and stability of transmitters.
- **Environmental pollution** from improper disposal of waste generated during construction and maintenance phases.
- **Vehicular traffic safety** from increased number of vehicles moving around the project site and slow-moving trucks transporting project structures during construction, and
- **Archaeological or cultural heritage impact** through unintentional uncovering of unknown archaeological objects or site by certain project activities such as excavation (the minimal site works).
- **Waste Generation** from improper disposal of waste generated during construction and maintenance.
- **Dust Generation** from construction works and vehicular traffic
- **Loss of Avifaunal Biodiversity**

7.2 Impact Assessment Methodology

The Environmental Assessment is primarily a process used to ensure 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 Legislation (Environmental Management Act No. 7 of 2007) and its EIA Regulations of 2012.

7.2.1 Impact Assessment Criteria

The identified impacts were assessed in terms of probability (likelihood of occurring), scale/extent (spatial scale), magnitude (severity) and duration (temporal scale) as presented in **Table 4.** The recommended mitigation measures prescribed for each of the potential impacts (as captured in the EMP) contributes towards the attainment of environmentally sustainable operational conditions of the project for various features of the biophysical and social environment. The following criteria were applied in this impact assessment:

Table 4: Impact Assessment Criteria

Duration – What is the length of the negative impact?	
None	No Effect
Short	Less than one year
Moderate	One to ten years
Permanent	Irreversible
Magnitude – What is the effect on the resource within the study area?	
None	No Effect
Small	Affecting less than 1% of the resource
Moderate	Affecting 1-10% of the resource
Great	Affecting greater than 10% of the resource
Spatial Extent – what is the scale of the impact in terms of area, considering cumulative impacts and international importance?	
Local	In the immediate area of the impact
Regional / National	Having large scale impacts
International	Having international importance
Type – What is the impact	
Direct	Caused by the project and occur simultaneously with project activities
Indirect	Associated with the project and may occur at a later time or wider area
Cumulative	Combined effects of the project with other existing / planned activities

Duration – What is the length of the negative impact?	
Probability	
Low	<25%
Medium	25-75%
High	>75%

7.2.2 Impacts Significance

After the impact has been assessed, its significance is then determined. The impact significance is determined through a synthesis of the above impact characteristics. The table below captures the significance rating scale which was used to rate the identified impacts.

Table 5: Impacts Significance

Class	Significance	Descriptions
1	Major Impact	Impacts are expected to be permanent and non- reversible on a national scale and/or have international significance or result in a legislative non- compliance.
2	Moderate Impact	Impacts are long term, but reversible and/or have regional significance.
3	Minor	Impacts are considered short term, reversible and/or localized in extent.
4	Insignificant	No impact is expected.
5	Unknown	There are insufficient data on which to assess significance.
6	Positive	Impacts are beneficial

7.2.3 Assessment of Potential Negative Impacts

Table 6: Environmental Impacts and Aspects Assessment

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure/ Activity
TOPOGRAPHY	Landscape Scenery	Visual aesthetic impact	Construction and Operation	Moderate	Moderate	Local	Direct	Medium 25 - 75%	Minor	Tower construction
SOIL DISTURBANCE AND POLLUTION	Soil	Contamination to soil from paints and other potentially hazardous substances	Construction and Operations	Moderate	Small	Local	Direct	Low <25%	Minor	Tower construction
	Soil	Spillages of fuel, oil and lubricants.	Construction	Short	Small	Local	Direct	Low <25%	Minor	Tower and Access Road construction
	Soil	Erosion	Construction	Moderate	Small	Local	Direct	Low <25%	Minor	Tower and Access Road construction
LAND CAPABILITY	Terrestrial ecology	Change in land use	Construction and Operations	Permanent	Great	Local	Direct	Low <25%	Moderate	Tower
	Carrying capacity	Increase in human activities in the environment	Construction and Operations	Moderate	Moderate	Regional	Direct	Low <25%	Minor	Tower
WATER	Surface water quality	Water pollution from potential oils, lubricants and chemicals spillages.	Construction and Operations	Moderate	Small	Local	Direct	Medium 25 - 75%	Moderate	Construction hydrocarbons
AIR QUALITY	Air Quality	Construction phase dust	Construction	Short	Small	Local	Direct	Low <25%	Minor	Tower and Access Road construction

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure/ Activity
WASTE	Groundwater quality	Hazardous waste such as waste lubricants and stored chemicals may be release into the environment.	Construction and Operations	Short	Small	Local	Direct	Low <25%	Minor	Tower and Access Road construction
	Surface water quality	Threatened from chemicals being washed into nearby water bodies	Construction and operations	Moderate	Moderate	Regional	Direct	Medium 25 - 75%	Moderate	Tower and Access Road construction
	Surface water quality	Construction and Operational solid waste	Construction and operations	Moderate	Moderate	Regional	Direct	Medium 25 - 75%	Moderate	Tower and Access Road construction and maintenance
FAUNA	Terrestrial ecology and biodiversity	Loss of habitat and driving away of local animals	Construction and Operations	Short	Small	Local	Direct	Low <25%	Minor	Tower and Access Road construction
	Terrestrial ecology and biodiversity	Destruction of vertebrate fauna (e.g. road kills; and fence)	Construction and Operations	Short	Small	Local	Direct	Low <25%	Minor	Tower and Access Road
SOCIAL	Noise Pollution	Increased noise levels	Construction	Moderate	Small	Local	Direct	Low <25%	Minor	Tower and Access Road
	Socio Economic Activities	Temporary and permanent employment prospects.	Construction and operations	Long	Moderate	Regional	Direct	Medium 25 – 75%	Positive	Tower and Access Road
	Socio Economic Activities	Climate change impacts	Operations	Long	Moderate	Regional / National	Direct	High >75%	Positive	Tower and Access Road
	Contribution to National Economy	Employment, local procurement, duties and taxes.	Construction and Operations	Short	None	Regional / National	Direct	Low <25%	Positive	Tower and Access Road

Environmental Impact	Valued Ecosystem Component	Impact	Project Phase	Duration	Magnitude	Extent	Type	Probability	Significance	Infrastructure/ Activity
HERITAGE	Artefacts, archaeological high value components	Destruction or affecting paleontological and archaeological artefacts	Construction and Operation	Moderate	Small	Local	Direct	Low <25%	Minor	Tower and Access Road
HEALTH AND SAFETY	Health Sanitation	Poor ablution and waste management facilities may be detrimental to human health.	Construction	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate	Tower and Access Road
	Property and human life	Electrocution, fires resulting in fatalities, damage to properties, veld fires and power surges.	Construction and Operation	Moderate	Great	Local	Direct	Medium 25 – 75%	Major	Tower housing
	Natural Environment	Spillage/ release of chemicals into the environment	Operation	Moderate	Great	Local	Direct	Medium 25 – 75%	Major	Tower and Access Road
	Humans, Vegetation, Animals	Potential impacts from non-ionizing radiation propagated by masts.	Operation	Moderate	Small	Local	Direct	Low <25%	Minor	Tower
AVIAN IMPACTS	Air traffic	Air Traffic disturbances	Operation	Moderate	Great	Local	Direct	Medium 25 – 75%	Major	Tower
	Avifauna	Bird fatalities	Operation	Moderate	Moderate	Local	Direct	Medium 25 – 75%	Moderate	Tower
TRAFFIC	Access roads	Vehicular accidents	Construction and Operation	Moderate	Great	Local	Direct	Medium 25 – 75%	Major	Tower

The potential negative impacts stemming from the proposed activities are described, assessed. Further mitigation measures in a form of management action plans are provided in the draft Environmental Management Plan (EMP).

8. CONCLUSION AND RECOMMENDATIONS

In conclusion, this Environmental Impact Assessment (EIA) has been conducted to comprehensively evaluate the potential environmental, social, and economic impacts associated with the proposed Construction and Operation of the Lisikili Telecommunication Tower. The assessment considered the baseline environmental conditions, anticipated project activities, and input from stakeholders to identify and address key concerns and opportunities for mitigation.

The findings indicate that while the project presents certain environmental and social challenges, these can be effectively managed through the implementation of the recommended mitigation measures outlined in the Adherence to the Environmental Management Plan. Adherence to the Environmental Management Plan will ensure compliance with relevant legislation, minimize adverse impacts, and enhance positive outcomes for the environment and affected communities.

We emphasize the importance of regular monitoring, stakeholder engagement, and adaptive management throughout the lifecycle of the project. These steps will not only ensure compliance with environmental standards but also foster a collaborative approach toward sustainable development.

Based on this assessment, we recommend that the project proceed, subject to the adoption of the mitigation measures and commitments outlined in this report and EMP. We trust that this EIA provides a robust framework for informed decision-making by the relevant authorities.

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