PARATUS
Always Prepared

Submitted to: Paratus Telecommunications (Pty) Ltd
Attention: Mr Edward Esterhuyse
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FINAL ESIA REPORT:

THE PROPOSED CONSTRUCTION AND OPERATION OF A BASE TRANSCEIVER STATION (BTS) TOWER AND ASSOCIATED INFRASTRUCTURE FOR PARATUS TELECOMMUNICATIONS (PTY) LTD ON ERF 398, OUTJO EAST, KUNENE REGION, NAMIBIA

PROJECT NUMBER: ECC-45-569-REP-10-D

REPORT VERSION: REV 01

DATE: 21 FEBRUARY 2025

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ENVIRONMENTAL
COMPLIANCE CONSULTANCY

TITLE AND APPROVAL PAGE

Project Name:	The Proposed construction and operation of a base transceiver station (BTS) tower and associated infrastructure for Paratus Telecommunications (Pty) Ltd on Erf 398, Outjo East, Kunene Region, Namibia
Client Company Name:	Paratus Telecommunications (Pty) Ltd
Client Name:	Mr Edward Esterhuyse
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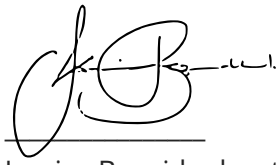

Jessica Bezuidenhout
Environmental Compliance Consultancy

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABBREVIATIONS

Abbreviation	Description
º	degree
°C	degree celcius
%	percentage
3G/4G	third and fourth generation technology
BID	background information document
BTS	base transceiver station
CIA	cumulative impact assessment
CRAN	Communication Regulatory Authority of Namibia
DEA	Department of Environmental Affairs
E	east
ESE	east southeast
EAP	environmental assessment practitioner
ECC	Environmental Compliance Consultancy (Pty) Ltd
ECS	Electronic Communications Service
ECNS	Electronic Communications Network Service
EMA	Environmental Management Act, No 7 of 2007
ESMP	environmental and social management plan
EMF	electromagnetic field
EMR	electromagnetic radiation
Erf	A piece of land or plot within a residential or commercial area. The number assigned to a specific plot of land helps to distinguish one plot from another for the purpose such as ownership, property taxes and planning.
ESIA	environmental and social impact assessment
FCC	Federal Communications Commission
GDP	gross domestic product
GHz	gigahertz
ha	hectares
I&APs	interested and affected parties
ICNIRP	International Commission on Non-Ionising Radiation Protection
IFC	International Finance Corporation
km	kilometre

Abbreviation	Description
kHz	kilohertz
Km^2	kilometre square
km/h	kilometre per hour
LTE	Long-Term Evolution
Ltd.	limited
m^2	square metre
mabsl	meters above sea level
MEFT	Ministry of Environment, Forestry and Tourism
MJ/kg	megajoules per kilogram
MHz	megahertz
MICT	Ministry of Information, Communication and Technology
mm	millimetre
MoHSS	Ministry of Health and Social Services
MTC	Mobile Telecommunication Company
NamWater	Namibia Water Corporation
NBC	Namibia Broadcasting Corporation
NCCA	Namibia Civil Aviation Authority
NDP	National Development Plan
NSA	Namibia Statistics Agency
NSRs	noise sensitive receptors
No.	number
PHC	Population and Housing Census
PHC	primary healthcare
Paratus	Paratus Telecommunications (Pty) Ltd
Pty	proprietary
RF	radiofrequency
RF-EMF	radiofrequency – electromagnetic fields
SWWAN	Software-defined Wide Area Network
RoD	record of decision
UNICEF	United Nations Children's Fund
VAT	value added tax
W	watts
W/m^2	watts per square meter

1 INTRODUCTION

1.1 COMPANY BACKGROUND

Environmental Compliance Consultancy (Pty) Ltd (ECC) has been engaged by Paratus Telecommunications (Pty) Ltd (hereto referred to as the Proponent or Paratus) as the environmental assessment practitioner (EAP) to undertake an environmental and social impact assessment (ESIA) and develop an environmental and social management plan (ESMP) for the proposed construction and operation of a base transceiver station (BTS) tower and associated infrastructure on Erf 398, Outjo East, in the Kunene Region, Namibia. The ESIA study is undertaken in terms of the Environmental Management Act No. 7 of 2007 (EMA) and its 2012 Regulations. ECC determined, as per Section 32(1) of the EMA that the Ministry of Information, Communication and Technology (MICT) is the competent authority for the proposed Project. However, the application for the environmental clearance certificate will be submitted to the Ministry of Environment, Forestry and Tourism (MEFT) for a record of decision (RoD).

Paratus Telecommunications (Pty) Ltd is a multinational organisation and one of Africa's largest privately owned pan-African network operator. Paratus provides reliable, scalable satellite services and unlimited internet access to both businesses and residential customers. As such, Paratus is committed to expanding its services through on-going infrastructure development and advanced network service initiatives. During operations, customers will have access to advanced fibre, wireless, satellite services and software-defined wide area network (SWAN) solutions.

The BTS tower will be built at a height of 30 m to ensure effective transmission and reception of telecommunication service signals for residents and business operators. Overall, the proposed Project aims to enhance communication services by broadening network coverage, improve internet connectivity and boost telecommunication access for Outjo residents, local businesses and visitors.

The Project site (i.eErf 398) covers an area of approximately 9 140 m^2 and is located within a well-established residential and recreational space, characterised by a mix of municipal and regional government offices, residential properties, schools, retails shops, churches and sports ground. The town of Outjo lies approximately 70 km west of Otjiwarongo and approximately 112 km south of the renowned Etosha National Park. The Project site is shown in Figure 1.

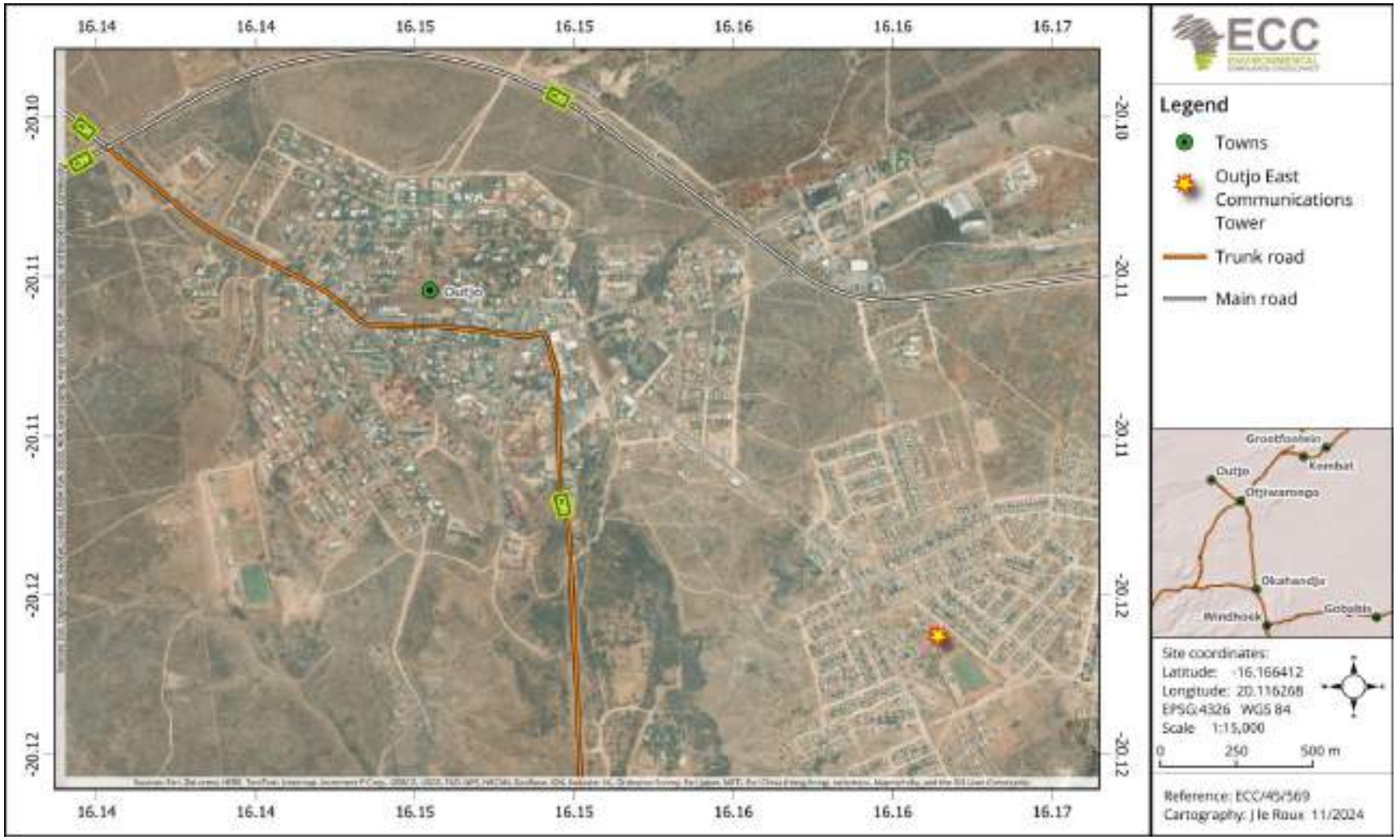

Figure 1 - Location of the proposed Project site

1.2 THE PROPONENT'S DETAILS

The Proponent's details are provided in Table 1.

Table 1 - Proponent's details

Company Representative:	Contact Details:
Mr. Edward Esterhuyse	Paratus Telecommunication (Pty) Ltd P O Box 90140, Klein Windhoek basie.esterhuyse@paratus.africa Tel: +264 83 300 1000

1.3 ENVIRONMENTAL AND SOCIAL PRACTITIONER

Environmental Compliance Consultancy (Pty) Ltd (ECC) (Reg. No. 2022/0593) has prepared this ESIA report and the EMP on behalf of the Proponent.

This report has been authored by ECC employees with no material interest in the report's outcome, ECC maintains independence from the Proponent and has no financial interest in the Project apart from fair remuneration for professional fees. Payment of fees is not contingent on the report's results or any government decision. ECC members or employees are not, and do not intend to be, employed by the Proponent, nor do they hold any shareholding in the Project. Personal views expressed by the writer may not reflect ECC or its client's views. The environmental report's information is based on the best available data and professional judgment at the time of writing. However, please note that environmental conditions can change rapidly, and the accuracy, completeness, or currency of the information cannot be guaranteed.

All compliance and regulatory requirements regarding this report should be forwarded by email or posted to the following address:

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P O Box 91193, Klein Windhoek, Namibia
Tel: +264 81 669 7608
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1.4 PURPOSE OF THE SCOPING REPORT

This final scoping with impact assessment report summarises the prescribed ESIA process to be followed, provides information on the baseline biophysical and socio-economic environments, Project description and details, identify and assess potential impacts, whether positive or negative and their relative significance, explore alternatives for technical recommendations and identify appropriate mitigation measures.

This report provides information to the public and stakeholders to aid in the decision-making process for the proposed Project by the MEFT. The objectives are to:

- Describe in depth the proposed activity and the site on which the activities are to be undertaken;
- Describe the baseline environment that may be affected by the proposed activities;
- Identify the laws, legislations and guidelines that have been considered in the assessment and preparation of this report;
- Provide details of the public consultation process;
- Provide a high-level analysis of feasible or unfeasible alternatives that were considered;
- Provide an assessment of potential impacts identified; and
- Develop the management, mitigation and monitoring measures to minimise the potential impacts.

This scoping with impact assessment report will be submitted to the Ministry of Information, Communication and Technology (MICT), as the competent authority and the Ministry of Environment, Forestry and Tourism (MEFT) – Directorate of Environmental Affairs (DEA) for review and record of decision on the application for the environmental clearance certificate. The MEFT, deals with applications for environmental clearance certificates and has determined that an environmental and social management plan (ESMP) (Appendix A) be developed to provide a management framework for the planning and implementation of the proposed Project. The ESMP provides development standards and commitments to ensure that the identified potential environmental and social impacts are minimised, mitigated, prevented, and/or enhanced as far as reasonably practicable, and that statutory requirements and other legal obligations are fulfilled.

1.5 ENVIRONMENTAL REQUIREMENTS

The EMA and its 2012 Regulations stipulates that an environmental clearance certificate is required before undertaking any of the listed activities that are identified in the Act and its Regulations. Potential listed activities triggered by the Project are provided in Table 2.

Table 2 - Listed activities triggered by the Project

Listed activity	As defined by the regulations of the Act	Relevance to the project
Infrastructure	(10.1) The construction of: (g) Communication networks, including towers, telecommunication lines and cables. (j) Masts of any material type and of any height, including those for telecommunication, broadcasting and radio transmission.	- A 30 m BTS tower and associated infrastructure will be constructed. The Project activities will include developing a staging area, surface preparation, levelling and establishing a storage and stockpiling area for materials and equipment. Key activities will include assembling tower materials, installing cables, wiring, casting concrete for the foundation, commissioning transmitters and erecting a perimeter security fence. An inspection and maintenance plan will be developed for operations to enhance the performance of the tower over time, which will guarantee consistent provision of reliable network services during operations.

2 APPROACH TO THE ASSESSMENT

2.1 PURPOSE AND SCOPE OF THE ASSESSMENT

This assessment aims to determine which Project impacts are likely to be significant. The available data is scoped to identify any gaps that need to be filled, enabling a determination of the spatial and temporal scope; and to identify the assessment methodology to be used.

The scope of the assessment was determined by undertaking a preliminary assessment of the proposed Project against the receiving environment, obtained through a desktop review, site verifications and available site-specific literature.

2.2 THE ASSESSMENT PROCESS

The ESIA methodology applied in this assessment has been developed using the International Finance Corporation (IFC) standards and models, in particular, Performance Standard 1, 'Assessment and management of environmental and social risks and impacts' (International Finance Corporation, 2017) (International Finance Corporation, 2012), which establishes the importance of:

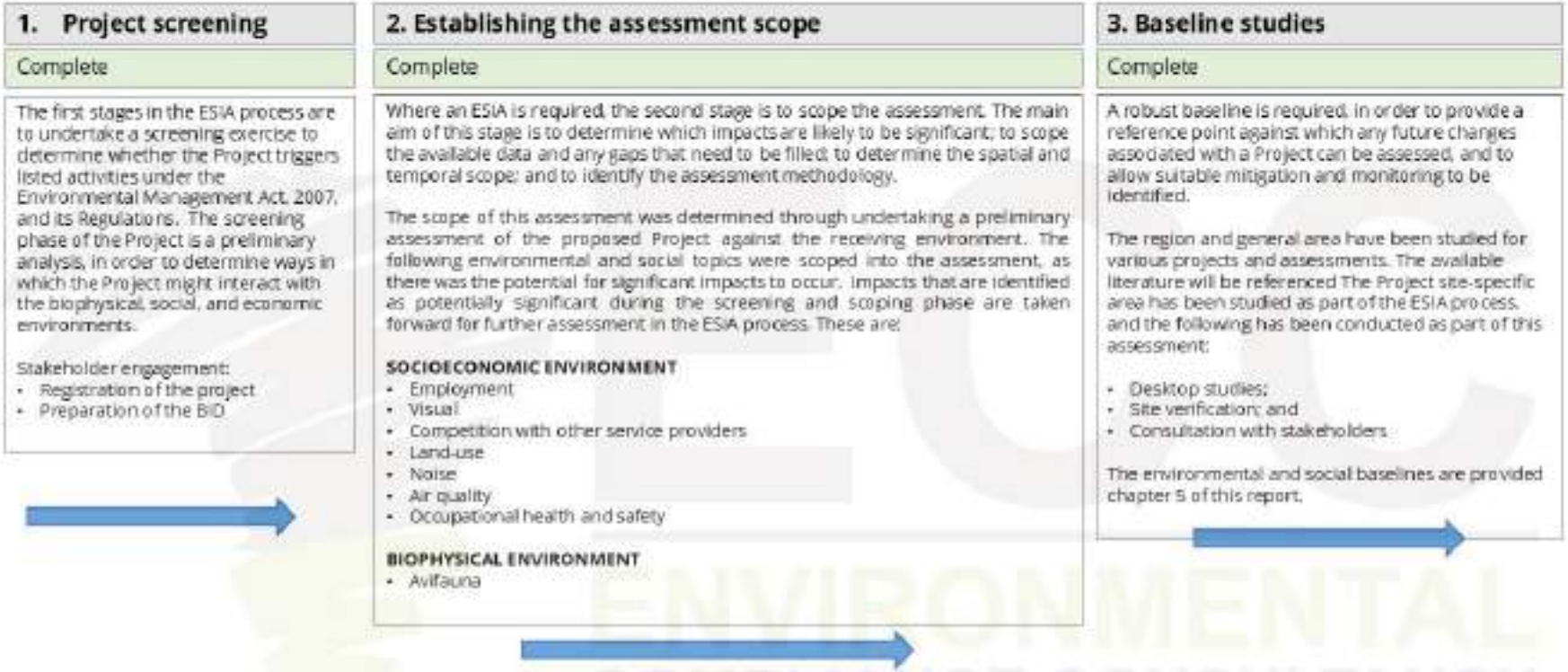
- Integrated assessment to identify the environmental and social impacts, risks, and opportunities of Projects;
- Effective community engagement through disclosure of Project-related information and consultation with local communities on matters that directly affect them; and
- The Proponent's management of environmental and social performance throughout the Project's lifecycle.

Furthermore, the Namibian Draft Procedures and Guidance for ESIA and EMP (Republic of Namibia, 2008), as well as international and national best practice, and over 30 years of combined ESIA experience, were also drawn upon in the assessment process. This impact assessment is a formal process in which the potential effects of the Project on the biophysical, social, and economic environments are identified, assessed, and reported so that the significance of potential impacts can be taken into account when considering whether to grant approval, consent, or support for the proposed Project. The process followed, through the assessment, is illustrated in Figure 2.

2.3 SCREENING OF THE PROJECT

The first stages in the ESIA process are to register the Project with the DEA/MEFT and to undertake a screening exercise to determine triggered listed activities under the Environmental Management Act, No. 7 of 2007 and associated regulations. The location, scale and duration of Project activities were considered against the receiving environment.

The proposed Project is a listed activity and potential impacts could occur. Thus, it was concluded that a scoping report, with an impact assessment, was required for Project and that an ESMP should be developed and submitted with the scoping report, as part of the application process for the environmental clearance certificate.


1. Project screening
Complete
The first stages in the ESIA process are to undertake a screening exercise to determine whether the Project triggers listed activities under the Environmental Management Act, 2007, and its Regulations. The screening phase of the Project is a preliminary analysis, in order to determine ways in which the Project might interact with the biophysical, social, and economic environments.
Stakeholder engagement:
• Registration of the project
• Preparation of the BID
2. Establishing the assessment scope
Complete
Where an ESIA is required, the second stage is to scope the assessment. The main aim of this stage is to determine which impacts are likely to be significant; to scope the available data and any gaps that need to be filled; to determine the spatial and temporal scope; and to identify the assessment methodology.
The scope of this assessment was determined through undertaking a preliminary assessment of the proposed Project against the receiving environment. The following environmental and social topics were scoped into the assessment, as there was the potential for significant impacts to occur. Impacts that are identified as potentially significant during the screening and scoping phase are taken forward for further assessment in the ESIA process. These are:
SOCIOECONOMIC ENVIRONMENT
• Employment
• Visual
• Competition with other service providers
• Land-use
• Noise
• Air quality
• Occupational health and safety
BIOPHYSICAL ENVIRONMENT
• Avifauna
3. Baseline studies
Complete
A robust baseline is required, in order to provide a reference point against which any future changes associated with a Project can be assessed, and to allow suitable mitigation and monitoring to be identified.
The region and general area have been studied for various projects and assessments. The available literature will be referenced The Project site-specific area has been studied as part of the ESIA process, and the following has been conducted as part of this assessment:
• Desktop studies;
• Site verification; and
• Consultation with stakeholders
The environmental and social baselines are provided chapter 5 of this report.

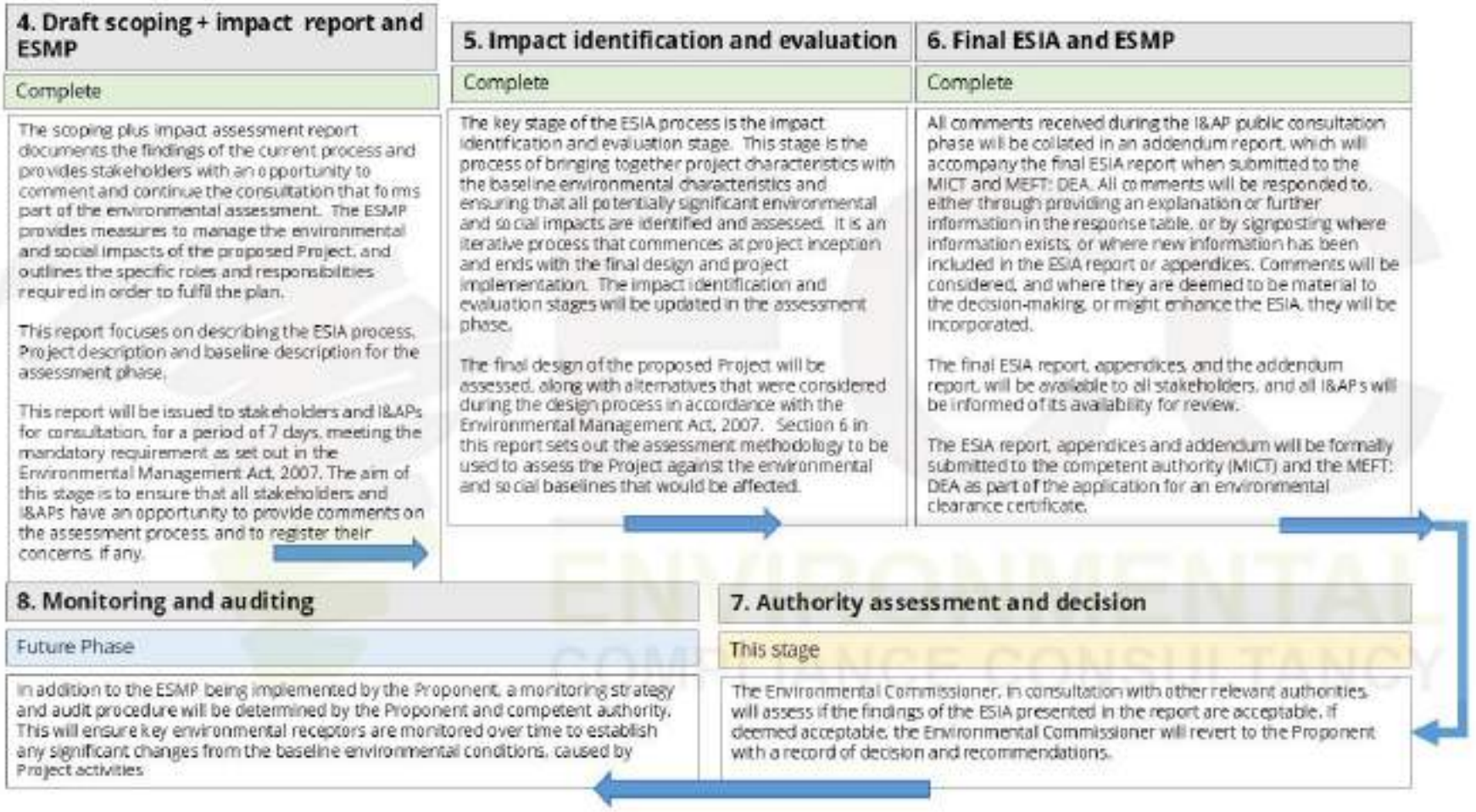


Figure 2 - ECC's ESIA flowchart

2.4 SCOPING AND THE ENVIRONMENTAL ASSESSMENT

Where a detailed assessment is required, the second stage is to scope the assessment. The main aims of this stage are to determine which impacts are likely to be significant; scope the available data and any gaps which need to be filled; determine the spatial and temporal scope and identify the assessment methodology.

The scoping phase of the Project is a preliminary analysis to determine ways in which the Project interacts with the biophysical, social, and economic environment. Potential impacts are identified, and the significance is assessed during the screening and scoping phase. Feedback from consultation with the Proponent informed the analysis of the impacts. The methodology and outcome of the impact assessment are discussed in Chapter 6 and 7 of this report, respectively. The following environmental and social aspects were considered during the initial impact assessment screening phase:

BIOPHYSICAL ENVIRONMENT

- Ground water;
- Surface water;
- Soils and geology;
- Fauna;
- Avifauna; and
- Flora.

SOCIO-ECONOMIC ENVIRONMENT

- Competition with local service providers;
- Viewshed of the Project area;
- Occupational health and safety;
- Ambient noise;
- Air quality (dust);
- Employment opportunities; and
- Revenue to the government.

2.5 BASELINE STUDIES

Baseline studies are undertaken as part of the scoping stage, which involves collecting all pertinent information from the status of the receiving environment. This provides a baseline against which changes that occur as a result of the proposed Project can be measured. For the proposed Project, baseline information was obtained through a desktop study, focusing on environmental receptors that could be affected by the proposed Project, and verified through a site verification excursion. The baseline information is covered in Chapter 5.

2.6 THE STUDY AREA

The ESIA study area has been defined according to the geographic scope of the receiving environment and potential impacts that could arise as a result of the proposed Project. The Proponent has been granted land-use approval by the Outjo Municipality for the Project (Appendix E). The receiving environment is a summary term of the biophysical and socioeconomic environment, as described in Chapter 5 (baseline environment). The study area extends beyond the Outjo townland boundaries.

2.7 PUBLIC CONSULTATION

Public participation and consultation are a requirement stipulated in Section 21 of the Environmental Management Act, 2007 and its Regulations, for a project that requires an environmental clearance certificate. Consultation is a compulsory and critical component of the ESIA process for achieving transparent decision-making and can provide many benefits. Consultation is ongoing during the ESIA process.

The objectives of the public participation and consultation process are to:

- Provide information on the Project, and introduce the overall Project concept and plan in the form of a background information document (BID) (provided in Appendix B);
- Determine the relevant government, regional and local regulating authorities;
- Listen to and understand community issues, record concerns, and questions;
- Explain the ESIA process and timeframes involved; and
- Establish a platform for ongoing consultation.

Public consultation for the Project commenced on 17 December 2024 when the Project was advertised in the local newspapers and the public was invited to register as interested and affected parties (I&APs).

The advertisements for the public meeting were placed in the following newspapers on 17 December 2024 and 23 December 2024, respectively.

- The Republikein;
- The Namibian Sun; and
- Allgemeine Zeuting.

The public consultation process and related records are discussed in detail in the public consultation document presented in Appendix C.

The draft scoping with impact assessment report and preliminary ESMP were issued to the I&APs from 12 February 2025 to 19 February 2025 (seven days public review). No comments were received during the public review period.

2.7.1 IDENTIFICATION OF KEY STAKEHOLDERS AND INTERESTED AND AFFECTED PARTIES (I&APS)

A stakeholder mapping exercise was undertaken to identify individuals or groups of stakeholders and the method in which they will be engaged during the ESIA process. Stakeholders were approached through direct communication (letters and phone calls), the national press, site notices and directly via email.

A summarised list of stakeholders that were engaged during the public consultation process is provided below:

- Outjo Municipality;
- Kunene Regional Council;
- Department of Environment Affairs (DEA);
- Ministry of Information, Communication and Technology (MICT);
- Namibia Civil Aviation Authority (NCCA);
- National Radiation Protection Authority;
- Residents and neighboring communities;
- Cellular network providers; and
- The general public with an interest in the Project.

The records of the public consultation process in the form of a summary report and a list of interested and affected parties (I&APs), evidence of consultation, including minutes of the public engagement meeting, advertisements in national newspapers and a summary of the comments and questions raised by the public are provided in the public consultation document presented in Appendix C.

2.7.2 SUMMARY OF ISSUES RAISED

In terms of section 22 of the Environmental Management Act No. 7 of 2007, a public meeting was scheduled for the 14 January 2025 to engage the I&APs and record all comments and inputs to enhance the impact assessment process. A summary of the comments and concerns raised by the I&APs are discussed in detail in the public consultation document (Appendix C). From the engagements held, the following key issues were raised by the I&APs:

- Employment opportunities for the residents;
- Concerns related to public exposure to radiation emitted by the telecommunication tower; and
- Limited access to recreational space, potentially to be encroached by the Project.

3 REVIEW OF THE LEGAL ENVIRONMENT

3.1 RELEVANT NATIONAL LEGISLATION

This chapter outlines the regulatory framework applicable to the proposed Project. A review of relevant legislations has been conducted to identify the applicable laws, policies and guidelines that aligns with the proposed Project. As stated in Chapter 1, an environmental clearance certificate is required for any activity listed in Government Notice No. 29 of 2012 of the EMA. Compliance to the relevant laws and regulations will ensure that proposed Project activities do not violate fundamental human rights or adversely affect the welfare of the community.

Table 3 outlines the relevant legal requirements specific to the Project and Table 4 lists specific permits that will be required for the Project.

3.2 RELEVANT NATIONAL POLICIES AND PLANS

Table 3 - Details of the regulatory framework as it applies to the Project

National Regulatory Framework/ Policies/ Plans	Summary	Applicability to the Project
Constitution of the Republic of Namibia (1990)	The constitution defines the country's position in relation to sustainable development and environmental management. The constitution refers that the state shall actively promote and maintain the welfare of the people by adopting policies aimed at the following: "*Maintenance of ecosystems, essential ecological processes and biological diversity of Namibia, and the utilisation of living, natural resources on a sustainable basis for the benefit of all Namibians, both present, and future*."	The Proponent commit to the sustainable use of the environment and has aligned its corporate mission, vision, and objectives with the Constitution of the Republic of Namibia.

National Regulatory Framework/ Policies/ Plans	Summary	Applicability to the Project
Communication Act No. 8 of 2009 and relevant regulations, subject to the regulations regarding licences as published in the Government Gazette Notice No. 308 of 2012	The Act provides for the regulation of telecommunications services and networks, broadcasting, postal services and the use and allocation of radio spectrum; the establishment of an independent Communication Regulatory Authority of Namibia (CRAN); to make provision for its powers and function; the granting of special rights to telecommunication licences; the creation of an association to manage the internet domain namespace and for matters connected therewith.	The Proponent shall comply with the provisions of the Act and relevant regulations by ensuring that the relevant licences are acquired prior to Project development.
The Aviation Act No. 74 of 1962 and Namibian Civil Aviation Regulations Part 139	The Act provides effect to certain International Aviation Conventions and makes provision for the control, erection of obstacles within Namibia's airspace and aerodromes and regulation for flying within Namibia's airspace. The Act also provides measures related to incidental matters.	The Project triggers the regulation regarding the erection of cellular structures or obstacles within aerodromes and the marking of such obstacles. The Regulation states that no obstacle higher than 45 m above mean level of the landing area shall be erected or allowed to come into existence within a distance of 5 nautical miles measured from the aerodrome reference point of any aerodrome (i.e. the unlicenced Outjo airport), unless the plans for such erection or coming into existence

National Regulatory Framework/ Policies/ Plans	Summary	Applicability to the Project
		have been approved by the Executive Director.
Regional Council Act No. 22 of 1992	The Act sets out the conditions under which Regional Councils must be elected and administer each delineated region. Regional Councils are authorised under Section 28 of the Act to undertake the planning of the development of the region for which it has been established with a view of physical, social, and economic characteristics, urbanisation patterns, natural resources, economic development potential, infrastructure, land utilisation patterns and sensitivity of the natural environment.	The office of the Kunene Regional Council has been identified as a key stakeholder for the Project and shall be engaged throughout the ESIA process.
Local Authority Act No. 23 of 1992	The Act provides for the determination of local government, local authority council, the establishment of such local authority councils, their powers and functions. The Act also provides measures regarding incidental matters.	The Project site (Erf 398) falls within the jurisdictions of the Outjo Municipality, which has granted lease rights for the Project. The municipality, along with other key stakeholders and interested and affected parties (I&APs) will be engaged throughout the ESIA process.

National Regulatory Framework/ Policies/ Plans	Summary	Applicability to the Project
Public and Environmental Health Act No. 1 of 2015	The Act provides with respect to matters of public health in Namibia. The objectives of the Act are: (a) promote public health and well-being, (b) prevent injuries, diseases and disabilities, (c) protect individuals and communities from the public health risks, (d) encourage community participation in order to create a healthy environment, and (e) provide for early detection of diseases and public health risks.	The Proponent is cognisant of the provisions of the Act and is committed to explore and utilise the best available technologies to safeguard individuals and communities from public health hazards and risks.
Environmental Management Act, (No. 7 of 2007) and its 2012 Regulations, including the Environmental Impact Assessment Regulation, 2007 (No. 30 of 2012)	The Act aims to promote sustainable management of the environment and use of natural resources. The Act requires certain activities to obtain an environmental clearance certificate prior to Project development. The Act states that an ESIA should be undertaken and submitted as part of the environmental clearance certificate application process. The MEFT is responsible for the protection and management of Namibia's natural environment. The Department of Environmental Affairs (DEA), under the MEFT, is responsible for the administration of the EIA process.	The ESIA process has been undertaken in line with the requirements of the Act and its Regulations. This scoping (with impact assessment) report documents the findings of the environmental assessment undertaken for the proposed Project. The ESMP discusses mitigation measures aimed at ensuring that potential impacts are effectively mitigated, managed, minimised and monitored.

National Regulatory Framework/ Policies/ Plans	Summary	Applicability to the Project
Soil Conservation Act, No. 76 of 1969	This Act makes provision for the prevention and control of soil erosion, and for the protection, improvement, and conservation of soil and vegetation.	It is anticipated that there will be minimal disturbance to the soil profile as the foundation is prepared.
The Atomic Energy and Radiation Protection Act No. 5 of 2005	This Act provides for adequate protection of the environment and 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 material, and controlling and regulating prescribed non-ionising radiation sources.	The proposed Project has the potential to emit minimal non-ionising radiation. The impact is discussed in detail in chapter 7 of this report.
Convention on International Civil Aviation, Annex 14	Annex to the Convention on International Civil Aviation - Chapter 4: Obstacle restrictions and removal - Chapter 6: Visual aids and donating obstacles	The proposed BTS tower could pose as an obstacle to aircrafts during take-off and landing at the Outjo airport. It is important to acknowledge that although the Outjo airport is currently unlicenced, the potential for interference with flight operations remains a significant concern. This impact is discussed in Chapter 7 of this report.
Guidelines for Limiting Exposure Time - Varying Electric, Magnetic and Electromagnetic Fields (up to 300 GHz). The guidelines are developed by the	ICNIRP provides international standards and guidelines for limiting adverse effects of non-ionising radiation on human health and well-being, and, where appropriate, provides scientifically bases advise on on-ionising	A comprehensive assessment will be conducted to evaluate the potential impacts of electromagnetic radiation on nearby

National Regulatory Framework/ Policies/ Plans	Summary	Applicability to the Project
International Commission on Non-Ionising Radiation Protection (ICNIRP).	radiation protection including the provision of guidelines on limiting exposure. The ICNIRP publication assessed all health risks to both the public and workers.	residents, employees and the broader community.

3.3 PERMITS AND LICENCES FOR THE PROJECT

Table 4 - Permit/licence(s) required for the Project

Permit or licence	Related activity requiring a permit/licence	Relevant Authority	Validity
Environmental clearance certificate	Required for any listed activities in terms of the EMA and its Regulations of 2012.	Ministry of Environment, Forestry and Tourism (MEFT)	Three (3) years
Class Comprehensive Telecommunications Service License (ECS & ECNS)	The license allows the licensee (Proponent) to own, operate a network and provide services to customers.	Communications Regulatory Authority of Namibia (CRAN)	Five (5) years
Spectrum Use Licences	The licence is complementary to the licence required to operate a network or to provide telecommunications or broadcasting services.	Communications Regulatory Authority of Namibia (CRAN)	One (1) year

4 PROJECT DESCRIPTION

4.1 PROJECT OVERVIEW

The Proponent has been granted land use approval by the Municipality of Outjo to construct and operate a 30 m BTS tower (a lattice self-supporting steel structure), along with associated infrastructure on Erf 398, Outjo East. The typical BTS equipment to be utilised includes 3G/4G/LTE Access Power Solutions APS6-400 Series, a high-performance point-to-point microwave antenna, the FibeAir IP-20G radio, panel antenna and the Air Harmony 4000/4200/4400 systems. The BTS tower operations will significantly enhance the transmission and reception of telecommunication signal, thereby improving network services for residents, business operators and visitors.

4.2 NEED FOR THE PROJECT

The Project aims to significantly enhance mobile network coverage in and around Outjo. By improving both voice and data services, the Project will ensure better connectivity for residents, businesses and visitors. This will lead to more stable and high-quality mobile phone calls, faster internet speeds and improved overall network performance. Improved coverage will also support a high number of simultaneous connections and increased use of data-driven appliances. Ultimately, the Project will contribute to greater accessibility, economic growth and improved quality of life through better mobile communication services. The BTS telecommunication will better position the town for economic development and future growth. Better connectivity opens the door to new opportunities, attract business investment and increase the likelihood of new ventures and business expansion.

4.3 ALTERNATIVES CONSIDERED

In terms of the Environmental Management Act No. 7 of 2007 and its 2012 Regulations, alternatives considered should be presented and analysed in the scoping with impact assessment report. This requirement ensures that during the design evolution and decision-making process, potential environmental impacts, costs and technical feasibility have been considered, which leads to the best option(s) being identified.

Erf 398 is currently unoccupied and free of any existing structure or land use restrictions. The Municipality of Outjo has granted formal land use approval for the Project; therefore, no other alternative site was considered.

The best alternatives and eco-friendly solutions to reduce potential impacts are discussed in Chapter 7 and the ESMP.

4.4 NO-GO ALTERNATIVES

Without the BTS tower in Outjo, the current status of telecommunication services in Outjo will remain unchanged and will not address the existing gaps in service coverage. This would hinder the town's potential for economic development, both in the present and in the future. In light of this, the no-go alternative is not considered a viable option. The BTS operations is expected to make a significant contribution to the town's economic growth and overall development by offering market-driven, fast and reliable telecommunication services.

4.5 PROPOSED ACTIVITIES

4.5.1 PROPOSED BTS TOWER AND ASSOCIATED INFRASTRUCTURE

The planning phase of the Project includes the following:

- The granting of provisional land use rights and Project approval by the Municipality of Outjo (already granted);
- The construction of the BTS tower and associated infrastructure; and
- The development of a maintenance plan to ensure the reliable provision of telecommunication services.

4.6 CONSTRUCTION PHASE

The construction phase is expected to involve low-impact and non-intrusive activities. The key activities during this phase will include:

- Development of the staging area;
- Minor ground preparation, including surface preparation and levelling;
- Storage and stockpiling of materials and equipment for the tower construction;
- Assembling of the BTS structure;
- Installation of cables and wiring;
- Concrete casting;
- Erection of a perimeter security fence; and
- Commissioning of transmitters.

4.6.1 EQUIPMENT AND MATERIALS

Equipment and materials necessary for the construction phase will be stockpiled in designated staging areas, located in close proximity to the construction site. The tower will be inclined at an angel of 2º and will comprise of the following:

- 3G access power solutions-APS6-400 series;
- High-performance point-to-point microwave antenna;
- FibeAir IP-20G radio;
- Panel antenna; and
- AirHarmony 4000/4200/4400.

Figure 3 shows a typical sketch of a lattice telecommunication tower.

Figure 3 - A typical sketch of a lattice telecommunication tower

The construction equipment and materials will be loaded onto light-to-heavy vehicles and delivered onsite. There will be no abnormal or hazardous loads. The public exposure from the equipment is less than 10 MJ/kg for workers and 2 MJ/kg for the general public. Table 5 presents the maximum output power for these two different exposure categories.

Table 5 - Whole body Specific Absorption Rate (SAR) exclusion power levels (Source: Paratus)

Exposure Category	Maximum output power (rms)
General public	Max. power [W] = general public whole body SAR limit [W/kg]*12.5 kg: 4-year-old child body mass = 1 W
Occupational	Max. power [W] = occupational whole body SAR limit [W/kg] *42 kg: 16-year-old worker body mass = 16.8 W

4.6.2 EMPLOYMENT AND ACCOMMODATION

The proposed Project will create employment opportunities. Specialised skills are required to conduct certain activities (e.g. assembling tower infrastructure). Contractors will be hired to conduct most of the construction activities and maintenance activities during the operational phase. It is expected that these workers will reside in the town. This will ensure timely

completion of the Project and will also offer significant opportunities for skills development and hands-on experience.

4.6.3 RESOURCE USE AND WASTE MANAGEMENT

All waste generated, including construction waste, packing waste and any other by-product will be carefully collected and stored in designated waste skips. Once full, the waste will be disposed of at the Outjo municipal waste disposal site.

4.7 OPERATIONAL PHASE

During the operational phase, the telecommunication infrastructure will require little interventions as a lattice tower is a self-supporting structure. However, regular inspections will be conducted on a monthly and annual basis, as required. These inspections will assess the performance and integrity of the infrastructure, allowing for early detection of potential issues. In addition to routine inspections, maintenance and repair work will be carried out as required. This approach will help ensure that high quality telecommunications services remain uninterrupted, allowing residents to consistently enjoy reliable connectivity and benefit from seamless service delivery over time.

4.8 DECOMMISSIONING PHASE

When the BTS tower and its associated infrastructure is no longer required, the infrastructure will be dismantled carefully. Consultation with the Outjo Municipality will be sought to ensure proper disposal of equipment. Furthermore, the site will need to be rehabilitated or reclaimed to restore its state for other future uses.

5 ENVIRONMENTAL AND SOCIAL BASELINE

5.1 BASELINE DATA COLLECTION

Desktop studies relevant to the Project formed part of the current environmental and social assessment conducted for the Project. No infield specialist studies were required. The baseline studies aim to establish the status quo of the receiving environment, against which potential impacts (positive, negative and cumulative) are likely to be triggered will be assessed. This process ensures that the Project design will effectively avoid, reduce or mitigate the potential adverse environmental impacts and social risks.

This section defines the existing biophysical and socio-economic environment through the review of existing literature, spatial data and publicly available reports. It is an important part of the scoping component of the assessment, as it determines whether there are knowledge gaps that require additional information prior to the assessment phase. The defined environment provides a framework where changes that would occur as a result of the proposed Project can be measured and assessed.

5.2 LAND USE

The town of Outjo is located in the Kunene Region and is the capital district of Outjo Constituency. The town has diverse land use patterns as the town features residential areas, comprised of urban houses, informal settlements and rural settings. The town's economy is driven by small and medium commercial centres that serve both local and tourists needs. The town serves as a key gateway to the renowned Etosha National Park. The town is surrounded by agricultural land, mainly used for commercial livestock, game farming and crop cultivation. As such, the town serves as a trading centre for the surrounding stock ranching and accommodation establishments.

Industrial activities are present but on a smaller scale. Public institutions, such as schools and healthcare facilities are also prominent and the town is well-connected by transport routes to other regions of Namibia. Currently, the town centre of Outjo offers visitors with a range of essential services and facilities. Among these are several banks, retail shops, gas stations, a hospital, accommodation establishments and an unlicenced airstrip that accommodates small fixed winged aircrafts. These amenities make Outjo a well-established and convenient stop for those exploring the region or passing through on their way to other destinations, such as the Etosha National Park.

The Outjo Municipality the custodian is responsible for the overall administration of the town, local land-use planning, zoning and approval of developmental projects within the town. This includes managing residential, commercial and public space in accordance with local policies, development plans and urban planning regulations.

5.3 CLIMATE

Climate and weather data from the Meteoblue (2024) were used to provide the climate information for the Project area (Outjo). Like other north and north central regions in Namibia, the greater Outjo area is characterised by a semi-arid climate, with distinct seasons and relatively high temperatures year-round. Summer months typically span from November to April, while winter months span from June to September (Figure 4). The summer months are generally warm to hot, with daily maximum temperatures ranging between 25 °C and 34 °C. Rainfall is limited to the summer months, with average precipitation ranging from 350 to 500 mm (Bubenzer, 2002).

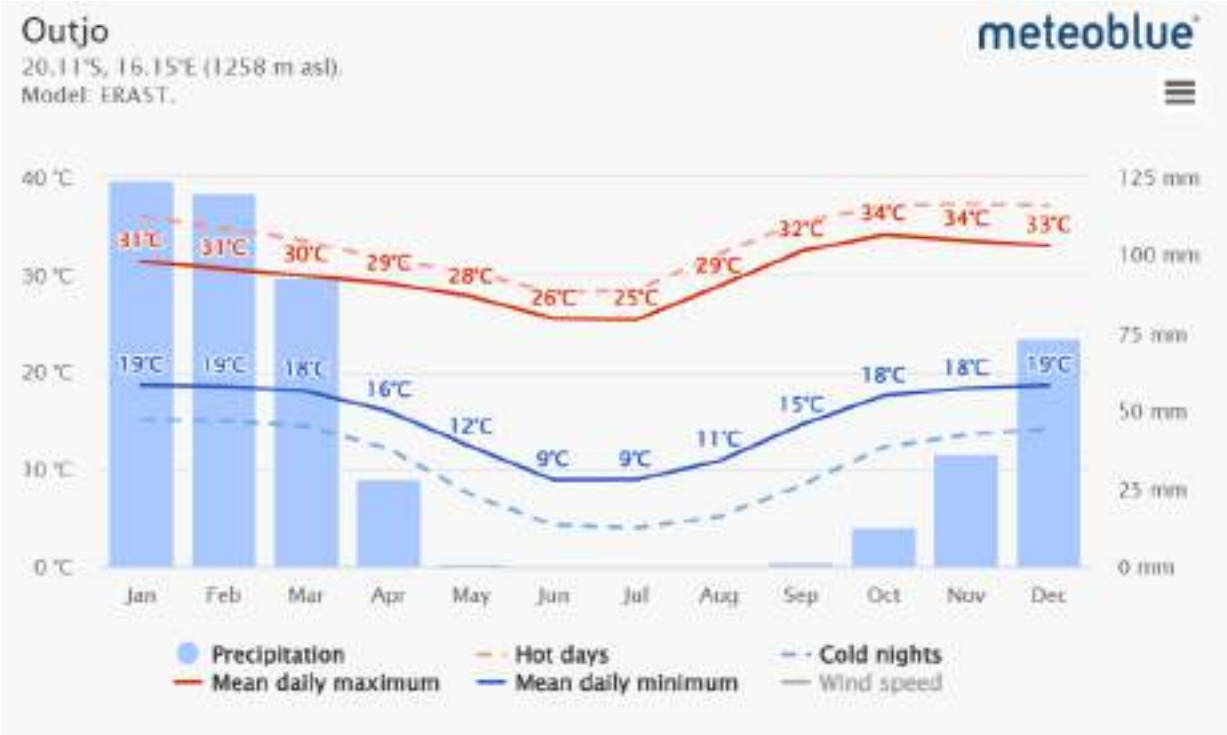


Figure 4 - Average temperatures and precipitation for Outjo (Source: Meteoblue, 2025)

The prevailing winds over the greater Outjo area typically come from the east (E) and east southeast (ESE) directions, although lighter winds are also observed from various other directions (Meteoblue, 2024) (Figure 5). The average wind speed of these prevailing winds ranges from 20 -30 km/h (Figure 5).

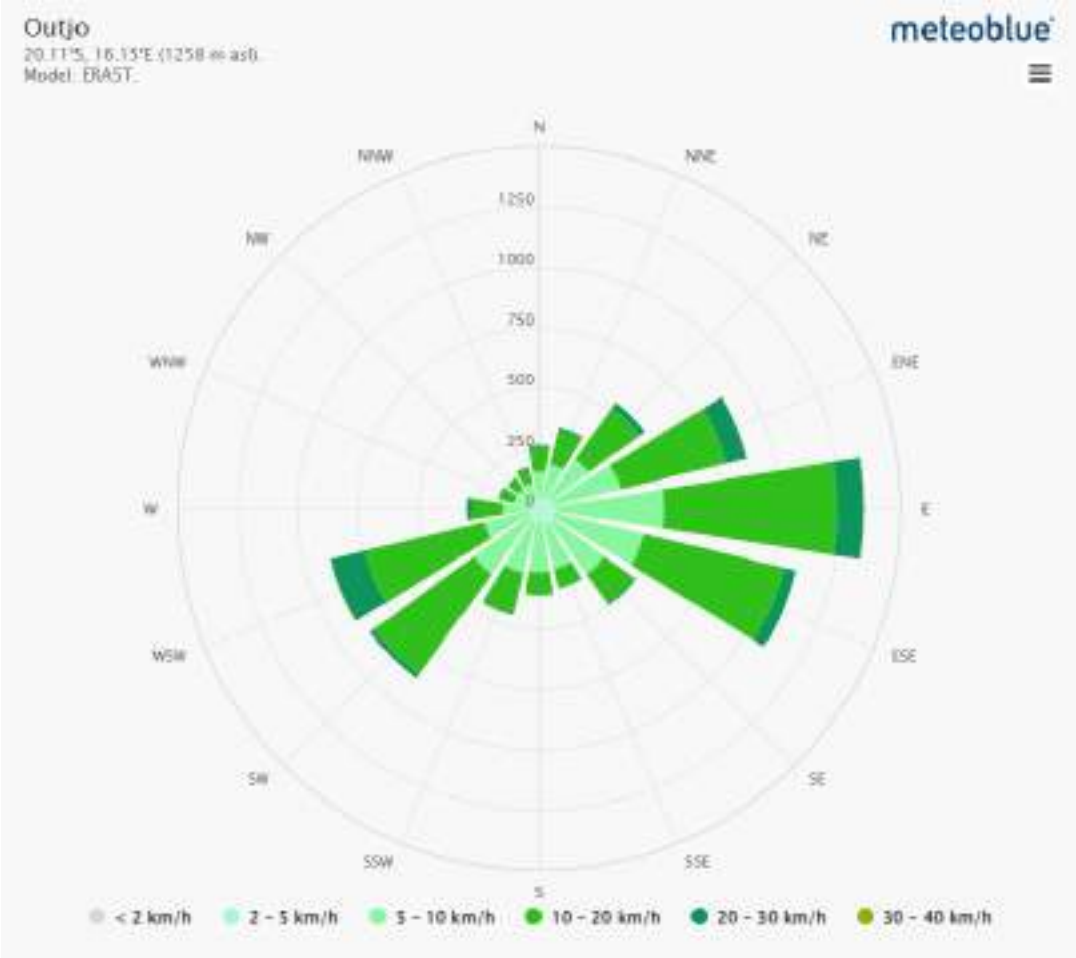


Figure 5 - Average wind direction and speed over the greater Outjo area (Source: Meteoblue, 2025)

5.4 SOIL, GEOLOGY AND TOPOGRAPHY

Vertisols cambisols soils are widespread in the Outjo district (Bubenzer, 2002). These soils are typically medium to fine textured, often associated with calcrete and are prone to waterlogging. Due to their waterlogging characteristics, these soils are not ideal for crop cultivation. However, in areas like Tsumeb and Grootfontein, they support the cultivation of crops such as maize, cotton and sunflowers. The remaining areas that are dominated by vertisols are primarily used for natural grazing, with about a third of the land falling within the Etosha National Park. The vegetation in these areas is classified within the "Karstevels" and "Mopane" savanna types (Giess, 1971).

The topography and landscape of Outjo is relatively flat, with clusters of low hills and rocky outcrops. The town lies at an elevation of approximately 1 260 meters above sea level (mabsl) (McKenna, 2024).

5.5 HYDROLOGY AND HYDROGEOLOGY

The town of Outjo is considered a low flood risk area, with less than a 1% chance probability of experiencing damaging and life-threatening river floods (Global Facility for Disaster Reduction and Recovery, 2024). The hydrogeology of the Outjo district is influenced by both shallow and deep aquifers, shaped by the region's geological features and the Etosha Basin. Shallow groundwater, typically found in sandstones, calcrete and sedimentary deposits, is prone to salinity and limited recharge due to the region's low and variable rainfall (350 - 500 mm annually). Deeper aquifers, often located in fractured or weathered basement rocks provide better quality water. Groundwater availability is generally dependent on seasonal rainfall. However, over-extraction can lead to depletion and salinisation. In the broader region, groundwater is essential for agriculture, livestock and game farming.

The Outjo Municipality independently manages water resources for its residents. Unlike most towns in Namibia, where Namibia Water Corporation (NamWater) is responsible for water supply, the municipality oversees the provision of water in Outjo. The municipality is responsible for maintaining its water infrastructure to ensure the provision of safe drinking to its residents. Regular maintenance of water infrastructure is performed to guarantee the ongoing reliability and provision of drinking water to the residents (NBC, 2023).

5.6 FAUNA AND FLORA

The Project site is situated in a well-established residential area, which has been developed and utilised for housing purposes for some time. The environment is already disturbed, making the surrounding area not pristine as it has undergone significant human activities and development, leaving minimal natural habitat intact. Upon assessment, no endemic, threatened, rare or sensitive species of fauna or flora have been identified within the Project footprint.

5.7 RADIATION BACKGROUND

Radiation emissions from a telecommunication tower primarily involve radiofrequency (RF) radiation, a form of non-ionising electromagnetic radiation. This form of radiation is used to transmit signals for mobile phones, radio, television and other wireless communications. People living closer to the telecommunication tower may be exposed to higher levels of radiation compared to those farther away. This is the affected groups within the community.

Electromagnetic radiation (EMR) from telecommunication towers primarily consists of high - frequency radio wave or microwaves. There are two types of radiation: ionising and non-ionising radiation. Ionising radiation carries enough energy to detach electrons from atoms, causing the atom to become charged or ionised while non-ionising radiation have less energy and are unable to ionise atoms. Natural sources of ionising radiation are sunlight and thermal

radiation, while non-ionising radiation are from microwaves ovens, mobile phones, network towers and powerlines (Adelaja, 2020).

The International Commission for Non-Ionising Radiation Protection (ICNIRP) is an independent scientific body that provide expert advice and guidance on the health and environmental effects of non-ionising radiation to safeguard both people and the environment. Namibia, like many other countries, follows the international guidelines set by the ICNIRP to ensure that exposure to non-ionising radiations remains within safe limits to protect public health. In March 2020, ICNIRP published the revised guidelines for human exposed to radiofrequency – electromagnetic fields (RF-EMF) in a range 100 kHz to 300 GHz. The specific frequency range from the BTS is 1800 MHz and the output power is 40 Watts (W). At 1800 MHz, the ICNIRP limits for the public is 10 W/m^2 and 50 W/m^2 for occupational workers (Table 6). The strength and intensity of the radiofrequency diminishes rapidly with distance and further reduced when signals pass through barriers such as buildings and trees.

Table 6 - ICNIRP RF-EMF safety thresholds for the public and occupational workers (ICNIRP, 2020)

Power	General public level		Occupational levels	
	Frequency range			
	698 - 960 MHz	**1710 - 2690 MHz**	**689 - 960 MHz**	**1710 – 2690 MHz**
	Distance			
2 W	**150 cm (59.1 in.)**	**100 cm (39.4 in.)**	**70 cm (27.6 in.)**	**50 cm (19.7 in.)**
5 W	**230 cm (90.1 in.)**	**150 cm (59.1 in.)**	**110 cm (43.3 in.)**	**70 cm (27.6 in.)**
10 W	**320 cm (126 in.)**	**210 cm (82.7 in.)**	**150 cm (59.1 in.)**	**100 cm (39.4 in.)**
20 W	**450 cm (177.2 in.)**	**290 cm (114.2 in.)**	**210 cm (82.7 in.)**	**140 cm (55.1 in.)**
30 W	**550 cm (216.5 in.)**	**350 cm (137.8 in.)**	**260 cm (102.4 in.)**	**160 cm (63 in.)**
40 W	**640 cm (252 in.)**	**410 cm (161.4 in.)**	**290 cm (114.2 in.)**	**190 cm (74.8 in.)**
50 W	**710 cm (279.5 in.)**	**460 cm (181.1 in.)**	**330 cm (130 in.)**	**210 cm (82.7 in)**
60 W	**780 cm (307.1 in.)**	**500 cm (196.9 in.)**	**360 cm (141.7 in.)**	**230 cm (90.1 in.)**
70 W	**840 cm (330.7 in.)**	**540 cm (212.6 in.)**	**390 cm (13.5 in.)**	**250 cm (98.4 in.)**
80 W	**900 cm (354.3 in.)**	**580 cm (228.3 in.)**	**410 cm (161.4 in.)**	**270 cm (106.3 in.)**
90 W	**950 cm (374 in.)**	**610 cm (240.2 in.)**	**440 cm (173.2 in.)**	**280 cm (110.2 in.)**

** The row highlighted in green applies to the Project.*

The component specifications for 900 MHz and 1800 MHz also applies to 850 MHz and 1900 MHz products, respectively. The specifications can be used to demonstrate compliance with Federal Communications Commission (FCC) guidelines for human exposure to radio frequency electromagnetic fields contained in the FCC.

5.8 SOCIAL BASELINE

5.8.1 POPULATION AND DEMOGRAPHY

The Kunene Region covers an area of approximately 115 293 km^2, which is approximately 13.5% of Namibia's land surface (Kunene Regional Council, 2024). The region is the second largest in Namibia after //Kharas Region. In November 2023, the Namibia Statistics Agency conducted the Population and Housing Census (PHC) as part of its legal obligation to collect vital population data for the country. The data indicate that the region has approximately 120 762 inhabitants, representing 4% of the Namibian population, with a population density of 1.0 persons per square kilometer (NSA, 2024).

Outjo is situated within the Outjo Constituency, which covers an area of approximately 7 466 km^2 and has a population of approximately 19 743 (Namibia Statistics Agency, 2024). Approximately 15 063 people reside in or around Outjo as the town serves as a key entry point for consumer goods and services distributed throughout the region. The town is regarded as the commercial center for farming activities, charcoal production, tourism facilities and retail operations (NSA, 2024).

5.8.2 POVERTY AND UNEMPLOYMENT

According to the labour force survey conducted in 2018 by the Namibia Statistics Agency in 2018, 42.3% of the households in the Kunene Region primarily earn their income from salaries, 13.1% from subsistence farming, 10.5% from business activities and 0.5% from commercial farming. Additionally, 3.7% of the population is inactive (Namibia Statistics Agency, 2018). The survey also indicated that the region has the second highest unemployment rate in Namibia, with an unemployment rate of 41.6%, following the Kavango East, which has the highest unemployment rate of 48.2% (Namibia Statistics Agency, 2018). These significant figures highlight the socio-economic challenges faced by the region, particularly among the youth. To tackle these challenges, there is a need for targeted policies that focus on creating employment opportunities, improving access to quality education and skills development and enhancing youth participation in income generating programs.

5.8.3 GOVERNANCE

Since gaining independence in 1990, Namibia has enjoyed a constitutional democracy and politically stable state which provided a conducive environment for programming and for children to thrive (UNICEF, 2022). As a result of sound governance and stable macroeconomic management, Namibia has experienced rapid socio-economic development. Namibia has

achieved the level of medium human development and ranked 145th on the Human Development Index out of 188 countries (World Data Atlas, 2023). The country's governance is guided by the long-term strategic/sustainable development objectives such as Vision 2030, Harambee Prosperity Plan and the National Development Plans (NDP) (National Planning Commission, 2020).

The Outjo Municipality is responsible for the governance and administration of the town. The municipality operates under a framework of Namibia's decentralization policy, with elected officials overseeing municipal services, development plans and community needs.

5.8.4 COMMUNITY HEALTH

Namibia's healthcare system is dual in nature, consisting of private services, which cater to approximately 18% of the population with medial aid and public services, which serve the remaining 82% (Cristian, 2020). Public healthcare in Namibia is managed by the Ministry of Health and Social Services (MoHSS), which operates a four-tiered health system comprising primary healthcare (PHC), district hospitals, intermediate hospitals and referral hospitals (Cristian, 2020). In Outjo, the primary healthcare facilities include the Outjo State Hospital and the Outjo Clinic.

5.8.5 TELECOMMUNICATION SERVICES IN OUTJO

In Outjo, telecommunication services are provided by Mobile Telecommunication Company (MTC) and Telecom Namibia, two of the leading service providers in the country. MTC provides mobile network services including voice data and internet access, while Telecom Namibia provides fixed-line telephony, broadband internet and fiber-optic services. These services collectively ensure that residents and businesses have access to essential communication tools.

The Project is expected to further enhance the telecommunications landscape in Outjo, thereby fostering a more competitive market, enhanced service quality, more affordable pricing, and better coverage for residents and businesses.

6 IMPACT IDENTIFICATION AND EVALUATION METHODOLOGY

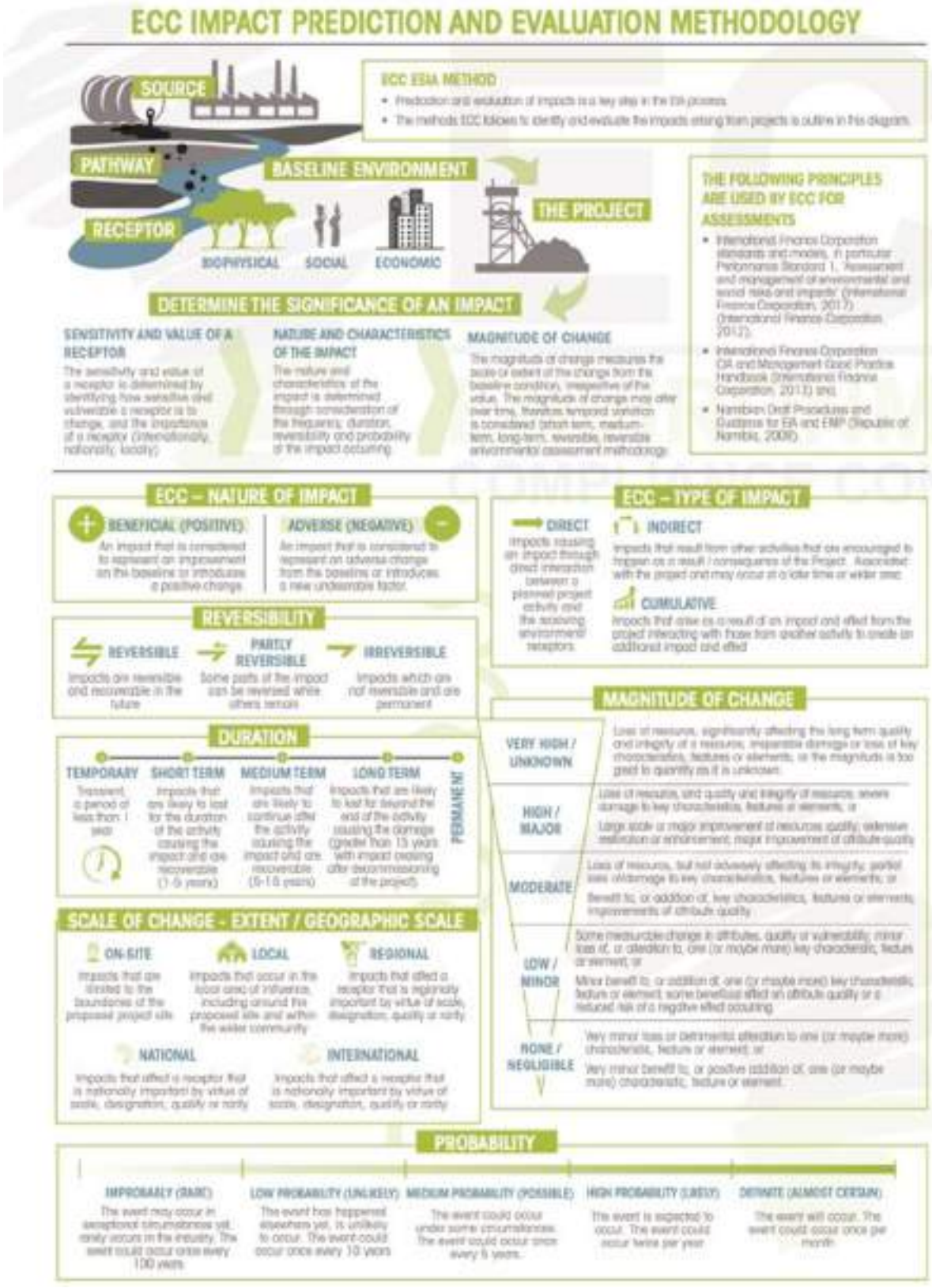
6.1 INTRODUCTION

The impact assessment method described in this chapter by ECC is designed to systematically identify and evaluate potential environmental and social impacts that may arise from a proposed Project. The method takes into consideration the baseline characteristics of the Project area and assesses the significance of impacts based on various factors, including the sensitivity and value of environmental and social receptors, the nature and characteristics of the potential impact and the magnitude of potential change.

The method shown in Figure 6 provides assessment guidance that is used to evaluate impacts, and it also acknowledges any limitations, uncertainties and assumptions associated with the assessment methodology. It outlines how impacts are identified and evaluated and how the level of significance is derived. The method also addresses the application of mitigation measures in the assessment and how additional mitigations are identified.

This chapter provides a structured approach for evaluating the potential impacts of the proposed Project on the environment and social aspects. It considers various factors to determine the significance of impacts and provides guidance on how to identify and evaluate potential impacts. It also recognises the limitations and uncertainties associated with impact assessment methodologies, which adds transparency and credibility to the assessment process.

Overall, this chapter provides a comprehensive and systematic approach for conducting impact assessments, which can help ensure that potential environmental and social impacts are thoroughly evaluated and addressed in the decision-making process for the proposed Project.


ECC IMPACT PREDICTION AND EVALUATION METHODOLOGY
SOURCE
PATHWAY
RECEPTOR
BASELINE ENVIRONMENT
BIOPHYSICAL
SOCIAL
ECONOMIC
THE PROJECT
ECC EIA METHOD
• Prediction and evaluation of impacts is a key step in the EIA process
• The methods ECC follows to identify and evaluate the impacts arising from projects is outline in this diagram.
THE FOLLOWING PRINCIPLES ARE USED BY ECC FOR ASSESSMENTS
• International Finance Corporation standards and models, in particular Performance Standard 1: 'Assessment and management of environmental and social risks and impacts' (International Finance Corporation, 2012) (International Finance Corporation, 2012).
• International Finance Corporation (IFC) and Management Good Practice Handbook (International Finance Corporation, 2013) and
• Namibian Draft Procedures and Guidance for EIA and EMP (Republic of Namibia, 2008)
DETERMINE THE SIGNIFICANCE OF AN IMPACT
SENSITIVITY AND VALUE OF A RECEPTOR
The sensitivity and value of a receptor is determined by identifying how sensitive and vulnerable a receptor is to change, and the importance of a receptor (internationally, nationally, locally)
NATURE AND CHARACTERISTICS OF THE IMPACT
The nature and characteristics of the impact is determined through consideration of the frequency, duration, reversibility and probability of the impact occurring
MAGNITUDE OF CHANGE
The magnitude of change measures the scale or extent of the change from the baseline condition, irrespective of the value. The magnitude of change may alter over time, therefore temporal variation is considered (short term, medium-term, long-term, reversible, reversible environmental assessment methodology
ECC – NATURE OF IMPACT
BENEFICIAL (POSITIVE)
An impact that is considered to represent an improvement on the baseline or introduces a positive change
ADVERSE (NEGATIVE)
An impact that is considered to represent an adverse change from the baseline or introduces a new undesirable factor
ECC – TYPE OF IMPACT
DIRECT
Impacts resulting an impact through direct interaction between a planned project activity and the receiving environment/ receptors
INDIRECT
Impacts that result from other activities that are encouraged to happen as a result / consequence of the Project. Associated with the project and may occur at a later time or wider area
CUMULATIVE
Impacts that arise as a result of an impact and effect from the project interacting with those from another activity to create an additional impact and effect
REVERSIBILITY
REVERSIBLE
Impacts are reversible and recoverable in the future
PARTLY REVERSIBLE
Some parts of the impact can be reversed while others remain
IRREVERSIBLE
Impacts which are not reversible and are permanent
DURATION
TEMPORARY
Transient, a period of less than 1 year
SHORT TERM
Impacts that are likely to last for the duration of the activity causing the impact and are recoverable (1-5 years)
MEDIUM TERM
Impacts that are likely to continue after the activity causing the impact and are recoverable (5-10 years)
LONG TERM
Impacts that are likely to last far beyond the end of the activity causing the damage (greater than 15 years with impact existing after decommissioning of the project)
PERMANENT
SCALE OF CHANGE - EXTENT / GEOGRAPHIC SCALE
ON-SITE
Impacts that are limited to the boundaries of the proposed project site
LOCAL
Impacts that occur in the local area of influence, including around the proposed site and within the wider community
REGIONAL
Impacts that affect a receptor that is regionally important by virtue of scale, designation, quality or rarity
NATIONAL
Impacts that affect a receptor that is nationally important by virtue of scale, designation, quality or rarity
INTERNATIONAL
Impacts that affect a receptor that is nationally important by virtue of scale, designation, quality or rarity
MAGNITUDE OF CHANGE
VERY HIGH / UNKNOWN
Loss of resource, significantly affecting the long term quality and integrity of a resource, irreparable damage or loss of key characteristics, features or elements; or the magnitude is too great to quantify as it is unknown
HIGH / MAJOR
Loss of resource, and quality and integrity of resource; severe damage to key characteristics, features or elements; or
Large scale or major improvement of resource quality; extensive restoration or enhancement; major improvement of attribute quality
MODERATE
Loss of resource, but not adversely affecting its integrity; partial loss /damage to key characteristics, features or elements; or
Benefit to, or addition of, key characteristics, features or elements; improvements of attribute quality
LOW / MINOR
Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (or maybe more) key characteristic, feature or element; or
Minor benefit to, or addition of, one (or maybe more) key characteristic, feature or element; some beneficial effect on attribute quality or a reduced risk of a negative effect occurring
NONE / NEGLIGIBLE
Very minor loss or detrimental alteration to one (or maybe more) characteristic, feature or element; or
Very minor benefit to, or positive addition of, one (or maybe more) characteristic, feature or element
PROBABILITY
IMPROBABLY (RARE)
The event may occur in exceptional circumstances yet rarely occurs in the industry. The event could occur once every 100 years
LOW PROBABILITY (UNLIKELY)
The event has happened elsewhere yet, is unlikely to occur. The event could occur once every 10 years
MEDIUM PROBABILITY (POSSIBLE)
The event could occur under some circumstances. The event could occur once every 5 years.
HIGH PROBABILITY (LIKELY)
The event is expected to occur. The event could occur twice per year
DEFINITE (ALMOST CERTAIN)
The event will occur. The event could occur once per month

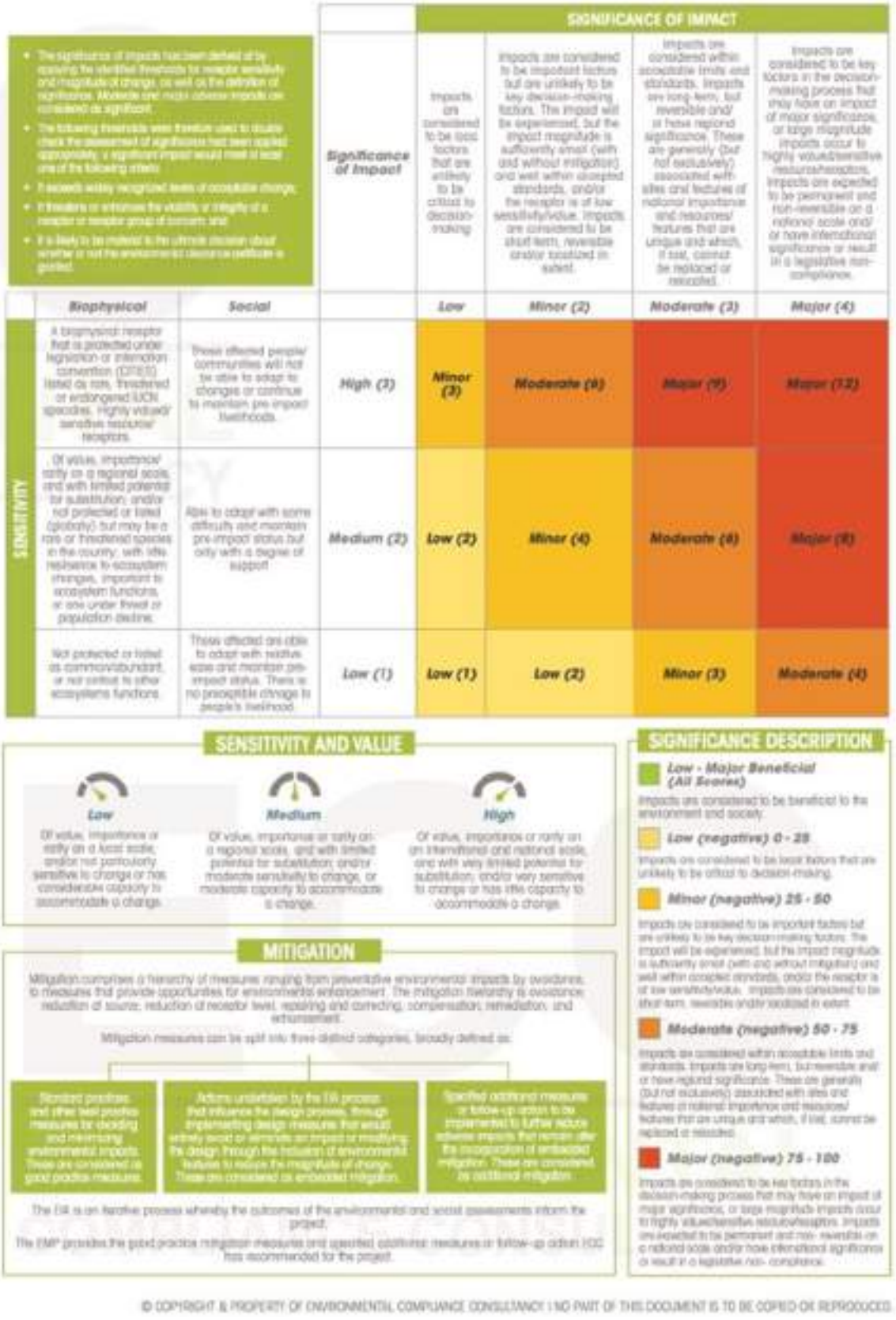


Figure 6 - ECC ESIA methodology based on IFC standards

6.2 ASSESSMENT GUIDANCE

The principal documents used to inform the assessment method are:

- International Finance Corporation (IFC) standards and models, in particular Performance Standard 1, 'Assessment and management of environmental and social risks and impacts' (International Finance Corporation, 2012 and 2017);
- International Finance Corporation Cumulative Impact Assessment (CIA) and Management Good Practice Handbook (International Finance Corporation, 2013); and
- Namibian Draft Procedures and Guidance for EIA and EMP (Republic of Namibia, 2008).

6.3 LIMITATIONS, UNCERTAINTIES AND ASSUMPTIONS

The limitations and uncertainties associated with the assessment methodology in Namibia were observed to include the absence of topic-specific assessment guidance, with a generic methodology being applied based on IFC (International Finance Corporation) guidance and professional judgement with over 25 years of ESIA experience (EAP CVs are provided in Appendix D). This implies that there may be limitations in terms of tailoring the assessment to specific topics or issues relevant to Namibia, and that the methodology may not fully capture the unique characteristics and nuances of the local context.

It is important to note that the limitations and uncertainties identified in the assessment methodology, shown in Table 7, may introduce potential biases or inaccuracies in the assessment results. Therefore, it is recommended to regularly review and update the methodology to address these limitations and uncertainties, and to ensure that it remains robust and relevant for the specific context of Namibia. Additionally, incorporating stakeholder feedback and local knowledge can also contribute to improving the accuracy and comprehensiveness of the assessment process.

Table 7 - Limitations, uncertainties and assumptions

Topic	Assumption/uncertainty
Topic-specific assessment guidance has not been developed in Namibia.	A generic assessment methodology will be applied to all topics using IFC guidance and professional judgement.
Lack of a detailed construction methodology	It is understood that the site preparation will involve low impact and non-intrusive activities. This will include digging a trench, which will be filled with concrete to create a foundation. The BTS tower will then be assembled on-site.
Environmental and social baseline data	Data gaps in specific environmental or social indicators and the accuracy and reliability of existing data sources. Reference has been made in this assessment to existing

Topic	Assumption/uncertainty
	studies and information publicly available. No site-specific or specialist studies are required.

6.4 CUMULATIVE IMPACTS

Cumulative impacts may arise as a result of other Project activities, or due to the combination of two or more projects in the Project area. A cumulative impact assessment (CIA) will be undertaken by applying the IFC CIA Good Practice Handbook (International Finance Corporation, 2013), which recommends that a rapid CIA is undertaken. A rapid CIA takes into consideration the challenges associated with a good CIA process, which include a lack of basic baseline data, uncertainty associated with anticipated development, limited government capacity, and the absence of strategic regional, sectoral, or integrated resource planning schemes.

The following five-step rapid CIA process will be followed:

1. Scoping – determine spatial and temporal boundaries.
2. Scoping – identify valued environmental and social receptors and identify reasonably foreseeable developments.
3. Determine the present conditions of valued environmental and social receptors (the baseline).
4. Evaluate the significance of the cumulative impacts.
5. Identify mitigation measures to avoid or reduce cumulative impacts.

The following information will be applied to the assessment in line with the above steps and IFC guidance:

- The spatial and temporal boundaries of the CIA are the extent of the Project boundaries and the duration of the construction and operation phases of the proposed Project.
- Valued environmental and social receptors that may be affected.
- A review of existing and reasonable, anticipated and/or planned developments has been undertaken, which is based on the information presented in Chapter 4.
- The predicted future conditions of sensitive and common environmental and social receptors have been taken into consideration in the assessment.
- The assessment findings will be presented in the assessment report and will have the CIA applied in combination with professional judgment and published environmental assessment reports.
- A review of mitigation and monitoring measures will be undertaken, with any additional ones identified.

6.5 MITIGATION

Impacts that are identified throughout the ESIA process will be subjected to a process of impact mitigation, which is inherent in all aspects of the ESIA system. Embedded mitigation and good practice mitigation will be considered in the assessment. Additional mitigation measures will be identified when the significance of an impact requires it and causes the impact to be further reduced.

The principal of impact mitigation comprises a hierarchy of measures ranging from preventative environmental impacts by avoidance, to measures that provide opportunities for environmental enhancement and will be applied to all impacts associated with the proposed Project. The mitigation hierarchy is avoidance; reduction at source; reduction at receptor level; repairing and correcting; compensation; remediation; and enhancement. The environmental and social management plan (ESMP) for the Project provides good practice measures of the impact mitigation and specifies additional measures or follow-up action where required. On completion of the impact assessment, the mitigation measures from the impact assessment and recommendations are then incorporated into the ESMP. The ESMP is appended to this report (Appendix A).

Mitigation measures can be split into three distinct categories, broadly defined as:

- Actions undertaken by the ESIA process that influence the design process, through implementing design measures that would entirely avoid or eliminate an impact, or, modifying the design through the inclusion of environmental features to reduce the magnitude of change. These are considered embedded mitigation;
- Standard practices or other best practice measures for avoiding and minimising environmental impacts. These are considered good practice measures; and
- Specified additional measures or follow up actions to be implemented, to further reduce adverse impacts that remain after the incorporation of embedded mitigation. These are considered additional mitigation measures.

Where additional mitigation is identified, a final assessment of the significance of impacts (residual impacts) will be carried out, taking into consideration the additional mitigation.

The ESMP provides an outline of the good practice measures and specified additional measures or follow up actions to be undertaken. The Project ESMP becomes a legal document once approved by the Department of Environmental Affairs (DEA).

7 IMPACT ASSESSMENT FINDINGS AND PROPOSED MITIGATION MEASURES

This chapter presents the findings of the impact assessment for the proposed Project, with a focus on significant potential impacts. Impacts deemed as not significant are listed and are not discussed further in this report. The desgin of the proposed Project (as discussed in Chapter 4) and best practice measures were considered during the assessment to identify likely significant impacts and recommend mitigation measures, as detailed in the ESMP (Appendix A).

The following aspects were considered during the scoping phase:

- Air quality;
- Noise;
- Waste management;
- Potential hydrocarbon spills;
- Sewage waste;
- Traffic impacts;
- Soil and landscape;
- Visual;
- Impact on biodiversity (fauna, flora and avifauna); and
- Socioeconomic (employment, GDP, local economy, exposure to radiation and restricted access to recreational spaces).

Impacts deemed as potentially significant are assessed in terms of their severity, duration, probability, sensitivity to receptors and nature of impact before and after mitigation. Best management practices are stated where required. The ESMP provides the best environmental practices, management and monitoring measures of all potential impacts disccused in this chapter.

The proposed construction and operational activities of the Project are expected to be low intrusive. Therefore, the potential environmental and social impacts associated with the Project activities are expected to be beneficial, with some adverse effects ranging from moderate to minor, before mitigation measures.

Mitigation measures will focus on reducing the effects of the potential impacts and ensure an acceptable measure of operation can be maintained when an impact cannot be avoided completely.

The impacts deemed as not significant are discussed in section 7.1, whereas the potential environmental and social impacts associated with the proposed Project are discussed in detail in section 7.2.

7.1 IMPACTS DEEMED AS NOT SIGNIFICANT

Impacts that have been assessed as not being significant are summarised in Table 8 and are not discussed further. The listed impacts are non-significant and do not render any threat to the environment in a way that adversely challenges its resilience to continue in its modified form.

Table 8 - Table of non-significant impacts

Environmental and social topic	Potential impact	Summary of preliminary assessment findings
Air quality	Dust generation from vehicles traveling on dirt roads and unpaved surfaces.	- Low traffic volumes are anticipated. It is unlikely that dust emissions significantly affect air quality or spread within the broader community.
Vegetation clearing	Potential removal of pristine flora species in the immediate Project area.	- The Project area is already disturbed and there are no protected species. - The Project footprint is relatively small (100 m^2).
Land use	The modified land may no longer be suitable for future developmental projects.	- The Project site is within a well-stablished residential and recreational space and is already disturbed. - At the decommissioning phase, tower infrastructure will be dismantled and properly disposed of appropriately. The land will remain in good condition and suitable for future development projects.
Waste generation (construction waste)	Littering, pollution and visual nuisance.	- As best practice, the Proponent will implement procedures to effectively manage on-site waste and its disposal in an environmentally responsible manner.

Environmental and social topic	Potential impact	Summary of preliminary assessment findings
		- No domestic waste will be generated, as no security guard will be stationed on-site after hours.
Traffic impacts	Alteration of traffic flow	- No heavy load vehicles will be used.
Spills from vehicle, equipment or any fuel/chemical containment	Potential for soil, surface or groundwater contamination.	- All Project vehicles will be maintained to prevent any spills.
Surface and groundwater quality	Potential penetration and contamination of surface and groundwater resources.	- It is unlikely that groundwater resources will be intercepted during the pouring of concrete for the foundation or the excavation of holes for the telecommunication stand poles.

7.2 SIGNIFICANT IMPACTS

7.2.1 SOCIO-ECONOMIC ENVIRONMENT – ECONOMIC

The socio-economic impact assessment concept embraces both social and economic impacts. The economic and social impacts associated with the telecommunication construction and operational phase include issues such as improved network services, local markets upliftment, employment creation, skills development and revenue generation for the government. An overview of the significant socio-economic impacts that have specific interest to the community and stakeholders before mitigation are shown in Figure 7. Each specific impact is discussed further in this section.

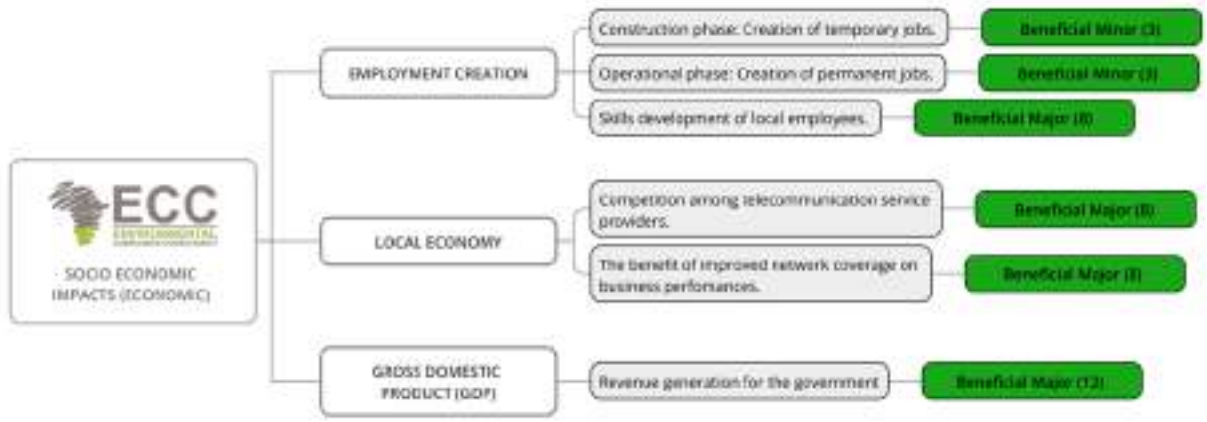


Figure 7 - An overview of the socio-economic impacts

7.2.1.1 Employment creation – construction and operational phase

The Project will create job opportunities during both the construction and operational phases. It is estimated that approximately 10 employees are likely to be contracted during both phases. During the construction phase, these employees will be responsible for various Project tasks, including ground preparation (such as land clearing, levelling and trenching), storage and stockpiling of materials for tower construction, cable and wiring installation, concrete casing and erecting the perimeter fence. During operations, highly skilled and trained tower climbers and technicians will be employed to repair the telecommunication tower equipment, conduct performance enhancing inspections and ensure safety standards are met.

The impact is direct and beneficial, and employees will not only enhance their skillsets, but also earn income to spend in the local economy. The impact is definite (expected to occur) as workers will be required for the Project to be initiated. The duration of impact is temporary during the construction phase, as the phase is expected to be completed within six (6) months. However, the impact will be long-term during the operational phase as scheduled inspections and maintenance work would likely be conducted routinely. Due to the required skill sets, the extent of the impact could be regional as employees with the required skills may not be available in the local settings and may be sourced from other areas within the region. The magnitude of impact and sensitivity are rated as low, primarily due to the limited number of employees expected to be engaged during both phases. However, it is anticipated that the earnings of these employees will be spent within the local economy for the duration of their contracts. Overall, the significance of impact is expected to be minor - beneficial (Table 9) for both the construction and operational phases, thus no mitigation measures are required.

7.2.1.2 Skills development of local employees

Skills development and capacity building to meet job requirements is a top priority for every company. Where skills are lacking, training is always provided, in addition to the mandatory safety, health and environmental training. Contractor employees working on the Project will acquire skills and work experience. The impact is beneficial, direct, permanent and irreversible. The impact will be on-site, however the skill sets developed can be used for future job opportunities. The magnitude of change is rated high employees will acquire work experience which they could use in future. The sensitivity of impact is rated medium as the skills acquired are of specialised jobs and may not be transferable. The significance of impact is rated beneficial major (Table 9). No mitigation measures are required.

7.2.1.3 Benefit of improved network for business efficiency

The telecommunication tower will greatly improve network coverage and reliability. Overall, this will improve business efficiency. With a stronger and more stable connection, businesses will experience faster communication, seamless data transfer and increased operational reliability. This advancement will streamline daily activities, support integration of advanced technologies, and foster greater productivity. The improvement of network will also be a critical asset for businesses seeking to remain competitive and responsive in the fast-paced market.

The impact is rated beneficial as businesses will directly benefit from improved network services. The duration of impact is expected to be long-term as the tower is expected to be operational for an extended period (20 or more years). The impact is localised as businesses within the network reception buffer zone will be impacted and the magnitude of change is rated high since the impact will boost business operations. The sensitivity of impact is rated medium since the local economy will be impacted. Overall, the significance of the impact is rated beneficial moderate (Table 9).

7.2.1.4 *Enhanced service delivery and market competition among service providers*

Telecommunication Network services in Outjo are offered by two local service providers (MTC and Telecom). These mobile network operators (MNOs) and internet service providers (ISPs) facilitate internet access and connect users (i.e. residents and business operators) via mobile phones, landlines and other networked systems. The introduction of Paratus network services is expected to boost market competition among service providers and this will offer residents to choose their preferred service provider.

The Project is expected to positively impact market dynamics, telecommunication services through competition and improved service delivery. The impact is considered both beneficial and direct, as the Project directly benefit the customers (within reception range). The Project is also expected to impact service delivery in terms of pricing strategies, ensuring that customers are afforded more competitive options as telecommunication companies compete to offer

better value, enhanced services and more affordable pricing. The duration of the impact is considered long-term as the tower is expected to remain operational for an extended period (20 years or more). The magnitude of change is rated major due to the significant improvements in communication, internet speed and reception. The scale of the impact is rated as regional, while the sensitivity of the impact is assessed as medium. This is because the tower's network coverage will extend beyond the town's boundaries. The reception buffer is anticipated to be 4 km; however, network reception may also be accessible up to 10 km, depending on the type of devices used. This broader reach implies that connectivity will extend over a larger geographic area. The sensitivity of the impact is rated medium due to the significant changes expected in the market and the increased variety of telecommunication options available to residents. The significance of impact is rated beneficial major (Table 9). No mitigation measures are required.

7.2.1.5 *Revenue generation for the government*

The required equipment and materials for the Project are not available in the local retail market. As a result, the necessary tower materials and equipment will be imported. This will generate revenue for the government through various income generating streams for the government such as, value-added tax (VAT).

The impact is considered direct, beneficial with a definite probability, as tower materials and equipment are required for the successful implementation of the Project. The scale of change is rated national, as revenue generated by the government is directed to various economic activities or developmental projects. The duration of the impact is temporary as these imports are likely anticipated to be a one-time occurrence. However, both sensitivity and the magnitude of impact are rated high as the Project, through its operational phase, will continue to impact the economy through payments to the government such as corporate income taxes, VAT, licences fees etc. Overall, the impact is expected to be beneficial major (Table 9).

Table 9 - Impacts related to employment creation, market competition and revenue for the government

Activity	Receptor	Impact	Nature of Impact	Value and Sensitivity	Magnitude of Change	Significance of Impact
Tower construction (construction activities)	Contractor employees	Creation of temporal jobs.	Beneficial Direct Reversible Temporal Regional Definite	Low	Low	Beneficial Minor (3)

Activity	Receptor	Impact	Nature of Impact	Value and Sensitivity	Magnitude of Change	Significance of Impact
Tower operations (inspections and maintenance)	Contractor employees	Creation of permanent jobs.	Beneficial Direct Reversible Long-term Regional Definite	Low	Low	Beneficial Minor (3)
Tower operations	Business operations	The benefit of improved network coverage on business performances	Beneficial Direct Reversible Long-term Local Likely	Medium	High	Beneficial Moderate (6)
Tower construction	Contractor employees	Skills development and work experience	Beneficial Direct Reversible Permanent On-site Definite	Medium	High	Beneficial Major (8)
Tower operations	Telecommu-nication service providers	Competition among telecommuni-cation service providers	Beneficial Direct Reversible Long-term Regional Definite	Medium	High	Beneficial Major (8)
Tower construction	National economy	Revenue generated through imports of tower materials and equipment and tax paid to the government	Beneficial Direct Reversible Temporary National Definite	High	High	Beneficial Major (12)

7.2.2 SOCIAL ECONOMIC ENVIRONMENT – SOCIAL

Social impacts include the consequences to the local population, effects that are impacting people lives, work or interactions. An overview of the social impacts is shown in Figure 8. Each specific impact is discussed in detail in the sections below.

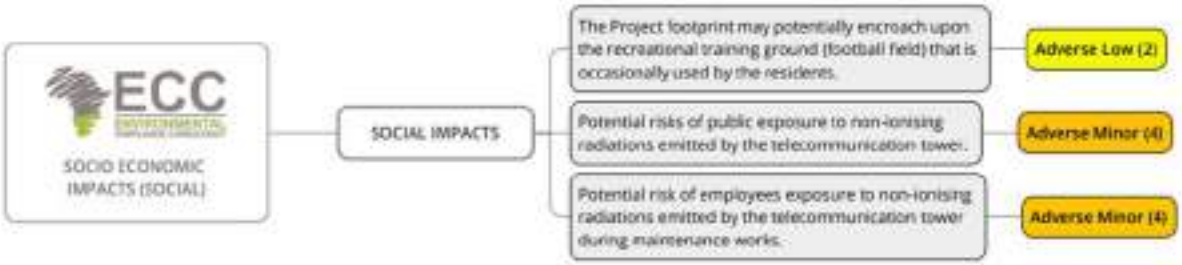


Figure 8 - An overview of the social impacts

7.2.2.1 Project may potentially encroach upon a recreational training ground (football field) that is occasionally used by the residents

A small portion of Erf 398 is transformed into a small football field (**Error! Reference source not found.**). The space is typically modest, open, with no grass surface and consist of dirt, with marking made through improvised means and goals crafted from wooden frames. The facility serves as a training ground for the residents.

Figure 9 - A small football field on Erf 398 (Source: ECC)

The telecommunication tower is expected to occupy a relatively small area of approximately 100 m^2 on the Erf, which has a total size of approximately 9 140 m^2. From a security or safety standpoint, the site may be inaccessible during the initial development phase (construction), and the telecommunication tower will be secured with a security fence. However, the remainder of the Erf will remain undisturbed and accessible.

The impact is considered adverse, direct and irreversible. Receptors are likely residents from the surrounding area (therefore the scale of the impact is considered on-site). The magnitude of impact is rated low/minor as the sport field is occasionally used by the local community. Furthermore, an alternative small field located to the east of the Etoshapoort Stadium is more frequently used by the community. While the football field may not be accessible, the alternative football field reduces the overall significance of the impact and thus the Project is expected to have minimal disruption to regular football activities. As a result, the sensitivity of the impact is rated low. Overall, the significance of the impact is rated adverse low significance (Table 10).

7.2.2.2 *Potential risk of public exposure to non-ionising radiation emitted by the telecommunication tower*

The potential impact for radiation from a telecommunication on surrounding communities is typically considered in terms of electromagnetic fields (EMF) and radiofrequency (RF) radiation. Although telecommunications emit non-ionising radiation, they are of much lower energy compared to ionising radiation. The International Commission for Non-Ionising Radiation Protection (ICNRP) is an independent scientific body that provides expert guidance on the health and environmental effects of non-ionising radiation to safeguard both people and the environment. The ICNRP guidelines have been followed in this assessment to ensure that the levels of radiation emitted by telecommunication tower remains within safe limits.

The levels of RF radiation emitted by telecommunication towers are typically very low and decrease significantly with distance from the tower and as it hit barriers such as trees and buildings. The telecommunication tower will operate at a frequency of 1800 MHz, which is within the range of radiofrequency (RF) radiation. However, the Project site (Erf 398) is relatively large (covering approximately 9 410 m^2). It is expected that the telecommunication tower will be located no closer than 410 (4.1 m) from any homestead. This distance indicates that the risk of exposure to the public is minimal.

The impact is rated adverse, direct, reversible and long-term under normal circumstances (when radiation levels emitted by the telecommunication tower are within safe limits). The surrounding homesteads are the most likely susceptible receptors; therefore, the impact will be confined to the Project site. The probability of public exposure to radiation under normal circumstances is rated as low (unlikely), as there will be no homesteads within the risk zones, and radiation levels are expected to decrease with increased distance. Although the probability

of exposure is relatively low, the magnitude of change is moderate due to the health risks and implications associated with exposure to radiation. The sensitivity of impact is rated low as communities are less likely to be directly impacted. Overall, the impact is expected to be adverse – low (Table 10). Safety precautions are provided in the ESMP.

7.2.2.3 Potential risk of employees' exposure to non-ionising radiation emitted by the telecommunication tower

Workers performing maintenance tasks on the tower will likely be within the 190 cm (1.9 m) risk zone, which will expose them to radiation. The level of exposure and severity associated with such exposures depends on the duration of maintenance activities. These activities are generally of short duration; therefore, the magnitude of the impact is expected to be moderate, as employees will consistently follow the necessary safety protocols and precautions. The sensitivity of impact is rated medium as employees will be able to adopt with some difficulty and maintain pre-impact status. Overall, the significance of impact is expected to be adverse minor (Table 10).

The Proponent shall ensure the following management measures are implemented:

- A security fence must be erected around the telecommunication tower to prevent un-authorised entries and ensure the safety and security of the site;
- Warning signboards, translated into local languages such as English, Afrikaans, Otjiherero, and Oshiwambo, are erected at the boundary fence to inform and alert the public about the site's restrictions and safety precautions; and
- Seek consent from the National Radiation Protection Authority for the Project to ensure that all regulatory and safety standards regarding radiation exposure are complied with.

Table 10 - Social impact ratings

Activity	Receptor	Impact	Nature of Impact	Value and Sensitivity	Magnitude of Change	Significance of Impact
Tower construction and operation	Residents Surrounding Erf 398	Restricted access to the football field for sporting activities	Adverse Direct Reversible Long-term On-site Medium (possible)	Low	Low	Adverse Low (2)
Tower operation	Residents surrounding Erf 398	Potential risk of public exposure to non-ionising	Adverse Direct Reversible Long-term	Low	Moderate	Adverse Low (2)

Activity	Receptor	Impact	Nature of Impact	Value and Sensitivity	Magnitude of Change	Significance of Impact
		radiation emitted by the telecommuni-cation tower	On-site Unlikely			
Tower operation	Contractor employees	Potential risk of employee's exposure to non-ionising radiation emitted by the telecommuni-cation tower	Adverse Direct Reversible Long-term On-site Likely	Medium	Moderate	Adverse Minor (4)

7.2.3 VISUAL IMPACTS

Visual impacts are changes to the scenic attributes of the landscape brought about introduction of visual contrasts, which alters the human visual experience of the landscape. Figure 10 presents an overview of the visual impacts associated with the Project. The impacts are discussed further in this section.

Figure 10 - An overview of the visual impacts

7.2.3.1 Disruption of the visual landscape and diminished sense of place

The Project site is located within an already disturbed environment, characterised by a combination of residential and recreational infrastructure. The site is currently in a state of despair, with large piles of scattered debris and household (domestic) waste (Figure 11). The introduction of infrastructure on this previously vacant portion will alter the landscape. It is important to note that there is an MTC telecommunication tower of similar height located on Willie Blom Street, three blocks northeast of the Project site (Figure 12). The introduction of an additional tower will alter the landscape. However, receptors will likely adapt to the modified environment over time.

Figure 11 - Waste disposal site on Erf 398 (Source: ECC)

Figure 12 - The MTC telecommunication tower located on Willie Blom Street (Source: ECC)

The visual impact of the Project development is adverse and localised, directly affecting the viewshed of receptors in Outjo because of the tower's height (30 m). The impact is considered cumulative as the presence of two telecommunication towers will significantly alter the landscape. While the impact is cumulative, it is expected to be reversible over time. The impact is considered long-term, as the tower, like other telecommunication structures across the country, will likely remain operational for an extended period (20 years or more). Cranes will only be used on-site throughout the duration of the construction phase. The landscape will be altered by the new development (definite probability), although visual nuisances are not likely expected. The magnitude of change is rated minor as residents will adapt to the modified environment over time. The sensitivity of impact is considered low, given the localised nature of the impact and the residents' ability to adapt to the modified environment over time. Overall,

the impact is expected to be adverse moderate (Table 11). The mitigation measures are discussed in the ESMP.

7.2.3.2 Dust generated during the construction phase may impact receptors in the surrounding Project area

Construction activities typically result in the generation dust, which can impact the surrounding environment and neighbouring residents. The adjacent homesteads to the Project site may be impacted by the dust generated by the Project, and the dust will disperse and unlikely impact homesteads that are further away. The project footprint (100 m²) is relatively small, and activities such as land clearing, leveling, and concrete mixing may result in moderate dust levels.

The impact is adverse, direct as dust will result from direct construction activities. The duration of impact is temporary and reversible due to the short duration of the construction phase (6 months). The impact will be on-site as it is not anticipated that dust generated will disperse within the broader town. The probability of event occurring is medium (possible) as no extensive land clearing will take place. The magnitude of change is rated low, and sensitivity of impact is low as no excessive dust emissions are anticipated, although adjacent homesteads may be exposed to considerable dust levels. Overall, the impact is considered adverse low (Table 11). The best dust control measures are provided in the ESMP.

7.2.3.3 Potential risk for local aircrafts to collide into the telecommunication tower

The telecommunication tower will be constructed within the 15 km aerodrome radius of the Outjo Airport (unlicenced). In accordance with the Technical Standards (NAMCATS) set by the Namibia Civil Aviation Authority (NCCA), the erection of obstacles within or near the aerodrome requires approval from the NCCA. This ensures that such obstacles do not pose a safety hazard to aircrafts or affect the usability of the aerodrome. The standards outline the following conditions, as they are applicable to the Project (NCCA, 2018):

- No building or structure exceeding 45 m in height above the aerodrome elevation may be erected within a 15 km radius of the aerodrome reference point without prior written approval of the Executive Director of NCAA; and
- Navigation aids that could negatively impact the performance of the radio navigation or instrument landing systems may not be installed without the written approval of the Executive Director of the NCAA.

Although the telecommunication tower will be within the airport aerodrome and could potentially pose a safety hazard to aircraft operating in the navigable airspace, the tower's height will be 30 m, which is below the 45 m height limit that requires authorisation from the NCCA. Furthermore, the Outjo Airport is classified as an unlicenced airport and does not have an Air Traffic Control (ATC) communication system in place. As such, the signals from the telecommunication tower are not expected to interfere with any local community systems.

The potential risk of aircrafts colliding with the telecommunication tower is adverse and direct as the tower will be located within the airport's aerodrome. The impact is considered long-term, as the tower is expected to remain in place for an extended period (20 years or more). The impact is localised, primarily affecting low-flying aircrafts that would be navigating through the airport's airspace (aerodrome). The magnitude of change is rated moderate due to the potential for aviation accidents. However, the likelihood of aircraft collisions is deemed medium (possible) as the telecommunication structure will not violate any operational, communication or security protocols for safe navigation in the Outjo Airport airspace. However, accidents could occur under certain circumstances (e.g. days with poor visibility). The sensitivity of impact is considered medium, considering the measurable effects that may arise from the potential risk. Overall, the potential impact is expected to be adverse moderate (Table 11).

As best practice, the following measures should be implemented:

- Visibility markers: the tower must be equipped with alternating white and red or white and orange markers. The selected colours must provide adequate contrast against the background to ensure visibility; and
- Engagement with the NCCA: any proposed material changes should be communicated with the NCCA to ensure full compliance with all security and safety protocols.

Table 11 - Visual impact ratings

Activity	Receptor	Impact	Nature of Impact	Value and Sensitivity	Magnitude of Change	Significance of Impact
Tower operation	Outjo residents	Disruption of the visual landscape and the loss of sense of place	Adverse Cumulative Reversible Long-term Local Definite	Low	Minor	Adverse Moderate (4)
Land clearing, levelling and concrete mixing (construction activities)	Outjo residents	Dust generated during the construction phase may impact residents in the immediate Project area	Adverse Direct Reversible On-site Temporary Medium (possible)	Low	Low	Adverse Low (2)
Tower operation	Local aircrafts navigating in the Outjo	Potential risk for local aircrafts to collide into the telecommunicat-ion tower	Adverse Direct Reversible Local Long-term	Medium	Moderate	Adverse Moderate (6)

Activity	Receptor	Impact	Nature of Impact	Value and Sensitivity	Magnitude of Change	Significance of Impact
	Airport airspace		Medium (possible)			

7.2.4 OCCUPATIONAL HEALTH AND SAFETY

Employee's health and safety are top priority in the workplace. Injuries sustained in the work environment can lead to partial disabilities and can significantly impact an individual's long-term well-being. These injuries not only compromise health but can also limit future employment prospects. An overview of the likely occupational health and safety issues is presented in Figure 13 and discussed in more detail in the following section.

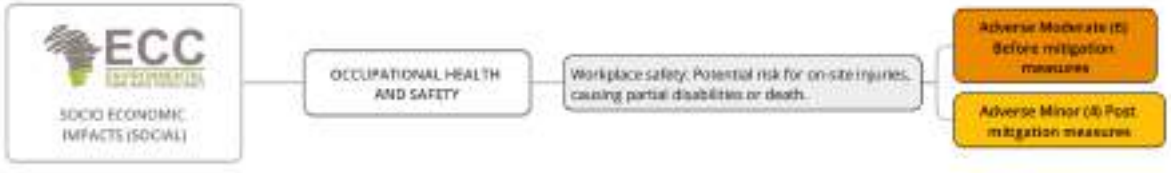


Figure 13 - Overview of the occupational health and safety impact

7.2.4.1 Workplace safety: potential risk for on-site injuries, causing partial disabilities or death

Construction work often involves complex tasks that require the use of heavy machinery and power tools, which requires specific knowledge and experience for safe operation. The fast-paced, high-pressure environment significantly increases the risk of injuries. Common injuries may result from slips, mishandling of power tools or missteps on the tower infrastructure. Minor injuries can include cuts, bruises and sprains while more severe injuries may include fractures, dislocations, or traumatic head injuries. In extreme cases, fatalities may occur due to machinery accidents or falls from working at heights.

The nature of impact is adverse and will directly affect workers on-site. The duration of impact is rated permanent, although the construction phase is anticipated to be completed within six (6) months. Injuries sustained during these phases may be irreversible as they could result in serious, permanent disabilities or even fatalities. The potential risk of an accident occurring during the construction phase is therefore rated medium (possible). It is expected that highly qualified personnel will be employed (e.g. climbers to assemble the tower infrastructure). Consequently, injuries are likely to result from accidents rather than from incompetence or practical inexperience. The magnitude of impact is rated high due to varying degrees of injuries that could occur, while the sensitivity of impact is rated as medium as injuries could lead to

permanent disabilities, which may restrict workers from securing future employment opportunities. However, the employment of experienced workers is expected to reduce both the magnitude and sensitivity of impacts to acceptable levels. Overall, the significance of impact, before mitigation is rated adverse moderate. The impact ratings (before mitigation measures) are provided in Table 12.

The Proponent is expected to abide to the following occupational health and safety measures which are also outlined in the ESMP:

- Incorporate occupational health and safety requirements into the bidding and tendering process to ensure contractors and subcontractors meet safety standards;
- Ensure that semi-skilled workers (if employed) receive comprehensive training and clear instructions on safe handling of tools and equipment;
- Conduct regular site inspections to monitor compliance with safety standards (e.g. ensuring that tools are securely stored and in a manner that prevent them from free falling); and
- Maintain accurate records of all injury statistics, track corrective actions and record learnt to improve safety practices on-site.

Table 12 - Impact related to occupational health and safety

Activity	Receptor	Impact	Nature of Impact	Value and Sensitivity	Magnitude of Change	Significance of Impact
Tower construction	Contractor employees	Potential risk of on-site injuries and accidents during the execution of construction activities and maintenance work	Adverse Direct Irreversible Permanent On-site Medium (possible)	Medium	Moderate	Adverse Moderate (6)[1]

[1] Impact rating before mitigation measures.

7.2.5 NOISE IMPACTS

The noise impact assessment addresses potential impacts of construction activities on the acoustic environment and noise sensitive receptors (NSRs). Noise is expected to be generated by excavators, cranes and bulldozers used for the site preparation and material transport. Additionally, trucks delivering materials or removing debris may generate considerate noise levels. The noise receptors identified include nearby communities, particularly the homesteads and the Etoshapoort Junior Secondary School, located in proximity to Erf 398. An overview of the noise impact(s) associated with the Project is presented in Figure 14 and discussed in more detail in the section below.

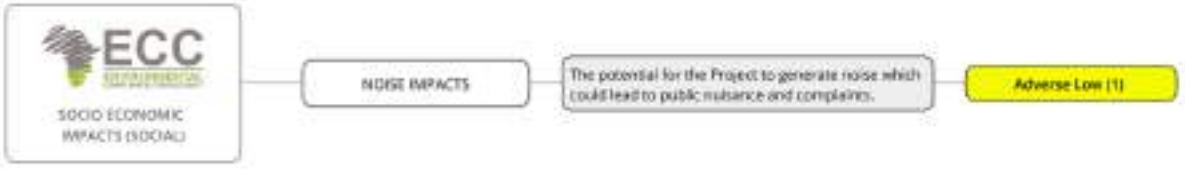


Figure 14 - Overview of the noise impact

7.2.5.1 Potential to generate noise, which may lead to public nuisance and complaints

The Project site is within a residential and recreational space, bordered by Etoshapoort Junior Secondary School and residential homesteads. As a result, these receptors may be exposed to measurable noise levels. Although noise generated during the construction phase may cause some disturbances, particularly with regard to comfort and communication, intolerable noise levels are unlikely. The nature of construction activities will not involve major mechanical work, and as such, noise levels are expected to remain within tolerable limits and not significantly disrupt daily activities.

Noise impacts are rated adverse and direct as they would result from Project construction activities. The duration of impact is temporary as construction activities will be completed within six (6) months. Noise levels are expected to impact the neighbouring receptors; therefore, the impact will be on-site. The likelihood of public noise nuisance and complaints is unlikely as only minor ground clearing activities are planned and there will be no extensive land clearing. Both magnitude of impact and the sensitivity of impact is rated low as low noise levels are anticipated. Overall, the significance of impact is expected to be adverse low (Table 13).

Noise attenuation measures (also included in the ESMP) are such as:

- Engage the noise receptors, particularly Etoshapoort Junior Secondary School prior to scheduling noisy activities;
- Construction activities must only be conducted between dawn and dusk (day shifts only);

- Avoid unnecessary idling of equipment;
- Maintain a high level of maintenance of all diesel equipment and construction vehicles; and
- Maintain a noise complaint register during the duration the construction phase, ensure noise complaints are addressed as required and lesson learnt are documented.

Table 13 - Noise impact ratings

Activity	Receptor	Impact	Nature of Impact	Value and Sensitivity	Magnitude of Change	Significance of Impact
Tower construction	Homesteads, Etoshapoort Junior Secondary School (NSRs)	The Project has the potential to generate noise which may lead to public nuisance and complaints	Adverse Direct Reversible Temporary On-site Low (unlikely)	Low	Minor	Adverse Low (1)

7.2.6 BIODIVERSITY IMPACTS

The biodiversity impact assessment addresses the potential impacts to fauna, flora and avifauna. These impacts typically involve aspects such as the alteration or disturbance of habitats and ecosystems, changes in behavioural patterns of key species, disturbance to species classified under various conservation statutory categories and the displacement of such species. Majority of these aspects will not be triggered by the Project as the Project site is already disturbed, with no significant flora or fauna species present (refer to Figure 11 and Figure 12). An overview of the biodiversity impact(s) likely to be triggered by the Project is shown in Figure 15 and discussed in more detail in the following section.

Figure 15 - Overview of avifauna impact

7.2.6.1 Potential for the tower may attract bird populations that could roost or nest on it, potentially affecting its affecting performance/functionality

Telecommunications equipment such as antennas and satellite dishes can attract birds due to their height, location and design structure. As a result, birds may nest or roost on the equipment. This may potentially cause damage to the infrastructure or disrupt its functionality. Additionally, the buildup of bird droppings on the equipment can lead to corrosion over time. This buildup creates an unsanitary environment, which may contain pathogens, and which increases the risk of respiratory infections and skin irritations (Sabine, 2023). The buildup of bird droppings also creates an environmental nuisance and disturb the aesthetic quality of the area.

The Outjo townland has been altered significantly by anthropogenic activities. Hence there are no prevalent bird colonies or populations in the area. Additionally, the level of noise pollution has potentially led to the displacement of birds. However, some bird species (e.g. Pied crows) are highly adaptable birds and thrive in cities and may be located within such disturbed/modified environments (Johnson and Murn, 2019).

The adverse impact is expected to be direct, long-term and confined to the Project site. Although certain species, for example Pied crows may be attracted to the tower, most birds typically prefer less disturbed areas, which reduces the likelihood of the impact. The duration of impact is rated long-term as the tower will be operational for an extended period (i.e. more than 20 years). The level of noise pollution will further deter birds (including seasonal migratory birds) away from town. Therefore, both magnitude of impact and sensitivity of impact are rated low due to the low probability of the event occurring and the fact that no threatened or critically endangered species will likely be impacted. Overall, the significance of the impact is expected to be adverse minor (Table 14).

The mitigation measures (also included in the ESMP) include:

- Bird deterrents can be used to prevent birds from perching or nesting on the telecommunication equipment and thus reduce the risk of accumulation of bird droppings; and
- Conduct monthly cleanup of bird droppings to prevent visual nuisance and odours.

Table 14 - Avifauna impact ratings

Activity	Receptor	Impact	Nature of Impact	Value and Sensitivity	Magnitude of Change	Significance of Impact
Tower operation	Avifauna	The tower may attract bird populations that could roost or nest on it, potentially affecting its functionality or performance	Adverse Direct Reversible Long-term On-site Low (unlikely)	Low	Minor	Adverse Low (2)

8 CONCLUSION

A scoping, with impact assessment has been undertaken for the proposed Project to identify the potential impacts and evaluate their severity and significance. The potential impacts likely to be triggered by the Project include impacts related to employment creation, noise impacts, occupational health and safety risks, visual impacts, air quality impacts (dust), socio-economic impacts, potential public risk to non-ionising radiation and potential avian and avifauna interaction with the telecommunication tower. The scoping and impact assessment study identified that no major potential risks required specialist studies. However, the areas of concern will need to be carefully monitored and managed according to the ESMP to ensure that the significance of these impacts are reduced as far as reasonably possible.

Table 15 summarises the impacts after mitigation. On a scale of 1 to 12, low to high, the beneficial (B) and negative (N) impact significance is stated.

Table 15 - Summary of the significance rating before mitigation for the expected impact

Socioeconomic environment: economic		Socioeconomic Environment: social		Biophysical environment	
Impact on employment creation (temporal jobs)	B3	Potential public exposure to radiation	N4	Avifauna: nesting and roosting on the tower	N2
Impact on employment creation (permanent jobs)	B3	Potential workers exposure to radiation	N4		
Competition with other service providers	B8	Disturbance to recreational space	N2		
Revenue generation for the government	B12	Visual impact and sense of place	N4		
Improved network coverage on businesses performances	B8	Air quality (dust)	N1		
Skills development of local employees	B8	Potential for the tower to interfere with local aircraft operations	N4		
		Occupational health and safety	N6		
		Noise impacts	N1		

The assessment of this Project on the receiving environment has shown that the Project may have adverse moderate to minor impacts and beneficial impacts (Table 15). These areas should be managed as per the commitments outlined in the ESMP (Appendix A). This will ensure that the Project remain compliant with the relevant legislation and environmental best practices.

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APPENDIX A – ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

APPENDIX B – BACKGROUND INFORMATION DOCUMENT

APPENDIX C – PUBLIC CONSULTATION DOCUMENT

APPENDIX D – EAP CVS

APPENDIX E – LAND-USE APPROVAL

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19 December 2024

Mr. Gerit De Vos
P.O. Box
Outjo
Namibia

Dear sir

Re: Application for leasing a portion of land to construct a tower network for telecommunication services.

Your application via email dated the 18 December 2024 regarding the above subject matter has reference.

Kindly be informed that the Council has approved your application to construct a Network Tower for telecommunication services on portion of Erf 398 (Outside Etoshapoort Stadium), Etoshapoort. The portion is allocated on lease basis hence, a lease agreement shall be concluded before any development start on the Erf.

The Council would therefore like to express its gratitude for choosing Outjo town as place of your investment and we are looking forward with anticipation.

Yours faithfully

Immanuel Tjipura
Acting Chief Executive Officer

All official correspondence must be addressed to the Chief Executive Officer