

**ENVIRONMENTAL IMPACT ASSESSMENT
FOR THE PROPOSED CONSTRUCTION AND
OPERATION OF A TELECOMMUNICATION LATTICE
TOWER AT KUPFERQUELLE RESORT IN TSUMEB,
OSHIKOTO REGION-NAMIBIA.**



**ENVIRONMENTAL MANAGEMENT PLAN
FINAL**

JULY 2020



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Contents

1. CHAPTER ONE: BACKGROUND	2
1.1. INTRODUCTION	3
1.2. PROJECT LOCATION	3
1.3. PROJECT OVERVIEW	5
1.4. THE PROJECT ENVIRONS	6
1.5. NEED AND DESIRABILITY	6
1.6. PROJECT ALTERNATIVES	7
1.6.1. SITE LOCATION ALTERNATIVES	7
1.6.2. TOWER INFRASTRUCTURE ALTERNATIVES	7
1.6.3. NO-GO ALTERNATIVE	7
1.6.4. CONCLUSION	8
2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK	9
2.1. INTRODUCTION	9
3. CHAPTER THREE: ENVIRONMENTAL MANAGEMENT PLAN (EMP).....	10
3.1. EMP ADMINISTRATION	10
4. CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS	17
4.1. RECOMMENDATION FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER.....	17

List of Figures

Figure 1: Proposed Project Site	4
Figure 2: Typical Telecommunication tower (Left) Proposed eco-friendly tower (right).	5

List of Tables

Table 1: Legal Compliance	i
Table 2: Roles and Responsibilities in EMP Implementation	11
Table 3 : Construction and Operation EMP (C&O EMP)	12

Acronyms

TERMS	DEFINITION
BID	Background Information Document
EAP	Environmental Assessment Practitioners
ECC	Environmental Clearance Certificate
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
GHG	Greenhouse Gasses
ISO	International Organization for Standardization
I&Aps	Interested and Affected Parties
JBIC	Junior Baiano Industrial Consultants
MET: DEA	Ministry of Environment and Tourism's Directorate of Environmental Affairs

1. CHAPTER ONE: BACKGROUND

1.1. INTRODUCTION

Powercom (PTY) LTD herein referred to as the proponent has identified different areas in the Northern regions of Namibia that needs improved communication alternatives due to growth in population and economic activities. To achieve the objective of improved telecommunication connectivity, Powercom intends to establish telecommunication towers across the identified different locations. One of the identified areas that needs a telecommunication mast is Tsumeb Town and a site at Kupferquelle Resort was identified.

In terms of the Namibian environmental legislation (Environmental Management Act (No. 7 of 2007)) and the Environmental Assessment Regulations of 2012; an EIA is required to obtain an Environmental Clearance Certificate from the Ministry of Environment and Tourism (MET) before the project can proceed.

Furthermore, as per the requirements of the Environmental Management Act No. 7 of 2007, Powercom has appointed JBIC to conduct an Environmental Assessment (EA) and develop an Environmental Management Plan (EMP) for the proposed project. This has been followed by an application for Environmental Clearance Certificate (ECC) to the Ministry of Environment and Tourism (MET) : Directorate of Environmental Affairs (DEA).

In this respect, this document forms part of the application to be made to the DEA's office for an Environmental Clearance certificate for the proposed Kupferquelle Resort telecommunication lattice tower, in accordance with the guidelines and statutes of the Environmental Management Act No.7 of 2007 and the environmental impacts regulations (GN 30 in GG 4878 of 6 February 2012)

1.2. PROJECT LOCATION

The proposed project site is at Kupferquelle Resort in Tsumeb, Oshikoto Region-Namibia. The Locality Map Fig 1) gives a local layout view of the project site:

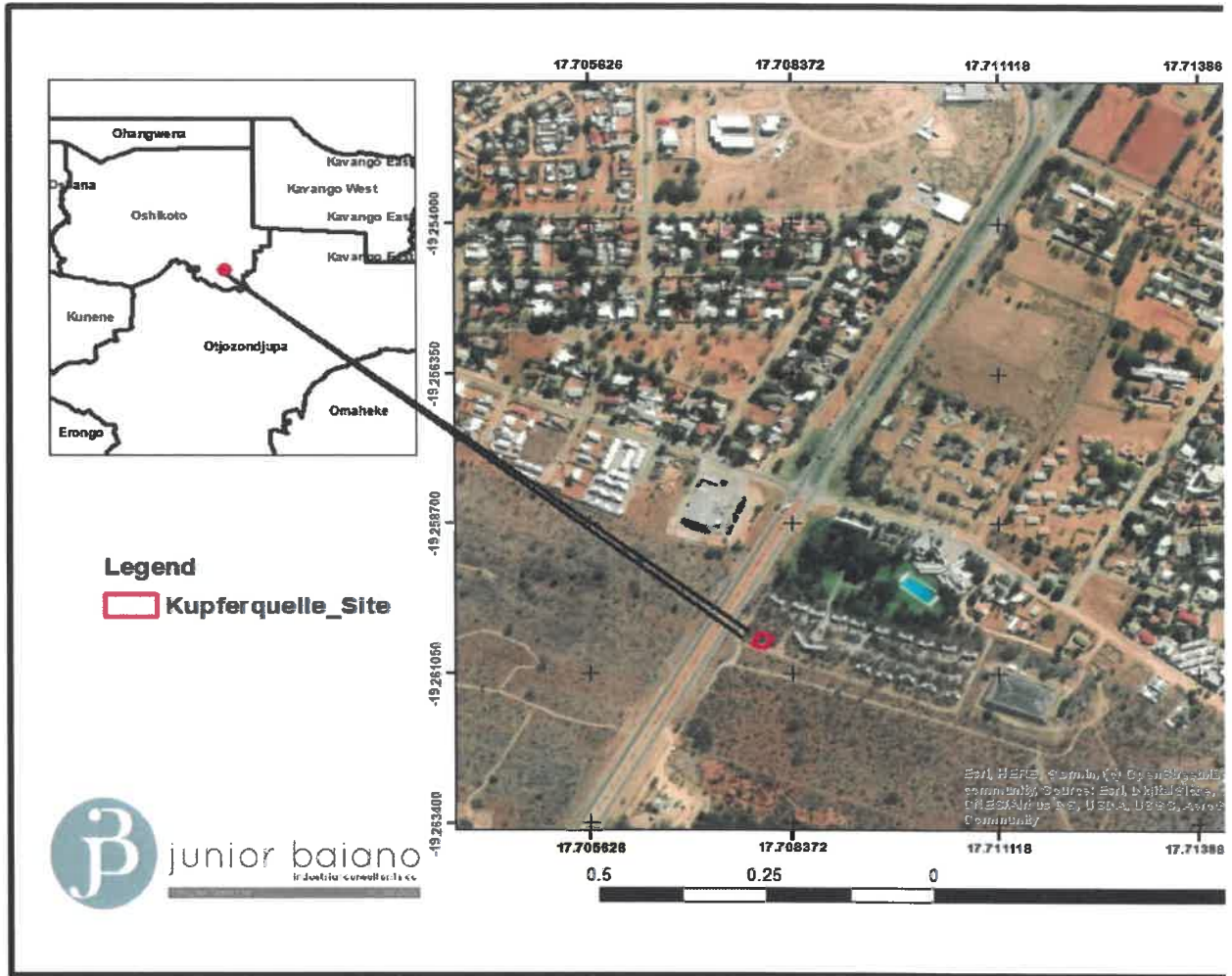


Figure 1: Proposed Project Site

1.3. PROJECT OVERVIEW

TELECOM Namibia's information and technology infrastructure development subsidiary, Powercom (Pty) Ltd is on a drive of construction network towers across the country. Powercom targets that, other than improving internet and voice connectivity in the regions, there is also a need to increase the company's footprint and asset base to best service ICT stakeholders and offer better connectivity in all regions of the country.

Powercom aims at providing different telecommunication service providers in Namibia with ready to use infrastructure as well as expand TN Mobile's network coverage into the different areas where there is weak or no network connectivity at all.

Behind this backdrop, the applicant, Powercom Pty Ltd intends to develop a telecommunication tower in Tsumeb at Kupferquelle resort. The development will include the following:

- The construction of an 60m Guyed mast within the footprint size of a 20m x 20m
- A storage and communication structure for equipment

The structure will be fenced to limit public access to it. The base station will be a secured building and sufficient precaution will be made to prevent access to the antenna support structure. Access to the area will be strictly controlled through a locked gate.

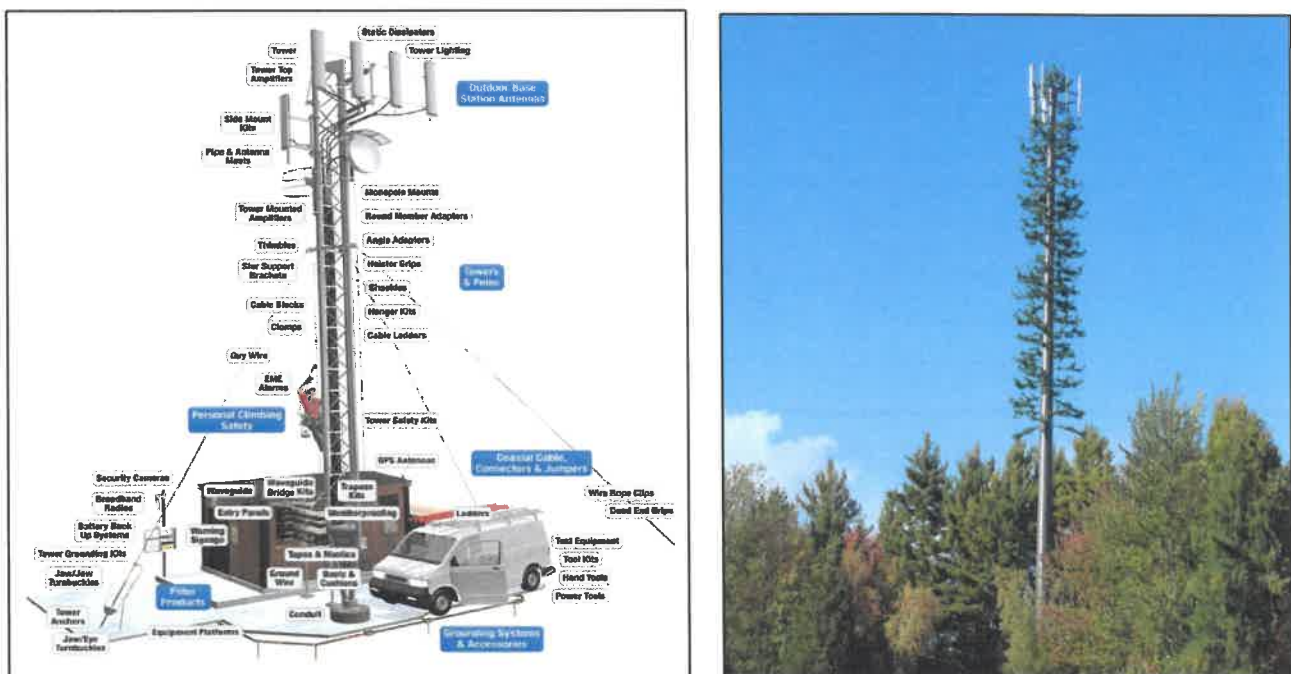


Figure 2: Typical Telecommunication tower (Left) Proposed eco-friendly tower (right).

Accessibility

The site is easily accessible from access road to Kupferquelle resort from the B1 national highway.

Infrastructure and Services

Water: There is already existing water supply from Tsumeb Town Council

Ablution: During construction, employees will use ablution at Kupferquelle resort, and during operation there is no need for on-site ablution.

1.4. THE PROJECT ENVIRONS

The project site is located to the South-Eastern corner of the Kupferquelle resort area, around this site are

1.5. NEED AND DESIRABILITY

The economic and social development goals of Namibia are embodied in (i) Vision 2030 and (ii) the National Development Plan 5 (NDP 5) 2017/2018 – 2021/2022 as well as NDPs 1, 2, 3, and 4. In addition, the Government has developed the Harambee Prosperity Plan (HPP) 2016/2017 – 2019/2020, which complements the Vision 2030 and NDP 5. All of the three plans set the goals, targets, and strategy for Namibia to move on a path to economic prosperity through a concerted strategy for the development of Namibia's economic growth. These Plans also include specific growth targets milestones and strategies for the sustainable deployment of Namibia's resources to achieve the stated economic and social development goals. Communication is one of the major targets aimed in the NDP5 and to stimulate development of any aspect, internet and voice connectivity is a pre-requisite. This project, is a major step in addressing the objectives of the developmental plans and targets of the Namibian government.

1.6. PROJECT ALTERNATIVES

1.6.1. SITE LOCATION ALTERNATIVES

An integrated site selection study was done in order to identify a suitable site for the proposed tower. The proposed site is considered highly desirable due to the following considerations:

- Elevation: The project location is strategic because it can allow the covering of a wider radius within Tsumeb townlands as well as other surrounding farms.

- Land suitability:

-Sites that facilitate easy construction conditions (relatively flat land with few rock outcrops or water-bodies) were favoured during site selection.

-The site is easily accessible by road and near electrical connection to power the tower components.

It is thus, the consideration of the above criteria resulted in the selection of the preferred site.

No further site location alternatives are considered in the EIA process.

1.6.2. TOWER INFRASTRUCTURE ALTERNATIVES

There are several types of telecommunication towers designs and form. In this respect, to be compatible with Kupferquelle resort, the proponent will invest in an eco-friendly telecommunication mast that will blend with the surrounding vegetation.

1.6.3. NO-GO ALTERNATIVE

The current low environmental impact associated with current land use will be maintained and no change in land use or zoning would be required. The status quo needs to be measured against the proposed facility to determine whether the environmental and socio-economic benefits warrant the approval thereof or whether the status quo should be maintained.

This development alternative entails that the proposed tower will not be constructed on the project site, thus result in the site being left as is. With the current needs in voice and internet connectivity within Tsumeb and its surrounding farms, it is imperative that the tower should be constructed. The non-development of the proposed tower will furthermore impede economic development and socio-economic progress for Tsumeb Town.

Due to the numerous socio economic and economic benefits, the environmental advancement and the fact that the identified environmental impacts can be suitably mitigated it has been determined that the No Go option can be eliminated. Should the Competent Authorities (CA) refuse the authorisation of the proposed telecommunication tower, the 'No

Go' option will be "implemented" and the status quo of the site will remain intact - leaving the site in its present state.

1.6.4. CONCLUSION

Based on the preceding alternative analysis and option, the project will go ahead and will ensure maximum environmental and safety performance systems are in place.

2. CHAPTER TWO: POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1. INTRODUCTION

An important part of the EIA is identifying and reviewing the administrative, policy and legislative situation concerning the proposed activity, to inform the proponent about the requirements to be fulfilled in undertaking the construction and land servicing activities. This section looks at the legislative framework within which the proposed project will operate under. The focus is on the compliance with the legislation during the planning, construction and operational phases. All relevant legislations, policies and international statutes applying to the project are highlighted in Table 1: Legal Compliance below as specified in the Environmental Management Act, 2007 (Act No.7 of 2007) and the regulations for Environmental Impact Assessment as set out in the Schedule of Government Notice No. 30 (2012).

The pursuit of sustainability is guided by a sound legislative framework. In this section, relevant legal instruments as well as their relevant provisions have been surveyed. An explanation is provided regarding how these provisions apply to this project.

Table 1: Legal Compliance

LEGISLATION/POLICY/GUIDING DOCUMENT	PROVISION	PROJECT IMPLICATION
<p>The Constitution of the Republic of Namibia (1990)</p>	<p>The articles 91(c) and 95(i) commits the state to actively promote and sustain environmental welfare of the nation by formulating and institutionalizing policies to accomplish the sustainable objectives which include:</p> <ul style="list-style-type: none"> - Guarding against overutilization of biological natural resources, - Limiting over-exploitation of non-renewable resources, - Ensuring ecosystem functionality, - Maintain biological diversity. 	<p>-Through implementation of the environmental management plan, the proposed development will be in conformant to the constitution in terms of environmental management and sustainability, through bringing development in an environmentally sensitive way.</p>
<p>Vision 2030 and National Development Plans</p>	<p>Namibia's overall Development ambitions are articulated in the Nations Vision 2030. At the operational level, five-yearly national development plans (NDP's) are prepared in extensive consultations led by the National Planning Commission in the Office of the President. Currently the Government has so far launched a 4th NDP</p>	<p>-The proposed project is an important element in the propelling and connectivity in the country.</p>

	<p>which pursues three overarching goals for the Namibian nation: high and sustained economic growth; increased income equality; and employment creation.</p>	
<p>Environmental Assessment Policy of Namibia 1994</p>	<p>The Environmental Assessment Policy of Namibia requires that all projects, policies, Programmes, and plans that have detrimental effect on the environment must be accompanied by an EIA. The policy provides a definition to the term "Environment" broadly interpreted to include biophysical, social, economic, cultural, historical and political components and provides reference to the inclusion of alternatives in all projects, policies, programmes and plans.</p>	<p>-The construction and operation of the tower will only commence after being awarded an environmental clearance certificate, thus by abiding to the requirements of the Environmental Assessment Policy of Namibia. The EIA and EMP will cater for the sustainable management of biophysical environment.</p>
<p>Environmental Management Act No. 07 of 2007</p>	<p>The Act aims at</p> <ul style="list-style-type: none"> - Promoting the sustainable management of the environment and the use of natural resources by establishing principles for decision-making on matters affecting the environment; - To provide for a process of assessment and control of projects which may have significant effects on the environment; - The Act gives legislative effect to the Environmental Impact Assessment Policy. Moreover, the act also provides procedure for 	<p>-This document is compiled in a nature that project implementation is in line with the objectives of the EMA. EIA guiding procedures developed by MET were also used in the course of this project.</p>

	adequate public participation during the environmental assessment process.	
Electricity Act 4 of 2007	<ul style="list-style-type: none"> - Requires that any generation and or distribution complies with laws relating to health, safety and environmental standards (s 18(4)(b)) - In the event that exemption from acquiring a license is granted, the Minister may impose conditions relating to public health safety or the protection of the environment. 	-Obliges Powercom to comply with all relevant provisions of the EMA and its regulations when installing electrical connections to the tower.
The Atomic Energy and Radiation Protection Act, Act 5 of 2005:	Provides for the adequate protection of the environment and of people against the harmful effects of radiation by controlling and regulating the production, processing, handling, use, holding, storage, transport and disposal of radiation sources and radioactive materials, and controlling and regulating prescribed non-ionising radiation sources according to the standards set out by the ICNIRP.	-Justifies the need for assessing the impact of electromagnetic radiation from the power line, on the nearby residents.
Hazardous Substances Ordinance 14 of 1974 Regulations Made In Terms Of Hazardous Substances Ordinance 14 of 1974 sections 3 and 27	<ul style="list-style-type: none"> - To provide for the control of substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances; to provide for the division of such substances into groups in relation to the degree of danger; to provide for the prohibition and control of 	<ul style="list-style-type: none"> - Powercom will have to conform to this Act and its regulations through application for relevant licences with the relevant bodies highlighted thereto.

	<p>the importation, manufacture, sale, use, operation, application, modification, disposal or dumping of such substances; and to provide for matters connected therewith.</p> <p>Provides international standards and guidelines for limiting the adverse effects of non-ionising radiation on human health and well-being, and, where appropriate, provides scientifically based advice on non-ionising radiation protection including the provision of guidelines on limiting exposure.</p>	<p>-Justifies the need for assessing the impact of ionising and non-ionising radiation from the operation of the network technologies to be installed on site.</p>
<p>“Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300GHz)” (April 1998 developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP))</p> <p>Soil Conservation Act 76 of 1969</p>	<p>The objectives of this Act are to:</p> <ul style="list-style-type: none"> - Make provisions for the combating and prevention of soil erosion, - Promote the conservation, protection and improvement of the soil, vegetation, sources and resources of the Republic. 	<p>-The project will have a rather localized impact on soils and on the soil through clearance for tower platform. Soil protection measures will be employed and preservation of trees as much as possible.</p>
<p>Nature Conservation Ordinance 1996</p>	<p>To consolidate and amend the laws relating to the conservation of nature; the establishment of game parks and nature reserves; the control of problem animals; and to provide for matters incidental thereto.</p>	<p>The proposed project implementation is not located in any known or demarcated conservation area, national park or unique environments. The project site was selected with this ordinance in mind to ensure that Namibian nature is conserved.</p>
<p>Protected Areas and Wildlife Management Bill</p>	<p>This bill, when it comes into force, will replace the Nature Conservation Ordinance 4 of 1975. The bill</p>	<p>Environmental recommendations and considerations on this project has ensured that</p>

	<p>recognizes that biological diversity must be maintained, and where necessary, rehabilitated and that essential ecological processes and life support systems be maintained. It protects all indigenous species and control the exploitation of all plants and wildlife.</p> <p>The Act gives provision for the protection of various plant species through the Ministry of Agriculture, Water and Forestry (MAWF), Directorate of Forestry).</p>	<p>the proposed activities will not fall within the boundaries of any protected area and that the project will not affect heavily endangered vegetation and animals on its site.</p>
<p>Forest Act, 2001 (Act No. 12 of 2001)</p>		<p>-Land clearing of an extensive piece of land will be done upon approval from the Directorate of Forestry.</p> <p>-The proponent will also have to ensure that there is no indiscriminate cutting down of trees during construction and operation</p> <p>-The proposed site is sparsely vegetated with white shrubs and grasses, which are not threatened or protected.</p>
<p>National Rangeland Policy and Strategy, 2012</p>	<p>The policy aims at enabling resource users (farmers and managers) to manage their rangeland resources in a sustainable manner and sustainable in that they are economically viable, socially acceptable, environmentally friendly and politically conducive.</p> <p>The action plan was operationalised in a bid to make aware the critical importance of biodiversity conservation in Namibia putting together management of matters to do with ecosystems</p>	<p>-This proposed project will ensure that the local community benefits both economically and socially from the project, this in line with the recently declared Harambee Prosperity Plan and NDP 4&5.</p>
<p>National Biodiversity Strategy and Action Plan (NBSAP2)</p>		<p>-The project proponent has been advised by JBIC and recognises the need for ecosystems protection to manage the changing climatic environment.</p>

	protection, biosafety, biosystematics protection on both terrestrial and aquatic systems.	-This project is one of the drivers to reduce the rate of global environmental change given its contribution, to decreased use of burning fossil fuels for energy generation.
Wetland Policy, 2004	The policy provides a platform for the conservation and wise use of wetlands, thus promoting inter-generational equity regarding wetland resource utilization. Furthermore, it facilitates the Nation's efforts to meet its commitments as a signatory to the International Convention on Wetlands (Ramsar) and other Multinational Environmental Agreements (MEA's).	-In compliance to this Policy, the development will ensure a standard environmental planning such that it does not affect any wetlands within its locale through recognition of wetlands to promote the conservation and wise utilization of wetlands resources. -There are no existing wetlands/peatlands within 2km radius of the proposed project site.
Water Resources Management Act, 2013 (Act No. 11 of 2013)	This Act provides for the management, protection, development, use and conservation of water resources. This also forms the regulation and monitoring of water resources.	-The proposed development will not have any interference with surface and groundwater sources during construction and operation, apart from water requirements for construction which will be supplied through Tsumeb water reticulation system
National Heritage Act 27 of 2004	Heritage resources to be conserved in development.	-During the project implementation as soon as objects of cultural and heritage interests are observed such as graves, artefacts and any other object believed to be older than 50 years, all measures will be taken protect these objects until the National Heritage Council of Namibia have been informed, and approval to proceed

<p>National Monuments Act of Namibia (No. 28 of 1969) as amended until 1979</p>		<p>with the operations granted accordingly by the Council.</p>
	<p>"No person shall destroy, damage, excavate, alter, remove from its original site or export from Namibia: (a) any meteorite or fossil; or (b) any drawing or painting on stone or a petroglyph known or commonly believed to have been executed by any people who inhabited or visited Namibia before the year 1900 AD; or (c) any implement, ornament or structure known or commonly believed to have been used as a mace, used or erected by people referred to in paragraph (b); or (d) the anthropological or archaeological contents of graves, caves, rock shelters, middens, shell mounds or other sites used by such people; or (e) any other archaeological or palaeontological finds, material or object; except under the authority of and in accordance with a permit issued under this section.</p>	<p>-The proposed site of development is not within any known monument site both movable or immovable as specified in the Act, however in such an instance that any material or sites or archeologic importance are identified, it will be the responsibility of the developer to take the required route and notify the relevant commission.</p>
<p>Pollution Control and Waste Management Bill</p>	<p>-This bill has not come into force. Amongst others, the bill aims to "prevent and regulate the discharge of pollutants to the air, water and land" Of particular reference to the Project is: Section 21 "(1) Subject to sub-section (4) and section 22, no person shall</p>	<p>-To control air, water and land pollution as agitated by the Act the project proponent will ensure that the development will prevent pollution in all forms during construction and operation phases.</p>

	<p>cause or permit the discharge of pollutants or waste into any water or watercourse.”</p> <p>Section 55 "(1) No person may produce, collect, transport, sort, recover, treat, store, dispose of or otherwise manage waste in a manner that results in or creates a significant risk of harm to human health or the environment.”</p>	
<p>Communications Act, 2009 (Act No. 8 of 2009)</p>	<ul style="list-style-type: none"> - (10) The Authority may impose specific obligations and requirements on a licensee regarding to masts, towers or other facilities including requirements relating to the environmental or aesthetic impact of such facilities; - Provide for the regulation of telecommunication activities. The bill provides licencing and enforcement of conditions, and the approval or equipment and technical standards to ensure public health and safety. - Namibia is a signatory of the Convention on Biological Diversity and thus is obliged to conserve its biodiversity. 	<p>-As a pre requisite, telecommunication towers would require environmental clearance certificates and, in this respect, Powercom authorised this EIA to obtain such.</p>
<p>Communication Bill 2009</p>		<p>-As per relevant spectrum, network equipment should be as per licenses.</p>
<p>Convention on Biological Diversity (CBD)</p>		<p>The project will preserve tree species on as part of their plans for green and sustainable development.</p>
<p>United Nations Convection to combat Desertification</p>	<p>Namibia is bound to prevent excessive land degradation that may threaten livelihoods.</p>	<p>It will be the responsibility of the proponent to conserve vegetation on and around the area, to avoid encroachment of the desert environs in the area.</p>

3. CHAPTER THREE: ENVIRONMENTAL MANAGEMENT PLAN (EMP)

The proposed telecommunication tower will have environmental impacts as indicated in the ESR. This section describes the Environmental Management Plan (EMP) for impacts associated with the proposed development. The EMP stipulates the management of environmental programs in a systematic, planned and documented manner. The EMP below includes the organizational structure, planning and monitoring for environmental protection at the proposed farm area development and other areas of its influence. The aim is to ensure that the proponent maintains adequate control over the project operations to:

- To prevent negative impacts where possible;
- Reduce or minimise the extent of impact during project life cycle;
- Prevent long-term environmental degradation.
- Ensure public safety and health is protected.

3.1. EMP ADMINISTRATION

There is a strong need to clearly outline the roles and responsibilities of all stakeholders to ensure that the EMP is fully implemented. There is also a need for the proponent to appoint an overall responsible person (Site Manager) to ensure the successful implementation of the EMP as highlighted below:

Table 2: Roles and Responsibilities in EMP Implementation

ROLE	ENVIRONMENTAL RESPONSIBILITIES
Site Manager	Responsible to enforce EMP implementation to contractors
Environmental Control Officer (ECO)	<p>Implement, review and update the EMP.</p> <ul style="list-style-type: none"> • Ensure all reporting and monitoring required under EMP is undertaken, documented and distributed as needed • Conduct environmental site training (tool box talks) and inductions • Conducts environmental audit at work site with the support of environmental consultant. • Close out all non-conformances. • Ensure materials being used on site are environmentally friendly and safe.
The Department of Environmental Affairs	<p>Approve the EMP and any amendments to the EMP.</p> <ul style="list-style-type: none"> • Approve reports of environmental issues and non-conformances as issued. • Review and approve environmental reports submitted as part of EMP implementation
Site Engineers	<p>Control and monitor actions required by the EMP.</p> <ul style="list-style-type: none"> • Report all environmental issues to Environmental Control Officer • Ensure documented procedures are followed and records kept on site. • Ensure any complaints are passed onto the management within 24 hours of receiving the complaint.
Workers	<p>Follow requirements as directed by site engineers.</p> <ul style="list-style-type: none"> • Report any potential environmental issues to site engineer/Site Manager, indicating spilt oil, excess waste, excessive dust generation, dirty water running off the site and other possible non-conformances

Table 3 : Construction and Operation EMP (C&O EMP)

Impact	Description	Effects	Class	Time frame	Responsibility	Action	Phase
Noise pollution	Noise will be generated through: -Construction activities -Moving vehicles.	- The health of working personnel could be disturbed. - Community residents could be disturbed by the noise. - General annoyance -Driving away of local animals species near the project site	Environmental	4-6 months	-Environmental Control Officer -Site Manger	- A construction interval will be established, used and adhered to. - Workers will be issued earplugs to protect them from excessive noise. - Public will be notified through printed timetable stating planned operational activities. - Construction activities will be conducted during daytime. -Site notices will be erected on, around the site-notifying visitors, and nearby residents of different hazards on site. -No go areas marked as sensitive environments, especially for birds needs to be avoided during construction and operation.	Construction & Operation
Dust Generation	Dust will accumulate because of the land preparation, onsite movements of vehicles and machines, wind blowing on loose material during construction and tipping.	- Can lead to respiratory illnesses especially to those working in the area. -General air pollution. -Nuisance to nearby residents -The process can also drive away wild animals	Environmental	6-8 months	-Environmental Control Officer -Site Manager	- Dust suppression will be done through watering dust sources surfaces. -Watering down dusty surfaces, -Ensure that protective equipment such as respirators are distributed to employees, and ensure their use. -Site notices to be erected on and around the site to inform visitors and surrounding residents.	Construction & Operation

Impact	Description	Effects	Class	Time frame	Responsibility	Action	Phase
Loss of Biodiversity	<ul style="list-style-type: none"> -Vegetative plants on site will be removed -Habitat destruction for both ground dwelling species and tree dwelling species. -Soil disturbance on and around the site. 	<p>within the project area surroundings</p> <ul style="list-style-type: none"> -The clearing of vegetation will result in the breaking of the ecosystem processes in the area. -Loss of aesthetic value of the proposed project area. -The few small animals still inhabiting the place such as small rodents and birds will be forced away. 	Environmental	Construction phase	-Environmental Control Officer -Site Manager	<ul style="list-style-type: none"> - The proposed project area is already disturbed, hence there is little vegetation to be affected by the development. - Ground disturbance will only be limited to the boundary area to avoid affecting a large area. -Upon completion of construction activities more trees and lawn will be planted on and around the site to restore the site into a status that is environmentally friendly. 	Construction
Greenhouse gas emissions	<p>Green House Gases (GHGs) emissions will be produced from the following activities:</p> <ul style="list-style-type: none"> • Fuels combustion for transport (construction vehicles and equipment) • Ground excavation releases phosphorus found underground and releases 	<ul style="list-style-type: none"> -Global climate change - Air pollution 	Environmental	Construction phase	-Environmental Control Officer -Site Manager of Environmental Affairs.	<ul style="list-style-type: none"> -Adopt the use of ethanol blended fuels wherever necessary. -Design an operation system that cuts on fuel consumption. - Use of solar energy system during construction for lighting and other minor energy needs. 	Construction & Operation

Impact	Description	Effects	Class	Time frame	Responsibility	Action	Phase
	particulate matter into the atmosphere.						
Waste Generation	<p>-Construction and operation are associated with a lot of raw material and activities that results in pollution</p> <p>-The construction and maintenance activities may generate e-waste and this needs to be disposed of in a sustainable manner.</p>	<p>-Pollution from oil spills resulting from the handling of various machineries used during the construction phase</p> <p>-Construction rubble, empty packaging containers/bags and materials remnants.</p>	Environmental	Construction phase	-Environmental Control Officer -Site Manager	<p>- Ensure that all waste from construction activities is stored and contained in designated containers and transported to an approved waste disposal site.</p> <p>-Bulky waste such as building rubbles must be collected and disposed of for landfilling.</p> <p>-Visual inspections monitoring</p>	
Safety and Health risks	<p>Construction related Safety and Health hazards</p>	<p>-Injuries to workers such as Occupational dermatitis, slips and fall of humans and objects, musculoskeletal disorders, etc.</p>	Health and safety	Construction phase	ECO	<p>- Equip workers with Personal Protective Equipment (PPE), provide trainings on how to effectively use the PPE.</p> <p>-Provide platforms for briefings and meetings about possible safety and health hazards in the work place</p> <p>-Provide site signs warning and informing about different hazards on site.</p>	Construction and operation
	Electrical hazards	-Fatalities and fires	Health and safety	Construction and operation	ECO	<p>-Employees should be trained on electrical safety before working on site.</p> <p>-Safety representative with training on electrical hazards emergency</p>	Construction and Operation

Impact	Description	Effects	Class	Time frame	Responsibility	Action	Phase
						management should be station on site always during construction -Safety signs during construction and operation should be put on site, no go areas should be labelled, PPE specifications should be clear to maintenance personnel.	
	Aviation Impacts	-Bird fatalities -Air transports impacts	-Socio-economic -Environmental	Permanent	-Environmental Control Officer -Site Manager	-The towers should comply with aviation guidelines so that they do not impact air transport systems. -Air traffic visibility systems such as lighting at the tip of the tower. -The towers should be designed so that they are visible to birds.	Construction and operation
Land use change	-There will be change in land use and visual aesthetics	-The area will no longer be suitable for agriculture. -Sudden change in landscape appearances may be unfavourable to the conservatives.	-Social -Terrestrial environment	Permanent	-Environmental Control Officer -Site Manager	-The development should blend into the existing area through designing and colour coding. -Green designing will bring life to the site and blend with surrounding areas.	Construction and operation
Positive Impacts							
Employment creation	The development provides an opportunity of outsourcing work	- Improves disposable income to those employed and their immediate families.	Socio-economic	Project time	-Site Manager	- Work with local leadership (councillor) on acquiring non-skilled labour from the residents.	Construction and operation

Impact	Description	Effects	Class	Time frame	Responsibility	Action	Phase
Business linkages	-Raw materials acquiring and contracting companies provide an opportunity for businesses.	-Local suppliers will be presented with an opportunity to empower their businesses. -Construction workers can be provided with accommodation, food and services from the local community increasing business activities.	-Socio-economic	Construction phase	-Site Manager	-The proponent will outsource most of its materials and services from Tsumeb	Construction and operation
Infrastructure development	The development presents a unique opportunity for infrastructure development in Northern Namibia area.	-Improvement in connectivity. -Development of the facilities will also pave way for future developers to grow interests in the area and result in ripple effects and quick growing of the area.	-Socio-economic	Construction phase	-Site Manager	-The new tower should cover a larger area, and they should also consider provision of infrastructure platform to other smaller companies such as security companies..	Construction and operation

4. CHAPTER FOUR: CONCLUSION AND RECOMMENDATIONS

4.1. RECOMMENDATION FROM ENVIRONMENTAL ASSESSMENT PRACTITIONER

Based on the information provided it is the opinion of JBIC CC that no fatal flaws have been identified for the proposed development and that the information contained in this report is sufficient enough to allow DEA to make an informed decision.

Junior Baiano Industrial Consultants cc therefore recommends that Environmental Clearance be granted for the proposed development based on the following recommendations:

- The proposed activity is not anticipated to have significant environmental impacts.
- There is however a visual impact.
- The following recommendations should be implemented in order to ensure that potential impacts associated with the establishment and operation of the site are minimised:
 - i. Any areas disturbed during construction and operation must be rehabilitated.
 - ii. The structure is to be removed when the structure ceased to be used for telecommunications purposes and the site rehabilitated.
 - iii. Construction to take place during working hours.
 - iv. Trampling and disturbance associated with construction should be limited to within 5m (five metres) of the footprint of the site.
 - v. On completion of the project all litter and construction debris shall be immediately removed from the site.
 - vi. Mitigation measures to reduce the potential visual impact should be implemented as far as possible.

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