ENVIRONMENTAL MANAGEMENT PLAN

FOR THE PROPOSED INSTALLATION AND OPERATION OF 15 CAMOUFLAGE TELECOMMUNICATION TOWERS IN WALVIS-BAY, ERONGO REGION, NAMIBIA

ENVIRONMENTAL MANAGEMENT PLAN

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1.1 INTRODUCTION

The planned project is likely to have an impact on the biophysical and socio-economic environment, as was mentioned in the chapter before. The Environmental Management Plan (EMP) for impacts related to the proposed development is described in this section. The objectives of the EMP include to prevent negative impacts where possible; reduce or minimise the extent of impact during project life cycle; and prevent long term environmental degradation

The expected project area and any potentially affected nearby sites are described in the Environmental Management Plan (EMP), together with the organizational structure, planning, and monitoring for environmental protection.

1.2 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 (project manager) to ensure the successful implementation of the EMP as highlighted below.

Table 1-1: Roles and Responsibilities in EMP Implementation

ROLE	ENVIRONMENTAL RESPONSIBILITIES
Demshi Investment Holdings (Pty) Ltd	Responsible to enforce EMP implementation to contractors
Environmental Control Officer	• Implement, review and update the EMP. • Ensure all reporting and monitoring required under EMP is undertaken, documented and distributed as needed • Conduct environmental site training (tool box talks) and inductions with the support of an environmental consultant. • Conducts environmental audit at work site with the support of environmental consultant. • Close out all non-conformances. • Ensure materials being used on site are environmental friendly and safe.
The Department of Environmental Affairs	• Approve the EMP and any amendments to the EMP. • Approve reports of environmental issues and non-conformances as issued. • Review and approve environmental reports submitted as part of EMP implementation
Environmental Consultant	• Conduct and monitor actions required by the EMP if required • Conduct environmental site training (tool box talks) and inductions if assistance is required

ROLE	ENVIRONMENTAL RESPONSIBILITIES
	• Conducts environmental audit at work site • Ensure materials being used on site are environmental friendly and safe.
Site Technical Team	• Control and monitor actions required by the EMP. • 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	• Follow requirements as directed by site technical. • Report any potential environmental issues to site engineer/project manager, indicating spilt oil, excess waste, excessive dust generation, dirty water running off the site and other possible non-conformances

1.3 EMP Management Actions

The management actions aim to avoid potential impacts where possible. Where impacts cannot be avoided, management actions are outlined in order to minimize the significant impacts.

The tables below outline the specific management actions which need to be undertaken during the construction and operational phase of the development to ensure that the site activities are compliant.

1.4 CONSTRUCTION AND OPERATIONAL PHASE MANAGEMENT ACTIONS

The table below outlines the management actions to be undertaken during the construction and operation phase of the project to ensure compliance with the EMP.

Table 1-2: Construction and Operation 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**

Impact	Description	Effects	Class	Time frame	Responsibility	Action	Phase
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 within the project area surroundings	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**
Loss of Biodiversity	• 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.	• 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 habiting the place	Environmental	Construction phase	• Environmental Control Officer • Site Manager	• 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 regreening of the construction footprint affected area is recommended. A local landscaper can be engaged.	**Construction**

Impact	Description	Effects	Class	Time frame	Responsibility	Action	Phase
		such as small rodents and birds will be forced away.					
Greenhouse gas emissions	Green House Gasses (GHGs) emissions will be produced from the following activities: • Fuels combustion for (construction vehicles and equipment) • Ground excavation releases phosphorus found underground and releases particulate matter into the atmosphere.	• Global climate change • Air pollution	Environmental	Construction phase	• Environmental Control Officer • Site Manager • Department of Environmental Affairs.	• 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**
Waste Generation	• Construction and operation are associated with a lot of raw material and activities that results in pollution • The construction and maintenance activities may generate e-waste and this needs to be disposed of in a sustainable manner.	• Pollution from oil spills resulting from the handling of various machineries used during the construction phase • Construction rubble, empty packaging containers/bags	Environmental	Construction phase	• Environmental Control Officer • Site Manager	• Ensure that all waste from construction activities is stored and contained in designated containers and transported to an approved waste disposal site. • Bulky waste such as building rubbles must be collected and disposed of for landfilling. • Visual inspections monitoring	

Impact	Description	Effects	Class	Time frame	Responsibility	Action	Phase
		and materials remnants.					
Safety and Health risks	Construction related Safety and Health hazards	Injuries to workers such as Occupational dermatitis, slips and fall of humans and objects, musculoskeletal disorders, etc.	Health and safety	Construction phase	ECO	• Equip workers with Personal Protective Equipment (PPE), provide trainings on how to effectively use the PPE. • Provide platforms for briefings and meetings about possible safety and health hazards in the work place • Provide site signs warning and informing about different hazards on site.	**Construction and operation**
	Electrical hazards	-Fatalities and fires	Health and safety	Construction and operation	ECO	• Employees should be trained on electrical safety before working on site. • Safety representative with training on electrical hazards emergency management should be station on site always during construction	**Construction and Operation**
						• 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.	

Impact	Description	Effects	Class	Time frame	Responsibility	Action	Phase
	Radiation (Non Ionizing)	Carcinogenic consequences	-Health -Social	Permanent	• Environmental Control Officer • Site Manager	• There are studies that indicate potential of radiation from cell phone towers to have carcinogenic impacts after prolonged exposure. • However, the towers are to be sited a considerable distance away from residential households so that there is no prolonged exposure to anyone. • The proponent will secure the towers perimeter to ensure that no one is always in proximity to the tower without pre-approval.	**Operation**
	Avifauna	Bird fatalities	Environmental	Permanent	• Environmental Control Officer • Site Manager	• New towers must be built below 60m height to avoid bird fatalities. • Construct unguyed towers with platforms that will accommodate possible future co-locations and build them at existing 'antenna farms', away from areas of high migratory bird traffic, wetlands and other known bird areas. • Where towers over 60m are absolutely necessary, use the	**Operation**

Impact	Description	Effects	Class	Time frame	Responsibility	Action	Phase
						minimum amount and intensity of lighting allowed under FCC regulations. • Minimize the tower 'footprint' on newly constructed towers. • If the tower is decommissioned, it should be removed as soon as possible. • Use visual daytime markers in areas of high diurnal birds. • Security lighting for on-ground facilities should be minimized, point downwards or be down-shielded. • Conduct on-site bird fatalities monitoring on the tower at least every month. • The use of white strobes results in less circling behavior by nocturnal migrants and thus fewer mortalities than red pulsating lights.	
	Aviation Impacts	• Bird fatalities • Air transports impacts	• Socioeconomic • 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.	Construction and operation

Impact	Description	Effects	Class	Time frame	Responsibility	Action	Phase
						• The towers should be designed so that they are visible to birds.	
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 through the installation of a Palm Tree Towers, that fits into the coastal ecological composition.	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 life 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.	Socioeconomic	Construction phase	Site Manager	The proponent will outsource most of its materials and services from the city.	Construction and operation
Infrastructure development	The development presents a unique opportunity for infrastructure development in the region.	• 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.	Socioeconomic	Construction phase	Site Manager	The new towers 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

1.5 ENVIRONMENTAL MONITORING PLAN

Monitoring is very important for identifying the success of mitigation measures formulated for the significant impacts identified. Monitoring of activities will identify impacts that have not been foreseen and give enough time to analyse the situation and formulate measures to minimise impacts. Survey records and results must be maintained for these monitoring and inspections, highlighting any problems and the measures taken to address it.

Prior to site preparation and construction activities, the main contractor should present an environmental monitoring plan (including, *inter alia*, location of construction camp and toilet facilities, location of material storage areas, solid waste management plan, dust control measures, activity schedule, etc.) for review and approval by the DEA, the environmental control officer and the project manager. The developer should present a landscape plan and the trees/vegetation earmarked for protection should be flagged and hoarded by the contractor.

The entity selected to carry out environmental monitoring of the construction works should then prepare an environmental monitoring programme based on the above, the requirements of the EIA, and conditions of the development permit. The major elements of the environmental impact monitoring programme to be implemented during the construction phase of the project are as follows:

- Site clearance to ensure that trees marked for protection are left untouched and that large areas of soil are not left exposed and uncovered for extended periods of time.
- Monitoring of potential ionising radiation from the towers.
- Site drainage and surface runoff, especially during and shortly after major rainfall events, to ensure there is no flooding, ponding and runoff of surface water Compliance of construction works with site management and landscape plans.
- Ensure transportation of earth materials is done by covered trucks and from approved sites.
- The contractor must immediately and completely clean up spills of materials in public areas.
- Solid waste disposal practices to ensure appropriate on-site management and final disposal at approved dump.

2 CONCLUSION AND RECOMMENDATIONS

The Environmental Impact Assessment process for the proposed Installation and Operation of 15 Camouflage Telecommunication Towers in Walvis-Bay, Erongo Region - Namibia was conducted in accordance to the Environmental Management Act 2007 and EMA Regulation 2012. Further consideration was given to relevant legislation throughout the entire process to ensure a successful assessment process.

Impacts likely to occur during project phases (construction and operation) were assessed depicting a positive outlook despite limited details of the magnitude of the proposed development. Based on the assessment, the overall project is less damaging to the environment demonstrating improved telecommunication service provision, high job creation opportunities and community development. Impacts with negative effects were also identified and summarized in a form of environmental management plan to ensure sustainable implementation.

The site has access to services such as electricity and roads for accessibility. Adding on the site has minimal vegetation such that very few or no trees will be removed during the construction phase. It is important that the proponent observe and maintain accountability to both socio-economic and environmental sensitive activities from the project, such that the project is harmonized with policy, regulations, administrative frameworks and social interface with the public as proposed in the environmental management plan. Failure to observe these measures will significantly affect the local environment and lead to non-compliance. Therefore, implementation environmental protection measures should be executed in consultation with the key stakeholders.

JBIC cc hereby recommends that MET: DEA grant the environmental clearance certificate for the proposed Installation and Operation of 15 Camouflage Telecommunication Towers in Walvis-bay, Erongo Region - Namibia, under the condition of full implementation of the project’s EMP.

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APPENDICES

Appendix A: Public Consultation Documents

1. Background Information Document
2. Newspaper Adverts
3. Site Notice
4. Meeting Attendance Register
5. Meeting Presentation
6. Questionnaires

Appendix B: Site Information

1. Approval to lease portion of ervens
2. Name of parks and locality of towers
3. Radiation consent letter

Appendix C: Consultancy Team resumes