Environmental Management Plan (EMP):

ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT (ESIA) FOR THE PROPOSED CONSTRUCTION AND OPERATION OF AN 80M GUYED MAST TELECOMMUNICATION TOWER LOCATED NEAR VAALGRAS VILLAGE, //KHARAS REGION

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1 INTRODUCTION

1.1 Project Background

Mobile Telecommunication Company (MTC) (Hereinafter referred to as the Proponent) proposes to construct and operate an 80m guyed network tower at vaalgras village (coordinate: -26.061391^0 ,18.480207^0), (**Figure 1**). The project footprint will measure 100m x 100m. The site is situated approximately 41.36 km southwest of Tses, within the Berseba Constituency of the Tses Reserve, (**Figure 2**) in the //Kharas Region.

The proposed telecommunications tower by MTC in Vaalgras village is both necessary and desirable to improve network coverage and service reliability in the area. Currently, connectivity in and around Vaalgras is limited or inconsistent, which restricts access to essential communication services. The development will enhance voice and data services, enabling better access to services. Furthermore, the project aligns with National Development Plan (NDP) 6 goals aimed at expanding digital infrastructure and bridging the digital divide in rural Namibia

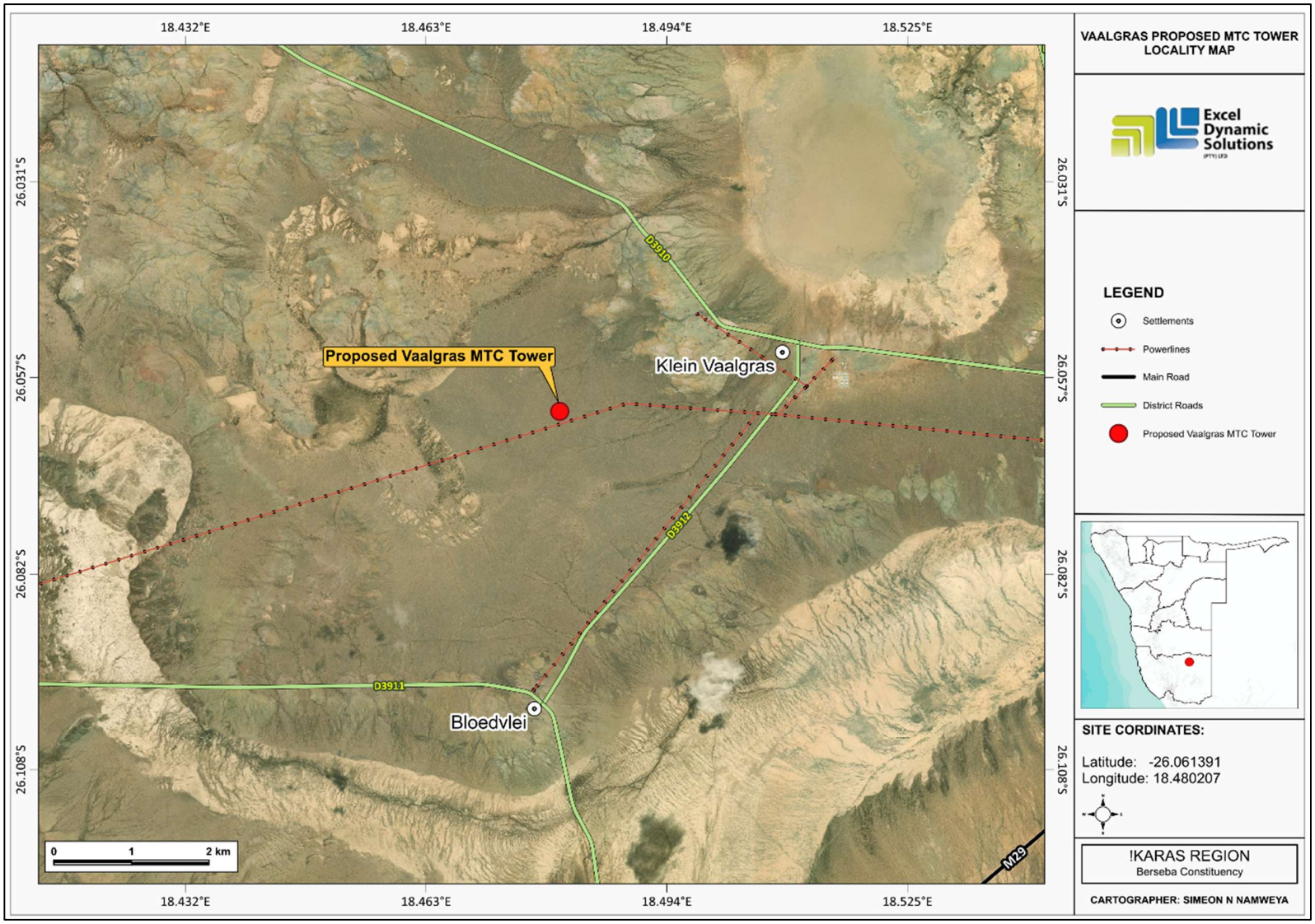

Figure 1: Location of the proposed tower site

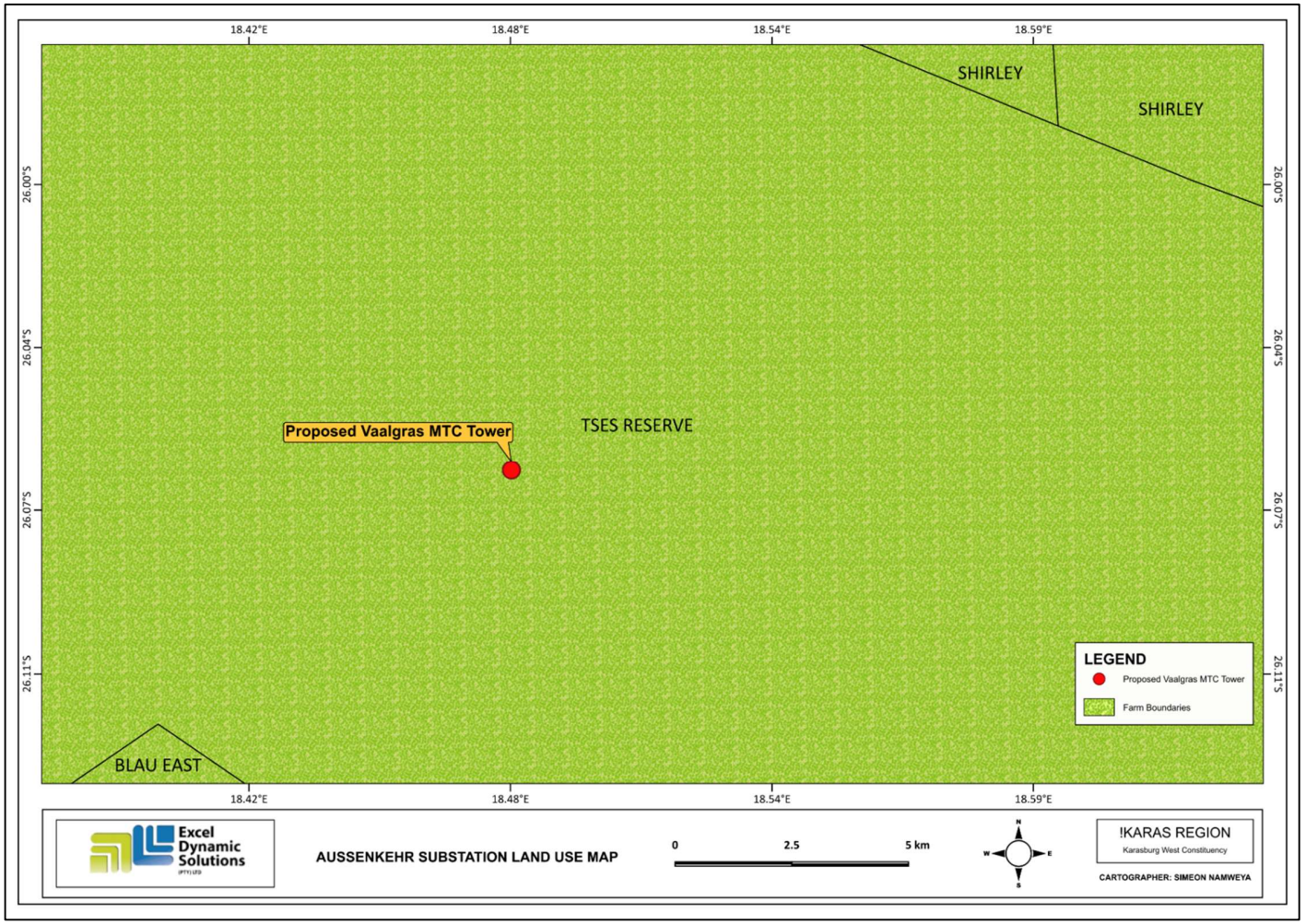

Figure 2: Land Use Map

Telecommunication tower and related infrastructure development are among listed activities that may not be undertaken without an Environmental Clearance Certificate (ECC) under the Environmental Management Act (EMA) (2007) and its 2012 Environmental Impact Assessment (EIA) Regulations. The relevant activities listed as per EIA regulations are:

- *10.1 (g) Communication networks including towers, telecommunication and marine telecommunication lines and cables,*
- *(j) Masts of any material or type and of any height, including those used for telecommunication broadcasting and radio transmission, but excluding (i) flag poles and (ii) lightning conductor poles.*

This document has been prepared as a legal requirement of Section 8 of the EMA (Act No. 7 of 2007). The compilation of this EMP is one of the outputs required of the Environmental Consultant by the Proponent. It is required of the Environmental Consultant to comply with the EMA and provide for the following:

- Prepare a detailed Environmental Management Plan to be used as a guideline to monitor compliance to the recommendations stipulated in the EA, and to assist in managing and monitoring activities throughout the proposed project.
- The Environmental Consultant must clarify in the EMP, the roles and responsibilities of the Proponent, the contractors, and any other identified stakeholders.

1.2 Aim of the Draft Environmental Management Plan (EMP)

Regulation 8(j) of the EIA Regulations (2012) requires that a draft Environmental Management Plan (EMP) shall be included as part of the Environmental Assessment (EA). A '**Management Plan**' is defined as:

> *"…a plan that describes how activities that may have significant environments effects on the environment are to be mitigated, controlled and monitored."*

An EMP is one of the most important outputs of the EA process. It synthesizes all the proposed management & mitigation and monitoring actions, set to a timeline and with specific assigned responsibilities. Additionally, it provides a link between the impacts identified in the EA process and the required mitigation measures. It is important to note that an EMP is a statutory document

and a person who contravenes the provisions of this EMP may face imprisonment and/or a fine. This EMP is a living document and can be amended to adapt to addressing project changes and/or environmental conditions and feedback from compliance monitoring.

The purpose of the Draft EMP is to ensure that the proposed project activities are undertaken in an environmentally friendly and sustainably manner. This would be done through the effective implementation of recommended environmental management and mitigation measures contained in the EMP, for which the aim is to avoid and or minimize the adverse identified impacts while maximizing the positive impacts.

The anticipated project phases for the proposed tower establishment are as follows:

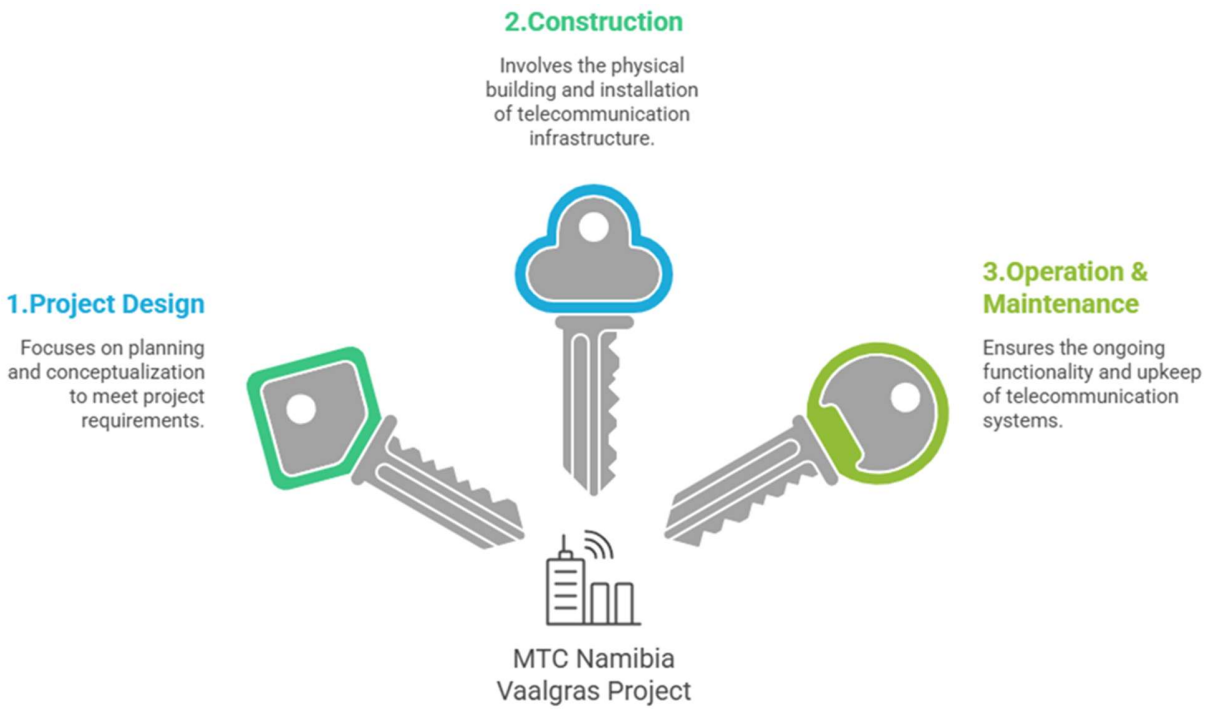

Figure 3: project phases for the proposed telecommunication tower

Environmental Monitoring Requirements: To support and ensure that the proposed mitigation measures are achieving the desired results, a monitoring plan must be implemented alongside the mitigation plan.

2 LEGAL OBLIGATIONS GOVERNING THE PROPOSED ACTIVITIES

Upon issuance of the ECC and obtaining any other necessary and required documentations, the Proponent will then prepare for the construction of the tower. The associated project activities will have some potential impacts, particularly the negative ones for which the draft EMP has been developed.

The construction and operation as well as maintenance of the telecommunication tower and associated activities will be required to adhere to certain local, regional, national as well as internation legal framework. The legal requirements provided in the Draft EMP are these in terms of permitting/licensing, i.e., permits or licensing that the Proponent will need to obtain prior to commencing with construction, operations and/or renewal of permits throughout the operational phases of the tower. These legal requirements are provided under **Table 1**.

Table 1: Applicable legal requirements and permits to the activities of the proposed tower

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Environmental Management Act EMA (No 7 of 2007)	Requires that projects with significant environmental impacts are subject to an environmental assessment process (Section 27). Details principles which are to guide all EIAs.	The EMA and its regulations should inform and guide this EA process. Should the ECC be issued to the Proponent, it should be renewed every 3 years, counting from the date of issue. Contact details at the Department of Environmental Affairs and Forestry (DEAF),
Environmental Impact Assessment (EIA) Regulations GN 28-30 (GG 4878)	Details requirements for public consultation within a given environmental assessment process (GN 30 S21). Details the requirements for what should be included in a Scoping Report (GN 30 S8) and an Assessment Report (GN 30 S15).	Ministry of Environment, Forestry and Tourism (MEFT), Office of the Environmental Commissioner Tel: +264 61 284 2701

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Communication Act No. 8 of 2009	All the relevant communication operations permit and license (broadcasting) should be applied for and obtained from the relevant regulatory authorities. The Proponent should comply with the relevant Sections of Part 5 of the Act. This special rights of carriers. The section that will apply to the proposed project are Section 59 (1) and (3), 60: Entry upon and construction of lines across any land, 64 (1): Fences, 64(2), 66(1): Height or depth of cable and facilities, and 66(2) and 66(3).	Contact: Communication Regulatory Authority of Namibia (CRAN), Tel: +264 61222666, Alternatively, Development Planner: Ministry of Information and communications Technology, Tel.: +264 283 2676
Atomic Energy and Radiation Protection Act 05 of 2005	The Proponent should ensure that they have applied for and obtained all the required licenses for operating the tower in accordance with the Non-ionising Radiation Regulations (2019).	For the determination of possible exposure, the Proponent should consult with the Ministry of Health and Social Services' National Radiation Protection Authority. Director: National Radiation Protection Authority, Tel: +264 61 203 2415
"Guidelines for Limiting Exposure to Time-Vary Electric, Magnetic, and Electromagnetic Fields (up to 300Ghz)" (April 1998 developed by the International Commission on Non-Ionizing Radiation Protection (ICNIRP))	To determine the "safe distance" around the site. These provisions justify the need for assessing the impact of electromagnetic radiation from the antennae, on the nearby residents.	

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
Civil Aviation Act No. 06 of 2016	The heights of the proposed telecommunication tower might be a threat to the nearest aerodrome site. Therefore, the Proponent should verify these prior to construction with the Namibia Civil Aviation Authority (NCAA).	**According to NAMCARS and ICAO requirements structures erected within less than 15 km and 8 km distance, respectively require permitting.** The site is located about 49.77 km from the nearest aerodrome point (Berseba airstrip). Therefore, may not require a permit from the NCAA to erect the tower. The contact details at the NCAA to verify and advice on the construction of the tower in the area with regards to the aviation sector are as follow: Senior Manager: Aerodromes and Ground Aids Section, Tel.: +264 83 235 2361 Email: siteketag@ncca.com.na
Convection on International Civil Aviation, Annex 14	-Annex 14 to the Convention on International Civil Aviation -Chapter 4: Obstacle restrictions and removal -Chapter 6: Visual aids and donating of obstacles	
Forestry Act 12 of 2001, Amended Act 13 of 2005	Prohibits the removal of any vegetation within 100 m from a watercourse (Forestry Act S22 (1)). The Act prohibits the removal of and transport of various protected plant species.	Should there be protected plant species, which are known to occur within the actual project site footprints and require to be removed, a permit should be obtained from the nearest Forestry office (Ministry of Environment, Forestry and Tourism (MEFT)) prior to removing them. Contact Details at MEFT (Forestry Division in Windhoek), **Tel: +264 61 284 8291**
National Heritage Act (Act No. 27 of 2004)	The Act makes provision for the protection and conservation of places and objects of heritage significance and the registration of such places and objects. Part V Section 46 of the Act prohibits removal, damage, alteration, or excavation of heritage sites or remains, while Section 48 sets out the procedure for	Director of the National Heritage Council of Namibia (NHC) Tel: +264 61 301 903 Rho1@nhc-nam.org and or rho2@nhc-nam.org

Legislation/Policy/ Guideline	Relevant Provisions	Implications for this project
	application and granting of permits such as might be required in the event of damage to a protected site occurring as an inevitable result of development. Part VI Section 55 Paragraphs 3 and 4 require that any person who discovers an archaeological site should notify the National Heritage Council. Section 51 (3) sets out the requirements for impact assessment. Should any objects of heritage significance be identified during the site clearing and excavations, the work must cease immediately in the affected site and the necessary steps taken to seek authorisation from the Council.	
The Road Traffic and Transport Act No. 52 of 1999 and its 2001 Regulations	Provides for the control of traffic on public road and the regulations pertaining to road transport, including the licensing of vehicle and drivers	Road Authority- Specialist Road Legislation, Tel.: +264 61 284 7072

2.1 EMP Limitations

This EMP has been drafted with the acknowledgment of the following limitations:

- This EMP has been drafted based on the Environmental Assessment (EA) conducted for proposed tower.
- The mitigation measures recommended in this EMP document are based on the risks/impacts identified in the ESIA, based on the project description as provided by the Proponent, site investigation and public input. Should the scope of the proposed project change, the risks/impacts will have to be reassessed and mitigation measures provided accordingly.

3 EMP IMPLEMENTATION, ROLES AND RESPONSIBILITIES

The Proponent is ultimately responsible for the implementation of the EMP. However, the Proponent may delegate this responsibility at any time, as they deem necessary during the project phases. The roles and responsibilities of all delegates/parties involved in the effective implementation of this EMP are set out in **Table 2** below:

Table 2: The persons and institutions responsible for the Implementation of the Draft EMP

Role (Person and or Institution)	Responsibilities
MTC Namibia (The Proponent)	-Managing the implementation of this EMP, updating and maintaining it when necessary. -Management and monitoring of individuals and/ or equipment on-site in terms of compliance with this EMP and issuing fines for contravening EMP provisions.
Site Manager	This individual will be responsible to ensure that the project activities of the project are completed on time. The Manager's duties and responsibilities will include: -Ensure that relevant commitments contained in the EMP Action Plans are adhered to. -Ensure relevant staff is trained in procedures entailed in their duties. -Maintain records of all relevant environmental documentation for the project. -Reviewing the EMP annually and amending the document when necessary.

Role (Person and or Institution)	Responsibilities
	-Issuing fines to individuals who may be in breach of the EMP provision and if necessary, removing such individuals from the site. -Cooperate with all relevant interested and affected parties/stakeholders. -Development and management of schedules for daily activities
Environmental Control Officer (ECO) or Safety, Health & Environmental (SHE) Officer	The Proponent may assign the responsibility of ensuring EMP compliance throughout the project life cycle to a designated member of staff or external qualified and experienced person, referred to in this EMP as the Environmental Control Officer (ECO). The ECO will have the following responsibilities: -Management and facilitation of communication between the Proponent, PR and Interested and Affected Parties (I&APs) regarding this EMP. -Conducting site inspections of all areas with respect to the implementation of this EMP (monitor and audit the implementation of the EMP). -Advising the Proponent on the removal of person(s) and/or equipment not complying with the provisions of this EMP. -Making recommendations to the PR with respect to the issuing of fines for contraventions of the EMP. -Undertaking an annual review of the EMP and recommending additions and/or changes to this document.
Public Relations Officer (PRO)	The PRO will be responsible for the following tasks: -Liaising between the affected landowners, communities and the Proponent. -Ensure effective communication with stakeholders, local communities, farmers, media (if necessary) and the public. -Organising and overseeing public relations activities, Managing public relations issues. -Preparing and submitting public relations reports, if required. -Collaborating with personnel and maintaining project-related open communication among personnel.
Other responsibilities include Archaeology: Chance Finds Procedure (CFP) Implementation Roles	A. Operator: exercise due caution if archaeological remains are found B. Site Manager and ECO: secure site and advise management timeously C. Archaeologist: inspect, identify, advise management, and recover remains.

4 ENVIRONMENTAL MANAGEMENT & MITIGATION MEASURES

4.1 Management of Key Potential Adverse Environmental Impacts

From the assessment conducted, the following key potential negative impacts have been identified as:

- **Physical land / soil disturbance**: Excavation activities to erect the tower,
- **Health and Safety issues:** Electromagnetic Radiation emitted from the antennae of cellular structures may affect human health.
- **Noise and disturbance:** During tower construction, the presence of the construction team and movement of heavy vehicles and machinery may disturb the immediate neighbours to the site.
- **Visual impact:** The presence of the tower in the neighbourhood may be a nuisance to locals.
- **Potential occupational health and safety** risks associated with mishandling of construction and operations equipment.
- **Civil Aviation concerns:** The proposed site designs and location need to be verified to ensure that it meets the approval of the Directorate of Civil Aviation regarding the height of the mast and the position and stability of transmitter.
- **Environmental pollution** from improper disposal of waste,
- **Vehicular traffic safety** from increased number of vehicles moving around the project site and slow-moving trucks transporting project structures during construction, and
- **Archaeological or cultural heritage** impact through unintentional uncovering of unknown archaeological.

4.2 The Management and Mitigation of Potential Key Negative Impacts

The management and mitigation measures (action plans) for the potential adverse impacts are presented in **Table 3** for the planning, construction and maintenance phase.

There will be some overlaps with regards to some potential impact's occurrence during the construction and operational phases, therefore, potential impacts have not been separated for these project phases. The required management and mitigation plan actions have been presented together with key performance indicators, responsible person(s), resources and the timeline of such actions. These aspects form the headings of **table 3**, and they are as follows:

- Environmental aspect and issues for which management actions are required.
- Proposed impacts mitigation measures.
- Key performance indicator (KPI) for monitoring success levels of management actions.
- Responsible person(s) for implementing the proposed management actions.
- Resources required for implementing management actions and monitoring.
- Implementation timeframes for the proposed management actions.

Table 3: Management and mitigation measures for the planning & design, construction and operational & Maintenance phases

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
PLANNING/ DESIGN PHASE						
EMP implementation and training	Lack of EMP awareness and implications thereof	-A Comprehensive Health and Safety Plan for the project activities should be compiled. This will include all the necessary health, safety, and environmental considerations applicable to respective works on site. -An EMP non-compliance penalty system should be implemented on site. -The Proponent should appoint an ECO to be responsible for managing the EMP implementation and monitoring.	-All required Plans and systems are compiled and in place. -Safety, Health and Environmental (SHE) Officer is appointed -Records of EMP implementation Plans and Systems -A SHE officer or ECO is appointed	Proponent	Independent Environmental Consultant: EMP compliance and auditing -DEAF: site inspections for compliance -Identification of all persons involved in the implementation of the EMP	Pre-construction works
Authorizations	Lack of Agreements, Permits/ Licenses	-All the required agreements and licenses or permits should be applied for and obtained. -The permits, agreements referred to herein include: • Environmental Clearance Certificate (ECC)	-Applicable permits and licenses to obtained from relevant authorities and kept on site for records keeping and future inspections.	Proponent	-Record of permits and authorizations obtained	Prior to construction and operations

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		• Power supply agreements from Manpower, • Finalized leasehold agreements from the TA, • Waste disposal authorization from the TA. • Conservancy Access agreements from TA. • Conservancy Access agreements from MEFT and/or Management for purposes of maintenance of the infrastructure during operation (such as power restoration).				

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
Telecommunication permit	Lack of necessary project authorization	- A telecommunication license and other relevant communications authorizations should be applied for and obtained from the Communications Regulatory Authority of Namibia (CRAN). - The Proponent should comply with the relevant Sections and Parts of the Act, and of importance is Part 5 of the Act. This Part (Special Rights of Carriers). The Sections that will apply to the proposed project are Section 59(1) and (3), 60: Entry upon and construction of lines across any land, 64(1): Fences, 64(2), 66(1): Height or depth of cable and facilities, and 66(2) and 66(3).	- All the relevant licenses obtained and documented.	Proponent	-Not applicable	Pre-construction phases
Tower design	Tower design failure during operations and public exposure	- The design standards to be applied for the tower and its supporting structures should comply with the internationally accepted public exposure guidelines. Please consult with the National Radiation Protection Authority of Namibia.	- The design according to the international approved standards	Planning & Design Engineer With the guidance or recommendations from the National Radiation Protection	Not applicable	Pre-construction phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
				Authority (NRPA) of Namibia		
Visual (sense of place)	Visual nuisance	- All the necessary options to improve the aesthetic of the site should be considered so that it blends in with the surrounding area or at least enhance the area to a better appeal to the locals, and neighbours. Some of the tower and equipment storage parameters to be considered here are colour, scale, design, and height.	- The parameters of the tower designed to reduce the visual impact	-Proponent -Planning & Design Engineer	Not applicable	Pre-construction phase
Civil aviation	Impact on aerodrome points	- The proposed tower design and location need to be verified to ensure that it meets the approval of the Namibia Civil Aviation Authority's Regulations (NAMCARS) regarding the tower height and the position in the area. - The Civil Aviation Act No. 6 of 2016 for setting up mast structures in Namibia should be complied with.	-Sufficient consultations done with the NCAA and approval/consent provided (if needed)	-Proponent -NCAA	Not applicable	Pre-construction and operations

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		- Civil Aviation Standards of the International Civil Aviation Organization (ICAO) pertaining to the tower should be adhered to. - The tower site is located beyond 8km and 15km from the nearest aerodrome point (Berseba Airstrip). Therefore, may not require a permit from the NCAA to erect the tower in accordance with the NAMCARS and ICAO requirements.				
Construction	Nuisance associated with poorly planned construction times.	- A convenient construction work / schedule should be prepared and be shared with the neighbouring property owners through the TA. This will ensure that the locals/neighbours are aware of when to expect the construction team on site. - Construction activities should be restricted to weekdays i.e., Mondays to Fridays and during working hours (08:00 - 17:00) only.	- Timely notification submitted to the conservancy Management -Clear posters erected on site	-Proponent -Construction contractor	-Notices of work schedule	-Pre-Construction
Communication between the Proponent and	Lack of communication (proper liaison)	-The Proponent should appoint a Public Relation	- A PRO is appointed	-Proponent	Grievance logbook	Pre-construction and throughout

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
surrounding land users	between surrounding land users (communities) and Proponent	Officer (PRO) to liaise with neighboring land users (home and or property owners), when needed and required. -A clear communication procedure/plan which should include a grievance mechanism should be compiled.		-PRO	-PRO appointment -PRO contact details to be provided to the affected residents -Local land users/ communities	the subsequent phases
Employment	Creation of employment opportunities	-Priority for non-skilled labour should be given to people from around the respective site, in accordance with procedures approved by the relevant authorities. -Equal opportunity should be provided for both men and women.	- Number and residence of locals employed	-Construction Contractor -Site Manager	-Record of employees -Constituency Council office to assist in identifying unemployed people	Pre-construction activities
Specialized procurement of services	Design, construction contractors, and services	-All services related to project activities such as construction related works that the Proponent may need, preference should be given to local providers of such services. If not available locally, the services search should be extended to a regional level (Karas Region)	-Number of locally hired contractors	-Proponent -Construction Contractor	-Record of hired or contracted companies or services providers	-Pre-construction As and when required for maintenance.

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		and lastly, nationally, or international, if all efforts lead to no success.				
CONSTRUCTION AND OPERATIONAL & MAINTENANCE PHASE						
EMP implementation and training	Lack of EMP awareness and implications thereof	-EMP trainings should be provided to all new workers on site. -All site personnel should be aware of necessary health, safety, and environmental considerations applicable to their respective work. -The implementation of this EMP should be monitored. -The site should be inspected, and a compliance audit done throughout the project as recommended below: - Daily construction phase, -Bi-annually for operations -An EMP non-compliance penalty system should be implemented on site.	-Compliance monitoring conducted daily during construction. -Bi-annual compliance for operations. -Timely renewal of the ECC every 3 years	ECO	-Monitoring reports ECC renewed on time. Records of EMP training conducted.	Throughout the construction and operation phases
Communication between the Proponent and other neighbouring	Lack of communication (proper liaison) between	-The Proponent should compile a clear	-PRO is part of the project personnel.	PRO	Complaint's logbook	Communication to run

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
land users and custodians	landowner's and Proponent	communication procedure / plan which should include a grievance and response mechanism.	-Ongoing affected parties' Engagement & Consultation throughout the project cycles, when and as required -Community grievances addressed to their satisfaction		PRO contact details to be provided to the affected land users. Records of community' consultation	throughout the project phases.
Soils	Site soils (land) disturbance Soil erosion	-The topsoil that was stripped from certain site areas to enable construction works should be levelled to reduce erosion. -All possible trenches excavated for construction on site should be backfilled. -Soils that are not within the intended footprints of the site areas should be left undisturbed.	-record evidence of new erosion gullies. -No visible oil spills on the ground or contaminated/ pollution spots owing to construction activities	Proponent / Site Manager ECO	Tipper trucks and excavators to backfill trenches	Throughout the phases

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
Electromagnetic radiation	Human health	-Familiarize with the gazette non-ionizing radiation regulations, 2019: Atomic Energy and Radiation Protection Act, 2005. -The National Radiation Protection Authority should be involved during the operational phase to assess the possible emissions from the tower. -The Proponent should ensure that the tower construction and its EMR are within the international standards of the Atomic Energy and Radiation Protection Act, Act 5 of 2005 and Guidelines for limiting exposure to time-varying electric, magnetic, and electromagnetic fields.	-Consultation with the NRPA	Proponent NRPA	Exposure guidelines and 2019 non-ionizing radiation regulations, 2019: Atomic Energy and Radiation Protection Act, 2005	Throughout the operational phase, as and when required

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
Civil aviation	Impact on aerodromes	-Comply with the guidelines and condition set forth by the NCAA under the Planning & Design phase.	Consultation with the NCAA	-Proponent -NCAA	Relevant guidelines	Throughout the operational phase
Visual	Visual nuisance	-The Proponent should use the tower to blend in with their surroundings, thus reducing visual nuisance. -All the necessary options to improve the aesthetic of the site should be considered so that it blends in with the surrounding area or at least	-Parameters to improve the sense of place incorporated into the design and implemented.	-Planning and Design Engineer, -Proponent	None	Pre-construction and operational phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		enhance it for a better appeal to the public.				
Biodiversity	Loss of Fauna and Flora	**Fauna:** -Project workers should refrain from killing or snaring livestock that may be found on and around the site. -Access roads (even existing ones) should be utilized appropriately in a manner that disturbs minimal land areas as possible, to minimize faunal habitat destruction. -Any faunal breeding sites discovered on the site should not be disturbed. -Environmental awareness on the importance of faunal preservation should be provided to the workers and contractors. **Flora:** -The Proponent should avoid unnecessary removal of vegetation. -Movement of vehicle and machinery should be restricted to existing roads and tracks to prevent	No disturbance to unmarked areas. No complaints from locals regarding unauthorized vegetation removal or cutting down of trees. No intentional disturbance and destruction of site vegetation and faunal species Visible preservation of onsite vegetation	ECO	Barricading tape (to indicate working areas) Complaint logbook	Throughout the phases

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		unnecessary damage to vegetation. -Design access roads appropriately in a manner that disturbs as little vegetation as possible. -Vegetation clearing to be kept to a minimum. The vegetation of the site is largely low and open and therefore whole-sale vegetation clearing should only be applied where necessary and within the project footprint. -Vegetation found on the site, but not in the targeted areas should not be removed but left to preserve biodiversity on the site. -Environmental awareness on the importance of floral biodiversity preservation should be provided to the workers and contractors.				
Air Quality	Air quality (dust)	-The Proponent should ensure that the construction work schedule is limited to the given number of days of the	-Incident reports of illegal hunting of animals by the Project workers	ECO	Complaint's logbook -Anti-poaching Police Unit	During site set up, and throughout the phases

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		week to keep the vehicle-related dust level minimal in the area. --Dust control measures such as reasonable amount of water spray should be used on gravel roads and near specific exposed areas of work on site to suppress the dust that may be emanating from certain project activities on site. -Dust masks, eye protective glasses and other respiratory personal protective equipment (PPE) such as face masks should be provided to the workers carrying out potential dust generating activities such as excavation, where they are exposed to dust.	-Contact details of the Anti-poaching Police Unit provided and visible onsite		-ECO	
Waste Management	Environmental pollution	-Workers should be sensitized to dispose of waste in a responsible manner and not litter. --Biodegradable and non-biodegradable wastes must be stored in separate containers and collected regularly for disposal at a	--A register of all waste types generated on site is kept on site. -All waste disposal permits from relevant authorities are available on site.	PRO Proponent ECO	-Waste storage containers, -Funds to acquire waste storage bins/ drums, and transport all waste from the site.	Throughout the phases

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		recognized garbage skips/landfill/dump site (upon reaching an agreement with the TA). -No waste may be buried or burned on site or anywhere else in the environment, apart from authorized and approved waste management site. -Sewage waste should be managed as per the portable chemical toilets' manufacturer's instructions and regularly disposed of at the nearest treatment facility.	-No littering on and around the project site and within the project			
Noise	Noise	-When operating excavators and other noise generating machinery on the site, workers should be equipped with personal protective equipment (PPE) such as earplugs to reduce exposure to excessive noise. -Construction and operational hours should be restricted to between 08h00 and 17h00 to avoid noise by vehicles and equipment before working or after hours to avoid noise generated by equipment and	-PPE provide to workers operating noisy equipment and in noisy site areas. -Weekdays activities during construction.	-Site Manager -SHE Officer -Contractor	-Clearly written placard with construction hours in a day placed at one of the access roads to the site	Throughout phases Site access permit (s) to be applied for and obtained prior to commencement of works

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		the movement of heavy vehicles, thus affecting neighbors and animals. -Noise from vehicles and equipment on site should be reduced to acceptable levels.				
Health, safety and Security	General health and safety associated with project activities	-All items for treatment as specified in the material safety data sheets (MSDS) for hazardous materials shall be available in the first aid kit -The Labour Act's Health and Safety Regulations should be complied with. -Keep a comprehensive first aid kit at the working site. -Establish an emergency rescue system for the evacuation of injured people, if needed. -Ensure that all workers know where the first aid kits are located and who is trained in administering in first aid. -As part of their induction, the project workers should be provided with an awareness training of the risks of mishandling equipment and	-Compilation of Comprehensive Health and Safety Plan.	Proponent Site Manager ECO	Health and Safety Policies	Prior to site setup activities and throughout the phases

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		materials on site as well as health and safety risk associated with their respective jobs. -When working on and moving around the site, employees and visitors should be properly equipped with adequate personal protective equipment (PPE) such as coveralls, gloves, safety boots, earplugs, dust masks, safety glasses, and hard hat depending on the project phase. -The Proponent must avail adequate and appropriate PPE to all workers and visitors. -Timeously recording and reporting of all health and safety incidences. -The Labour Act's Health and Safety Regulations should be complied with.				
	Accidental fire outbreak	-Portable fire extinguishers should be provided on site. -No open fires to be created by project personnel on site.	No wildfires recorded (due to presence of workers)	Proponent ECO	Fire extinguishers (1 per vehicle) and 1 per working site	Throughout project phase

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		-Potential flammable areas and structures such as fuel storage tanks should be marked with clearly visible signage.				
Archaeology and heritage	Accidental disturbance and destruction of archaeological or heritage objects and sites	-A "No-Go-Area" should be put in place where there is evidence of archaeological site, historical, rock paintings, cave/rock shelter or past human dwellings. It can be a demarcation by fencing off or avoid the site completely by not working closely or near the known site. -On-site personnel and contractor crews must be sensitized to exercise and recognize "chance finds heritage" in the course of their work. -During the excavation works, it is important to take note and recognize any significant material being unearthed and making the correct judgment on which actions should be taken (refer to CFP Appendix attached to the EMP). -The footprint impact of the proposed project activities	-Preservation of all artefacts and objects that are discovered on and around project site -No-Go Areas avoided	Proponent ECO Operator Superintended	Salvage equipment Archaeologist	As and when required, i.e., prior to site set up, and during works.

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		should be kept to minimal to limit the possibility of encountering chance finds within the project boundaries. The Proponent should keep a buffer of 500 meters on all the archaeological/cultural sites observed within the project site and broader area throughout their stay (duration of their presence) in the area. -A landscape approach of the site management must consider culture and heritage features in the overall planning of infrastructures within and beyond the project boundaries. -The Proponent and Contractors should adhere to the provisions of Section 55 of the National Heritage Act in event significant heritage and culture features are discovered while conducting construction works. -Subject to the recommendations herein made and the implementation of the mitigation measures and adoption of the project		Archaeologist	Flag tapes GPS (site marking)	

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		Archaeological Management Plan (AMP)/EMP should be complied. -An archaeologist or Heritage specialist should be onsite to monitor all significant earth moving activities that may be implemented as part of the proposed project activities. -During removal of topsoil and subsoil at sites, the sites should be monitored for subsurface archaeological materials by a qualified Archaeologist. -Show overall commitment and compliance by adapting "minimalistic or zero damage approach". -In addition to these recommendations above, there should be a controlled movement of the contractor, project crews, equipment, setting up of camps and everyone else involved in the project activities to limit the proliferation of informal pathways, gully erosion and disturbance to surface and sub-surface artefacts such as				

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		stone tools and other buried materials etc.				
Social Conflicts	Job seeking, private property	-Any workers or site employees found guilty of intruding private properties should face disciplinary hearing and/or dealt with as per their employer' (Proponent)'s code of employment conduct. -No worker should be allowed to wander in private yards or fences without permission -Construction and operation personnel should not wander around other parts of the site beyond the vicinity of the site. -The Proponent should inform their workers about the importance of respecting the locals, private properties by not intruding or vandalizing homes or yard fences	-More local workers who are familiar with the values, and way of living in the area, -No complaints of property theft or damage related to project workers.	-ECO	-Employment code of conduct, -Grievance logbook	Throughout the phases

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
Vehicular Traffic	Traffic safety	-The site access roads should be equipped with road safety signs. -No heavy trucks or project related vehicles should be parked outside the project site boundary or demarcated areas for such purpose. -Sufficient parking space for all project vehicles should be provided and clearly demarcated on the site. -Vehicle drivers should not be allowed to operate vehicles while under the influence of alcohol or any other intoxicants. -Project vehicles should be in a road worthy condition and serviced regularly to avoid accidents due to mechanical faults of vehicles. -Drivers should drive slowly (40km/hour or less) and be on	-Demarcated areas for parking, offloading, and loading zones are on the site. -The vehicles are driven at the recommended speed. --No complaints from members of the public regarding vehicular traffic issues related to the project. --Site access road permits obtained, and requirements fulfilled.	ECO	-Vehicular traffic compliance to be included in the annual environmental audit reporting	Throughout the phases

Aspect	Impact	Management and Mitigation Measure(s)	Key Performance Indicator (KPI)	Implementation Responsibility	Resources	Timeline
		the lookout for animals and residents, especially children, within proximity of the site.				

APPENDIX 1: CHANCE FINDS PROCEDURE (AFTER KINAHAN, 2020)

Areas of proposed development activity are subject to heritage survey and assessment at the planning stage. These surveys are based on surface indications alone, and it is therefore possible that sites or items of heritage significance will be found during development work. The procedure set out here covers the reporting and management of such finds.

Scope: The "*chance finds*" procedure covers the actions to be taken from the discovery of a heritage site or item to its investigation and assessment by a trained archaeologist or other appropriately qualified person.

Compliance: The "chance finds" procedure is intended to ensure compliance with relevant provisions of the National Heritage Act (27 of 2004), especially Section 55 (4): "*a person who discovers any archaeological …. Object ……must as soon as practicable report the discovery to the Council*". The procedure of reporting set out below must be observed so that heritage remains reported to the NHC are correctly identified in the field.
Manager/Supervisor must report the finding to the following competent authorities:

- National Heritage Council of Namibia (061 244 375 / Technical Office +264 61 301 903)
- National Museum (061 276800),
- National Forensic Laboratory (061 240461).

Archaeological material must NOT be touched. Tempering with the materials is an offence under the heritage act and punishable upon conviction by the law.

Responsibility:

Operator:	To exercise due caution if archaeological remains are found
Foreman:	To secure site and advise management timeously
Superintendent:	To determine safe working boundary and request inspection
Archaeologist:	To inspect, identify, advice management, and recover remains

Procedure:

<u>Action by person identifying archaeological or heritage material:</u>

a) If operating machinery or equipment stop work

b) Identify the site with flag tape

c) Determine GPS position if possible

d) Report findings to foreman

Action by foreman

a) Report findings, site location and actions taken to superintendent

b) Cease any works in immediate vicinity

Action by superintendent

a) Visit site and determine whether work can proceed without damage to findings

b) Determine and mark exclusion boundary

c) Site location and details to be added to project GIS for field confirmation by archaeologist

Action by Archaeologist

a) Inspect site and confirm addition to project GIS

b) Advise NHC and request written permission to remove findings from work area

c) Recovery, packaging and labelling of findings for transfer to National Museum

In the event of discovering human remains

a) Actions as above

b) Field inspection by archaeologist to confirm that remains are human

c) Advise and liaise with NHC and Police

d) Recovery of remains and removal to National Museum or National Forensic Laboratory, as directed.