ALCATEL SUBMARINE NETWORKS (ASN)
EQUIANO SUBMARINE FIBRE OPTIC CABLE SYSTEM TO BE LANDED AT SWAKOPMUND, NAMIBIA

PARATUS TELECOMMUNICATIONS (PTY) LTD

(LANDING PARTNER)

DRAFT

ENVIRONMENTAL MANAGEMENT PLAN (EMP)

EIA REFERENCE: APP-002171

ALCATEL SUBMARINE NETWORKS (ASN)
EQUIANO SUBMARINE FIBRE OPTIC CABLE SYSTEM TO BE LANDED AT SWAKOPMUND, NAMIBIA

PARATUS TELECOMMUNICATIONS (PTY) LTD
(LANDING PARTNER)

DRAFT ENVIRONMENTAL MANAGEMENT PLAN (EMP)

EIA REFERENCE: APP-002171

Compiled for

Paratus Telecommunications (Pty) Ltd
104-106 Nickel Street, Prosperita
Windhoek
PO Box 90140
Windhoek
Namibia

Compiled by

ACER (Africa) Environmental Consultants
PO Box 503
Suites 5 & 6, Golden Penny Centre
26 Hely Hutchinson Road
Mtunzini, 3867
South Africa

January 2021

AUTHORS

The authors of this Draft Environmental Management Plan are Mr G. Churchill, Ms J. Barnard and Dr R-D Heinsohn (ACER (Africa) Environmental Consultants), with local support provided by Dr A. Faul based in Windhoek.

TABLE OF CONTENTS

1 SCOPE OF THE EMP

1.1 Introduction

This EMP has been compiled with the holistic view to minimise potential direct site impacts, and indirect impacts to adjoining habitats and ecosystems linked to the sites. This EMP undertakes to ensure a systematic and robust approach to the management of environmental impacts during the pre-construction, construction, operational and rehabilitation phases of the Equiano Cable System to prevent long-term or permanent environmental degradation, as per the following approach:

- Assigns roles and responsibilities to the parties charged with its implementation as shown in Table 1.
- Sets out environmental specifications that are applicable to the project and its associated activities and provides guidance in order to achieve these environmental specifications.
- Defines corrective actions, which must be taken in the event of non-compliance with these environmental specifications.
- Specifies requirements and procedures for monitoring and reporting.
- Specifies requirements and procedures for record keeping.
- Makes provision for the fulfilment of other relevant legal requirements pertaining to the environment.
- Acts as a monitoring reference tool for ensuring compliance with the provisions of the EMP.
- Makes provision for review of the EMP.
- The updated EMP will fulfil certain conditions of environmental authorisation (as contained within the environmental authorisation).
- The updated EMP will make provision for the fulfilment of other relevant conditions of environmental authorisation (as contained within the environmental authorisation).

This EMP contains management actions, given as specifications, addressing the various components of the work site and the specifications will apply to all phases of construction unless reference is made to a specific phase.

In order to give effect to the above, the Developer requires a commitment from the Project Manager and the Contractor on the following matters:

- To ensure that environmental conditions stipulated in the environmental authorisation are implemented.
- To resolve problems and claims arising from damages immediately, to ensure a smooth flow of operations.
- To implement this EMP for the benefit of all involved.
- To preserve the natural environment by limiting destructive actions on site.

This EMP may be amended, as required, for the duration of the contract. The management of the environment changes over time and, therefore, this document shall be updated regularly to ensure environmental management is implemented during all phases of the project.

1.2 Project description

Refer to Chapter 4 of the Draft Scoping Impact Report.

1.3 Timing of Construction Activities

- The landing of the cable should be scheduled to take place outside of the peak holiday season and legislated school holidays if possible.
- The Recreation and Parks Department will be notified at least three months prior to construction and landing of the cable.
- The seasonal timing of the offshore installation of the Equiano Cable System related to seasonal whale migration patterns is required to be taken into consideration. The marine ecology specialist recommended that should the cable installation be planned for during the whale migration period (beginning of June to end of November), consideration will be required from the cable-laying vessels to appoint a crew member as a dedicated Marine Mammal Observer (MMO) with experience in seabird, turtle and marine mammal identification and observation techniques.

1.4 Sensitive environments

Sensitive environments are any aspects of the surrounding biophysical or social environment that should be provided additional care, protection or respect and these areas must be suitably and visibly demarcated and cordoned off prior to and during construction activities.

The proposed cable landing point lies within a highly transformed, yet generally sheltered portion of seashore, and the cable is to come ashore at a point of sediment transport within the intertidal zone. As such, significant erosion, nor deposition is likely to be encountered at this point. Within the supra tidal environment, the reclaimed shoreline and stabilised dune form act as a significant barrier to moderate storm and tidal events. It follows that the establishment of the cable landing at this point is likely to have little impact on the eco-morphology of the shoreline at this point. Given that the High-Water Mark aligns with reclaimed beach and stabilised dune form, the ecological drivers inherent under a natural regime have effectively been rendered dysfunctional. Habitat within the site is of limited ecological value and as such, can be considered to have little ecological and conservation value.

The construction zone associated with the trench for the laying of the cable on the beach, and the connection of the cable to the existing Manhole is required to be demarcated and cordoned off.

Refer to Figure 1 below that indicates the beach landing and BMH, and front haul route to the CLS.

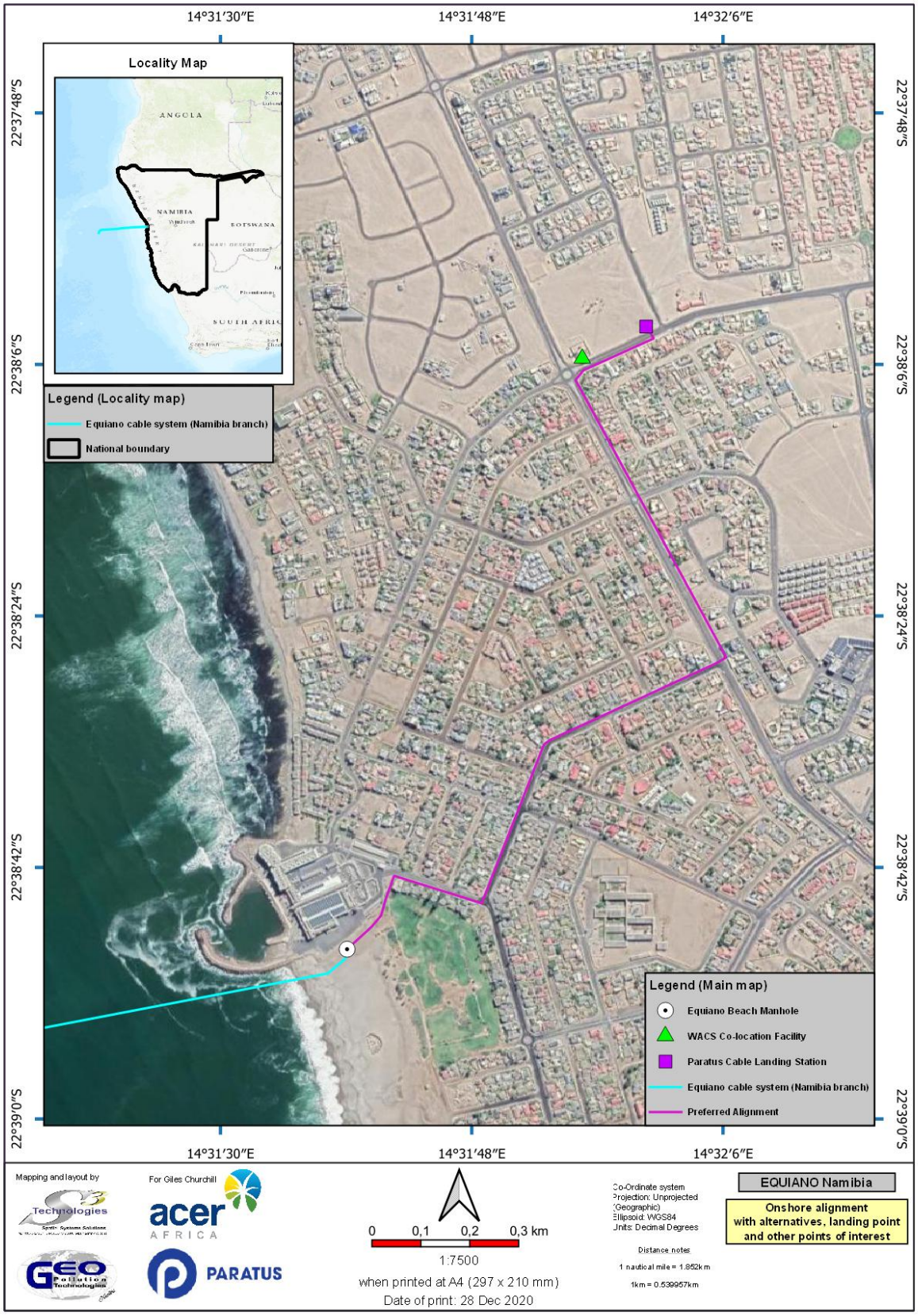

Figure 1 **Locality Map of the landing point at Swakopund to the BMH, with haul route to the Cable Landing Station on a portion of Erf 5360 Swakopmund located in the area of Hage Heights and WACS Co-location Facility**

Table 1 Responsibility Matrix and Organisational Structure

Function	Name	Responsibilities
Developer	Paratus Telecommunications (PTY) LTD	Overall responsibility for ensuring that the development is implemented according to the requirements of environmental authorisation and EMP
Project Manager	To be confirmed	Overall management of project and EMP implementation
Project Engineer	To be confirmed	Developer's responsible agent to ensure that the Contractor adheres to construction specifications and environmental authorisation and EMP
Resident Engineer	To be confirmed	Project Engineer's representative on site
Environmental Control Officer (ECO)	To be confirmed	Implementation of EMP and liaison between the Project Proponent, Contractor and Authorities
Contractor	To be confirmed	Implementation and compliance with recommendations and conditions of the EMP; appoints or delegates a dedicated person to work with the ECO

Figure 2 below illustrates the role players and their reporting relationships for the construction phase of the project. This figure depicts the practical reporting relationship, not necessarily the contractual or institutional relationships. All official communication and reporting lines related to the EMP (including instructions, directives and information) shall be channelled according to this organisational structure.

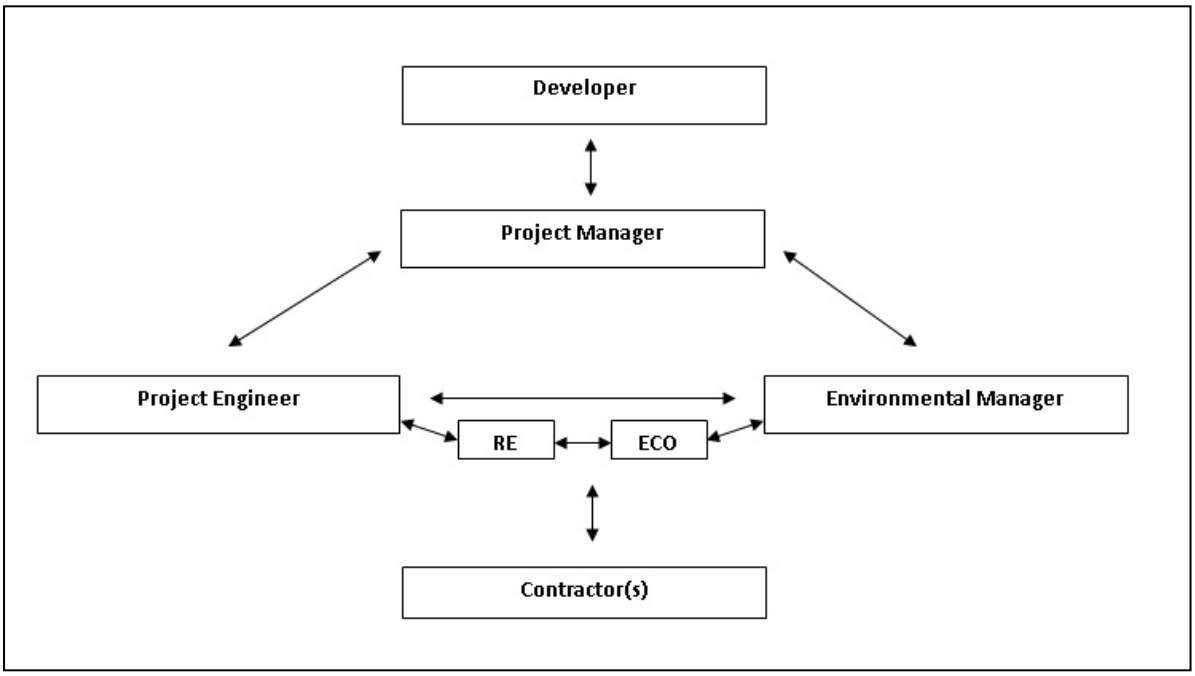

Figure 2 Organogram reporting relationships for the onshore construction phase

2 ROLES AND RESPONSIBILITIES

2.1 Developer

Paratus will be the Developer for all components of the work related to the project from the BMH to the CLS. The Developer remains ultimately responsible for ensuring that the development is implemented according to the requirements of the EMP. In terms of the EMP, the Developer is responsible for the following:

- Compilation and submission of an EMP for the construction of the project to the environmental authority (MEFT) for approval prior to commencement of construction.
- Implementation of the approved EMP.
- Submission of any substantial changes, updates or amendments to the EMP to MEFT.
- Ensuring that the provisions of the EMP are binding on all Contractors operating on the site during construction of the project.
- Ensuring that environmental inspections are conducted during construction to establish how well the Contractor is complying with conditions of authorisation of the Environmental Clearance Certificate (ECC) and the EMP.
- Ensuring that compliance/non-compliance records are kept in good order and made available on request by the authorities.
- Ensuring that the ECC and EMP are available at the construction site and Contractors are familiar with or made aware of the contents of the ECC.
- Complying with all applicable environmental legislation, regulations and guidelines, and ensuring that Contractors undertake responsibility to do the same.
- Being committed to the principles contained within EMA.

2.2 Project Engineer and Resident Engineer

The Developer will appoint a Project Engineer as its responsible agent to ensure that the Contractor adheres to construction specifications and the ECC and EMP. The Resident Engineer (RE) is the Project Engineer's representative on site.

The Project Engineer, assisted by the RE on site, shall be responsible for the following:

- Ensuring that the provisions of the EMP are binding on all Contractors operating on the site during the construction phase of the project by including the approved EMP as part of the Contract documents.
- Approving final construction site layout plans.
- If necessary, on the recommendation of the Environmental Manager or ECO, instruct the Contractor(s) to suspend any or all works on site, if the Contractor(s) or his/her Sub-contractors/suppliers fail to comply with the EMP and/or environmental authorisation.
- Liaising directly with the Environmental Manager in terms of environmental issues and maintaining close channels of communication with the Environmental Manager regarding foreseeable activities that may require environmental input.
- On behalf of the Developer, reviewing any substantial changes, updates or amendments to the EMP prior to its submission to MEFT of non-compliance of any of the conditions of the authorisation within a reasonable period.
- Making information available to the authorities on request.
- Ensuring that the EMP forms part of the tender documentation.
- Providing the Project Engineer with an environmental performance certificate at the end of a contract confirming that all environmental specifications applicable to the Contractor have been met.

2.3 Environmental Control Officer

The ECO is the Environmental Manager's representative on site and shall be responsible for the following site functions:

- Assisting with enforcing of the site environmental specifications on site via the RE.
- Conducting regular site visits to monitor and verify compliance with the EMP and ECC, and keeping records of compliance/non-compliance.
- Ensuring that a copy of the ECC and latest version of the EMP are always available on site.
- Ensuring that the Contractor is conversant with the requirements of the EMP. The ECO should ensure that all members of staff on site have attended an environmental awareness-training course (if deemed necessary if deemed necessary and can be undertaken in the form of toolbox talks given to staff in-house).
- Identifying and assessing previously unforeseen, actual or potential impacts of the project on the environment.
- Bringing any environmental concerns to the attention of the RE.
- Recommending to the RE that the Contractor suspend any or all works on site if the third parties who carry out all or part of the Contractor's obligations fail to comply with the environmental specifications.
- Advising on the rectification of any pollution, contamination or damage to the project site, rights of way and adjacent land.
- Ensuring that the Contractor(s) bear the costs of damages/compensation resulting from non-compliance with the EMP.
- Attending site meetings (scheduled and ad hoc).
- Recording complaints or queries from I&APs and actions taken to address complaints.
- Ensuring that all EMP-related instructions from the RE to the Contractor are recorded in the site diary.
- Maintaining a photographic record of the development footprint.
- Ensuring that the RE and Contractor(s) are made aware of all applicable changes[1] to the EMP.

2.4 Contractor

The Contractor is the successful tenderer, appointed by the Developer to undertake the Works as specified in the Contract. The Contractor shall:

- Be responsible for the implementation of the applicable environmental specifications in accordance with the requirements and provisions of this EMP.
- Compile construction site layout plans.
- Obtain any required written permission from the landowner for use of a suitable site for the erection of the construction camp, storage yards, and stockpile areas.
- Ensuring that a register of complaints and queries by members of the public is maintained at the site office and the actions taken in response to these complaints.
- Ensure that all third parties who carry out all or part of the Contractor's obligations comply with the requirements and provisions of this EMP.
- Report any non-compliance to the RE and ECO in writing within 12 hours of the event occurring.
- Report any non-compliance event that constitutes an emergency immediately and in line with the protocol applicable to that particular emergency event.

1 MEFT: DEA-approved where there are substantial changes.

- Paratus to ensure that all employees and sub-contractors attend the environmental awareness-training course (if deemed necessary and can be undertaken in the form of toolbox talks given to staff in-house) and are familiar with or are made aware of the contents of the EMP and ECC.
- Ensure that a copy of the ECC and the approved EMP is available at the construction site at all times and all sub-contractors and staff are familiar with contents of the ECC.

3 ENVIRONMENTAL PRINCIPLES AND LEGAL REQUIREMENTS

3.1 Environmental Principles

The following principles should always be considered during the pre-construction and construction phase activities.

- The environment is composed of both biophysical and social components.
- Construction is a disruptive activity and all due consideration must be given to the environment, including the social environment, during the execution of a project to minimise all impacts.
- Minimisation of areas disturbed by construction activities (i.e. the footprint of the construction area) should minimise many of the construction related environmental impacts of the project and reduce rehabilitation requirements and costs.
- As minimum requirements, all relevant standards relating to international, national, provincial and local legislation, as applicable, shall be adhered to. This includes requirements relating to waste emissions (e.g. hazardous, airborne, liquid and solid), waste disposal practices, noise regulations, road traffic ordinances etc. Every effort should be made to minimise, reclaim and/or recycle "waste" material.

3.2 Applicable legislation and environmental standards

The Developer must comply with all applicable Namibian national, provincial and local legislation and environmental standards related to environmental protection.

The legislation listed in Section 3 of the Scoping Impact Report shall be adhered to where relevant to this construction contract. Where any legislation or regulations referred to in this EMP are repealed, amended or supplemented by any subsequent legislation or regulations which have been duly promulgated and have come into effect, the legislation thus referred to shall be deemed to have been repealed, amended or supplemented by the subsequent legislation or regulation in question, and shall be construed accordingly.

3.3 Environmental permitting requirements

Environmental permits that are likely to be required are listed in Table 2 below for various activities undertaken as part of the project. These must be obtained before the activity commences and according to the conditions contained within the permit. The applicant of the permit or licence for this project will be the relevant party as defined by the relevant legislation, which in most cases will be the Developer or the Contractor.

3.3.1 Environmental Clearance Certificate

MEFT is the competent authority for this project, and accordingly, is responsible for decision-making on whether to authorise the proposed development. Should environmental authorisation be granted, the authorisation will probably contain a number of conditions of authorisation, including the compilation and approval of an EMP. The EMP will be legally binding on the Developer in its capacity as applicant in its application authorised by MEFT. Similarly, the provisions of the EMP will be binding on all Contractors operating on the site during the life of the project, including the rehabilitation stage. This includes any third party appointed by the Contractor to fulfil its obligations.

3.3.2 Heritage Resources

During construction, should a cultural heritage resource be discovered, the “Chance Finds Procedure” is to be followed (attached as Annexure 1) and the heritage practioner contacted. Depending on the find, this may affect all construction activities or only some and further assessment and permits may be required.

Table 2 Permissions and Licenses required

No.	Permit	Title	Description
1	Environmental Clearance Certificate	Ministry of Environment, Forestry and Tourism (MEFT)	Environmental Clearance Certificate as stipulated in the (Environmental Management Act, 2007). Based on findings during the screening exercise it is ACER's opinion that the certificate will be issued following a Scoping process and will not require a full EIA
2	Heritage Permits (Terrestrial)	Ministry of Education, Arts and Culture/National Heritage Council of Namibia	Onshore heritages resources in project's area of influence (unlikely to be required)
3	Heritage Permits (Offshore)	Ministry of Education, Arts and Culture/National Heritage Council of Namibia	Offshore heritage resources in project's area of influence (unlikely to be required)
4	Protected Tree and Plant Permits	Ministry of Agriculture, Water and Forestry/Directorate of Forestry	Based on observations on site and along the proposed fronthaul alignments, no protected plant and tree permits will be required
5	Maritime Permits	Ministry of Works and Transport/Directorate of Maritime Affairs	Based on discussions with MoWT, no permits are required for the installation of the Equiano Cable
6	Land Use Permits	Ministry of Land Reform	The portion of the beach south of Platz am Meer shopping mall (preferred landing site) is state property and an application needs to be made to the state for the landing of the cable at this site
7	Building Permits	Municipality of Swakopmund	A wayleave from the municipality will be required for land-based installations and construction. To date Paratus has received a building permit for the CLS from the Swakopmund Municiplaity as well as Wayleave approval for the construction of the front haul route from the BMH to the CLS.
8	Sea Floor Lease Agreement	Office of the President	Based on information obtained from the WACS cable installation, it was determined that a lease agreement for the use of the seafloor must be concluded. This lease agreement must be signed by His Excellency the President of Namibia

4 DESIGN AND PRE-CONSTRUCTION PHASE

The pre-construction phase refers to the period following final project planning and the tender phase, leading up to, but not including the establishment on site by the appointed Contractor.

4.1 Environmental Clearance Certificate (ECC) and EMP

- ❑ The Developer must ensure that the conditions of the EMP, ECC and any other relevant licenses/permits are brought to the attention of the Project Engineer and Contractor (as well as any appointed sub-contractors).
- ❑ The Developer must provide the Contractor with a copy of the ECC and EMP.
- ❑ The ECC and EMP must be made binding to the main Contractor as well as sub-contractors.
- ❑ The Contractor must ensure that the construction crew are aware of the requirements set out in the ECC and EMP for this development prior to commencing activities on site.

4.2 Appointment of ECO

- ❑ The Developer must appoint an Environmental Control Officer (ECO) who must monitor the Contractor's compliance with the ECC and EMP.
- ❑ The ECO must attend all relevant project meetings and provision must be made at the monthly site meetings for environmental issues.

4.3 Liaison with affected parties

- ❑ Once the final positions of the proposed Equiano Cable System land-based infrastructure have been confirmed, the Project/Resident Engineer must ensure that the necessary liaison with landowners, land users, service providers and other affected parties has taken place prior to construction and where required, the relevant consent obtained.
- ❑ The design phase must address the disturbance of access to affected landowners during the construction phase, and must make provisions for maintaining access, adequate notice of access closures and alternative routing if required.
- ❑ Obtain municipal plans or inputs with regards to the location of existing utilities.
- ❑ Prior to construction commencing residents must be notified of the construction programme and commencement date.

4.4 Fisheries Industry Mitigation Measures

- ❑ Standard measures would include a process of notification to affected parties prior to the commencement of installation of the cable. Selected fishing industry associations and the Ministry of Fisheries and Marine Resources (MFMR) should be informed of the pending activity and the safety clearance requirements of the cable-laying vessel.
- ❑ The following actions are recommended:
  - Distribute a Notice to Mariners prior to the commencement of the subsea cable installation. The Notice to Mariners should give notice of the proposed timeframes for subsea installation and at least a 0.5 Nm safety zone around the cable-laying vessel. This Notice to Mariners should be distributed timeously to fishing companies and directly onto vessels where possible
  - The subsea vessel contractors must adhere to the International Cable Protection Committee (ICPC) recommendations.

- The subsea cable routing must be published in nautical charts, which are distributed by the navy hydrographic office.
- Undertaking all maritime operations in line with International Maritime Law and safe practice guidelines.

4.5 Marine ecology pre-construction phase considerations

- ❑ Plan the routing of the proposed subsea cable to avoid sensitive benthic habitats in the coastal and nearshore zone as best possible.
- ❑ Align the cable routing as closely as possible to the routes of existing or de-commissioned cables (even when these traverses a Marine Protected Area) thereby avoiding the impact of as yet undisturbed ecosystem types.
- ❑ Seek as practicable (recognising considerable constraints around vessel availability) schedule construction associated with the cable shore crossing to avoid bird breeding (March to September) and whale migration periods (June to November).
- ❑ Ensure as much as practicable, that construction activities required for subsea cable installation occur concurrently thereby minimizing the disturbance duration in the coastal and nearshore zone.
- ❑ If cable installation is scheduled during the whale migration period (beginning of June to end of November), the cable laying vessel must appoint a crew member as a Marine Mammal Observer (MMO) with experience in seabird, turtle and marine mammal identification and observation techniques, to carry out daylight observations of the subsea cable route and record incidence of marine mammals, and their responses to vessel activities. The observation post will keep a record of sightings, noting date, time, coordinates, approximate distance of the ship and additional

4.6 Construction camps & site office (if required)

- ❑ Accommodation of labour is not permitted at the Contractor's camps (other than site security personnel).
- ❑ The following criteria will apply to the selection of a site for the Contractor's camp:
  - Landowner's permission is required.
  - Select a location that has easy access, and which has already been cleared or disturbed by previous human activity (e.g., old fields, abandoned tracks or yards, previous construction camps or stockpile areas).
  - Select a site that minimises nuisance impacts on neighbouring residents (e.g., visual intrusion, lights at night, noise, dust, movement of people and vehicles, and safety and security risks).
  - Select a level site.
  - Select a site with good drainage.
  - Select an area that requires the least amount of removal of indigenous vegetation.

4.7 Site layout, design and construction schedule

- ❑ The Project/Resident Engineer is to adhere to the following, in terms of site layout and design:
  - Limit the size of the site to a minimum.
  - Provide suitable drainage to prevent soil erosion from stormwater runoff.
  - Locate materials and soil stockpile areas, fuels and chemical storage areas, cement mixing areas away from environmentally sensitive areas and protected from stormwater runoff, fire and access by unauthorised persons.

- Locate and clearly indicate convenient access routes, temporary loading and parking areas and turning circles so that vehicle movement can be confined to these areas.
- Locate chemical toilets so that they are easily accessible by staff and for servicing.
- Locate temporary waste bins and skips so that they are easily accessible for emptying and removal.
- Design layout to control and reduce noise from source.
- Position components and equipment to limit visual intrusion.

- ❑ Prior to construction the Project/Resident Engineer must draw up a construction schedule for all phases of construction.
- ❑ The construction schedule should make optimum use of the dry season for construction works.
- ❑ The Project/Resident Engineer is to provide a programme of project activities and time schedules to the ECO, who is also to be made aware of any amendments to the construction programme or alteration to the scope of work, so that their impacts on the environment can be assessed prior to construction.

4.8 Demarcation of sensitive areas

Environmentally sensitive areas (assessed as discussed below) must be suitably demarcated and cordoned off by the ECO prior to construction activities commencing.

BEACH AND COASTAL DUNE

- ❑ A detailed survey has been undertaken of the route. in order to identify the topography of the shoreline and beach area where the proposed Manhole is to be constructed, in order to allow for the reinstatement of these systems to mimic the present morphology, once the cable has been laid.

FAUNA AND FLORA

- ❑ The developer must allow for a pre-construction inspection of the site to take place to ensure that animals nesting, sheltering or roosting in vegetation or on the beach, or within close proximity will not be compromised. If so, then the ECO must be notified for further action.
- ❑ Restrict construction activities and storage of materials to the demarcated construction footprint

HERITAGE RESOURCES

- ❑ The heritage practioner (specialist report referenced in the Draft Impact Scoping Report) has assessed the marine section of the cable route provided by FUGRO (2019) and has noted that there are no shipwrecks within the surveyed route. In addition, there are no heritage resources associated with the BMH, haul route and CLS site.
- ❑ Should any archaeological material, be accidentally encountered during the course of cable installation, work must cease in that area until the project heritage specialist has been notified, the find assessed, and agreement has been reached on how to manage it.

4.9 Appointment of local labour for terrestrial works

- The Proponent should communicate all possible additional job opportunities / contracts clearly to employees (attempting to ensure no incorrect assumptions be made regarding possible employment).
- Employ workers residing in Namibia (with relevant experience) if available.
- Gender sensitive recruiting and communication regarding employment.
- There must be a “local first” recruitment policy, as far as possible, to maximise employment opportunities for the local communities, taking account of the local skills base and the existing legislation and policies on professional procurement.
- Where possible, preference should be given to labour intensive practises to encourage job creation.
- The overall environmental management approach must include provision for the use of local contractors, and priority must be given to sub-contracting to local companies.

4.10 Environmental awareness training and skills training

- In house environmental awareness is a requirement for all construction crews. This not only ensures the safety of the personnel, but also helps to protect the integrity of the environment during construction.
- The ECO must conduct environmental awareness training (can be in the form of routine toolbox talks) for all staff on site and attendance records of this training must be kept by the contractor. Training should at a minimum include the requirements of the ECC and conditions of the EMP. The training should enable the employees to acquire a basic understanding of the environment, the EMP, ECC and specific environmental features pertaining to the work site.
- If identified, skills training should be provided to individuals who exhibit potential for development.
- If applicable, skills development and improvement programs to be made available as identified during performance assessments.

4.11 Access/Haul roads

- The design phase must make provision for the utilisation of existing roads in the area (as far as possible).
- Any clearing for access, both within, and where necessary, outside the construction site may only be undertaken once the necessary landowner permission has been obtained.

4.12 Erosion control and drainage considerations

- Technical design and planned construction methods must build in measures to prevent soil erosion and scouring associated with the construction of all infrastructure.
- In determining the location of the stockpile areas, areas of high erosion potential must be avoided.
- The design must allow for the ground conditions encountered, including adequate allowance for settlement of embankments and drainage layers.
- Technical design and planned construction methods must build in measures to avoid soil compaction associated with the construction of all infrastructure.
- Alteration of groundwater movement patterns must be prevented. To this end, appropriate design and planned construction techniques to provide for subsurface water movement are to be implemented.
- Ensure that drainage systems are kept as natural as possible. Retain natural drainage and normal flow at all times.

4.13 Storm water management

- ❑ The design of storm water management measures must be undertaken in close collaboration with the ECO.
- ❑ Storm water must be kept separate from any sewage effluent system.

4.14 Stockpile and spoil areas

- ❑ Where possible, stockpile and spoil areas must be identified and approved by the Project/Resident Engineer and ECO during the pre-construction phase.
- ❑ Sensitive and no-development areas (private property, natural areas, community gardens, etc.) must be avoided and stockpile and spoil areas must be kept away from areas of undisturbed natural vegetation.
- ❑ Stockpile or spoil areas must have suitable screening erected to lessen visual impacts.
- ❑ Stockpile and spoil areas must not negatively affect surface drainage, nor must they alter the topography to the extent that they become visually intrusive.

4.15 Dust and noise management

- ❑ Appropriate dust control management practices and procedures must be defined where required during the design phase to ensure the effective suppression of dust during all activities.
- ❑ Noise control measures must be planned for, such as restricting working hours and avoiding working over weekends where practicable to do so.
- ❑ If required during dry conditions control measures must be applied, such as the operation of a water sprayer truck/tank using non-portable water to assist in settling the dust.

4.16 Safety and security

- ❑ During the site induction programme, emphasise the prohibition of Equiano Cable System staff accessing/trespassing onto private property.
- ❑ Develop a communication channel with the local Police Services so that potential situations and/or issues can be dealt with formally.
- ❑ Make use of a private security company/ies during all phases of the project if considered necessary.

5 CONSTRUCTION PHASE

The construction phase refers to the period of the project during which the actual works are carried out, deemed to include site establishment and site works. When carrying out the works during the construction phase, the environmental objective is to minimise the footprint of damage, disturbance and/or nuisance (to the social and biophysical environment), to properly manage use of water resources and to prevent pollution. Unless otherwise specified, it is the responsibility of the Contractor to comply with that described hereunder.

5.1 Demarcation of the site

- The Contractor must identify and demarcate the extent of the site and associated work areas. Appropriate barriers and easily understood signage must be in place to block public access to unsafe areas.
- If the construction footprint and construction activities block a regularly used public access route/s, then suitable alternative/s public access route/s must be identified and demarcated accordingly.
- The size of the construction footprint must be kept to a minimum by constructing suitable boundaries to avoid infringement of the development on the natural habitat.
- All construction activities must remain within the boundaries of the demarcated areas.
- The Contractor must ensure that the site is not used for any other purpose other than for the proper carrying out of the works under the Contract.

5.2 Construction camps and storage areas (if required)

- The construction camp must be sited within existing disturbed areas, outside of any no-development area.
- The Contractor must ensure that the construction camp is completely fenced and has controlled security access.
- The construction camp may include administrative offices, construction plant, material stockpiles, fuels, storage facilities and security guard accommodation.
- Construction workers may not be housed on site.
- The construction camp should be surfaced with a temporary surface such as gravel to assist with dust suppression.
- All storage areas and material laydown sites must be located within predetermined zones as indicated on the site plan.
- The construction camp must be kept secure and neat at all times.
- Security lighting must be positioned so as to not pose a nuisance to neighbouring residents and should point downwards to avoid disturbing nocturnal birds that could become disorientated.
- Ensure adequate access to HIV/AIDS-related information and condoms, for all construction employees are available at the construction camps.
- Ensure sufficient water and sanitation are provided at the construction camps.

5.3 Waste Management

5.3.1 Marine and Intertidal Environment

- Waste generation on board the cable laying vessel must be minimised, and the disposing/treating of non-recyclable wastes must be done in an environmentally sound manner (MARPOL prohibits the disposal to sea of any plastics whilst restricting the discharge of other non-hazardous waste in coastal waters).
- Hazardous waste and debris recovered from the seabed during pre-lay clearing activities should be stored on board the vessel until it can be disposed at a suitably equipped port.
- Discharge of sewage and bilge waters must be managed in accordance with applicable MARPOL requirements.
- No mixing of concrete in the intertidal zone.
- Mixing of concrete must take place on an impermeable surface to prevent the spillage of liquid concrete.
- No dumping of construction materials, excess concrete, or mortar in the intertidal and subtidal zones or on the seabed.
- Ensure regular collection and removal of refuse and litter from the beach and intertidal areas.
- Good housekeeping must form an integral part of any construction operations on the beach from start-up.
- All construction activities in the coastal zone must be managed according to a strictly enforced EMP.
- After completion of construction activities remove all artificial constructions or created shore modifications from above and within the intertidal zone. No accumulations of excavated intertidal sediments should be left above the high-water mark.
- Restrict disturbance of the intertidal and subtidal areas to the smallest area possible. Once the shore crossing is finalised and the associated construction site is determined, the area located outside of the site should be clearly demarcated and regarded as a 'no-go' area.
- Restrict traffic in the intertidal area to minimum required.
- Restrict traffic to clearly demarcated access routes and construction areas only. These areas should be defined in consultation with the Environmental Control Officer (ECO).
- No accumulations of excavated sediments or rock stockpiles should be left above the high-water mark. Any substantial sediment accumulations below the high-water mark should be levelled to follow the natural profile.
- Keep heavy vehicle traffic associated with construction in the coastal zone to a minimum.
- Restrict vehicles to clearly demarcated access routes and construction areas only.

5.3.2 Terrestrial Environment

- Keep all work sites and the Contractor's camp tidy and litter free at all times.
- Collect all domestic waste in adequate numbers of reasonably spaced, scavenger proof litterbins on the work sites and within the construction camp.
- Ensure waste is removed and transported to a registered solid waste disposal facility on a regular (weekly) basis.
- No solid waste may be burned or buried on site or disposed of by any other method on site or within the greater area.
- No water may be discharged on site.
- Construction of the BMH involves hazardous materials such as concrete and cement, and care shall be taken to avoid spillages as this material is transported to the BMH construction site.

- Cement or concrete may not be mixed on the beach at the BMH construction site, but on the hard surface (on a mixing board) of the adjacent parking area, which should be demarcated as a construction site.
- Ensure that all vehicles involved in the construction activities on the beach are not parked on the beach, but on the construction site on the adjacent parking area, where drip trays could, if needed, be placed to manage any oil leakages.
- Chemical toilets must be serviced regularly (weekly) and the liquid waste disposed at a formal sewage disposal facility is required. Sewage may not be dumped anywhere other than at a formal sewage disposal facility.
- All employees should be briefed on the importance of proper waste handling and disposal and the implications of carelessly discarding waste into the environment.
- All waste must be securely stored in temporary, closed containers before being discarded at an approved waste disposal facility or recycler. This is especially important during windy conditions.
- All construction waste must be removed at the end of the construction period and continually during operations when for example maintenance is performed on any of the infrastructure.
- Disciplinary steps for any employee not adhering to proper waste handling and disposal requirements should be enforced by the appointed contractor.
- Any waste that are not contained or is blown away by wind must immediately be collected and securely stored until disposal

5.4 Storage of hazardous substances and dealing with hazardous waste

- Ensure compliance with all national, regional and local legislation with regard to the storage, handling and disposal of hydrocarbons, chemicals, solvents and any other harmful and hazardous substances and materials. The onus is on the Contractor to identify and interpret the applicable legislation.
- The Contractor shall submit an Oil Spill Contingency Plan (relevant to management on land) prior to construction commencing for prior approval by the ECO.
- The ship operators shall be expected to have their own offshore Oil Spill Contingency Plans, which are to be maintained onboard the vessel.
- Position hazardous substance stores as indicated on the approved construction site layout plan, in areas not threatening human life or the environment.
- Keep a record of all hazardous substances stored on site for submission to the ECO.
- A record must be kept of all spills and the corrective actions taken.
- Store all hazardous substances in secure, safe and weatherproof facilities, underlain by a bunded concrete slab to protect against soil and water pollution.
- Provide for controlled loading/unloading areas, underlain by an impervious paving or PVC sheet to protect against soil and water pollution.
- Ensure that personnel handling hazardous substances have been educated in terms of the correct handling, use and disposal thereof.
- Empty containers in which hazardous substances were kept are to be treated as hazardous waste.
- Drip trays must be used where dispensing mechanisms or stored receptacles may leak.
- No servicing or the maintenance of vehicles and machinery may take place on site.
- All used filter materials should be stored in a secure bin for disposal off site. Hazardous waste shall not be stored or stockpiled in any area other than that designated on the construction-site layout.
- Solid waste concrete may be treated as inert construction rubble, but wet cement and liquid slurry, as well as cement powder must be treated as hazardous waste.
- Regularly dispose of all hazardous waste not earmarked for reuse, recycling or resale (such as oil contaminated with chlorinated hydrocarbons, bitumen, tar, electrical cleaning

solvent, certain chemicals and fluorescent tubes) at a registered approved hazardous waste disposal site.

5.5 Pollution control

- ❑ Do not locate any depot for any substance which causes or is likely to cause pollution within a horizontal distance of 100 m of a watercourse, drainage line or identified wetland.
- ❑ Do not dump waste of any nature, or any foreign material into any drainage line or wetland.
- ❑ Do not allow the use of any natural surface water body for swimming, bathing, or the cleaning of clothing, tools or equipment.
- ❑ Prevent the discharge of water containing polluting matter or visible suspended materials, fines and sediments directly into drainage lines or wetlands.
- ❑ Take special care during rainy periods to prevent the contents of sumps and drip trays from overflowing.
- ❑ Where practicable vehicles may not be serviced or repaired on site (other than in emergencies).
- ❑ Conduct regular visual assessments to identify any pollution issues within and downstream/down slope of work areas.
- ❑ Ensure that accidental oil or fuel spills or leakages (other than those classed as emergency) are immediately contained and cleaned up.
- ❑ Carefully control all on-site operations that involve the use of cement and concrete.
- ❑ Use plastic trays or liners when mixing cement and concrete. Do not mix cement and concrete directly on the ground.
- ❑ The Contractor is liable for the costs of remedying damages resulting from pollution.

5.6 Protection of sensitive areas

- ❑ All no-development areas must be clearly demarcated (e.g., fencing or hazard tape). The type of demarcation used must be robust enough to remain intact during the entire construction phase.
- ❑ The Contractor must regularly monitor the condition of demarcation.

PROTECTION OF BEACH AND COASTAL DUNE ENVIRONMENT

- ❑ Where vehicles access the beach, tyres should be deflated sufficiently to minimize pressure impacts on soil dwelling invertebrates where possible.
- ❑ Once all trenching and backfilling has been completed, following the laying of the cable, it is proposed that the dune be reinstated and sculpted to mimic the pre-construction state as per the detailed survey conducted in the planning phase.
- ❑ No refuelling of vehicles and fuel storage areas are permitted on the beach or coastal dune environment.

PROTECTION OF FAUNA

- ❑ Any extraordinary sightings of animal burrows or nests must be recorded with proof of notification to MEFT.
- ❑ Report on any dead or injured birds observed on site to MEFT.
- ❑ Construction work must be confined to the construction sites and interference with indigenous plant and animal species must be avoided.
- ❑ If a particular animal species is perceived to become a pest or hazard, the Contractor may apply to the Project/Resident Engineer and ECO for a mitigation programme to be established.

- ❑ All employees should be briefed by the ECO on the value of biodiversity and the consequences of taking part in illegal activities such as the illegal wildlife trade.
- ❑ Report on any illegal activities.
- ❑ Any entangled or injured animals, whether from the Proponent's activities or not, must be reported to MEFT.
- ❑ Report on any encounters with trapped, entangled or injured animals and where it is as a result of the Proponent's activities, corrective measures should be taken and recorded.
- ❑ Where vehicles access the beach, tyres should be deflated sufficiently to minimize pressure impacts on soil dwelling invertebrates where possible.
- ❑ Environmental awareness training should be provided to all staff in the form of toolbox talks provided by the appointed contractors on site.
- ❑ Report on any illegal activities

FLORA

- ❑ The construction zone will be clearly demarcated at the CLS site to avoid any other plants and restrict construction activities and storage of materials to the demarcated area.

PROTECTION OF HERITAGE RESOURCES

- ❑ The heritage specialist has reviewed the geophysical data generated to support the installation of the cable system (FUGRO, 2019) for the presence of historical shipwrecks or related material, including datasets that are particularly useful in this regard are magnetometer, side scan sonar and multibeam bathymetric data.
- ❑ Should the undersea cable alignment change the archaeologist will need to review the new route. Should the data identify wreck material at or near the location of any portion of the cable, micro-siting of the cable and/or the possible implementation of an exclusion zone around the archaeological feature should be sufficient to mitigate the risks to the site;
- ❑ Should any archaeological material, heritage resources or human remains be found during the course of cable installation, work must cease in that area until the heritage practioner notified, the find has been assessed, and agreement has been reached on how to deal with it. Refer to the Chance Finds Protocol, attached at Annexure 1.

5.7 Weed and invader plant control

- ❑ The Contractor is responsible for the control of weeds and invader plants within the construction site for the duration of the construction and rehabilitation phase.
- ❑ Alien invasive plants around any work areas and within the cable servitude must be kept under control during both construction and operation. During construction, mechanical methods should be encouraged as the main form of control, together with the judicial use of herbicides. The colonisation and rate of growth of alien plants must be closely monitored so that they can be controlled by simple hand pulling while plants are still small. If alien plants are allowed to grow too large, herbicide use will be compounded.
- ❑ Only properly trained people must handle and make use of chemical herbicides.
- ❑ Workers must wear protective clothing when applying the herbicides.
- ❑ Spraying must not take place in windy conditions, when the herbicide may drift onto healthy indigenous plants or surrounding areas.
- ❑ The use of herbicides is not permitted within identified sensitive areas. The removal of weeds and invader plants within these areas must be undertaken by hand

5.8 Visual considerations

- ❑ All temporary buildings and structures, including offices, site camps, stores, etc. must be located as per the approved site plan.
- ❑ All earthworks and/or scarring of the landscape surrounding the Equiano Cable System structures must be rehabilitated and landscaped during the construction process so that they blend as much as possible into the surrounding environment.

5.9 Water

- ❑ A supply of water for construction purposes must be identified and approved by the Project/Resident Engineer.
- ❑ No abstracting of water from any watercourse is permitted, unless authorised ……
- ❑ Non-portable water is permitted for dust suppression subject to the Swakopmund By-Law on Water Restrictions.

5.10 Cement mixing

- ❑ Cement mixing may only be done at designated areas. No-development and sensitive areas must be avoided.
- ❑ The designated areas must have an impervious surface upon which cement is prepared and mixed.
- ❑ The mixing area must either be bunded or have a berm structure to control run-off into an impervious sump area.
- ❑ The sump must be cleaned out daily.
- ❑ Any cement spilled on open ground must be timeously cleared and disposed of in an appropriate manner.

5.11 Roads and road safety

- ❑ All drivers must be polite and considerate to fellow road users and allow right of way when appropriate.
- ❑ All vehicles including Equiano Cable System contractors and sub-contractors must be in a road worthy condition and have valid licenses.
- ❑ All drivers must have relevant vehicle usage licenses.
- ❑ Soil compaction should be minimized by keeping vehicle and construction plant access ways and parking areas to a minimum and making use of existing compacted/hardened surfaces wherever possible.
- ❑ Roads must be capable of accommodating the type of vehicles and/or mechanical plant that contractors plan to use on site.
- ❑ Speed limits must be enforced at all times.
- ❑ Enforce a disciplinary code/measure for the Equiano Cable System Project drivers who do not comply with safe road/driving regulations.

5.12 Air quality

- ❑ Project vessels must operate in compliance with MARPOL regarding limits on SO_2 and NOx emissions from ship exhausts, the prohibition of ozone depleting substances and the 4.5% limit on the sulphur content of fuel.
- ❑ The Project shall require that contractors operate only modern and well-maintained engines.
- ❑ No burning of waste material shall be allowed anywhere on site or in the surrounding areas.

5.13 Noise control

- Establish operating time limits and conditions for construction purposes where possible. The recommended operating times are 06h00 to 17h00 on weekdays (daylight hours).
- Compliance with the appropriate legislation with respect to noise is mandatory.
- Keep the location of stationary plant (generators and compressors) as far away from residential homesteads as possible.
- Use natural screening where feasible to reduce noise impacts.
- Use enclosures, screens and barriers to reduce and contain some of the noise.
- Choose low noise construction equipment and/or methods.
- Modify construction equipment or construction methodology or programmes. This can entail operating a noisy activity whilst other less noisy activities also operate, thus. masking some of the noise.
- As much as practicable, limit heavy and abnormal vehicle traffic (associated with the supply of bulk construction material) on public roads in the project area during peak hours (weekdays between 06:45 and 07:45, and between 16:00 and 17:00).
- Sufficient notice must be given to residents, schools and businesses prior to any planned activities that will be unusually noisy or if after-hours construction work is planned.

5.14 Fire control

- Adequate precautions must be taken to ensure that fires are not started as a result of work on site. The Contractor will be held liable for any damage to property adjoining the site as a result of any fire caused by one of his employees.
- The construction site must be adequately equipped with fire-fighting equipment.
- Immediate steps must be taken to extinguish any fire, which may break out on the construction site.
- No open fires are permitted anywhere on site.
- Fuel or chemicals must not be stored under trees.
- Gas and liquid fuel must not be stored in the same storage area.
- Smoking must not be permitted within 3 m of any fuel or chemical storage area, or refuelling area.

5.15 Health and Safety

- The Contractor is bound by the occupational safety, health and welfare provided for in Chapter 4 of the Namibian Labour Act 11 of 2007, that is divided into Part A (dealing with the rights and duties of employers and employees) and Part B (which includes provisions concerning health and safety representatives and joint OSH committees).
- Furthermore, Labour General Regulations No. 261 of 2008 are the implementing regulations of the Labour Act 11 of 2007.
- In addition, there are other safety and health provisions contained in other regulations and codes such as the Guidelines for the Implementation of the National Code on HIV/AIDS in Employment No. 78 of 1998 (the Code). The Code makes provisions for, among others, risk management, first aid and compensation of occupational benefits in respect of the contraction of HIV/AIDS in the workplace.
- The Hazardous Substance Ordinance 14 of 1974, Government Notice No. 151, is required to taken into account where applicable, as it provides 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, and for the control of certain electronic products.

- Other specifications should be outlined in a Health and Safety Plan commissioned by the Developer
- Include an HIV/AIDS awareness component in the induction programme of all construction workers coming onto site.

5.16 Earthworks and trenching

- Signs or hazard tape must be placed in and around areas where excavations are in progress.
- Excavations and backfilling must be undertaken on a progressive basis.
- All trenches must be dug with digging, placement of infrastructure and backfilling taking place on a progressive basis to limit the amount of open trench on site.
- All trenches must be suitably barricaded to prevent access by surrounding residents or children.
- Bulk (shaping) and fine (trimming) earthworks must be executed according to the design (aimed at the prevention of soil erosion, efficient storm water control, the eventual reestablishment of vegetation and ultimately achieving aesthetically acceptable landscapes).

5.17 Management of topsoil

- Topsoil (with vegetation) should be retained in position for as long as possible, with removal only occurring immediately ahead of construction and earthworks in that area.
- Where soil requires excavation, the original topsoil (the upper most 200 mm of soil, together with plant roots and organic matter) must be stripped and stockpiled separately.
- Topsoil stockpiles must be kept free of alien invasive plants. During rehabilitation, topsoil must be reinstated to ensure rapid re-establishment of groundcover on bare areas.
- Topsoil is to be handled twice only – once to strip and stockpile, and once to replace and level.
- Topsoil should not be stripped when it is wet.
- Topsoil may not be stored in heaps exceeding 1 metre in height.
- Topsoil must not become buried, mixed with spoil (excavated subsoil), rubble or building material, or subjected to compaction or contamination by vehicles or machinery. This will render the topsoil unsuitable for use during rehabilitation. The Contractor will be held liable for the replacement of any topsoil rendered unsuitable for use during rehabilitation, for reasons due to negligence or mismanagement on site.

5.18 Management of spoil

- Spoil (excavated subsoil) must be stored in low heaps, not exceeding 1 metre in height.
- Spoil stockpiles must not be placed in close proximity to sensitive hydrological features, such as wetlands, drainage lines, flow paths or any place where water may converge or flood during rainfall events. Spoil stockpiles must be barricaded and bunded to stop erosion and sediment laden runoff from flowing into wetlands and drainage lines.
- Spoil must be positioned on the higher side of a disturbed area wherever possible.
- Spoil must be stored in such a way and in such a place that it will not cause the damming up of water, erosion gullies, or wash away itself.
- Spoil sites must be rehabilitated once work in that area is complete.

5.19 Erosion control and protection

- ❑ Minimise clearance of vegetation; retain natural trees, shrubs and grasses wherever possible (if applicable to the site).
- ❑ Do not allow surface water or storm water to be concentrated, or to flow down the cable servitude without erosion protection measures being in place.
- ❑ Protect all areas susceptible to erosion[2] and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.
- ❑ Erosion problems must be repaired on a progressive basis throughout the contract.
- ❑ Soil erosion controls must be inspected and maintained on a regular basis during construction and operation.
- ❑ Conduct regular visual assessments to identify any soil erosion issues, particularly any erosion scars or recently deposited drifts of silt associated with construction, drainage structures or spoil.
- ❑ The extent of exposed soil areas must be minimised at all times.

5.20 Vehicles and equipment

- ❑ Vehicles used during construction must have the minimum impact on the environment and other road users.
- ❑ Vehicles, machinery and equipment must be checked regularly to ensure that none have leaks or cause spills of oil, diesel, grease or hydraulic fluid. Problematic vehicles, machinery or equipment must be sent for repair or removed from site immediately.
- ❑ Drip trays must be provided for any machinery that will be in position for longer than one day. Drip trays are to be watertight and must be emptied regularly and before rain events. The contents of drip trays are to be treated as hazardous waste.
- ❑ All the necessary handling and safety equipment for vehicles, machinery and equipment must be provided by the Contractor and used or worn by the staff.

5.21 Fuel

- ❑ If a fuel tank is to be positioned at a construction camp, then this tank must be on a stand, within a bunded area below, with a metal drip tray under the dispensing hose. The dispensing hose must have a control pump with a valve, tap, hose and funnel.
- ❑ An impervious layer (paving or PVC sheeting with a layer of sand) must be provided adjacent to the diesel tank upon which vehicles must park during refuelling. This will help to accommodate fuel spills during refuelling.
- ❑ All spills (within the bund and dispensing area) must be directed to a collection sump.
- ❑ Spills and the contents of the sump must be treated as hazardous waste.
- ❑ All the necessary handling and safety equipment for fuels must be provided by the Contractor to, and used or worn by, staff.

[2] This may include:
- o Use of approved groundcover or grass.
- o Construction of cut off berms (earth and/or rock pack) - these are to be angled across the contour and normally would approximate an angle of 30º from the bisector of the contour.
- o Placing of brushwood on bare surface.
- o Other technical methods as directed by the Engineer.

6 REHABILITATION PHASE

The rehabilitation phase refers to the period of the project after the completion of the actual works, the onset signalled by site clean-up, site rehabilitation, the withdrawal of the Contractor from site, and coinciding with the maintenance/operational period. The concept of progressive reinstatement/rehabilitation is to be implemented throughout the life of the project. As soon as work on one area is completed, the rehabilitation of that site is to commence. This will involve returning the condition of the disturbed areas to a state that they were in before the project began, or better. The Contractor will be required to prepare a Rehabilitation Plan including a schedule for rehabilitation, in a Method Statement for prior approval by the ECO.

6.1 Removal of structures and infrastructure

- ❑ All construction plant, equipment, signage, storage containers, temporary fencing and gates, temporary services, fixtures, foundations and any other temporary construction infrastructure must be cleared from the construction site.
- ❑ Access roads utilised during construction must be returned to a usable state and/or a state no worse than prior to construction.

6.2 Stockpiles, inert waste and rubble

- ❑ All stockpiles and surplus material must be transported to an approved disposal location off site.
- ❑ After the stockpiled material has been removed, the site must be re-instated and rehabilitated.
- ❑ The site must be cleared of all inert waste and rubble, including surplus rock, foundations and batching plant aggregates.
- ❑ All waste and rubble must be disposed of in an approved manner at an approved landfill disposal site.

6.3 Hazardous waste and pollution control

- ❑ All temporary fuel stores, hazardous substance stores, hazardous waste stores and pollution control sumps must be removed from site. The waste must be disposed in an approved manner.
- ❑ All pollution containment structures must be removed from site to be disposed of at a hazardous waste facility.
- ❑ All temporary sanitary infrastructure and waste water disposal systems must be removed from site and disposed of appropriately.

6.4 Final shaping

- ❑ All trenches and excavations must be made safe through backfilling and shaping to conform to the surrounding topography.
- ❑ Programme the backfill of trenches and excavations so that subsoil is deposited first, followed by topsoil. Compact in layers for best results.
- ❑ Deficiency of backfill may not be made up by excavating haphazardly within the work site. Additional fill may only be imported from approved borrow areas as indicated by the ECO.
- ❑ Monitor backfilled areas for subsidence (as the backfill settles) and fill depressions using available material.

- Shape all disturbed areas to blend in with the surrounding landscape.
- Ensure that no excavated material or stockpiles are left on site and that all material remaining after backfilling is smoothed over to blend in with the surrounding landscape.

6.5 Topsoil replacement and soil amelioration

- The principle of progressive reinstatement must be followed wherever possible. This includes the reinstatement of disturbed areas on an ongoing basis, immediately after the specified construction activities for that area are concluded.
- Top soiling activities must preferably be executed prior to the rainy season or any expected wet weather conditions.
- Topsoil placement must be executed concurrently with construction where possible, or as soon as construction in an area has ceased.
- Topsoil must be replaced to the original depth, as much as was removed prior to construction.
- Topsoil must be replaced in the same area from where it was stripped. If there is insufficient topsoil available from a particular soil zone to produce the minimum specified depth, topsoil of similar quality may be brought from other areas.
- The suitability of substitute material must be approved by the ECO.
- Topsoil suspected to be contaminated with the seed of alien vegetation must not be used.
- Remaining stockpiled topsoil must be shaped in an acceptable manner so as to blend in with the local surrounding area.
- After topsoil placement is complete, available stripped vegetation must be replaced randomly by hand over the top soiled area.

6.6 Weed and invader plant control

- The Contractor is responsible for the “control” of weeds and invader plants within the construction site for the duration of the rehabilitation phase. “Control” involves killing the plants present, killing the seedlings, which emerge, and establishing and managing an alternative plant cover to limit re-growth and re-invasion.
- Only properly trained people must handle and make use of chemical herbicides. Workers must wear protective clothing when applying the herbicides.
- Spraying must not take place in windy conditions, when the herbicide may drift onto healthy indigenous plants.
- The use of herbicides is not permitted within identified sensitive areas. The removal of weeds and invader plants within these areas must be undertaken by hand.
- Affected areas must be reinstated and rehabilitated as soon as practically possible.

7 MAINTENANCE / OPERATIONAL PHASE

7.1 Marine activities

- Cable repair vessel to be deployed as soon as possible to a site of cable damage or breakage.
- Waste generation on board the cable repair vessel must be minimised, and the disposing/treating of non-recyclable wastes must be done in an environmentally sound manner (MARPOL prohibits the disposal to sea of any plastics whilst restricting the discharge of other non-hazardous waste in coastal waters).
- Someone on board the cable repair vessel must assume a designated responsibility for spotting marine mammals and turtles. Should these species be observed in the vicinity of the work area, the vessel shall execute measures to avoid collision or disturbances.
- The Ports Authority must be notified of the marine activities associated with cable repair activities, so that vessels in the area are warned in advance of the ongoing operations through a “Notice to Mariners’ report”.
- Vessel movement and activity shall observe standard navigational safety procedures and local communication protocols, as applicable, to avoid conflicts with other vessels in the project area.

7.2 Land based activities

- Ensure that beach and dune erosion is monitored and repaired timeously by cable operator to manage and mitigate the effects of climate change (such as an increase in storm events coupled with sea-level rise) from exposing the cable.
- Should the cable need to be retrieved from a sensitive portion of the route the contractor must be briefed prior to the work being undertaken and the works area must be demarcated by red tape or temporary fencing.
- Rubble and debris from all repair activities must be stored in a designated area and removed from site to an appropriately licensed landfill or waste transfer station.

8 CLOSURE PHASE

- At the end of the project life span, should a decision be made to retrieve the entire or portions of the marine cable, this must be done in accordance with applicable legislation at the time.
- Waste generation on board the cable retrieval vessel must be minimised, and the disposing/treating of non-recyclable wastes must be done in an environmentally sound manner (MARPOL prohibits the disposal to sea of any plastics whilst restricting the discharge of other non-hazardous waste in coastal waters).
- Someone on board the cable retrieval vessel must assume a designated responsibility for spotting marine mammals and turtles. Should these species be observed in the vicinity of the work area, the vessel shall execute measures to avoid collision or disturbances.
- The Ports Authority must be notified of the marine activities associated with cable retrieval activities, so that vessels in the area are warned in advance of the ongoing operations through a 'Notice to Mariners' report.

9 COMPLIANCE MONITORING AND REPORTING

9.1 Introduction

In keeping with current environmental and associated legislation, all environmental management procedures and actions should be reviewed and refined on an on-going basis. This is in accordance with the dynamic nature of environmental management and allows for the timeous identification and mitigation of issues as they come to light.

9.2 Pre-construction compliance monitoring

- ❑ The ECO will review the site plan and construction schedule submitted by the Contractor and submit comments or recommendations to the Project/Resident Engineer for any proposed amendments, prior to final approval.
- ❑ The ECO will monitor compliance with the requirement that environmental awareness training is provided for construction personnel.
- ❑ The ECO will monitor compliance with the requirements stipulated in the ECC and EMP to ensure that the necessary pre-construction activities have been undertaken.

9.3 Construction compliance monitoring

9.3.1 Site Handover

The ECO will attend the site handover meeting, where the EMP will form part of the agenda. Key environmental matters discussed at this meeting will be minuted and submitted as part of environmental reporting. The approved site plan and construction schedule will be discussed at this meeting.

9.3.2 Document Requirements

The latest versions of the following documents should be managed at all times:

- ❑ Environmental Clearance Certificate (ECC) and EMP.
- ❑ Records of safe disposal of waste at a licence waste site or transfer station.
- ❑ Site plans.
- ❑ Construction programme.
- ❑ Applicable permits.
- ❑ Training material and records of attendance of inductions and / or environmental awareness training.
- ❑ Monthly ECO reports.
- ❑ Covid-19 Register of Attendance on Site (if applicable)
- ❑ Hazardous substances register; including Safety Data Sheets (SDS) for all potentially hazardous substances stored or handled onsite.
- ❑ Environmental incident register, including reports and record of corrective action.
- ❑ Public complaints register, including a record of the Developers response.

9.3.3 Site Inspections and Meetings

Compliance monitoring will take place monthly during construction. The ECO will attend meetings and will complete and submit monthly ECO monitoring checklists to establish how well the Contractor is complying with the ECC and the EMP. Completed monitoring checklists will be submitted to the Project/Resident Engineer and the Contractor, who will attend to issues. The monitoring checklists will also be submitted to MEFT.

Anything of an environmental nature that arises in between the monthly site inspections and meetings must be recorded in the site diary and be reflected in written correspondence (email/fax/letter) directed or copied to the ECO. If required, the ECO will conduct a site visit to address the matter.

9.3.4 Practical Completion

The ECO will attend the practical completion inspections. Outstanding environmental matters requiring attention will be provided to the Project Engineer for inclusion in the snag list, which is attached to the practical completion certificate.

9.3.5 Final Completion and Environmental Performance Certificate

Once the environmental items on the snag list have been addressed to the satisfaction of the ECO, the ECO will provide an environmental performance certificate confirming that the environmental specifications applicable to the Contractor(s) have been met. This certificate will be submitted to the Project Engineer prior to the final Certificate of Completion being issued.

9.3.6 Non-Compliance

With particular reference to Contractor performance during construction, the ECO will monitor the ongoing compliance with the EMP or lack thereof, by the Contractors and Sub-contractors. The Contractor(s) and Sub-contractors are deemed not to have complied with the EMP if:

- ❑ There is evidence of contravention of the EMP specifications within the boundaries of the construction-site, site extensions and haul/access roads.
- ❑ There is contravention of the EMP specifications that relate to activities outside the boundaries of the construction site.
- ❑ Construction activities take place outside demarcated areas.
- ❑ Environmental damage ensues due to negligence or intent.
- ❑ Failure to comply with corrective or other instructions issued by the Project Engineer within a specific time period.

Where the ECO identifies non-compliance by the Contractors and Sub-contractors, it will be discussed at the monthly site meetings (or when identified) and remedial actions and associated timeframes specified. The ECO will record these incidents of non-compliance together with the specified remedial actions and timeframes in the site inspection checklist. The Resident Engineer must also record the relevant instructions for the Contractor(s) in the site diary.

If the specified remedial action has not been carried out by the Contractor(s) within the period stipulated by the ECO, the non-compliance in question shall be dealt with as follows:

- ❑ Where non-compliance has resulted in environmental damage to the site which cannot be rectified by the remedial action specified by the ECO, or the Contractor(s) has failed

to carry out the remedial work within the prescribed time limit (or permitted extension thereof), the ECO shall convene a meeting between the Resident Engineer and the Contractor to discuss the appropriate penalty(s). Appropriate remedial work shall also be discussed and agreed to.

- In determining appropriate remedial action, the ECO and Project Engineer shall consult with the relevant authority and where necessary, obtain specialist input.
- The Project Engineer shall issue an instruction to the Contractor to procure execution of the remedial work as agreed between the parties, and the Contractor shall be obliged to procure such remedial work within the prescribed period to the satisfaction of the Project Engineer.
- Failure by the Contractor to comply with an instruction from the Project Engineer to procure the carrying out of the required remedial work shall constitute a material breach of the contract.
- Where the Developer has taken action to procure the remediation of such consequences it shall be entitled to recover from the Contractor the full cost of remediation.

Incidents of non-compliance must be recorded in the site inspection checklist and the site diary. Application of a penalty clause shall apply for incidents of non-compliance and the penalty will be rendered when the Developer withholds money from the retention payout. The penalty imposed shall cover the costs of remediation. Where remediation is not possible, the penalty may be issued per incident, the value of which corresponds with the severity of the incident. Money withheld from the retention payout should only be used for environmental management of the project and not for unrelated purposes.

10 ANNEXURE 1: HERITAGE "CHANCE FINDS PROCEDURE"

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 in the course of 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.

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, advise management, and recover remains

Procedure:

Action by person identifying archaeological or heritage material

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.