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REPORT

Central Térmica de Temane Project - Construction Environmental and Social Management Plan (c-ESMP)

Moz Power Invest, SA. and Sasol New Energy Holding (Pty) Ltd.

Submitted to:

World Bank Group

Submitted by:

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Acronym or Abbreviation	Description
APE	Agente Polivalente Elementar (APE) or Community health worker
BANP	Bazaruto Archipelago National Park
CFC	Chlorofluorocarbons
CHMP	Cultural Heritage Management Plan
CLF	Community Liaison Forum
CLO	Community Liaison Officer
CPF	Central Processing Facility
CTT	Central Térmica de Temane
EC	Environmental Coordinator
ECO	Environmental Control Officer
EDM	Electricidade de Moçambique, E.P (Mozambique Power Company)
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan. (c-ESMP – construction ESMP; o-ESMP – operations ESMP and d-ESMP – decommissioning ESMP)
ESO	Environmental Site Officer
EPDA	Estudo de Pré-viabilidade Ambiental e Definição de Âmbito (Environmental Pre-feasibility and Scope Definition Report)
EPRF	Emergency Preparedness and Response Framework
IFC	International Finance Corporation
ISO	International Organisation for Standardisation
LOCSA	Liaison Officer – Community and Stakeholder Affairs
IUCN	International Union for Conservation of Nature
MITADER	Ministério da Terra, Ambiente e Desenvolvimento Rural (Mozambican Ministry of Land, Environment and Rural Development)
MSDS	Material Safety Data Sheets
MW	Megawatt
NGO	Non-Governmental Organisation
PCB	polychlorinated biphenyl
PLA	Project Labour Agreement
POC	Potentially oily contaminated

Acronym or Abbreviation	Description
PPZ	Partial Protection Zone
PSA	Production Sharing Agreement
PVC	Polyvinyl Chloride
STE/CESUL	Projecto de Interligação da Rede Nacional de Energia Centro-Sul (Interconnection Project of South-Central National Energy Network)
ToR	Terms of Reference
WHO	World Health Organisation

1.0 INTRODUCTION

The Mozambican economy is one of the fastest growing economies on the African continent with electricity demand increasing by approximately 6-8% annually. In order to address the growing electricity demand faced by Mozambique and to improve power quality, grid stability and flexibility in the system, Moz Power Invest, S.A. (MPI), a company to be incorporated under the laws of Mozambique and Sasol New Energy Holdings (Pty) Ltd (SNE) in a joint development agreement is proposing the construction and operation of a gas to power facility, known as the Central Térmica de Temane (CTT) project. MPI's shareholding will be comprised of EDM and Temane Energy Consortium (Pty) Ltd (TEC). The joint development partners of MPI and SNE will hereafter be referred to as the Proponent. The Proponent propose to develop the CTT, a 450MW natural gas fired power plant.

The proposed CTT project will draw gas from the Sasol Exploration and Production International (SEPI) gas well field via the phase 1 development of the PSA License area, covering gas deposits in the Temane and Pande well fields in the Inhassoro District and the existing Central Processing Facility (CPF). Consequently, the CTT site is in close proximity to the CPF. The preferred location for the CTT is approximately 500 m south of the CPF. The CPF, and the proposed site of the CTT project, is located in the Temane/Mangugumete area, Inhassoro District, Inhambane Province, Mozambique; and approximately 40 km northwest of the town of Vilanculos. The Govuro River lies 8 km east of the proposed CTT site. The estimated footprint of the CTT power plant is approximately 20 ha (see Figure 1).

Associated infrastructure and facilities for the CTT project will include:

1) Electricity transmission line (400 kV) and servitude; from the proposed power plant to the proposed Vilanculos substation over a total length of 25 km running generally south to a future Vilanculos substation. [Note: the development of the substation falls outside the battery limits of the project scope as it is part of independent infrastructure authorised separately. Environmental authorisation for this substation was obtained under the STE/CESUL project. (MICOA Ref: 75/MICOA/12 of 22nd May 2012)];

2) Piped water from one or more borehole(s) located either on site at the power plant or from a borehole located on the eastern bank of the Govuro River (this option will require a water pipeline approximately 11km in length);

3) Access road; over a total length of 3 km, which will follow the proposed water pipeline to the northeast of the CTT to connect to the existing Temane CPF access road;

4) Gas pipeline and servitude; over a total length of 2 km, which will start from the CPF high pressure compressor and run south on the western side of the CPF to connect to the power plant;

5) Additional nominal widening of the servitude for vehicle turning points at points to be identified along these linear servitudes;

6) A construction camp and contractor laydown areas will be established adjacent to the CTT power plant footprint; and

7) Transhipment and barging of equipment to a temporary beach landing site and associated logistics camp and laydown area for the purposes of safe handling and delivery of large oversized and heavy equipment and infrastructure to build the CTT. The transhipment consists of a vessel anchoring for only approximately 1-2 days with periods of up to 3-4 months between shipments over a maximum 15 month period early in the construction phase, in order to offload heavy materials to a barge for beach landing. There are 3 beach landing site options, namely SETA, Maritima and Briza Mar (Figure 7). The SETA site is considered to be the preferred beach landing site for environmental and other reasons; it therefore shall be selected unless it is found to be not feasible for any reason;

8) Temporary bridges and access roads or upgrading and reinforcement of existing bridges and roads across sections of the Govuro River where existing bridges are not able to bear the weight of the equipment loads that need to be transported from the beach landing site to the CTT site. Some new sections of road may need to be developed where existing roads are inaccessible or inadequate to allow for the safe transport of equipment to the CTT site. The northern transport route via R241 and EN1 is considered as the preferred transport route (Figure 8) on terrestrial impacts; however, until the final anchor point is selected, and the barge route confirmed, the marine factors may still have an impact on which is deemed the overall preferable route.

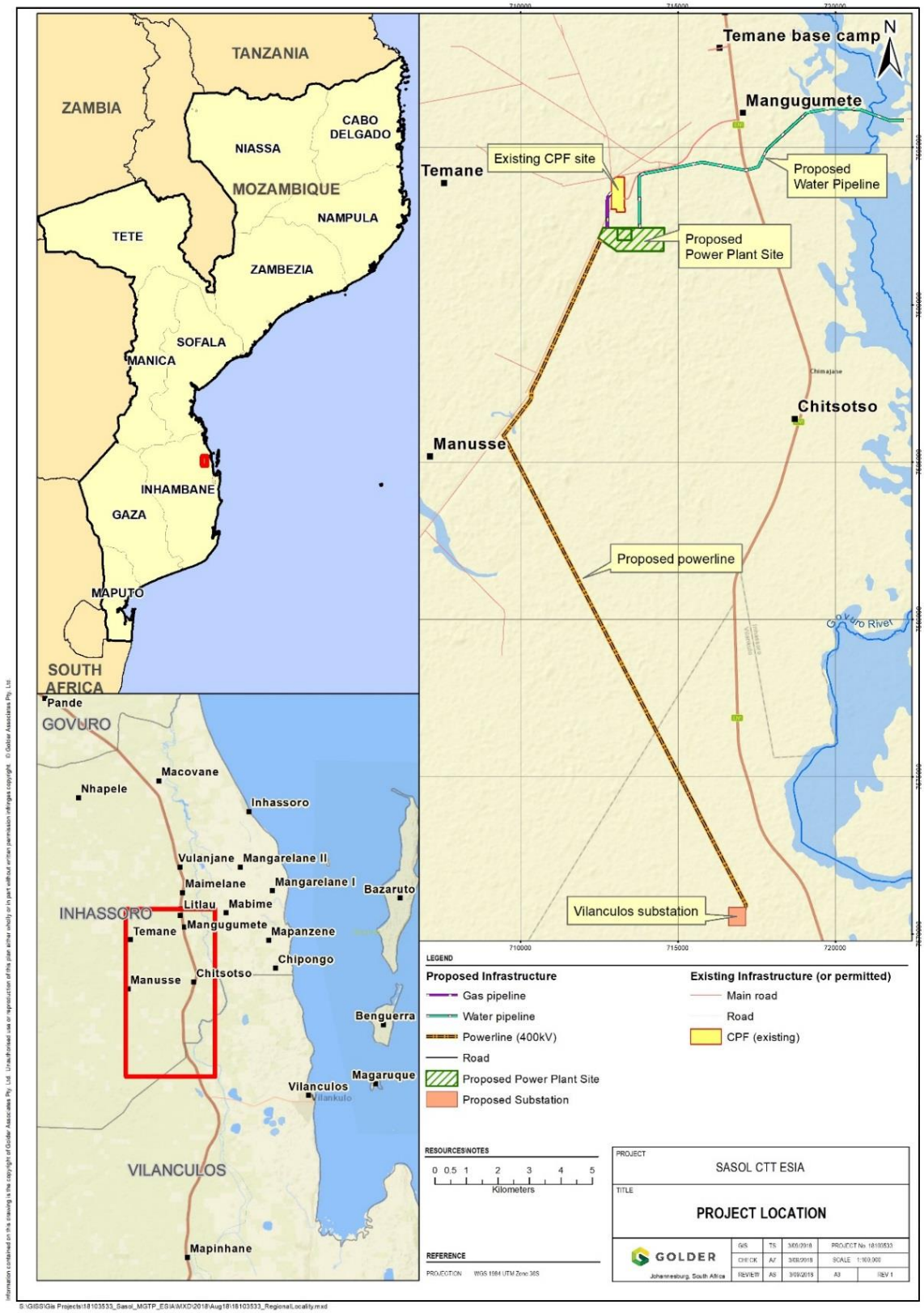

Figure 1: Project Location

1.1 Details of the Proponent

Moz Power Invest, S.A. (MPI), a company to be incorporated under the laws of Mozambique and CTT New Energy Holdings (Pty) Ltd (SNE) in a joint development agreement is proposing the construction and operation of a gas to power facility, known as the Central Térmica de Temane (CTT) project. MPI's shareholding will be comprised of Electricidade de Mozambique E.P. (EDM) and Temane Energy Consortium (Pty) Ltd (TEC).

Dr. Aly Sicola Impija, board member of EDM, is the Proponent representative and will hold the environmental authorisation should it be granted.

Table 1: Proponent details

<table>
<tr><th colspan="2">MPI</th><th>SNE</th></tr>
<tr><td colspan="2">Moz Power Invest S.A. (MPI)
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1.2 Scope and Objectives of c-ESMP

This document is the Construction Environmental and Social Management Plan (c-ESMP) for the CTT project. It is used as a guideline for the management of the construction phase of the CTT. It is derived from the ESIA and supporting specialist studies.

1.2.1 What is included

The c-ESMP is intended to identify possible impacts associated with the construction phase, propose mitigation measures and action plan for each identified impact. The ESMP is used as a guideline during the construction phase. The construction phase covers all of the physical footprints and activities linked to the construction and commissioning of infrastructure described in section 3.0 during the CTT construction phase which is expected to continue for 18-24 months.

1.2.2 What is Excluded?

The c-ESMP does not cover any operational or decommissioning activities. Separate ESMPs for both operation and decommissioning phases are available for this project and are referenced as (o-ESMP and d-ESMP) for operational and decommissioning activities respectively.

Aspects related to compensation and resettlement are not addressed in this c-ESMP and the reader is referred to the document “Compensation and Resettlement Procedure” for the CTT project.

The c-ESMP also excludes specifications regarding occupational health, hygiene or safety requirements. The client (MPI and SNE) obligations in this regard are determined by legislation and will be documented separately in the appropriate policy or procedure prior to construction activities commencing.

1.2.3 Report Structure

The c-ESMP is structured as follows:

- Chapter 2 describes the CTT environmental and social policies and commitments in Mozambique.
- Chapter 3 describes the activities that make up construction phase of the projects covered by this c-ESMP.
- Chapter 4 describes the environmental management structure, including the approach to the c-ESMP and the organisational structure and responsibilities.
- Chapter 5 sets out the detailed specifications, including management of the pre-construction phase, the construction phase and the post-construction phase up to the operation phase.
- Chapter 6 describes requirements for performance assessment, corrective action, management review and auditing.
- Chapter 7 sets out requirements for competency training and awareness creation.
- Chapter 8 outlines requirements for dealing with emergencies.
- Chapter 9 specifies requirements for document control.

2.0 CTT ENVIRONMENTAL POLICIES AND COMMITMENTS IN MOZAMBIQUE

2.1 Safety, Health and Environmental (SHE) Policy

The CTT shall implement a Safety, Health and Environmental Policy declaration that sets the framework for an integrated management system for the Construction, Operation and Decommissioning of the CTT. All visitors, contractors and employees are required to comply with the requirements of the policy declaration.

CTT management and staff shall fully subscribe to the SHE policy declaration and shall demonstrate commitment to the policy by:

- Developing and implementing an integrated management system that will comply with the requirements of the OHSAS 18001 Occupational Health & Safety, and ISO 14001 Environmental Management Systems;
- Subjecting itself to third party audits conducted by an internationally recognised certification body as part of their drive towards continual improvement;
- Accepting and complying with Corporate Governance requirements, Mozambican SHE - related legislation, all Financing obligations (including WB/IFC PS) and any appropriate, recognised, industry codes of practice;

- Engaging with the Mozambican Government regarding the implementation framework for any new legislation that affects the CTT and its activities;
- Influencing suppliers and contractors to conform as a minimum to the Mozambican SHE - related legislation and to respect and adhere to the CTT codes of practice;
- Sharing and communicating relevant information about safety, health and environmental performance with interested and affected parties, employees and authorities in an open and transparent manner, and making this declaration available by displaying it in all office buildings and in the induction training;
- Minimising risks associated with its activities which may impact on the health and safety of its employees, communities and the environment;
- Enhancing the general awareness of its employees and contractors to ensure understanding of all the SHE risks and impacts associated with their work activities;
- Preventing pollution, accidents, injuries and ill health through setting and reviewing objectives and programmes;
- Responding effectively to safety, health and environmental emergencies;
- Providing appropriate resources to implement the above commitments;
- Reviewing such a declaration of intent on an acceptable basis or as and when required by CTT SHE Governance structure.

2.2 Community Engagement Principles

CTT's community engagement principles are centred on:

- Community involvement and ownership
- Strengthen community leadership
- Targeted impacts-driven interventions
- Addressing key community priorities
- Strategic research informed interventions
- Monitoring and evaluation
- Building capacity through partnership

2.3 Compliance with Legislation and Best Industry Standards

The CTT project has committed to comply with international guidelines and standards (the Equator Principles, World Bank Group Operational Policies, International Finance Corporation Performance Standards and other applicable international and regional guidelines) where these are more rigorous or detailed than Mozambican national standards or where Mozambique standards do not exist.

2.3.1 Mitigation hierarchy

The first priority of environmental management is always to prevent adverse impacts, thereafter management measures with other objectives are considered. Environmental management measures can be varied and the measures themselves can have a variety of objectives.

World Bank guidelines for a best practice approach to the management of environmental and social impacts are presented in Table 2. Many of the recommendations set out in the design component of Chapter 5.0 are designed to meet the criterion for 'avoidance'.

Table 2: Primary objectives of mitigation measures for adverse environmental impacts. The objectives are listed in decreasing order of priority

Avoidance	■ Avoiding activities that could result in adverse impacts. ■ Avoiding resources or areas considered as sensitive.
Prevention	■ Preventing the occurrence of negative environmental impacts and / or ■ Preventing such an occurrence having negative environmental impacts.
Preservation	■ Preventing any future actions that might adversely affect an environmental resource. ■ Typically achieved by extending legal protection to selected resources beyond the immediate needs of the project.
Minimisation	■ Limiting or reducing the degree, extent, magnitude or duration of adverse impacts. ■ This can be achieved by scaling down, relocating, redesigning elements of a project.
Rehabilitation	■ Repairing or enhancing affected resources, such as natural habitats or water sources, particularly when previous development has resulted in significant resource degradation.
Restoration	■ Restoring affected resources to an earlier (and possibly more stable and productive) state, typically 'background / pristine' condition.
Compensation	■ Creation, enhancement or protection of the same type of resource at another suitable and acceptable location, compensating for lost resources.

3.0 PROJECT DESCRIPTION

This section describes the area and the nature of the activities that are covered by this c-ESMP.

The Central Térmica De Temane (CTT) project will produce electricity from natural gas in a power plant located 500m south of the CPF. The project will consist of the construction of the following main components (Figure 2):

- Gas to Power Plant with installed capacity of approximately 450MW;
- Gas pipeline (±1-2 km) that will feed the Power Plant with natural gas from the CPF;
- 400kV Electrical transmission line (± 25 km in length) with a servitude of 100m that will include a fire break (vegetation control) and a maintenance road to the Vilanculos sub-station. The transmission line will have a partial protection zone (PPZ) of 100m width (i.e. 50m on either side of centre line). The transmission line servitude will fall inside the PPZ;
- Water supply pipeline to one or more borehole(s) located either on site or at borehole(s) located east of the Govuro River;

- Paved access road to the CTT site and gravel maintenance roads within the transmission line and pipeline servitudes;
- A construction camp and contractor laydown areas will be established adjacent to the CTT power plant footprint;
- Temporary beach landing structures at Inhassoro town for the purposes of delivery of heavy and oversized equipment and infrastructure to build the power plant. This will include transhipment and barging activities to bring equipment to the beach landing site for approximately 1-2 days with up to 3-4 months between shipments over a period of approximately 8-15 months; and
- Temporary bridge structures across the Govuro River, as well as possible new roads and/or road upgrades to allow equipment to be safely transported to the CTT site from the beach landing during the construction phase.

Figure 2: Examples of gas to power plant sites (source: www.industcards.com and www.wartsila.com)

The final selection of technology that will form part of the power generation component of the CTT project has not been determined at this stage. The two power technology options that are currently being evaluated are:

- Combined Cycle Gas Turbine (CCGT); and
- Open Cycle Gas Engines (OCGE).

The two technology options are discussed in detail in the Environmental and Social Impact Assessment (ESIA) report (reference- 181035333-320908-2). Once a technology and vendor is selected, this ESMP must be updated accordingly. The provisional layout of the project infrastructure is indicated in Figure 3 with a conceptual layout of the CTT plant shown in Figure 4.

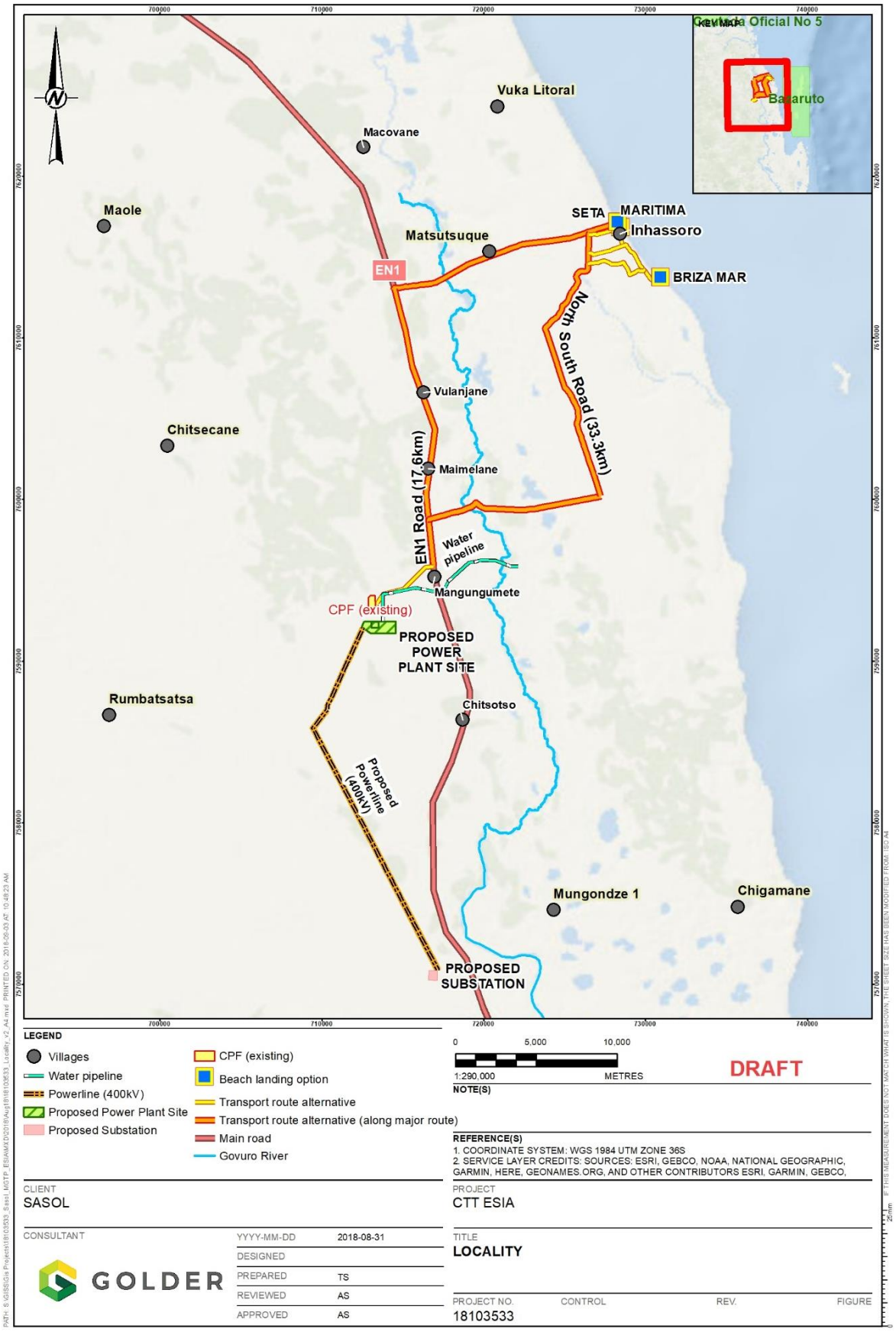


Figure 3: CTT Key Infrastructure

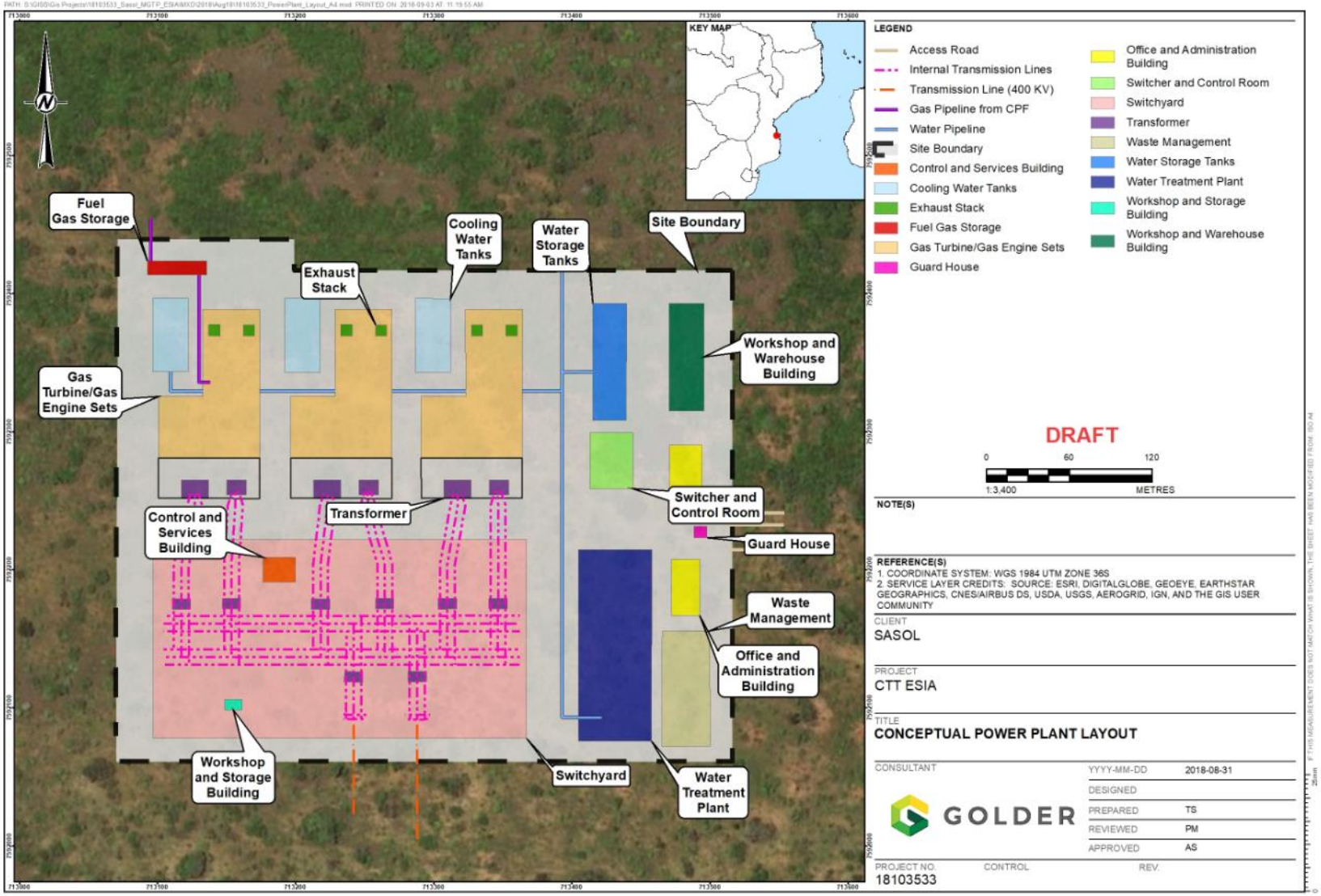


Figure 4: Conceptual layout of CTT plant site

3.1 Ancillary Infrastructure

In addition to the previously described main infrastructure components, the ancillary construction phase activities that will be undertaken and which will be managed under this c-ESMP consist of the following:

- Maintenance facilities, admin building and other buildings (work shop, warehouse etc);
- Telecommunications and security;
- Waste (solid and effluent) treatment and/or handling and disposal by third party, (ablution facilities will be a combination of septic tanks and French drains/ soak away pits);
- Site preparation, civil works and infrastructure development for the complete CTT plant, transmission line and pipelines (gas and water);
- Construction camp (including housing/accommodation for construction workers); and
- Road construction and/or road upgrades along either of the two transport options being considered for transporting equipment from the beach landing sites to the CTT plant during construction phase;
- Beach landing laydown area and logistics camp.

3.2 Beach Landing Jetty Construction

As part of the CTT construction phase, it was considered that large heavy equipment and materials would need to be brought in by a ship which would remain anchored at sea off the coast of Inhassoro. Equipment and materials would be transferred to a barge capable of moving on the high tide into very shallow water adjacent to the beach to discharge its cargo onto a temporary off-loading jetty (typically containers filled with sand) near the town of Inhassoro. As the tide changes, the barge rests on the beach and off-loading of the equipment commences.

Currently, the SETA beach landing site is the preferred beach landing site (assuming the use of one of the identified anchor sites) together with the road route option to be used in transporting equipment and materials along the R241 then the EN1 then via the existing CPF access road to the CTT site near the CPF. Figure 5 indicates the beach landing site while Figure 6 indicates the Conceptual illustration of the Jetty at SETA beach landing site. The alternative beach landing sites of Maritima and Briza Mar are still being evaluated as potential options.

Figure 5: SETA Beach landing site and route at Inhassoro

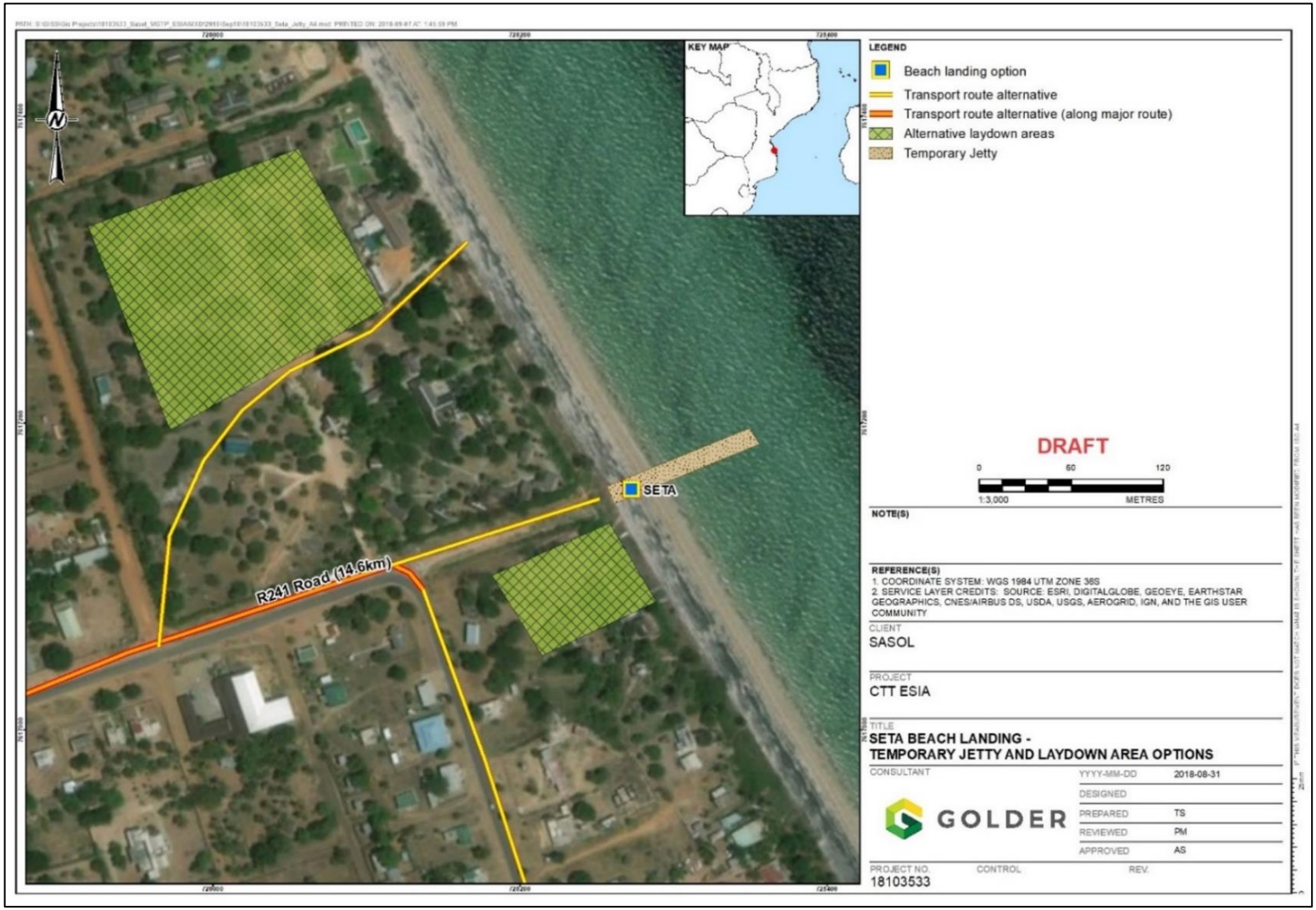


Figure 6: Conceptual illustration of the Jetty at SETA beach landing site

3.3 Anchorage Points

Two anchorage points for the ships that will transport large heavy equipment and components are indicated on nautical charts; both are located off the coast of Inhassoro within Bazaruto Archipelago National Park (BANP) (Figure 7) and therefore an approval from the BANP would need to be obtained prior to utilizing these points, as well as consistency with PS 6, Mozambican legal requirements and any Management Plan of the BANP. The first anchorage point is located approximately 20km east of SETA beach landing site (7km from Bazaruto Island and 13km from Santa Carolina Island) while the second one is nearer to the mainland shore, approximately 13km east of Briza Mar beach landing site (5-6km from Santa Carolina Island and 10km from Bazaruto Island).

As both previously identified anchorage sites are within the boundaries of the Bazaruto Archipelago National Park (BANP), an ongoing study seeks to identify alternative anchorage point(s) that would be located completely outside BANP, as well as being feasible from a technical, environmental, and social point of view. The anchorage point(s) and associated barge lane(s) to be used by this Project shall be fully outside BANP boundaries, unless alternative sites outside BANP either (i) are not at all available or clearly technically not feasible or (ii) would clearly have greater overall adverse environmental or social impacts than if they were within BANP. The selection of the final anchorage points therefore is subject to the World Bank's no-objection.

Should the anchorage point(s) and/or barge route(s) have to be within the BANP for the above-mentioned reasons, a) the marine studies included within the ESIA will be updated and resubmitted to the World Bank for approval and b) the ESMP shall be updated to specify any further measures that may be necessary or appropriate to enhance the conservation and management of BANP and resubmitted to the World Bank for approval. Moreover, CTT would ensure that the locations of these facilities (i) have been formally approved by African Parks (legally responsible for BANP management) and ANAC (Mozambique's national conservation agency); (ii) are consistent with the Government-approved BANP Management Plan; and (iii) are legally permitted under Mozambican law—all in full compliance with IFC Performance Standard 6 (Paragraph 20) and the applicable Mozambican laws and regulations.

It is understood that the vessel will not be anchored for extended periods of time and will most likely be anchored for a day or two at a time to offload the heavy equipment, although this will be defined once a technology option has been chosen as well as a preferred manufacturer of the various large and oversized power plant components.

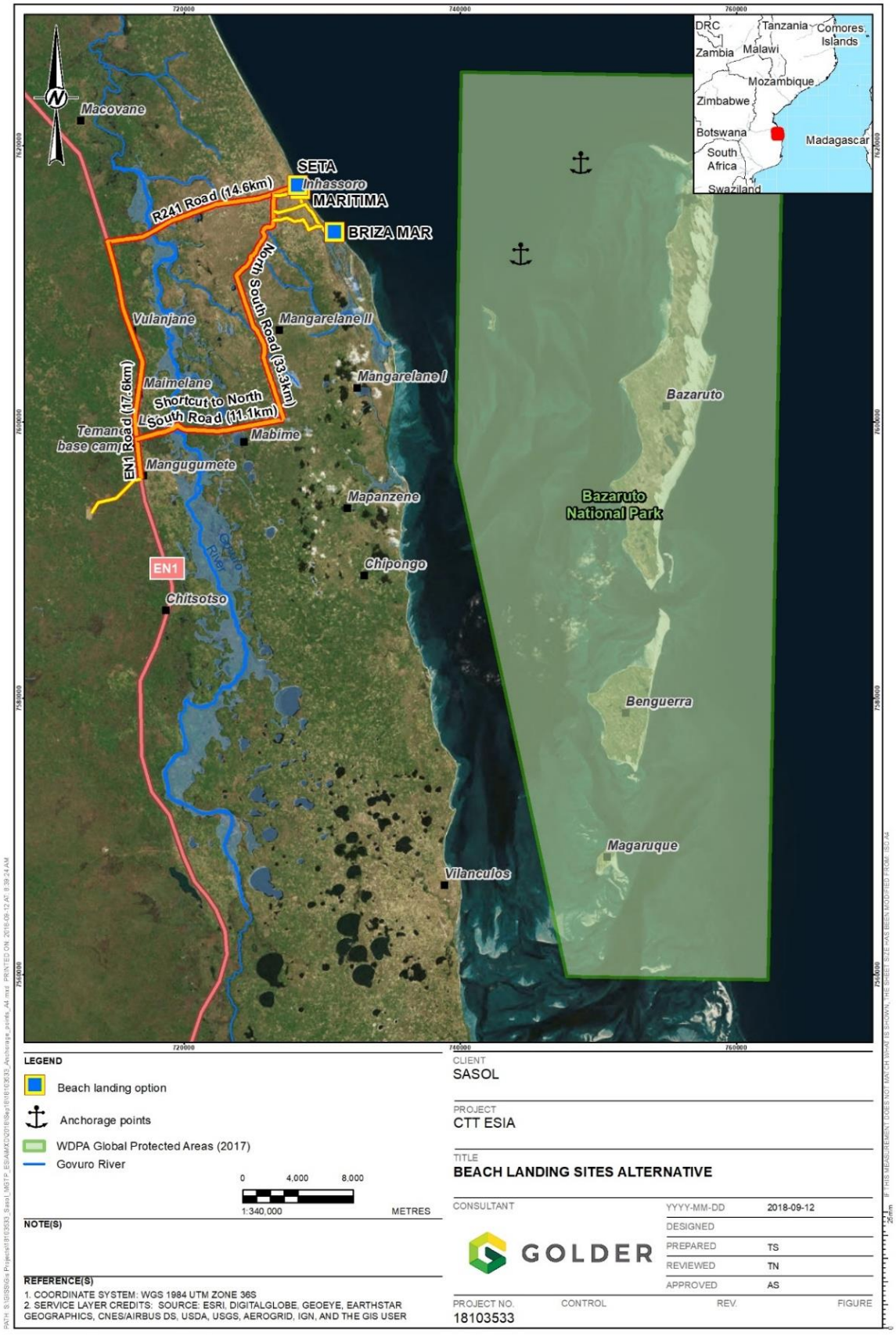


Figure 7: Previously used or identified Offshore Anchorage locations

3.4 Construction Camp Laydown Areas

A construction camp will be required to cater for the construction workforce and contractors at the CTT site. General equipment and material laydown areas for contractors at the CTT site will also be required during the construction phase. An example of the construction camp and laydown area is provided in Figure 8 below. It is worth noting that the CTT plant site, construction camp and laydown area all fall within the area which has previously been bush-cleared and de-mined for any potential unexploded ordnances. The linear features such as access roads, transmission line, gas and water pipelines have also been bush-cleared and de-mined. Prior to the commencement of construction activities, the appointed Contractor will be responsible for clearing and site preparation. The Contractor will prepare and implement its site specific Contractor ESMP on site.

Figure 9 below provides an indicative construction camp layout for a number of 850-person camp. It typically provides accommodation for workers, offices, administration offices, catering facilities, medical clinic (with supporting equipment), diesel generators and diesel storage tanks, sewage treatment plant as well as water treatment facilities. There are recreational facilities as well as security facilities on site. A detailed construction camp management plan, aligned with international best practices will need to be prepared for implementation by the contractor, prior to construction. Refer to the framework construction (work) camp management plan for further guidance on this.

3.5 Beach Laydown Area

It should be noted that there will be a laydown area at the chosen beach landing site. This area will be used as a staging area to manage the large equipment and materials that will be offloaded from the barges. This is only expected to be used during daylight hours and for temporary storage of materials, equipment and vehicles.

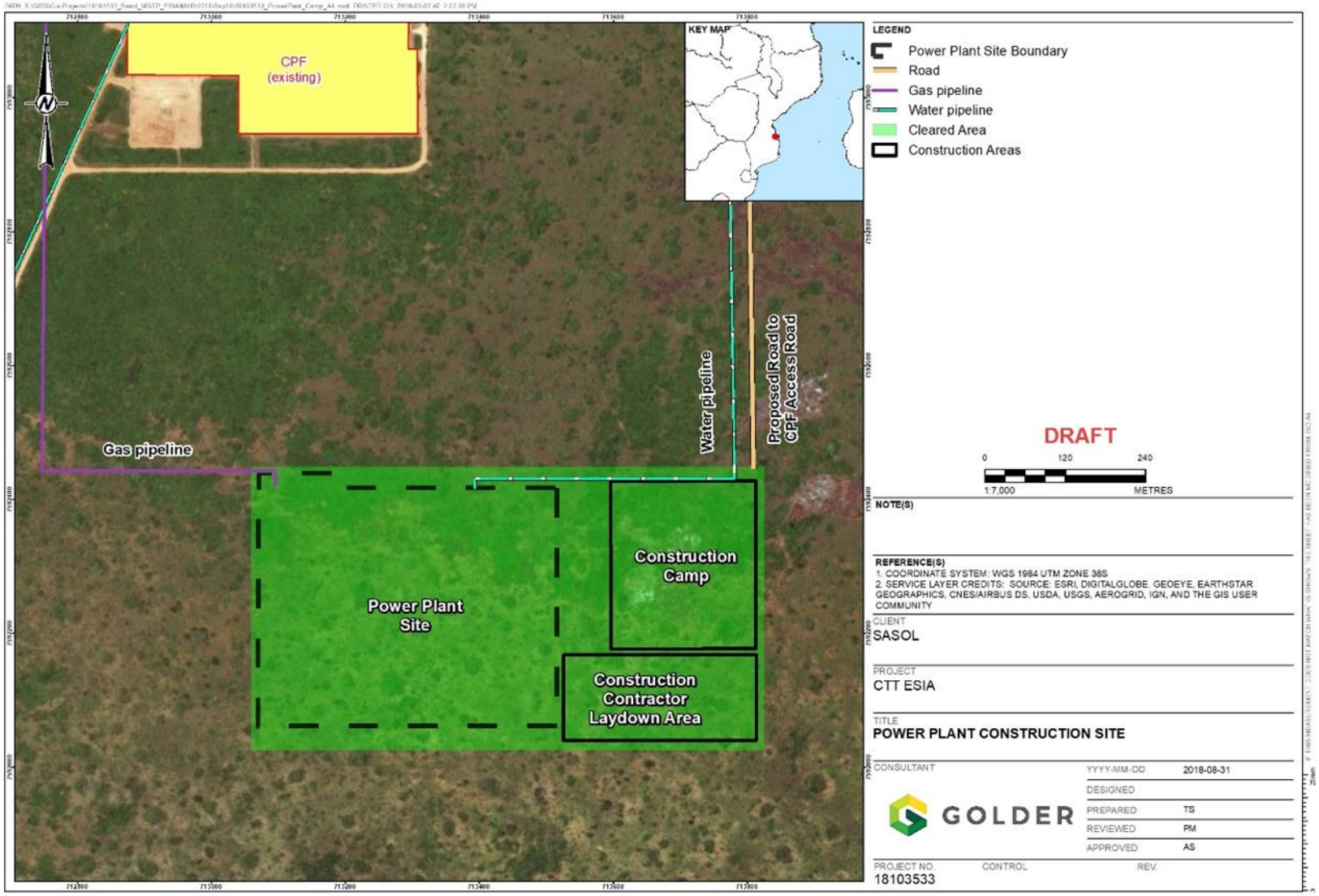


Figure 8: Conceptual illustration of CTT during construction phase

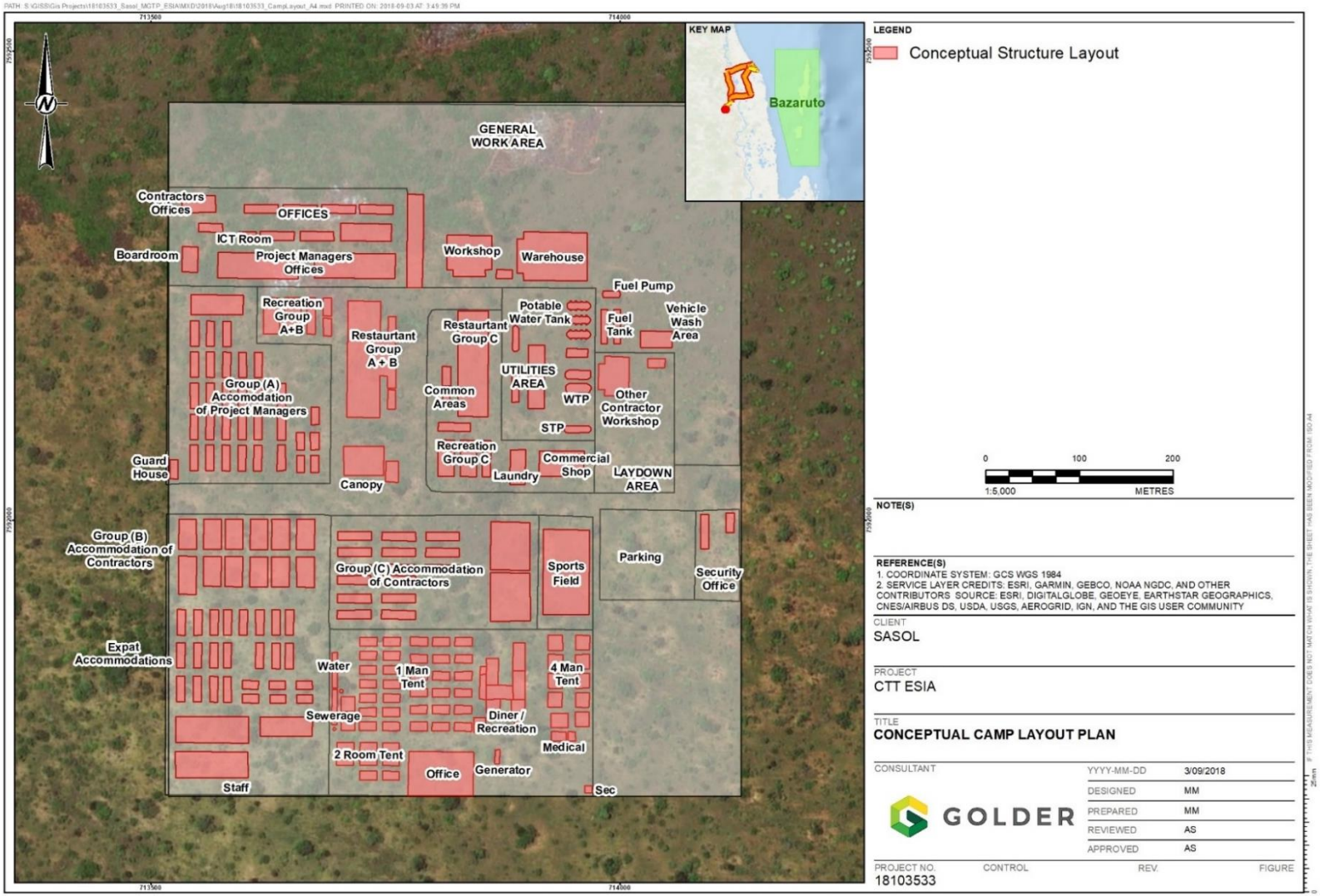


Figure 9: Conceptual Construction Camp Layout

3.6 Transmission Line

A 400 kV transmission line will be constructed from the CTT to the Vilanculos substation (this sub-station was previously authorised under a separate project). The 400kV transmission line is approximately 25km in length and will evacuate the power to the National Grid via the Vilanculous sub-station.

A typical Over Head Line (OHL) uses three main types of lattice steel towers (pylons). These are:

- **Suspension towers**: which support the conductors on straight stretches of line. Two alternative designs may be used on this Project - self-supporting or guyed V-towers;
- **Angle / Deviation towers**: which are used at points where the route changes directions. They are self-supporting towers; and,
- **Terminal towers**: which are used where the line terminates at substations.

It is proposed to use a combination of self-supporting towers and guyed V-towers but where possible to avoid the use of guyed V-towers where economically viable, at minimum in high risk areas for collision risk posed by guy wires to birds (also fruit bats), including species of conservation concern such as several globally threatened vulture species, It is proposed that at least 3 meters of spacing between the conductors is implemented

The tower height will be dependent on the terrain, height above sea level and span length (distance between towers) which will typically vary between 400m and 500m (Figure 10 provides a visual illustration of the towers).

ANGLE / DEVIATION TOWER

Source: Mott MacDonald: Mozambique Regional Transmission Backbone Project, ESIA, 2011

SUSPENSION TOWER - GUYED V TOWER

Source: Mott MacDonald: Mozambique Regional Transmission Backbone Project, ESIA: 2011

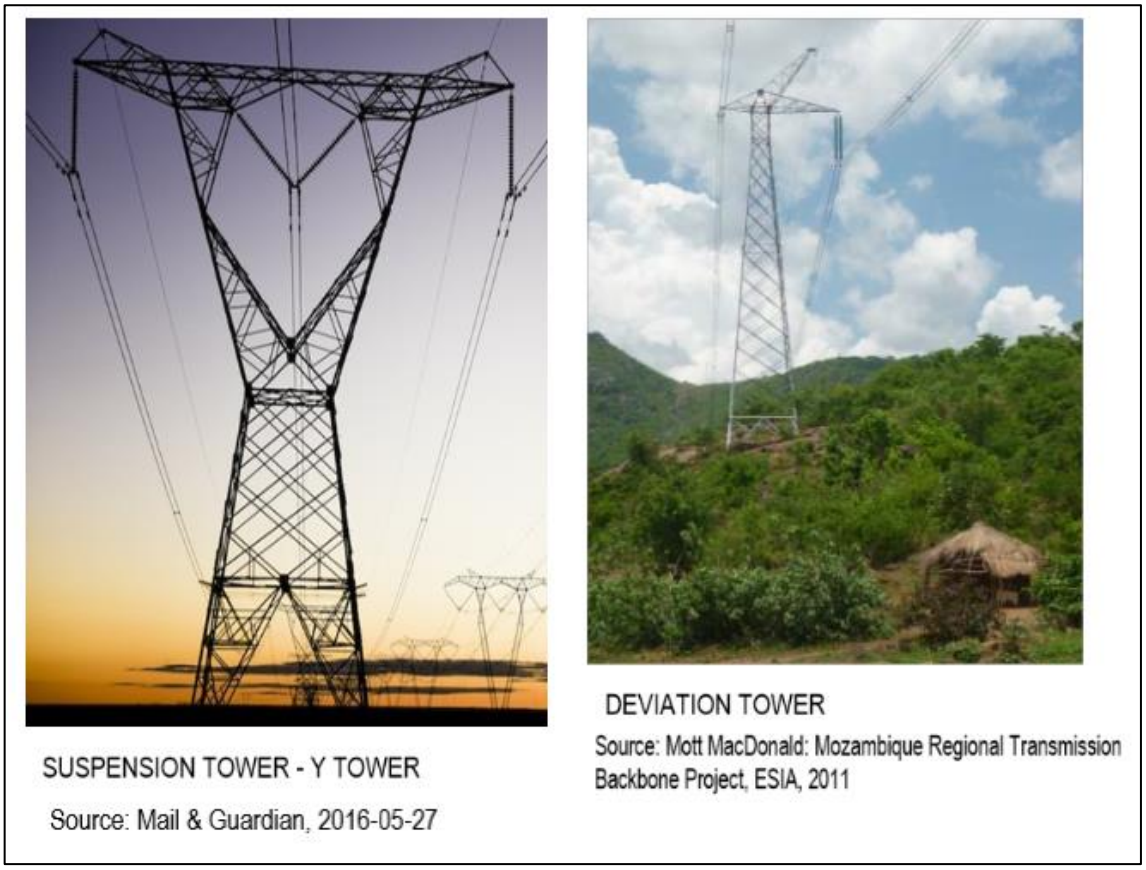
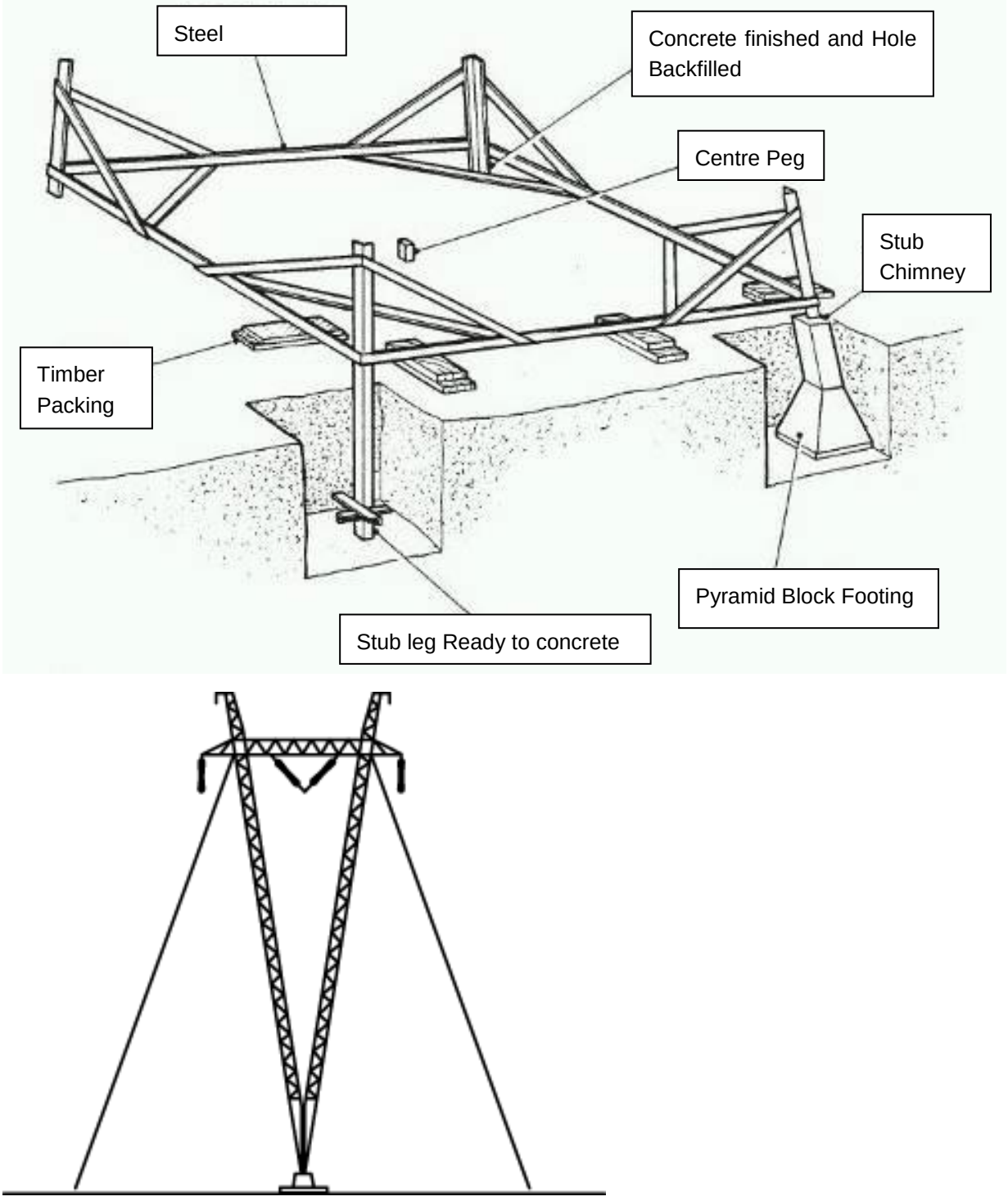


Figure 10: Pylon illustrations

The typical tower height will vary between 20 – 25 m and will have a PPZ of 100m (50m on either side of centre-line) established. Depending on the tower design finally chosen, the foundations will differ between one to four foundation columns, however they will both have level bases which will be used to erect the towers (Figure 11).



Source: Mott MacDonald, Mozambique Regional Transmission Backbone Project, ESIA, 2011

Figure 11: Pylon Foundations

The construction process will generally be undertaken sequentially as follows:

- De-mining & bush clearing (already mostly completed to ensure safety of personnel conducting surveys);
- Site preparation, including road access;

- Civil Works for pylon foundations;
- Pylon erection;
- Conductor stringing;
- Compliance quality testing; and
- Rehabilitation of disturbed areas.

Figure 12: Examples of Pylon construction (source: http://cscon.co.za/ and EDM)

4.0 ENVIRONMENTAL MANAGEMENT STRUCTURE

4.1 Content of the Report

The content of the report is set out according to an internationally recognised framework, which includes the following:

- Avoidance / mitigation / management measures required during the construction phase of the project;
- A description of the activities necessary to achieve the mitigation measures;
- Generic programming and scheduling requirements;
- Definition of responsibilities, resources, communication and reporting structures;
- Specification of performance evaluation requirements;
- Identification of training requirements;
- Identification of monitoring requirements; and
- Identification of audit requirements.

4.2 Organisational Structure and Responsibility

The overall organisational structure for environmental management of construction infrastructure projects is set out in Figure 13 below. The responsibilities of the personnel are described in Table 3 below.

Table 3: Responsibilities of organisations and personnel for environmental and social management on CTT during construction phase

Item	Refers to
All parties	All parties shall comply with all the requirements of the CTT ESIA and ESMP and shall, in accordance with accepted industry standards and the World Bank policies and guidelines, employ such up to date techniques, practices and methods that will ensure compliance to the requirements and, in general, minimise environmental damage, control waste, avoid pollution, prevent loss or damage to natural resources and minimise effects on surrounding landowners, occupants and the general public. All parties shall prevent or minimise the occurrence of accidents which may cause damage to the environment or people, prevent or minimise the effects of such accidents and shall return the environment to a state as close to the condition existing prior to any such accident as possible. All parties shall take proactive steps to ensure that the requirements in the ESMP are met during construction activities. These shall include, but not be limited to, the following: ■ Employment of competent and dedicated members of staff to oversee the implementation of the ESMP. ■ Instruction of staff about the relevant environmental aspects and the specific measures that each employee will implement to meet the environmental protection and management standards defined by the ESMP. ■ Engagement with stakeholders to share information and consult, particularly with affected persons and communities on the proper implementation of protective and compensatory measures.

Item	Refers to
CTT	CTT management responsible for oversight of civil construction including engineering, procurement and construction management (EPC). Where a Managing Contractor (or EPC Contractor) is appointed, the CTT project manager will liaise with them and exercise contractual rights to ensure compliance with the ESMP. Where a Managing Contractor is not appointed the CTT manager will be responsible for all oversight of the works. This will also require adequate oversight of the implementation and management of the Resettlement Policy Framework (RPF). The Sponsor will be responsible to ensure that the RAP/ARAP/LRP is implemented according to requirements of MITADER as well as the WBG requirements (PS5).
CTT Managing Contractor	This role is defined as CTT's representative, responsible for engineering, procurement and construction management (EPC) of the project. The Managing Contractor is also referred to as the EPC Contractor. Construction management includes all social and environmental management. This will also include the implementation and management of the Resettlement Policy Framework (RPF) and any tools such as the RAP/ARAP/LRP. In accordance with accepted standards, the Managing Contractor shall ensure that the Construction Contractor employs such up to date techniques, practices and methods of construction that comply with the E&S standards enunciated above, and, in general, minimise environmental damage, control waste, avoid pollution, prevent loss or damage to natural resources and minimise effects on surrounding landowners, occupants and the general public. The Managing Contractor shall regularly update the Environmental and Social Coordinator (ESC) about any non-conformance in respect of this c-ESMP and the RPF and shall advise the ESC of the actions that will be taken to rectify the non-conformance. The Managing Contractor shall employ the staff indicated in Figure 13 to monitor the Construction Contractor's performance and shall ensure that they are competent and fully briefed about the nature of the particular project. In some instances, CTT may manage the Construction Contractor themselves, in which case the positions of Managing Contractor and Site Engineer will be members of CTT's staff.
CTT Site Engineer	The Managing Contractor's representative on site. Environmental staff (Community Liaison Officers (CLO) and Environmental Site Officers (ESOs)) shall report directly to the Site Engineer referred to as 'the Engineer' in all specifications below.
Construction Contractor (including all sub-contractors)	The Construction Contractor is responsible for the construction of all of the works required by the project. The c-ESMP shall form part of the Construction Contractor's agreement with CTT and shall be legally

Item	Refers to
	binding. The Construction Contractor (or 'Contractor') shall be responsible for the actions and performance of all sub-contractors. The Contractor shall be responsible for ensuring compliance with relevant Mozambican legislation, and all pertinent elements of the ESMP and RPF including World Bank Group standards applicable to environmental management for this project. The Contractor shall take proactive steps to ensure that the standards in the c-ESMP are met during all phases of construction. These shall include, but not be limited to, the following: ■ Employment of competent and dedicated members of staff to oversee the implementation of the c-ESMP. All employments and replacements of staff responsible for the environmental and social management of the contract shall be subject to the Managing Contractor's and CTT's approval. ■ Active participation of such staff in the planning, construction and re-instatement of the works ■ Regular interaction with the Managing Contractor's environmental and social staff In addition, the Contractor will prepare and implement its site-specific Contractor ESMP and where required RAP/ARAP/LRP. Staff must be instructed about the relevant environmental and social sensitivities and the specific measures that each employee will implement to meet the environmental and social protection and management standards defined by the c-ESMP. In addition, the Contractor will prepare and implement its site-specific Contractor ESMP.
Construction Contractor Environmental and Social Coordinator (ESC)	The Construction Contactor's Environmental and Social Coordinator (ESC) is an employee with extensive environmental and social work experience. The EC shall liaise with any consultants or specialists, as necessary, during the course of the project. The ESC shall monitor environmental and social performance on the project and shall review monthly non-conformance reports. The ESC shall liaise with the Managing Contractor regarding any significant non-compliance by the Construction Contractor and the steps to be taken to rectify this. The ESC shall provide support to the ESOs and CLOs and shall review the ESO/CLO monthly reports. The ESC shall update the c-ESMP, when necessary, based on experience of the works. Any updates shall be submitted to MITADER for authorisation, as well as the World Bank for No Objection (N/O). The ESC shall oversee the re-instatement of the site and provide final sign-off following acceptable re-instatement. Together with the CTT Environmental Site Officer (ESO) and CTT Liaison Officer – Community and Stakeholder Affairs (LOCSA), the EC shall initiate, coordinate and manage all necessary communication with the Government (local, provincial and national) via the Government of

Item	Refers to
	Mozambique's (GOM's) environmental representative based in Maputo and in the Provinces and Districts.
CTT Liaison Officer – Community and Stakeholder Affairs (LOCSA)	The LOCSA is the CTT officer responsible for all ongoing communications with communities and stakeholders affected by CTT's operations in Mozambique. This is a permanent position. The LOCSA shall guide the CLO(s) appointed under the management contractor's staff, where necessary, and shall introduce the CLO(s) to the community leaders in the areas in which the project is situated. The LOCSA shall review the ESO/CLO monthly reports The LOCSA shall interact with the ESC on matters of common interest and shall review non-conformances in the monthly reports. Together with the ESC, the CTT Environmental Site Officer (ESO) and CTT LOCSA shall initiate, coordinate and manage all necessary communication with the Government (local, provincial and national) via the Government of Mozambique's (GOM's)environmental representative based in Maputo and in the Provinces and Districts.
CTT Local Procurement Officer	Implement enterprise and supplier development strategies, tactical plans including the required supporting business and governance processes, procedures, systems and tools in order to enable CTT to meet its preferential procurement and CTT targets for all of its Mozambique local content requirements. ■ Identify, nurture, grow and leverage both internal and external partnerships necessary to successfully execute the local content strategy particularly as it relates to Enterprise Development, Supplier Development and Local Procurement (Local Content Strategy/Plan) ■ Oversee the management of the delivery of business and technical support activities provided to CTT's Enterprise and Supplier Development beneficiaries.
CTT Community Liaison Officer (CLO)	Community Liaison Officers (CLOs) shall be appointed under the Managing Contractor's staff as the principal interface between the community and the Construction Contractor during construction. The CLO(s) shall be full time employees for the period of the contract in the case of all projects for which authorisation has been required by MITADER. The CLO(s) shall act as a guide and advisor to the Construction Contractor in respect of the c-ESMP concerning communication and local community issues. This shall be achieved by ongoing liaison with and monitoring of relations with communities, identification of problem areas and supporting their resolution. The CLO(s) shall report directly to the Site Engineer. Where advice about community issues is required, the CLO shall notify and request assistance from the LOCSA.

Item	Refers to
	The CLO shall comply with all requirements for ongoing communication with affected communities during the construction period. Responsibilities of the CLO shall be set by CTT and will include the following: ■ To keep communities informed about upcoming construction activities and progress with construction ■ To arrange occasional visits to construction sites for District Government and community leaders ■ To provide traffic safety educational programmes to those communities near or on access routes that will be used by construction vehicles ■ To support CTT in the implementation of the Project Labour Agreement by communicating to government, village leaders and community members the aims and objectives of CTT's transparent recruitment approach for unskilled temporary construction workers, aimed at providing maximum benefit to and fair job distribution between locally affected communities ■ To liaise between CTT, the Managing Community Liaison Officers, the community and NGOs/service providers implementing community projects for the construction phase ■ To communicate and manage the CTT Compliments and Complaints Register ■ To report any transgressions of foreign construction workers in the communities to the Site Engineer and the CTT EC ■ Prepare monthly reports with the ESO. ■ Provide guidance on and evaluate the implementation of the social aspects of the ESMP. The core competencies and job descriptors of the CLO need to reflect the substantive role of CLOs (or other project social specialists) in implementing the social management plans and social aspects of the mitigation measures beyond purely communications in a manner more comparable to the role of the ESO. The CLO(s) shall preferably be hired from the District in which the Project is proposed, shall be trained by the Managing Contractor and LOCSA about all relevant aspects of the project, shall have experience in communication with communities and local and district authorities and shall be able to communicate in local languages. He/she shall be capable of evaluating the effectiveness of specified social management measures and shall further be capable of proposing solutions to problems identified in respect of the implementation of the c-ESMP.
CTT Environmental Site Officer (ESO)	The Environmental Site Officer (ESO) shall be appointed under the Managing Contractor's staff and shall be employed on a full-time basis for the duration of the contract phase (this appointment will likely extend into operational phase). The ESO shall perform all tasks necessary to monitor the performance of the contractor with respect to the environmental

Item	Refers to
	specifications in the c-ESMP. Specific responsibilities of the ESO shall be as follows: ■ Ensure the protection of the environment ■ Perform all of the day-to-day tasks necessary to monitor the performance of the Contractor(s) with regard to the requirements of the c-ESMP ■ Liaise with the Site Engineer and CTT EC in the case of incidents, non-conformance or any matter where the course of action is unclear ■ Verify the accuracy of the information contained in the c-ESMP and bring any errors, omissions, oversights to the attention of the Managing Contractor and EC ■ In consultation with CTT's EC, guide all aspects of the re-instatement process ■ Prepare monthly reports with the CLO(s). The ESO shall be fully briefed about the project, and receive any necessary training from the Managing Contractor and the CTT EC. Through the Site Engineer, the ESO shall guide and advise the Contractor in respect of compliance with the c-ESMP on environmental issues during the construction phase of the project. This will be achieved by ongoing internal coordination meetings, inspections / monitoring of the project, identification of problem areas and provision of action plans to avoid environmental damage. The ESO shall liaise frequently with the CLO(s) and with the Contractor's environmental staff (Environmental Control Officer). The ESO shall have experience in environmental management. He / she shall be capable of evaluating the effectiveness of specified management measures and be familiar with environmental management techniques. He / she shall be capable of proposing solutions to problems identified in respect of the implementation of the c-ESMP.
Specialist Environmental / Social Consultant (Project Implementation)	The Managing Contractor shall employ the services of an environmental and social specialist(s) as and when required during construction and project implementation to ensure compliance with the requirements of the c-ESMP or to advise about environmental sensitivities that were previously unknown and are not adequately dealt with in the c-ESMP. This Specialist shall be either a person(s) directly employed by CTT, where the expertise is available, or a consultant, where the expertise is not available, as determined by the Scope of Work prepared by the ESC or ESO. The Specialist shall report directly to the ESC. Responsibilities of the environmental and social specialist shall be set by the ESC. The specialist shall have a demonstrated track record in the specific environmental or social aspect under consideration. The specialist shall advise CTT of any appropriate actions to be taken and recommend any necessary changes to the c-ESMP or RPF.

Item	Refers to
Environmental and Social Auditor	An Experienced, independent, environmental and social expert(s), familiar with auditing requirements and procedures for Environmental, Social, Health and Safety audits, appointed to audit the project every 3 months (quarterly) during the first year of construction and twice a year thereafter until the end of the construction period. The auditor(s) shall prepare a report documenting the effectiveness of environmental management, problem areas, remedial actions proposed and taken, and compliance/non-compliance by the Contractor(s) with the project standard. The specific audit objectives, the individuals and organisations that the auditor proposes to meet, the documentary evidence of performance and the locations on site that are to be visited during the audit shall be decided in pre-audit discussions with the CTT ESC. The auditor findings and corrective actions for project closure and future project are to be included in CTT's 6-monthly reporting to MITADER and Lender as required.

*Additional roles for an Environmental Manager and/or Environmental Control Officer and/or a Health and Safety Officer may be included depending on the final CTT project organogram once adopted. It should further be noted that the term "environmental" encompasses the bio-physical and socio-economic environment.

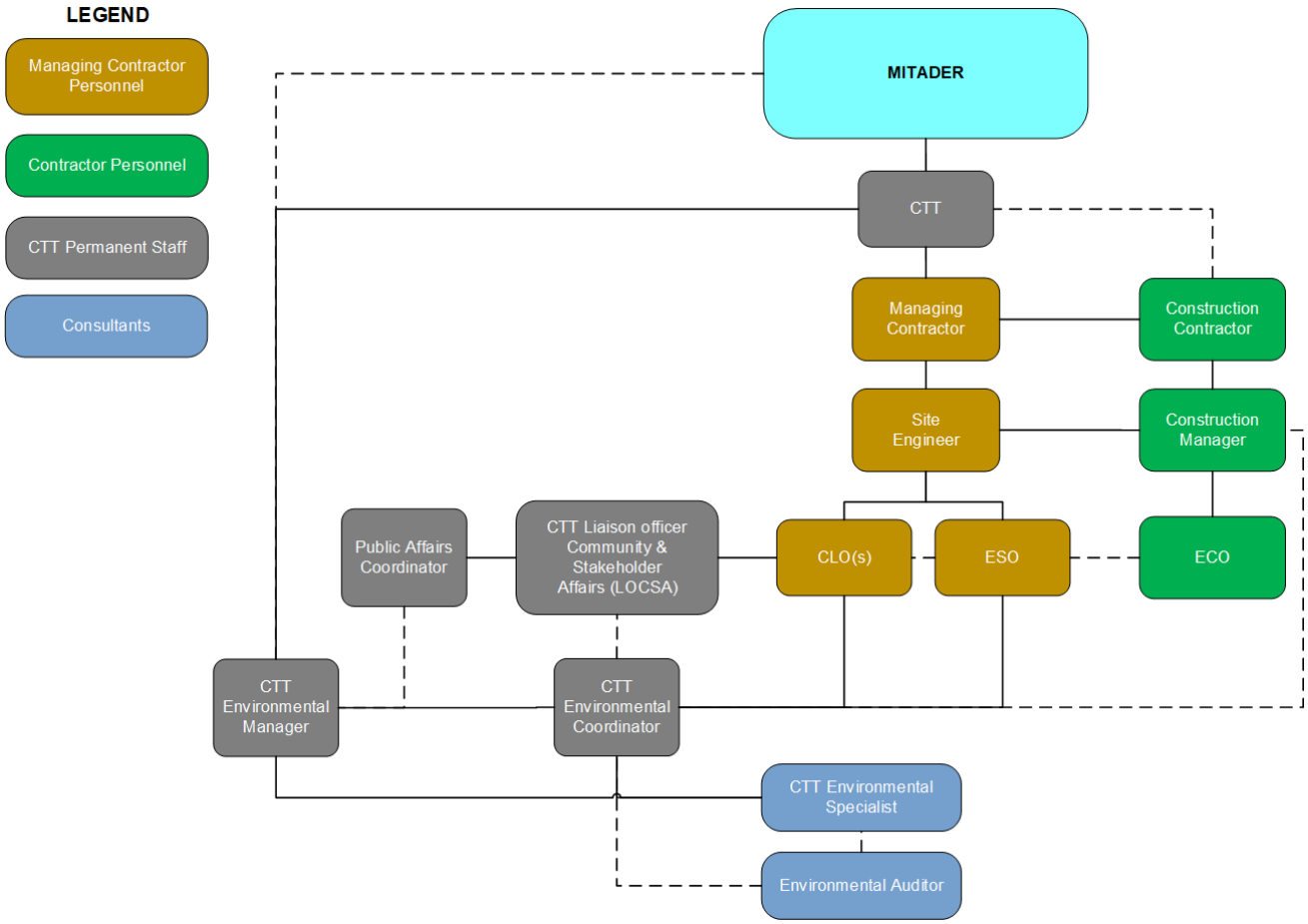


Figure 13: Responsibilities for environmental and social management during construction of the CTT' project

4.3 Communication with Government, Communities and Stakeholders

All communication with the Mozambique Government regarding environmental management matters shall be via CTT's Environmental Coordinator and Liaison Officer – Community and Stakeholder Affairs (LOCSA). All communication with local structures shall be undertaken by the Community Liaison Officer(s) (CLOs) appointed for the construction period, with assistance, where necessary, from the LOCSA.

CTT aims to engage respectfully and in a timely manner with all relevant stakeholders. The Stakeholder Engagement plan details its approach in relation to communications with stakeholders.

Note: All communication with the Mozambique Government regarding construction matters shall be via the CTT Management (Communication Manager). All communication with local structures shall be undertaken in conjunction with the CTT Communications Manager and CLO appointed for the construction period.

4.4 Environmental and Social Management System (ESMS)

There are three main tools for environmental and social management at the CTT:

- The Environmental and Social Impact Assessment / Study (ESIA);
- The Construction Environmental and Social Management Plan (c- ESMP); and
- The Environmental and Social Management System (ESMS).

In addition, the ESMS will include the operations ESMP and decommissioning ESMP's.

The ESMP is intended to guide impact management and mitigation associated with the CTT. It converts ESIA mitigation measures into actions and allocates responsibility and deadlines to those actions. The ESMS confirms management commitment to the ESMP and describes how the requirements of the ESMP will be achieved. It sets the management framework in terms of environmental organisational structure, reporting, review and monitoring, training and public disclosure. The Managing Contractor, in conjunction with the ESO and EC is to ensure that a suitable management system is implemented to ensure compliance (and be able to demonstrate compliance) to the ESMP.

A comprehensive ESMS aligned to IFC ESMS Implementation Handbook – General (2015) and ISO 14001:2015 standards will be developed and implemented, inclusive of the following system elements:

1) Policy;
2) Identification of Risks and Impacts;
3) Management Programmes;
4) Organisational Capacity and Competency;
5) Emergency Preparedness and Response;
6) Stakeholder Engagement;
7) External Communications and Grievance Mechanisms;
8) Ongoing Reporting to Affected Communities; and
9) Monitoring and Review.

5.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

5.1 Register of Activities

The management requirements presented in this section have been compiled in rough order of construction activities. While specifications have been listed under activities, the requirements are not necessarily mutually exclusive to the activity under which the specification or requirement is listed. Should any specification be applicable to any other activity, listed or otherwise, the intent remains.

For each activity identified, the following items are specified in the management plan:

Ref.: A reference number for the specified management requirement / specification.

Management requirements: Detail on the management requirements / specifications required.

Responsible party: The person that will assume overall responsibility for ensuring that the requirement / specification is met.

Scheduling: The date by which the requirement shall be achieved. Should the requirement be applicable throughout the life of construction phase or a period thereof, the date will be indicated as ‘ongoing’.

Compliance/Performance indicator(s): Indicates means to determine if the requirement has been met and verified. Additional monitoring requirements are specified under Section 6.0. Note that the number of incidents, audit findings etc. shall also be used as indicators of performance.

5.2 Project Planning

5.2.1 Pre-construction Requirements

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s)or verification
5.2.1.1	Authorisation granted by MITADER	Should authorisation for this project be granted by MITADER, it shall be attached to this ESMP and updated were required in order to comply with any specific conditions set out by the authority.	CTT Specialist Environmental Consultant	Pre-construction - as a basis for licensing of the activity	As per requirement
5.2.1.2	Avoidance of obstruction to surface water flow	All project infrastructure shall be designed to minimise impacts on the natural flow of water. For linear infrastructure, this shall include appropriately sized and positioned drains, culverts etc. Other infrastructure shall be located to avoid impact on seasonal and permanent water courses and on stormwater drainage in general. Where linear infrastructure must cross seasonal or permanent drainage lines, measures must be taken to ensure that the infrastructure has limited impact on the receiving environment.	CTT Managing Contractor All contractors	Pre-construction	No damming of water or obstructions to water flow

5.3 General Administration and Liaison

5.3.1 Administration and General Issues

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification [1]
5.3.1.1	Release of contracts	Relevant SHE requirements extracted from the ESMP will be included as part of tender documentation and form part of contracts when the scope of the work to be conducted or service to be provided can impact on the environmental performance of the CTT.	Supply Chain (SC) Manager	At the time of release of requests for quotation. At the time of contract preparation.	Inclusion of ESMP as part of relevant tenders (RFT) and contracts.
5.3.1.2	Compliance with legislation	In all cases, the requirements of Mozambican legislation shall be met. Should this not be possible for any reason, CTT shall be immediately notified of any breach, or pending breach. This notification shall be accompanied by full details of the contravention or pending contravention and shall be accompanied by a corrective action plan.	Construction Contractor	At all times	Project records Absence of legal warnings / prosecutions ESO/CLO monthly reports with reference to legal non-compliances
5.3.1.3	Compliance of sub-contractors	The main contractor shall be responsible for ensuring the compliance of sub-contractors with all aspects of this c-ESMP (all references to the Construction Contractor means the main contractor and all sub-contractors).	Construction Contractor	At all times	Evidence of compliance by all sub-contractors

[1] *Performance indicators are only specified where there may be additional requirements to the verification that the requirement / specification have been met. Additional monitoring requirements are specified under Section 6. Note that number of incidents, audit findings etc. shall also be used as indicators of performance.*

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification [1]
5.3.1.4	Working period and work hours	All construction work shall be restricted to between the hours of 06h00 and 18h00 unless otherwise approved by CTT following consultation with affected communities. Work hours will also need to comply with local labour laws. Any approved night work shall not create a nuisance in surrounding communities. The beach landing activities will only be permitted during daylight hours and are to occur outside of the peak tourist periods (November-January, Easter and during any important tourist events that may occur such as fishing competitions as far as practical).	Construction Contractor	At all times	ESO/CLO monthly reports. Absence of complaints Contractor's reports on weekly hours worked by personnel
5.3.1.5	Personnel management	A site and project-specific HSE induction shall be drafted prior to commencement of construction and be presented to all employees before they start work on the Project. The EC shall approve the content of the induction. A register shall be kept by the Contractor of all personnel who attend the induction.	Construction Contractor Environmental Coordinator	Prior to employment	Inclusion in training / induction programme(s) Register of attendance of induction

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification [1]
5.3.1.6	Bush fire prevention and management	A procedure for the prevention and control of bush fires shall be prepared. The procedure shall include, but not be limited to, the following: ▪ Sources of fire risk ▪ Measures to comply with any requirements of local authority fire departments ▪ Measures to minimise the risk of accidental bush fires caused by any activity related to the works Measures to control an accidental bush fire. Smoking is only permitted outside and in designated areas and where there is no risk of starting bush fires (subject to normal safety precautions in terms of flammable materials).	Construction Contractor Environmental Coordinator	At all times.	Inclusion of smoking areas in training / induction programme(s)
5.3.1.7	Work site employment	Workers shall not be employed at the gate of any work site.	Construction Contractor	At all times.	No soliciting of work by workers observed at the campsites or work locations
5.3.1.8	House-keeping	The work place shall be kept tidy and free of litter at all times.	Construction Contractor	At all times	Inclusion in training / induction programme(s) Absence of litter on site
5.3.1.9	Disciplinary procedures	Appropriate disciplinary procedures shall be taken against offenders by the contractor's management in the event of deliberate non-compliance with any of the specifications in this c-ESMP and notification shall be given to the Site Engineer of the actions taken.	Construction Contractor	At all times	Evidence of disciplinary procedures where deliberate non-compliance is registered

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification [1]
5.3.1.10	Alcohol and drug use	No alcohol or narcotic substances shall be permitted on site at any work site or at the construction camp and laydown areas. All aspects of the code of conduct will need to be adhered to by all parties.	Construction Contractor	At all times	Records of disciplinary procedures

5.3.2 Community, Stakeholder and Government Liaison

A key management principle during the construction phase of the project shall be that of ensuring that the rights of the inhabitants are not infringed and that all construction activities are conducted in a manner that is respectful of the local residents and the land and resources that belong to them. Most people are tolerant of short-term construction impacts if treated courteously and this shall be a guiding principle of all CTT's contractors' activities and relationships with communities.

The project area is characterised by the following socio-economic conditions, which shall at all times be taken into consideration:

- Subsistence living,
- Extreme poverty,
- Strong dependence on local natural resources,
- Limited access to health and education facilities, access roads (basic services); and
- Very limited employment opportunities.

All communication shall be in accordance with the CTT Stakeholder Engagement Plan, and as set out, in general, in the specifications below.

Note that this section does not contain specifications for liaison in respect of compensation, which is covered under the RPF for this project. Furthermore, the RPF will refer to specific tools (RAP/ARAP/LRP) that may be required to be implemented in certain instances.

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.3.2.1	Management of community expectations	Community leaders and residents may have expectations that CTT will play a supporting and developmental role within the area and that the project will have other positive economic benefits. In order to encourage realistic expectations, close communication shall be maintained between local communities and the Community Liaison team (the CTT LOCSA and the Community Liaison Officer/s appointed for the construction period) with the objective of clarifying the limitations to CTT's involvement in development initiative in project-affected communities.	LOCSA CLO	At all times	Absence of community complaints in complaints register
5.3.2.2	General	Access over land, the integrity of fences, control of bush fires, littering, harassment of domestic and wild animals, sedimentation and contamination of ground and surface waters, damage to landscape and vegetation, nuisance (noise and dust) and all such environmental matters, shall be controlled in the best interests of the local inhabitants and shall, where necessary, be the subject of open communication between the parties.	Construction Contractor LOCSA CLO	At all times.	Absence of community complaints in complaints register
5.3.2.3	Communication plan	Prior to construction activities starting, the Managing Contractor, in consultation with the LOCSA, shall prepare a Communications Method Statement, based on the principles and procedures established in CTT's Stakeholder Engagement Plan (2018, or as updated), including: ▪ details of stakeholders; ▪ methods of communication at the various levels of Government and among local stakeholders; ▪ responsibilities for communication prior to the start of construction and during the construction phase itself; and	Public Affairs Coordinator LOCSA CLO	Pre-construction	Absence of community complaints in complaints register

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		▪ details of the messages that are to be communicated to the different interest groups; Any local areas where there may be particular sensitivities due to proximity to construction activities shall be highlighted and specific additional measures for liaison with the affected people shall be determined.			
5.3.2.4	Ongoing community consultation by the CLO(s)	Ongoing communications with communities during the construction contract shall be the responsibility of the CLO(s). Where construction teams are active, the frequency of communication with local communities shall be increased. Records of all communication shall be kept and regularly updated.	CLO	Ongoing	Absence of community complaints in complaints register
5.3.2.5	CTT Compliments and complaints register (paper copies in communities, electronic database at CTT)	Each construction-affected community shall be provided with a Compliments and Complaints Register and informed by the CLOs about how to use it. Information about its use shall also be included in the register itself. Marginally literate and illiterate people are to be encouraged to obtain assistance to use the register or to contact the CLO by phone or meet with the CLO on days when the register is checked. The Register in each community shall be inspected weekly by the CLO as a part of ongoing communication and any complaints are to be resolved within 48 - 72 hours. The Register should be structured in accordance with the requirements set out in the CTT Communications Plan.	CLO	Register to be provided to local communities prior to the commencement of any construction activity. Weekly check of register by the CLO	Increase in compliments and a decrease in complaints recorded in each register

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.3.2.6	Responsibility for communicating with stakeholders	The Contractor shall not deal directly with surrounding communities about construction-related issues. The Managing Contractor shall bring to the Construction Contractors' attention any issues that are raised by the community that require action. The Construction Contractor's ECO shall stay in regular daily contact with the CLO. When requested to do so by the CLO, the Construction Contractor shall attend community meetings with the Community Liaison Team in order to resolve any issues that have arisen.	Managing Contractor Construction Contractor CLO	Ongoing	Absence of community complaints in complaints register
5.3.2.7	Prohibition of access	CTT personnel and its contractors shall not gain access to land outside of its approved areas of operation without prior consultation with community leaders and, where considered necessary by the LOCSA, the affected families themselves. Access by construction personnel to villagers' private homes is prohibited. The property and rights of all persons shall be respected at all times. No activities that cause damage may be undertaken without prior approval by the regulatory authority, and prior communication with an agreement on appropriate compensation by the affected person/ s, and will need to be conducted in accordance with the approved RPF.	Construction Contractor	At all times	Absence of community complaints in complaints register

5.4 Community Health and Welfare

5.4.1 Nuisance

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.4.1.1	Construction working hours	No construction shall take place outside of daytime hours, as defined above, without the written permission of the Managing Contractor, after due consideration of the potential of the activity to create nuisance. Some activities may be required to be undertaken at nigh-time but this will be the exception and the approval sought from the Managing Contractor, in consultation with the ESO.	Construction Contractor Managing Contractor ESO (nigh-time activities)	As required	Records of working hours Record of Managing Contractor authorisation Absence of community complaints about night work
5.4.1.2	Dust generation and standards	Dust caused by construction activities shall be controlled to ensure no detrimental effect on landowners, occupants, employees or the public. The contractor shall comply with the Mozambique legal requirements and IFC/World Bank air quality guidelines for suspended particulates, as well as the South African National Standard for dust fallout. These are as follows: ▪ Suspended Particulates (Mozambique daily standard): 150 µg/m^3 ▪ PM_{10} (IFC daily standard): 50 µg /m^3 ▪ PM_{10} (IFC annual standard): 20 ug/m^3 ▪ Settleable dust (SA National Standard for residential areas): 600 mg/m^2/day Where considered necessary by the Managing Contractor, the construction contractor shall demonstrate compliance with the above standard by monitoring of dust using passive air quality monitoring devices	Construction Contractor CLO	As required. Formal monitoring as specified by the Managing Contractor	Complaints registered by communities or employees in the Compliments and Complaints Register Records of timeous corrective action to resolve complaints Records of observations in ESO/CLO monthly reports (Need for use of formal monitoring equipment to be determined by CLOs and ESO, based on circumstances on site)

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.4.1.3	Batching plant	Dust generation from batching plants shall be minimised so as not to create nuisance in surrounding communities. Control measures that may be required include sprays, division panels, and direct feed from silo to mixer or dust screens.	Construction Contractor	During operation of batching plant and related activities.	Monitoring of dust levels in environment Compliance with dust standards at nearest sensitive receptors Complaints recorded in Compliments and Complaints Register
5.4.1.4	Use of water carts to suppress road and work site dust	Dust suppression measures to meet the standard shall include dust suppression along roads using water carts and, where necessary, 'environmentally friendly' surface binding products to achieve dust reduction. The Construction Contractor shall ensure that sufficient watering capacity is available on site to dampen dust at all work areas and along access roads used by construction traffic, particularly in areas where there are nearby communities.	Construction Contractor	As required by visual observation	Availability of sufficient water spray capacity to prevent dust Absence of community complaints in Compliments and Complaints Register Records of monitoring in ESO monthly reports. (Need for use of formal monitoring equipment to be determined by CLOs and ESO, based on circumstances on site)

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.4.1.5	Control of noise nuisance	Noise levels shall be controlled to ensure no detrimental effect on landowners, occupants, employees or the public. All vehicles and equipment shall be fitted with noise suppression, as appropriate, and operated and maintained at all times in conformity with the manufacturer's specifications, instructions and manuals.	Construction Contractor LOCSA CLO	At all times	Complaints registered by communities or employees in the Compliments and Complaints Register Records of timeous corrective action to resolve complaints Records of monitoring in ESO weekly and monthly reports
5.4.1.6	Noise monitoring	The Construction Contractor shall comply with the World Bank guideline for daytime noise affecting communities (Laeq of 55 dBA, measured at the receiver). In cases where there is evidence of noise nuisance based on field observations by the Managing Contractor, or based on complaints received, the Construction Contractor shall take measurements to verify noise levels being generated by construction work and shall take the necessary corrective action taken.	Construction Contractor Managing Contractor	As required	Complaints registered by communities or in the employees Complaints Register Records of timeous corrective action to resolve complaints Records in ESO monthly reports Monitoring results, when required by the ESO/CLO
5.4.1.7	Open communication with households	The CLO(s) and ESO shall communicate regularly with households and other receivers living close to construction activities where noise and dust are potentially affecting them. Most people are tolerant of short term nuisance when treated courteously and when efforts are made to minimise their issues of concern.	CLO ESO	As required	Records of regular community liaison and discussion about nuisance issues

5.4.2 Population Influx and Social Pathologies

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.4.2.1	Early communication of CTT recruitment strategy	Prior to any activities commencing on site, a Communication Plan shall be prepared in line with the Stakeholder Engagement Plan, including national coverage and community communication campaigns, starting prior to establishment on site, and communicating the following CTT policies: ▪ No hiring of job seekers on site, ▪ No procurement at the gate, ▪ Employment selection in agreement with agreed procedures by the Community Liaison Forum, ▪ Maximising local content in procurement i.e. from local people and towns, whenever possible, and whenever project requirements are met (Local Content Plan).	Public Affairs Coordinator LOCSA	Pre-construction	Inclusion of recruitment issues in the Communication Plan
5.4.2.2	Information meetings	Information meetings shall be held with Government and in all affected villages, explaining the negative impacts of population influx, the company's recruitment policy and verification process for appointing only local people for unskilled work, and harnessing their support to reduce influx of work and opportunity seekers.	Public Affairs Coordinator LOCSA	Pre-construction and ongoing	Communication in accordance with requirements of Communication Plan and Communication Method Statement Records of meetings
5.4.2.3	Appointment of local personnel	All unskilled employment shall be from local project-affected villages, if sufficient numbers of applicants are available who comply with project requirements for unskilled workers. Recruitment of unskilled labour shall be in accordance with the agreed procedures of the Community Liaison Forum (CLF), a part	Construction Contractor LOCSA	As required by the Construction Contractor	All unskilled employment requests channelled through the CLF Employment as per the procedure agreed by the

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		of whose mandate is to provide CTT with unskilled personnel based on a fair and transparent selection process.			CLF Number of employment selection issues registered in the Complaints Register
5.4.2.4	Record keeping	Records shall be kept of the number of communication initiatives nationally, in the Province and District and in the nearest communities. Updated records shall also be kept of the number of construction jobs awarded to people verified as 'local', women and other vulnerable people from the communities, as well as from the District, Province and Nationally. Survey results shall be maintained from interviews with village leaders about increases in numbers of new arrivals.	LOCSA CLO	Ongoing	Records of meetings Records of construction employment to local people Surveys of interviews with village community leaders about in-migration
5.4.2.5	Exposure to Gender based violence (GBV) and sexual exploitation and abuse (SEA)	■ Employees to sign a code of conduct prior to the commencement of work; ■ Access to the construction site must be controlled to prevent sex workers from entering the construction camp; ■ Implement GBV and SEA campaigns (including educational awareness around risks such as sexually transmitted diseases) in the project affected communities; and ■ Develop and implement SEA/GBV Prevention and Response Plan (also aligned with Community Health, Safety and Security Plan)	LOCSA CLO Security Manager	Ongoing	No complaints recorded in register. No incidents or cases reported of CTT personnel relating to GBV and SEA recorded by Police Dismissal / disciplinary action taken against employees that breach the code of conduct

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.4.2.6	Physical and economic displacement	■ Seek to re-align the transportation route and water pipeline route to avoid any sensitive receptors along the routes (and within the PPZs/RoW) and thus the need for resettlement or compensation (associated with the southern transport route options); and ■ If resettlement or compensation is unavoidable, then Project-affected people must be identified and compensated accordingly viz.; in line with the process outlined in the RPF or further resettlement plans if required, which are in accordance with national legislation and IFC standards.	Project Design CTT Management LOCSA CLO	Ongoing	Decrease the amount of physical or economic displacement numbers as far as possible
5.4.2.7	Disturbance to fishing activities (Bazaruto Bay area)	■ Communication, Safety and awareness measures (such as educational campaigns) should be put in place to alert and inform community members about the duration, nature and schedule for the delivery of heavy equipment and pre-fabricated components which will be transhipped and barged to the beach landing site. ■ Compensation: If there is an economic loss or displacement requiring compensation, then this will be handled in accordance with the process set out in the RPF.	Project Design CTT Management LOCSA CLO	Ongoing	No complaints recorded in register due to barging/transhipment activities as part of beach landing that are interfering with local fishing activities (artisanal and commercial/sports fishing).

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.4.2.8	Socio-economic impact on Tourism industry	Possible mitigation measures are identified that will minimise the impact on Tourism in the area: ■ Maintain the practice of operating the beach landing activities outside of peak tourist seasons (November-January and outside Easter Holidays, as well as major tourism events such as fishing competitions); ■ Restrict the offloading to the daytime periods, and ■ Only use the local Inhassoro facilities to accommodate the involved contractor staff associated with beach landing activities. ■ Any extra accommodation required for CTT and that cannot be met at the construction camp, is to utilise Inhassoro accommodation facilities. ■ Compensation: If there is an economic loss or displacement requiring compensation, then this will be handled in accordance with the process set out in the RPF.	Construction Contractor Public Affairs Coordinator LOCSA CLO	Ongoing	No complaints recorded in register due to barging/transhipment activities as part of beach landing that are interfering with local tourism activities and/or tourism numbers Records of local accommodation being used at Inhassoro for contractors and third parties involved with the project via the contractor

5.4.3 Communicable Diseases

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.4.3.1	Management of sexually transmitted infections (STIs)	The Construction Contractor shall prepare and implement an STI Management Plan designed to minimise the spread of HIV infection and other STI's. The plan shall be prepared with the assistance of a specialist in sexually transmitted diseases. A typical plan would include, among other things, the following measures:	Construction Contractor Public Affairs Coordinator	Before site establishment and ongoing	CTT-approved STI Management Plan, as well as ancillary plans Number and nature of initiatives in communities as per the Plan

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		▪ An HIV/AIDS training course and on-going education on transmission of HIV/AIDS and STIs, to employees, through workshops, posters and informal information sessions; ▪ Encouragement of employees to determine their HIV status; ▪ Supply of condoms at the construction site(s); ▪ Development of a comprehensive construction Camp Management Plan, including rules for on-site behaviour, entrance and exit policies and prohibition of sex workers on site. The plan shall be submitted to and approved by CTT prior to implementation. ▪ Develop a Community Health Information System (CHIS) to collect and monitor key community health indicators in a longitudinal fashion. This may require specific Health Systems Strengthening (HSS) in the local health facilities so that they can be used as a reliable source of information, and potentially support of Community Health Agent/ Agent Polyvalent Communitaire (CHA/APE) in the respective communities. There may be a need to support better diagnostics for TB in the study area and reporting on the District Health Information System (DHIS2). Develop workplace health strategies as part of the occupational health plan or organisational health plan, to include: ▪ A communicable disease strategy or c-EMP that has an initial workplace (including contractors and short-term			requirements

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		labourers) focus, with the view to extend to manage potential community health impacts. It is important that core interventions are implemented at an early stage so that these are in place prior to the start of construction. The focus of the programmes should include malaria control, HIV/AIDS, TB and STI control and general and personal hygiene. This plan can potentially be expanded on the c-EMP developed for the CPF to include elements such as HIV, but also TB and other communicable disease risks that may originate from the workforce. This plan will need to have specific CMR provisions; ▪ Plan and manage construction accommodation camps so that overcrowding does not occur during development of the Project. Develop a Camp Facilities Management c-EMP based on the IFC workers accommodation and camp facilities standards where applicable (25); ▪ Ensure adequate space is available to reduce the need for any externally contracted workforce to stay in the surrounding community as this will place pressure on available housing and potentially increases rentals; ▪ Develop a vaccine preventable disease programme for all employees, contractors and visitors based on risk for travellers and at risk occupations; ▪ Develop effective fitness to work procedures and programmes (especially in-coming contracted workforce) to reduce communicable disease			

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		transmission by implementing an effective pre-deployment screening process for TB and other communicable conditions. Specific CMR provisions should be part of the procedure; and ▪ Develop and/or extend outbreak preparedness policies and programmes to reduce the impact of any suspected or confirmed outbreak at the local level. ▪ Support HSS with improved case detection and case management of TB especially from the three health centres and with support of APE programmes; and ▪ Support with development and extension of community based integrated management of childhood illness programmes in APEs.			
5.4.3.2	Mosquito vector control, avoidance, diagnosis and treatment	The Construction Contractor shall prepare and implement a malaria management plan and shall align its malaria control strategy with the CTT's communicable disease strategy, which includes vector control (such as malaria control), avoidance, diagnosis, treatment and training. The plan shall be submitted to and approved by CTT prior to implementation	Construction Contractor Public Affairs Coordinator Environmental Coordinator	Prior to the commencement of construction activity and ongoing	CTT-approved Malaria Management Plan Record of actions taken in accordance with the Malaria Management Plan Records of ongoing training of employees in respect of malaria avoidance
5.4.3.3	General Communicable and Non-Communicable	▪ Ensure that no waste whatsoever, including operational waste, is dumped in watercourses or at any site that impacts on villagers or their land use;	CTT Management; OHS division; Contractors; and Supervisors.	Ongoing	Employee Health Awareness Policy implementation; Minutes of liaison meetings with local authorities; and In-situ proof of distribution

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
	Disease Related Impacts	■ Ensure that the CTT use of water does not disturb public water availability and that sources of water are carefully selected; ■ Ensure the development of a water and hygiene code of conduct that prohibits open defecation/urination, stresses the proper water use, water conservation, hygiene and sanitation to prevent pollution of community water sources; ■ Evaluate opportunities for health systems strengthening (HSS) with government and key partners for improved case detection and treatment of TB; ■ Support community-based information, education and communication (IEC) campaigns to promote improved knowledge and awareness of TB, other infectious diseases and their associated determinants; ■ Reassess project impacts on community-dependent ecosystem services and develop corresponding mitigation measures. This includes the design and development of appropriate environmental health programmes to reduce the potential risk of airborne pollutants such as dust, which may impact on community health; ■ Develop educational materials regarding the prevention of water, sanitation and waste related diseases; ■ Monitor changes to footprints of animal husbandry activities adjacent to the CTT facilities; and			of printed posters, leaflets and leaflets at health clinics and community meetings.

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		■ Support the improvement of veterinary public health services in the project area, including preventative programmes such as vaccinating and sterilising dogs, vaccinating livestock and the control of the public slaughter of livestock.			

5.4.4 Traffic and Pedestrian Safety

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.4.4.1	Site access plan	The Construction Contractor shall submit a Traffic Access and Safety Plan to the Managing Contractor for approval, prior to site establishment, defining the transport routes to be used to and from the construction work areas and camps, and measures that will be taken to ensure community safety during construction.	Construction Contractor Managing Contractor	Prior to site establishment	Plan submitted and approved Records of accidents and corrective actions taken
5.4.4.2	Access to the construction right of way	The Construction Contractor shall make every effort to gain access to the construction right of way using existing roads. No new access, haul or maintenance roads (other than that approved within the ESIA) shall be constructed without the written approval of the Managing Contractor.If there is an economic loss or displacement requiring compensation, then this will be handled in accordance with the process set out in the RPF.	Construction Contractor Managing Contractor CLO	At all times	Limited new access road development. Written authorisation from Managing Contractor where access roads necessary
5.4.4.3	Speed limits	Safe travelling speeds for each section of the route along the right of way shall be determined and enforced. Enforcement may include, but not be limited to, the monitoring of vehicle speeds, the	Construction Contractor Managing Contractor CLO	Ongoing	Speed testing, speed limit signage Absence of community

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		erection of speed limit signs and the installation of speed humps. Emphases on safety aspects amongst project drivers, explicitly ensuring that drivers respect speed limits through busy and built up areas;			complaints Accident records
5.4.4.4	Defensive driver training	All vehicle operators shall have received defensive driver training, aimed at promoting improved driver safety performance	Construction Contractor	At beginning of driver's employment contract	Records of defensive driver training Accident records and trends
5.4.4.5	Community traffic awareness	CTT shall conduct an ongoing traffic safety awareness campaign during the construction period, particularly in communities where construction vehicles will be most active. The awareness training shall be repeated in villages as construction moves into / passes their areas. Furthermore, CTT shall Collaborate with local communities on education about traffic and pedestrian safety (e.g. one road safety campaign at a nearby location once a month).	LOCSA	At intervals during construction.	Records of traffic awareness campaigns
5.4.4.6	Injuries to community members	In the event of an accident in which a community member is harmed, Construction Contractor shall take responsibility for transporting the injured person to an appropriate health facility capable of dealing with the injuries and should cover the cost of the person's medical treatment. Avoiding dangerous routes and times of day to reduce the risk of accidents.	Construction Contractor	In the event of an accident.	Number of near misses. Number and nature of accidents involving community members (minor to serious)

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.4.4.7	Driver Fatigue	Ensuring the roster and shifts structure for the project allows employees plenty of opportunity for sleep and rest between shifts and on their days off; Adopting a proactive approach to managing driver fatigue, based on adequate hours of rest to avoid overtiredness;	Construction Contractor	Ongoing	Roster
5.4.4.8	Vehicle maintenance	Ensuring contractors maintain vehicles to minimise potentially serious accidents such as those caused by brake failure commonly associated with loaded construction vehicles; Ensuring contractors compile a list of service schedules of all equipment deployed on site.	Construction Contractor	Ongoing	Maintenance records
5.4.4.9	Pedestrian safety	■ Ensure the adoption and implementation of the CTT driving and vehicle management plan during initial activities which will be adopted for the construction phase. Based on this, CTT shall adopt the best transport safety practices with the goal of preventing traffic accidents and minimising injuries suffered by project personnel and the public, as well as creating awareness amongst the local people and villages about road safety. Other mitigation should include: ■ Positioning traffic guides at children's crossings to control driver speeds and seeking cooperation with local educational facilities (school teachers) for road safety campaigns; ■ Implementing safe traffic control measures, including road signs and flag persons to warn of dangerous conditions and children's crossings;	Construction Contractor	Ongoing	Driving and Vehicle (Traffic) Management Plan Health and Safety Plan

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		■ Provision of alternative transport (bus) for the construction workforce where applicable; ■ Minimising interaction of pedestrians with construction vehicles through collaboration with local communities and responsible authorities (e.g. police) to improve signage, visibility, and overall safety of roads, particularly along stretches located near schools or through busy areas; ■ Considering additional warning tape at accident-prone stretches and sensitive locations (schools and hospitals) if identified as required ■ As part of the Beach Landing activities, heavy and abnormal loads will make infrequent trips via either one of the two route options currently being evaluated, however the following additional measures will apply to these movements: ■ Communicate dates and times of vehicle movements to the communities, schools and businesses along the routes. Educate drivers on potential areas of high pedestrian and cyclist activity; and ■ Ensure that at least two vehicles accompany every abnormal load; one vehicle in the front and one at the back. ■ Educate community on dangers of construction vehicles new to their area; ■ Advertise the dates and times of the abnormal load movements, taking specific care to inform communities that do not have access to newspapers and other forms of media; ■ Liaison with the traffic authorities about the movement of abnormal loads; and ■ Upgrade roads and bridge crossing where necessary. The			

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		deterioration over time must be monitored and a maintenance plan must be negotiated with the ANE (National Road Administration) with specific mention of the Monitoring and Planning departments that should be consulted. ■ If there is an economic loss or displacement requiring compensation, then this will be handled in accordance with the process set out in the RPF (which may link to specific tools such as RAP/ARAP/LRP).			
5.4.4.10	Increased construction vehicle traffic	■ EN1/CTT Access northern approach: add minimum 30 m right turning lane with a 45 m taper to allow for safe queuing. EN1/CTT Access northern approach: add minimum 30 m left turning lane with 45 m taper; ■ Cover materials with tarpaulins where possible alternatively wet sand and/or provide other means of protection. Treatment of dirt/sand roads near communities would be advisable; ■ Indicate areas where heavy vehicles will be expected with adequate signage; ■ Clearly indicate pedestrian crossings; ■ Educate drivers on potential areas of high pedestrian and cyclist activity; ■ Educate community on dangers of construction vehicles new to their area; and ■ Upgrade roads and bridge crossing where necessary. The deterioration over time must be monitored and a maintenance plan must be negotiated with the ANE (National Road Administration) with specific mention of the Monitoring and Planning departments that should be consulted.	Construction Contractor	Ongoing	Driving and Vehicle (Traffic) Management Plan

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification

5.4.5 Violence and crime

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.4.5.1	Violence and crime	■ Sensitise and build the capacity of local governance systems (village chairperson and councillors at the settlement level), including the establishment of checks and balances for maintaining individual rights and responsibilities and for managing crime; ■ Identify mechanisms for constructively incorporating traditional (clan) leaders into processes for promoting stability and moral 'regeneration' at village level; ■ Promote the development of a disciplined policing forum for the area, in collaboration with appropriate civil society organisations as well as the Police Department; and ■ Ensure the development of appropriate mechanisms as part of the CHSSP (current Framework to be expanded on).	CTT Management; OHS division; Contractors; Supervisors; and Community liaison officers.	Construction	Documented proof of implementation of violence and crime mitigation measures and monitoring;

5.4.6 Fire

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.4.6.1	Fire outbreak	■ Manage the risks of fire through specific management requirements for hot works and through education of personnel about careless behaviour in respect of cigarette smoking; ■ Promote the establishment of village level fire-fighting and emergency preparedness capacity, including the sourcing of fire-fighting equipment capacity; and ■ Promote awareness amongst members of the settlements about potential fire hazards and mechanisms for promoting household safety from fires	CTT Management; OHS division; Contractors; Supervisors; and Community liaison officers.	Construction	Site and management meeting minutes and directives to improve performance in respect of community safety, generally; and Reported community safety and fire related incidents against the baseline to gauge intervention efficacy and impact.

5.5 Biodiversity

5.5.1 General

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.5.1.1	Previously undiscovered biodiversity hotspots	Where small areas of high biodiversity are encountered during surveying or bush clearing for road or transmission line / pipeline infrastructure, that were not identified in pre-construction studies, consideration shall be given to slight re-alignment of the infrastructure.	Construction Contractor Managing Contractor Environmental Coordinator	During surveying or bush clearing	Records of ECO training to identify hotspots Records of ECO accompanying surveyors and dozer operators during bush clearing

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		Bird flight diverters shall be installed along the transmission line to reduce collisions, prioritizing areas with higher presence of vultures and other vulnerable bird species, with at least 3 meters between the conductors.			Records of biodiversity hotspots and avoidance measures taken
5.5.1.2	Collecting or harvesting fruits, vegetables, grains and any other plant material	The harvesting or collection of fruits, vegetables, grains and other plant material by CTT Employees or the Contractor for use or sale is prohibited.	Construction Contractor	At all times.	Inclusion of prohibition in training / induction programme(s) and contractor tool box talks Absence of evidence of plant harvesting by employees Evidence of disciplinary procedures in the event of non-compliance
5.5.1.3	Hunting or harassing wild animals – including fishing	Hunting, harassing or capturing of wild animals for sale as pets shall be prohibited. The purchase of wild animals for food by CTT employees and Contactors shall also be prohibited.	Construction Contractor	At all times.	Inclusion of prohibition in training / induction programme(s) and contractor tool box talks Absence of evidence of hunting or animal harassment by employees
5.5.1.4	Habitat change	In order to minimise the impacts on the in-stream habitats during construction of the proposed CTT Project, the following mitigation measures are required:	Construction Contractor Managing Contractor Environmental Coordinator	At all times	Records of ESO accompanying contractors during

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		■ The construction of the Govuro River crossings should take place during the dry season so as to limit the intensity of impact, particularly in terms of flow diversion and runoff of sediments; ■ Implement low impact construction techniques to minimise the impact on the river system, especially during the diversion of any water during construction; ■ Where possible, keep construction activities out of the riparian areas, floodplain, inland depressions and macro channel: ▪ Vegetation clearing should be restricted to the proposed development footprints only, with no clearing permitted outside of these areas; and ▪ Areas to be cleared should be clearly demarcated to prevent unnecessary clearing outside of these sites. ■ The alignment of the road should be routed to avoid impacting the adjacent floodplain and inland depressions and any non-perennial bodies of water; ■ A suitable rehabilitation programme should be developed and implemented in all disturbed areas. The programme should include active re-vegetation, using locally-occurring indigenous grass and tree species; and ■ Monitoring the water quality and habitat downstream of the river crossing sites during construction on an at least bi-annual basis and implement an early warning system that would	ESO		construction works in these areas Records of monitoring and rehabilitation of riparian areas after construction activities

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		trigger a survey of the biological responses, should water quality or habitat alterations warrant this.			
5.5.1.5	Habitat Loss	The final layout of the CTT Plant and the exact position of the powerline has yet to be confirmed. At this stage, only a conceptual layout is available. Proposed mitigation measures for this facility are thus focused on avoiding clearing important ecological features as far as possible, and limiting the extent of clearing to the absolute necessary for project activities: ■ A targeted survey should be undertaken during the wet/growing season of the CTT footprint to locate, record and mark important ecological features, such as large trees (DBH >20 cm), geophytic plants and termite hills that should be avoided during construction activities. Based on collected data: ▪ As far as possible, proposed infrastructure should be positioned to avoid clearing large trees (DBH >20 cm) and termite hills. Particular tree species that should be avoided during vegetation clearing are Afzelia quanzensis and Dalbergia melanoxylon; ▪ If avoidance is not possible, replacement trees should be planted during rehabilitation at a ratio of 3:1, (i.e. three	Construction Contractor Managing Contractor Environmental Coordinator ESO	At all times	Records of ESO accompanying contractors during construction works in these areas Records of species rescue and relocation Records of marked trees and designs/re-alignment of infrastructure and cleared areas where possible. inland pan/depression habitats successfully avoided

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		replacement trees of the same species, for every individual tree lost); and ▪ Geophytes growing within development footprints should be rescued and relocated to adjacent areas of undisturbed natural habitat. ■ If selected as the preferred road option, the alignment of the upgraded Shortcut Road should be re-routed to avoid impacting the adjacent inland pan/depression habitats; ■ A suitable rehabilitation programme should be developed and implemented in all disturbed areas. The programme should include active re-vegetation, using locally occurring indigenous grass and tree species: ▪ Areas that should be considered priority sites for stabilisation and rehabilitation post-construction should they be negatively impacted include: a) coastal dunes at the selected beach landing site; b) Govuro River crossing point, and c) inland pan/depression habitats adjacent to the proposed Shortcut Road.			
5.5.1.6	Death / Injury to Fauna	■ An ECO should be on-site during vegetation clearing to monitor and manage any wildlife-human interactions. The ECO should be trained in inter alia, snake handling. The ECO shall relocate slow-moving wildlife (snakes, tortoises, etc.) to safe areas outside the project work zones;	Construction Contractor Managing Contractor Environmental Coordinator ESO	At all times	Records of ESO accompanying contractors during clearing areas. ESO training records for snake handling.

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		■ Fences (or other suitable obstacle/deterrent) should be erected to prevent fauna gaining access to construction areas, such as open trenches and voids; ■ A low speed limit (recommended 20 - 40 km/h) should be enforced on site to reduce wildlife-collisions; ■ The handling, poisoning and/or killing of on-site fauna by construction workers and contractors must be strictly prohibited; and ■ This prohibition needs to be clearly stated in project management policies and communicated to all employees and contractors through suitable induction training and on-site signage.			Records of training for construction personnel on safe driving speeds, communication of policies to employees.
5.5.1.7	Secondary habitat loss/modification (due to resource exploitations)	■ Monitor the progression of secondary habitat transformation using aerial/satellite imagery to identify any problem areas and target for further management actions.	Environmental Coordinator ESO	Every 6 months	Visual comparisons and report assessing the extent of change. Recommendations to reduce negative impacts. Records of actions taken to address any negative impacts

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.5.1.8	Activities at Beach Landing site (temporary jetty construction)	■ New areas of primary dune and beach habitat disturbance and associated vegetation clearance should be minimised wherever possible. Areas proposed for vegetation clearance should be clearly marked and no heavy vehicles should travel beyond the marked works zone ■ Prohibit access to personnel outside of the defined project work sites and access roads. Train personnel to understand the sensitivity of the local environment in induction and ongoing tool box talks; ■ Ecological clerk of works (ECOW) to be appointed for duration of construction works (temporary jetty); ■ The Proponent must enforce a complete ban on wildlife harvesting (hunting/trapping/fishing) for all project personnel, including any such activities by any person working on site; ■ The development of worker and community education programmes by the Proponent, which focus on the value of conservation of species such as sea turtles and dugong, and the generation of tourism potential, can contribute to the alleviation of hunting pressure on affected fauna species and reduce local people's reliance on consumption of bush meat; and ■ An Influx Management Plan for the Project will be implemented prior to construction of the project to manage access control, prevent unplanned growth in housing development and	Construction Contractor Managing Contractor Environmental Coordinator ESO CLO	Ongoing	Records of ESO accompanying contractors during construction works at temporary jetty Records of rehabilitation after construction works and removal of temporary jetty (accompanying photographs)

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		promote regional economic development, at the same time reducing pressure on ecosystems of concern and associated species for provision of natural resources.. It will be important that the IMP is developed once all project footprints and activities are finalised in order to develop a plan that responds accurately to project activities and phases. The IMP will be developed by the project Sponsor and managed and implemented by the MC through the ESO and CLO daily. The IMP will also need to be cross referenced and links to the Labour Management Plan for the project.			
5.5.1.9	Activities at Beach Landing site (barging and transhipment activities)	■ Monitor erosion and accretion of sands on either side of the jetty and employ appropriately designed engineering measures to prevent any significant impacts on sandy beach habitat upshore and downshore of the jetty where necessary; ■ Routes for transfer of heavy equipment should be clearly marked and no heavy vehicles should travel beyond the marked works zone; ■ Prohibit access to personnel outside of the defined access roads. Train personnel to understand the sensitivity of the local environment in induction and ongoing tool box talks; ■ Strict controls should be put in place to ensure that leakages of petrol, oils and/or lubricants from barges, transhipment vessels and heavy equipment are minimised/eliminated. Daily	Construction Contractor Managing Contractor Environmental Coordinator ESO CLO MMO	Monthly water quality monitoring for duration of activities	Records of monitoring (water quality) Records of rehabilitation after construction works and removal of temporary jetty (accompanying photographs) Records of marine mammal observations

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		maintenance and monitoring checks of vessels should be conducted; ■ Frequent monitoring of marine water and sediment quality should be implemented for the duration of transhipment and barging activities, focussing on the anchorage point, landing site and the designated barging route between them; ■ Strict controls on ballast water management for both barges and transhipment vessels must be enforced by The Proponent, in line with the relevant MARPOL standards (see Section 3.2). High risk ballast water (that coming from ports and coastal waters outside of Bazaruto Bay) should not be discharged within the CHAA under any circumstances. Tank-to-tank transfer of ballast water should be enforced for all barges and transhipment vessels associated with the Project and should be documented and monitored by at all times; ■ Monitoring for the introduction and/or spread of invasive marine algal and faunal species should be conducted on a regular basis for the duration of barging and transhipment activity, so that any introductions can be addressed timeously. ■ Strict speed restrictions must be enforced on barges and any other project vessels including the transhipment vessel and any small vehicles that may be used for transport between the vessel and the beach site, to protect Dugongs (and Indian Ocean Humpback Dolphin) from vessel strikes in Bazaruto Bay. The maximum allowable speed should be <5 kmph to			

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		allow Dugong to move out of the way of oncoming vessels, minimising the risk of collision; ■ A Certified Marine Mammal Observer (MMO) must be employed by the Proponent or the Contractor responsible for such activities to observe and monitor all barge and transhipment movements. The MMO will have authority to influence the speed and direction of vessel movements where any potential risks to marine mammals are identified. If useful for reducing collision risks with Dugongs, Indian Ocean Humpback Dolphin, or sea turtles, the MMO or other trained staff shall be aboard a small boat ahead of the barge to spot these marine creatures and ensure that they leave the pathway in front of the barge as well as on the transhipment vessel; and ■ Barges must be routed via one designated vessel lane that avoids or minimizes overlap with any important areas of seagrass habitat. This lane (200 meters or other appropriate width) shall be marked with buoys in advance of any project-related barge traffic. All project buoys must not be made of Styrofoam (which is often ingested by marine life when small pieces break off and float away).			
5.5.1.10	Establishment of Anchorage Points	■ The extent of seabed disturbance should be minimised wherever possible. Areas proposed for works should be clearly	Construction Contractor Managing Contractor Environmental Coordinator ESO	Ongoing	Records of ESO accompanying contractors during

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
	(including operation)	marked and no excavation or disturbances should occur beyond the marked works zone; ■ Site-specific surveys for coral reef and endemic gastropods should be conducted in advance of placement of the anchorage points to select locations which would cause least potential harm to coral reef and/or endemic gastropod populations, as well as other benthic organisms, i.e. to confirm that anchor sites are not on coral reefs or seagrass beds; and ■ The selected anchorage point shall be located outside of the boundary of the Bazaruto Archipelago National Park and IBA (BANP) as well as popular recreational sites (dive/snorkelling sites), unless such a location is clearly not available or would result in clear markedly greater environmental risks (for example, if the resulting barge shipping lane through sensitive habitat were much longer, thus placing Dugongs at greater overall collision risk). Also, a buffer of at least 250 m should be maintained between the outer extent of the boundary and the anchorage points/navigation routes of the transhipment/barging vessels; ■ Strict controls should be put in place to ensure that leakages of hydrocarbon fuels, oils and/or lubricants from barges, transhipment vessels and heavy equipment are minimised/eliminated. Daily maintenance and monitoring checks of vessels should be conducted; and	A revised marine study to consider the selection of the final anchorage point, barge route and landing site will be prepared by CTT and submitted to the World Bank for No Objection		construction works at anchorage points Records of maintenance of vessels

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		■ Ensure that all vessels and machinery are in sound mechanical order, do not have any oil leaks and are fitted with appropriate mufflers to minimise nuisance affecting migratory/congregatory seabird species. Other measures include restrictions in operating hours for heavy machinery and vessels.			

5.5.2 Bush clearing

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.5.2.1	Minimising vegetation clearance	The principle of minimising vegetation clearing, and topsoil disturbance shall be followed at all times. Areas to be cleared should be clearly demarcated to prevent unnecessary clearing outside of these sites;	Construction Contractor	During demining and bush clearing	Records of extent of vegetation cleared (including before and after photographs)
5.5.2.2	Access to work sites	Access to areas to be cleared is to be obtained along existing routes of access only. No new routes or tracks shall be constructed, unless there is no alternative and Managing Contractor provides approval.	Construction Contractor Managing Contractor	At all times	Absence of new and unauthorised tracks / roads
5.5.2.3	Width of clearing for access roads and pipelines	The width of the construction right of way for linear construction activities shall be as small as possible.	Construction Contractor	During bush clearing	As per requirement Extent of cleared areas

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.5.2.4	Remaining within the approved right of way	No vegetation shall be cleared outside of the defined construction work sites without the approval of the Managing Contractor.	Construction Contractor Managing Contractor	At all times	No disturbance outside of RoW areas.
5.5.2.5	Changes to approved alignments	If the Construction Contractor wishes to change an approved route, CTT shall be notified in advance. The notification shall include a motivation for the proposed route change. No changes shall be agreed to that, in the opinion of CTT, result in an unacceptable environmental or social impact. Any change shall be certified by the ESC. If there is an economic loss or displacement requiring compensation, then this will be handled in accordance with the process set out in the RPF.	CTT Management Construction Contractor Managing Contractor Environmental and Social Coordinator	Prior to route change	Record of notification and any approval(s)

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.5.2.6	Additional clearing around borrow pits	Borrow pits shall be de-mined by an additional 15m around the planned outer limit of the pit in order to ensure that pedestrian and vehicle access can be maintained around the pit, as well to allow for the slopes to be properly contoured during re-instatement. Borrow pit areas will need to be assessed for any sensitivities once these locations are determined, prior to them being opened up and material extracted (biodiversity, cultural heritage, social etc, management plans will need to be developed taking into consideration the measures stipulated in this ESMP and RPF as required). For any new areas that are needed to be opened up (e.g. access roads or additional temporary camps) and that are not covered under the ESIA and ESMP's, then a method of screening the areas by the ESO needs to take place. Any sensitive areas such as biodiversity, social or cultural heritage features need to be avoided. Furthermore, any impacts to such features will need to be managed as per the ESMP and management plan concerning that specific aspect. Any economic loss or displacement requiring compensation, will be handled in accordance with the process set out in the RPF. A procedure for Ancillary Facilities Screening and Management will need to be developed and implemented for any such new areas (borrow pits, additional roads/access laydown areas or camps etc)	Construction Contractor	During bush clearing	As per requirement

5.5.3 Control of Invasive Alien Plants

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.5.3.1	Develop alien invasive species control programme	■ In order to minimise the risk of introduction of alien plants, an alien invasive species control programme must be developed and implemented at both temporary construction sites and permanent operational sites; ■ The programme must include: ▪ The use of both mechanical and chemical control treatments, as required; ▪ Provision for periodic follow-up treatments; and ▪ Regular monitoring. ■ The implementation of the programme should be overseen by an ECO officer during construction, and the environmental manager during the operational phase. ■ A Pest and Pesticide Management Plan must be compiled by the contractor for approval by the ECO prior to the use of any chemicals.	Construction Contractor	Prior to importation of equipment or vehicles into the CTT plant	An alien invasive species control programme being developed and implemented. Records of action taken and monitoring of affected areas
5.5.3.2	Cleaning of vehicles and equipment	In order to minimise the risk of introduction of alien plants, all vehicles and equipment shall be washed down or sprayed with a herbicide before being brought to the CTT plant construction sites.	Construction Contractor	Prior to importation of equipment or vehicles into the CTT plant	Records of vehicle and equipment washdown
5.5.3.3	Booklet of alien plants	CTT shall prepare a booklet of alien plants, annotated with photographs, as a basis for identification and control by the	Environmental Coordinator	Prior to establishment on site	As per requirement

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		Construction Contractor. The list of alien plants in Table 4 shall serve as a basis for alien plant control, to be updated from time to time, as necessary. The booklet shall be available on site at the Managing Contractor's and Construction Contractors' site offices and shall be provided to the ECO/ESOs.			
5.5.3.4	Removal of alien plants	If alien vegetation establishes during the construction phase, or during the Construction Contractor's warranty period, it shall be selectively removed. Table 4 provides guidance about removal strategies and methods for the listed alien plants.	Construction Contractor	Ongoing	Records of alien plant removal
5.5.3.5	Handover of management after construction	Alien species monitoring, and control shall be handed over to the CTT environmental team after the Construction Contractor has demobilised.	Environmental Coordinator ESO	At end of Construction Contractor warranty period	Record of handover

Table 4: Alien invasive plants identified in the CTT license areas and recommended control methods (Source: adapted from Biodynamica, 2016)

Scientific Name	Common Name	Control Method/ Recommendations
Agave sisalana	Sisal hemp	Cut the central growth stem as low as possible and apply herbicide solution immediately after cutting (within 20 seconds).
Argemone mexicana	Mexican prickly poppy	Hand weeding carried out before the plant has set seed.
Azolla pinnata	Mosquito fern	Manual removal by using thin-meshed nets. This is the preferred methodology when the invaded areas are relatively small. All material should be removed from the location, as this plant reproduces vegetatively through fragments of stems that root easily.

Caesalpinia decapetala	Shoo fly	Seedlings and saplings can be dug up or pulled up manually. Larger plants must be cut, and stumps treated with herbicide.
Calotropis procera	Giant milkweed	Plants should be cut down close to ground level and a herbicide applied to the cut stump. Foliar spray can also be considered for control of smaller plants.
Cereus jamacaru	Queen of the night	Single, isolated seedlings shall be uprooted and disposed of. Care must be taken that no part of the plant is left lying where it can root. Under no circumstances must pieces of the plant simply be carted away to be discarded, since this is one of the most common ways in which cactus infestations spread
Datura stramonium	Devil's snare	Isolated plants should be hand-pulled before they set seed. Larger infestations can be controlled by manual clearing. For larger plants it may be necessary to spray with a herbicide such as Roundup, limiting as much as possible of its application to the target species.
Leucaena leocucephala	Leucaena	Plants should be manual cleared and the roots dug up and removed. If roots are not cleared, a herbicide application should be applied to the basal stem.
Opuntia ficus-indica	Prickly pear	Manual/mechanical pulling preceded (or not) by the stem cut (preferred methodology). In compacted substrates, uprooting must be undertaken during the rainy season so as to facilitate the removal of the root system. No fruits, large roots and cladode fragments should be left in the ground, which root easily and spread new invasion. All cleared material should be removed from the location and burned.
Parthenium hysterophorus	Whitetop weed	The plants should be pulled out before they flower, making sure that all of the root system is removed to avoid regrowth from root remnants
Pistia stratiotes	Water lettuce	Small scale infestations can be controlled manually. Larger infestations should be tackled using herbicide. Reapplication is likely to be necessary over time.
Ricinus communis	Castor oil bush	The plant can be controlled through manual clearing. Herbicides can be effective as cut stump treatments or basal bark applications (painting herbicide onto the bark).
Senna occidentalis	Coffee weed	The plant can be successfully controlled when in the seedling stage by manual clearing. Likewise, a variety of herbicides can successfully control the species.

Xanthium strumarium	Rough cocklebur	Single plants and small infestations can be hoed, and larger infestations sprayed with herbicide. Control efforts should be aimed at preventing seed formation.

** A Pest and Pesticide Management Plan must be compiled by the contractor for approval by the ECO prior to use of any chemicals.*

5.5.4 Rehabilitation Management

The phasing of rehabilitation of areas disturbed by civil construction will depend on the activity being undertaken. Along roads, the perimeter of the construction right of way will be rehabilitated after construction. Pipelines will be fully rehabilitated across the full right of way after construction.

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.5.4.1	Topsoil stripping and stockpiling	Topsoil shall be stripped for later use in landscaping and re-instatement. Topsoil stripping and management requirements shall be as follows: The top 150 mm of soil shall be stripped and stockpiled, unless otherwise specified by the Site Engineer. Topsoil shall be stockpiled separately from subsoil or rocky material (the topsoil contains both the seedbed and the nutrient supply necessary for plant growth: if mixed with subsoil the usefulness of the topsoil for re-instatement/ landscaping of the site will be reduced) Topsoil stockpiles shall not be compacted and shall not exceed 2 m in height. Topsoil stockpiles shall be located away from drainage lines and areas of temporary inundation. Topsoil stockpiles shall be protected from wind and rain erosion, where necessary, by placing sandbags around the base of the stockpiles to reduce water erosion. In certain instances, if the natural grass does not cover the topsoil the Engineer may specify the seeding of the stockpiles with a local indigenous grass seed. The Engineer will provide advice to contractors relating to this provision. The following other guidelines and requirements shall apply:	Construction Contractor	During site preparation where the removal of topsoil is required.	Details of topsoil removal (quantity) and topsoil stockpile location. As per requirement

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		▪ Wherever possible construction work and the stockpiling of soils shall occur during the winter months from April to November in order to minimise water erosion from rainfall runoff. ▪ For Pipelines, the topsoil shall be stockpiled on the dead side of the trench (i.e. opposite side of the excavation trench to where the machinery works) to ensure it does not become mixed with or inadvertently pushed into the trench during the works. ▪ Topsoil shall not be contaminated with any other material or spoil or used for any purpose other than rehabilitation.			
5.5.4.2	Removal of temporary works	All temporary works shall be removed from the construction work site or along the construction right of way (linear infrastructure) when construction is completed.	Construction Contractor	Immediately following backfilling.	Photographic record All temporary Works removed and site clean and tidy
5.5.4.3	Reinstatement of natural ground contours	The construction right of way shall be restored to natural contours of the ground to allow for normal surface drainage. Georeferenced photographic records of key areas before and after construction shall be taken and kept on record for future comparison with rehabilitated areas	Construction Contractor	Immediately following backfilling.	Photographic record As per requirement
5.5.4.4	Loosening of compacted sub-soils	Compacted soils shall be loosened along the construction right of way by means of a plough or scarifier. Scarifying shall be carried out prior to the replacement of topsoil. Any ripping or scarifying operation shall not exceed a depth of 100 mm	Construction Contractor	Immediately following backfilling.	Photographic record As per requirement
5.5.4.5	Spread of topsoil	Topsoil shall be evenly spread across the rehabilitated area or right of way (linear infrastructure) to a depth of 150 mm as applicable.	Construction Contractor	Immediately following backfilling.	Photographic record Construction Contractor

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.5.4.6	Natural process of rehabilitation	Reinstatement of natural vegetation shall be done by encouraging the natural process of primary and secondary succession, except in areas with steeper gradients and/or erodible soils, where the Managing Contractor may instruct the contractor to revegetate disturbed areas using a seed mix containing only species indigenous to the area.	Construction Contractor Managing Contractor Environmental Coordinator	Immediately after top soiling (where necessary)	Records of reinstatement As per requirement
5.5.4.7	Returning brush to the right of way	Cleared brush and tree limbs shall be spread over the construction right of way during re-instatement to assist in the regeneration of natural vegetation, erosion control and provision of habitat for animals. Bush spreading shall be in accordance with the following: ▪ Bush, tree limbs and timber fragments shall be retained and spread evenly across the right of way after construction. ▪ Any remaining tree trunks and large branches are to be laid on the construction right of way so that they lie in a random fashion across the natural slope of the ground. The above will be applicable to buried pipelines, however the transmission line RoW may require also require a similar approach in assisting the return of bush growth, however, to limited height as it will be controlled during the operational phase and maintained a fire break vegetation height restrictions.	Construction Contractor	Immediately after top soiling	Photographic record. As per requirement
5.5.4.8	Managing erosion	Where necessary, special protection methods shall be used to prevent or arrest soil erosion during the period before vegetation re-establishment. Diversion ditches, swales, berms, straw and hay may be specified in places where erosion risk exists.	Construction Contractor	After construction	Absence of material erosion Engineering works to minimise erosion

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.5.4.9	Soil Erosion	CTT should undertake a visual assessment and a surface water monitoring for all infrastructure and streams and rivers near the soils with high erodibility. This will mainly apply to the temporary bridge crossing of the Govuro River.	Construction Contractor	Monthly, and weekly during	Evidence of erosion.
5.5.4.10	Removal of alien plants	Infestation of areas disturbed by construction with alien plants shall be monitored and removed as per section 5.5.3.	Construction Contractor Environmental Coordinator	During Rehabilitation of RoW	No Alien Invasive
5.5.4.11	Soil stockpiles	Visual verification of soil stockpiles	Construction Contractor Environmental Coordinator	Annually	Volume of soil stockpiled. Height of stockpile Type of soil stockpiled. pH and salinity values; Content of major plant nutrients; Organic matter content; Heavy metals and hydrocarbons.

5.5.5 Cultural Heritage

A CHMP should be developed by the Proponent to manage and monitor all cultural heritage effects for the project's lifetime in line with IFC PS 8 and Mozambican heritage legislation (Law 10/1988 and Decree 27/1994). The CHMP should include:

- The preparation of a project-specific, 'site ready' Chance Find Procedure (CFP) to detail the requirements of the Mozambican Archaeological Heritage Protection Regulations (Decree 27/1994) which enforce the reporting of any archaeological assets to the local authority within 48 hours of discovery. The CFP will set out the course of action to be followed in the event that any cultural heritage artefacts are recovered. The CFP should be provided to all contractors and consultants on the project site during all construction activity and incorporated within the project's 'site induction' process. It will remain in place for the lifetime of the project;
- Demarcation of 'no go' sensitive areas e.g. sacred forests, sacred trees, sacred pools, medicinal bush, cemeteries (i.e. mitigation by avoidance). Although these sites may not be directly affected by construction activities there is a potential for disturbance of community access routes to cultural sites and to the environmental setting of the sites themselves;
- Enhancement or protection of environmental setting may be required and should be discussed in conjunction with local community e.g. through planting/screening;
- It may be necessary to demarcate areas to be avoided (e.g. by noisy, dust-inductive) construction vehicles at certain times of the day/year so as to avoid disturbance of traditional ceremonial activities in close proximity of construction routes;
- Maintaining community access to sacred sites and facilitating respect for local intangible cultural heritage, tradition and taboo will ensure that the negative socio-cultural effects are effectively managed – regular platforms for community liaison are recommended in this regard. It is suggested that the presence of culturally significant places are highlighted to contractors at any early stage, e.g. during site induction; and
- Continued liaison between the Proponent and local cultural leaders to facilitate the identification of any cultural sites not yet shared by the community and potentially affected by the proposed project. The CHMP must set out plans for stakeholder identification and a programme for long term consultation in this regard.

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.5.5.1	Updating of cultural heritage site data base	The data base of all cultural heritage sites shall be updated, based on the investigation associated with each project, and any sites within 500 m of construction activities shall be included in a project specific Appendix to the c-ESMP. Such heritage sites shall be georeferenced for easy identification in the field.	CTT	Pre-construction	Inclusion of updated and geo-referenced cultural heritage site listings in a project-specific Appendix to the c-ESMP

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.5.5.2	Avoidance of known cultural heritage sites near the construction works	Where project infrastructure is within 100 m of a cultural heritage site, the area shall be flagged for special attention. In such cases, the precise location of the site shall be confirmed with members of the local community. All construction team personnel, particularly operators of vehicles and heavy equipment, shall be made aware of the site and advised of its importance. If considered necessary by the Managing Contractor, in consultation with local community representatives, the site shall be temporarily fenced or demarcated in order to protect it from damage.	Construction Contractor Managing Contractor	At all times	Absence of damage to any cultural heritage site Absence of complaints from members of the community in the Compliments and Complaints Register
5.5.5.3	Collection of cultural heritage remains	The Contractor shall respect local intangible cultural heritage, tradition and taboo during construction so as to ensure that the negative socio-cultural effects are effectively managed. The collection of archaeological or other cultural artefacts found on site by contractor personnel shall be prohibited.	Construction Contractor	At all times	Inclusion of cultural heritage sensitisation in induction programme(s) and contractor tool box talks. Absence of complaints from members of the community in the Compliments and Complaints Register

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.5.5.4	Maintenance of community access and communication	Community access to sacred sites shall, where necessary, be maintained during the construction period. Access requirements shall be determined by the CLO in consultation with local communities.	Construction Contractor CLO	As required by consultation with communities	Records of communication Absence of complaints from members of the community in the Compliments and Complaints Register
5.5.5.5	Change to the land surface	Review design options to avoid impact. Preference is northern transport route, and to re-align powerline within the transmission line corridor. Adherence to Cultural Heritage Management Plan (CHMP)	Construction Contractor	Construction Contractor	No heritage sites affected
5.5.5.6	Ground pollution	Ensure all vehicles are well maintained. Prepare Emergency Response Plan and Adherence to CHMP	Construction Contractor	Construction Contractor	ERP and CHMP
5.5.5.7	Chance Find Procedure	The Contractor shall minimise the risk of accidental damage to heritage sites by implementing the Chance Find Procedure (CFP) developed for this project. The Environmental Coordinator (EC) and ESO/ECO shall undertake training provided by a qualified specialist in order to improve their capability to identify archaeological and paleontological finds. In the event of a Chance Find for which the EC determines a professional archaeologist's opinion is required, no further construction work shall be undertaken until the archaeologist has seen the site and made a recommendation.	Construction Contractor ESO / ECO Specialist Environmental Consultant	At all times	Records of training of site personnel Compliance with CFP

5.6 Employment and Local Procurement

5.6.1 Employment and Labour Management

Labour management will include compliance with Mozambican laws, ILO Labour Standards and World Bank OP 4.03/PS2, including adequate contracts, minimum wages, health care, adequate disability/ fatality insurance, etc. Additionally, the labour contracts and policies will include guidance for camp management plans, contractors community relations requirements, and guidelines for contractors (and subcontractors) on child and forced labour. These will also include codes of conduct with sanctions against adverse behaviour (drug and alcohol use, disregard for safety rules on and off site) and against Gender-based violence, sexual harassment and abusive behaviour. Codes of Conduct will need be signed by all workers in order to avoid and sanction misbehaviour of workers, including sexual harassment, gender-based violence and sex with minors, drug abuse, hunting, wildlife capture, improper waste disposal, etc. The Contractor will provide Worker's manuals and training protocols to inform workers of their rights and responsibilities, including grievance redress and channels for communication.

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.6.1.1	Establishment of a Project Labour Agreement (PLA)	CTT (and not the construction contractor) is to establish a Project Labour Agreement (PLA) with the National Department of Labour (taking into consideration Mozambican law, World Bank Group policies and performance standards on labour (PS2), and occupational health and safety requirements), which shall include the process of recruitment of local labour. The PLA shall be negotiated with the relevant labour union in consultation with Local and District authorities and with leaders of the affected communities.	CTT Local Procurement Officer	In advance of the construction contract	Signed Project Labour Agreement Records of disputes
5.6.1.2	Implementation of the PLA	Employment shall be undertaken and managed by the Construction Contractor according to Mozambican labour law and the approved Project Labour Agreement (provided to the Construction Contractor by CTT). In particular the following should be addressed in the PLA and implemented by the Construction Contractor:	Construction Contractor CTT Local Procurement Officer	Pre-construction and ongoing	Signed Project Labour Agreement Maximisation of labour use, where practical

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		▪ The maximum use of local labour during construction (where possible) on activities where construction machinery could be dispensed of. Where enhance labour use is practical, it shall be complimented by applicable skills training. ▪ All unskilled temporary construction jobs to be for the project-affected communities, subject to availability of sufficient workers from these communities who qualify with project requirements for employment. ▪ Recruitment methods for the project shall be agreed with the local authority and community leaders (represented in the CTT Community Liaison Forum) but shall under no circumstances be *ad hoc* recruitment at the construction sites or personnel camps. ▪ No fees shall be levied for recruitment or preferred status for employment opportunities.			Records of CLF, showing unskilled employment from project-affected communities Absence of justifiable complaints in the Compliments and Complaints Register
5.6.1.3	Fair distribution of jobs for unskilled workers	Selection for unskilled employment shall further be based on the procedures developed and agreed by the Community Liaison Forum (CLF), which is intended as a mechanism for identifying and selecting unskilled workers from local communities in a fair and transparent manner.	Construction Contractor	Ongoing	Compliance with PLA Records from Community Liaison Forum
5.6.1.4	Communication of requirements for employment opportunities	In order to maintain a transparent labour recruitment process, the information concerning procedures and eligibility requirements shall be communicated through channels used by local authorities and grass roots community organisations. Details of communication channels shall be included in the Communications Plan.	CTT Local Procurement Officer CTT Public Affairs Coordinator	Ongoing	Number and nature of communication initiatives Records of communication.
5.6.1.5	Grievance procedure	The PLA shall include a formal employee Grievance Procedure which provides employees with a mechanism for raising issues with the company without fear of	CTT Local Procurement	Ongoing	Grievance Procedure.

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		victimisation. Contractors shall ensure that the induction of employees includes instruction on how to use the grievance procedure.	Officer Construction Contractor		Induction regarding Grievance Procedure. Records of grievances and how they were resolved
5.6.1.6	Semi-skilled and skilled employment	Where positions are available for semi-skilled and skilled jobs, the Construction Contractor shall coordinate with local authorities and the education sector to identify appropriate local candidates given that there are technical schools in the Inhassoro District. The Construction Contractor shall follow the 'spiral' principle in seeking qualified candidates, i.e. start in local communities, then the closest town, then rest of the Inhambane Province and Nationally.	Construction Contractor	Ongoing.	Percentage of semi-skilled and skilled employees from local communities, District and Province. Evidence of use of the 'spiral principle'
5.6.1.7	Employment of women disabled and other disadvantaged people	The Construction Contractor shall weight the award of specific unskilled jobs in favour of women, disabled and other disadvantaged people wherever practical. Targets should be developed in conjunction with the Developer and local organisations working with vulnerable groups.	Construction Contractor	Ongoing	Percentage of women disabled, and other disadvantaged people Employed.
5.6.1.8	Alignment of employee agreements with the PLA	The Contractor shall ensure that agreements with employees (including disciplinary criteria, working conditions, payment of over-time etc.) are in line with the PLA and are properly understood by all employees.	Construction Contractor	Ongoing	Records of employee briefings and induction

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.6.1.9	Understanding of temporary nature of employment	The Contractor shall ensure that contract employees fully understand the temporary nature of their employment contracts.	Construction Contractor	Ongoing	Employment Contract and records of employee briefings and induction
5.6.1.10	Employee supervision	Construction Contractors shall ensure proper supervision of employees at all times, including after-hours where employees are resident on site.	Construction Contractor	At all times	Compliance with ESMP requirements

5.6.2 Procurement of Local Goods and Services

CTT will develop procedures and guidelines intended to drive preferential procurement and enterprise and supplier development in Mozambique. The success of this programme will have a major influence on CTT's contribution to sustainable development.

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.6.2.1	Procurement of local goods and services	CTT will create a local content guideline or plan, to be used as a guide to local content procurement for the CTT. Goods and services shall be procured locally whenever possible and whenever these meet CTT's established requirements, in accordance with the CTT's Procedure. However, no bushmeat or other local wildlife products shall be purchased. Furthermore, all fish served to project personnel at the construction camp shall be brought in from well outside the project area, to avoid stimulating increased fishing activity within the Bazaruto Archipelago National Park or adjacent areas of important habitat for Dugong and other threatened marine life.	CTT Local Procurement Officer Construction Contractor	Ongoing	Local suppliers in service provider list Register and percentage of procurement in communities, the District and Province, and nationally

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.6.2.2	Preparation of a Local Content Plan	The Construction Contractor shall prepare and submit a Local Content Plan to CTT for approval in line with CTT's Local Content Strategy or Guideline/Plan. The Local Content Plan shall prohibit the purchase of bushmeat or other local wildlife products in any quantity, as well as any bulk purchases of local fish (to avoid increasing local fishing pressures in the BANP or other sensitive marine habitats). The Construction Contractor will be expected to comply with this plan. The Contractor is to use a specific template as a part of reporting requirements to CTT. Detailed records of procurement shall be kept for submission to Government.	Construction Contractor CTT Local Procurement Officer	Local Content Plan to be submitted prior to establishment on site. Periodic ongoing reporting	Prepared and implemented Local Content Plan Records of percentage of procurement from local communities, the district, province and nationally

5.7 Solid Waste and Materials Management

5.7.1 Non- Hazardous Waste Management

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.7.1.1	Non-hazardous waste management	All non-hazardous camp waste shall be collected, separated for recycling, temporarily stored, transported and disposed of in accordance with CTT Waste Management Plan.	Contractor	At all times	As per requirement Records of waste collected and recycling Manifests of waste collection and disposal at selected municipal waste disposal site
5.7.1.2	Waste generation and	■ Develop waste inventories. These inventories will be updated throughout the project, commissioning and operations phases.	Contractor ESO	Prior to start of project.	Record of waste reduction and recycling

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
	recycling	■ Stipulate the storage and disposal requirements for each waste stream. ■ Develop waste management strategies for each waste stream based on the waste management hierarchy. ■ Prepare waste management procedures for the specific scope of work and expected waste types and volumes. ■ Ensure worksites are kept free of litter and that any litter is cleaned up immediately. ■ Demonstrate efforts to reduce waste volumes, where possible, and to segregate and recycle waste where not possible.	Process Engineers Stores Managers Workshop Managers	At all times during the project.	initiatives. Recycling bins on site.
5.7.1.3	Waste handling and storage	■ Comply with applicable regulatory requirements and standards regarding the design and operation of all waste storage areas (Decree 83/2014 of 31 December; Decree 94/2014, of 31 December) (as amended). ■ Segregate all waste streams at source, where practicable ■ Label all hazardous waste containers in accordance with the labelling system as described in Annex IV of Decree 83/2014. This labelling system is consistent with international guidelines. ■ Store all waste in appropriately designed and clearly labelled waste bins or waste containers. ■ Cover or close waste receptacles that may present an issue for attraction of pests and other fauna. ■ Regard any unidentified wastes as hazardous waste and handle and store such waste accordingly. ■ Separate combustible wastes from ignition sources to minimise fire hazards. ■ Inspect and empty temporary waste bins/facilities regularly.	Contractor ESO Process Engineers Stores Managers Workshop Managers WWTP operators	At all times	Evidence of waste storage containers. Evidence of waste segregation, separate bins/containers for different kinds of waste. Clear labels on bins Evidence of waste inspection records Evidence of inspection of waste transport vehicles.

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		■ Securely store and contain all wastes during transport to landfill facilities. Waste transport vehicle shall be in secure skips or containers which are covered during transport.			
5.7.1.4	Waste transport and disposal	■ Comply with Mozambican waste management regulations regarding waste disposal (Decree 83/2014 of 31 December, Decree 94/2014 of 31 December). ■ Stipulate the storage and disposal requirements for each waste stream. ■ For items that are marketable, re-use or recycle waste materials. These materials shall be separated from the waste stream at their point of generation and stored separately for collection by an accredited recycling contractor. ■ In accordance to the legislation, where transport of waste off-site is required, use a transporter that is certified by MITADER. ■ Implement a Waste Transfer Note (WTN), which is to be signed by the Site Engineer. ■ Correlate the waste manifests with the contractor's waste management method statement. ■ Retain the WTN for at least 3 years. ■ Collect waste sufficiently frequent to ensure that there is no overloading of the temporary storage at the site.	Contractor ESO Process Engineers Stores Managers Workshop Managers WWTP operators Waste transportation Contractor	At all times	Record of waste manifest signed by ESO Certificates of safe disposal

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		■ Have in place the means to respond appropriately to spillages of waste anywhere along the route within a time limit acceptable to the Proponent. ■ Provide certificates of safe disposal to the Site Engineer for all wastes disposed at the waste site. ■ Where possible, dispose waste in a discreet location at the waste site that permits deposition and closure independently of other waste, so that due diligence can be verified and documented.			
5.7.1.5	Burying of waste on site	■ Prohibit the discard or burying of waste materials on site.	Contractor ESO Process Engineers Stores Managers Workshop Managers WWTP operators	At all times	No incidents of waste being buried on sites.
5.7.1.6	Specific requirements for burning of combustible waste	■ Permit the burning of combustible, non-hazardous waste in a burn pit, the location of which shall be identified by the EC/ESO.	Contractor ESO Process Engineers Stores Managers Workshop Managers WWTP operators	Daily	Daily burning at EC-identified location Absence of waste unsuitable for combustion in burn pits.

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.7.1.7	Specific requirements for incineration of waste	■ Do not dispose of any waste by incineration unless emissions from the incinerator meet internationally accepted emissions guideline levels / limits for small, temporary installations (Basel Convention Technical Guidelines on Incineration on Land, 2002; IFC, Environmental Health and Safety Guidelines for Waste Management Facilities, 1998; The European Waste Incineration Directive, Directive 2000/76/EC on the Incineration of Waste, 200).	Contractor	Specific requirements for incineration of waste	As per specification
5.7.1.8	Specific requirements for composting of organic wastes	■ Organic wastes; a composter will be used to store these at the camps.	Contractor ESO Process Engineers	At all times	As per specification
5.7.1.9	Specific requirements for recycling of inorganic wastes	■ Separate inorganic waste into appropriately labelled waste bins for recycling. Provide bins for plastics, glass, waste packaging, aluminium cans and scrap ferrous metal. Uncontaminated wood shall be made available to communities for their use (or used in a wood chipper and used for composting).	Stores Managers Workshop Managers WWTP operators	At all times	As per specification

5.7.2 Hazardous Waste Management

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.7.2.1	Compliance with legislation	Comply with the Mozambique Regulations for the management of Hazardous Wastes (Decree 83/2014 of 31 December). The specifications below cover key requirements, but a full listing should be obtained from the regulations themselves.	Contractor ESO Process Engineers Stores Managers Workshop Managers	From project initiation and at all times.	Compliance with Decree 83/2014 of 31 December
5.7.2.2	Hazardous waste management	All hazardous camp waste shall be collected, classified, labelled, temporarily stored, transported and disposed of in accordance with Mozambique Decree 83/2014, and as set out in the CTT Waste Management Plan.	Contractor	At all times	As per requirement
5.7.2.3	Hazardous waste method statement	■ Prepare a Method Statement for Management of Hazardous Waste in accordance with Article 11 of Decree 83/2014 of 31 December, including the relevant information required by Annexure II. The plan shall include but not be limited to: ▪ An inventory of all hazardous waste, together with estimated quantities, documented in accordance with the classification system in Annexures III and IX of the regulations. ▪ Measures to comply with waste hierarchy requirements for minimizing hazardous waste generation and recycling of waste	Contractor ESO Process Engineers Stores Managers Workshop Managers	Before project initiation as a basis for licensing of the activity	Authorisation by MITADER

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		▪ Measures to safely contain and temporarily store hazardous waste prior to collection. ▪ Measures to label hazardous waste in accordance with Annexure IV of the regulations. ▪ Measures to transport hazardous waste in accordance with Annexures VI and VIII of the regulations. ▪ Details of the licensed disposal site.	WWTP operators		
5.7.2.4	Waste generation and recycling	■ Develop waste inventories. These inventories must be updated throughout the project. ■ Stipulate the storage and disposal requirements for each waste stream. ■ Develop waste management strategies for each waste stream based on the waste management hierarchy. ■ Prepare waste management procedures for their specific scope of work and expected waste types and volumes. ■ Manage controlled waste as required by the Mozambican waste management Decree and Proponent's SHE policy. ■ Demonstrate efforts to reduce waste volumes. ■ Recycle used oils and greases, where possible, or dispose of them appropriately according to the regulation (Decree 83/2014).	Contractor ESO Process Engineers Stores Managers Workshop Managers WWTP operators	Before establishment on site At all times during the project	Record of waste reduction and recycling initiatives. Recycling bins on site

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.7.2.5	Waste storage and handling	■ Comply with applicable regulatory requirements and standards regarding the design and operation of all waste storage areas (Decree 83/2014). ■ Segregate all waste streams at source, where practicable. ■ Line hazardous waste containers or construct of materials that are compatible with the wastes to be stored. Keep containers in good condition, free from corrosion, leaks or ruptures and sealed to prevent spillage. ■ Label hazardous waste in accordance with the labelling system required by Annexure IV of Decree 83/2014 of 31 December. ■ Keep Material Safety Data Sheets for stored hazardous waste, where available, at the following locations: - the hazardous waste storage area at the Camps - the office of the Contractor's site manager - the EC/ESO's office ■ Regard any unidentified wastes as hazardous waste and handle and store such waste. ■ Locate spill kits at hazardous liquid waste storage areas. ■ Handle waste chemicals in accordance with the appropriate Material Safety Data Sheet (MSDS).	Contractor ESO Process Engineers Stores Managers Workshop Managers, Hazardous Waste Transportation Contractor	At all times Within 7 days	Evidence of waste storage containers. Evidence of waste segregation, separate bins/containers for different kinds of waste. Clear labels on bins Evidence of inspection waste storage facilities/containers Presence of spill kits Record of MSDS for hazardous waste materials Manifest of waste removal from site

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		■ Keep temporarily stored hazardous waste at the work sites on pallets underlain by a plastic liner. All waste stored in this manner shall be removed to the Construction Camp daily. ■ Ensure that storage at the Camps is a concrete floored, bunded, facility, covered to provide shade and prevent ingress of rain. Bunded areas shall include a trap to collect wash-down water from cleaning of the area. If this water is likely to contain hydrocarbons, then the washdown shall be treated as POC water. ■ Fully secure the storage area, with lockable gates, to prevent unauthorised access. ■ Inspect and empty hazardous waste storage facilities regularly.			
5.7.2.6	Waste transport and disposal	■ Comply with Mozambican waste management regulations regarding waste disposal, as described in Decree 94/2014 of 31 December. ■ Dispose of hazardous waste at a licensed hazardous waste disposal site. ■ Stipulate the disposal requirements for each waste stream. ■ Implement a waste manifest which must be signed by the Site Engineer. ■ Correlate the waste manifest with the contractor's waste documentation. ■ Maintain the waste manifest for at least 3 years. ■ Collect waste sufficiently frequent to ensure that there is no overloading of the temporary storage at the site.	Contractor ESO Process Engineers Stores Managers Workshop Managers	At all times	Record of waste manifest signed by ESO Certificates of safe disposal

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		■ In accordance with the legislation, ensure that waste to be transported off site is removed by a transporter that is certified by MITADER. ■ Securely contain all wastes during transport to hazardous waste disposal sites or other means. ■ Have in place the means to respond appropriately to spillages of waste anywhere along the transport route within a time limit acceptable to the Proponent. ■ Provide certificates of safe disposal to the Site Engineer for all wastes disposed at the licensed waste site.			
5.7.2.7	Specific requirements – bioremediation of contaminated soils	Treat small quantities of soils contaminated by hydrocarbons (less than 20kg) in-situ using bioremediation. Where large quantities of contaminated soils are involved (greater than 20kg) or if there is the potential to cause pollution to groundwater, surface water or community water facilities, remove the contaminated soils to the area allocated by the EC at the Construction Camp for longer-term bioremediation (over a surfaced hard standing area). Contractors shall be responsible for the bioremediation of their own contaminated soil until the following standards are met: ■ There is no hydrocarbon odour. ■ The soil particles do not coagulate as a result of hydrocarbon contamination. ■ There is no visual evidence of hydrocarbons in the soil. ■ Where there is uncertainty the soil shall be sent for analysis.	Proponent Contractor ESO Process Engineers Stores Managers Workshop Managers WWTP operators	At all times	Records of treatment/disposal

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		■ Where soils are contaminated by other hazardous chemicals they shall be removed and disposed of as per hazardous waste disposal requirements, indicated in the MSDSs.			
5.7.2.8	Specific requirements - disposal of unused chemical waste	Chemicals that are no longer used, or are past their shelf-life date, shall be stored in the hazardous waste storage area at the Camps for interim storage until disposal (toxic chemicals are normally sent to incineration).	Contractor, ESO Process Engineers Stores Managers Workshop Managers WWTP operators	At all times	Records of disposal
5.7.2.9	Specific requirements - pesticide use for vector control	■ Should pesticides be used to control the mosquito vector in and around worker's camps and work sites, they shall be selected to minimise negative effects on non-target organisms. ■ The disposal of waste pesticide and pesticide containers shall be as per the CTT Waste Management Plan. ■ A Pest and Pesticide Management Plan must be compiled by the contractor for approval by the ECO prior to use of any chemicals.	Contractor ESO Process Engineers Stores Managers Workshop Managers	At all times	Records of pesticide use and eco-toxicity management Records of selection procedure

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
			WWTP operators		
5.7.2.10	Specific requirements - cement storage, use and disposal	Cement/aggregate shall be stored and mixed on compacted ground in designated areas. This ground shall be lifted and disposed of in a waste site as cover fill at the end of the construction phase.	Contractor ESO Process Engineers Stores Managers Workshop Managers	Cement mixing	As per requirement

5.8 Water Management

5.8.1 Wastewater Management

There are four types of wastewater streams that would be expected from the CTT project activities. These are:

- Potentially oily contaminated (POC) wastewater and storm water from maintenance areas and vehicle wash bays; this would be an intermittent stream;
- Domestic wastewater, which includes grey water (from kitchens and washing facilities) and sewage waste;
- Oily water effluent; and
- The brine and ultrafiltration reject from the water treatment process.

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.8.1.1	Effluent Disposal (oily wastewater) (irrigation)	■ Dispose of effluent in line with Mozambican regulations on effluent water disposal requirements and irrigation - amended by Decree 67/2010 of 31 December or World Bank Group Effluent standards – whichever is more stringent. ■ Prepare a method statement describing effluent management at Camps that shall include, but not be limited to: ▪ How effluent will be stored prior to treatment. ▪ How the effluent will be treated to meet the standards required under Mozambican legislation: Decree 18/2004 amended by Decree 67/2010 of 31 December, Environmental Quality and Effluents Emission Standards Regulation ▪ “Regulation on Environmental Quality and Effluents Emission Standards.” ▪ Measures to ensure that there will be no release of polluted runoff from the site. ▪ Measures to prevent erosion at any discharge point. ▪ The duration of the use of the site. ■ Proponent/Managing Contractor shall approve the Method Statement prior to submission of the effluent management method statement to MITADER as a part of wastewater licensing requirements.	Proponent Contractor ESO Process Engineers Stores Managers Workshop Managers WWTP operators	Prior to initiation of project activities	Method statement available and followed by staff No non-conformances
5.8.1.2	Potentially oil-contaminated wastewater	In work areas for servicing of vehicles and equipment and other tasks where oils and fuel are handled, route spillages via appropriately sized mechanical oil separators. Undertake planned maintenance activities under roofed areas to minimise contaminated storm water.	Contractor ESO Process Engineers	At all times	POC-contaminated areas contained, and drainage routed through mechanical oil traps

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
			Stores Managers Workshop Managers WWTP operators		
5.8.1.3	Potentially contaminated storm water	Keep potentially oil-contaminated (POC) storm water separate from other drainage. If necessary, test and treat POC storm water to remove contaminants before being released into the environment.	Contractor ESO Process Engineers Stores Managers Workshop Managers WWTP operators	At all times	Incident reports and corrective action report where contaminated water is generated
5.8.1.4	Compliance with Mozambique oil and grease specification for effluent	Ensure that water draining from POC areas complies with the Mozambique specification for oil and grease in effluent discharged to the environment (20 mg/l).	Contractor ESO Process Engineers Stores Managers Workshop Managers WWTP operators	At all times	Compliance with oil and grease standard for POC-wastewater released into the environment

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.8.1.5	Vehicle wash bays	Regard heavy vehicle wash bay(s) as POC areas.	Contractor ESO Process Engineers Stores Managers Workshop Managers WWTP operators	At all times	Compliance with oil and grease standard for wastewater released into the environment
5.8.1.6	Sand washing	Should sand washing be necessary, prepare a Method Statement for approval by the Managing Contractor, which shall include details of, but not be limited to, the following: ■ Location of the washing process; ■ Estimated quantity to be washed and water volumes required; ■ Source of water for washing; ■ Any additives to be used in the washing process, including chemistry and environmental status (include MSDSs); ■ Methods for the management of effluent, including TDS and the monitoring thereof; and ■ Measures to prevent erosion as a result of the washing process.	Contractor, ESO, Process Engineers, Stores Managers, Workshop Managers, WWTP operators	Prior to sand washing	Approved and implemented method statement
5.8.1.7	Domestic wastewater (irrigation)	■ Discard grey water (kitchens) into French drains. ■ Drain sewage effluent from worker's Camp activities to a brick or concrete-lined sump and treat it in a package sewage plant, the effluent from which shall comply with the requirements of the Mozambique regulations for domestic wastewater (Decree 18/2004 Appendix IV, amended by Decree	Contractor ESO Process Engineers	At all times	Compliance with domestic wastewater specification as per Decree 18/2004 of 2 June

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		67/2010 of 31 December), Environmental Quality and Effluents Emission Standards Regulation or World Bank Group Effluent standards – whichever is more stringent. ■ Size the sewage plant in order to cater for the maximum forecast loads over the project construction and operation periods. Undertake regular compliance monitoring of effluent quality. ■ In the event that the Contractor proposes a septic tank and soak away system, design this in accordance with a recognised standard such as ZA SANS 10400-P:2010. The septic tank shall accommodate at least three times the expected daily flow rate (approximately 90 litres per day worker) and the soak away shall meet the requirements of the standard or other recognised standard. ■ Ensure that no septic tank and soak away system is situated closer than 150 m from a community borehole. ■ For Camps and work sites, ensure that there is a sufficient complement of compositing toilets available.	Stores Managers Workshop Managers WWTP operators		(amended by Decree 67/2010 of 31 December)
5.8.1.8	Brine and Ultrafiltration reject	Brine and reject will be sent to the Evaporation pond and managed. The brine pond will be lined with an HDPE liner. There will be regular desludging to remove the residual salts and this will be removed by an accredited waste removal contractor in line with the method statement.	Contractor ESO Process Engineers Stores Managers Workshop Managers WWTP operators	Prior to operations and at all times	Approved and implemented method statement.

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.8.1.9	Potentially oil-contaminated wastewater	Small quantities of POC wastewater may result from washdown of spillages in the POC work areas at the Construction Camp. These include bunded areas for hydrocarbon storage, the bunded generator platform and areas designated for vehicle servicing and repair.	Contractor	At all times	POC-contaminated areas contained, and drainage routed through mechanical oil traps

5.8.2 Stormwater Management

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.8.2.1	Accelerated erosion	Accelerated erosion during storm events shall be minimised during all stages of construction. Should this be unavoidable, specific erosion control measures shall be implemented for the duration that the risk exists. These may include the packing of sandbags in areas of storm drainage, diversion berms, temporary culverts etc. in order to minimise erosion.	Construction Contractor	At all times.	Minimised alteration of natural flows. Details of measures implemented to control stormwater Absence of material erosion on site

5.8.3 Water Supply Management

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.8.3.1	Permits for water use	The contractor shall obtain all necessary permits for the use of surface water and groundwater from the relevant authorities	Construction Contractor	Prior to water use	Permits for use

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		(ARA-SUL).			
5.8.3.2	Groundwater use	Water abstraction for the project shall be from groundwater boreholes. The project shall have no detrimental impact on water volumes available to existing users in the area. If any borehole is closer than 1,000 m to the nearest community borehole, specific provision shall be made to monitor the effect of construction use community water supply and to supplement this supply, if necessary.	Construction Contractor	Pre-planning of facility location Monitoring if closer than 1,000 m from a community borehole	Records of proximity of project water supply to community boreholes Monitoring of community boreholes, if required Record of action taken if community borehole temporarily affected
5.8.3.3	Surface water use	Should the use of surface water be considered this shall be subject to the approval of the Mozambique Water Authorities. The use of surface water from pans and depressions in the study area shall be prohibited.	Construction Contractor Managing Contractor	All times	Authorisation by Managing Contractor Quantity and location of surface water use

5.8.4 Bio-medical Waste Management

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.8.4.1	Disposal of medical waste	■ Separate all medical waste from other waste. Place medical waste in labelled bags in accordance with the requirements of Decree 8/2003. ■ Separate infectious waste in yellow plastic bags or, if not possible, any other yellow impermeable plastic bags or containers labelled with the wording “Infectious Waste”. ■ Clearly identify all infectious waste container through the label “Infectious Waste” and the international Infectious Waste logo stamp. ■ Third party waste contractor to collect for treatment/incineration. Records of all medical waste collected shall be kept and submitted to the EC.	Contractor ESO Process Engineers Stores Managers Workshop Managers	As required	Certificates of disposal
5.8.4.2	Procedure for medical waste disposal	Dispose of the waste at the in accordance with Proponent’s approved medical waste management procedures.	Third party waste contractor	As required	Records of medical waste disposal.

Ref.	Description	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.8.4.3	Off-site disposal of medical waste	The third party waste contractor shall provide the Proponent with the license of the site(s) at which the waste is to be disposed. In addition, ensure that the site(s) receiving the waste provide certificates of acceptance of the waste.	Contractor ESO Process Engineers Stores Managers Workshop Managers	As required	Certificates of disposal

5.8.5 Vehicle and Materials Management (including hazardous chemicals, fuels and lubricants)

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.8.5.1	Vehicle maintenance	All equipment and machinery shall be maintained in good working order so as to prevent oil, fuel or other such leaks.	Construction Contractor	At all times	Records of maintenance and inspections
5.8.5.2	Location of planned maintenance facilities	Planned vehicle and equipment maintenance shall only be undertaken at the Construction Camp. All drainage from vehicle and machinery servicing areas shall be collected and passed through a mechanical oil separator. Waste oils and other hydrocarbon wastes shall be collected, drummed and recycled according to the requirements in the Waste Management Plan. No hydrocarbon-contaminated water may be voided into the environment. The Contractor shall strictly prohibit the washing of	Construction Contractor	At all times	Compliance with oil and grease standard for wastewater released into the environment

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		vehicles or other machinery, or the changing of lubricants, in rivers, streams, ponds, or other waterways.			
5.8.5.3	General	All applicable laws, regulations, permit and approval conditions and requirements relevant to the storage and use of hazardous materials shall be complied with. All hazardous materials shall be managed in a safe and responsible manner.	Construction Contractor	At all times	Reference to waste management in the weekly reports of the ESO and EC.
5.8.5.4	Method statement	The Construction Contractor shall prepare a Method Statement, for approval by the Managing Contractor, which includes an inventory of all hazardous materials that will be used on site, and measures to prevent: ▪ Soil contamination, ▪ Pollution of water, ▪ Accidental fires and ▪ Risk / injury to people or animals.	Construction Contractor Managing Contractor	Prior to establishment on site	Method Statement as per requirement
5.8.5.5	MSDS availability	The MSDS's of any hazardous chemicals / substances (including that within equipment) described in the Method Statement shall be provided to the Managing Contractor, and shall be kept in the following locations: ▪ the chemical storage area, ▪ the office of the Construction Contractor's site manager, ▪ the office of the Managing Contractor's site manager,	Construction Contractor Managing Contractor	At all times	Inventory of hazardous materials and MSDS's Documentation available at specified locations.
5.8.5.6	Prohibition of PCBs	Transformers and other equipment used on site shall use oils that are PCB-free.	Construction Contractor	At all times	Documented statement by Contractor regarding PCB-free equipment

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.8.5.7	Prohibition of CFCs	Refrigerants used on site shall be CFC-free	Construction Contractor	At all times	Documented statement by Contractor regarding PCB-free equipment
5.8.5.8	Location of fixed-fuel storage	Fixed fuel storage tanks shall not be located anywhere other than at the Construction Camp, approved plant yards, lay down areas or campsites.	Construction Contractor	At all times	Location of fixed fuel storage as per requirement
5.8.5.9	Enclosure and signage at fuel storage areas	All fixed fuel storage shall be enclosed with a security fence which has a lockable gate. Signs indicating ‘no smoking’ ‘no naked flames’ and ‘danger’ shall be provided in appropriate languages and are to conform to a recognised standard such as the South African Bureau of Standards Code 1186 or equivalent Mozambique standards. The capacity of the tank and the product within the tank shall be displayed using the Emergency System detailed in SABS 0232 or similar international code.	Construction Contractor	At all times.	As per enclosure and signage requirement.
5.8.5.10	Surfacing of storage areas	Fixed fuel storage shall be on a flat, impermeable, surface, surrounded by a bund wall capable of retaining at least 110% of the volume of the storage tank, in order to ensure that accidental spillage does not pollute local soil or water resources.	Construction Contractor	At all times	As per storage requirement
5.8.5.11	Refuelling at fixed storage areas	Fuel transfer at fixed fuel storage areas shall be performed on a concrete surface draining to a mechanical oil separator. No hydrocarbon-contaminated water shall be released into the environment.	Construction Contractor	At all times	As per requirement. Incident and corrective action records.
5.8.5.12	Refuelling in the field	All reasonable precautions shall be taken to prevent fuel and lubricant spills in the field during the course of construction. Measures include the following:	Construction Contractor	At all times	As per requirement Incident and corrective action records

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
		■ No overfilling of diesel bowsers ■ Regular inspections to verify that no leaking or defective refuelling equipment is brought onto site. ■ Capture of any fuel spills, oils or lubricants discharged during emergency vehicle servicing on site using drip trays, containers or other appropriate containment measures.			
5.8.5.13	Location of storage in relation to sensitive environments	Chemicals, fuels, lubricating oils and any other hazardous materials shall not be stored within: ■ 200 m of the full seasonal extent of any river, wetland, pan or depression ■ 20 m of any stormwater drainage system ■ 100 m of any community groundwater borehole	Incident and corrective action records.	At all times	As per requirement
5.8.5.14	Health risk awareness and protective clothing	The Construction Contractor shall make his employees aware of the health risks associated with any hazardous substances used and appropriate safety behaviour when working with or near such substances. The Construction Contractor shall provide his workers with appropriate protective clothing / equipment in case of spillages or accidents. The necessary awareness training (including safe handling) of such hazardous substances will also be provided to employees	Construction Contractor	At all times	Records of training conducted Provision of PPE
5.8.5.15	Below ground storage	No fuel or any other chemicals shall be stored below ground (either partially or completely).	Construction Contractor	At all times	As per storage requirement

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.8.5.16	Supervisory staff for fuelling and repairs	Fuelling and repairs shall be carried out or supervised by personnel familiar with spill containment and clean up procedures.	Construction Contractor	At all times	As per refuelling requirement.
5.8.5.17	Cleaning of vehicles in wetland areas	All vehicles or equipment that are required to cross rivers, wetlands or floodplains shall be cleaned of oil, grease and other contaminants damaging to aquatic life.	Construction Contractor	At all times	As per requirement.
5.8.5.18	Diesel generators	Diesel power generators at the Construction Camp shall be located on a bunded impermeable surface to contain fuel spills. Diesel generators in the field shall be located on a PVC liner or drip tray to contain spills	Construction Contractor	At all times	Spill protection around generators
5.8.5.19	Availability of spill clean-up materials	In all cases, the necessary tools and materials, including absorbent material, shovels and bags shall be readily available at the Construction Camp and work sites to clean up spills. An inventory of this equipment and its location on site shall be prepared and included in the contractor's Method Statement.	Construction Contractor	At all times.	Availability of spill / drip clean-up materials at specified locations
5.8.5.20	Emergency spill kits	Key vehicles that work at the work sites for the majority of the time must be equipped with temporary sheeting / drip trays and absorbent materials in case of emergency maintenance in the field.	Construction Contractor	At all times	Sheeting / drip trays in all key vehicles
5.8.5.21	Spill management and reporting	All spills of fuels, oils or other hazardous substances shall be cleaned up and measures taken to remediate the spill. The incident shall be reported to the ECO and an incident report completed. The ECO shall ensure that the spill is cleaned up and the incident closed out with the Contractor.	Construction Contractor	Immediately following any spill	Incident and corrective action records.

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.8.5.22	Bioremediation of hydrocarbon spills	Small quantities of soils contaminated by hydrocarbons (less than 20 kg) shall be treated *in situ* using bio-remediation. Large quantities of contaminated soils (greater than 20 kg) or if there is the potential to cause pollution to groundwater, surface water or community groundwater facilities shall be removed to an area at the Construction Camp allocated by the EC for longer term bioremediation. Contractors shall be responsible for the bioremediation until the following standards are met: ■ there is no hydrocarbon odour, ■ the soil particles do not coagulate as a result of hydrocarbon contamination, ■ there is no visual evidence of hydrocarbons in the soil. Where there is uncertainty the soil shall be sent to an accredited laboratory for analysis.	Construction Contractor	After any spill.	As per requirement. Incident and corrective action records.

5.9 Camp Sites and Lay Down Areas

5.9.1 Construction Camps

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.9.1.1	Location of camps	The construction camp shall be located within the existing bush cleared and de-mined area on the CTT site adjacent to the CTT plant footprint as per the layout maps. The laydown and logistics camp associated with the beach landing activities will be finalised based on the beach landing site option chosen, and this should be finalised with the ESC and SHE Manager/ESO's approval and screened and managed in accordance with this ESMP and the RPF. Where needed site-specific ESMPs and RAP/ARAP/LRP will be prepared and approved with necessary clearances including CTT and WB N/O.	Environmental Coordinator	Pre-construction or as required	Acceptability of location verified in pre-construction documents or by ESC. Ancillary approvals or clearances where required.
5.9.1.2	Topsoil management during site construction	Topsoil stripped from the site shall be stored and managed in accordance with the general specification in Section 5.5.4.	Construction Contractor	During site clearing	As per requirement
5.9.1.3	Security	Camps shall be fully fenced and gated, with security control at the entrance. No unauthorised entry into the camps shall be permitted. A Security Management Plan for hiring of private security shall be prepared and approved by the ECO for implementation. The plan will be developed in accordance with the Voluntary principles on Security and Human Rights. This will be cross referenced to the Community Health Safety and Security Plan (CHSSP).	Construction Contractor	During camp construction and at all times thereafter	As per requirement

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.9.1.4	Sewage treatment	Sewage effluent shall be drained to a brick or concrete-lined sump and treated in a package sewage plant, the effluent from which shall comply with the requirements of the Mozambique regulations for domestic wastewater (Decree 18/2004 Appendix IV). The sewage plant shall be sized in order to cater for the maximum forecast loads over the project construction period. Regular compliance monitoring of effluent quality shall be undertaken	Construction Contractor	During camp construction. Monitoring at specified intervals thereafter	Construction and operation of plant as per requirement. Compliance with sewage effluent wastewater standard Records of treated sewage effluent monitoring and trends in ESO monthly reports
5.9.1.5	Stormwater management	Accelerated erosion during storm events shall be minimised during all stages of construction. Where necessary, berms and other stormwater management facilities shall be constructed to prevent channelling of stormwater and direct it off site	Construction Contractor	During camp construction. Monitoring at specified intervals thereafter	As per requirement. Evidence of stormwater management and lack of erosion gullying on site
5.9.1.6	Dust damping using treated sewage effluent	Treated sewage effluent may be used for dust damping along the project access roads or shall be routed into an appropriately-sized French drain system.	Construction Contractor	As required	Records of use for dust control As per requirement
5.9.1.7	Non-hazardous waste management	All non-hazardous camp waste shall be collected, separated for recycling, temporarily stored, transported and disposed in accordance with the specification set out in Section 5.8.1 and Decree 94/2014	Construction Contractor	At all times	As per requirement Records of waste collected and recycling Manifests of waste collection and disposal at selected municipal waste disposal site

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.9.1.8	Hazardous waste management	Any quantities of hazardous waste that are generated at the camps shall be disposed of in accordance with the requirements set above.	Construction Contractor	As required	As per requirement Records of waste collected by certified hazardous waste contractor
	Refuelling facilities	The refuelling facilities provided at the personnel camp, shall comply with the requirements set out in Section 5.8.5. Vehicle wash bays shall also be designed to trap wastewater and residual oils, as specified in Section 5.8.5.	Construction Contractor	Pre-construction design. Camp construction	Facility design drawings As per requirement
5.9.1.9	Diesel generators	Diesel power generators shall be located on a flat, impermeable surface, bunded to contain fuel spills	Construction Contractor	Pre-construction design. Camp construction	Facility design drawings As per requirement
5.9.1.10	Servicing of vehicles and equipment	Vehicle and equipment servicing shall be undertaken at the Construction Camp.	Construction Contractor	As required	No servicing at the personnel camp

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.9.1.11	Services included at Construction Camps	The Construction Camps shall provide services to CTT construction personnel, including: ▪ Offices and administration facilities ▪ Accommodation and ablution facilities ▪ Catering and dining facilities ▪ Workshops, laydown, warehouses and storage area ▪ Utilities area (water, power and sewage) ▪ Vehicle and equipment servicing facilities, ▪ Hazardous and non-hazardous (including recyclable) temporary waste storage facilities, ▪ Security guard houses All service listed above shall comply with the requirements set out in the relevant sections of this c-ESMP.	Construction Contractor	At all times	Compliance with relevant standards elsewhere in the c-ESMP

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.9.1.12	Light Pollution at night (applies to construction camp and laydown areas)	■ Identify zones of high and low lighting requirements, focusing on only illuminating areas to the minimum extent possible to allow safe operations at night and for security surveillance; ■ Plan the lighting requirements of the facilities to ensure that lighting meets the need to keep the site secure and safe, without resulting in excessive illumination; ■ Reduce the heights of light post where possible and develop a lighting plan that focusses on illuminating the required areas through strategically placed individual lights rather than mass light flooding; ■ Utilise security lights that are movement activated rather than permanently switched on where feasible, to prevent unnecessary constant illumination; ■ Fit all security lighting with 'blinkers' or specifically designed fixtures, to ensure light is directed downwards while preventing side spill. Light fixtures of this description are commonly available for a variety of uses and should be used to the greatest extent possible; and ■ Eliminate any ground-level spotlights as these invariably result in both direct glare and increased sky glow and cannot be effectively mitigated.	Construction Contractor ESO CLO	During construction activities at camp and laydown areas	No complaints from surrounding communities in terms of light pollution

5.9.2 Lay Down Areas

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.9.2.1	Activities permitted in lay down areas	Laydown areas may include facility for the storage of equipment and supplies that are needed close the work sites. Provision for fuel storage and supply may also be made at lay down areas as well as materials. Fuel storage shall comply with the requirements set out above. All vehicle and equipment servicing shall take place at the project Construction Camps.	Construction Contractor	As required	As per requirement
5.9.2.2	Siting of laydown areas and refuelling sites	The Environmental Coordinator shall approve the location of all laydown areas including the final position of the beach laydown area, in consultation with CTT SHE Manager/ESO.	Construction Contractor CTT SHE Manager	As required	Location outside of prohibited areas Authorisation of EC
5.9.2.3	Securing of laydown areas	Where considered necessary by the Managing Contractor, laydown areas shall be fenced, and security guards shall be stationed at the perimeter to prevent inadvertent or deliberate access by local people.	Managing Contractor Construction Contractor	As required	Appropriate security around laydown areas

5.10 Work Sites - General

5.10.1 Access Control

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.10.1.1	Access to pipeline	The Construction Contractor shall provide a method statement, for approval by the Managing Contractor, which demonstrates that open trenches that could be accessed by the public:	Construction Contractor Managing Contractor	As required	Control measures to avoid / prevent accidents at trenches

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
	construction sites	▪ are adequately protected by a barrier or fence of at least 1 m in height and as close to the excavation as is practicable; and ▪ are provided with warning illumination or any other clear visible boundary indicators at night or when visibility is poor or any other suitable and sufficient precautionary measure acceptable to the Managing Contractor. If any sections of a pipeline cause a significant disruption of access for members of the local community, resulting in a lengthy detour, provision shall be made for temporary access across the trench. Escape ramps shall also be included. Following the laying of the pipeline and backfilling, access shall not be restricted, and community access shall be re-instated.			Absence of complaints in the Compliments and Complaints Register
5.10.1.2	Open trenches along pipelines	The CLO shall keep nearby inhabitants informed about the location of open trenches, alternative access arrangements, and the schedule for closing them.	Construction Contractor CLO	At all times	Records of communication with communities about access. Absence of complaints in the Compliments and Complaints Register
5.10.1.3	Access to road construction sites	Access across any road construction site leading to camps shall, in general, not be restricted, except as necessary to ensure community safety in the immediate area of construction. Access along secondary gravel and dirt roads leading to a road construction site may be restricted for construction purposes for short periods following consultation with local communities and authorities.	Construction Contractor	At all times	As per requirement Record of consultation with authorities and communities regarding access

5.10.2 Civil, Steel and Mechanical Work

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.10.2.1	Welding	Any welding or other sources of heating of materials shall be done in a controlled environment wherever possible and under appropriate supervision, in such a manner as to minimise the risk of bush fires and injury to staff.	Construction Contractor	At all times	As per requirement Absence of bush fires
5.10.2.2	Pipe cleaning	Pipe cleaning may involve the use of acids / caustic soda. This requires specialist management with regards to delivery, handling, storage and disposal and shall be done in accordance with the requirements of CTT Waste Management Plan in a manner which minimises any potential environmental impacts.	Construction Contractor	During pipe cleaning	As per requirements of CTT's WMP

5.11 Work Sites - Specific

5.11.1 Pipeline Installation and Testing

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.11.1.1	Animal protection	Trench excavations shall be left open for the minimum period of time possible. Excavations left open during construction shall be checked daily (especially once the rainy season begins) to ensure that animals trapped in the trench are safely removed and released away from construction activities. Escape ramps shall also be included.	Construction Contractor	Ongoing	Record (including photographs) of animal removal from trench.

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.11.1.2	Removal of dangerous animals	At least two members of the Managing Contractor's and/or Construction Contractor's teams shall be trained in the handling of poisonous snakes and other animals. The Contractor shall ensure that there is always a trained snake handler on site. Where practical anti-venom for the most common poisonous snakes should be kept on site at the medical facility in the event of an emergency.	Construction Contractor Managing Contractor	In advance of site establishment	Training records Presence of trained staff on site at all times
5.11.1.3	Waste disposal in trenches	No waste shall be disposed of in any trench or pipeline / pipeline excavation. Building rubble and solid cement may be disposed of in borrow pits in accordance with the requirements in the Section below.	Construction Contractor	As required	Records of waste disposal.
5.11.1.4	Replacement of rock armouring	Where the land is naturally armoured (significant amounts of surface rock and stone), this material may be returned over the construction right of way in approximately the same proportions as occurred prior to construction.	Construction Contractor	After pipe-laying.	Photographs (before / after)
5.11.1.5	Disposal of waste rock	The Managing Contractor shall authorise the proposed location and method of disposal of any waste rock excavated from the pipeline trench. As a general rule, windrowing of waste rock along the perimeter of the trench shall be prohibited. Waste rock and other granular material shall be collected and transported to a disposal site approved by the EC / ESO. Erosion gullies or old borrow pits shall be identified for the preferential disposal of this material. The method statement shall include the measures that are proposed to stabilise and re-instate the disposal site.	Construction Contractor Managing Contractor	After trenching	Record of authorisation As per requirement

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.11.1.6	Backfilling	Soil shall be replaced in the trench in the order of removal, i.e. subsoil first, followed by topsoil. Final topsoil levels may be mounded slightly in order to allow for settlement of material in the trench. Refer to general topsoil management and rehabilitation requirements in the sections above.	Construction Contractor	Backfilling.	Photographs.
5.11.1.7	Drainage control	The Construction Contractor shall prevent the development of preferential flow paths that may develop along the pipeline trench following backfilling. This is more likely to occur where the pipeline is aligned with the direction of flow. This effect can be reduced by creating low, 100 mm high, 2-5 m wide, lenticular shaped berms at 50 – 100 m intervals near-perpendicular to the pipeline route across the width of the servitude.	Construction Contractor	After backfilling.	Photographs.
5.11.1.8	Hydrotesting / pipeline testing	Water for hydrotesting shall be obtained only from boreholes approved for the project. No water shall be obtained from the Govuro River, barrier lakes or from the identified coastal streams. Necessary permits for the use of water shall be obtained from the authorities (ARA-SUL)	Construction Contractor	Hydrotesting.	Quantities of water used to be recorded. Records of supply Authorisation for water abstraction
5.11.1.9	Hydrotesting / pipeline testing	No contaminated water shall be discharged into the environment. Should biocides or corrosion inhibitors be used during hydrotesting, they shall be ‘environmentally friendly’. Every effort shall be made to reduce residence times of water in the pipeline so as to avoid the need for biocides and corrosion inhibitors. The management of wastewater from hydrotesting shall comply with the requirements set out in the CTT Waste Management Plan.	Construction Contractor	During hydrotesting	As per requirement. MSDS’S for corrosion inhibitors used demonstrating low toxicity

5.11.2 Borrow Pits

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.11.2.1	Authorisation of borrow pits	The Construction Contractor shall obtain approvals for borrow pits in accordance with the Mozambique mining law (Decree 62/2006, Chapter IX). A permit is required under this law. Borrow pits are also classified as Type B activities in terms of the Environmental Regulations (Decree 54/2015) and must be licensed on the basis of a Simplified Environmental Impact Study to be submitted to MITADER in accordance with the requirements for Type B activities.	Construction Contractor	Prior to excavation of borrow pit	Mining Permit Environmental license
5.11.2.2	Borrow pit location	The Construction Contractor shall also submit the location of proposed borrow pits to the Managing Contractor for submission to the Government of Mozambique for authorisations. Where necessary, the Managing Contractor shall call upon specialist consultants to verify the acceptability of the location in terms of any environmental and social sensitivities that may be associated with such a site in accordance with this ESMP and the RPF.	Construction Contractor Managing Contractor	Prior to excavation of borrow pit	Authorisation by Managing Contractor Record of absence of sensitive site features
5.11.2.3	Minimising the number of borrow pits	Borrow pit development shall be minimised wherever possible, e.g. open one instead of several. The Construction Contractor shall also take cognisance of the existence of borrow pits developed for previous projects in the area and investigate re-opening these rather than opening new borrow pits. The location of borrow pits shall be authorised by the Managing Contractor after screening in accordance with this ESMP and the RPF.	Construction Contractor	As required	Report on borrow pit site selection

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.11.2.4	Borrow pit development and closure	No Borrow pit shall be operated without prior approval of a site specific ESMP and approval and implementation of a site-specific RAP/ARAP/LRP, if required. Photographic records shall be kept of borrow pits before any activity on site in order to establish a baseline condition. The expectation shall be that the Contractor shall reinstate the borrow pit to a condition that will facilitate eventual recovery of vegetation to similar to the pre-construction status. Alternatively, with local community concurrence, the borrow pit could be restored to a pond or wetland (with gently sloping sides), suitable as a livestock or wildlife watering area, only where practical.	Managing Contractor Construction Contractor	Prior to opening borrow pit.	Pre-excavation photographic records
5.11.2.5	Borrow pit development and closure	The Contractor shall comply with the CTT Framework Decommissioning and Rehabilitation Plan for the decommissioning and rehabilitation of borrow pits.	Construction Contractor	During establishment, borrow and closure	As per Work Instruction requirements
5.11.2.6	Borrow pit development and closure	No borrow pit shall be used as a waste disposal site for domestic or hazardous waste, either temporary or permanent. Building rubble and solid cement may be disposed of in borrow pits in accordance with the requirements of the CTT Framework Decommissioning and Rehabilitation Plan	Construction Contractor Managing Contractor	Closure of borrow pit	As per approved Method Statement

5.11.3 Road Construction

Ref.	Activity	Requirements / specifications	Responsibility	Scheduling	Performance indicator(s) or verification
5.11.3.1	Road drainage and erosion control	The Construction Contractor shall take measures that will prevent erosion along unsurfaced roads during construction.	Construction Contractor	Ongoing	As per Section 5.5.4
5.11.3.2	Reinstatement and rehabilitation	Re-instatement and rehabilitation shall be in accordance with the specifications in previous subsections.	Construction Contractor	Post construction.	As per Section 5.5.4
5.11.3.3	New road construction	No new road construction will take place without the approval of the Managing Contractor. Any new road construction will require a site specific ESMP and approval and implementation of a site-specific RAP/ARAP/LRP, if required.	Construction Contractor Managing Contractor	Ongoing	As per Section 5.5.4

5.11.4 Environmental and Social Management Plan Development and Budget Estimates

At this stage of the CTT project, a full suite of management plans and procedures have not yet been developed. The core management plans, some of which have been developed as frameworks will still need to be expanded on once the final CTT project technology is selected as well as final selection of routes, beach landing site, barge navigation route and anchorage point. The implementation of these management plans, in conjunction with the c-ESMP will be the responsibility of the EPC Contractor during construction phase.

This c-ESMP, as well as the management plans and framework plans completed to date, will form part of the construction tender documents to be published in order to ensure that the activities required to be placed under the responsibility of the EPC Contractor will be accurately costed as part of their proposals. The c-ESMP for each contractor will include a budget to be approved by CTT with World Bank N/O. The full Environmental and Social Action Plan (ESAP) is an annex to the ESIA.

The following table provides a preliminary ESMP budget estimate, based on the main costs for implementation, including all remaining plans and procedures that need to be developed. It should be noted that resettlement costs are not included in the following table. A resettlement budget estimate is provided in the RPF.

Table 5: ESMP budgets

Item / Action	Timing	Budget	Comment
Existing Plans / Frameworks			
ESIA for CTT and 25 km T-line	Complete	0	
Construction ESMP (c-ESMP) draft for bidding documents	Complete	0	
Draft Operations ESMPs	Complete	0	
Draft Decommissioning/Rehabilitation ESMPs	Complete	0	
Resettlement Policy Framework	Complete	0	
New Plans / Procedures / Items to be developed			
Contractor Local Procurement Plan for Goods and Services, as part of EPC contract.	Prior to EPC contract signature	$20,000	
Project Stakeholder Engagement Plan (for construction, operations, and decommissioning phases). *GRM and linkages to resettlement committees*	Prior to EPC contract signature	$100,000	
Project Human Resources Manual *Including: (i) HR Policy, (ii) project specific T&C's, (iii) Code of Conduct covering community health & safety, (iv) employment contract requirements, (v) applicability to all contractors and sub-contractors.*	Prior to EPC contract signature	$25,000	

Item / Action	Timing	Budget	Comment
Detailed RAP/RAIP/LRP approved for each affected group (land holders, roadside vendors, Tourism operators, fishermen and communities)	60 days following financial close; prior to construction	$100,000	
Final Project ESMS	60 days following financial close; prior to construction	$100,000	
Final E&S Management Plans	60 days following financial close; prior to construction	$200,000	
SEA/GBV Prevention and Response Action Plan	60 days following financial close; prior to construction	$30,000	
Final operations ESMPs and Decommissioning and Rehabilitation Plan	60 days after commercial operations date	$50,000	
Ongoing monitoring as required under all management plans	Construction and Operations Phase, as per frequencies discussed in ESAP	$300,000	
Environmental studies updated for the final preference of anchorage point, barge route and beach landing site	[Prior to earlier of approval of the guarantee or EPC signature] (to be confirmed) *(identification of alternative anchorage sites endeavoured to be complete by approval of guarantee)*	$100,000	

6.0 PERFORMANCE ASSESSMENT, CORRECTIVE ACTION, MANAGEMENT REVIEW AND AUDIT

The assessment of performance and provision for corrective actions has three key aims:

- Confirmation of compliance with the requirements as set out in the c-ESMP and RPF, i.e. Construction Contractor (and CTT) performance measured against the c-ESMP;
- Measurement of environmental and social performance (degree of success of the c-ESMP specifications in managing social and environmental impacts); and
- Ensuring that any deficiencies in the Contractor's or project's performance or the c-ESMP itself are identified and remedied.

These aims shall be met by monitoring of performance as follows:

- Ongoing monitoring / inspections undertaken by full time site staff (the ESO(s) and CLO(s) as part of the Managing Contractor's team);
- Senior staff review (the CTT Environmental and Social Coordinator);
- Review by independent consultants (where considered necessary by the Managing Contractor or CTT Environmental and Social Coordinator);
- Auditing by independent consultants; and
- Corrective action by the Construction Contractor or CTT shall ensure that any identified problem areas identified by the Managing Contractor's team, CTT or the independent auditor are effectively addressed. Specifications for monitoring, review and auditing are provided in the sections below.

6.1 Environmental and Social Monitoring Strategy

A monitoring strategy must be defined to ensure that the effectiveness of mitigation measures can be tracked and corrective action (see Table 6) taken as necessary. Monitoring is not only intended to verify the contractor's compliance with the c-ESMP but also to assess the effectiveness of environmental management, independently of whether the specifications in the c-ESMP have been complied with.

Table 6 defines, in broad terms, the monitoring requirements necessary during the construction phase of a project. Monitoring is undertaken by the Managing Contractor's team, with assistance where necessary, from the CTT Environmental and Social Coordinator and from Specialist Consultants. Much of the monitoring in this kind of construction contract involves the ESO or CLO being present when potentially significant construction activities are taking place, being observant, and checking that the Construction Contractor is not materially deviating from the requirements set out in the c-ESMP.

There are some specific metrics that define performance and are based on actual quantitative measurements (dust and noise are examples), but much of the monitoring is simply careful observation to check that the Construction Contractor is meeting the obligations set out in the c-ESMP. Even in the case of noise and dust, it is not always necessary to measure performance against the quantifiable standards, and this judgement must be made at the time by the ESO and the EC, depending on the circumstances. The performance standards often provide an indirect measure of effectiveness – for example, the monitoring of the Contractor's compliance with local employment requirements and the communication of these requirements widely is an indirect measure of the control of in-migration.

Non-hazardous and hazardous waste, and wastewater monitoring, are included in the CTT Waste Management Plan.

It is the responsibility of the Contractor to ensure that adequate monitoring is undertaken to demonstrate compliance with the requirements of the ESMP and RPF. In some cases, performance indicators have been indicated in the ESMP and RPF standard and thus additional monitoring may be required in addition to that presented in the table. It should be noted that there are several additional plans that are currently framework documents that will need to be finalised prior to construction. The monitoring requirements outlined below will therefore need to be updated as required upon finalisation of the abovementioned plans, as well as additional parameters and monitoring criteria added for plans that still require further development (such as, but not limited to SEA/GBV action plan, detailed IMP, CHSSP and RPF etc).

Table 6: Monitoring requirements

Parameters / Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility
Community Nuisance (Dust)	To be based on the location of sensitive receptors in relation to construction activities. ESO/CLO to prioritise locations in which monitoring is required	Daily observation at key locations where dust is being generated near sensitive receptors Passive sampling when specified by the ESO /CLO in cases where dust impact is in question either due to visible evidence of public complaint	**Observation** ESO to monitor and log dust incidents where dust control is ineffective or only partially effective in sensitive areas. Log to include time of day, period over which incident occurs, and apparent severity (low, medium, high). **Community Concerns** Number of community complaints recorded in the Compliments and Complaints register or made directly to the CLO **Quantitative Monitoring** PM_{10} (daily): 50 ug/m^3 TSP (daily): 150 ug/m^3 PM_{10} (annual): 20 ug/m^3 Fallout Dust: 600 mg/m^2 (measured over 30 days)	Monthly ESO/CLO progress reports	ESO/CLO
Community Nuisance (Noise)	To be based on the location of sensitive receptors in relation to construction activities. ESO/CLO to prioritise	Daily observation at key locations where noise is being generated near sensitive receptors Noise monitoring using an integrating noise meter when	**Observation** ESO to monitor and log noise incidents where noise control is ineffective or only partially effective in sensitive areas. Log to include time of day, period over which incident occurs, and apparent severity (low, medium, high). **Community Concerns**	Monthly ESO/CLO progress reports	ESO/CLO

Parameters / Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility
	locations in which monitoring is required	specified by the ESO/CLO when there is clear evidence of community nuisance.	Number of community complaints recorded in the Compliments and Complaints register or made directly to the CLO **Quantitative Monitoring** Daytime LAeq: 55 dBA		
Population influx and social pathologies	Camp sites, work sites	Ongoing watching brief Community feedback	Compliance with PLA employment requirements No ad hoc employment at the work sites or camp sites Adherence to closed camp, alcohol-free camp policy Evidence of implementation of communicable disease programmes Compliments and Complaints Register	Construction Contractor Communications Plan ESO/CLO progress reports	CLO/ESO Construction Contractor
Communicable Diseases	Non-specific	Ongoing watching brief	CTT-approved STI Management Plan Number and nature of initiatives as per the plan CTT-approved Malaria Management Plan Record of actions taken in accordance with the Malaria Management Plan Record of STI and malaria incidents recorded among Contractor staff Record of induction training and tool box talks	STD Management Plan Malaria Management Plan ESO/CLO monthly reports Malaria / STD incidence reports	ESO/CLO Construction Contractor
Traffic and Pedestrian Safety	Principally areas where households and construction teams interact	Ongoing watching brief	Vehicle accident records Pedestrian accident records Near misses Compliance with speed limits Advanced driver training for Contractor heavy vehicle staff Community safety references in induction briefings and	Accident / incident reports ESO/CLO progress reports	ESO/CLO Construction Contractor

Parameters / Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility
			ongoing toolbox talks Safety briefings of communities Compliments and Complaints Register		
Water Use Management	Community boreholes within 1 km of project boreholes Surface water abstraction sites	Ongoing	Records of groundwater use License for use of water in terms of 43/2007 and Decree 18/2012 Records of monitoring of impact on community water supply when Project supply closer than 1 km to community borehole Records of corrective action, where necessary Record of authorisation of use of surface water	Record of community borehole monitoring Groundwater abstraction report Surface water abstraction report ESO monthly report	Construction Contractor ESO
Vehicle and Materials Management	Camp sites, work sites	Ongoing watching brief	Records of inspection and maintenance of vehicles and equipment Approved method statement for handling of hazardous materials on site Compliance with requirements of approved method statement Inventory of hazardous materials and MSDS's Documentation available at specified locations Documentation confirming PCB and CFC free equipment Protection of fuel storage and camp generators as per requirement Availability of spill / drip clean-up materials at specified locations Availability of sheeting / drip trays in all key vehicles Incident and corrective action records Provision of appropriate PPE to employees	ESO progress reports Logistics Superintendent progress reports SHE advisor progress reports Camp manager progress reports	Construction Contractor

Parameters / Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility
			Records of induction training and tool box talks Records of bio-remediation		
Biodiversity – general and bush clearing	Project footprint and surrounding areas	Ongoing watching brief	Induction and toolbox talks about wild animal and plant protection Record of training of dozer operators to minimise Project footprint Record of training vehicle operators to remain within the approved Project footprint Records of dangerous animal removal from work sites and camps Records of communication with IUCN regarding reptile identification Absence of evidence of hunting or animal harassment Absence of evidence of unauthorised vehicle access outsider of the approved Project footprint Records of ESOs accompanying surveyors and dozer operators during bush clearing and salvaging of threatened species or relocation of infrastructure to avoid local areas of high biodiversity Footprint compliance with c-ESMP buffer zones and access restrictions	ESO progress reports	ESO
Biodiversity – alien invasive species	Project footprint and surrounds	Ongoing watching brief	Records of wash-down of site vehicles and equipment prior to use on site to remove alien weeds Production of illustrated alien invasive species booklet Photographic record and GPS locations of alien infestation in Project footprint area	Records of vehicle wash-down Records of alien plant identification and removal	ESO

Parameters / Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility
			Records of removal strategy	ESO monthly report	
Biodiversity – rehabilitation management	Project footprint	Ongoing watching brief	Record of induction and toolbox talks for dozer operators Record of training of dozer operators regarding topsoil removal Absence of contamination of topsoil with other material Evidence of reinstatement as per rehabilitation requirements of the specification	Photographic record pre-bush clearing ESO monthly report	ECO/ESO
Biodiversity – Marine & Coastal Habitat and species	Beach landing sites, barge routes and anchorage/transhipment site	Monthly water quality monitoring and visual inspections	Monitoring records and no adverse change in water quality. No marine fauna injuries or fatalities.	Specialist report and data analysis on water quality. MMO records of marine fauna interactions or observations	ESO MMO Specialist
Cultural Heritage	Project footprint and surrounding area	Ongoing watching brief	Records of training of key personnel to identify cultural / archaeological artefacts Record of communication with communities to verify location of sacred sites when construction is within 100 m of a known cultural heritage site Compliments and Complaints Register Compliance with Chance Find Procedure and subsequent recommendations by specialist where artefacts are found	Specialist Report (if significant artefacts found) ESO/CLO monthly report	ESO/CLO Specialist archaeologist
Employment	Project Area	Ongoing watching brief	Signed Project Labour Agreement (PLA) Evidence of maximising labour use in preference to machinery, where practical	Project Labour Agreement Records of employment	Construction Contractor CTT Local

Parameters / Activities to be monitored	Monitoring location	Frequency of monitoring	Performance indicator/threshold value	Reporting	Responsibility
			Compliance with the Community Liaison Forum procedure for selection and vetting of unskilled personnel Compliance with the PLA Records of communication initiatives to improve understanding of Project-affected communities about how to apply for a job Percentage of unskilled workers from Project-affected communities Evidence of vetting semi-skilled and skilled workers according to the 'spiral' principle Percentage of women disabled, or otherwise disadvantaged people employed Provision and briefing of personnel about a grievance procedure Workers understanding and use of the Grievance Procedure Frequency of complaints in the Compliments and Complaints Register rand the Grievance Procedure	Grievance Procedure CTT Local Procurement Officer monthly report	Procurement Officer
Local Procurement	Project Area	Ongoing watching brief	Implementation of CTT Local content plan/procedure Local procurement records in compliance with approved Local Content Plan, developed in accordance with the CTT procedure Local content spends in relation to total spend	Construction Contractor Local Content Plan CTT Local Procurement Officer monthly report	Construction Contractor CTT Local Procurement Officer

6.2 Inspections and Reporting

6.2.1 Monthly Reporting

The ESO and CLO shall be full time appointments for the CTT project as it requires MITADER authorisation, and shall produce a monthly compliance monitoring report, which covers all aspects of compliance with the specification in this c-ESMP. The content of the report shall include, but not be limited to:

- Main site activities during the month
- Community nuisance (dust, noise)
- Community health and safety (and investigations of accidents and near-misses)
- Traffic and pedestrian safety
- Marine and coastal ecology
- Hazardous waste management
- Non-hazardous waste management
- Spills and hazardous product management
- Wastewater management
- Cultural heritage
- Biodiversity
- Bush clearing and topsoil stockpiling
- Rehabilitation
- Control of alien invasive plants
- Erosion and sedimentation
- Communication with stakeholders
- Compliments and complaints
- Trends in performance
- Corrective actions / Conformance Certificate.
- The format of the report may be modified with the agreement of the CTT Environmental Coordinator and Public Affairs Coordinator.

6.2.2 Corrective and Preventive Action

The need for corrective action shall arise from material deviations from:

- A predetermined baseline or limit (as detected by monitoring); or
- General inspections based on ESMP requirements.

The Managing Contractor shall establish an incident and non-conformance reporting procedure which shall be implemented prior to the initiation of any works. The procedure shall set out a structure for the proper recording of incidents / non-conformances and shall determine the necessary reporting channels.

Incident recording shall include a brief description of the non-conformance with the contract specification, the date it was first logged, the reason for the non-conformance, the responsible party, the result (consequence), the corrective action taken and any necessary follow up required. Repeated non-compliances in respect of the same issue shall be highlighted

Corrective actions may include:

- the implementation of a specific action to remedy an identified non-conformance; or
- a recommended change to the targets or objectives set in the ESMP[2]. In this case, following discussion and agreement with CTT, the proposed change shall be brought about in the c-ESMP, which shall be submitted to Government as a part of CTT six monthly reporting cycle (refer to Section 6.2.4)

Should a Government Authority audit find that construction activities are causing unacceptable environmental damage, the Managing Contractor shall immediately consult with CTT and agree, in consultation with the Government, the remedial measures to be taken. Such agreed measures shall be implemented as quickly as possible to prevent further damage and to repair any damage that may have occurred.

6.2.3 Environmental Committee Meetings and Reporting

The Managing Contractor shall establish an environmental and social committee that shall include as a minimum the ESO, the CTT ESC, a member of the Community Liaison Team and the Contractor's environmental representative. This committee shall meet on at least a fortnightly basis to review environmental and social performance, including incidents/non-conformances reported, corrective actions implemented, monitoring results and ESMP and RPF compliance (of all supporting plans). The meeting shall be documented.

6.2.4 Six-Monthly Report

The CTT Environmental Coordinator shall prepare a 6-monthly report for submission to CTT management and MITADER. The six-monthly report shall summarise environmental and social performance over the 6-month period, and examine any trends and corrective actions taken to comply with the c-ESMP, and.

The report shall:

- Evaluate environmental and social performance by reviewing monitoring results;
- Consider trends over the period as an indication of improving or deteriorating performance
- Identify any critical areas of performance that requires immediate improvement
- Evaluate changing circumstances and lessons learned that may need to influence and be reflected in the c-ESMP.
- Set new objectives or specifications in the c-ESMP, as appropriate;

6.2.5 Independent Audits

An independent auditor shall prepare the project audits. An audit procedure shall be developed by CTT to ensure that audits are sufficiently comprehensive, and comply with the requirements of Mozambican Decree 25/2011, the Regulation on the Environmental Audit Process. The audit procedure shall include (but not limited to) the following:

- Audit approach;

[2] *Modification to the ESMP may only be made by the CTT Environmental Co-ordinator. If the changes are major or are material changes as defined in CTT's license, an independent environmental specialist shall verify their applicability and the ESMP shall be submitted to MITADER*

- Scheduling;
- Reporting; and
- Responsibilities.

It is anticipated that there shall be the following audits for the CTT project during the construction phase, scheduled as follows:

- One audit every three (3) months during the first year of construction, thereafter;
- One audit twice a year until the end of the construction phase;
- a post-construction audit report based on a site visit, the review of monthly monitoring reports and discussion with the Contractor's environmental and social team, CTT's environmental and social team, community and PAP representatives and any other party whose views/opinions are considered relevant.
- a final audit report at the end of the construction contract and at the end of the maintenance period (one-year post contract sign-off), prior to the CTT's representative issuing a closure certificate for rehabilitation.

Auditing shall consider the results obtained from monitoring and inputs from PAPs and stakeholders to assess whether c-ESMP and RPF objectives and targets have been met, and whether there has been any material non-conformance with stipulated c-ESMP, RPF and legal and WBG policy requirements. The audit shall also assess whether ESMP and RPF implementation has been undertaken according to the planned staffing and administrative arrangements and that the ESMP and RPF themselves (and related plans and methods) are being appropriately updated. The audit shall confirm that any identified corrective action has been undertaken and assess the effectiveness of that action as a basis for recommendations for improving contractor performance and the effectiveness of the c-ESMP and RPF.

7.0 COMPETENCY, TRAINING AND AWARENESS CREATION

7.1 General Training Requirements

The Contractor shall ensure that training is provided to all employees about CTT's commitment to conduct the proposed activities in a manner that is respectful to local people, and which minimises impact on their lands, resources and the natural environment and social environment. Training shall take the form of, but not be limited to:

- Induction training;
- Use of educational posters; and
- Daily environmental and social discussion topics prior to the start of each shift (toolbox talks).

The Contractor shall provide the induction training material and key educational posters to the Engineer for approval prior to establishment on site. Ongoing toolbox talks (to include reinforcement of safe work procedures, code of conduct etc), and other educational posters shall be structured to meet specific needs, depending on the activity being undertaken. The Contractor shall maintain an updated list of all training sessions for review at the monthly meetings.

For induction training, the material shall include but not be limited to the following:

- CTT's corporate environmental, social, health and safety policies and applicable Mozambican environmental regulations, World Bank Group policies and guidelines;
- Avoidance of activity outside of the approved construction right of way;
- Traffic and pedestrian safety;

- Permitted communication and courteous behaviour in interactions with communities;
- Purchase of food and goods from hawkers, including prohibition of bulk fish or any bushmeat purchases;
- Management of STDs and malaria;
- Alcohol and drug policy;
- Code of Conduct in general and sanctions;
- SEA/GBV and sexual harassment policies, accountability framework and referral system;
- Minimising nuisance impacts in local communities;
- Minimising impacts on cultural heritage (including Chance Find procedure);
- Minimising impacts on natural heritage (prohibition of hunting, harassing animals, plant collection, animal capture for pets);
- Safe relocation of snakes or other potentially dangerous animals;
- Handling potentially hazardous and polluting substances;
- Use of sanitary facilities on site;
- Dealing with pollution spills;
- Littering, especially with plastics or other non-biodegradable wastes;
- Firefighting procedures;
- Procedure for emergency response; and
- Reporting of incidents.

Toolbox talks shall be structured to provide more detail around the specific tasks and behaviours that are the responsibility of the construction crew. Contractors and CTT shall make financial provision for unforeseen potential impacts that may require specific mitigation / management measures

7.2 Specialist training material

CTT shall prepare and provide to the Contractor the following field booklets for use by key members of staff and for dissemination to employees, as requested:

- ‘Encountering Wild Animals’: the booklet shall contain easy to understand, fully illustrated information about wild animals that could be encountered, whether they are dangerous, and the necessary actions to be taken in the event that they are found.
- ‘Managing Alien Invasive Plant Species’: The booklet is to include all alien plant species listed in the c-ESMP, with clear illustrations and recommended methods of eradication.
- ‘Good Relationships with Communities’. The booklet is to provide all personnel with basic rules of courteous communication with community members when encountered in the field as well as good behaviour in general with respect to the community including aspects related to prevention of SEA/GBV..

7.3 Handling of potentially dangerous snakes and other animals

The Contractor is to train selected members of staff in safe methods of handling snakes and other potentially dangerous animals. Sufficient capacity shall be developed to ensure that there is always a trained member of

staff on site in the event that a snake needs to be safely removed from a work site or camp. The necessary snake handling equipment is to be provided to the employees responsible for removing snakes. All animal relocations are to be photographed, logged and reported at the monthly meetings. All snakes and other slow-moving wildlife (such as tortoises) shall be safely released in suitable habitat away from project work sites.

In cases where reptiles that are captured could be rare (including snakes, skinks, lizards) they should be photographed and, if needed, temporarily kept in safe containment until they can be positively identified by a specialist.

8.0 EMERGENCY PREPAREDNESS AND RESPONSE

CTT shall develop an Emergency Preparedness and Response Plan for the CTT activities (the current Emergency Preparedness and Response Framework (EPRF) shall be expanded on). The purpose of the EPRF is to outline the minimum requirements about emergency management to ensure that the appropriate resources and plans are prepared and available for an effective response to mitigate, control and recover from incidents.

The detailed EPRP shall identify the potential for, and response to accidents and emergency situations in accordance with Mozambique law and recognised international standards. The plans shall also address measures to prevent such situations and to mitigate environmental impacts that may be associated with them (SHE Manager).

The emergency plans shall include the establishment of a network of communication between CTT, employees, contractors, the Sasol CPF emergency medical and security personnel, as well as available emergency services including police, health department, fire departments, community associations, specialist services etc. that may be available in the area.

The emergency plan(s) shall be tested on a regular basis through the use of drills and mock emergencies so as to identify and rectify any shortcomings (Production Manager and SHE Manager).

9.0 DOCUMENT CONTROL

The c-ESMP forms the basis for the management of environmental and social impacts on site, during the construction phase. Based on the results of future performance assessment and review processes, the c-ESMP may be modified as the project progresses. Modifications shall only be permitted by the CTT SHE Manager, who shall retain a single master copy of the c-ESMP on the company ESMS at the CTT plant site. All changes to the c-ESMP shall be tracked, including details of the change, date of the change and name of the reviewer. The CTT SHE Manager shall ensure that any modifications are communicated, explained to and discussed with all affected parties (the Contractor, CTT management and any directly affected party who requests this information), and shall be submitted to and approved by MITADER and receive non-objection from the World Bank.

CTT shall prepare a document control procedure / change management procedure which the Contractor shall comply with. This procedure shall define:

- Document distribution;
- Document retention; and
- Management of c-ESMP and RPF revisions.

The document control procedure shall also apply to the Incident and Non-Conformance Reporting described in Section 6.

Signature Page

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