

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

VOLUME I

SONGO CONVERTER SUBSTATION & POWER PLANT (REABSUL2) REHABILITATION AND REFURBISHMENT PROJECTS

EXECUTIVE SUMMARY



Prepared for:



Hidroelétrica de Cahora Bassa, S.A.

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1 Introduction

Hidroeléctrica de Cahora Bassa, SA (“HCB” or “Proponent”), a public limited company incorporated under Mozambican law, operates under a concession, the Cahora Bassa hydroelectric plant with the main purpose of producing, transporting, and marketing electricity.

HCB's mission is to operate the Cahora Bassa project with efficiency, to contribute to expanding use of the country's energy potential, competing in the domestic and regional markets, in a sustainable and socially responsible way, and its vision is to be an international reference company, providing a decisive impetus to development of the national and regional energy matrix.

The Cahora Bassa project, located in the Province of Tete (Mozambique), comprises the Dam, the Hydroelectric Power Station on the south bank of the Zambezi River and the Energy Conversion and Transport System.

With the aim of improving technical and operational reliability and prolonging the useful life of the operation, HCB intends to implement structuring projects for the rehabilitation and modernization of the Hydroelectric Power Station and the Songo Converter Substation.

The present Projects are part of CAPEX VITAL and concern the Songo Converter Substation (Brown field3) and Power Plant (Reabsul2) Rehabilitation and Refurbishment Projects

This assessment aims to document the positive and negative effects that projects may have on the environment and communities.

Contributions from communities, authorities at provincial, district, local levels and other interested organizations, through the expression of their concerns, suggestions or proposals, are essential for the development of the process and the fulfilment of its objectives.

2 Project Overview

2.1 Location

The Cahora Bassa reservoir is an artificial lake, located in the central province of Tete, Mozambique, in the middle course of the Zambezi River, between coordinates 15°29'S and 16°00'S (latitude) and 30°25'E and 32°44'E (longitude).

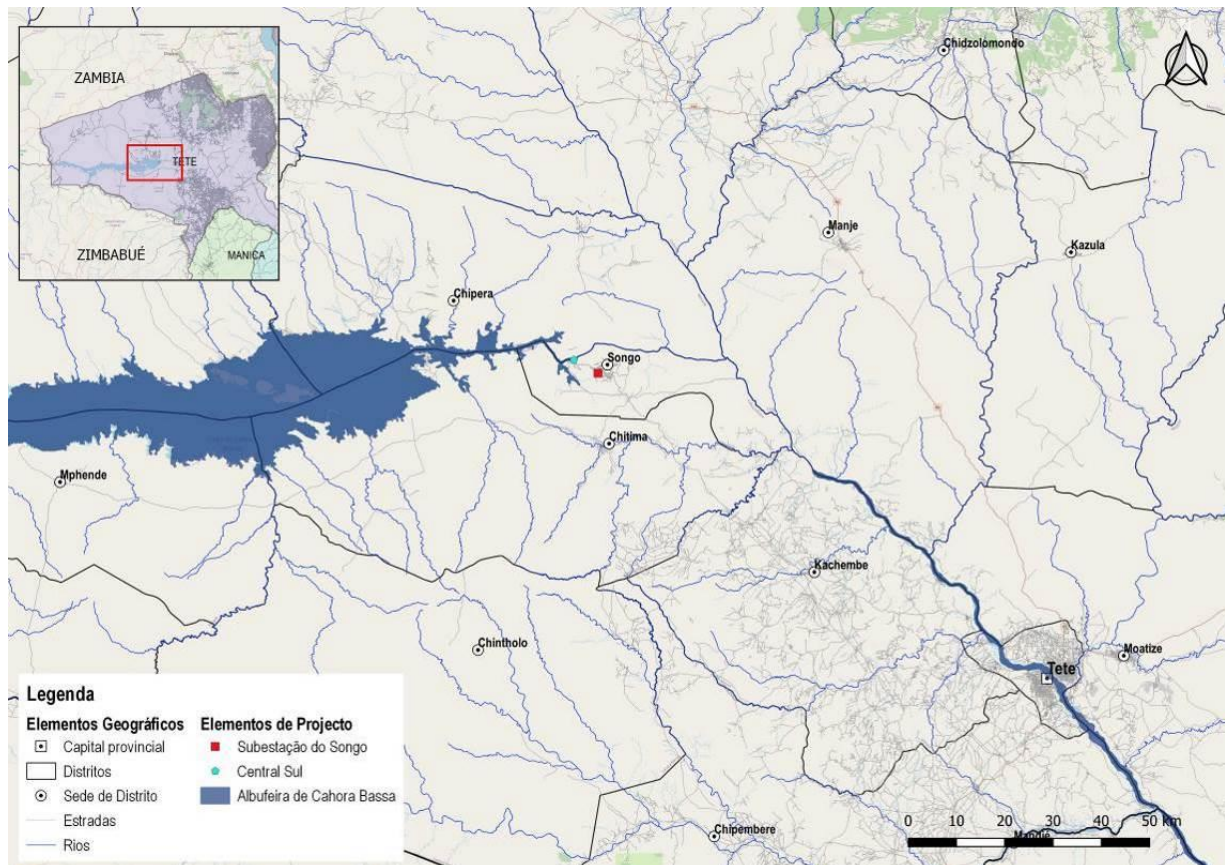


Figure 2-1- Project Location

This lake was formed as a result of the damming of the Zambezi in the Cahora Bassa waterfalls and has a maximum length of 270 km extending to Zumbo, on the Mozambique border with Zimbabwe and Zambia.

In the narrowest area, near the dam, it is less than 500 m long, but its maximum width is just over 30 km. The reservoir has an area of 2,900 km² at the maximum flood level, a maximum capacity of 65x10⁹ m³ and useful storage of 52x10⁹ m³.

The Songo Converter Substation is located west of the centre of the town of Songo and about 3 km south of the Zambezi River.

Central Sul is located on the south side of the dam wall.

2.2 Project Justification and Objectives

The project for the rehabilitation and modernization of the Songo converter station, which the tenderer intends to implement, consists, as mentioned above, of replacing and refurbishing equipment and systems installed around 40 years ago, with a view to increasing the reliability, availability and sustainability of the maintenance and prolong the operating life of the converter SE.

However, to guarantee the continuity of energy supply to customers during the period of execution of the rehabilitation project, it is necessary to implement a hybrid system using the existing converter transformers as the main ones and the construction of a new pole and a new isolated 220kV SE. in the "North extension area", an area previously reserved for SE expansion.

The main objective of the rehabilitation of the SE is to improve the performance of the converter station in the medium and long term to improve reliability, availability and guarantee the extension of its useful life to more than 40 years.

The main objective of the rehabilitation and modernization of the Hydroelectric Power Station is related to the need to improve the reliability, availability, and maintenance capacity (RAM) to guarantee the extension of the useful life of the operation of the main assets. It also provides for the installation of instrumentation to facilitate performance-based maintenance, reducing operating costs.

2.3 Songo converter SE

The Songo Substation plays an important role in the supply of electricity, supplying the Central and Northern areas in Mozambique through high voltage alternating current (HVAC) lines, called Tete 1 and Tete 2, which supply the Matambo Substation. In the southern region, it supplies Zimbabwe through an HVAC line and South Africa through 2 high voltage direct current (HVDC) lines, whose conversion system is composed of 8 converter bridges made up of transformers and converter valves.

The work to be carried out as part of this project include the design, manufacture, and testing of equipment in the factory, transport, installation of HVDC poles and a Gas Insulated Substation (GIS), as well as the removal of old equipment.

The project involves construction of a new pole and a new 220kV SS in the "Northern extension area", and another pole in the area where one of the existing poles is currently located.

- Implementation of two complete HVDC poles with all the systems and equipment necessary for a fully functional bipolar HVDC system;
- Replacement of valves, valve cooling system and respective control system;
- Replacement of the grid power and stability control system (Grid Master Power Controller - GMPC) and the teletransmission systems;
- Replacement of 220 kV AC equipment control and protection systems;

- Replacement of auxiliary service transformers 2 x 220kV / 20kV, 20 MVA;
- Reconfiguration of the 220kV AC bus providing greater flexibility for O&M;
- Replacement of all circuit breakers and isolators in the SS park;
- Replacement of a 3.6 MVA emergency Diesel generator set;
- Replacement of AC 1 and 2 Filter Banks containing PCBs;
- Replacement of the HVDC earth line electrodes.

2.4 Power Plant

The main objective of the rehabilitation and modernization of the Hydro Power Plant is related to the need to improve the reliability, availability and maintainability (RAM) to guarantee the extension of the useful life of the operation of the main assets. It also provides for the installation of instrumentation to facilitate performance-based maintenance, reducing operating costs.

The works to be carried out under this project include the design and manufacture of all necessary equipment and provision of necessary services, including disassembly and assembly, removal of obsolete equipment, assembly, cleaning, painting, testing and commissioning of the generator sets, including equipment auxiliaries, as well as the supply of lifting tools, essential spare parts and operating manuals.

The project will mainly focus on the following equipment:

- Stator (replacement of winding and magnetic circuit);
- Rotor (replacement of poles and rehabilitation of the Magnetic Circuit);
- Turbine rehabilitation;
- Replacement of 220 kV oil insulated cables;
- Increase in the efficiency of the main alternator cooling system;
- Reinforcement of the stator foundation support;
- Replacement of the Voltage Regulation System;
- Rehabilitation of auxiliary alternators;
- Rehabilitation of the speed governor system;
- System of control and protection systems;
- Replacement and rehabilitation of auxiliary systems.

2.5 Main Construction Activities

This phase will involve preliminary preparatory work such as excavation, dismantling, removal and disposal of all existing equipment, structures, foundations and any other redundant installations that obstruct the works and cannot be reused or modified, deforestation (if necessary) and removal of surface soil of the substation extension area, the establishment of the intervention area, the relocation of any buried accessories/equipment or other buried facilities, as well as the relocation of any primary equipment and structures to a suitable location within the SE perimeter in order to accommodate the new equipment, if necessary and also the fence to isolate the intervention areas.

Subsequently, construction activities will begin. For carrying out the construction activities of the project, mainly conventional technologies will be used. Most construction material will most likely be sourced from Mozambique and, where possible, rental of necessary equipment will also be done within the country.

The rehabilitation also includes the supply and installation of equipment, the installation of all earth connections for the new system, the installation of protection and control cables and interface cables with the existing building, as well as the replacement of the earth electrode in Chitima . .

Following construction activities, commissioning with initial start-up will take place to ensure installed systems and components are assembled, tested and in operation in accordance with operational requirements.

The Contractor shall be entirely responsible for all accommodation of its personnel and for the provision of all other accommodation-related facilities.

If the Contractor wishes to build a camp to accommodate the personnel, it must be in the area indicated by the HCB in Songo village.

2.6 Operational Activities

Activities during the operational phase will be those currently carried out in the SS, namely, operation, maintenance (preventive and corrective) activities including:

- **General maintenance:** equipment functionality, condition of oils and lubricants below those produced, performance of transformers, quality and quantity of gas insulation, etc.;
- **Replacement of oils and lubricants:** during SS operation and maintenance it is expected that limited quantities of oils and lubricants will be generated, and that the oils can be filtered and reused;
- **Replacement of transformers:** due to increased electricity demand it may be necessary to change the transformer. The existing transformer can be reused in another SS with lower demand for electricity;
- **Replacement of spare parts:** due to the operation of the equipment, parts will need to be replaced.

- **Waste production:** includes generated and rejected domestic waste (rejected cables and spare parts).

2.7 Equipment and Raw Material

Building materials to be used include gravel, sand, soil, cement, water, blocks, lumber, steel, tiles, glass and paint.

During the construction phase, fuel and lubricants will be used to supply the various equipment to be used, such as: excavator, motor graders, compactor cylinder, tanker truck, mixing truck, 4 x 4 vans, generator, among others.

2.8 Work Force

For the Power Plant, the amount of labour that will be involved in the construction has not yet been defined. However, for the SE rehabilitation project, it is expected to hire around 365 national workers and 205 foreign workers in the construction phase. Manpower needs will include specialized engineering personnel, technical support personnel as well as non-specialized personnel, with provision for local hiring of non-specialized labour.

2.9 Origin and Quantity of Chemicals Used

It is planned to use lubricants, fuel (diesel) for construction vehicles and other machinery. The supply of fuels (diesel) will be carried out locally.

2.10 Investment

The value of the investment in the SE is estimated at 300 million euros and in the Central Sul at 207 million euros.

2.11 Schedule

The construction and commissioning phase of both projects is expected to last 3 years (2023, 2024 and 2025), with a further 2 years of technical support (2026 and 2027).

These projects are expected to increase the useful life of the Songo converter substation by another 40 years and of the South Central by another 25 years, operating with minimal maintenance.

3 Brief description of Environmental and Social baseline

Climate

On a regional scale, the climate of the Songo region is predominantly of the “Dry Tropical with Dry Winter” type, locally modified by altitude. Characterized by the occurrence of two distinct seasons: a hot and rainy season that runs from October to March and another colder and drier season that runs from April to September. Maximum temperatures occur between October and January.

Air Quality and Sound Environment

In the Songo region there are some activities that contribute to the anthropomorphic alteration of the air quality. At a local level, atmospheric emissions related to the circulation of road vehicles can be expected, and other possible sources of emission of atmospheric pollutants may be associated with agricultural practices, where woody materials are burned as well as the dispersion of dust due to erosion phenomena. wind.

On a local scale, another possible source of emission could correspond to the dispersion of particles through wind erosion phenomena. This phenomenon occurs mainly during the dry season in soils that are not covered or with little vegetation cover.

The burning of firewood and charcoal for domestic uses, such as cooking, also causes the release and emission of polluting gases and fine particles such as PM10 and PM2.5.

The ambient noise of the area of interest is, in general terms, determined by natural noise sources (such as rain, wind, insects, etc.), by low-intensity road traffic and by the normal human activities of the communities.

As part of the identification of areas with sensitivity to noise, a survey was carried out on the sensitive receptors existing in the surroundings of the SE. The closest noise-sensitive receivers are located at distances between 140 and 340 meters from the SE limits.

In the area surrounding the SE, noise sensitive receptors fundamentally include population agglomerations, no social infrastructure associated with these residential areas, such as schools, health centers and places of worship such as churches or mosques, were identified.

The SE area has a fundamentally peri-urban character with some level of acoustic disturbance generated by the communities that live in the residential areas as well as by the traffic that circulates along the road structures.

The area surrounding the South Power Station has a fundamentally natural character where high levels of acoustic disturbance of anthropogenic origin are not expected.

The current acoustic environment in the intervention area and its surroundings is little disturbed, in accordance with the current land use that characterizes the Project area, and with the inexistence of sources of significant noise.

Geology

The geomorphology of the study area is strongly conditioned by the rift structures that affect East Africa and penetrate the Mozambique Sedimentary Basin, in which the Zambezi graben stands out, which conditions the implantation and flow direction of the Zambezi River.

The reservoir of the Cahora Bassa dam is a fundamental element in the region and is located to the west of the study area.

At the local level, the geomorphology, in addition to the tectonic control in the macrostructures, also presents evidence of lithological control, very well evidenced on the ground by the presence of the typical *granite inselbergs* that stand out in the landscape.

In Songo and, consequently, in the area where the Project infrastructures are located, in geological and petrographic terms, the so-called Brown Granite (P2CT) occurs in the area of the SE expansion and in the South Central and the Matinde Formation (PeT) of the Lower Karoo in the electrode area.

Soils

In the Songo region, where the SE of Songo and Central Sul are located, the highlights are the gray brown clayey soils in the SE area, the deep soils derived from limestone rock in the electrode area and the lithic soils derived from rocks precambrian acids in the South Central area.

Hydrology

The hydrographic basin of the SE expansion area has a general orientation WNW-ESSE, which includes Vila de Songo, where the main water line flows in the same direction to the Zambezi River, north of the dam. The basin has an elongated shape, thin in its central sector and drains an area of 24.5 km². The main water line has a channel of about 8km.

The catchment area of the electrode area has a general NW-SE orientation, where the main waterline presents an arcuate flow direction, concave to the NE, with the project area being close to its effluvium. The basin has a rounded shape and drains an area of 14.7 km². The main water line has a channel of about 7 km. The drainage pattern is asymmetrical, with most tributaries on the left bank of the main stream.

The position of the Power Station and the area intended for the Project's support yard in the context of the surrounding surface hydrology. As can be seen, the area is located on the right bank of the Zambezi River, very close to the Cahora Bassa dam area, where there are no tributary water lines to the river, only small drainage channels after the rainy season.

Biological Environment

In Tete province, the main existing vegetation types are made up of Mopane forests, Acacia forests, undifferentiated forests, wooded grasslands and riverine vegetation.

However, in the study area, naturalized vegetation is observed, although with some signs of anthropization. The main types of land use and land cover occurring in the Projects' areas of influence are:

- Deciduous shrubs;
- prairies;
- Agriculture;
- Natural bodies of water.

The fauna in Tete province was, in the recent past, abundant and diverse, and large animals such as rhinos, antelopes, zebras, rhinos and lions. Of the large animals, only the Nile crocodile and the hippopotamus are still frequently observed, while the African elephant is sporadically recorded. However, none of this large fauna exists in the immediate vicinity of the project areas.

Currently impoverished, the fauna is in a large part of the province represented mainly by medium and small animals such as monkeys, goats, antelopes, mongooses, squirrels and small rodents adapted to anthropized areas.

In the areas under study, no areas considered ecologically sensitive were identified.

Socioeconomic Environment

Both projects are located in the district of Cahora Bassa, Administrative Post of Songo, locality of Songo, the SE is located next to the community of Matumbuliro.

The district of Cahora Bassa is located in the Center-North of the province of Tete and is limited to the north by the District of Maravia, to the west by the District of Magoé, to the south by Zimbabwe, to the east by the District of Changara and to the northeast by the District of from Chiuta.

According to provisional results from INE, in 2017 the **population** of Tete Province is estimated at 551,828 population. In a decade (2007-2017) the province presented an average annual growth rate of 5.2%, against 2.7% registered at the national level.

At the district level, the District of Cahora Bassa had an average annual growth rate of 4.9%. The City of Tete presented an average annual growth rate of 3.3%.

The Administrative Post of Songo has a total of 48,910 inhabitants, of which 24,809 are women and 24,101 are men.

The village of Matumbuliro has a total of 2,562 inhabitants distributed in four units, and a total of 380 housing infrastructures.

In the district of Cahora Bassa there are several population groups of different **ethnicities**, such as the ChiNhungue, Sena and Chewa, among others of lesser expression. The dominant language is chiNhungue. Portuguese is the mother tongue of a very small percentage of the population (3.2%) in the province, but it is widely spoken (33.8%).

The dominant **religion** in Cahora Bassa is Catholic, practiced by 20% of the population followed by Evangelical religion and Zion/Zione practiced by 19% and 18% of the population. 32% say they have no religion.

Tete province is made up of several cultural ethnic characteristics, among them its typical dances, the Nhau and Kadaba, which portray the imploring spirits of former traditional guerrillas.

The population of the Province also practices Mafuwe, Nhanga, Tchintali, Tchiwere, N'handa, N'goma and N'cansuere, which are frequent dances in ceremonies for the reception of great figures, requests for events (rain) to the spirits and others.

An **archaeological survey was carried out** in the area under study with the collection of oral tradition and a visit to the Songo wall. No archaeological remains were detected at the Inspected sites.

Regarding the **illiteracy rate**, according to available data, 56.2% of the population over 15 years of age in Tete Province is illiterate. About 96% of educational establishments are used to teach the basic primary levels of 1st and 2nd grade, approximately 2.5% are dedicated to first cycle secondary education, with secondary education, second cycle and vocational education being allocated installations of less than 1% each.

There are about 22 teaching establishments in the Administrative Post of Songo, being 5 primary schools of the 1st grade (1st to 5th grade), 13 complete primary schools (1st to 7th grade), 1 secondary school, 1 technical school, 1 higher institute and 1 private school belonging to the company HCB.

It should be noted that for the current academic year, 15,437 students were enrolled at all educational establishments, of which 7,612 are girls. With regard to the teaching staff, the post has a total of 608 of which 307 are women. Some of these schools have faced some constraints with regard to computer equipment, laboratory, energy and water supply.

With regard to **health care**, in 2019, Tete Province had a total of 140 health units: 134 Health Centers: 2 District Hospitals; 3 Rural and General Hospitals and 1 Provincial Hospital. The ratio of Inhabitants per Health Unit in the Province of Tete is 1:20839 inhabitants and in the District of Moatize 1:16303 (the WHO recommendation is 1:10000 inhabitants).

The Administrative Post of Songo has 3 health units, 1 health center, 1 rural hospital and 1 private health center owned by the company HCB. A ratio of 12,227 inhabitants per health unit is estimated.

To access health care, the population of the neighboring areas travels to Vila do Songo, this route being done most of the time on foot, and taking about 1 hour. The main diseases that affect the community are malaria, diarrhea, cough, flu and high blood pressure.

As **for water supply**, the Songo administrative post has household connections and in addition there are a total of 31 water supply pumps. According to local authorities, the number of supply pumps is insufficient to meet the needs of the population.

With regard to **electricity**, not all of Vila do Songo is connected to the grid, but most have electricity connections in their homes. The remaining homes are waiting for the expansion of the service so that they can also make calls to their homes.

With regard to **building materials** in Vila do Songo we can find mostly buildings made of conventional material, although there are some in mixed material, that is, walls made of raw brick, sheet roofing and the floor of beaten earth.

Agriculture is the main **economic** activity in Tete Province. There are, however, some exceptions, in places where rainfall is low and erratic with frequent droughts, resulting in normally low crop productivity.

In the District of Cahora Bassa, agriculture is the main activity, considered as the basic unit of production, in which the family plays a key role in the practice of rainfed and irrigated agriculture (small low-cost irrigation systems) for self-consumption and commercialization. of surpluses. In general, each family has two machambas, one for domestic consumption only and the other to complement family consumption in crisis years, and for sale in surplus years. In this type of agriculture, cereals (corn, sorghum and millet) and other crops such as peanuts, watermelon, pigeon peas, cowpeas and vegetables predominate .

Of the 888 thousand hectares of surface area in the District of Cahora Bassa, the potential of arable land in this district is estimated at 400 thousand hectares.

Livestock **farming** in the District is essentially carried out by the family sector, intended for self-consumption and local sale.

In a similar way to agriculture, livestock in the district of Cahora Bassa is developed in a rudimentary way, with animals normally found in pens or grazing in the vicinity of houses. The existing infrastructures for this activity are granaries, poultry houses and rudimentary corrals made with local materials.

In the District of Cahora Bassa, livestock promotion has been weak, despite having good conditions, essentially reflected in good pasture areas.

Until 2010, Tete Province was characterized by the tobacco **industry** (the largest processing plant in the country is located in the city of Tete), pepper processing, beverage production, production of metal structures, furniture and small industrial units dedicated to the cereal milling, metalwork, bakeries and ceramics, as well as by the informal industry sector that was dedicated to the production of construction materials (bricks and stone)

Despite its rich fauna, flora and hot springs, **tourism** in Tete Province is still underdeveloped and is mainly associated with hunting.

The province has a community management system, the Tchuma-Tchato project , which promotes ecotourism and trophy hunting activities managed by the community itself. In terms of areas of historical and cultural interest, the province has several sites that reveal its strategic importance over time, since the Monomotapa Empire.

In Cahora Bassa, the tourist potential includes the use of the Cahora Bassa reservoir, which offers conditions for the development of tourism associated with water sports.

The administrative post of Songo has as **income generation activities** : commerce (formal and informal), subsistence agriculture, small and large livestock, formal employment in various sectors of the HCB company, seasonal employment (task workers), domestic work in residences of company employees and tourist activity.

Fishing is an activity that has been developed mostly along the reservoir in an artisanal and semi-industrial way .

For the practice of **artisanal fishing** , fishermen mostly use two fishing gears, drag and gill nets. Artisanal fishing is carried out every day during the day. The fish is sold in the domestic market while it is still fresh, the dried fish is exported to the Democratic Republic of Congo and a part goes to Angola and Tanzania; smoked fish is traded in Zambia.

Semi -**industrial fishing** is carried out using vessels, which vary from 7 to 9 meters, with a crew composed of 4 elements, who cast the net into the water and then use light to attract the fish.

There are 2 associations that practice semi-industrial fishing, having exclusive licenses for Capenta fishing. Semi-industrial fishing is carried out at night, on almost every day with the exception of full moon days as it interferes with the light used for fishing.

Capenta hake is intended for export to Zimbabwe, Zambia and the Democratic Republic of Congo.

With regard to **vulnerable groups** , extreme poverty and the HIV/AIDS epidemic affect mostly women and girls in the country, thus contributing to their precarious living conditions. Although access to social services has increased, gender and geographic inequalities persist in Tete Province.

In the District of Cahora Bassa, about 20% of single-parent households are headed by women (generally widows or single women over 50 years of age), therefore socially more vulnerable.

An indicator intrinsically related to gender issues and women's well-being concerns the illiteracy rate. In the District, the illiteracy rate is higher in the female population than in the male population. There is a lot of pressure on girls to drop out of school and dedicate themselves to the machamba or other domestic tasks.

4 Institutional and Legal Framework

4.1 Environmental Authorities

The **Land and Environment Ministry (MTA)** directs, plans and coordinates, controls and ensures the implementation of policies in the areas of administration and management of Land and Geomatics, Forests and Wildlife, Environment, Climate Change and Conservation Areas. About environmental management specifically, the MTA reviews environmental and social impact assessments, issues environmental licenses for project implementation, promotes public awareness of environmental issues and implements the territorial planning process. This ministry is also

responsible for issuing land titles and managing the land registry, licensing forest concessions and managing conservation areas.

There are several directorates and departments in the MTA organizational structure. Regarding regulation of energy sector issues, the main relevant institutions are:

- **National Environment Directorate (DINAB)** which deals with development of environmental policies, reviews documents associated with the ESIA process, and issues environmental licenses, etc;
- **Land and Environment Inspection (ITA)** which is responsible for inspections in accordance with MTA procedures;
- **National Agency for Environmental Quality Control (AQUA)** which carries out audits and monitoring, both at central and provincial levels, and is responsible for reviewing and approving independent audit reports prepared by proponents;
- **National Administration of Conservation Areas (ANAC)** which is administratively and financially autonomous and is responsible for the management and administration of protected areas (reserves and national parks). ANAC also oversees the conservation of biological biodiversity, landscapes and associated heritage within protected areas, through the national system for conservation areas.¹;
- The **National Council for Sustainable Development (CONDES)** was founded by Law No. 20/97, of 7 October, as a consultative body of the Council of Ministers, with the task of advising on matters related to the coordination and integration of environmental management principles in the Mozambiquan development process.

4.2 Legislative framework

The relevance and applicability of these legal diplomas to the Project are briefly outlined in **Table 4-1**. Note that a given legal diploma may be relevant to different matters (e.g., the Environment Law must be considered in different aspects, such as biodiversity conservation and waste management, as well as other aspects).

Table 4-1– Main environmental legislation

Legislation	Description	Relevance
ENVIRONMENTAL ASSESSMENT		
National Environmental Policy	Lays the foundation for all environmental legislation. According to Article 2.1, the main objective of this policy is to ensure sustainable development to maintain an acceptable balance between socio-economic development and environmental protection. To achieve this objective, the requirements of the policy must ensure include incorporation of environmental considerations in socio-economic planning, management of the country's natural resources and protection of ecosystems and essential ecological processes.	The Project will achieve the policy objectives by incorporating environmental considerations in the engineering design to minimize impacts on natural resources and ecosystems.

¹ Regarding biodiversity issues in conservation areas, DINAB is responsible for coordinating the National Biodiversity Action Plan and Strategy.

Legislation	Description	Relevance
Environmental Law	Defines the legal basis for sound use and management of the environment for the country's sustainable development. Environmental Law applies to all public and private activities that directly or indirectly affect the environment.	The Project will consider the principle of sustainable development defined by Environmental Law throughout its entire lifecycle.
Environmental Inspection Regulation	Regulates the supervision, control and verification of project compliance with national environmental protection standards.	During Project construction and operational phases, the MTA may carry out inspections to verify compliance with environmental legislation and the Environmental and Social Management Plan (ESMP). The Proponent must collaborate with and facilitate these inspections.
General Directive for Preparation of Environmental Impact Studies	Provides details on procedures for obtaining an environmental permit, as well as the format, general structure and content of the EIA report. It aims to standardize the procedures followed by various key participants in the AIA process.	The ESIA report was prepared in accordance with the specifications described in this Ministerial Diploma.
General Directive for the EIA PPP	Defines the basic principles, methodologies and procedures for the EIA PPP. It considers public participation to be an interactive process that begins at the design stage and continues throughout the life of the project.	The PPP report was prepared in accordance with the specifications described in this Ministerial Diploma.
Environmental Audit Process Regulation	Defines the environmental audit as an objective and documented instrument for management and systematic evaluation of the management and documentation system implemented to ensure protection of the environment. Its objective is to assess compliance of the operational and work processes with the environmental management plan, including the legal environmental requirements in force, approved for any given project.	During the Project lifetime, the Proponent will conduct independent annual environmental audits, without prejudice to any public environmental audits that may be requested under this decree.
Environmental Impact Assessment Process Regulation	Establishes the EIA process as one of the fundamental instruments for environmental management, aimed at mitigating negative impacts of public and private sector projects on the natural and socioeconomic environment, by means of environmental studies before project start. Defines the EIA process, necessary environmental studies, PPP, study review process, decision process on environmental feasibility and environmental license issue. It applies to all public and private activities with a direct or indirect influence on the environment.	This document was complied for the ESIA process in accordance with this regulation. An environmental license will be obtained from MTA, and issue of this license precedes any other license or authorization required for the Project.
ATMOSPHERIC EMISSIONS AND AIR QUALITY		
Environmental Law	Article 9 prohibits the discharge of any toxic substances into the atmosphere above legal limits. Emission standards are defined by the Environmental Quality and Effluent Emission Standards Regulation, approved by Decree No. 18/2004, of 2 June (see below).	The Project will comply with ambient air quality and atmospheric pollutant emission standards, so as not to cause damage to the environment.
Environmental and Effluent Emission Quality Standards Regulation	Establishes parameters for maintaining air quality parameters (Article 7), gaseous pollutant emission standards by industry type (Article 8), and gaseous pollutant emission standards from mobile sources (Article 9), including light and heavy vehicles.	
WATER RESOURCES AND WATER QUALITY		
Water Law	This law is based on the principle of public water usage, water management based on river basins and the user-pays and polluter-pays principle. It seeks to ensure ecological and environmental balance. The use of water requires either a concession (permanent or long-term uses) or a license (short-term uses).	If a project needs to capture water from natural water bodies (e.g., to produce concrete), it is necessary to obtain a license from the

Legislation	Description	Relevance
	Licenses are valid for renewable periods of 5 years, whilst concessions are valid for renewable periods of 50 years. Article 54 specifies that any activity with the potential to contaminate or degrade public waters, in particular the discharge of effluents, is subject to a special authorization to be issued by the Regional Water Administration and payment of a fee.	competent authority (Regional Water Administration). If a project needs to release effluents into water bodies (such as in encampments), a license must be obtained for this purpose.
Environmental and Effluent Emission Quality Standards Regulation	Determines that, when industrial effluents are discharged into the environment, the final discharged effluents must comply with the rules for discharges as established in Annex III of the Decree. Domestic effluent discharges must comply with the discharge regulations as set out in Annex IV.	The Project will respect the effluent emission limits established in this regulation, so as not to harm the environment.
POLLUTION AND WASTE MANAGEMENT		
Environmental Law	Prohibits the production and disposing of any toxic or pollutant substances in soil, subsoil, water or atmosphere, as well as prohibiting any activities that may accelerate erosion, desertification, deforestation or any other form of environmental degradation, in excess of the limits established by law (Article 9).	The Project includes measures to avoid pollution throughout its lifecycle. All projects comply with the requirements described in this regulation.
Urban Solid Waste Management Regulation	Establishes the legal framework for solid urban waste management. The fundamental objective is to establish rules for the production, collection and disposal of urban solid waste to minimize its negative impacts on health and the environment. Urban solid waste under the terms of this Decree is classified in accordance with the Mozambican Standard NM339 – Solid Waste – Classification. Waste management obligations are assigned to Municipal Councils and District Governments, in their respective areas of jurisdiction.	All projects will implement adequate waste management practices throughout their lifecycles. The Project will comply with the requirements described in this regulation.
Hazardous Waste Management Regulation	Establishes the legal framework for hazardous waste management. The fundamental objective is to establish rules for the production, collection and disposal of hazardous waste to minimize its negative impacts on health and the environment. Annex IX of this Decree presents waste classifications. The MTA is given powers to manage hazardous waste, through the licensing of management units. Only registered and licensed entities can collect and transport waste outside installation boundaries.	
LAND USE AND RESETTLEMENT RIGHTS		
National Land Policy	Establishes that the State must provide land for each family to build or own their home and is responsible for planning the use and physical occupation of land, although the private sector can participate in preparing plans.	The Project will comply with the principles of the policy, in accordance with the regulations defined in the laws they implement.
Land Law	Defines land use rights, including details on customary rights and procedures for the acquisition and utilization of land use rights (DUATs) by communities and individuals. This law recognizes and protects rights acquired through inheritance and occupation (customary rights and duties of good faith), except for legally defined reserves or areas where land has been legally transferred to another person or institution.	The Proponent owns the DUAT for the Project area. The DUAT acquisition process comply with Land Law requirements, considering pre-existing land rights of the community.
Land Law Regulation	Defines separate total protection zones for nature conservation and State protection, as well as partial protection zones where land use and benefit rights cannot be issued and where activities cannot be implemented without a license. Partial protection zones include a 50 m strip along lakes and rivers, a 100 m strip along the coastline and estuaries, 50 m along overhead, surface or underground ducts / cables for electricity, telecommunications, oil, gas and water, 30 m corridor surrounding primary roads and 15 m surrounding secondary and tertiary roads.	This regulation defines total and partial protection zones where land use is restricted. The Project does not interfere with these buffer zones.

Legislation	Description	Relevance
Regulation of the Resettlement Process resulting from Economic Activities	Defines guidance rules and principles to be followed in resettlement processes resulting from implementation of public and private economic activities. Article 15 states that the Resettlement Plan is part of the EIA process and specifies that it must be approved prior to the issue of an environmental license.	The Project does not result in physical or economic resettlement, so there's no need to develop a Resettlement Plan.
Territory Planning Regulation	Defines the general bases for national territory planning to ensure rational and sustainable use of natural resources, regional potential, urban centres and infrastructure, and to promote national cohesion and the safety of the population. Articles 68 to 71 describe procedures for the expropriation of private property for reasons of national public interest. Article 70 states that expropriation must be preceded by fair compensation.	No land expropriation or land rights are necessary for Project implementation.
Directive on the Expropriation Process for Land Use Planning	Sets out expropriation process procedures for land use planning purposes, including procedures for issuing a declaration of public interest, compensation for expropriation (including calculation methods), and for the expropriation process itself.	No expropriation of land or land use rights in the Project area is required.
CULTURAL HERITAGE		
Cultural Heritage Law	<p>The objective is to protect material or non-material cultural heritage. Cultural heritage is defined in this law as the "set of material and intangible assets created or integrated by the Mozambican people throughout history, with relevance to definition of the Mozambican cultural identity."</p> <p>Material cultural goods include monuments, groups of buildings with historical, artistic or scientific relevance, places or sites (with archaeological, historical, aesthetic, ethnological or anthropological interest) and natural elements (physical and biological formations of special interest from an aesthetic or scientific viewpoint).</p>	The potential presence of cultural heritage in the Project area was assessed in the ESIA. Archaeological objects may also be found during construction of the Project. If this happens, the Proponent must stop work at once and immediately report the finding to the relevant cultural heritage institution.
BIODIVERSITY		
Environmental Law	Articles 12 and 13 define that the planning, implementation and operation of projects must ensure the protection of biological resources, in particular species of flora and fauna threatened with extinction or that require special care, due to their genetic, ecological, cultural or scientific value. This aspect extends to their habitats, especially any present in environmental protection areas.	The Project considers the protection of biodiversity. The potential presence of relevant biodiversity values in the Project area was assessed in the ESIA.
Forest and Wildlife Law	Establishes basic rules and principles for the protection, conservation and sustainable use of forest and wildlife resources. Article 10 defines protection zones, as demarcated areas of the territory, representative of the national natural heritage, included due to their biodiversity, fragile ecosystems or the conservation of animal and plant species.	No protection areas, as defined by this Law, are affected by the Project.
Forest and Wildlife Law Regulation	Applies to the protection, conservation, use, exploitation and production activities involving flora and fauna resources. It includes the trade, transport, storage and primary artisanal and industrial transformation of these resources. It includes a list of protected species of fauna in Appendix II, and which prohibits hunting.	The Proponent would notify the MTA if a species listed in this regulation is captured or disturbed.
Law on the Protection, Conservation and Sustainable Use of Biological Diversity, and respective Regulation	<p>This law establishes the basic principles and standards for the protection, conservation, restoration and sustainable use for biological diversity use in the national territory, in particular in conservation areas.</p> <p>Article 11 of the Regulation establishes that cultural and natural monuments must be preserved. These include areas with one or more unique aesthetic, geological, religious, historical or cultural values which given their rarity, should be preserved. Natural monuments can include trees of ecological, aesthetic, historical and cultural value.</p> <p>Article 16 specifies that all activities that may result in alterations to the vegetation cover, or which may degrade the flora, fauna or ecological processes to the point of compromising their maintenance, are prohibited within natural parks, unless necessary for scientific or management reasons.</p>	No conservation areas, as defined by this Law, are affected by the Project.

Legislation	Description	Relevance
Regulation for the Protection, Conservation and Sustainable Use of Avifauna.	<p>This Decree regulates the protection, conservation and sustainable use of avifauna, including their natural, continental, marine, lake and river habitats.</p> <p>Art 5 defines “Key Biodiversity Areas”, and “Important Bird Zones” as avifauna protection zones” and Art. 4 prohibits the exercise of any activity or construction of infrastructure capable of disturbing avifauna or its habitat in the protection areas, and any economic or social infrastructure to be built in sensitive areas for birds must respect international good practice standards, ensuring the placement of signalling devices that prevent bird collisions or any other damage that could affect the avifauna.</p> <p>Appendices A and D define the protected species that may not be exploited, and Appendix B defines the species of avifauna in Mozambique included in CITES.</p>	The Project considers the protection of avifauna as well as their habitats. There is no presence of relevant potential avifauna values in the Project area, namely “Key Biodiversity Areas”, and “Important Bird Zones”.
WORK AND SAFETY		
Work Law	This law applies to legal subordinate work relationships established between national and foreign employers and workers, across all industries, operating in the country. Chapter VI provides the safety, hygiene and health principles.	The Proponent will provide its workers with good physical, environmental and moral work conditions, inform them about the risks of their work and instruct them on correct compliance with health and safety standards at work.
Regulation on General Labour Inspection	This regulation establishes the rules regarding inspection activities, within the scope of work legality control. Section 2 of Article 4 outlines the employer's responsibilities in terms of preventing occupational health and safety risks for employees.	The Proponent will comply with the requirements. In the case of an inspection, the Proponent must provide all necessary information to the inspectors.
Legal Regime on Workplace Accidents and Occupational Illnesses	<p>Revokes Legislative Diploma No. 1706, of 19 October 1957 and does not apply to employees and agents of the State and Local Authorities.</p> <p>Specifies that the employer is responsible for adopting the measures prescribed in the laws and regulations relating to the prevention of accidents at work and occupational illnesses.</p>	The Proponent will comply with the requirements. In the case of an inspection, the Proponent must help to provide all necessary information to the inspectors.
Law for the Protection of Individuals, Workers and Job Seekers with HIV/AIDS	This law establishes general principles that aim to ensure that no employees or job seekers are discriminated against in the workplace or when applying for jobs, because they are suspected of having or have HIV/AIDS. Article 47 states that workers and job seekers shall not be discriminated against in their rights to work, training, promotion, and career advancement, on account of being HIV positive. Article 52 prohibits the requirement for HIV testing when applying for jobs, maintaining employment, accessing training or for qualification, promotion, or any other employment activity.	HIV/AIDS testing of job seekers is prohibited. Testing workers without the worker's consent is also prohibited. The Proponent will train and reorient all HIV positive workers who are able to perform their duties at work with activities compatible with their abilities.

4.3 International Guidelines and Policies

This ESIA was prepared in accordance with national legislation and in-line with international best practices, including African Development Bank (AfDB) guidelines for environmental and social assessment and public participation, and World Bank (WB) performance standards and environmental, health and safety guidelines.

The main international standards and guidelines applicable to this Project are described below in Table 4-2.

Table 4-2 – International EIA Best Practice Policies and Guidelines

International Guideline / Standard	Description	Requirement in terms of National Legislation
Project Categorization		
African Development Bank (AfDB) Integrated Environmental and Social Assessment Guidelines (2009; 2015)	<p>AfDB guidelines require a project categorization. Projects financed directly by the AfDB are classified into three categories, depending on the expected impact of the potential benefits and adverse impacts of the project:</p> <ul style="list-style-type: none">– Category 1 projects require a complete ESIA, including preparation of an ESMP. These projects will likely result in major adverse environmental and/or social impacts that are irreversible, or will significantly affect environmental or social elements judged sensitive by the Bank or the client country;– Category 2 projects require the development of an ESMP. These projects are likely to have detrimental and site-specific environmental and/or social impacts that are less adverse than those of Category 1 projects, and that could be minimized by applying mitigation measures or incorporating internationally recognized design criteria and standards;– Category 3 projects do not require an impact assessment. These projects do not involve any adverse physical intervention in the environment and do not induce any adverse environmental or social impacts. <p>This project is categorized as category 1 according to the AfDB environmental categorization (OS 1). Category 1 project require Full ESIA.</p>	Regulation on the Environmental Impact Assessment Process, approved by Decree No. 54/2015, of 31 December, defines projects in four categories: A+, A, B and C. An ESMP is required for category C projects. The national process for categorization generally complies with international best practices.
World Bank (WB) Environmental and Social Framework (ESF) (2017)	<p>The objective of the WB ESF is to ensure that projects financed by the WB are environmentally and socially sustainable, and that the decision-making process is improved through appropriate to assessment and management of the environmental and social risks. The policy is triggered if a project is likely to result in potential (negative) environmental and social risks and impacts in its area of influence.</p> <p>WB will classify all projects (including projects involving Financial Intermediaries (FIs)) into one of four classifications: High Risk, Substantial Risk, Moderate Risk or Low Risk. In determining the appropriate risk classification, the Bank will consider relevant issues, such as the type, location, sensitivity, and scale of the project; the nature and magnitude of the potential environmental and social risks and impacts; and the capacity and commitment of the Borrower (including any other entity responsible for the implementation of the project) to manage the environmental and social risks and impacts in a manner consistent with the Environmental and Social Safeguards (ESS).</p>	
Assessment and Environmental and Social Management		
African Development Bank (AfDB) Integrated Safeguards System (ISS) (2013)	OS1 emphasizes the importance of managing the environmental and social performance of a project throughout its lifecycle. OS1 1 requires the client to carry out an environmental and social assessment process and to establish and maintain an Environmental and Social Management System (E&SMS), appropriate to the nature and scale of the project and commensurate with the level of environmental and social risks and impacts.	Regulation on the Environmental Impact Assessment Process, approved by Decree No. 54/2015, of 31 December, states that an environmental and social assessment process is necessary for each Project with potential to generate environmental and social impacts. This evaluation results in an ESMP, which the
World Bank (WB) Environmental and Social Framework (ESF) (2017)	ESS1 establishes the importance of (i) integrated assessment to identify the environmental and social impacts, risks, and opportunities of projects; (ii) effective community engagement through disclosure of project-related information and	

International Guideline / Standard	Description	Requirement in terms of National Legislation
	<p>consultation with local communities on matters that directly affect them; and (iii) the client's management of environmental and social performance throughout the life of a project. The objectives are to:</p> <ul style="list-style-type: none"> - To identify and evaluate environmental and social risks and impacts of the Project; - To adopt a mitigation hierarchy to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/ offset for risks and impacts to workers, affected communities, and the environment; - To promote improved environmental and social performance through the effective use of management systems; - To ensure that grievances from affected communities and external communications from other stakeholders are responded to and managed appropriately; and - To promote and provide means for adequate engagement with affected communities throughout the Project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated. 	Proponent can develop in a ESMS. National regulations are therefore in-line with international best practices.
Public Participation		
AfDB - Stakeholder Consultation and Participation Guidelines	<p>For Category 1 projects, the AfDB guidelines will require significant consultation during the EIA. Significant consultations are required with relevant stakeholders, including potential beneficiaries, affected groups, civil society organizations and local authorities, to discuss the environmental and social aspects of the project, as well as to incorporate public perspectives into the analysis. The guidelines state that these consultations must be carried out in compliance with national legal requirements, providing they meet AfDB 's minimum requirements for public consultation, summarized below:</p> <ul style="list-style-type: none"> - Consultation must be carried out as early as possible; - Information about the Project and the EIA must be disseminated in a timely manner and in a form and language accessible to the groups being consulted; - Relevant stakeholders should be consulted during the scoping phase and the EIS phase; - Stakeholder input should be incorporated with the EIS report and reflected in the proposed mitigation, if applicable; - Stakeholder consultation should be continued during the construction and operational phases. 	<p>The Environmental Impact Assessment Process Regulation, approved by Decree No. 54/2015, of 31 December, and the General Guidelines for the Process of Public Participation in the Environmental Impact Assessment Process, approved by Ministerial Diploma No. 130/2006, of 19 July, fully comply with the requirements of these international guidelines and policies regarding stakeholder consultation. The process includes consultation with local communities, companies and a range of government sector entities (state companies, national, provincial and local departments).</p>
World Bank (WB) Environmental and Social Standard 10. Stakeholder Engagement and Information Disclosure .	<p>ESS10 recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. The objectives are to:</p> <ul style="list-style-type: none"> - To establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, project-affected parties. - To assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be considered in project design and environmental and social performance. 	<p>The stakeholder consultation process will solicit participation from potential stakeholders through newspaper advertisements and public meetings.</p>

International Guideline / Standard	Description	Requirement in terms of National Legislation
	<ul style="list-style-type: none"> - To promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle on issues that could potentially affect them. - To ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible, and appropriate manner and format. - To provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow Borrowers to respond to and manage such grievances. 	
Resettlement		
AfDB Involuntary Resettlement Policy	<p>BAD's Involuntary Resettlement Policy covers the involuntary displacement and resettlement of people caused by a AfDB financed project and applies when a project results in the displacement or loss of housing, loss of property, or income for residents in the project.</p> <p>The overall aim of the policy is to ensure that people who must be displaced are treated equitably, and that they share in the benefits of the project causing their resettlement.</p> <p>The policy has the following key objectives:</p> <ul style="list-style-type: none"> - To avoid involuntary resettlement wherever possible, or to minimize resettlement impacts when population displacement is unavoidable, by exploring all viable project engineering concepts. Particular attention should be paid to sociocultural considerations, such as land of cultural or religious significance, the vulnerability of the affected population, and the availability of in-kind replacement assets, especially when they have important intangible implications. When large numbers of people or a significant portion of the affected population may be subjected to displacement or impacts that are difficult to quantify and compensate for, serious consideration should be given to the alternative of not going ahead with the project; - To ensure that displaced persons receive resettlement assistance, preferably under the project, in such a way that their living standards, income earning capacity and production levels are improved; - To provide explicit guidance to AfDB staff and clients about the conditions necessary to address involuntary resettlement issues in AfDB operations, to mitigate the negative impacts of displacement and resettlement, and to establish a sustainable economy and society; - To establish a mechanism to monitor the performance of involuntary resettlement programmes in AfDB operations and remediate problems as they arise to guard against poorly prepared and implemented resettlement plans. 	<p>National resettlement requirements are defined in the Regulation on the Resettlement Process resulting from Economic Activities, approved by Decree No. 31/2012, of 8 August, which defines the basic rules and principles for resettlement processes resulting from implementation of public or private economic activities.</p> <p>Resettlement will not be required for the Project under review.</p>
AfDB OS 2: Involuntary Resettlement: Land Acquisition, Population Displacement and Compensation	<p>OS2 aims to facilitate the operationalisation of the AfDB's Involuntary Resettlement Policy in the context of the requirements of OS1 and thereby mainstream resettlement considerations into Bank operations.</p> <p>The term resettlement refers to both physical and economic displacement. Resettlement is considered involuntary when the project-affected people are not able to refuse the activities that result in their physical or economic displacement. This occurs in cases of lawful expropriation or temporary or permanent restrictions on land use, and in negotiated settlements in which the buyer can resort to expropriation or impose legal restrictions on land use if negotiations with the seller fail</p>	

International Guideline / Standard	Description	Requirement in terms of National Legislation
World Bank (WB) Environmental and Social Safeguard 5 Land Acquisition and Involuntary Resettlement	<p>ESS5 recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land. The objectives are to:</p> <ul style="list-style-type: none">- To avoid, and when avoidance is not possible, minimize displacement by exploring alternative project designs.- To avoid forced eviction.- To anticipate and avoid, or where avoidance is not possible, minimize adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and (ii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected.- To improve, or restore, the livelihoods and standards of living of displaced persons.- To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure at resettlement sites.	National resettlement requirements are defined in the Regulation on the Resettlement Process resulting from Economic Activities, approved by Decree No. 31/2012, of 8 August, which defines the basic rules and principles for the resettlement processes resulting from implementation of public or private economic activities. The national resettlement regulation is in-line with international best practice, with the goals of minimizing resettlement where possible and to restore and enhance living standards for resettled people when resettlement is unavoidable.
Pollution Prevention		
AfDB OS 4: Pollution Prevention and Control, Greenhouse Gases, Hazardous Materials and Resource Efficiency	OS4 recognizes that increasing economic activity and urbanization often produce increasing levels of pollution to air, water and land, and consume finite resources in ways that can threaten people and the environment at local, regional and global levels. OS4 aims to: avoid or minimize adverse impacts on human health and the environment, by avoiding or minimizing pollution from project activities; promoting more sustainable use of resources, including energy and water; and reducing project-related emissions that contribute to climate change.	The Environmental Law (Law No. 20/97, of 1 October) includes provisions for controlling pollution, and the Regulation on Environmental Quality and Effluent Emission Standards, approved by Decree No. 18/2004 of 2 June, defines environmental quality standards (for air and water) as well as effluent emission limits. Environmental quality issues will be addressed in the ESMP. Where national standards do not exist (such as for noise), international guidelines will be adopted as Project standards.
World Bank (WB) Environmental and Social Standard 3. Resource Efficiency and Pollution Prevention and Management	<p>ESS3 recognises that increased economic activity and urbanization often generate increased levels of pollution to air, water, and land, and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels. The objectives are to:</p> <ul style="list-style-type: none">- To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities;- To promote more sustainable use of resources, including energy and water; and- To reduce Project-related GHG emissions.	
Biodiversity		
AfDB OS 3: Biodiversity and Ecosystem Services	OS 3 recognizes that the protection and conservation of biodiversity, maintenance of ecosystem services and sustainable management of living natural resources are fundamental to sustainable development. Its objectives are to protect and conserve biodiversity; maintain the benefits of ecosystem services; promote the sustainable management and use of natural resources through practices that integrate conservation and development.	The protection of biodiversity in Mozambique is defined in the Law on the Protection, Conservation and Sustainable Use of Biodiversity (Law No. 16/2014, of 20 June, amended and republished by Law No. 5/2017, of 11 May). This law establishes the basic principles and standards for the protection,
World Bank (WB) Environmental and Social	ESS6 recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development. The objectives are to:	

International Guideline / Standard	Description	Requirement in terms of National Legislation
Standard 6. Biodiversity Conservation and Sustainable Management of Living Natural Resources	<ul style="list-style-type: none"> - To protect and conserve biodiversity; - To maintain the benefits from ecosystem services; and - To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities. 	conservation, restoration and sustainable use of biological diversity in the national territory, in particular in conservation areas.
Socio-economics		
AfDB OS 5: Labour Conditions, Health and Safety	<p>OS5 recognizes that the pursuit of economic growth through job creation and income generation must be accompanied by the protection of workers' fundamental rights and recognizes that project activities, equipment and infrastructure can increase the community's exposure to risks and impacts</p> <p>OS5 aims to: establish, maintain and improve the worker-administration relationship; promote equal opportunities for work and compliance with national labour and employment laws; protect the workforce by banning child and forced labour; protect vulnerable workers; and promote safe and healthy working conditions and the health of workers and aims to anticipate and avoid adverse impacts on the health and safety of the affected community during the project lifecycle, and to ensure that personnel and property safety measures prevent or minimize risks to the safety and protection of the community.</p>	<p>The protection of workers' fundamental rights is fully covered by Mozambican law, through the Labour Law (Law No. 23/2007, of 1 August) and auxiliary legislation (see analysis of the legal framework in section 2.2 for more information).</p> <p>Community health and safety is not specifically defined in national law as an independent concept. However, the requirement to protect community health and to ensure community safety can be derived from the overall national legal framework</p>
World Bank (WB) Environmental and Social Standard 2. Labour and Working Conditions	<p>ESS2 recognises that the pursuit of economic growth through employment creation and income generation should be balanced with protection for the basic rights of workers.</p> <p>The objectives are to:</p> <ul style="list-style-type: none"> - To promote fair treatment, non-discrimination and equal opportunity of workers, and compliance with national labour and employment laws; - To establish, maintain and improve the worker management relationship; - To promote compliance with national employment and labour laws; - To protect the workforce by addressing child labour and forced labour; and - To promote safe and healthy working conditions, and to protect and promote the health of workers. 	
World Bank (WB) Environmental and Social Standard 4. Community Health and Safety	<p>ESS4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. The objectives are to:</p> <ul style="list-style-type: none"> - To anticipate and avoid adverse impacts on the health and safety of the affected community during the Project from both routine and non-routine circumstances; and - To ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the affected communities. 	
World Bank (WB) Environmental and Social Standard 8. Cultural Heritage	<p>ESS8 recognizes the importance of cultural heritage for current and future generations. The objectives are to:</p> <ul style="list-style-type: none"> - To protect cultural heritage from the adverse impacts of project activities and support its preservation; and - To promote the equitable sharing of benefits from the use of cultural heritage. 	

International Guideline / Standard	Description	Requirement in terms of National Legislation
		historical, artistic or scientific importance, places (with archaeological interest, historical, aesthetic, ethnological or anthropological) and natural elements (physical and biological formations with aesthetic or scientific interest).

5 Environmental and Social Impacts

At this stage, the potential impacts of the projects were identified and evaluated, and mitigation measures for negative impacts or enhancement measures for positive impacts were defined. The residual impact is classified. The following impact were identified:

- **Physical environment** - in the construction phase, typical impacts associated with civil construction works are expected, including increased emissions of air pollutants and noise, soil degradation and potential contamination of soils and water resources, due to improper handling or accidental spills of waste, hazardous materials or other contaminants. In the operational phase, impacts on the physical environment are reduced or negligible.
- **Biological environment** - Projects are located within highly disturbed areas. The construction phase will involve the removal of vegetation and consequent loss of natural area. During the operational phase, an increase in the circulation of vehicles and human activity is expected, disturbing the surroundings with pressures on the natural environment.
- **Socioeconomic environment** - The development of the Projects could result in socio-economic impacts for the local community which, if not properly addressed, could introduce friction in economic and social relations. The main negative impacts in the construction phase are associated with the disruption of community life because of traffic and construction works, and the increase in noise and dust emissions.

6 Public Participation Process

One public consultation meeting was held as part of the project, in Songo Village, Tete province. The meeting took place 15 days after the announcement, to allow sufficient time for I&APs to effectively participate in the project's public consultation meetings.

After the publication of the announcement and the distribution of individual invitations to the identified I&APs, telephone calls were made to confirm participation and formalize registration on the dates/times available for the public consultation meetings.

Table 6-1 shows the place where the public meeting was held, the date as well as the number of registered participants.

Table 6-1- Meeting general information

Place	Venue/Room	Date 2022	Participants
Songo Village	HCB Cultural Centre	May 23 rd	30 Participants enrolled, including: <ul style="list-style-type: none"> - Representatives of Provincial Government Institutions and the Provincial State Secretariat, namely: Provincial Environment Service (SPA), and Provincial Directorate of Public Housework. - Representatives of other public institutions such as the Centre Water Administration (ARA-Centro). - Representatives of Fisheries Associations (Kapenta).

Place	Venue/Room	Date 2022	Participants
			<ul style="list-style-type: none"> - Representative of Songo Community Radio. - HCB Departments

During the meeting held, the proposed Project and the main conclusions of the ESIA report were presented, based on an audio-visual presentation. The presentation and clarifications were made using simple, objective and clear language, to facilitate the understanding and enhancing of the consequent debates. All comments and suggestions made are recorded and compiled in this report.

The Executive Summary was distributed to all meeting participants. After the presentation, a period for open debate was reserved, during which the I&APs were encouraged to express their views and ask their questions, regarding both, the Project and the ESIA Process.

At the end of the meeting, the I&APs were informed that they could submit additional comments and suggestions until June 6th, 2022, through telephone, email and fax addresses provided at the meeting and disclosed in the Executive Summary that was distributed.

The following photos illustrate some of the meetings held.



Figure 6-1 - Photographic record

The main questions, suggestions and comments collected in the public consultation meeting are presented (Annex VII), at this point, in a summarized and non-exhaustive way.

Table 6-2- Summary of the main issues addressed in the meetings held

Component	Main issues (Q), concerns, comments (C) and suggestions (S) addressed
Technical aspects	<ul style="list-style-type: none"> - What will be the rainwater treatment system in the substation? (Q) - Final destiny of the equipment's and materials that will be removed from both infrastructures. (Q)
About environmental aspects	<ul style="list-style-type: none"> - Will there be a decrease on the actual flows in the dam? (Q) - What are the main impacts of the project downstream of the dam? (Q)
About socio-economic aspects	<ul style="list-style-type: none"> - It is important to consider community action plan to cover social demands. (C) - The contractor must have its own Social Responsibility Plan - This action plan will have to be implemented by the contractor to avoid any responsibility to HCB. (C)

7 Environmental and Social Management Plan

This ESMP will be implemented during the Project's Construction and Operation Phase. Details of actions required for the implementation of mitigation measures have been developed and tabulated in the form of action plans. The plan indicates the organisation responsible for taking specific action and sets out parameters for monitoring the implementation of such action.

The ESMP should be updated regularly, every 5 years after the start of the operations phase, to reflect any Project change.

7.1 General Mitigation/Maximisation Measures

In this section of the ESMP, the environmental management measures to be implemented in the operation of the HCB SS are presented in detail. These management measures include mitigation and maximisation measures defined during the impact assessment.

The table presented was structured to identify the aspect (or impact to be addressed), the environmental management measures to be implemented, including the respective responsible entities, as well as the monitoring and performance evaluation for the implementation of the mitigation measures. Note, however, that the Proponent is ultimately responsible for ensuring the mitigation/maximisation implementation, even when other stakeholders (such as the Contractor) are involved, through supervision and audits.

Table 7-1 - Environmental Management Measures for the Construction/Rehabilitation Phase

Appearance	Management Actions	Responsible	Performance Monitoring and Evaluation		
			Monitoring	Performance indicators	Frequency
AIR QUALITY					
Production of Particulate Matter	Restrict earthworks and land movements to what is strictly necessary as defined in the project.	Contractor	<ul style="list-style-type: none">• Performance report• Audits	<ul style="list-style-type: none">• No. of Non-conformities	<ul style="list-style-type: none">• Monthly
	Careful choice of itineraries for the vehicles assigned to the work, to minimize, whenever possible, circulation along or through inhabited areas.	Contractor	<ul style="list-style-type: none">• Performance report• Audits	<ul style="list-style-type: none">• No. of Non-conformities• No. of complaints	<ul style="list-style-type: none">• Monthly
	Determine a maximum speed of 30 km/h for the circulation of vehicles in critical stretches, such as close to inhabited areas, considering that dust emissions increase linearly with speed.	Contractor	<ul style="list-style-type: none">• Performance report• Audits	<ul style="list-style-type: none">• No. of Non-conformities• No. of complaints	<ul style="list-style-type: none">• Monthly
	To efficiently reduce the emission of particulate matter, emitted by machines and vehicle wheelsets, the implementation of a regular system of wetting of the intervention areas where there are soils exposed to wind action should be considered.	Contractor	<ul style="list-style-type: none">• Performance report• Audits	<ul style="list-style-type: none">• No. of Non-conformities• No. of complaints	<ul style="list-style-type: none">• Monthly
	All equipment equipped with combustion engines must be inspected regularly to check their operating conditions (periodical maintenance), the aim is to minimize combustion gas emissions resulting from their operation.	Contractor	<ul style="list-style-type: none">• Performance report• Audits	<ul style="list-style-type: none">• No. of Non-conformities	<ul style="list-style-type: none">• Monthly
	Equipment which generates excessive black should not be used at site.	Contractor	<ul style="list-style-type: none">• Performance report• Audits	<ul style="list-style-type: none">• No. of Non-conformities• No. of complaints	<ul style="list-style-type: none">• Monthly
	Provide appropriate PPE to workers which will be exposed to a risk of dust and combustion gases	Contractor	<ul style="list-style-type: none">• Performance report• Audits	<ul style="list-style-type: none">• No. of Non-conformities• No. of complaints	<ul style="list-style-type: none">• Monthly
NOISE AND VIBRATION ENVIRONMENT					
Local increase of noise and vibration levels in the immediate	The location of the contractor’s camp site should be selected to be located as far away as possible from areas of sensitive use (housing).	Contractor	<ul style="list-style-type: none">• Performance report• Audits	<ul style="list-style-type: none">• No. of Non-conformities• No. of complaints	<ul style="list-style-type: none">• Monthly

Appearance	Management Actions	Responsible	Performance Monitoring and Evaluation		
			Monitoring	Performance indicators	Frequency
surroundings of populated areas	Carry out a careful choice of itineraries for the vehicles assigned to the work, to minimize their circulation along or through inhabited areas.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
	Construction activities, especially the noisiest ones, should be limited whenever possible to daytime hours (6:00-22:00).	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
	The Contractor must instruct its drivers on techniques to minimize vehicle noise, such as when braking or accelerating near inhabited areas.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
	The Contractor shall, whenever possible, avoid parking fixed equipment (e.g. cranes or compressors or other noisy equipment) in the vicinity of areas of sensitive use.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
	Select and use low noise/vibration machinery/equipment.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
	The contractor should ensure that equipment and vehicles are well maintained and properly fitted with exhaust mufflers	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	• Monthly
	Workers exposed to excessive noise or vibrations should use protective equipment.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
HYDROLOGY/SOILS					
Changes in the quality of surface and underground water with risk of contamination by leakage / spillage of polluting substances and solids suspended in water /	Implement the Waste Management Plan.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	• Monthly
	Implement an Emergency Response Plan.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • N.º of Accidents 	• Monthly
	Keep equipment and machinery in good working order, including clean brakes, catalytic converters and silencers (high pressure washed), transformers, without leaks, excess oil and/or grease.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • N.º of Accidents 	• Monthly

Appearance	Management Actions	Responsible	Performance Monitoring and Evaluation		
			Monitoring	Performance indicators	Frequency
Changes in soil chemical properties and risk of soil contamination	All flammable, reactive, corrosive and toxic materials will be stored in clearly labelled containers.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • N.º of Accidents 	• Monthly
BIODIVERSITY					
Disturbance and loss of habitats and individuals (mortality) of local fauna	Implement an environmental awareness program.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • Number of trained workers • No. of Awareness Actions 	• Monthly
	Implement a Waste Management Plan for the construction phase.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	• Monthly
	Avoid leaving the garbage unattended, so as not to attract nocturnal carnivorous animals.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	• Monthly
	Deforestation should be limited to strictly necessary areas.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	% of Deforested Area	• Monthly
	Promote the selection of areas with bare soil and less need to cut vegetation for temporary work and storage areas.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	% of Deforested Area	• Monthly
	Restrict the movement of people and equipment during construction activities.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	• Monthly
	Keep equipment and machinery in good working order, including brakes, silencers, catalytic converters clean (jet wash), without leaks and excess oil and/or grease.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • N.º of Accidents 	• Monthly
	Construction works during the night period should be avoided.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
	Implement a faunal scare/rescue program.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • Number of animals run over • Number of animals chased away/rescued 	• Monthly

Appearance	Management Actions	Responsible	Performance Monitoring and Evaluation		
			Monitoring	Performance indicators	Frequency
	Signal and delimit large trees that do not need to be felled, so that they are not affected by the movement of machines.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • Number of felled trees • No. of complaints 	<ul style="list-style-type: none"> • Whenever necessary
	Avoid, whenever possible, felling trees. Timber with commercial value and of interest to local communities must be felled with a chainsaw. These woods should be arranged in piles with a height of not more than 5 m, in places that do not interfere with the activities.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • Number of felled trees • No. of complaints 	<ul style="list-style-type: none"> • Whenever necessary
	Request prior authorization from the HCB for the felling of trees.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • Number of felled trees • No. of complaints 	<ul style="list-style-type: none"> • Whenever necessary
Disturbance and loss of habitats and individuals (mortality) of local fauna	Implement an environmental awareness program.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • Number of trained workers • No. of Awareness Actions 	<ul style="list-style-type: none"> • Monthly
	Implement a Waste Management Plan for the construction phase.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	<ul style="list-style-type: none"> • Monthly
	Prohibit all workers from purchasing charcoal or firewood or any other product that may be offered for sale in and around the project area, to avoid promoting the use of forest resources.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	<ul style="list-style-type: none"> • Monthly
Loss of Ecosystem Services	Implement an environmental awareness program.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • Number of trained workers • No. of Awareness Actions 	<ul style="list-style-type: none"> • Monthly
	Donate the biomass that results from the deforestation activity to local communities if applicable.	HCB	<ul style="list-style-type: none"> • Performance report 	<ul style="list-style-type: none"> • Kg of donated biomass 	<ul style="list-style-type: none"> • Monthly
SOCIO-ECONOMY					
Creation of employment opportunities, working conditions and labour	During the process of hiring workers, priority should be given to the local population, if the candidates have the necessary qualifications for the job opportunity created;	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • Number of Local Workers • Number of contracted women 	<ul style="list-style-type: none"> • Monthly

Appearance	Management Actions	Responsible	Performance Monitoring and Evaluation		
			Monitoring	Performance indicators	Frequency
	Employment opportunities should be adequately publicized so as not to limit application opportunities including the inclusion of genders and vulnerable groups	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • Number of Local Workers • Number of contracted women 	• Monthly
	Ensure that the recruitment process is transparent and open to everyone, regardless of race, political opinion, colour or gender. The recruitment process should consider cultural and social sensitivities, as well as the number of vacancies for women and youth.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Local Workers • Number of contracted women N • No. of contracted youngers 	• Monthly
	The process of hiring personnel must be transparent and follow pre-established and accepted criteria.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
	Establish a Human Resources policy in accordance with relevant legislation, including national and central labour laws of the International Labour Organization (ILO) covering: <ul style="list-style-type: none"> – Forced labour – Freedom of Association and Right to Organize; – Right to Unionize and Collective Bargaining; – Discrimination (Employment and Occupation); – Equal Remuneration; – Minimum age (prohibit the hiring of minors). 	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
Potential impacts on workers' health and safety during the construction phase	The Contractor will develop and implement an Emergency Response Plan	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	• Monthly
	The Contractor will develop and implement a Health and Safety Management Plan to protect every worker involved in construction activities, even temporary workers. This plan will comply with national legislation, AfDB OS 5: Labour Conditions, Health and Safety, WB General EHS Guidelines and WB Industry Sector Guideline for Electric Power Transmission	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	• Monthly

Appearance	Management Actions	Responsible	Performance Monitoring and Evaluation		
			Monitoring	Performance indicators	Frequency
	<p>Sub-contractors will be contractually required to comply with labour and health and safety legislation. Specific provisions must be included for:</p> <ul style="list-style-type: none"> – Supply drinking water and maintain its quality and ensure sanitation at the construction sites; – Provision of sanitation at camps and work areas; – Provision of separate accommodation and sanitation facilities in worker camps, to satisfy both gender needs; – Declaration of accidents through an accident reporting mechanism; – Handling domestic and specialized waste, as well as dangerous goods; – Procedures in case of injuries and accidents; – Secure equipment and demarcate any excavation work areas; – Sign and fence construction areas, where necessary; – Maintain construction camps in a clean and healthy condition as prescribed by international worker health standards. – Implement a long-term training program throughout the construction phase to ensure adequate training and qualification of all staff employed for the project. – Provide medical facilities throughout the construction phase for the use of workers where required; – Ensure reasonable working hours, wages and other benefits; – Provide suitable and safe accommodation and sanitation facilities, including available drinking water and improved latrines; – Provide and ensure the use of personal protective equipment (PPE); – Establish a 'grievance mechanism' for workers 	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	<ul style="list-style-type: none"> • Monthly
Local and regional economic stimulus due to the purchase of construction goods and materials and increased labour income	The procurement of goods and services by the construction contractor should prioritize supply from local and provincial markets whenever possible.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • Number of local/provincial acquisitions 	<ul style="list-style-type: none"> • Monthly
Disruption of the daily activities of local communities due to	Construction activities with potential for noise generation should be limited to the daytime period of weekdays, whenever possible.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	<ul style="list-style-type: none"> • Monthly

Appearance	Management Actions	Responsible	Performance Monitoring and Evaluation		
			Monitoring	Performance indicators	Frequency
the nuisance factor of construction (noise, light and dust emissions and traffic interference)	Speed limits in construction with heavy vehicles should not exceed 30 km/h in critical segments such as near residential areas.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
	All unpaved surfaces should be kept moist, especially during dry and windy conditions.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
	Inhabitants of local communities near construction fronts should be informed in advance about future construction activities.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
	Implement GRM procedure.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly
Increased risk of disease transmission (STD and COVID-19) due to labour mobilization	Implementation of self-protection measures for COVID-19: social distance, respiratory etiquette, mask use, frequent disinfection of hands and work surfaces;	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	• Monthly
	The Contractor shall develop a management plan for the prevention of HIV/AIDS and STD and a contingency plan for COVID-19 and implement awareness campaigns for counselling, testing, care, treatment and prevention among the workforce	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	• Monthly
	Conducting awareness campaigns on various aspects of health for workers and the community in general through community radio	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	• Monthly
Temporary socio-economic changes and gender and vulnerable groups	Gender should be mainstreamed in all project phases and activities;	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	• Monthly
	Prepare and develop a course and/or information package on local context and vulnerability to be provided to all staff. Aspects of appropriate and expected behaviour by contractor staff must be adhered to. It is the responsibility of the contractor to ensure appropriate behaviour and conduct of all staff (code of conduct).	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of course and/or information package developed 	• Annually
	Ensure that entire labour force is dually informed and educated of above impacts and informed on the legislation, responsibility and accountability. The repercussions and legal ramifications of any violation should be made explicit.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of sensibilisation/training sessions 	• Annually

Appearance	Management Actions	Responsible	Performance Monitoring and Evaluation		
			Monitoring	Performance indicators	Frequency
	Ensure appropriate procedures and policies are in place to address any violation of the law and/or rights of individuals and/or communities.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	<ul style="list-style-type: none"> • Monthly
	Should a sexual abuse and/or underage sex complaint or other violation of rights be brought to the grievance committee (which may involve one or more workers) and where the accusation(s) found to be justified.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	<ul style="list-style-type: none"> • Monthly
	Organise education and information campaigns for both workers and the local communities, on rights, responsibilities and obligations concerning the above impacts. Local communities should be informed on the available redress mechanisms and the requisite procedures.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of campaigns • N°. of participations 	<ul style="list-style-type: none"> • Annually
	Prepare and implement an STD and HIV and Aids prevention programme for all staff.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of workers involved 	<ul style="list-style-type: none"> • Annually
Loss of cultural heritage sites	The Contractor will implement a Random Archaeological Finds Procedure to safeguard any archaeological elements that are found during construction.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	<ul style="list-style-type: none"> • Monthly

Table 7-2 - Environmental Management Measures for the Operation Phase

Appearance	Management Actions	Responsible	Performance Monitoring and Evaluation		
			Monitoring	Performance indicators	Frequency
HYDROLOGY/SOILS					
Changes in the quality of surface and underground water with risk of contamination by leakage / spillage of polluting substances and solids suspended in water /	Implement the Waste Management Plan.	HCB	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities 	<ul style="list-style-type: none"> • Monthly
	Implement an Emergency Response Plan.	HCB	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No of accidents 	<ul style="list-style-type: none"> • Monthly
	Keep equipment and machinery in good working order, including clean brakes, catalytic converters and silencers (high pressure washed), transformers, without leaks, excess oil and/or grease.	HCB	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No of accidents 	<ul style="list-style-type: none"> • Monthly

Appearance	Management Actions	Responsible	Performance Monitoring and Evaluation		
			Monitoring	Performance indicators	Frequency
Changes in soil chemical properties and risk of soil contamination	All flammable, reactive, corrosive and toxic materials will be stored in clearly labelled containers.	HCB	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No of accidents 	• Monthly
	Regularly inspect all equipment in the SS that may contain contaminants such as transformers.	HCB	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No of accidents 	• Monthly
SOCIO-ECONOMY					
Creation of employment opportunities, working conditions and labour	During the process of hiring workers, priority should be given to the local population, if the candidates have the necessary qualifications for the job opportunity created.	HCB	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • Number of Local Workers • Number of contracted women 	• Monthly
	Employment opportunities should be adequately publicized so as not to limit application opportunities including the inclusion of genders and vulnerable groups.	HCB	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • Number of Local Workers • Number of contracted women 	• Monthly
	Ensure that the recruitment process is transparent and open to everyone, regardless of race, political opinion, colour or gender. The recruitment process should consider cultural and social sensitivities, as well as the number of vacancies for women and youth.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Local Workers • Number of contracted women N • .No of contracted youngsters 	• Monthly
	The process of hiring personnel must be transparent and follow pre-established and accepted criteria.	HCB	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	• Monthly

Appearance	Management Actions	Responsible	Performance Monitoring and Evaluation		
			Monitoring	Performance indicators	Frequency
	Establish a Human Resources policy in accordance with relevant legislation, including national and central labour laws of the International Labour Organization (ILO) covering: <ul style="list-style-type: none"> – Forced labour – Freedom of Association and Right to Organize; – Right to Unionize and Collective Bargaining; – Discrimination (Employment and Occupation); – Equal Remuneration; – Minimum age (prohibit the hiring of minors). 	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	<ul style="list-style-type: none"> • Monthly
Disruption of the daily activities of local communities	Implement GRM procedure.	Contractor	<ul style="list-style-type: none"> • Performance report • Audits 	<ul style="list-style-type: none"> • No. of Non-conformities • No. of complaints 	<ul style="list-style-type: none"> • Monthly

7.2 Mitigation Measures from Hazard Identification and Risk Assessment

A summary of the mitigation measures proposed to reduce the identified risks' significance is provided in the follow tables.

Table 7-3– Mitigation Measures for the Construction Phase

Construction Phase	
Activity 1 Removal of vegetation and clearing of the site and ground preparation	<ol style="list-style-type: none"> 1. A procedure would be required for the safe use and maintenance instruments and Machinery/equipment, if required [including schedule periodic inspections of equipment and material handling devices (machines, cables, etc.)]. 2. The Emergency Response Plan (ERP) must specify measures to protect people and the environment in the event of an emergency. 3. Preparation of procedures and training for personnel working with safety guidelines for the operation of machines, including PPE. 4. Ensure all process areas are fully contained to prevent spillages. 5. Procedures for Oil Spill Response (part of the ERP) and response equipment will be prepared. 6. Spill kits for response chemical spills will be made available as part of the emergency response equipment.
Activity 2 Excavation and earthworks	<ol style="list-style-type: none"> 1. A procedure would be required for the safe use and maintenance instruments and Machinery/equipment, if required [including schedule periodic inspections of equipment and material handling devices (machines, cables, etc.)]. 2. The Emergency Response Plan (ERP) must specify measures to protect people and the environment in the event of an emergency. 3. Preparation of procedures and training for personnel working with safety guidelines for the operation of machines, including PPE. 4. Ensure all process areas are fully contained to prevent spillages. 5. Procedures for Oil Spill Response (part of the ERP) and response equipment will be prepared. 6. Spill kits for response chemical spills will be made available as part of the emergency response equipment.
Activity 3 Building the bases of the foundations	<ol style="list-style-type: none"> 1. A procedure would be required for the safe use and maintenance instruments and Machinery/equipment, if required [including schedule periodic inspections of equipment and material handling devices (machines, cables, etc.)]. 2. The Emergency Response Plan (ERP) must specify measures to protect people and the environment in the event of an emergency. 3. Preparation of procedures and training for personnel working with safety guidelines for the operation of machines, including PPE. 4. Ensure all process areas are fully contained to prevent spillages. 5. Procedures for Oil Spill Response (part of the ERP) and response equipment will be prepared. 6. Spill kits for response chemical spills will be made available as part of the emergency response equipment.
Activity 4 Assembly of metallic structures	<ol style="list-style-type: none"> 1. A procedure would be required for the safe use and maintenance instruments and Machinery/equipment, if required [including schedule periodic inspections of equipment and material handling devices (machines, cables, etc.)]. 2. The Emergency Response Plan (ERP) must specify measures to protect people and the environment in the event of an emergency. 3. Preparation of procedures and training for personnel working with safety guidelines for the operation of machines, including PPE.
Activity Assembly and installation of new electrical or electromechanical equipment	<ol style="list-style-type: none"> 1. A procedure would be required for the safe use and maintenance instruments and Machinery/equipment, if required [including schedule periodic inspections of equipment and material handling devices (machines, cables, etc.)]. 2. The Emergency Response Plan (ERP) must specify measures to protect people and the environment in the event of an emergency. 3. Preparation of procedures and training for personnel working with safety guidelines for the operation of machines, including PPE.

Table 7-4 – Mitigation Measures for the Operation Phase

Operation Phase	
Activity 1 General maintenance, Replacement of oils and lubricants, Replacement of equipment, Production of waste	<ol style="list-style-type: none"> 1. A procedure would be required for the safe use and maintenance instruments and Machinery/equipment, if required [including schedule periodic inspections of equipment and material handling devices (machines, cables, etc.)]. 2. The Emergency Response Plan (ERP) must specify measures to protect people and the environment in the event of an emergency. 3. Preparation of procedures and training for personnel working with safety guidelines for the operation of machines, including PPE. 4. Ensure all process areas are fully contained to prevent spillages. 5. Procedures for Oil Spill Response (part of the ERP) and response equipment will be prepared. 6. Spill kits for response chemical spills will be made available as part of the emergency response equipment.

7.3 Environmental and Social Management Programs

Following the identification and evaluation of the environmental components on which the main potential environmental impacts resulting from the SS's operation activities may be felt, as well as the identification and analysis of these impacts, we propose that the following Environmental and Social Management Programmes be implemented:

- Waste Management Programme;
- Communication Programme;
- Grievance Response Mechanism;
- Procedure for Heritage Incidental Finds;
- Environment, Health and Safety Training Programme;
- Emergency Response Programme.

These programmes systematise the environmental management actions to be implemented with a view to adequately managing the environmental aspects identified and, thus, safeguarding the potential negative impacts (to avoid or minimise them as far as possible) and enhancing the potential positive impacts of the SS. The performance indicators of the parameters to be monitored are also identified.

7.4 Environmental and Social Monitoring Plan

The Environmental and Social Monitoring Plan must comply with the current and applicable legal requirements. Monitoring plans were prepared, which were informed by the Environmental Impact Study, namely:

It should be noted that the monitoring programme is dynamic and should change over time in accordance with different phases of the mine. The programme will be reviewed and revised if necessary.

The objectives of the environmental monitoring system are to:

- Prevent and minimise the environmental impacts associated with the proposed project construction and operation;
- Ensure that the ESMP performs according to mitigation statements;
- Check compliance with the licence requirements; and
- Ensure consistent auditing and reporting protocols.

The HCB shall undertake internal audits for compliance and continual improvement purposes. If, when compared with the baseline characterisation, a significant increase in the concentration of monitored parameters is identified, measures should be adopted including additional environmental management precautions and the establishment of temporary containment or treatment structures.

7.5 Estimated Budget

Most of the costs associated with the development of specific social and environmental management plans and the implementation of mitigation measures cannot be specified at this stage of the project. Many of these measures will be the responsibility of the Contractor(s) who will oversee the project construction; therefore these costs will be integrated in the construction costs.

It should be noted that this ESMP must be attached to the Tender Documents to ensure that these activities are placed under the responsibility of the Contractor(s) and quoted as part of their bids. The ESMP for each contractor will include a budget to be approved by HCB.

Additionally, given that the implementation of operational measures will be the responsibility of the HCB, part of the operational budget required to implement the measures is not known at this time. The budget estimate shown below for the operation phase is limited to the first five years of operation.

The following table presents a preliminary estimate of the budget for the ESMP, based on the main costs. It should be noted that resettlement costs are not included in the table below.

Table 7-5 – Preliminary Estimated ESMP Budget based on core costs

Phase	Item	Cost (USD)
Pre-construction	Environment, Health, and Safety Training Programme;	\$5,000
Pre-construction Subtotal		\$5,000
Construction	Develop and implement the Communication Plan	\$5,000
	Community awareness campaigns during construction	\$5,000
	Development and implementation of the Waste Management Plan for the construction phase	\$5,000
	Set and implement the Project's GRM	\$5,000
	Develop and implement a GBV/SEA Plan	\$5,000
	Procedure for Cultural Heritage Incidental Finds	\$5,000
	Environmental management, auditing, and monitoring activities ²	\$50,000
Construction Subtotal		\$80,000
Operations (first 5 years)	Development of an Emergency Response Programme, including the acquisition of spill response kits	\$10,000
	Development and implementation of the Waste Management Plan for the operation phase	\$5,000
	Development and implementation of a Communication Plan and Grievance Response Mechanism (GRM) for the operation phase	\$5,000
	Monitoring social and environmental performance, including the development of adaptive mitigation measures (if necessary)	\$20,000

² Including preparatory activities.

Phase	Item	Cost (USD)
	Operation Subtotal	\$40,000
	Contingency Fund (~20% of the construction and operating budget)	\$25,000
	Preliminary Global Total	\$150,000

7.6 Audits

The Regulation on the Environmental Audit Process approved by Decree No. 25/2011, of 15 June, requires annual environmental audits, for the operation, closure and restoration phases, of particular activities that have the potential to cause environmental damage, in order to ensure compliance with the approved ESMP.

HCB must conduct annual internal audits to verify the correct implementation of this ESMP.

The audits should encompass all processes and installations within the functioning and operation of the SS.

An independent auditor should conduct annual audits, except were indicated in the conditions of approval issued by the environmental authority.

A protocol for conducting internal audits should be established and checklists developed for each of the components inherent to the operation of the SS and the requirements of this ESMP.

The audit programme should include the following:

- The list of issues to be audited;
- A report on the audit findings;
- A performance records.

All non-conformities shall be recorded. Whenever applicable, non-conformity notifications shall be issued. Once non-conformities are known, corrective and preventive actions shall be established to avoid their repetition in the future, a Corrective Action Plan (CAP) shall be drawn up in response to the non-conformities identified.

The notifications shall be recorded, as well as their response, mentioning the date and actions taken.

The audit results should be made available to relevant people, so that any issues identified can be discussed and addressed.

7.7 Performance and Reporting

As part of the ESMP implementation, performance reports should be prepared for the construction phase and the operation phase monthly, respectively.

The performance reports aim to:

- Collect information on the quarterly and semi-annual environmental performance management of the Contractor and HCB respectively;
- Demonstrate transparency in responding to disclosure requests from stakeholders (including regulators, investors and communities) with up-to-date and verifiable information on environmental performance;
- Play a role in ensuring full compliance with applicable legal and statutory obligations and promoting internal accountability;
- Give information about the Contractor/HCB's environmental training programmes;
- Help identify opportunities to improve resource use and reduce environmental footprint;
- Support performance benchmarking programs that will help the Contractor/HCB identify the best practices;
- Provide a means of communicating new environmental initiatives being undertaken by the Contractor/HCB.

The SS project performance report should include the following:

- Environmental and sustainability information;
- Activities and status of environmental compliance;
- Results of the environmental monitoring programme;
- Grievance and non-conformities;
- Highlighted actions and successes.

This document shall be prepared, filed and maintained by the Contractor and HCB in order to document the results of the ESMP implementation.

The performance report should be made available every year to relevant persons, including environmental authorities and finance institutions so that any issues identified can be discussed and addressed.