ENVIRONMENT & SOCIAL MANAGEMENT PLAN
Construction of Gas-Insulated Switchgear (GIS) Substations

By Central Electricity Board

(Existing GIS sub-station at the Saint Louis Power Station, Mauritius)

Document Control

ESMP/SS/Ver. 01	Name	Designation	Date	Signature
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LIST OF ABBREVIATIONS

AfDB	African Development Bank
AIS	Air Insulated Switchgear
CEB	Central Electricity Board
CEMP	Construction Environment Monitoring Plan
CPR	Corporate Planning and Research Department, CEB
EIA	Environment Impact Assessment
EMP	Environment Monitoring Plan
EPA	Environment Protection Act
EPC	Engineering, Procurement and Construction
ESMP	Environment and Social Management Plan
EU	European Union
GHG	Green House Gas
GIS	Gas Insulated Switchgear
IFC	International Finance Corporation
MEPU	Ministry of Energy and Public Utilities
ODA	Official Development Assistance
RESP	Renewable Energy and Strategic Project (CEB)
SF6	Sulfur Hexafluoride

NON-TECHNICAL SUMMARY

Project Description

The Central Electricity Board (CEB) will be undertaking the construction of ten (10) Gas Insulated Switchgear (GIS) Substations in Mauritius. Six will be constructed as replacements for the existing Air Insulated Switchgear (AIS) Sub-Station and four at a new location around the island of Mauritius. The project will overcome space constraints and increase the reliability of the national grid electricity network providing a forerunner for the integration of renewable energy technologies in the generation mix.

This project will have a net positive impact on the current electricity infrastructure development by bringing up a modern electricity system. The increase in stability of the grid will also cater for the future increase in electricity demand.

Environment and Social Impact Assessment and Project Appraisal

The Mauritian Environment Protection Act (EPA) 2002 provides the main legislative framework for new projects in Mauritius. It imparts environmental stewardship, greater transparency, and public participation in the Environment Impact Assessment (EIA) process as well as streamlining of EIA procedures. However, the construction of the **substation** (indoor or outdoor) is not a scheduled activity requiring the submission of a formal EIA report. The Ministry of Environment has also submitted to the CEB a letter of comfort indicating that no EIA application is required for the project (refer to annexe 1). The present **Environment and Social Management Plan (ESMP)** is prepared to meet the requirement of the African Development Bank (AfDB). The AfDB is one of the main funding agencies for this project and based on the project's Category 2 classification according to the Bank's Integrated Safeguards System (ISS), the Bank requires CEB to prepare and submit an Environmental and Social Management Plan (ESMP) for the processing of the loan. The project is anticipated to generate medium and site-specific environmental and/or social impacts that can be minimized by the application of mitigation measures or the incorporation of internationally recognised design criteria and Standards. The ESMP is a guiding document that gives an insight into the legal and institutional framework, the environmental and social impacts of the project, the proposed mitigation actions, reporting requirements, duration, and frequency of monitoring. The ESMP also specifies the stakeholder's responsibilities and mitigation actions or plans.

Potential Environmental Impacts and compliance with environmental regulations

The construction of the GIS sub-stations will have negligible impact on the environment because most of the sites earmarked for the project are either in existing locations or areas remote from human settlement. the main environmental problems identified during the study will occur during the construction phase. During the operational phase, the main environmental issue will be the release of the SF6 gas used as insulating material in the GIS system. However, the SF6 will remain encapsulated, and the likelihood of accidental release is very minimal.

The EPC contractor will have to abide environmental requirements of the ESMP. An environmental monitoring plan (EMP) will be prepared by the EPC contractor before the start of works on site. The CEB will appoint professional staff to supervise the environmental and social aspects of the project.

Project cost and implementation

The total cost of the ten GIS substations is USD 119.15 million. The ESMP is estimated to be USD 5.0 Million.

The CEB will appoint an EPC contractor for the construction of the GIS sub-station through an international tender process as per the Mauritian Public Procurement Office and the due diligence requirement of the African Development Bank (AfDB). The construction is expected to start in November 2023 to be completed in March 2026 (refer to section 8 of the ESMP report).

1. GENERAL DESCRIPTION OF THE PROJECT

1.1. Background

The Central Electricity Board of Mauritius (CEB) is a state-owned enterprise, which reports to the Ministry of Energy and Public Utilities (MEPU). Established in 1952, and empowered by the Central Electricity Board Act 1964, the CEB is responsible for the preparation and undertaking of development schemes with the general aim of promoting, coordinating, and improving the generation, transmission, distribution, and sale of electricity in Mauritius. According to the data for the year 2021, CEB produces around 40% of power requirements in Mauritius from its four thermal power stations and nine hydroelectric plants. Independent Power Producers that use coal and bagasse as fuel produce the remaining amount. There is also a marginal proportion of electricity produced through Small-Scale Distributed Generators, mainly from Solar Photovoltaic (Solar PV) installations.

The Mauritius electricity network comprises the Transmission and Distribution (T&D) systems, owned and operated by the CEB. The transmission network, operating at the highest voltage of 66 kV, transports bulk power from the main sources of generation to various 66 kV-to-22 kV substations scattered over the island. In addition, part of the 132kV transmission network operates at only 66 kV. With the progressive addition of new generation units and an increase in load demand, the existing 66 kV transmission capability will reach its limit during peak demand periods and, consequently, would require a transmission voltage upgrade to 132 kV. The 132 kV double-circuit transmission lines, built in 1997, operate at 66 kV. The transition to a higher transmission voltage level would require additional investment in 132 kV-to-66 kV power transformers, protective relays, 132 kV gas-insulated switchgear (GIS) and training of the CEB's technical staff.

The CEB is now considering switching from an outdoor 66 kV AIS substation to an indoor 66 kV GIS substation, to overcome space constraints and increase the reliability of the national grid. CEB commissioned the first 66 kV indoor GIS substation in Mauritius in 2017 at the St Louis Power Station. Within the scope of the current project, six existing outdoor AIS will be replaced by the new GIS sub-stations and four new GIS Sub-Stations will be constructed at new locations.

1.2 Purpose of Gas Insulated Switchgear (GIS) Substation

The CEB is switching from an outdoor 66kV AIS substation to an indoor GIS substation, to overcome space constraints and increase the reliability of the national grid. CEB commissioned

the first 66kV indoor GIS substation in Mauritius at the St Louis Power Station in 2017. The CEB has just embarked on a similar mega project, consisting of the construction of 10 GIS substations. Considering the state of the concrete structures at the existing AIS substations, CEB proposes to demolish existing structures in the first instance and then construct the new GIS. Opting again for new AIS substations will not be resolving the space constraint. Since the physical footprint of a GIS substation is about 35% less than AIS, GIS is a better alternative for the new Substations on a space-constrained island. Furthermore, the construction time for GIS substations is less in comparison to AIS. Not only are the concrete support structures in AIS substations vulnerable to continuous degradation due to atmospheric conditions, but the insulation of the equipment also deteriorates over time due to changes in ambient temperature and humidity level, rain, coastal moisture, and pollutants in the air. However, in the case of GIS substations, as all the active parts are fully enclosed and are not exposed to harsh atmospheric conditions, the insulation remains intact thereby offering a high level of reliability and security. The insulation of the active elements of the GIS makes the system more secure by avoiding cables that meet the live parts and as a result minimises the risks of arc flashes. GIS substations also have the advantage of lowered maintenance costs. Compared to GIS substations, AIS substations require substantially more effort owing to the thoroughness of the inspections required. The latter normally involves torquing, drawing out, cleaning, lubricating, vacuuming the unit and checking for visual signs of copper corrosion. The complete insulation of the GIS helps to reduce inspection time. Depending on the specific manufacturer's recommendation, GIS require visual inspections every four years unlike most AIS, which necessitate inspection every year to two years.

The construction of the modern GIS substations, with the latest technology, will offer the following additional benefits:

a) Availability of line bays at both the 66kV and 22kV for the connection of renewable energy systems and Battery Energy Storage Systems.

b) Making space for the installation of containerized Battery Energy Storage Systems to support the integration of variable renewable energy systems.

c) Modern microprocessor-based electronic relays for fast fault clearing and implementation of protection schemes for renewable energy generating units.

d) Acquisition of accurate critical data from relays and transducers for use in analytical software for decision-making at the level of the System Control Centre and power system analysis.

1.3 Activities Proposed

The CEB is the sole national electric utility of the island and owns the transmission and distribution networks. The electric power transmission system primarily consists of 66 kV transmission with eighteen (18) major substations, where the voltage is stepped down to 22 kV for distribution. All these major substations are 66 kV AIS substations except for two (2) substations, namely Dumas and Union Vale, which are of indoor type AIS. Moreover, barring the FUEL Substation, which consists of outdoor 22 kV switchgear, the remaining 22 kV switching substations comprise indoor 22 kV metal-clad switchgear. The GIS sub-stations under the project will be scattered around the island of Mauritius (figure1). Ten sub-stations are for planned construction. Six will comprise the replacement of existing outdoor sub-stations and four new GIS sub-station will be constructed at the new location. The GIS Substation will increase the resilience and reliability of the CEB electricity distribution system and boost the integration of renewable energy.

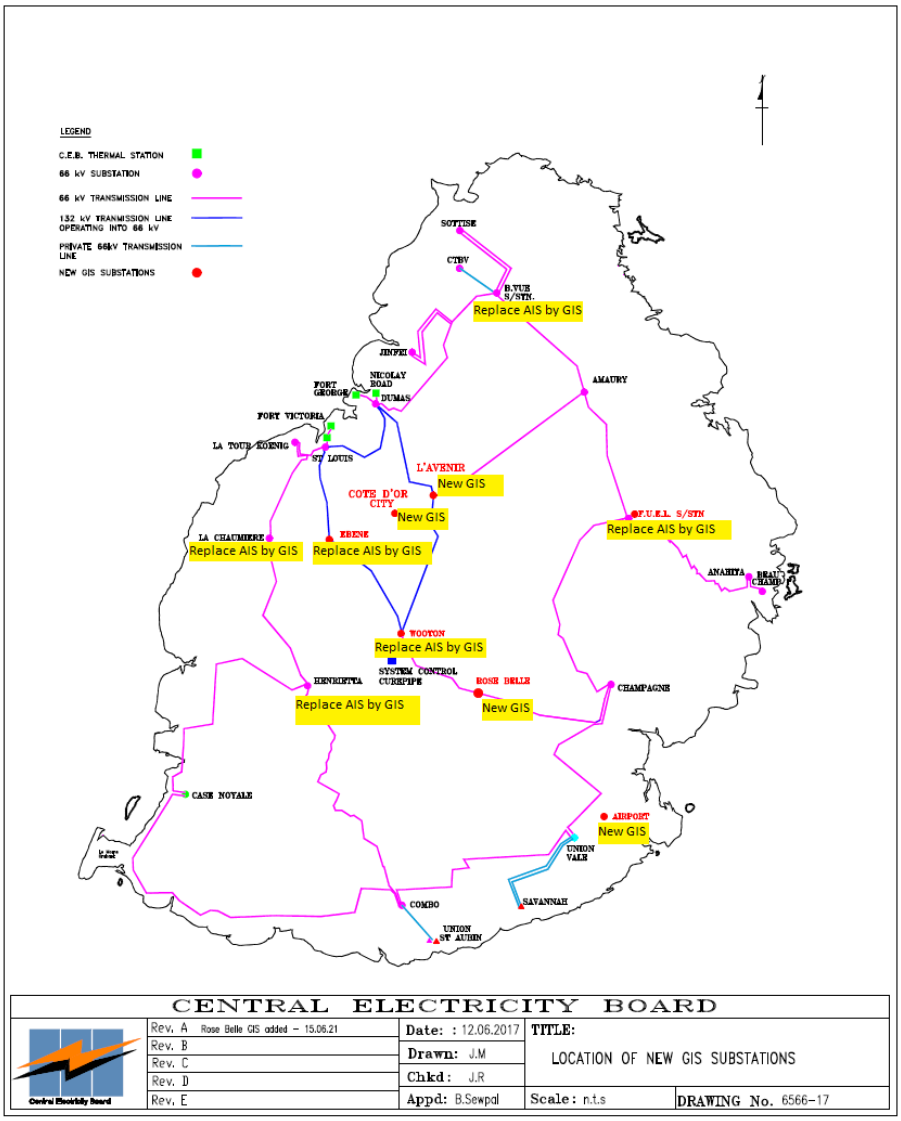

Figure 1.1: Location of Substations proposed for the GIS project.

The scope of work is split between the conversion of infrastructure in existing substations from air-insulated systems to gas-insulated systems and the establishment of new substations with the GIS infrastructure included only.

1.4 Scope of Work

The new double busbar 66 kV indoor GIS Substation will comprise twelve feeder bays, transformer bays, and a bus-section bay. Associated civil works, protection and control panels, substation controller, battery chargers (main and back up), batteries and communications panel. The Works shall include the following:

- Design, Supply, Construction and Commissioning of a new 22kV switch room including metal-clad switchgear consisting of 21 feeder circuits, 3 transformer incomer circuits and two bus sections.
- Design, Supply, Construction and Commissioning of this equipment and its connection to the existing CEB transmission network to replace the existing outdoor AIS 66 kV substation which will be phased out of operation. A smooth transition of all feeders including existing units from the 66 kV outdoor AIS to the new 66 kV indoor GIS is required.
- Deconstruct and demolition of the AIS systems and infrastructure and remove waste materials.
- Relocate, test and commission the existing 66/22kV step-down transformers.

1.5 Replacement of Existing AIS Sub Station

The below section provides a summary of the activities and infrastructure to be installed and activities to be performed. A summary table of the comparisons of the pre-construction and post-construction scope is provided in **Error! Reference source not found.**.

i. **La Chaumiere Substation – 66/22kV GIS:** The existing 66/22kV La Chaumière substation is in the western region of the island and was commissioned in 1984. The new indoor GIS substation will be constructed on a plot of land annexed to the existing substation.

ii. **Henrietta Substation – 66/22kV GIS:** The Henrietta substation, located in the mid-western region of the island, was commissioned in 1984. The new indoor GIS substation will be constructed on a plot of land annexed to the existing substation.

iii. **Belle Vue Substation – 66/22kV:** The Belle Vue substation is located in the northwest region of the island and was commissioned in 1985. The new 66kV and 22kV substations will be constructed within the compound of the existing substation.

iv. **Fuel Substation – 66/22kV:** The 66/22kV Fuel substation is located in the eastern region of the island and was commissioned in 1985. The new 66kV and 22kV substations will be constructed on a plot almost opposite the existing substation.

v. **Wooton switching substation – 66kV:** The 66kV outdoor AIS Substation at Wooton is in the centre of the island and was commissioned in 1984. The new 66kV indoor GIS substations will be constructed within the compound of the existing substation.

vi. **Ebene switching Substation – 66kV:** The 66kV outdoor AIS Substation at Ebene is located in the centre of the island and was commissioned in 1989. It is connected to the 132kV backbone transmission network, which is currently being operated at 66kV. The new indoor GIS substation will be constructed within the premises of the existing substation. It will comprise 132kV indoor GIS which will operate initially at 66kV and will thereafter operate at 132kV when the voltage level of the backbone transmission network is upgraded to 132kV.

Table 1: Existing substation upgrades

	Existing Infrastructure		Proposed Infrastructure	
La Chaumiere	66kV Busbar System	Single	66kV Busbar System	Double
	Outdoor AIS 66kV Bays	8	Indoor GIS 66kV Bays	11
	Indoor 22kV bays (metal clad)	12	Indoor GIS 22kV Bays	26
	Step down power transformers	2 (36/45 MVA each)	Step down power transformers	3 (36/45 MVA each)
Henrietta	Number of outgoing feeders	8	Number of outgoing feeders	18
	66kV Busbar System	Single	66kV Busbar System	Double
	Outdoor AIS 66kV Bays	9	Indoor GIS 66kV Bays	13
	Indoor 22kV Bays (metal clad)	14	Indoor GIS 22kV Bays	26
	Step down power transformers	2 (36/45 MVA each)	Step down power transformers	3 (36/45 MVA each)
	Number of outgoing feeders	10	Number of outgoing feeders	18
Belle Vue	66kV Busbar System	Single	66kV Busbar System	Double

	Existing Infrastructure		Proposed Infrastructure	
	Outdoor AIS 66kV Bays	11	Indoor GIS 66kV Bays	14
	Indoor 22kV Bays (metal clad)	13	Indoor GIS 22kV Bays	26
	Step down power transformers	2 (36/45 MVA each)	Step down power transformers	3 (36/45 MVA each)
	Number of outgoing feeders	7	Number of outgoing feeders	18
Fuel	66kV Busbar System	Single	66kV Busbar System	Double
	Outdoor AIS 66kV Bays	9	Indoor GIS 66kV Bays	14
	Outdoor 22kV bays	9	Indoor GIS 22kV Bays	26
	Step down power transformers	2 (20/30 MVA each)	Step down power transformers	3 (36/45 MVA each)
	Number of outgoing feeders	6	Number of outgoing feeders	18
Wooton	66kV Busbar System	Single	66kV Busbar System	Double
	Outdoor AIS 66kV Bays	9	Indoor GIS 66kV Bays	12
Ebene	66kV Busbar System	Single	132 kV Busbar System	Double
	Outdoor AIS 66kV Bays	8	Indoor GIS 132 kV Bays	10

1.6 New Indoor GIS Substations.

In addition to the above replacements, the CEB needs to construct four additional new 66/22kV GIS Substations and one 66kV switching substation to meet the load demands of committed

major developments. Their construction will also help to increase the grid capacity in terms of interconnection points to accommodate utility-scale renewable energy generation facilities (refer to **Error! Reference source not found.** for a comparison of infrastructure).

The four new substations and their associated developments are as follows:

i. **Rose Belle Substation – 66/22kV:** The 66/22kV Rose Belle Substation was triggered by the forthcoming Rose Belle Industrial Park project. It will be constructed in the southeast of the island more specifically in the region of Banane. This new substation will be connected to the Champagne – Wooton 66kV tower line in the first instance pending the commissioning of a double-circuited tower line connecting the Wooton Substation to the Champagne Substation.

ii. **Airport Substation – 66/22kV:** The Airport substation will be located in the region of the SSR Airport and will be connected to the Union Vale – Champagne 66kV transmission line. This new substation is required for the New Cargo Freeport Zone project and forthcoming load demand in the region, as the nearest substation, namely Union Vale is already saturated.

iii. **Cote D'Or Substation – 66/22kV:** The Cote D'Or substation is required for the Cote d'Or Smart City project. It will be connected to the transmission network via the new 66kV GIS Substation at L' Avenir.

iv. **L'Avenir – 66kV:** The 66kV switching substation at L' Avenir is required to connect the Cote D'Or substation to the network and increase the flexibility of operation at the transmission level with a common busbar for six transmission lines.

Table 2: New GIS Substation infrastructure proposed.

	Proposed Infrastructure	
Rose Belle	66kV Busbar System	Double
	Indoor GIS 66kV Bays	10
	Indoor GIS 22kV Bays	26
	Step down power transformers	3 (36/45 MVA each)
	Number of outgoing feeders	18

Airport	66kV Busbar System	Double
	Indoor GIS 66kV Bays	8
	Indoor GIS 22kV Bays	26
	Step down power transformers	3 (36/45 MVA each)
	Number of outgoing feeders	18
Cote - d'Or	66kV Busbar System	Double
	Indoor GIS 66kV Bays	8
	Indoor GIS 22kV Bays	26
	Step down power transformers	3 (36/45 MVA each)
	Number of outgoing feeders	18
L'Avenir	66 kV Busbar System	Double
	Indoor GIS 66 kV Bays	11

2. OBJECTIVES OF THE ESMP

2.1 Need for ESMP

The Environmental and Social Management Plan (ESMP) provides a review of the potential environmental and social impacts of the activities undertaken during the proposed project and suggests mitigation measures, defining the roles and responsibilities of various stakeholders for the implementation and monitoring of the project operations. This is document is not intended to be the final ESMP to manage construction activities, but rather to inform the EPCM and EPC contractors of the measures required to be included in their scopes of work. This ESMP has been prepared to achieve the following specific objectives:

- Provide guidance measures to contractors on the measures to manage/mitigate the environmental and social impacts arising during the construction and operational phases of the GIS project.
- Ensure compliance with AfDB Social and Environment Policies to safeguard environmental and social attributes. The ESMP will also ensure all the activities are following Mauritian Environmental Laws and Regulations.
- Ensure there is proper funding for the implementation of all the activities identified in the ESMP. The project makes provision for relevant training and capacity building in specific areas for the CEB personnel. Contractors must take note of the requirements of this ESMP and cost their works accordingly.

This ESMP will address the potential impacts and provide measures and actions to mitigate and manage potential adverse impacts, or to enhance positive or beneficial impacts based on the following mitigation hierarchy:

- Avoidance.
- Minimization and management.
- Restoration and
- Compensation/Offset in case of significant residual impacts.

CEB proposes to allocate financial resources and designate responsible personnel within the organisation to implement the management program. The promoter will develop a procedure to adjust the ESMP and, adapt actions and mitigations based on the environmental and social monitoring data. The contents of the ESMP will form part of the overall operational plan implemented after the completion of the project.

The GIS sub-station is on existing sites owned by the CEB and new sites that will have little impact on the surrounding environment. There will be no physical resettlement required and only land acquisition in the form of lease agreements. The project will bring an overall improvement over the existing infrastructure for the transmission of power within the Mauritian Grid Network and thereby improvement to the socio-economic environment.

2.2 Role of the African Development Bank (AfDB) in Mauritius

According to the AfDB Country Strategy Paper (CSP) for Mauritius (2009-2013), which was approved by the Board in September 2009 (ADB/DB/WP/2009/146), the role of the AfDB was to focus on: (i) Reducing structural bottlenecks to competitiveness and trade and (ii) Improving public sector efficiency and social service delivery. The AfDB thus help the Mauritian Economy respond to the global economic downturn while supporting the country's development priorities.

A new Country Strategy Paper (CSP) for the period 2014-2018 was based on two pillars: (i) infrastructure investment and (ii) regional integration. The 2014-2018 CSP was designed following the Bank's Strategy for 2013-2022 to assist Mauritius in reinforcing its ongoing efforts toward more inclusive growth and development.

The Bank's operational framework in Mauritius is intended to meet the needs of the country as an upper middle-income country (MIC). It prioritizes policy reform, technical assistance, capacity building, and knowledge work.

Since its first project in 1975, the Bank Group has provided significant and diverse support to the country's development efforts, approving a total of 37 operations consisting of 26 projects, three policy-based operations, three economic sector studies, and five lines of credit totalling US $1.2 billion in committed funds (https://www.afdb.org/en/countries/southern-africa/mauritius/mauritius-and-afdb).

All activities funded by the bank are subject to the Integrated Safeguards System (ISS) of the bank. In this regard, since this project is categorized as a Category 2 project, an ESMP is required to adhere to the ISS.

3. LEGISLATIVE FRAMEWORK AND NATIONAL POLICY

3.1 Introduction

The ESMP will comply with the Mauritian Legislation and has several environmental policies aimed at controlling the environmental impacts associated with a range of activities. The GIS project will be primarily required to comply with these policies.

3.2 AfDB Policy on the Environment

Integrated Safeguards System (ISS)- Guidance Materials

The African Development Bank Group (AfDB) implemented its Integrated Safeguards System as part of its strategy to promote inclusive and environmentally sustainable growth. Safeguards are an effective tool for identifying risks, lowering development costs, improving project sustainability, benefiting affected communities, and aiding in environmental preservation.

Environmental and Social Assessment Procedures (ESAP)

The African Development Bank's existing Environmental and Social Assessment Procedures (approved in 2001) have been revised to reflect the Integrated Safeguards System's updated information, upgraded processes, and cutting-edge knowledge (ISS). It also addresses the shortcomings of the existing ESAP and provides a solid procedural foundation for the implementation of the Integrated Safeguards Systems. It specifies the specific procedures that the Bank and its borrowers or clients must follow to ensure that Bank operations meet the operational safeguards (OSs) requirements at each stage of the Bank's project cycle.

3.3 Mauritius Legislative Framework

i. Environmental Protection Acts 1991 and 2002

The Environment Protection Act 1991 provided the framework for the administration of environmental protection in Mauritius. The key elements of the Act included:

- The requirements for, and role of Environmental Impact Assessment (EIA) in Mauritius; and
- National Environmental Standards (i.e. for air, noise, effluent discharge, hazardous waste.

In June 1993, Mauritius has adopted formal procedures for EIA following an amendment of the Environment Protection Act 1991. New Environment Protection Act enforced in September 2002 further consolidated and reinforced the institutional and legal framework for the protection of the environment in Mauritius. The Environment Protection Act (EPA) 2002 was repealed

from the 1991 Act with some saving and transitional provisions specified. In 2008, the Government of Mauritius brought an amendment to the EPA 2002 through the promulgation of the Environment Protection Amendment Bill to address many shortcomings in the previous EPA 2002:

Construction of a Substation, whether indoor (GIS) or outdoor (AIS), is not a scheduled activity requiring the submission of an EIA report. However, the enforcing agency can consider the non-listed project to submit an EIA report if there is a potential impact on the environment. Consultations with the enforcing authority have confirmed that no EIA is required, however, a screening study is required to allow the ministry of environment to determine any conditions that may apply to the project.

ii. Environment Regulations

Several Regulations are currently in place that supports the implementation of the Environment Protection Acts of 1991 and 2002. The following are the relevant regulations to the project:

- Environment Protection (Control of Noise) Regulations 2008;
- Environmental Standards for Noise (Amendment) Regulations 2003;
- Environment Protection (Standards for Air) Regulations 1998;
- Environment Protection (Standards for Effluent Discharge) Regulations 2003;
- Environment Protection (Standards for Effluent Discharge) (Amendment) Regulations 2004;
- Environment Protection (Effluent Discharge Permit) Regulations 2003;
- Environment Protection (Effluent Discharge Permit) (Amendment) Regulations 2004;
- Environment Protection (Standards for Hazardous Waste) Regulations 2001;
- Environment Protection (Industrial Waste Audit) Regulations 2008.

The Ministry of Environment and Sustainable Development has developed a new set of air quality and atmospheric emission standards, which are currently under review.

iii. Operational Noise Control

The *Environmental Protection (Environmental Standards for Noise) (Amendment) Regulations 2003* includes specific environmental limits on noise from any activity. The likelihood of noise during the construction phase will have little impact on the surrounding environment.

iv. Hazardous Waste

The *Environment Protection (Standards for Hazardous Wastes) Regulations 2001* classify the following power station wastes as hazardous material:

- Contaminated containers or another packaging (e.g. spent oil drums);
- Engine lubricating oils;
- Insulating and heat transmission oils containing Poly Chlorinated Biphenyls (PCBs) or Poly Cyclohexanedimethylene Terephthalate (PCTs);
- Non-chlorinated insulating and heat transmission oils and other liquids;
- Other chlorinated insulating and heat transmission oils and other liquids;
- Oil/water separator contents (solids, sludge and emulsions);
- Oil spills; and
- Synthetic insulating and heat transmission oils and other liquids.

According to the regulations, the Department of the Environment may impose pre-treatment of the wastes before disposal at a licensed disposal site. A waste generator is required to minimise such wastes by using the best practicable means and to ensure that the waste is properly stored, treated on-site, or disposed of as approved by the appropriate enforcing agency. The regulations specify waste labelling and consignment notes for the transportation of any hazardous wastes leaving a facility. CEB will continue to comply with these requirements.

3.4 National Development Strategy

The National Development Strategy builds on some of the key principles laid down in the National Physical Development Plan (NPDP) and other complementary strategies. The timeframe of the Strategy covers the period from 2003 to 2020. This Strategy aims to achieve critical mass through the clustering of settlements and employment-generating activities, to form an attractive economic base for Government sector commitments and private sector initiatives. The following is a list of objectives under the NPDP:

- Providing strategic advice to the Government on the efficient provision of transport and utility infrastructure.
- Facilitating development opportunities for national and international advisors.
- Promoting sustainable development which conserves high-quality agricultural land and protects sensitive environmental areas; and
- Earmarking the institutional and implementation changes needed to support effective follow including the framework for the Plans of Local Council.

3.5 International Conventions applicable to the project

Mauritius has signed several Multi-Lateral Environmental Agreements (MEA) to protect the environment. The International Convention, which is required before the implementation of the proposed development are:

- United Nations Framework Convention on Climate Change (UNFCCC)
- Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their disposal; Ban Amendment to the Basel Convention
- Bamako Convention on the ban of the import into Africa and the control of transboundary movement and management of hazardous wastes within Africa

3.6 Statutory requirements

The statutory permits which are required before the implementation of the proposed development are:

- Clearance from Central Water Authority (C.W.A)
- Clearance from Central Electricity Board (C.E.B)
- Clearance from Wastewater Management Authority (WMA)
- The Development Permit and the Building Permit (Municipality)

4. PREDICTED ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

4.1 Introduction

The purpose of this section is to indicate the possible impact on the environment by the project and the measures to minimise, eliminate or manage those impacts. The impact will depend on the phase of the development. A GIS substation is a high-voltage substation in which the major structures are contained in a sealed environment with **sulfur hexafluoride gas (SF6)** used as the insulating medium. GIS technology originated in Japan, where there was a substantial need to develop technology to make substations as compact as possible. The clearance required for phase-to-phase and phase-to-ground for all equipment is much lower than that required in an air-insulated substation; the total space required for a GIS substation is substantially less than that needed for a conventional substation.

4.2 Impacts of the project on GHG Emissions

Green House Gas (GHG) Emissions

The presence of SF6 in our switching system of the GIS Substation is a matter of concern as SF6 has a very high **Global Warming Potential (GWP)**. Switchgear with SF6 is in widespread use throughout the world and is an accepted industry standard for indoor substations. This material is currently the most suitable for such type of application and CEB has no alternative to consider. There is no restriction on the use of SF6 in electrical switchgear. In its pure state, SF6 is a non-toxic gas. It is not hazardous for people and contains no pollutants. It is non-flammable. Based on literature and experience with our current performance of switchgear, we are of opinion that the SF6 release to the atmosphere will remain under control. CEB will regularly check for leakages on these switch gears and consider repair. CEB will endeavour to return the faulty device containing SF6 to the supplier for disposal. The SF6 is far denser than air, hence if leaked and detected it can be captured again without release into the atmosphere.

4.3 Impact during the Construction Phase

i. Construction Waste during Excavation

The construction of the GIS Substations will necessitate excavation works to prepare the foundation for the building and transformers. The site preparation and demolition works will generate debris including rocks and soil. The contractor will transport all wastes to approved

disposal sites. Site Clearing will be carried out at the new locations, namely, l'Avenir, Cote d'Or, Rose Belle and Airport.

The pulling down of the existing AIS will generate a substantial number of wastes including metals and conductors. A Waste Management Plan will be prepared in collaboration with the contractor to ensure all the wastes are properly disposed of.

ii. Noise

The use of machinery for construction works will generate noise. Welding and fixing of the racks will also generate some high levels of noise. These activities will be during the daytime only. Workers on site will be required to wear ear-protecting devices whenever necessary.

iii. Traffic Movement

During the construction phase, there will be regular movement of the vehicle to and from the site for the transportation of workers and materials. All works will occur under the close supervision of the promoter to ensure the loading and unloading occurs safely.

iv. Visual Impacts

The site is located away from the residential zone and does not have any perceived visual impact. However, during the construction phase, there is likely to be movement of vehicles for the transportation of construction materials for the building and GIS modules.

The promoter will consider upgrading the landscape by planting endemic and native plants around the site. The building and other structures will use light paint. Security fencing will be used to barricade the site.

4.4 Mitigation Measures

Overview

There are several considerations during both detailed design and operation to minimise environmental and social impacts. The promoter will employ specific measures to mitigate significant impacts. CEB and the EPC contractor(s) will develop a series of operational management plans to ensure mitigation measures are implemented.

i. Measures to Mitigate Air Quality

Construction activities will generate a significant amount of dust. The EPC contractor will provide a proper screen to limit the amount of dust. They will also have to use water sprinklers if dry weather conditions prevail which can produce excessive amounts of dust. CEB will carry out periodic leak monitoring tests for sulphur hexafluoride (SF6) in the GIS and respond appropriately. A stocktaking exercise shall indicate if there have been any significant leaks. The promoter will arrange to send any faulty units to the manufacturer for disposal. A Grievance Mechanism Plan will be prepared by the CEB or contractor to address complaints from residents.

ii. Measures to Mitigate Impacts on noise.

The construction phase will generate a significant amount of noise. However, the impact on the inhabitant will be negligible as they are at a large distance from the site of work. Workers on site will wear ear protection devices. Works on site will occur from 07.00 a.m to 5.00 p.m during weekdays and from 07.00 to 13.00 on Saturdays. There will be no work on Sundays.

iii. Measures to Mitigate Impacts on Water Resources

CEB will prepare and implement **Operational Procedures** to mitigate impacts on water resources during the design or operational phase. Spent fluids will be stored on site before disposal at an appropriate location, for example, hazardous waste can be sent to the Mare Chicose Landfill site, where the is the provision of a hazardous waste cell. CEB will conduct water quality monitoring of water bodies in the region to show the impact of the construction of the GIS project.

iv. Measures to Mitigate Impacts from Traffic and Transport

The Contractor will provide a Traffic Management Plan to ensure there is no disturbance caused to the movement of traffic during the construction phase. The traffic movement will return to normal once the project is completed.

Major mobilisation would be required for transporting heavy equipment to the site from the Harbour and will be carried out late at night when there is little traffic on the road.

v. Measures to Mitigate Impacts from Wastes

The impact of the wastes from the operation phase of the Project can be mitigated by managing them following the Construction Soil and Waste Management Plan (and with due regard to the waste hierarchy. The promoter will adopt the following methods in order of preference:

- Waste Minimisation.
- Reuse and Recycling.
- Waste Treatment; and
- Disposal

vi. Measures to Mitigate landscaping and visual impacts.

The following mitigation measures are recommended throughout the operational phase of GIS to further minimise landscape and visual impacts during operation:

- the design, orientation and materials will be appropriately and reasonably developed to match existing site and landscape characteristics.
- appropriate use of non-reflective surfaces and surface colour treatment.
- an appropriate landscape plan shall be developed and adopted using tree belts and buffer screenings to provide visual relief and shade.
- minimisation of external signage clutter and signs which have a silhouette effect on the skyline.
- Monitoring to ensure that visual screening and dust control measures in the Management and Action Plans for the Project are implemented effectively.

5. ROLES AND RESPONSIBILITIES

The ESMP will be implemented using an adaptive management approach to respond to changes that occur at various stages of the Project and, as a living document, will be updated as needed to reflect the status of the Project, site features, and management requirements.

The CEB will implement the ESMP with adequate and qualified personnel working within an appropriate organizational structure, following Project standards, stakeholder participation and information-sharing requirements, and ensure that contractors and subcontractors implement management controls. Contractors are expected to adopt this ESMP and implement the mitigation measures provided.

5.1 CEB Organisational Structure

The CEB has a well-trained pool of personnel to supervise the construction of the GIS sub-station; they include electrical engineers, mechanical engineers, and civil engineers, supported by subordinate staff, like supervisors and Safety and Health officers. Additional training on the GIS will be provided during the construction and commissioning stage of the project. The Transmission and Distribution Department of the CEB will be the main department for the construction and operation of the GIS sub-station. The Environment Section in collaboration with the Safety and Health Department of the CEB will coordinate all activities related to environmental, safety Health and social impact monitoring. Regular awareness programmes will be conducted for the personnel that will focus on environmental monitoring, health and safety and waste minimisation. The tentative project management Unit (PMU) of the CEB management section will comprise the following personnel:

Project Manager	CEB and CEB appointed Project Engineer
Team Leader	Mr Chavan Dabeedin (RESP Manager)
Technical Staff	Mr. Mohamed Sameerkhan Khodabocus Mr Ally Rujbally Mr Damodar Doseeah Mr Nawaz Edoo
Procurement	Mr Krishoonlall Jeewooth (Supply Chain Executive)

Environmental and Social	Mr Sanjay Sookhraz (Senior Environmental Affairs Officer)
Financial Management	Mrs. Farida Hossen Khan Mr Bashir Mungrah

The Environmental Engineer appointed by the contractor shall be a qualified Environmental Specialist. The appointment of a Safety and Health Specialist is also a mandatory requirement for the EPC Contractor. The following roles and responsibilities will apply to the project (on-site management):

5.3 Organisational Structure of the ESMP project

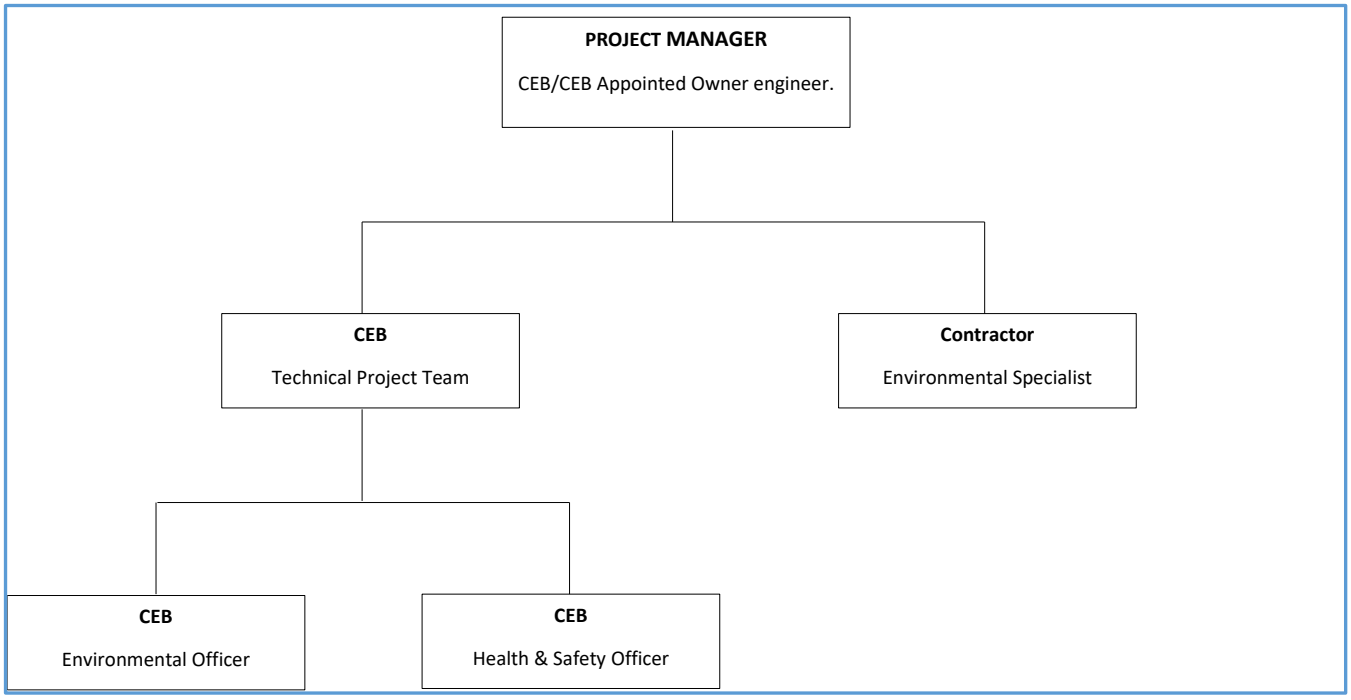

Figure 5.1: Organisational structure of the GIS project

Project Manager

- Responsible for implementation requirements.
- Liaison with the authorities
- Incorporation of any environmental requirement imposed by the authorities into the ESMP.
- Review reports from EPC environmental officer
- Investigate any environmental incident enquiries.

- Liaise with the Procurement Practice to incorporate environmental control documents into contracts.
- Ensure induction material includes project-appropriate environmental issues.
- Approve environmental training programmes and other awareness initiatives.

5.2 Owner's Engineer

The Owner's Engineer (OE) has overall responsibility for environmental management on site which includes the implementation of the CEMP and ESMP. The OE reports to the CEB Project Manager. The OE is supported by the Employer's Project Environmental Manager. The specific tasks during the construction phase will include:

- Reviewing the monthly reports compiled by the Employer's Environmental Officer
- Identifying the need for remedial measures concerning the proposed works
- Communicating directly with the Contractors
- Responsible for ensuring a suitable CEMP is compiled.
- Enforcement of the ESMP and CEMP
- Issuing non-conformance notifications to Contractors that do not comply with the requirements as set out in the CEMP.

5.4 Environmental Officer (CEB)

CEB's environmental officer assigned to the project must conduct internal audits of the activities. This role can be filled by the OE by appointing a suitably qualified environmental professional. The roles would include the following:

- Audits of the project's environmental compliance against the legal requirements and AfDB requirements.
- Develop a system and control documents to be used to demonstrate compliance (e.g. audit checklists, waste registers, incident registers etc.).
- participation in the procurement phases to Ensure that this ESMP and environmental controls are included in the tendering phases for each contractor.
- Reporting to the AfDB and authorities as needed.
- Overall supervision of the project in terms of Environmental and Social safeguards.

5.5 Contractor's Environmental Officer

The roles and responsibilities of the contractor Environment officer will be as follows:

- Fulfilment of all requirements of the ESMP and management plans
- Implementation of additional commitments determined by CEB.
- Ensuring compliance with project standards, obtaining all relevant permits and licenses
- Monitoring construction activities (including subcontractor activities) and taking measures within the scope of the ESMP.
- Development of implementation and monitoring plans/procedures in line with the ESMP structure, implementation after the approval of the CEB
- Employment of competent EHS staff within the scope of the project
- Providing the necessary training to the contractor and sub-contractor staff on environmental and social issues
- Providing follow-up and analysis of environmental and social accidents
- Environmental inspections, monitoring and audits related to ESMP practices, reporting to CEB.
- Prompt notification of accidents and incidents and keeping an incident register at the construction site throughout the Project life.

5.6 The Contractor

The Contractor shall comply with the specifications of the ESMP and CEMP and abide by the instructions issued by the OE.

A Declaration of Understanding must be signed by each contractor as part of the procurement process acknowledging the agreement and the content of the ESMP and CEMP.

6. MANAGEMENT MEASURES

The EPC contractor is expected to produce a CEMP that considers the control measures as stipulated in this ESMP. The CEB Environmental Manager will be responsible for reviewing and approving the CEMP in consultation with the OE. The following environmental and social management measures will be addressed in the CEMP and any other EMP that is produced as part of the project:

1. Site establishment
    a. Locating of sites for site establishment and laydown areas
    b. Ensuring environmental and social mitigation measures have been addressed.
2. Waste management
    a. Conduct a waste classification to identify the nature and types of waste that may arise from construction and demolition.
    b. Waste management measures for minimising and handling wastes
3. Dust management
4. Stormwater management and pollution avoidance
5. Rehabilitation and landscaping of work areas, specifically areas around the final substation footprints and temporary access
6. Noise management
7. Protection of heritage resources
8. Fire control
9. Environmental awareness training and induction
10. Safety
11. Traffic

The table in Annexe 2 provides an initial identification of impacts and mitigation measures to be used in compiling future EMPs.

7. CONTROL MEASURES

7.1 Overview

The ESMP will meet international standards on environmental and social management and performance, specifically those set out by the IFC/World Bank and the AFD. The ESMP includes measures for Environmental Management, Waste Management and disposal, noise abatement measures, maintenance schedules, emergency response planning as well as monitoring and dissemination of information to the enforcement agencies and public on the environmental and safety impacts of the project. The ESMP will ensure compliance with applicable environmental standards during both the construction and operation phases of the Redevelopment Project.

The ESMP will be available to the prospective bidders to ensure that normal environmental mitigation costs are included in the construction costs. The Contractor will prepare work plans for environmental management in line with the ESMP (Environment Management Plan, Construction Management Plan, Traffic Management Plan, and Waste Management Plan.)
The ESMP will be dynamic and will be subject to changes during the design and construction phase to enable continuous improvement of the Project's environmental and social performance. The plan details the mitigation and enhancement measures. The promoter will implement through the duration of the project including desired outcomes, performance indicators, targets or acceptance criteria, the timing for actions, responsibilities, and associated costs. CEB will have principal responsibility for all measures outlined in the ESMP but may delegate responsibility to its contractor(s), where appropriate. The ESMP table indicates the responsibilities of project developers, individuals, or organisations. Capacity building and training requirements are described where these relate to specific skills required to deliver the ESMP outcomes.
The CEB and EPC contractor will formulate several Environment and Social Management Plans (ESMP) to address problems that occur during the construction and operational phase of the GIS project. The following is a list of ESMPs:

7.2 Material Use and Waste Management Plan

The dismantling of the existing AIS Sub-Station will generate a significant amount of solid waste comprising concrete and metallic parts. The Waste Management Plan will ensure the wastes are properly stockpiled before disposal. CEB will consider sorting the wastes and consider re-use the electrical parts. A waste register kept on the site will record the amount

type and disposal methods.

Chemical and transformer oils will be properly contained. A spill kit will be kept on-site to manage minor spoil that may occur during construction as well as the operational phase.

7.3 Health and Safety Management Plan

For the construction phase, the EPC Contractor will formulate a Health and Safety Management Plan in line with the contractor's policy and the Mauritian Occupational Safety and Health Act (OSHA). This plan will address the safety of employees who will be working during construction and consider matters related to working with electrical hazards and working at heights.

The promoter (CEB) will appoint a Safety and Health Officer to supervise the works on site. Before an operation, CEB will commission a risk assessment exercise to identify the risks and consequently propose measures to mitigate those risks.

7.4 Noise and Vibration Management Plan

Noise and vibration will be the main concern during the construction phase. The EPC contractor will develop a Noise/Vibration Management Plan. The equipment used on site will be well maintained to prevent the generation of excessive noise that can disturb the local environment. A noise-monitoring plan will be prepared for the construction period.

The EPC contractor will carry out work between 7.00 a.m. and 5.00 p.m.

7.5 Water Quality Management Plan

The EPC contractor shall prevent the entrainment of sediments into the watercourses by keeping all wastes in covered containers. Chemical and liquid wastes will be stored in hermetic containers. All liquid wastes will be disposed to approve sites.

7.6 Air Quality Management Plan

Dust emissions during the construction phase could be a source of nuisance. The EPC contractor will take remedial action deemed necessary to mitigate this problem. For instance, the use of water sprinklers to suppress dust during dry weather conditions.

The GIS system consists of SF6, which is a compound with High Global Warming Potential. Mauritius is a signatory member of the United Nations Framework on Climate Change Convention and consequently should submit its GHG emission. CEB will monitor the level SF6 in the GIS and inform the Ministry of Environment of the amount on an annual basis or as

advised by the Ministry.

7.7 Land Quality Management Plan

CEB will maintain good housekeeping of the site to prevent any kind of an eyesore. The design of the sub-station will consider the aesthetic look and the colour of the building will match the surrounding environment.

7.8 Reporting

CEB will manage and audit the Contractors' environmental and social management and monitoring responsibilities. This will be accomplished through a combination of reviewing the Contractor's construction environmental and social management plan, conducting regular inspections and audits, and conducting formal reviews and reporting as part of the overall construction monitoring process.

8. BUDGET AND SCHEDULE

8.1 Estimated costs for the project.

The estimated cost of the ten GIS substations is **USD 119.15 million**. Table 3 shows an indicative project implementation plan.

Table 3: Proposed Time Schedule for the Execution of work

Activity	Expected date
Launching of Tender Documents	April 2023
Award of Contract	October 2023
Mobilisation of Work on Site	November 2023
Commissioning	February 2025 (Rose Belle, Cote D'Or Henrietta) April 2025 (Belle Vue, L'Avenir Cote D'Or) March 2026 (Wooton, Ebene, Fuel)
Operation	February 2025 (Rose Belle, Cote D'Or Henrietta) April 2025 (Belle Vue, L'Avenir Cote D'Or) March 2026 (Wooton, Ebene, Fuel)

8.2 Costs for ESMP Implementation

The overall ESMP indicative budget, before and during the construction phase, is USD 5.0 Million. Several costs have been estimated based on the information available at the time of the ESMP's preparation. The costs associated with some measures are expected to change. Although a provision was always made when the budget was prepared, budgets allocated may have been underestimated or overestimated. CEB will propose an update to the overall environmental and social budget twice a year, along with suggestions on how to reallocate funds. These ideas will be presented to lenders for consideration.

Table 4: Estimated cost for the ESMP Project implementation

Item	Amount (Million US Dollars)
Staff Budget	1
Monitoring Requirement	0.5
Spill kits and spill response	0.5
Rehabilitation	0.5
Landscaping	0.75
Landform management /Stormwater management and control	0.75
Waste Management	1
Total	5

9. CONCLUSION

The new GIS will cater for the increase in the net transmission and distribution network as compared to the AIS Substation, which is less reliable. The GIS project will also help the country upgrade the transmission network to a higher voltage of 132 kV in the future. The GIS project will have a net positive impact on electricity infrastructure by providing a safe and reliable system. The project will forge significant capacity-building opportunities for CEB officers.

Through the setting up of an Environment Management and Monitoring Plan, CEB will significantly reduce the environmental impacts of this project. The land requirement for a GIS substation is much less than compared to an AIS substation.

Construction time will be as per the works regulation and working hours will be controlled to avoid noise nuisance to the nearby inhabitants. During excavation works, dust barriers will retain dust emission.

The GIS project will have a net positive impact on electricity infrastructure by providing a safe and reliable system to manage the electrical grid network. There will be significant capacity-building opportunities that will benefit the CEB officers with this kind of technology.

Annexe 1: Letter from the Ministry of Environment

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In reply please quote
EN CLR/RQS/GNRL/T6

Ministry of Environment , Solid Waste Management and Climate Change
Department of Environment
2nd Floor, Ken Lee Tower
Cnr Barracks & St Georges Sts
Port Louis

October 10, 2022

General Manager
Central Electricity Board
Rue du Savoir
Cyber City
Ebene

Dear Sir,

Re: Clearance for Replacement of AIS Sub-Station by GIS Sub-Station and Construction of 4 New GIS Sub-Station

Reference is made to your letter dated 25 August 2022 requesting clearance for the replacement of AIS Sub-Station by GIS Sub-Station and construction of 4 new GIS Sub-Station.

2. I am directed to inform you of the following:

i. The construction of the ten new GIS sub-station namely at La Chaumiere, Henrietta, Belle Vue, Fuel, Wootun, Ebene, Airport, Cote D'Or, Rose Belle and L'Avenir does not warrant a PER approval nor an EIA licence.
ii. All necessary permits/clearances from the relevant authorities including the respective Local Authority shall be obtained and all the conditions attached therewith shall be scrupulously observed.
iii. Clearance from the Water Resources Unit shall be sought for the site at Rose Belle given that same is located within the 200m buffer zone of boreholes.
iv. Necessary measures shall be taken during all the phases of the project, including site preparation, decommissioning, and construction, so as not to cause any nuisance by way of dust, noise, vibration or otherwise, to the public and surrounding environment.
v. The solid wastes from the decommissioning of the existing AIS sub-stations shall be disposed of to the satisfaction of the Solid Waste Management Division.
vi. All equipment to be used on site during the construction period shall be regularly serviced and maintained in good condition to minimize risk of air and noise pollution.

MINISTRY OF ENVIRONMENT, SOLID WASTE MANAGEMENT AND CLIMATE CHANGE
Date Issued: 10/10/22
Signature:

Annexe 2: Summary of Anticipated Environmental and Social Management Measures per Activity

REF	Activities/Mitigation/Enhancement Measures	Desired outcomes	Performance indicators	Monitoring and records keeping	Timing of Mitigation/enhancement measures	Responsibilities Cost/Resources
1	**Emissions to air during the construction phase**					
	Demolition of the existing AIS building and ancillaries cause the emission of dust particles to the surrounding. The EPC contractor will Implement best practices to minimise emissions, like the use of screens to block dust, and the use of water Sprinklers to dampen the dust.	Minimisation of dust emissions and avoidance of dust nuisance Minimise soil entrainment in the surrounding area. Avoidance of health impacts on the workers and local community	Stockpiling of construction debris inside shall be minimised Keep a record of waste disposal.	The contractor will provide a monthly environmental monitoring report to the CEB	To be provided in the Construction Management Plan (CMP) by the contractor. A dust management programme will be provided in the CEMP submitted by the EPC Contractor before work on the site Water sprinklers will be used when required and the proper screen will be provided by the contractor A Grievance Committee will look after complaints from workers as well as public complaints	This will be provided within the general responsibilities of the site supervisor

REF	Activities/Mitigation/Enhancement Measures	Desired outcomes	Performance indicators	Monitoring and records keeping	Timing of Mitigation/enhancement measures	Responsibilities Cost/Resources
2	**Emissions to air during the operation phase**					
	GIS substation contains a substantial quantity of Sulfur Hexafluoride (SF6), known as a very potent Green House Gas (GHG). It is, however, well encapsulated within the system and does not escape to the environment.	The amount of SF6 used will be the minimum possible. No leaks will be allowed.	Amount of SF6 used annually for refilling	The SF6 level in the GIS will be regularly checked. CEB will send the report to the Ministry of Environment for their inventory of GHG emissions.	During commissioning and operation	CEB and supplier of the SF6
3	**Noise During the Construction Phase**					
	Construction noise levels will be treated under the Occupational Safety and Health Act 2005. The contractor will provide ear protective devices and ensure there is proper monitoring of the employees' exposure to excessive noise levels. Construction noise will be managed through the following measures: • Selection of low-noise equipment • Temporary screening of noisy equipment	Minimisation of noise to avoid exceedance of noise levels indicated in the Occupational Safety and Health standard. To minimise noise disturbance to residents and receptors	Noise measurement compared with Environmental Noise and Occupational noise is within standards. Number of Complaints received	Provision of appropriate Noise level meter to monitor the noise during construction.	Monthly monitoring during the construction phase.	This will be joint monitoring by the Contractor and the Safety and Health Section of the CEB. Any cost that is required to minimise the noise levels will be borne by the contractor. The contractor will provide ear-protecting

REF	Activities/Mitigation/Enhancement Measures	Desired outcomes	Performance indicators	Monitoring and records keeping	Timing of Mitigation/enhancement measures	Responsibilities Cost/Resources
	• Switching the machines off when, not in use					devices. CEB will take care of its employees
4	**Noise During the Operational Phase**					
	Noise generated from GIS is normally low and will not affect the surrounding environment.	The safety and health of CEB employees will be monitored regularly.	Health monitoring report prepared by the CEB HR Department	Noise measurement to verify compliance with national Environmental and Health regulations.	Monthly monitoring during the operational phase of the project	Test to be carried out during the commissioning stage by the EPC contractor.
5	**Waste Management During Construction Phase**					
	Demolition and excavation of the site will generate a significant quantity of solid wastes, comprising concrete material, metals and electrical wastes. Excavation works may cause soil material to be blown/washed from the construction site.	The solid waste generation will be minimised and segregated appropriately Reduce entrainment of wastes in the surrounding	CEB/EPC contractor shall consider waste minimisation techniques by recycling and/or reuse of some of the remains from the existing AIS substation	Waste segregation and disposal as per Mauritian regulations. Debris will be sent to disposal sites. Records of disposal are to be kept	Monitoring will be done every month	EPC Contractor to provide details of disposal done every month

REF	Activities/Mitigation/Enhancement Measures	Desired outcomes	Performance indicators	Monitoring and records keeping	Timing of Mitigation/enhancement measures	Responsibilities Cost/Resources
6	**Waste Management During Operational Phase**					
	Liquid Waste Generation Storage of SF6 on site in case there is a need to top up the gas in the GIS modules	Water will be needed for daily usage by the employees in their daily activities such as drinking and hygienic use Ensure minimum SF6 is kept on site	Amount of liquid waste transported by the sewer waste carrier Amount of SF6 used every year	Wastewater will be properly disposed of using septic tanks and absorption pits. Use of SF6 will be recorded and data sent to the Ministry of Environment for GHG inventory.	The proper septic tank will be designed to ensure there is no contamination caused to underground water. CEB will have to provide data to the Ministry of Environment on the amount of SF6 used in the GIS system	The number of liquid wastes on site will be limited as the GIS substation will be unmanned. CEB will carry out the inventory of SF6
7	**Management of Social Issues**					
	Complaints from the local population may occur during the construction phase.	Reduce the number of complaints	The number of complaints received over the construction period. A Grievance Mechanism Plan will be prepared to ensure prompt intervention	Keep records of complaints in the complaints register and take precautionary measures. CEB/EPC Contractor will keep Grievance Records on site	A complaint monitoring committee will be set up to address public complaints.	CEB/ EPC Contractor

REF	Activities/Mitigation/Enhancement Measures	Desired outcomes	Performance indicators	Monitoring and records keeping	Timing of Mitigation/enhancement measures	Responsibilities Cost/Resources
				for the workers and public.		
8	**Others**					
	Health and Safety Management Plan (Developed separately by Contractor) Recruitment Policy and Human Resources Policy	Safe working environment, procedures and culture. Further policies/procedures to be developed if needed to be identified through site audits IFC PS2 – Labour and Working Conditions IFC EHS General Guidelines on Occupational Health and Safety (OHS) Equity in local employment benefits / minimises social conflict. Prohibit the	The number of accidents and non-compliance. Use of Personal Protective Equipment (PPEs) Number of staff, their age	Regular visits by officers as per the Health and Safety Policy of the EPC contractor and the CEB	System in place prior to construction, additional plans and policies developed as needed. Before Construction phase	Contractor Project Manager (construction) / General Manager (operation) responsible for implementation at project /Operation Level CEB/EPC Contractor

REF	Activities/Mitigation/Enhancement Measures	Desired outcomes	Performance indicators	Monitoring and records keeping	Timing of Mitigation/enhancement measures	Responsibilities Cost/Resources
	Traffic Management Plan	The use of child and forced labour / promotes non-discrimination and equal opportunities. Avoid traffic congestion	and qualifications Number of vehicles on-site during construction. Movement of vehicles and workers to and from the site of works	List of employees by the EPC contractor. Consultation with Traffic Management Officers to prepare and execute the Plan	During the construction phase.	CEB/ EPC Contractor