

The Belize Reliant and Resilient Energy System Project

Summary of Environmental and Social Risks and Impacts – San Pedro Site

I. Project Description

The Belize Reliant and Resilient Energy System Project is a World Bank financed project that will be implemented by a Project Implementation Unit (PIU) located within the Central Execution Unit (CEU) of the Ministry of Finance, Economic Development, and Investment (MFEDI).

The Project Development Objective (PDO) is to strengthen the reliability and resilience of the national electricity system and enable greater renewable energy integration. This will enhance the electricity system's resilience against extreme climate by strengthening the national transmission infrastructure. The project consists of two components:

Component 1 – Strengthening Energy Reliability and Resilience. This component focuses on hardware and software investments that are designed to strengthen energy reliability and resilience in Belize within the existing institutional and sectoral arrangement.

Sub-component 1a will support the acquisition and deployment of 4 x 10 MW Battery Energy Storage System (BESS) across the indicative sites of (i) San Pedro in Belize District (10MW), (ii) Dangriga in Stann Creek District (10MW), (iii) Orange Walk in Orange Walk District (10MW), and (iv) Ladyville in the Belize District (10MW).

Sub-component 1b on enhancing operation of national electricity system will support the acquisition and deployment of associated investments (hardware and software investments) for the BESS and the overall power system operation to enhance the national electricity system and support its cost-effective operation.

Component 2 – Energy Sector Institutional Strengthening, Capacity Building and Project Management. This component will finance technical assistance and capacity building for main energy sector stakeholders to move towards implementation to achieve the objectives of the National Energy Policy 2023, in addition to increasing female representation in the energy sector.

Sub-component 2a will include capacity building and will provide support to stakeholders to inform and develop policies and regulations.

Sub-component 2b focuses on developing the technical and soft skills of women within STEM and the energy sector who are interested in renewable energy through the provision of technical capacity building and skill development, scholarships, and mentoring.

Sub-component 2c is related to Project management.

The project is expected to start implementation in early 2025 for a duration of 6 years. Feasibility studies will be undertaken to determine the suitability of the sites for installation of the BESS. Based on the study's outcomes, detailed designs and other analytical work including Environmental and Social Impact Assessments will be undertaken during implementation.

II. Purpose of this Report

As part of project preparation, E&S screening was undertaken at all four indicative BESS sites. As per the environmental and social screening of 3 of the proposed sites i.e. Dangriga, Orange Walk and Ladyville, E&S risks are considered as Moderate. The E&S risk rating for the potential San Pedro site was assessed as Substantial.

Due to the Substantial risk associated with the San Pedro site, this document addresses the E&S due diligence undertaken during project preparation. This includes description of the baseline conditions, identification of potential impacts and measures to be implemented, stakeholder engagement carried out, the grievance mechanism and monitoring and reporting arrangements.

III. The San Pedro Site

The proposed project site is located within San Pedro Town, Ambergris Caye in North-Eastern Belize. San Pedro is a popular tourist destination and is located close to the Belize Barrier Reef Reserve System (BBRRS) which is considered a UNESCO World Heritage Site. The BESS site is located on the Leeward Edge of Central San Pedro Town (Figure 1), which is considered an enclosed portion of the island that receives less hydrodynamic influence due to its relatively protected nature within the Ambergris Caye Lagoon.

The BESS site is owned by Belize Electricity Limited (BEL) since 1995.¹ The approximate area of the land is about 1.83 acres. There is a BEL-owned Substation occupying about 0.84 acres out of the 1.83 acres and is fenced. The remaining 0.79 acres have mangroves, and an Eco-Sanctuary separated from the substation by a local road. To prepare for the installation of the BESS, BEL applied for permission to the Department of Forests (DoF) and Ministry of Environment (DoE) to clear the mangroves in the 0.79 acres of their property. Permission was granted by DoF in November 2023 to clear 0.39 acres. In December 2023, BEL altered 0.429 acres of land of which 0.39 acres was covered with mangroves. After the clearance, the site was infilled (Figure 2). As per the information at hand, the remaining mangrove area is not expected to be needed for the BESS, during the construction period or the operation period. The exact location of the BESS will be finalized when the Owner's Engineer's analysis has been completed.

¹ The Government of Belize (GOB) has 32.6% interest in the Company, the Social Security Board owns 31.2% resulting in public sector interest of 63.8%. Fortis Cayman Inc. owns 33.3% and over 1,500 small shareholders own the remaining 2.9% interest in ordinary shares.

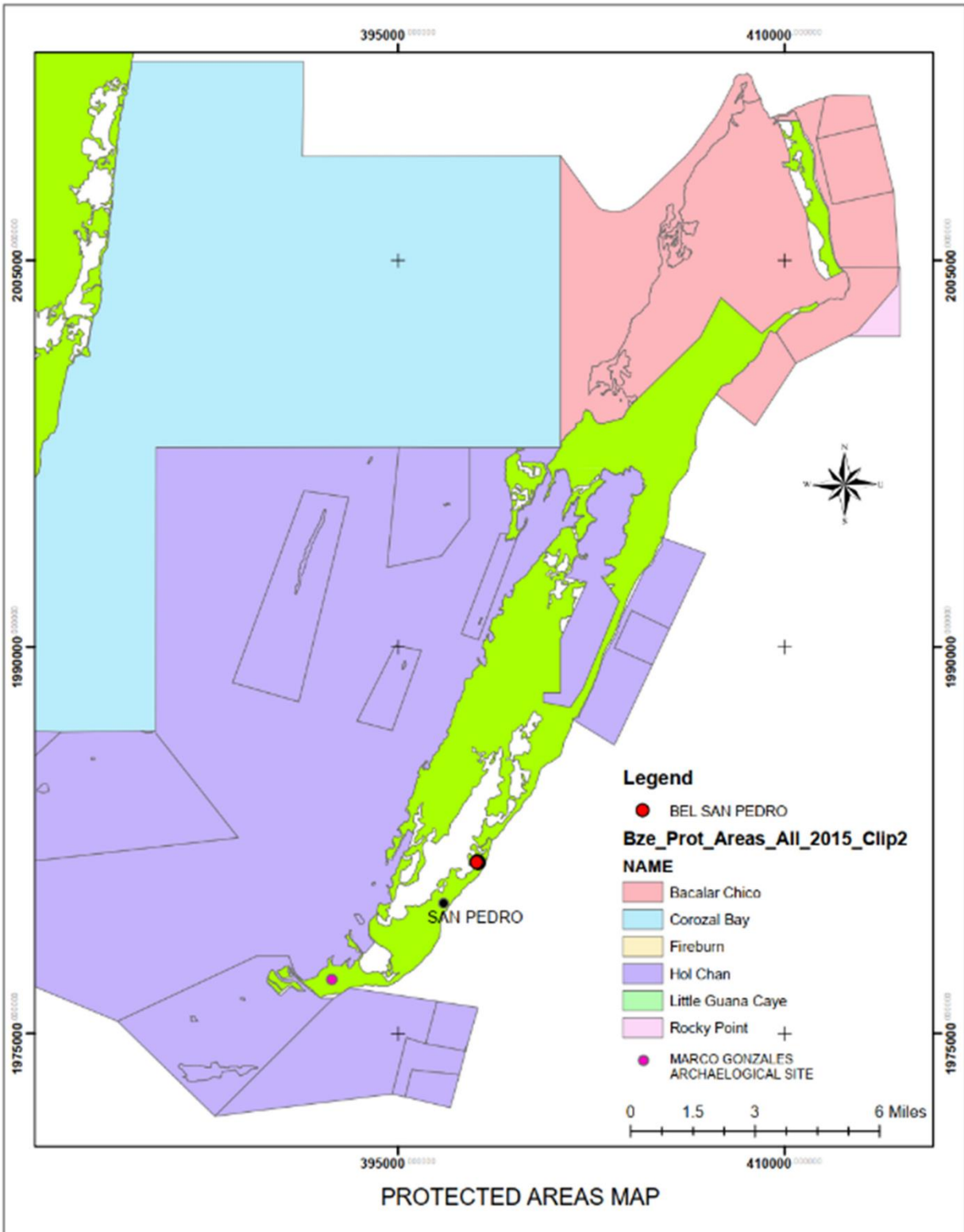


Figure 1 – Project Location and Marine Protected Areas. Source: Tunich-Nah Consultants & Engineering, 2024.

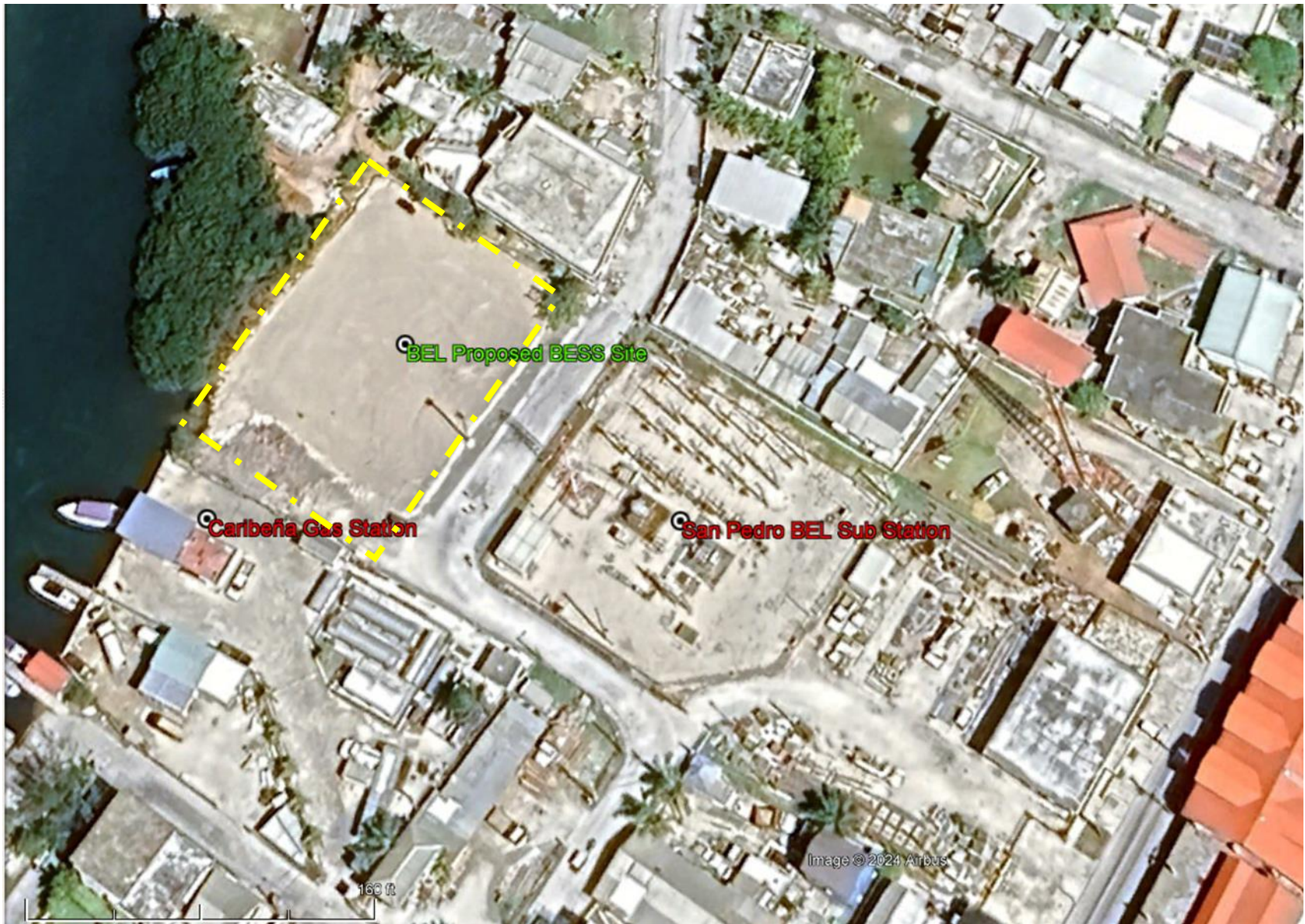


Figure 2: Satellite Imagery (Google earth, 2024) showing cleared and filled Proposed BESS Site adjacent to the BEL substation.

IV. Baseline Data

As the clearance occurred at BEL's sole initiative prior to baseline data collection, an E&S Audit² was undertaken to identify the baseline E&S conditions at the site. The information presented in this section is based on the findings of the Audit report.

Environmental Conditions

The inner lagoon and the terrestrial portions of San Pedro Town are not immediately considered by Belizean Zonation, to be a highly valuable ecological zone due to the high levels of anthropogenic influence at Southern Ambergris Caye that has been occurring since the 1960s. Though several protected areas surround Ambergris Caye, such as the Hol Chan Marine Reserve, Bacalar Chico and Marco Gonzalez Maya Cultural Site, they are not considered within the project site's zone of influence (Figure 1).

The San Pedro Town is being developed and is expected to expand. This is permitted for the South Ambergris Zone (San Pedro Town) as it is identified as a zone of development (not conservation)³. The San Pedro Town has about 1,156.2 acres of mangroves of which 0.39 acres (0.03%) was cleared for the BESS installation.

The most prominent species of mangroves found at the site are the Red Mangrove (*Rhizophora mangle*) and Black Mangrove (*Avicennia germinans*). Both are classified as species of Least Concern as per the IUCN Redlist.⁴

A large number of Iguanas which are considered a semi-protected species (they are classified as "game" species), according to the Belize Wildlife Protection Act (revised 2010), are present at the site. The Green Iguana (*Iguana iguana*) is used for its meat and eggs in traditional dishes; and as a result, game species in Belize are allowed to be hunted for their parts if the proper regulations are followed. The Green Iguana is classified as Least Concern as per the IUCN Redlist.

Based on observation and public knowledge, significant amounts of bird species (migratory, seasonal, game, etc.) or mammalian species are not prevalent at the project site, as well as the entire San Pedro Town, due to the minimal availability of nesting habitat and foraging opportunities, along with high levels of noise and human interference. Due to high levels of boat traffic and disturbance throughout the San Pedro Lagoon and the nearby creek and aquatic pollution, the mangroves cleared were not considered as habitat for protected marine life such as lobster and conch.

Thus, based on site observations and historical records the Audit concluded that the potential BESS site was a modified habitat with no species of significance present at the site.

² E&S Audit Report for the Belize Renewable Integration and Resilient Energy System Project: San Pedro BESS Site. Prepared by Tunich-Nah Consultants & Engineering. July 2024.

³ As per the Informed Management Zoning Scheme within the Coastal Zone Management Guidelines of 2016

⁴ All mangroves are protected in Belize under the Forest (Protection of Mangroves) Regulations, 2018. As per Clause 3 subclause 1 'A person shall not alter, allow or cause to be altered any mangrove, unless the alteration is carried out pursuant to a permit'

Socio-Economic Conditions

The socio-economic conditions of the San Pedro site prior to the land clearance by BEL showed the existence of an eco-sanctuary that promotes tourism in the area. No one has lived on the land except for its use as an eco-sanctuary that houses iguanas run by an individual who has been in informal occupation of approximately 0.79 acres of land that BEL has legal title to. Of these 0.79 acres, 0.429 acres were cleared and filled in anticipation of this project. Prior to the removal of the mangroves from the land there were two small built structures, an access way and boardwalk to facilitate visitors' navigation around the eco-sanctuary for viewing the iguanas. The two small structures, the access and part of the boardwalk were damaged during the mangrove clearance and infilling. Findings from the E&S Audit report indicate that the owner of the Eco Iguana Corner Foundation which runs the eco-sanctuary, claims to have started maintaining the land as a way to protect the iguanas there since 1998, much prior to establishing the Eco Iguana Corner Foundation as a non-profit organization in 2019. According to the individual, there is no charge for patrons who visit the eco-sanctuary, although donations are accepted and used to pay for the services of two staff members of the Foundation who help to maintain the facility. Visitors can view the iguanas in their natural habitat and the two staff members provide information about the species. The clearance of the land has affected the accessibility and infrastructure of the site, which adversely impacted the donations received. Thus, BEL's action resulted in damage to the eco-sanctuary's assets and the loss of income to its employees.

Consultations between BEL and the owner of the Foundation have not resulted in a mutually amicable solution. More recently BEL filed a claim in the High Court to regain possession of the remaining 0.361 acres of land.

V. Environmental and Social Risks and Impacts

The Project will have overall positive environmental and social impacts as it will support the integration of variable renewable energy (VRE) through the acquisition and deployment of battery of storage and grid infrastructure which will improve the resilience and reliability of the grid. The Environmental and Social (E&S) risks are primarily related to Component 1 of the Project.

Environmental risks and impacts during construction are primarily related to noise, water, and air pollution, drainage, occupational health and safety impacts, hazardous and non-hazardous waste management, fire and life safety, traffic management among others.

Due to the clearing and subsequent infilling, ponding and water logging along the north boundary of the site, has been observed affecting the neighboring property. During the design phase, the drainage will be assessed and based on the design and placement of the BESS, drainage will be designed and constructed by the civil works contractor. In the interim, remedial measures will need to be taken to address the ponding and water logging that is taking place.

Social risks and impacts are associated with labor and working conditions, occupational health and safety (OHS), community health and safety and possibly land acquisition due to the matter being subjudice in court. Given the size of the installation and maintenance service contracts expected under the project, contracted firms are expected to hire local labor, and thus the risks related to labor influx to San Pedro for the project are expected to be limited. Community-based concerns may relate to construction-related vehicles and greater volume of traffic on adjacent access roads. The Stakeholder Engagement Plan (SEP)

has been prepared and disclosed by the client. More details on stakeholder engagement including grievance mechanism are provided in sections VI and VII below.

The clearing of the land and mangroves, has had adverse economic impacts on an individual and his staff at the eco-sanctuary. Furthermore, recently, BEL has filed a court case to regain possession of its property 0.361 acres of uncleared land being used by the eco-sanctuary.. The judicial decision will determine whether the borrower will need to exercise its power of eminent domain to acquire the land if needed for the project and/or use in the future. The remedial actions recommended in the audit report include a commitment to provide compensation to the affected persons working in the eco-sanctuary until the restoration of damaged infrastructure is completed, and for the eco-sanctuary to continue operating in the 0.361 acres of land till the court decision has been made.

Based on the E&S Audit proposed remedial actions, around 4 broad categories of activities have been identified which include water runoff, restoration of damaged infrastructure, restoration of loss of income and payment of compensation to Project Affected People. Additionally, due to Belize's commitment to protecting and reversing the loss of mangroves, replanting of the mangroves is added to the scope of remedial actions⁵.

These actions, elaborated below have been agreed between the World Bank and GoB and are included as commitments in the Environment and Social Commitment Plan (ESCP).

1. Replantation of Mangroves

- a. Provide details and ecological justification of the mangrove species to be replanted including source of seedlings to inform replanting.
- b. Provide a replantation plan describing inter alia the proposed location and size of land, ecological suitability of the site for the selected species, planting plan and program and management proposals for the mangrove area.
- c. Plant the mangrove seedlings in a location, of a size and with a species composition agreeable to the World Bank.

⁵ The replanting of mangroves as part of the Project will contribute to GoB's laudable NDC targets (<https://unfccc.int/sites/default/files/NDC/2022-06/Belize%20Updated%20NDC.pdf>), ensure that national legislation and World Bank policies (<https://www.worldbank.org/en/projects-operations/environmental-and-social-framework>) are complied with, and align with international good practice, as elaborated below:

- Belize has long recognized the importance of mangroves and has developed policies, laws and regulations that collectively aim to not only protect the existing mangroves but expand and restore them. Although all mangroves have been afforded legal protection in Belize under the Forest (Protection of Mangroves) Regulations since at least 2018, Belize has announced targets (Belize Updated NDC, 2021) to nearly double the amount of mangrove that is under protection (by adding 6000ha by 2025 and another 6000ha again by 2030), restore at least 2000ha by 2025 (and another 2000ha by 2030), and halt and reverse mangrove loss by 2025. Belize has identified that achieving these targets will require not only improvement of public conservation measures, but also the engagement of private landowners, local communities and bilateral and multilateral agencies.
- The permit dated Sep 4th, 2023, issued by the Department of the Environment prior to the clearance of the mangroves at San Pedro, requires in its point 8, the replanting of mangroves, and the maintenance of a mangrove fringe along the shoreline of the San Pedro site. The audit undertaken of the site identified that mangrove was the dominant habitat type of the area that was cleared.
- The ESF (ESS6 – Biodiversity; ESS1 – Assessment and Management of E&S risks and impacts) requires projects that are financed by the World Bank to consider impacts on habitats and biodiversity (including from threats such as habitat loss, degradation and fragmentation) and to take measures to avoid, minimize, mitigate or compensate for impacts taking into account the vulnerability and irreplaceability of the habitats at a global, regional or national level. The audit undertaken of the site has indicated that the area of mangrove that was cleared was not critical habitat but had developed naturally at the site over the last approximately 40 years.
- Given the importance of the project and the small scale of impact (0.39ha of low value mangrove lost), the project will align with the Government's commitments to protecting and reversing the loss of mangroves in Belize.

- d. Develop and submit a long-term management plan for the monitoring and maintenance of the replanted mangroves, describing the arrangements for the survival and protection of the seedlings for the first 10 years.

2. Water Runoff

- e. Undertake measures with urgency to address the flooding issues caused due to the clearing of the mangroves and land reclamation; more permanent measures will be implemented when the designs are developed, and civil works are started.
- f. Review designs to ensure drainage is adequately addressed in the BESS designs.
- g. Include the specifications in the procurement documents.

3. Restoration of damaged infrastructure

- h. Restore/repair/relocate damaged infrastructure: the pathway, boardwalk linking pathway to entrance and two small built structures at the eco-sanctuary.

4. Restoration of loss of income

- i. Provide compensation from Project loan to the affected persons working in the eco-sanctuary for loss of income in line with the World Bank's ESS5.

5. Compensation to Project Affected People

- j. Compensate Project Affected People from Project loan for proven loss and damage suffered as per the World Bank's ESF requirements and national legislation based on the outcome of the judicial court decision.

Apart from the remedial actions identified above, to manage the potential ESHS risks during project implementation, at each potential site a detailed environmental and social assessment will be undertaken and site specific environmental and social management plans (ESMPs) will be developed in line with the WB Group General Environmental Health and Safety (EHS) Guidelines and the Guideline for Electric Power Transmission and Distribution. The Owner's engineer will be responsible for undertaking the feasibility studies and the E&S due diligence under the supervision of the CEU. This includes conducting the E&S assessments, developing the ESMPs, integrating the E&S requirements into the bidding documents and supervision of civil works. The ToR for the Owner's engineer (consultancy) has been reviewed by the World Bank towards this end.

VI. Stakeholder Engagement Process

A Stakeholder Engagement Plan (SEP) for the project has been prepared and disclosed. This will be updated after the project becomes effective and will be subject to further consultations and then redisclosed publicly by GoB. A draft was disclosed on the government's website on July 15, 2024, and is available here: <https://med.gov.bz/sep-belize-renewable-integration-and-resilient-energy-system-bries/>.

Under ESS 10 of the World Bank's ESF, the neighbors and business impacted by the San Pedro BESS are considered to be project affected parties, and Government of Belize is required to consult with such parties as part of project design and preparation and throughout project life as necessary. Besides, the beneficiary communities in San Pedro, key stakeholders are the Belize Electricity Limited (BEL), Ministry

of Public Utilities, Energy and Logistics and E-Governance (MPUELE), Public Utilities Commission (PUC) among others.

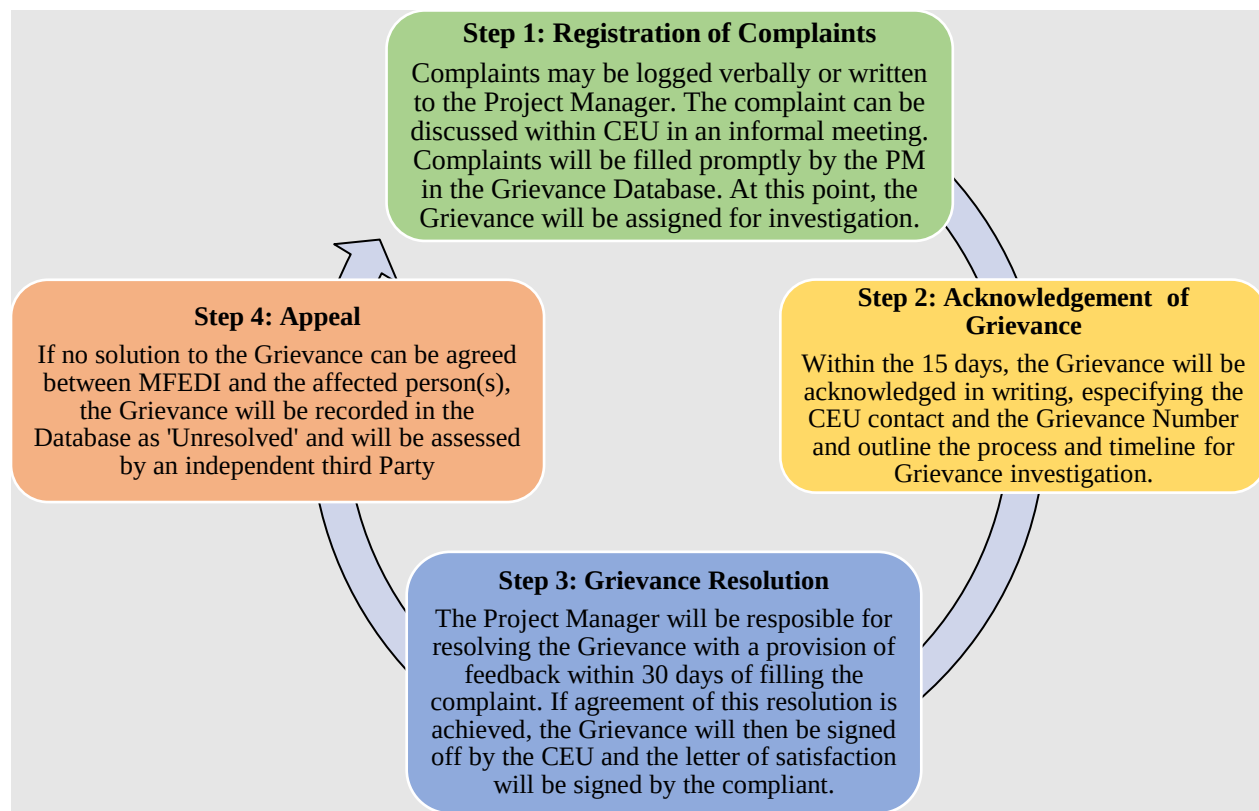
VII. Grievance Redress

The Government of Belize has established a Grievance Mechanism (GM) for this project and is described in the SEP (Figure 4). This mechanism accepts complaints about the projects' impacts from the public and offers an opportunity to clarify the risks and impacts, as well as mitigation measures. It also provides an opportunity to receive feedback from the beneficiary communities at the project locations.

The GM has been designed to be easily accessible, costless to accept anonymous complaints and can be used at the same time as local judicial pathways for seeking redress. Complaints may be sent to the contacts given below. Complaints which are submitted anonymously or by a third party will be accepted.

Contact details for the GM: are: Name: Dr Pedro Villegas Post: Environmental and Social Specialist Email: pvillegas.ceu@cpu.mof.gov.bz Phone: +501 822-4106	Contact details for the Appeals: Name: Alexis Salazar Post: Monitoring, Evaluation, Accountability and Learning Assistant Email: asalazar.ceu@cpu.mof.gov.bz Phone: 822-4106
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Figure 4: GM procedure and process for handling a complaint



VIII. Monitoring and Reporting

The CEU will be the Project Implementation Unit (PIU) and will be staffed with a Project Manager and experts in monitoring and evaluation, environment and social, among others. The environmental and social safeguards staff will work closely with the Owner's Engineer to monitor and manage E&S risks at the BESS project sites and prepare regular implementation progress reports to ensure E&S planned activities are on track and consistent with the ESF.