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Environmental and Social Assessment (ESA)

Proposed Abaco Island Solar PV Plant and
Energy Storage Project

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Acronyms and Abbreviations

Name	Description
°C	Degrees Celsius
AC	Alternating current energy
BAOI	Biological Area of Influence
BEC	Bahamas Electricity Corporation
BEST	Bahamas Environmental, Scientific and Technological Commission
BIA	Bahamas Investment Authority
BMP	Best Management Practice
BNGIS	Bahamas National Geographic and Information Systems Department
BNT	Bahamas National Trust
BPAF	Protected Area Fund
BPL	Bahamas Power and Light
BPS	Bahamas Power and Light Company, Ltd.
BS EN	British Standard European Norm
CCLIP	Conditional Credit Line for Investment Projects
CR	Critically Endangered
dBA	Decibels (A)
DC	Direct Current
DEHS	Department of Environmental Health Services) and
DRA	Disaster Reconstruction Authority (DRA),
EHS	Environmental, Health, and Safety
EIA	Environmental Impact Assessment
EN	Endangered
EPA	United States Environmental Protection Agency

ERM	Environmental Resources Management
ERMA	Environment Monitoring and Risk Assessment
ESA	Environmental and Social Assessment
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plans
ESPF	Environmental and Social Policy Framework
FAO	Food and Agriculture Organization of the United Nations
GBIF	Global Biodiversity Information Facility
GBPC	Grand Bahama Power Corporation
GHGs	Greenhouse gases
GIS	Geographic and Information Systems
GoBH	Government of Bahamas
GSM	Global System for Mobile Communications
ha	Hectare
IBA	Important Bird Areas
IBAT	Integrated Biodiversity Assessment Tool
IDB	Inter-American Development Bank
IEC	International Electrotechnical Commission
IFC	International Finance Corporation
ILO	International Labor Organization
IOM	International Organization for Migration
IUCN	International Union for Conservation of Nature
Km/h	Kilometer per hour
Km/h	Kilometer per hour
Km ²	Square kilometers
KPIs	Key Performance Indicators
kV	Kilovolt
LRP	Livelihood and Resettlement Plan
m	Meters
m ²	Meter square
mm	Millimeters
MoF	Ministry of Finance
mph	Mile per hour
MW	Megawatts
NEMA	National Emergency Management Agency
NGOs	non-governmental organizations
NO ₂	Nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
PM	Prime Minister

PM ₁₀	Particle concentrations less than 10 microns in aerodynamic diameter
PM _{2.5}	particle smaller than 2.5 microns in aerodynamic diameter
PS	Performance standard
PV	Photovoltaic
RMI	Rocky Mountain Institute
SEA	Strategic Environmental Assessment
SESA	Strategic Environmental and Social Assessment
SO ₂	Sulfur dioxide
TOR	Terms of Reference
UNEP	United Nations Environment Program
UNODC	United Nations Office on Drugs and Crime
VU	Vulnerable
WHO	World Health Organization
WTO	World Trade Organization
µg/m ³	Microgram per cubic meter
IBA	Internationally recognized Important Bird Area

1. INTRODUCTION

Established in 1959, the Inter-American Development Bank ("IDB" or "Bank") is the main source of multilateral financing for the economic, social and institutional development in Latin America and the Caribbean. Through its activities, the Bank provides loans, grants, guarantees, policy advice and technical assistance to the public and private sectors of selected borrowing countries.

To support the diversification of the Energy Matrix of The Bahamas and to increase security and reliability of the network, the IDB is undertaking the operation "Reconstruction with Resilience in the Energy Sector in The Bahamas" (the "Operation"), coded BH-G0003. The objective of the Operation is to support the Government of The Bahamas (GoBH) with the rehabilitation of critical energy infrastructure and restoration of electricity service in the islands heavily affected by hurricane Dorian, while facilitating the integration of renewable energy in the country.

The Operation represents an additional source of funding, offered by the European Union – Caribbean Climate Investment Facility (EU-CIF) under the Framework Administrative Agreement signed between the European Union (EU) and the IDB, to expand the scope of the IDB's Conditional Credit Line for Investment Project (CCLIP) "Advancing Renewable Energy In The Bahamas" (approved by the IDB in January 2020 and coded as BH-O0006). In January 2020, as part of the CCLIP approval process, a Strategic Environmental and Social Assessment (SESA) and an Environmental and Social Management Framework (ESMF) were prepared to identify the potential social and environmental impacts related to the CCLIP and establish adequate management guidelines for the components of the Operation.

The Operation will support the following two components of the CCLIP:

- **Component 1:** Reliable and renewable electricity in New Providence and family Islands to support the reconstruction efforts.
- **Component 2:** Strengthening skills for the energy reconstruction effort across the Bahamas.

In support of Component 1, the Operation will finance the installation of a 2.25 Megawatts (MW) Solar Photovoltaic (PV) Plant and an equivalent capacity of battery energy storage (occupying an area of approximately 5 hectares of governmental land) to primarily supply the Marsh Harbor Government Complex and the Marsh Harbor Healthcare Center (the "Hospital") in the Island of Great Abaco. This project will support the resilient reconstruction and rehabilitation efforts of the electric system, following the destruction caused by Hurricane Dorian in 2019.

Environmental Resources Management (ERM) prepared this Environmental and Social Assessment (ESA) as an Addendum to the SESA to assess the significant environmental and social impacts associated with the development of the 2.25 MW Solar PV Plant and energy storage project (the "Project") within the CCLIP.

1.1 Project Proponent

The proponent of the Project is the Ministry of Finance (MoF). In order to properly execute the Project, a Project Execution Unit (PEU) has been established within the PEU; this unit will oversee and manage the Project development. This PEU is comprised of a legal specialist, a technical specialist, and an environmental and social specialist to provide high level project management. The Project is being developed in collaboration with the public utility Bahamas Power and Light Company Ltd. (BPL), the energy provider on the Island of Great Abaco.

1.2 Purpose and Need for the Project

Before Hurricane Dorian, the installed electricity capacity in The Bahamas was approximately 630 MW, of which 530 MW was managed by the public utility BPL and 100 MW by the private utility Grand Bahama

Power Company (GBPC), which serves the whole island of Gran Bahama. BPL serves 114,000 customers, whereas GBPC serves 19,000. Electricity demand in The Bahamas is concentrated in New Providence Island, representing 75% of the country's demand, followed by Grand Bahama. The remaining demand comes from the Family Islands.

The electricity system in The Bahamas was already vulnerable and faced structural challenges, even before the hurricane. Overwhelming dependence on imported fossil fuels, specifically heavy fuel oil, represents a costly and unsustainable burden on Bahamian households and businesses. The Bahamian National Energy Policy (NEP) 2013-2033 establishes a target of 30% Renewable Energy (RE) generation in the energy mix by 2030. Unless additional financial resources are made in RE generation and policymakers prioritize the use of RE over fossil fuel resources, the likelihood that the GoBH will meet such target is low. Although there have been some pilot programs and developments on the RE regulatory side since 2010, not enough sustainable and comprehensive actions have been taken to move beyond the current renewable share of less than one percent of the overall generation.

To stimulate the RE sector, the MoF is taking action in corralling stakeholders towards a sustained effort. The Bahamas has a historic opportunity to transform its energy matrix in the aftermath of Hurricane Dorian by addressing structural challenges that have made electricity costly and unreliable, constraining economic growth and dampening the quality of life for its population. The reconstruction and modernization of the archipelago's energy system is an opportunity to strengthen isolated and interconnected grid networks with resilient RE resources, coupled with conventional power systems designed to withstand the increasing frequency and severity of extreme weather events. It also presents an opportunity to raise awareness of RE as a new energy subsector, and the skills employment and economic opportunities this presents for Bahamian citizens.

1.3 Objectives and Scope of the Environmental and Social Assessment (ESA)

The objective of ESA is to complement the SESA and assess the Project specific environmental and social impacts in accordance with the IDB's Environmental and Social Operating Policies.

Specific objectives of this ESA include:

- Identification of positive and/or negative changes in the human and natural environment that may affect the quality of life as well as current and future options for sustainable social and economic development in the Project's Area of Influence;
- Identification of measures to minimize negative impacts and enhance positive impacts of the Project, following the mitigation hierarchy;
- Stakeholder mapping and documentation of existing consultations and or additional consultations and outreach activities; and
- Present the Environmental and Social Management Plans established for the Project.

2. SUPPLEMENTAL POLICY, LEGAL, AND ADMINISTRATIVE FRAMEWORK

2.1 National Legal Framework in Bahamas

The Commonwealth of The Bahamas has established a comprehensive institutional and legal framework for environmental protection and natural resources management. Three key organizations, The Bahamas Environmental, Scientific and Technological Commission (BEST), the Department of Environmental Health Services (DEHS) and The Bahamas National Trust (BNT) within the Ministry of Environment and Housing, together with specific governmental resource management agencies, provide the institutional direction for environmental protection and management.

The regime of environmental protection in the country is supported by a number of policies that control activities in the physical and biological environment. Recent modifications during November 2019 included a compendium of environmental legislation such as The Ministry of Environmental Bill (2019), The Environment Planning and Protection Bill (2019), The Environmental Protection (Control of Plastic Pollution) Bill (2019), The Bahamas National Trust (amendment) Bill (2019), The Bahamas Protected Areas Fund (Amendment) Bill (2019), and the Tariff (Amendment) Bill (2019). The main institutions, the legal, regulatory and administrative frameworks governing environmental protection, natural resources management and other relevant topics related to the Operation are summarized below.

2.1.1 *The Ministry of Environment and Housing*

The Ministry of the Environment and Housing is focused on protecting the health and sustainability of the natural environment in The Bahamas, as well as providing housing needs to low and middle-class income families and individuals.

Its areas of responsibility are:

- The protection, Conservation and Management of the Environment;
- Relations with National and International Organizations on matters relating to the Environment;
- International Convention, Treaties, Protocols and Agreement relating to the Environment;
- Reefs and Blue Holes;
- Wild Animal and Bird Protection; and
- Natural History Specimens.

The following sub-sections describe in more detailed some of the key units and departments within the Ministry of Environment and Housing.

2.1.1.1 *The Bahamas Environment, Science and Technology Commission (BEST)*

The Bahamas Environment, Science and Technology Commission (BEST), the country's environmental agency created in 1994, is responsible for the overall environmental and natural resources management of The Bahamas. BEST has developed the Environmental Impact Assessment (EIA) guidelines and has the primary responsibility of assessing the proposals submitted for the development of projects in the country. BEST reviews EIA reports, advises the Government as to the acceptability of projects and recommends amendments when necessary.

BEST has developed a policy and procedures for environmental management, including coastal zone management. The agency's mandate also includes:

- Advising the Bahamas government on the environmental impact of development proposals submitted to the commission for review; and conducting site visits for projects under EIA review;

- Serving as the country's focal point and point of contact for all international organizations on environmental, scientific and technological matters;
- Coordinating activities related to international treaties, protocols and agreements to which The Bahamas is or will become a signatory;
- Representing the government in discussions and negotiations with representatives of regional and international organizations and foreign governments on environmental, scientific and technological matters; and
- Serving as a forum to encourage and enhance dialogue and information exchange between government agencies and private sector entities.

BEST's Board, headed by the Ambassador for the Environment, consists of representatives from the Senate, Department of Fisheries, Department of Environmental Health Services, Department of Agriculture, Water and Sewerage Corporation, College of The Bahamas, Ministry of Tourism, Ministry of Foreign Affairs, Ministry of Finance, Port Department, Department of Land & Surveys and Bahamas National Trust.

2.1.1.2 Department of Environmental Health Services (DEHS)

The Department of Environmental Health Services (DEHS) is responsible for enforcing public health guidelines and industrial regulation and enforcement. The Department is responsible for solid waste management and oil spill contingency plans. Under the Environmental Health Act of 1987, and the Environmental Health Regulations, the DEHS mandate is to promote and protect public health and ensure conservation and maintenance of the environment. In practice, ensuring conservation and maintenance of the environment has been limited to preventing actions taken in the environment that negatively impact human health, such as pollution.

The main role of the DEHS is to regulate, monitor, and control actual and likely contamination and pollution of the environment and establish minimum standards required for preserving a clean, healthy, and pleasant environment. For large projects, the DEHS evaluates the effectiveness of pollution control measures and initiatives to protect the health and safety of workers and the natural environment. DEHS also issues the necessary effluent discharge and emissions permits. DEHS has created a new entity, the Environment Monitoring and Risk Assessment (ERMA) Division, formerly the Public Analyst Laboratory attached to the DEHS, which has the responsibility for environmental monitoring.

Sub-divisional offices presently exist on the islands of Grand Bahama, Exuma, Abaco, Andros, Bimini and Eleuthera San Salvador, Inagua, Acklins, Crooked Island and Long Island.

2.1.1.3 Forestry Unit

The Forestry Unit of the Ministry of the Environment and Housing is in charge of sustainably managing The Bahamas' extensive natural forest resources. This Unit develops the forest resources of the Bahamas to their maximum potential by applying sound, scientific, and sustained yield forest management principles and concepts.

The Director of Forestry and the Forestry Unit carry out the provisions of the Forestry Act, which was enacted in 2010 for the long-term sustainable management of all types of forests in the Bahamas. The Unit's services include permits for timber harvesting and general forests activities.

2.1.1.4 The Bahamas National Geographic and Information Systems Department (BNGIS)

The BNGIS Centre's vision and remit is to serve as the National technical focal point for the collection and management of geospatial data on the Commonwealth of The Bahamas. It has also as mandate to advance

an Operation that provides a strategic national framework for long-term systematic access and exchange of geospatial data between governmental agencies and other information providers. This data exchange is for improved planning, research and analysis, to improve GIS literacy in the school system and to equip managers, technicians and the wider GIS Community with GIS skills and technical support.

2.1.2 National Emergency Management Agency (NEMA)

The National Emergency Management Agency (NEMA) is a government agency, which operates under the authority of Cabinet Office. Their mission is to reduce the loss of life and property within the Commonwealth of The Bahamas in case of national emergencies, by ensuring that adequate preparedness and mitigation measures and response and recovery mechanisms are established to counteract the impact of natural, man-made and technological hazards. The NEMA administers the country's Disaster Management Program, including mitigation planning, community preparedness, public information and recovery coordination. The NEMA office is located in Nassau.

The activities of reconstruction and rehabilitation in Abaco and Grand Bahama after Hurricane Dorian are currently managed by NEMA (for short-term reconstruction) and by the new Ministry Of Disaster Preparedness, Management and Reconstruction (for long-term master planning). Given the emergency nature of these interventions, these activities are expedited and do not necessarily require approval by the Ministry of Environment.

2.1.2.1 International Support

Further, some international organizations were involved with helping manage the damage caused by Hurricane Dorian in the Bahamas. For example, as of September 2020, the Red Cross was instituting a Home Repair program to help those who had lost their homes in the hurricane (International Federation of Red Cross, 2020). Direct Relief was also supporting The Bahamas with aid, including providing repairs and extensions for health clinics across Grand Bahama and the Abaco islands (Direct Relief, 2020). It was also supporting the operation of a mobile medical bus on Abaco, which is providing primary care and basic lab services to affected communities in remote areas on Grand Abaco (Direct Relief, 2020). Other organizations, such as the St. Bernard Project, provided aid by repairing homes, providing water and developing alternative power solutions (St. Bernard Project, 2020).

2.1.2.2 Disaster Reconstruction Authority (DRA)

The Disaster Reconstruction Authority (DRA), established in the Bahamas under the Disaster Reconstruction Act 2019, was also working to assist NEMA and international efforts with reconstruction. It designed The Small Home Repair Program to facilitate the reconstruction and restoration of Abaco and Grand Bahama. To date, the DRA has assisted over 330 homeowners, conducted over 4,600 assessments and registered over 6,700 users.

2.1.3 Ministry of Disaster Preparedness, Management and Reconstruction

On September 22, 2019, The Bahamas Prime Minister (PM) announced the creation of a new Ministry of Disaster Preparedness, Management and Reconstruction. This new ministry will help to coordinate the recovery of Grand Bahama and Abaco. The responsibilities of the Ministry include:

- Relations with NEMA;
- Relations with Family Island Consultative Committees and Administrators;
- Disaster Preparedness;
- Disaster Response; and

■ Disaster Relief and Recovery.

Additionally the Ministry will also be responsible for the preparation of information to local residents on financial matters and the changing state of local services; and securing from cabinet approval of all medium and long-term plans.

2.1.4 Bahamas Power and Light (BPL)

Bahamas Power and Light Company, Ltd. (BPL) was established in 1956 by the Electricity Act of 1956, which created The Bahamas Electric Company as a government-owned public corporation. BPL's mission is "to provide The Bahamas with safe and reliable electrical power" (BPL, 2019). BPL is the only state-owned electric utility and it is governed by a board of directors appointed by the Government. It operates 30 generating plants in 25 island locations and it provides service to approximately 100,000 customers.

BPL has a total installed capacity of 438 MW in New Providence and the Family Islands and it generates electricity from 28 diesel engine stations and one gas turbine power station. Over the past 15 years, BPL invested approximately \$290 million in capital projects, primarily allocated to providing power to 13 islands and upgrading or replacing aging plants and equipment; it also delivers electricity through a network of high voltage transmission lines up to 132 kilovolt (kV) and delivered to consumers at a minimum voltage level of 120 V. BPL's website has a Hurricane Safety Centre site with recommendations to stay safe before and after a storm and a phone number to report any downed power lines¹.

2.1.5 The Ministry of Public Works

The Ministry of Public Works' mission is to "plan and produce quality services that will protect, improve, provide for and maintain the physical infrastructure and natural environment of The Bahamas for its residents and visitors by serving its client agencies" (Ministry of Public Works website, 2019).

The Ministry of Public Works counts with different departments and divisions, including the Department of Public Works, which is in charge of construction, maintenance and upkeep of public infrastructure including government buildings, roads, roadsides, verges, parks, drains, docks, bridges, cemeteries, Montague beach foreshore, and western esplanade. The Buildings Control Division is responsible for the explosives, volatile substances regulations, and the construction standards and guidelines management. The Ministry of Public Work's portfolio also includes the urban renewal and urban development in downtown Nassau redevelopment scheme; the Department of Physical Planning and they also liaise with BPL, the Bahamas Water and Sewerage Corporation and the Bahamas Air Holdings Limited.

The Ministry of Public Works is also responsible for building permits and inspections, which are required to ensure public safety, health, and welfare as they are affected by building construction, through its structural, mechanical, electrical integrity, adequate exit facilities, sanitary equipment, lighting, ventilation and fire safety. A Building Permit is required for all new construction, additions, alterations, including decks, sheds, retaining walls, and fences in The Bahamas as mandated by the Buildings Regulations Act (1971, Chap. 200). Building permission must be obtained from the Buildings Control Division of the Ministry of Works & Urban Development before any building is undertaken. The permit is valid for eighteen months from the date of issue. An extension may be applied for prior to the permit expiration date.

2.1.6 The Department of Labor

The Department of Labor promotes the development and improvement of industrial relations policies, procedures and practices through the provision of a range of services to employers, trade unions and

¹ BPL's Hurricane Safety Centre phone number to report any downed power lines is 242-323-5561.

employees. Its mission is to foster good industrial relations between employer and employee while promoting a high level of employment.

The Department of Labor has a Conciliation Unit, which provides a neutral, free, fast and fair conciliation service to all disputant parties in order to assist them toward an amicable resolution of their dispute. Generally, conciliation is a process of rational and orderly discussion of differences between parties under the guidance of a conciliator. Conciliation is a service provided by the Department of Labor by which joint consultations are arranged with a conciliator (a neutral third party provided by the Department of Labor) who chairs meetings as a means of helping disputant parties to reduce the extent of their differences and to arrive at an amicable settlement or resolution. These services are provided to trade unions on behalf of their members, individual workers who are not members of a trade union, individual employers who are not members of a trade union of employers and to the trade union of employers. This department also counts with the Bahamas Employment Exchange, which was established to facilitate improved functioning of the labor market, bringing employers and employees together with a view to finding job placements for workers to encourage the full utilization of Bahamian labor and support for the Government's Bahamianization Policy. The service provides a system of freely chosen employment for workers and is mainly concerned with the collection of information concerning job vacancies, the preparation of a register of those seeking work and the placement of workers in employment.

Particulars of job vacancies received in any Labor Office are circulated in all the departments, including those in the Family Islands, enabling workers to enhance their employment opportunities in other districts. The Exchange administers the system of distribution of Labor certificates where it is unable to fill a vacancy by Bahamians. This Unit focuses on the Adult Employment Exchange, which caters to the needs of persons over 20 years of age and professionals and the Youth Employment Exchange Services, which caters to persons under the age of 20.

The Department of Labor also has an Inspection Unit, which carries out general inspections relating to statutory laws and to supervise union elections and safety and welfare inspections of establishments and other work sites so that workers can feel confident that adequate precautions are taken on the job site to secure their safety and welfare.

Finally, the Statistical Unit is in charge of obtaining and updating information relevant to occupational demand and supply and the characteristics of occupations, specifically, labor market data obtained.

2.1.7 The Ministry of Finance

The primary responsibility of the Ministry of Finance is the care and management of the Government's financial resources. This responsibility involves providing support and advice on the most appropriate fiscal, tax and economic policies with the aim of maximizing sustainable economic growth and development with full regard to equity and social policies. The development and management of the Government Budget is a major aspect of the Ministry's function.

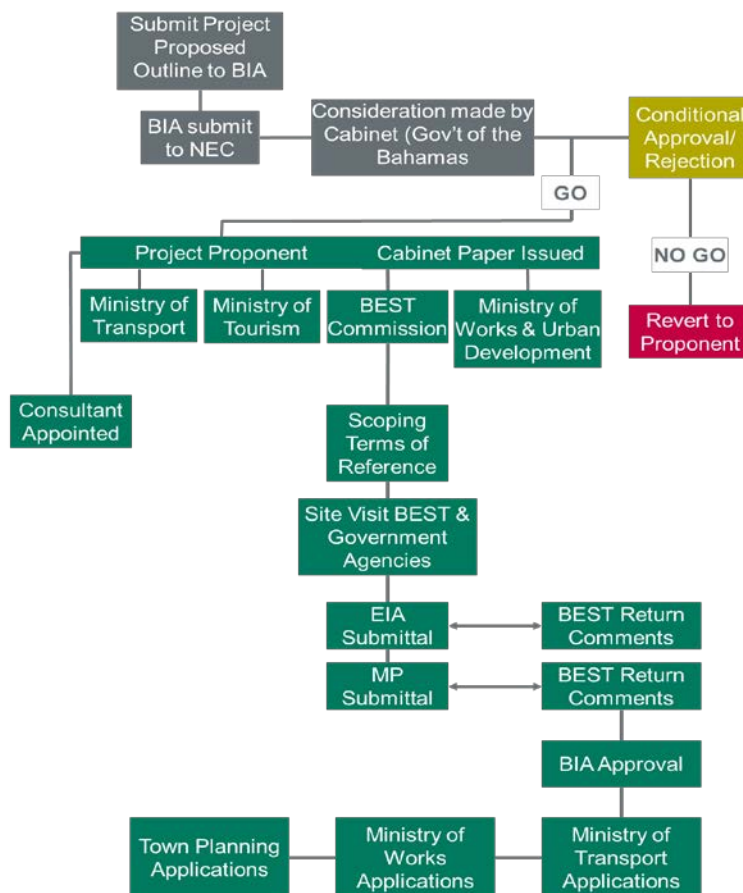
2.1.8 Other Relevant Institutions

Other Government agencies with specific environmental responsibilities are:

- The **Department of Agriculture** who oversees the agricultural provisions of the Agricultural and Fisheries Act 1963. This department works to stimulate and diversify crop production. Its mandate also includes conserving biodiversity and protecting wild flora and fauna.
- The **Department of Lands & Surveys** is responsible for disposing and leasing Crown Lands, land surveying, reproducing photography and photogrammetry and advising the Government on Land matters. In addition, its mandate includes ensuring that the natural characteristics of Crown Land are complimentary to proposed use.

2.1.9 Environmental Permit Procedure and Review

Environmental documents are generally submitted to the Bahamas Environment, Science, and Technology Commission (BEST) within the Ministry of the Environment and Housing and circulated amongst relevant Ministries, agencies and departments for comments during review. For projects associated with foreign direct investment, environmental documents are submitted to the Bahamas Investment Authority (BIA) and then to the National Economic Council (NEC) within the Office of the Prime Minister (OPM). The detailed process for environmental obligations namely, Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP), is outlined in Figure 2-1.



Source: ERM, 2021.

Figure 2-1: Common EIA Approval Process in The Bahamas

Interagency consultation is likely for the determination of EIA Terms of Reference and the EIA review and will likely extend the timeline. The timeline for approval varies by project activity and scope. Approximately three (3) months to approval is average. The timeline may also be impacted due to requirement for public consultation.

An EIA is prepared in accordance to the EIA guidelines established by the Bahamas Environment, Science, and Technology Commission (BEST Commission). Prior to submittal of an EIA, a meeting is held with BEST to determine the Terms of Reference (TOR). The TOR identifies the applicable components of the EIA

guidelines with priority areas noted by BEST based on a proposed project type. For example, the TOR for transmission line project would differ from that of a housing development. Overall, an EIA identifies potential environmental risks and impacts based on site investigations and recommends measures for minimizing or mitigating those potential impacts with reference to local legislation and international conventions.

Following approval of the Environmental Impact Assessment, BEST will require the completion and submittal of an Environmental Management Plan (EMP). The development of an EMP is performed at the request of the government and shall be produced as a separate document to that of this EIA. Similar to the EIA, prior to submittal of an EMP, a meeting is held with BEST to determine the TOR. The TOR identifies the applicable components of the EMP with priorities areas noted by BEST based on a proposed project type. An EMP is a written guide that identifies relevant management techniques, including Best Management Practices (BMPs) and Emergency Response Plans, based on site-specific conditions and potential impacts as documented in an Environmental Impact Assessment. The EMP outlines measures that are to be implemented in order to minimize potential adverse environmental impacts and safety hazards associated with the proposed development.

For projects of small size and low environmental and social impact, a simplified permitting process is followed. Simplified processes do not require the preparation of an EIA.

2.1.10 Cultural Heritage Legal Framework

The *Antiquities, Monuments, and Museum Act of 1998* (AMMA) is the principal piece of legislation governing cultural heritage in the Bahamas. In addition to providing a definition of legally protected monuments, the AMMA includes a series of legal requirements that would apply to Projects funded by the Project, including:

- The processes by which the government may declare a cultural heritage resource on public or private land a monument subject to legal protections;
- All artifacts discovered in the Bahamas are the property of the government;
- Any person who discovers, or knows of the discovery of an antiquity or supposed antiquity is required to report the discovery to the government or designated person;
- A person who discovers an antiquity or supposed antiquity shall take all reasonable measures to protect it;
- The government may enter upon and inspect the site of the discovery of an antiquity or supposed antiquity; and
- No person, other than the government or a designated and authorized person shall excavate or search for antiquities except in accordance with a license granted by the government or remove any artifact from a monument or site where it is discovered.

These legal procedures and requirements will need to be incorporated into the planning for individual projects financed as part of the Operation. Aligning Projects AMMA requirement to notify the government if an antiquity or potential antiquity is discovered and the prohibition on excavating or removing antiquities without a license will need to be incorporated into project specific cultural heritage management plans and chance finds procedures for all Projects where there is a potential for encountering undiscovered cultural heritage resources.

Subsequent to the approval of the AMMA, the Antiquities, Monuments, and Museum Corporation (AMMC) was established as the primary cultural heritage regulator in the Bahamas (AMMC, 2019). The AMMC is based in Nassau and is a quasi-governmental, non-profit entity managed by a Board of Directors. The mission of the AMMC is to protect, preserve, and promote the historic cultural resources of the Bahamas

through implementation of a variety of initiatives, including archaeological investigations, preservation of the Colonial era fortress on the islands, and historic preservation. The historic preservation activities of the AMMC are divided into two categories. The first is providing technical assistance for preservation projects, reviews of tax-exempt applications and provides architectural support for AMMC programs. The second is coordinating the development of the National Register of Historic Resources throughout The Commonwealth of The Bahamas (AMMC, 2019).

2.2 IDB Safeguards

The IDB has established its own policies and safeguards to ensure that projects financed by the IDB group are sustainable (see Table 2-1 below). These environmental and social policies are guided by international best practices, and are relatively consistent with widely used International Finance Corporation (IFC) guidelines regarding environmental, health, and social management.

Table 2-1: Inter-American Development Bank Policies

IDB Policies	Policy Description
OP-703 Environmental and Safeguards Compliance Policy	<p>The Policy has three specific objectives:</p> <ul style="list-style-type: none"> (i) To enhance long-term development benefits by integrating environmental sustainability outcomes in all Bank operations and activities and strengthening environmental management capacities in its borrowing member countries (ii) To ensure that all Bank operations and activities are environmentally sustainable (iii) To foster corporate environmental responsibility within the Bank <p>The Policy has two sets of directives, as follows:</p> <ul style="list-style-type: none"> • <i>Environmental Mainstreaming (Directives A.1 through A.7)</i>, which refer to the concept of mainstreaming environmental issues and upstreaming them early on during the project cycle. • <i>Safeguarding Directives (Directives B.1 through B.16)</i> – allow the Bank to adopt a more effective and efficient risk management framework. <p>Safeguards are applied throughout the project cycle to ensure the environmental sustainability of all Bank-financed operations. The Environmental Safeguards Directives are: B.1 Bank Policies; B.2 Country Laws and Regulations; B.3 Screening and Classification; B.4 Other Risk Factors; B.5 Environmental Assessment Requirements; B.6 Consultations; B.7 Supervision and Compliance; B.8 Transboundary Impacts; B.9 Natural Habitats and Cultural Sites; B.10 Hazardous Materials; B.11 Pollution Prevention and Abatement; B.12 Project Under Construction; B.13 Noninvestment Lending and Flexible Lending Instruments; B.14 Multiple Phase and Repeat Loans; B.15 Co-financing Operations; B.16 In-country Systems; B.17 Procurement.</p>
OP-710 Involuntary Resettlement Policy	<p>This document presents the principles and strategies to be followed in the case of Bank-financed development projects that result in involuntary relocation and includes specific guidelines on preparing resettlement plans. The guidelines are meant to assist the Bank and borrowers in mitigating the negative impacts of compulsory relocation on individuals and communities, and in assisting the affected populations to establish a sustainable society and economy.</p>

OP-761 Gender Equality in Development	This Policy integrates a gender perspective that seeks equal conditions and opportunities for women and men to reach their social, economic, political, and cultural potential by providing specific mechanisms for ensuring the effective implementation of the Policy and the evaluation of its results.
OP-765 Indigenous Peoples Policy	The objectives of this policy in the context of the social and environmental quality review of its projects is to strengthen <i>standards and guidelines</i> on sociocultural relevance and feasibility in order to avoid, mitigate, compensate, or offset adverse impacts and safeguard indigenous peoples' legitimate interests and rights. Such standards and guidelines will take into account the points of view of indigenous peoples, and will be incorporated into the Bank's safeguards and environmental procedures using specific operational guides approved by Management's Programming Committee.
OP-704 Natural and Unexpected Disasters Policy	The Policy has two interrelated specific objectives: i) To strengthen the Bank's effectiveness in supporting its borrowers to systematically manage risks related to natural hazards by identifying these risks, reducing vulnerability, and preventing and mitigating related disasters before they occur. ii) To facilitate rapid and appropriate assistance by the Bank to its borrowing member countries in response to disasters in an effort to efficiently revitalize their development efforts and avoid rebuilding vulnerability.
OP-102 Access to Information Policy	This Policy is based on the principle that information concerning the Bank and its activities must be made available to the public in the absence of a compelling reason for confidentiality. Information provided to the public must be made available in a form and at a time, that enhances the transparency and therefore the quality of Bank activities.

Source: IDB Safeguards.

Regarding environmental and social issues, the proposed Project triggers the following directives of the Environment Safeguard Policy (OP-703):

- **B.1, Bank Policies:** The Bank will only finance operations and activities that comply with the directives of this policy and are consistent with the relevant provisions of other Bank policies. This policy ensured the borrower/executing agency has legislation in place that promotes environmental management, training, and environmental governance, and promotes conservation and sustainable use of natural resources.
- **B.2, Country Laws and Regulations:** Project activities must comply with all Bahamian laws and regulations.
- **B.3, Screening and Classification:** The Project will have impacts on the environment and the community. The Project is classified as Category "B". In accordance with OP-703, Category B projects "are likely to cause mostly local and short-term negative" impacts, for which "effective mitigation measures are readily available". These will be further discussed in this report.
- **B.4, Other Risk Factors:** The Project's executing agency needs to comply with the ESA and Environmental and Social Management Plan (ESMP) requirements. Therefore, the executing agency and relevant third parties will be required to develop appropriate measures for managing the identified risks.

- **B.5, Environmental Assessment Requirements:** This ESA addresses the IDB's requirement for environmental assessment for the Project.
- **B.6, Consultations:** A public consultation will be carried out in February 2021, for more information see Section 8.
- **B.7, Supervision and Compliance:** A monitoring plan will be implemented for the Project as part of the ESMP.
- **B.9, Natural Habitats and Cultural Sites:** This directive requires the development of mitigation and monitoring measures to mitigate impacts, as addressed in this ESA and its ESMP.
- **B.11, Pollution Prevention and Abatement:** Project activities have a risk of pollution, specifically during the construction phase. Pollution prevention is addressed in the Project's ESMP (see Section 8).
- **B17. Contractor clauses for implementation of an ESMP.**

Additionally, the Project triggers the IDB's Access to Information Policy (OP 102), the Gender Equality in Development Policy (OP-761), and the Disaster Risk Management Policy (OP-704). When it comes to financing projects, it is the Bank's intent to be as clear and transparent as possible and, through clear stakeholder communication, to improve the quality of its operations. Table 2-2, from the IDB's Environmental and Social Strategy report, shows how the Project will comply with IDB Safeguard Policies.

Table 2-2: Compliance with Inter-American Development Bank Policies

Policies / Directives	Policy / Directive Applicable?	Rationale for applicability of Policy / Directive	Actions required during Preparation & Analysis
OP-703 Environment and Safeguards Compliance Policy			
B.2 Country Laws and Regulations	Yes	The Project will comply with the environmental and social regulation of the Commonwealth of The Bahamas.	Development of ESA and ESMP
B.3 Screening and Classification	Yes	The Project was categorized as B	N/A
B.4 Other Risk Factors	Yes	The Project will be developed in potentially challenging health and sanitary conditions, exacerbated by the COVID-19 pandemic.	Specific H&S measures will be included in the ESMP to address the unfavorable sanitary conditions in the Abaco Island, exacerbated by the COVID-19 pandemic.
B.5 Environmental Assessment and	Yes	ESA and ESMP for the Project necessary	

Policies / Directives	Policy / Directive Applicable?	Rationale for applicability of Policy / Directive	Actions required during Preparation & Analysis
Plans Requirements			The Borrower / Executing Agencies will develop the ESA and ESMP with the assistance of the Bank.
B.5 Social Assessment and Plans Requirements			
B.6 Consultation	Yes	Meaningful consultations will be held for the Project and the consultation plans will inform the project design and the ESMP.	The IDB will evaluate the consultation process to ensure compliance with the requirements of the OP-703 / B.6.
B.7 Supervision and Compliance	Yes	The Project will be supervised to ensure compliance with the guidelines and requirements agreed in the Loan Agreement and the ESMP.	The IDB will verify that the scope and responsibilities for the supervision of the Project and the ESMP are correctly defined and implemented. Both the Executing Agency and the IDB will supervise the implementation of the Project.
B.8 Transboundary Impacts	No	N/A	N/A
B.9 Natural Habitats	No	N/A	Project siting for microgrid PV plant in the Island of Abaco will take into account and avoid impacts to natural habitats.
B.9 Invasive Species	Yes	Shipping of equipment, machinery and components from abroad may represent a vector for pest and invasive species	Invasive Species and Pest Management Control Practices and Processes will be accounted for the Project.
B.9 Cultural Sites	No	N/A	N/A
B.10 Hazardous Materials	Yes	Construction work will include, handling, removal, disposal, use and generation of	Specific procedures will be established in the ESMP for both construction and operations, for the management of hazardous materials. Specifically, a

Policies / Directives	Policy / Directive Applicable?	Rationale for applicability of Policy / Directive	Actions required during Preparation & Analysis
		hazardous materials such as oils and lubricants, etc.	Waste Management Plan will be prepared.
B.11 Pollution Prevention and Abatement	Yes	The Project will generate a range of environmental impacts	The Borrower shall include in the ESMP specific measures and procedures for both construction and operations for the prevention and reduction of pollution.
B.12 Projects Under Construction	No	N/A	N/A
B.13 Noninvestment Lending and Flexible Lending Instruments	No	N/A	N/A
B.14 Multiple Phase and Repeat Loans	No	N/A	N/A
B.15 Co-financing Operations	Yes	The Project is co-financed by IDB and EU-CIF. IDB is directly and actively managing the compliance with the relevant safeguards.	IDB will directly and actively manage the compliance with the relevant E&S safeguards.
B.16 In-Country Systems	No	N/A	N/A
B.17 Procurement	Yes	The ESHS requirements should be included in the contracts of construction companies.	Requirements will be included in the operation and maintenance to ensure that ESHS aspects are included in the contracts of construction companies.

OP-704 Natural Disaster Risk Management Policy

A.2 Analysis and management of Type 2 risk scenario	No	It is not expected that the Operation will exacerbate disaster risk, type 2. Type 1 needs to be assessed.	A Disaster Risk Assessment will be prepared as part of the ESA.
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Policies / Directives	Policy / Directive Applicable?	Rationale for applicability of Policy / Directive	Actions required during Preparation & Analysis
A.2 Contingency planning (Emergency response plan, Community HS plan, OHS plan)	Yes	Disaster risk management procedures should be included in the ESMP	The Borrower will include an emergency management plan within the ESMP.

OP-710 Operational Policy on Involuntary Resettlement

Involuntary Resettlement	No	N/A	N/A
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OP-765 Operational Policy on Indigenous Peoples

N/A

OP-761 Operational Policy on Gender Equality in Development

Consultation and effective participation of women and men	Yes	Women and men should have the same opportunities and their participation in public consultations will be promoted.	The consultations will be inclusive and will facilitate the participation of women and men
Application of safeguard and risk analysis	Yes	The ESA will analyze the risks of the Project.	The ESA will ensure gender equality in the development of the Operation.

OP-102 Access to Information Policy

Disclosure of relevant E&S Assessments Prior to Analysis Mission, QRR, OPC and submission of the operation for Board consideration	Yes	ESA and ESMP must be disclosed before analysis mission through the IDB and Borrower's web page.	The IDB and the Borrower will publish all necessary ESHS documents.
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Policies / Directives	Policy / Directive Applicable?	Rationale for applicability of Policy / Directive	Actions required during Preparation & Analysis
Provisions for Disclosure of Environmental and Social Documents during Project Implementation	Yes	In the event that new relevant ESHS documents are prepared during the execution of the Project, they will also be made available to the public.	This will be included as specific conditions of the Loan Agreement.

Source: ERM, 2021.

In addition to the safeguards and policies described above, it is important to note that the IDB has developed a new Environmental and Social Policy Framework (ESPF) that will include new standards in several areas and consideration of risks associated with pandemics and epidemics. The ESPF will apply to the preparation and execution of all new IDB-financed operations, including this Project. Except for the two purposes described below, the ESPF will supersede the following IDB environmental and social operational policies once it becomes effective:

- the Environment and Safeguards Compliance Policy (OP-703),
- the Disaster Risk Management Policy (OP-704),
- the Involuntary Resettlement Policy (OP-710),
- the Policy on Gender Equality in Development (OP-761), and
- the Indigenous Peoples Policy (OP-765).

IDB environmental and social operational policies (OP-703; OP-704; OP-710; OP-761; and OP-765) will continue to apply for the following two purposes:

- Regarding safeguards, for the implementation of operations approved prior to the effectiveness of the ESPF.
- For all matters related to the Bank's mainstreaming work regarding such policies. "Mainstreaming" refers to IDB's proactive actions to address environmental and social issues strategically as cross-cutting dimensions of development. These issues include protecting the environment, supporting disaster risk management, and facilitating rapid assistance in response to disasters, promoting development with identity for Indigenous Peoples, and gender equality.

2.2.1 Other Applicable International Best Practices

Although the Project is committed to complying with the IDB Safeguards, the IDB itself recognizes a series of additional norms and standards that, if implemented, could help minimize risks associated with the development of this Project. These are described below.

2.2.1.1 IFC Performance Standards

The IFC is a division of the World Bank Group that lends to private investors. The IFC released a Sustainability Policy and set of Performance Standards (PSs) on Social and Environmental Sustainability in January 2012. These standards stipulate that the Project shall meet certain requirements throughout the

life cycle of an investment by IFC or other relevant financial institution or commercial banks, which are signatory to the Equator Principles (EP, 2006).

These PS and guidelines provide ways and means to identify impacts and affected stakeholders and lays down processes for management and mitigation of adverse impacts, see Table 2-3.

Table 2-3: IFC Performance Standards

Performance Standard	Description	Purpose
PS 1: Assessment and Management of Environmental and Social Risks and Impacts	Underscores the importance of managing environmental and social performance throughout the life of a project (any business activity that is subject to assessment and management).	<ul style="list-style-type: none"> ■ To identify and assess 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 impacts and risks ■ To promote improved environmental and social performance through management systems. ■ To ensure grievances and external communications from are responded to and managed appropriately. ■ To promote and provide means for adequate engagement with Affected Communities
PS 2: Labor and Working Conditions	Recognizes that the pursuit of economic growth through employment creation and income generation should come with the protection of worker's fundamental rights.	<ul style="list-style-type: none"> ■ To promote the fair treatment, non-discrimination and equal opportunity of workers and to protect workers. ■ To promote compliance with national labor and employment laws. ■ To promote safe and healthy working conditions, and health of workers.
PS 3: Resource Efficiency and Pollution Prevention	Recognizes that increased economic activity can generate increased levels of pollution and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels.	<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. ■ To reduce project-related greenhouse gas emissions.
PS 4: Community Health, Safety and Security	Recognizes that project activities, equipment, and infrastructure can	<ul style="list-style-type: none"> ■ To anticipate and avoid adverse impacts on health and safety of the Affected Community during the

Performance Standard	Description	Purpose
	increase community exposure to risks and impacts.	<p>project life from both routine and non-routine circumstances</p> <ul style="list-style-type: none"> ■ 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.
PS 5: Land Acquisition and Involuntary Resettlement	Recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons that use this land.	<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 ■ To improve or restore, the livelihoods and standards of living of displaced persons.
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living and natural resources are fundamental to sustainable development	<ul style="list-style-type: none"> ■ To protect and conserve biodiversity. ■ To maintain the benefits from ecosystem services. ■ To promote the sustainable management of living natural resources through the adoption of practices that integrates conservation needs and development priorities.
PS 7: Indigenous Peoples	Recognizes that Indigenous Peoples, as social groups with identities that are distinct from mainstream groups in national societies, are often among the most marginalized and vulnerable segments of the population.	<ul style="list-style-type: none"> ■ To ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples ■ To anticipate and avoid or minimize adverse impacts of projects on communities of Indigenous Peoples ■ To promote sustainable development benefits and opportunities for Indigenous Peoples ■ To establish and maintain an ongoing relationship based on Informed Consultation and Participation with the Indigenous Peoples affected by a project through the project's life cycle.

Performance Standard	Description	Purpose
		<ul style="list-style-type: none"> ■ To ensure the Free, Prior, and Informed Consent (FPIC) of the Affected Communities of Indigenous Peoples
PS 8: Cultural Heritage	Recognizes the importance of cultural heritage for current and future generations	<ul style="list-style-type: none"> ■ To protect cultural heritage from the adverse impacts of project activities and support its preservation ■ To promote the equitable sharing of benefits from the use of cultural heritage.

Source: IFC Performance Standards, January 2012.

IFC EHS Guidelines

The Environmental, Health, and Safety (EHS) Guidelines are technical reference documents that address IFC's expectations regarding the industrial pollution management performance of its projects. They are designed to assist managers and decision makers with relevant industry background and technical information. This information supports actions aimed at avoiding, minimizing, and controlling EHS impacts during the construction, operation, and decommissioning phase of a project or facility. The EHS Guidelines serve as a technical reference source to support the implementation of the IFC PSs, particularly in those aspects related to PS 3: Pollution Prevention and Abatement, as well as certain aspects of occupational and community health and safety. The IFC also has industry sector guidelines that can be used, especially, the Electric Power Transmission and Distribution guidelines for this Operation. General EHS Guidelines (30 April 2007) also exist, which contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors.

When host country (The Bahamas) regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, a full and detailed justification for any proposed alternatives is required.

2.2.2 International Environmental Policies

The Bahamas is signatory to several international environmental agreement, including:

- The Ramsar Convention.

The Bahamas is signatory to the Convention on Wetlands of International Importance, also known as the Ramsar Convention. This Convention provides a framework for the international protection of wetlands as contributors for human resources and for avifauna, which do not adhere to international boundaries.

- The Convention on Biological Diversity

The Bahamas is a signatory to the Convention on Biological Diversity, which came into force December 1993. It has three main goals:

1. The Conservation of biological diversity.
2. The sustainable use of components of biological diversity.
3. The fair and equitable sharing of the benefits arising out of the utilization of genetic resources.

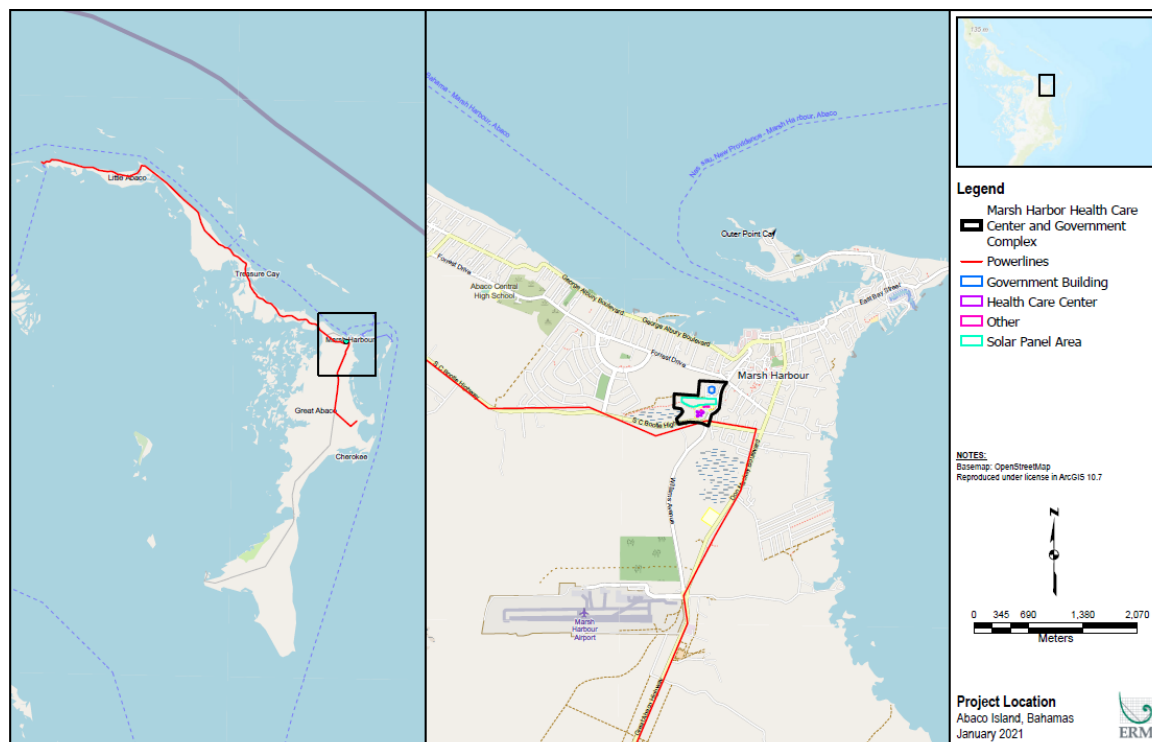
- International Labor Organization since 1976.

- International Labor Organization (ILO).
- Conventions of the International Maritime Organization (IMO)
- The United Nations Convention to Combat Desertification.
- Convention on International Trade in Endangered Species of Wild Fauna and Flora.
- United Nations Framework Conventions on Climate Change.
- Vienna Protocol for the Protection of the Ozone Layer.
- International Convention on Oil Pollution Preparedness, Response and Cooperation (OPRC).
- Montreal Protocol on Substances that Deplete the Ozone Layer.
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

3. PROJECT DESCRIPTION

3.1 Project Location

The solar plant will be constructed on a government-owned 5-hectare (ha) parcel (Project Site) in Marsh Harbor on Great Abaco Island, in between the Marsh Harbor Healthcare Center (the Hospital) and the Marsh Harbor Government Complex (See Figure 3-1 below). Access to the site will be from the existing access road Government Complex to the north or directly from the road to the east (see Figure 3-2 below).



Source: ERM, 2021.

Figure 3-1: Project Location Map

The Project will also include the construction of substation on site and a short transmission line from the Project Site to the existing medium voltage line which serves the government complex and the hospital (maximum 200 meters to the south). Specific design details have not been finalized as of the date of this report.



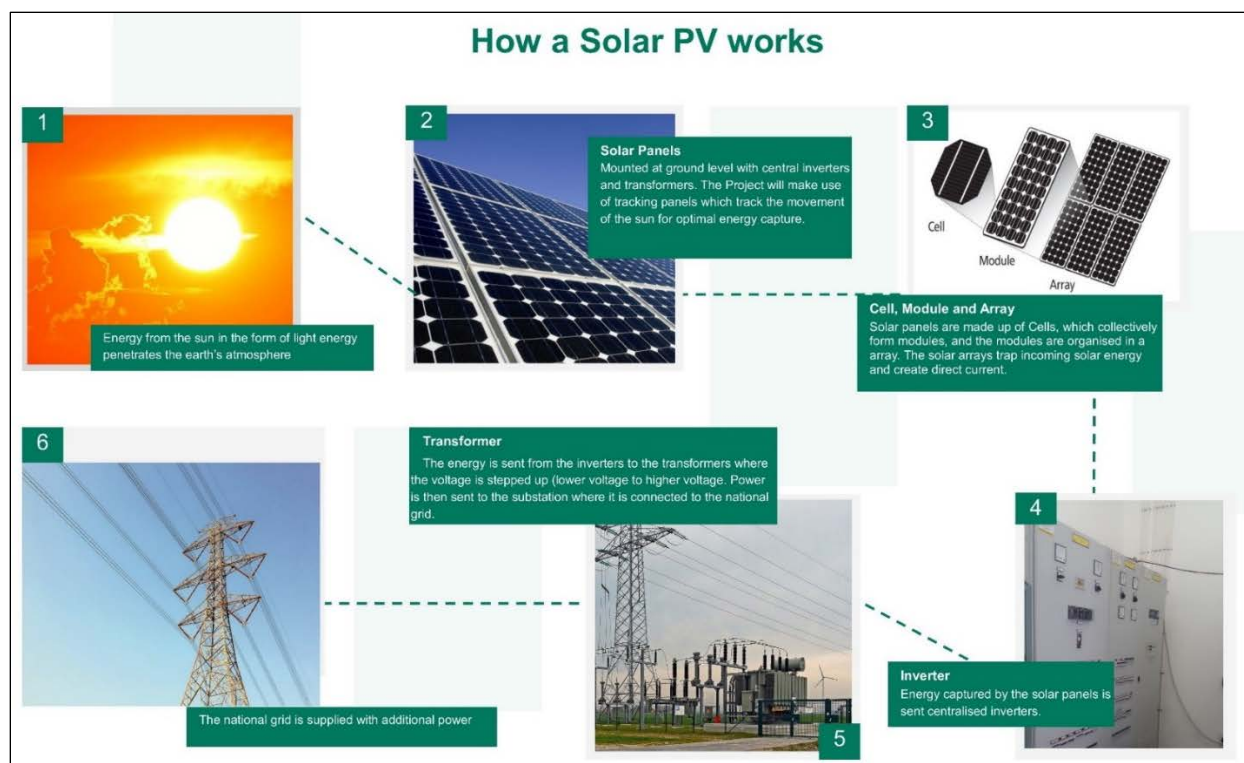
Source: ERM, 2021.

Figure 3-2: Project Overview Map

The Project Site is generally moderately flat land undeveloped land which will require minimal earthwork and vegetation clearance. In addition, because the land is already owned by the government, it will not require land acquisition or expropriation, nor will it impact indigenous communities, natural habitats, or cultural sites.

3.2 Technology Overview

Photovoltaic (PV) technology allows the direct conversion of sunlight (photon energy) to electricity using semiconductor devices called solar cells. Solar cells are almost maintenance free, because they have no moving parts and have a relatively long life span. The photoelectric conversion process produces no pollution and can make use of free solar energy. Overall, the longevity, simplicity, and minimal resources used to produce electricity via PV systems make this a highly sustainable technology (Figure 3-3).



Source: ERM, 2021.

Figure 3-3: How Solar Panels Work

3.2.1 Capacity

The Proposed Project will have an installed capacity of 2.25 MW and energy to primarily supply the Marsh Harbor Government Complex and the Hospital. This project will support the resilient reconstruction and rehabilitation efforts, following the destruction caused by Hurricane Dorian in 2019.

3.3 Project Components

The PV solar technology chosen for the Project typically consists of the main components listed below, which details will be defined in the final design.

3.3.1 Solar Cells

The PV cell is the device that generates electricity when exposed to solar radiation. The absorbed solar energy excites the electrons inside the PV cell and produces electrical energy. All PV cells produce direct current (DC). There are three main types of PV cell technologies:

- Monocrystalline (mono-c-Si) – Made from a single silicon crystal;
- Multi or Poly-crystalline (multi-c-Si) — Made from multiple silicon crystals; and
- Thin film — Common materials used for thin film modules are Cadmium Telluride (CdTe), Copper Indium (Gallium) Di-Selenide (CIGS/CIS), and Amorphous Silicon (a-Si).
- Mono-c-Si cells are generally the most efficient, but are also more costly. Thin-film cells provide a cheaper alternative, but are less efficient.

3.3.2 PV Module

The PV module is a set of interconnected PV cells encapsulated between a transparent front (usually glass) and supporting framework in the back to allow for mounting. The modules will appear dark blue or black and will be mounted to an aluminium frame. The modules are designed to absorb solar radiation and are therefore not susceptible to reflection or glinting. The glare and reflectance levels from a given PV module are decisively lower than the glare and reflectance generated by standard glass.

The performance of a PV module will decrease over time due to a process known as degradation. The degradation rate depends on the environmental conditions and the technology of the module (IFC, 2011).

3.3.3 Mounting Structures

To create a PV array, solar cells are mounted on a support system and arranged to receive solar radiation. The arrays can be “fixed” (simple stands mounted on the ground) or “tracking” (attached to a motorized apparatus that repositions the cell as the sun moves across the sky to receive maximum solar radiation). Tracking systems can be horizontal single axis, tilted single axis, or dual axis and can increase yield by up to 45 percent. Tracking, particularly for areas with a high direct/diffuse irradiation ratio also enables a smoother power output (IFC, 2011).

The Project will utilize fixed frames, which are simpler to install, cheaper and require less maintenance.

3.3.4 PV Array

The PV array is the complete power generating plant consisting of multiple PV modules wired in series and in parallel. The PV modules will be connected by DC cables to combiner boxes mounted underneath the PV module mounting structures. Each combiner box occupies an area of approximately one square meter. The power generated by many PV module strings is combined in the combiner box and transmitted via underground 400-1000 volt DC cables to an inverter and transformer enclosure.

3.3.5 Inverters

Inverters will be utilized to convert DC energy created by the PV panels into useable alternating current (AC) energy. The voltage input for an inverter is a function of how the PV panels are connected together and can vary from 12 volt DC to as high as 1500 volt DC. PV Panels are connected either in string or central configurations. Central configuration inverters are considered to be more suitable for multi-MW plants. String inverters enable individual string Maximum Power Point Tracking and require less specialized maintenance skills, while string configurations offer more design flexibility.

3.3.6 Plant Switchyard

The plant switchyard receives all power from the inverters via underground cables and provides protection and control equipment required to safely manage the plant and to ensure grid code compliance regulations. The switchyard will include transformers to increase the solar plant output to the same voltage as the grid. The primary and backup energy meters are typically located in the plant switchyard to provide measurement of the plant electrical generation. The switchyard can consist of at least one small building, outdoor electrical plant and equipment, and the transformers.

3.3.7 Energy Storage

The Project will utilize a battery energy storage system with a capacity of 2.25 MW AC. Although specific information on the design of this energy storage system is currently not available, this system will likely include self-compartmented battery units, an air conditioning unit to cool the system, as well as a self-

extinguishing fire system. Information from the system would be monitored along with the solar plant performance through the use of a master control system.

3.3.8 Transmission Line

A transmission line will connect the plant switchyard to a Substation, to be built and then connect to the existing distribution network; however, information on location of the substation and the transmission line capacity are not yet known. The solar power plant will also provide a direct energy source to the hospital to the south and the government complex facility to the north; however, specific information on how they will be connected is currently not available. Based on the existing transmission lines, the length to connect will likely not exceed 200 m and will be constructed along existing road ways or through the already developed hospital property.

3.3.9 Substation

Specific details on the substations are not yet known. The Project will include a substation at the site prior to connecting to the existing distribution network. Bahamas Power and Light's (BPL) transmission and distribution network on the Island does include multiple substations; however, Hurricane Dorian caused extensive damage to the existing system and much of the infrastructure is being replaced. The Hospital and the Government Complex are supplied electricity via an existing medium voltage transmission line located to the south of the Hospital (see Figure 3-2 above).

3.3.10 Communications

The plant monitoring system and the security system will require a communications medium with remote access. There can also be a requirement from the grid network operator for specific telephone landlines for the grid connection. Often, an internet broadband (DSL) or satellite communications system is used for remote access. A GSM (Global System for Mobile Communications) connection or standard telephone line with modems are alternatives, although they have lower data transfer rates.

Specific details about the Project's communications systems have not been finalized.

3.3.11 Connection to National Grid

BPL operates an extensive transmission and distribution network throughout Great Abaco and cays. The system consists of approximately 100 miles of transmission lines at 34 kilovolt (kV) and 11 kV, which emanates from the Wilson City Plant south to Sandy Point and north to Crown Haven. BPL operates numerous substations along the way and throughout the keys that step down the voltage from the transmission system to either 11 kV/7.2 kV distribution network.

The solar plant will connect to the national grid; however, the exact location of connection is not yet known since many existing lines and substations were damaged by hurricane Dorian and are still being replaced.

3.3.12 Additional Facilities

Additional facilities that are typically part of a solar power plant include an operation and maintenance (O&M) building, a warehouse, and a guardhouse: The O&M can house a control room, offices, a meeting room, and restrooms. A warehouse is typically used to store any necessary plant equipment and the guardhouse will house any security equipment and personnel associated with the Project.

The Project will include tracks throughout the site to permit access for maintenance vehicles and personnel. Vegetation (such as grass) will be permitted to grow throughout the site but will be kept low.

The remaining components that could make up the Project, commonly referred to as “balance of plant” components, typically include, but are not limited to, combiner boxes, DC cables, trenches, power conversion stations, AC cables and earthing, and lightning protection.

3.3.13 Safety

At a minimum, project component should be built according to the following international standards (see Table 3-1).

Table 3-1: Typical Design Standards

Component	Standard
Transformers	British Standard European Norm (BS EN) 50464-1:2007+A1:2012, International Electrotechnical Commission (IEC) 60076 for the power transformer, IEC 60085 for electrical insulation and IEC 60214 for tap changers.
Module cables	Adhere to local and international standards including IEC 60502, IEC 60228, 0364-1, 60332-1-2, 60754-1 and -2, 61034.
AC cables	IEC 60502 for cables between 1 kV and 36 kV, IEC 60364 for LV cabling and IEC 60840 for cables rated for voltages above 30 kV and up to 150 kV
AC switchgear	IEC 62271 for HV switchgear and IEC 61439 for LV switchgear.

Source: IFC, 2011.

In addition to the requirements in the standards for the Plant components above, according to the Guidelines published by the IFC (IFC, 2011), additional benchmark features for the Plants infrastructure include:

- Watertight, reinforced concrete stations or prefabricated steel containers. All buildings and foundations should be designed and constructed in accordance with the appropriate country building codes, standards and local authority regulations.
- Ventilation grilles, secure doors and concrete foundations that allow cable access.
- Interior lighting and electrical sockets that follow country-specific regulations.
- Either adequate forced ventilation or air conditioning with control thermostats, depending on environmental conditions.
- Weather bars or upstands to prevent flooding of electrical equipment buildings.

3.3.14 Site Security

At a minimum, the Project Site will be secured by a security fence, alarm system, and close circuit television security cameras. Specific details about site security have not been finalized yet.

3.4 Project Phases and Schedule

3.4.1 Project Planning and Design

The Project is currently in the planning and design phase which typically includes multiple pre-feasibility and feasibility studies, as well as engagement with government and community stakeholders.

3.4.2 Construction

Although specific construction details of the project are still unknown, it takes approximately 3 months/per 2 MW DC for a standard ground-mounted solar farm (SOLAR, 2020). The Project is currently being proposed with a capacity of 2.25 MW; therefore, construction time will take approximately over than 3 months. Installation of the solar modules and racking being the quickest aspects of the build, with electrical contracting and connecting to the local utilities taking the longest.

3.4.2.1 Site Preparation and Construction Phase

Site preparation will start with the construction of an access road from the highway. Site preparation will proceed with the clearance of vegetation, installation of fencing, and grading of the site.

The construction phase will be initiated following the completion of site preparation activities. The following activities will take place during the construction phase:

- Transportation of equipment and components to the Project Site;
- Establishment of workshops and temporary laydown areas;
- Excavation of cable trenches;
- Ramming or drilling of the mounting structure frames, depending on the geotechnical condition of the ground;
- Installation of the modules onto the frames;
- Installation of measuring equipment;
- Laying of cables between the module rows to the inverter stations;
- Construction of inverter and transformer station foundations and installation of inverter stations;
- Construction of transmission lines, switchyard, and upgrades/expansions to the Substation, if required;
- Construction of stores, workshop, and office buildings;
- Testing and commissioning; and
- Removal of equipment and demobilization of the construction team.

3.4.2.2 Construction Equipment

Typical construction equipment includes:

- Dump trucks;
- Bobcats;
- Tractors;
- Water trucks;
- Tractor-loader-backhoes;

- Pick-up trucks; and
- Excavators.

3.4.2.3 Additional Facilities

Although design details are currently not available, construction could require the following facilities:

- Workshop and maintenance area;
- Storage areas for handling fuel, lubricants, solvents, paints, and construction materials;
- Contractor lay-down areas;
- Mobile site offices;
- Restroom facilities;
- Designated rest areas (to include areas for eating);
- Security facility;
- Water Storage Tank;
- Temporary waste collection and storage area; and
- Parking area for cars and equipment.

Once the construction works are completed, the temporary facilities corresponding to that stage will be dismantled and removed. All waste from the construction stage will be transported and disposed of in accordance with current legislation. Once the structures and heavy machinery have been removed from the site, the operation and maintenance stage can begin.

3.4.2.4 Waste generation, Hazardous Materials and Hazardous Waste

Waste generated during construction will include general domestic waste, including sanitary and food waste, office waste, and organic material. Petrol and diesel by-products will be generated from the transportation of goods and personnel, generators, and heavy construction equipment.

Large quantities of non-hazardous waste will be generated from the solar PV panel packaging material, which typically arrive in wood pallets. The recycling and/or donation of these materials to affected communities will be investigated.

Waste will be separated at source and labelled bins will be located within the Project Site for the storage of the various categories. Staff will be trained in proper waste management practices and the importance of implementing them. Cleaning staff will be trained in the safe handling and storage of waste and hazardous materials. They will also be provided with adequate personal protective equipment.

All hazardous waste generated during construction will be removed by the EPC Contractor and safely disposed of in a licensed facility. The Project will investigate the possibility of recycling non-hazardous waste. Non-recyclable, non-hazardous solid waste will be sent to a licensed waste site in accordance with the Project's Management Plans.

3.4.2.5 Workforce

The number of skilled, permanent employees involved in the construction and commissioning phase for a 2.25 MW plant is typically around 20 employees.

3.4.3 Operation and Maintenance

A typical solar PV plant has an estimated lifetime of 20-25 years, although some Plant components will need to be replaced even within that amount of time.

Good quality modules with the appropriate IEC certification have a design life in excess of 25 years. Beyond 30 years, increased levels of degradation may be expected. Based on real time use, the central inverters have an expected lifetime of between 10 and 20 years, with tracker warranties vary between technologies and manufacturers, but a 5- to 10-year guarantee on parts and workmanship may be typical (IFC, 2011).

3.4.3.1 Activities

Preventive maintenance is necessary for the correct operation of the photovoltaic plant. The main maintenance activities are maintenance of the equipment and maintenance of the site or vegetation. Both are described below:

Equipment Maintenance

Preventive maintenance activities will be planned in advance according to the manufacturer's specifications. The preventive maintenance protocol includes routine inspections of the photovoltaic panels and auxiliary areas. These inspections may be established in a fixed manner in monthly, quarterly, semi-annual or annual periods.

Heavy equipment will not be used during normal plant operation. Operation and maintenance vehicles include pickup trucks and sedans.

Site / Vegetation Maintenance

The vegetation that grows on the sides of the panels will be respected as long as it does not affect the performance of the panels. Efforts will be made to keep them at a height that does not interfere with the proper functioning of the solar park.

3.4.3.2 Water Requirements during Operation

Specific details on water source are not yet available. The site does have access to municipal water mains and on-site water could be supplied by the local municipality; however, there is a possibility that site water could be brought in to tanks on-site.

The water to be used for human consumption will come from the city mains or be supplied by a specialized company for this service, complying with all the requirements established in the corresponding current regulations. Quantity of water required is not yet known since design details are unknown; however, it is not expected to be much since the plant will likely be operated remotely and water would only be needed for the security personnel or any maintenance personnel that happen to be at the site during operation.

If a water tanks is used, tanker trucks will be hired to bring in treated water that will be used to clean the solar panels. The frequency is not yet determinable and could vary depending on the conditions of the panels and the frequency with which they get dirty.

The quantity of water required varies according to available cleaning technologies and the local climate, however approximately 1.6 liters per square meter (m²) of PV modules may be required (IFC, 2011).

3.4.3.3 Security System and Fire Fighting System

One of the main components of this stage is the security system, which is designed to detect intrusion attempts from outside the plant and to be able to react in the event of an incident. The security system will

have a closed circuit video system in conjunction with the surveillance personnel who will be monitoring the site through this system.

Although design details remain unknown, fire protection systems will likely be installed in switchgear rooms and/or other ancillary facilities. Fire protection systems will comply with operational regulations and will consist of a sprinkler system that will be activated by detecting smoke.

3.4.3.4 Waste Generation, Hazardous Materials and Hazardous Waste

Minimal waste is expected to be generated during the operations phase. Hazardous materials used on site during operations will include fuels, oils, lubricants, cleaning products, and specialized gases (for use in switchgear). Oil that needs to be replaced will be recycled, if possible, or safely stored and removed from the site and correctly disposed.

Domestic waste will be produced by the personnel onsite during operations; however, this is expected to be minimal as the workforce during operation will likely be low and intermittent. Industrial waste production will be occasional (e.g., solar panels, electrical waste) as they will only require disposal if they become damaged.

3.4.3.5 Workforce

Monitoring of plant performance can be achieved remotely by the original equipment manufacturer (OEM) or other asset manager (IFC, 2011). About 15 full-time employees will be required for the operation and preventive maintenance activities, which will consist of plant operators, maintenance technicians and safety officers. In case corrective maintenance is required, additional personnel may be required. The source for the workforce is currently unknown as specific design details have not been finalized; however, a local workforce will be utilized to the extent possible.

3.4.4 Decommissioning

The useful life of the Project will be 25 years from the start of operations (with the possibility of extension). Once the Project comes to an end, the solar panels and other mechanical elements will be dismantled, which will be transferred for reuse, recycling or final disposal, as the case may be, in accordance with current regulations. Likewise, an abandonment plan will be designed to ensure that the site is left in good condition and free of contaminants or hazardous waste, in which case an environmental remediation would be carried out.

3.4.4.1 Dismantling of Structures

Once the useful life of the Project has concluded (25 years with the possibility of extension), the dismantling of the solar plant structures will be carried out. These activities will be carried out in such a way that the land is restored to the conditions prior to construction and employing measures to minimize the impact on the environment. The recycling of industrial material such as beams, tables, bars, conductor cable of the underground transmission line and other materials subject to recycling is contemplated.

The actions to be carried out will be the following:

- Dismantling of all elements on the surface and underground elements;
- Revegetation and restoration of occupied areas; and
- Supervision of abandonment to ensure that there has not been any type of contamination to the soil and, where appropriate, proceed with the corresponding remediation actions.

3.4.4.2 Wastes

The waste generated during this stage will be collected in temporary rooms for this purpose, according to the type of waste and its characteristics. Finally, they will be removed by an authorized company for recycling or final disposal at an authorized site. Batteries will need to be handled accordingly and either recycled or disposed of appropriately.

3.4.4.3 Workforce

It is estimated that 20-30 people will be required during the abandonment stage.

3.5 Alternative Analysis

After the passing of Hurricane Dorian, the devastation left behind in the Abaco Islands and on Grand Bahama emphasized the existing energy challenges and the need for a more resilient energy infrastructure to support critical facilities. After a catastrophic event, facilities such as hospitals, clinics, government buildings, water treatment and pumping stations along with air and seaports ensure that health, security, safety, transportation and other critical services are provided to a vulnerable population. Energizing the Country has become a major Government priority.

3.5.1 No Project Alternative

The no-Project alternative will leave the Island with a need for resilient energy infrastructure, especially for the critical facilities mentioned above.

3.5.2 Project Alternatives

3.5.2.1 Project Selection

The Project has prepared a pre-feasibility report that identified six (6) microgrid initiatives directly impacting seven (7) critical facilities and one dependent Cay that will improve resiliency, reliability and sustainability. These facilities included: Marsh Harbour Water Treatment and Distribution Plant, Marsh Harbour Airport, Marsh Harbour Government Complex, Marsh Harbour Seaport, Marsh Harbour Hospital, Cooperstown Community and Health Center, Sandy Point Community/Clinic and a battery switching station on Elbow Cay as a pilot for all interconnected Cays on Abaco (RMI, 2019). The proposed projects provide the Government with an opportunity to meet a major milestone in the drive towards 30% RE by 2030.

Table 3-2 summarizes the individual locations and proposed capacity installations considered by the Feasibility Study.

Table 3-2: Feasibility Study Proposed Projects

Project	Installation Type	Battery (MW AC)	Solar PV (MW AC)
Microgrid 1: Marsh Harbour Government Complex & Marsh Harbour Hospital	Ground mount solar PV, battery storage plus diesel hybrid microgrid	4.25	4.00
Microgrid 2: Marsh Harbour Airport & Marsh Harbour Water Treatment/ Pumping Station	Ground mount solar PV, battery storage plus diesel hybrid microgrid	3.50	2.50

Marsh Harbour Sea Port	Rooftop Solar PV, battery storage plus diesel hybrid microgrid	0.25	0.02
Coopers Town Medical Clinic	Ground mount Solar PV with full grid management and community islanding battery storage solution, along with diesel hybrid microgrid	2.00	0.18
Sandy Point Community	Rooftop or ground mount Solar PV with full grid management and community islanding battery storage solution, along with diesel hybrid microgrid	2.00	0.01
Elbow Cay Substation	New Substation, Switch gear and Battery Storage for Pilot Project	1.00	NA
Total Capacity (MW AC)		12.00	6.71

Source: (RMI, 2019).

All seven (7) of the critical facilities described above, across the five (5) project locations provide critical services prior to and post hurricane. Without an effective power solution and given the potential risks associated with generator maintenance, fuel shortages and increased fuel cost after a catastrophe, critical care at the hospital and other essential services could be severely jeopardized.

3.5.2.2 Site Selection

With regards to selecting a site for developing a PV project, a desirable site has favorable local climate, good solar resource (irradiation), land available for purchasing or long-term leasing, an accessible grid connection or a binding regulatory commitment to connect the site to the transmission network, and no serious environmental or social concerns (IFC, 2011).

As indicated in the previous section, there are two priority locations for ground-mounted solar, battery, diesel hybrid microgrids in the Marsh Harbour Area. The first location is in the vicinity of the Marsh Harbour Government Administrative Complex and the neighboring Hospital (Microgrid 1). The second location is in the vicinity of the Marsh Harbour Airport and nearby Water Treatment/Storage Facility (Microgrid 2). These land locations were determined based upon their proximity to the critical facilities, likely availability of land resources and elevation assessments. The land requirement for each microgrid site is approximately 10 acres (20 acres in total), an insignificant area within the 600 acres encompassing the Airport, Water Plant, Hospital and Government Complex vicinity (RMI, 2019).

Based on the Feasibility Study, the location for Microgrid 2 is not as ideal as the location for Microgrid 1 because the land is not as elevated and could be prone to issues such as flooding (RMI, 2019).

4. IMPACT ASSESSMENT AND METHODOLOGY

4.1 General Methodology

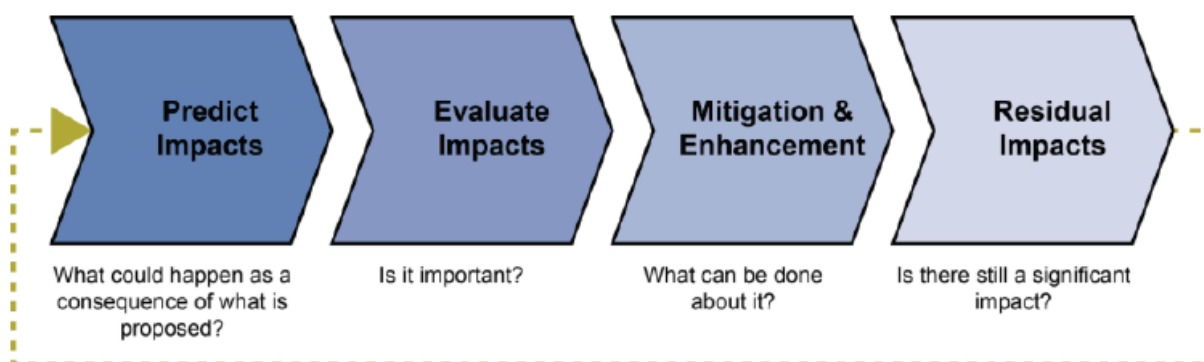
The primary purpose of an Environmental and Social Impact Assessment (ESIA) is to predict the impacts resulting from the proposed project. Impacts can be direct, indirect, or induced, as defined in the Table 4-1.

Table 4-1: Impact Designation Definitions

Designation	Definitions
Direct	Impacts that result from a direct interaction between the Project and a resource/receptor (e.g., between disturbance of a plot of land and the habitats on that plot of land that are affected).
Indirect	Impacts that follow from the direct interactions between the Project and its environment as a result of subsequent interactions within the environment (e.g., viability of a species population resulting from loss of part of a habitat as a result of the Project occupying a plot of land).
Induced	Impacts that result from other activities (which are not part of the Project) that happen as a consequence of the Project (e.g., influx of camp followers resulting from the presence of a large Project workforce).
Cumulative	Impacts that result from the successive, incremental, and/or combined effects of an action, project, or activity added to other existing, planned, and/or reasonably anticipated actions, projects, or activities. For practical reasons, the identification, assessment, and management of cumulative impacts are limited to those effects generally recognized as important on the basis of scientific concern and/or concerns of Project-Affected Communities

Source: ERM, 2020.

The assessment of impacts proceeds through an iterative process that considers four questions as illustrated in Figure 4-1.



Source: ERM, 2021

Figure 4-1: Impact Prediction and Evaluation Process

These questions are expanded in Steps 1 through 4 below.

Step 1: Predict Impacts

An ESIA evaluates potential project impacts by predicting and quantifying to the extent possible the magnitude of impacts on resources (e.g., water and air) or receptors (e.g., people, communities, wildlife species, habitats). Magnitude is a function of the following impact characteristics:

- Type of impact (i.e., direct, indirect, induced);
- Nature of the change (what is affected and how);
- Size, scale, or intensity;
- Geographical extent and distribution (e.g., local, regional, international); and

- Duration and/or frequency (e.g., temporary, short term, long term, permanent).

Magnitude describes the actual change that is predicted to occur in the resource or receptor. The magnitude of an impact takes into account all the various dimensions of a particular impact in order to make a determination as to where the impact falls on the spectrum (in the case of adverse impacts) from *Negligible* to *Large*. Some impacts can result in changes to the environment that may be immeasurable, undetectable, or within the range of normal natural variation. Such changes can be regarded as essentially having no impact, and are thus characterized as having a *Negligible* magnitude. In determining the magnitude of impacts on resources and receptors, embedded controls (i.e., physical or procedural controls that are planned as part of the project design) are taken into consideration (e.g., the magnitude of impacts on stream water quality from construction take into consideration the effectiveness of proposed sediment and erosion control measures).

In addition to characterizing the magnitude of impact, the sensitivity/vulnerability/importance of the impacted resource/receptor is characterized. There is a range of factors taken into account when defining the sensitivity/vulnerability/importance of the resource/receptor. Where the resource is physical (e.g., a waterbody), its sensitivity (to change) and importance (on a local, national, and international scale) are considered. Where the resource/receptor is biological or cultural (e.g., the marine environment or a coral reef), its importance (e.g., its local, regional, national, or international importance) and its sensitivity to the specific type of impact are considered. Where the receptor is human, the vulnerability of the individual, community, or wider societal group is considered. Other factors may also be considered when characterizing sensitivity/vulnerability/importance, such as legal protection, government policy, stakeholder views, and economic value.

As in the case of magnitude, the sensitivity/vulnerability/importance designations themselves are universally consistent (i.e., *Low*, *Medium*, and *High*), but the definitions for these designations will vary on a resource/receptor basis.

Step 2: Evaluate Impacts

An ESIA evaluates the significance of a potential project impact by considering, in combination, the magnitude of the impact and the sensitivity/vulnerability/importance of the impacted resource or receptor. The assignment of a significance rating facilitates decision-makers and stakeholders to understand how much weight will be given to the issue in their process. In the case of positive impacts, the significance is assigned as *Positive*.

Significance was assigned for each impact using the matrix shown in Table 4-2. This matrix applies universally to all resources/receptors.

Table 4-2: Evaluation of Significance of Impacts

Impact Significance Matrix		Sensitivity / Vulnerability / Importance of Resource/Receptor		
		Low	Medium	High
Negative Impacts				
Magnitude of Impact	Negligible	Negligible	Negligible	Negligible
	Small	Negligible	Minor	Moderate
	Medium	Minor	Moderate	Major
	Large	Moderate	Major	Major
Positive Impacts				
Magnitude of Impact	N/A	Positive	Positive	Positive

Source: ERM, 2021.

In terms of what the various significance designations represent, the following considerations are provided:

- An impact of Negligible significance is one where a resource/receptor (including people) will not be affected by a particular activity, or the predicted effect is deemed to be imperceptible or is indistinguishable from natural background variations.
- An impact of Minor significance is one where a resource/receptor will experience a noticeable effect, but the impact magnitude is sufficiently Small (with or without mitigation) and/or the resource/receptor is of Low sensitivity/vulnerability/importance. In either case, the magnitude will be well within applicable standards.
- An impact of Moderate significance has an impact magnitude that is within applicable standards but falls somewhere in the range from a threshold below which the impact is Minor, up to a level that might be just short of breaching a legal limit. To design an activity so that its effects only just avoid breaking a law and/or cause a major impact is not best practice. The emphasis for Moderate impacts is therefore on demonstrating that the impact has been reduced to a level that is as low as reasonably practicable. This does not necessarily mean that impacts of Moderate significance have to be reduced to Minor, but rather that Moderate impacts are being managed effectively and efficiently.
- An impact of Major significance is one where an accepted limit or standard may be exceeded, or Large magnitude impacts occur to highly valued/sensitive resources/receptors.
- An impact of Positive significance is one that has been identified as having a positive effect on the receptor/resource. Generally, this ESIA does not attempt to characterize magnitude for positive impacts.

A goal of an impact assessment is to get to a position where a project does not have any *Major* residual impacts (i.e., after mitigation measures are considered), certainly not ones that will endure into the long term or extend over a large area. However, for some aspects, there may be *Major* residual impacts after all practicable mitigation options have been exhausted. An example might be the visual impact of a facility. It is then the function of the decision-makers and stakeholders to weigh such negative factors against the positive ones, such as employment, in coming to a decision on a project.

Step 3: Mitigation and Enhancement

An ESIA process aims to ensure that project decisions are made in full knowledge of their likely impacts on the environment and society. A vital step within the process for this ESIA was therefore the identification of measures that could be taken to mitigate potential impacts of the Project.

The process involved identifying where potentially significant impacts could occur and identifying ways of mitigating those impacts as far as reasonably possible. A mitigation hierarchy was used in which preference is always given to trying to avoid or minimize the impact before considering other types of mitigation (i.e., remedy, compensate, offset). The conventional preferred hierarchy of measures, which was followed in this ESIA, is provided below:

- Avoid —remove the source of the impact;
- Minimize —reduce the magnitude of the impact;
- Mitigate—“repair” the results of the impact after it has occurred; and
- Compensate/offset—address the loss or change to a resource by replacing the loss/change in kind or with a different resource of equal value.

Step 4: Residual Impacts

Once mitigation measures are agreed to, the next step in the impact assessment process is to determine the residual impact significance. Residual impacts are the impacts that are predicted to remain after both embedded controls and committed mitigation has been taken into consideration. In most cases, the sensitivity/vulnerability/importance of a receptor is unaffected by proposed mitigation measures; the mitigation measure is typically intended to reduce the magnitude of a predicted impact, thereby reducing its overall significance.

5. ENVIRONMENTAL AND SOCIAL BASELINE AND IMPACT ASSESSMENT

5.1 Physical Resources

This Section summarizes the environmental baseline and the major impacts to the physical resources of the area that would be potentially impacted by the proposed project. Additional information on the environmental resources and impact assessment conducted for the physical resources is also provided in the SESA (ERM, 2020) of the Project's CCLIP.

5.1.1 Air Quality and Noise

5.1.1.1 Air Quality Baseline

Air quality data for Abaco is limited; in addition, there is not specific data available for the Project Site. According to an overview on air quality policies in the Bahamas published by the United Nations Environment Program (UNEP), based on research that UNEP conducted in 2015, ambient air quality in most of The Bahamas is relatively good due to: (i) strong winds, (ii) small industrial base, and (iii) low population density. As described in the SESA (ERM, 2020), the local meteorology is dominated by strong easterly trade winds for the majority of the year. The strong winds will tend to transport emissions from sources located on the Islands out over water, rather than allowing them to accumulate and concentrate in ambient air over areas of population. This same effect will also preclude the chance for sufficient accumulations of ozone precursors that could lead to elevated levels of ambient ozone. In addition, due to its small industrial base and low population density, the Bahamas is not a major contributor to greenhouse gases (GHGs) (UNEP, 2015).

Further, the mean urban PM₁₀ (particles with a diameter of 10 micrometers or less, which are inhalable into the lungs and can induce adverse health effects) in The Bahamas, based on WHO country health statistics from 2004, is 18 micrograms per cubic meter (µg/m³)². For reference, the United States' Environmental Protection Agency (EPA) establishes that PM₁₀ must not exceed 150 µg/m³ more than once per year on average over 3 years³. With regard to PM_{2.5} (particles with a diameter of 2.5 micrometers or less), World Bank provides the mean annual concentration of fine suspended particles of less than 2.5 µg/m³, which is another common measure of air pollution. The mean is a population-weighted average for urban population in a country. For The Bahamas, it was 17.6 µg/m³ in 2017⁴. The EPA recommends that PM_{2.5} must not exceed 12.0 µg/m³ as a primary standard (standard that provides public health protection, and includes protecting the health of sensitive populations such as asthmatics, children and the elderly) as an annual mean, averaged over three years. The EPA also recommends that PM_{2.5} must not exceed 15.0 µg/m³ in the 98th percentile, averaged over three years, as a secondary standard (standard that provides public welfare protection, protecting against decreased visibility and damage to animals, vegetation and buildings). Lastly, the EPA establishes PM_{2.5} is not to exceed 150 µg/m³ during a period of 24 hours more than once per year on average over three years, for both primary and secondary standards.

It can be presumed that the ambient air quality in the Project Site and its vicinity is good because the area is relatively undeveloped mixed urban/residential area. There is high air dispersion, because the island of Abaco is influenced by steady easterly trade winds and tropical oceanic and cyclonic movements. Besides the air emissions generated by the island's electrical power plant, there are no major industrial sources of emissions in Abaco and the area surrounding the Project Site is moderately developed.

5.1.1.2 Noise Baseline

The Project Site is located in a vegetated area that is surrounded by an open vegetated field to the west, a hospital complex to the south, a government-building complex to the northeast, and a mixed urban/residential to the east. In general, the existing sources of noise at the Project Site are associated with mixed-use urban land use (residential and institutional), with a low to moderate volume of local traffic flow on the adjacent S.C. Bootle Highway that forms a portion of the eastern border of the Project Site. There are currently no industrial noise generating sources located in proximity to the Project Site. Existing ambient sound levels were not collected; however, based on the surrounding land use type of urban residential and institutional, we estimate that daytime sound levels (in normal condition, i.e., following the return of the inhabitants and the resume of the regular urban activities) are approximately 55 decibels (dB) for the western side and 65 db for the eastern side of the Project Site. For nighttime, we estimate that the sound levels for the western side are approximately 49 dB and for eastern side 54 db of the Project Site (ANSI, 2013).

The International Finance Corporation (IFC) General Environmental, Health, and Safety (EHS) Guidelines (IFC, 2007) recommended noise level thresholds for residential/institutional/education areas of 55 A-weighted decibels [dBA] equivalent sound level (Leq) for daytime and 45 dBA Leq for nighttime.

Construction of the Project would generate moderate amounts of daytime noise from construction equipment during site cleaning, leveling, and counteracting activities. Noise generated from these activities are not expected to represent an element of disturbance for the nearby communities. Operation of the Project would generate very little noise. Maintenance and cleaning activities would generate small amounts of noise; however, they would not likely be perceptible outside of the Project footprint.

² WHO Country Profile of Environmental Burden of Disease, 2009. Accessed at https://www.who.int/quantifying_ehimpacts/national/countryprofile/bahamas.pdf?ua=1

³ EPA Criteria for Air Pollutants, accessed at <https://www.epa.gov/criteria-air-pollutants/naaqs-table>

⁴ <https://data.worldbank.org/indicator/EN.ATM.PM25.MC.M3>

5.1.1.3 Impacts and Mitigation

Air Quality

Air emissions from construction activities will be temporary and associated primarily with the following activities:

- Increase of dust from construction activities (site clearance, grading, counteracting, earthworks, material stockpiling).
- Combustion emissions for the operation of vehicles/machinery and construction equipment.

Increase of Dust from Construction Activities

Little to no emissions are anticipated during the operational phase of the Project through management of on-site vehicle speed, restoration of disturbed areas and the implementation of erosion and sediment control measures.

Development of the Project Site will require clearance of a maximum of approximately 5 ha of land, however the area for the location of the PV plant would require less clearance. The site preparation and construction activities (e.g., clearance of vegetation, levelling, and counteracting) have the potential to generate fugitive dust emissions. Dust emissions may result in nuisance issues at nearby sensitive receptors due to airborne and dust deposition, causing temporary increases in ambient concentrations of particulate matter (PM₁₀). In addition, dust emissions would arise due to traffic along unpaved roads during the construction phase.

The construction of the Project would take approximately 3 months. Should construction occur during the dry season (November to April), dust generation would be exacerbated. Instead, during the wet season (May to October), the conditions within the Project Area are not conducive for dust emissions. In addition, emissions would not occur constantly over the construction period, but would instead peak during site clearance and delivery of panels and mounting structures. Exposure to dust generating activities and associated dust emissions are therefore likely to primarily occur in the dry season and over a short period during the construction phase. The hospital complex and government complex would likely have a Low sensitivity to Project construction activities. The impact duration for these complexes would be short-term (over 3 months and primarily during the dry season within this period). The impact magnitude is considered Small; therefore, the impact is rated as Negligible.

Even though the impact is considered negligible, best management practices measures can be implemented to reduce dust emissions:

- Removal of vegetation and soil cover will be restricted to that which is necessary for the Project;
- Land clearance will be sequential and the smallest possible area for working will be exposed where ground and earthworks are undertaken;
- Stripping of topsoil will not be conducted earlier than required (i.e., the Project will maintain vegetation cover for as long as possible) in order to prevent the erosion (wind and water) of organic matter, clay, and silt;
- A speed limit of 25 km/h on unpaved surfaces will be enforced and national speed limits on public roads will not to be exceeded;
- Transported materials will be covered with tarpaulins to prevent fugitive dust;
- Stockpiles stored longer than six weeks will be vegetated or covered with sheeting, shade cloth, or tarpaulin to reduce soil loss from wind or storm water runoff;

- Stockpiles will be located as far away from receptors as possible and will be covered with sheeting, shade cloth, or tarpaulin; and
- Implement an erosion and sediment control plan.

Increase of Emission Exhausts

The site clearance activities and preparation will involve the use of mobile non-road machinery for leveling the site and clearing the vegetation. The equipment can have an impact on local air quality by leading to an increase in ambient levels of NO_x, SO₂, PM₁₀, PM_{2.5}, and CO.

At this stage of the Project, the quantities of the non-road machinery required are not known, however, it is likely that bulldozers and dump trucks will be used on site during the clearance and construction phase.

Additionally, vehicles used during construction of the Project would primarily be Heavy Goods Vehicles associated with bringing in materials and equipment. During construction, the primary Project components would be delivered in the following way:

- Inverters - truck deliveries;
- Main transformer - specialized abnormal load deliveries;
- LV/MV transformers – truck deliveries;
- PV modules – truck deliveries;
- Tracker/structure – truck deliveries; and
- Miscellaneous – truck deliveries.

Based on the size of the proposed Project and on international guidance that suggests that exhaust emissions from onsite non-road machinery and other heavy goods vehicles are unlikely to make a significant impact on local air quality. Therefore, the significance of the potential impacts from the increase of exhaust emissions is considered Negligible (low sensitivity; small magnitude).

Even though the impact is considered negligible, best management practices measures can be implemented to reduce vehicle emissions.

- Minimize movement of construction vehicles and enforce a speed limit around the construction site;
- Where available, use ultra-low sulfur diesel (ULSD) in diesel powered equipment, together with best management practices;
- Vehicle / equipment air emissions should be controlled by adopting simple good practice procedures (such as turning off equipment when not in use);
- Vehicle / equipment exhausts observed to be emitting significant black smoke in their exhausts should be serviced;
- Regularly maintain all diesel-powered equipment and reduce idling time to avoid emissions of NO_x, PM₁₀ and SO₂; and
- All non-road mobile machinery to use ultra-low sulfur diesel where available.

Noise

Noise from construction activities will include that produced by diesel mobile construction and earth moving equipment, drilling, and foundation work. Traffic associated with the transportation of construction materials, transformers, generators, other equipment and materials, and construction workers will also result in

increased noise levels along transportation routes. The operation of the solar PV power plant is not expected to generate significant noise emissions.

During the construction phase, the main potential impacts on the acoustic environment are related to the noise emissions from construction machinery and construction vehicles being utilized for the activities listed below.

Site preparation: This includes significant noise-producing activities such as vegetation clearance and minor earthworks. These activities would require heavy construction vehicles and equipment (e.g., excavators, dozers, dump trucks).

Civil works and installation: This includes noise-producing activities such as drilling for mounting structure frames, construction of inverter and transformer station foundations and installation of inverter stations, and construction of stores, workshop, and office buildings.

Road traffic offsite: The movement of vehicles for transportation of materials and personnel on local roads and/or new access roads close to communities would also generate noise emissions.

All the construction activities mentioned above have the potential to result in an overall increase in the background noise level close to the Project Site and to potentially disturb occupants at the nearest receptors.

Noise would be generated during the construction phase (and potentially at a lower level during decommissioning). The noise during this phase would be short term, over a total construction period of 6 months. Based on UK guidance (BS 5228), noise levels that exceed 65 dB LAeq at a receptor would represent significant noise impacts. This assumes that work is carried out during the daytime, and that no noise generating work is required at night. According to the World Bank Group General EHS Guidelines (2007), noise levels should not exceed 55 dBA LAeq during the daytime and 45 dBA LAeq during the night at residential receptors.

Noise impacts from construction activities at the Project Site would persist for the construction period and would therefore be short term in nature. Emissions would be limited to the Project Site and would therefore be limited in nature. Noise emissions associated with construction would be variable in nature and depend on the particular activities being undertaken, as well as the number and type of equipment in operation. All construction work and traffic movements would take place during the day. As a result, there should be no activities with the potential to cause nighttime disturbance. In addition, noise emissions would peak during site preparation and delivery of panels and mounting frames.

The exact location of construction equipment has not been confirmed, but buildings within approximately 100 m from the nearest construction activities (a backhoe loader with a sound level of up to 84 dB LAeq at 10 m) would result in a noise level of 67 dB LAeq at the nearest receptor (façade). There are no buildings within 100 m of the Project Site.

In terms of nearby receptors, there are buildings complexes in the vicinity of the Project Site. The magnitude of the impact is considered Negligible, as it would be short term, and the sensitivity of the receptors are considered high. As a result, the impact significance is assessed to be Negligible within 100 m of the Project Site.

5.1.2 Geology and Geomorphology

5.1.2.1 Geology and Geomorphology Baseline

The Bahama Islands have a foundation (i.e., the Bahamian Platform) of fossil coral, but much of the rock is oolitic limestone⁵. The limestone is derived from the disintegration of coral reefs and seashells (US Army Corps of Engineers, 2004). Geological investigations of the Bahamian Platform suggests that the platform is a layer more than 5 km of carbonate sediment (limestone) that have accumulated on pre-Triassic. The upper units consist of Pleistocene and Holocene limestones, including aeolian calcarenites, beach rock, fossil coral reef rock, and sub-tidal facies. Lithified aeolian dune ridges provide topography, with shallow brackish to hypersaline lakes occupying the depressions between. The shorelines are characterized by sand beaches, commonly containing Holocene beach rock, located between headlands composed of older, eroded aeolianites crystalline rock (KES, 2008).

The limestone exposed at the surface of the Bahamas is the upper boundary of the Lucayan Formation⁶, whose average thickness is 40 m. The texture of this limestone ranges from mudstone to grainstone, but packstone predominates. The Lucayan Limestone is dated as late Pliocene-Pleistocene.

The surface geology of the Bahamas is formed from Pleistocene and more recent deposits, basically reef limestone and its weathered products. Karst features created during Pleistocene sea level fluctuations provide caves, blue holes and remnants of cave systems. The topography of the islands is subdued, with low relief, which seldom exceeds 9 meter above sea level (masl). Dune ridges of greater than 31 m are found on some islands, notably Abaco and New Providence. Ponds and lakes form between dune ridges (KES, 2008; Walker, 2006).

5.1.2.2 Impacts and Mitigation

Earthworks will occur only during the construction phase. No earthmoving is expected during the operation phase, and during the decommissioning phase the movements will be minimal. These actions will slightly affect the geologic formations, causing superficial alterations on the geomorphology of the project area. Therefore, the impacts from earthworks will be generally of a small scale and therefore the induced impacts are of low to Negligible significance (low senility; small magnitude).

Potential impacts on the geology of the project area are more related to the construction phase, and therefore earthmoving will have to:

- Be reduced to a minimum in terms of affected area, so as to minimize the instability and collapse of soil; and
- In case unstable areas are identified, it is important to implement measures to reinforce the support capacity of those soils, at the time of excavation work.

5.1.3 Landscape, Topography, and Soils

5.1.3.1 Landscape, Topography, and Soils Baseline

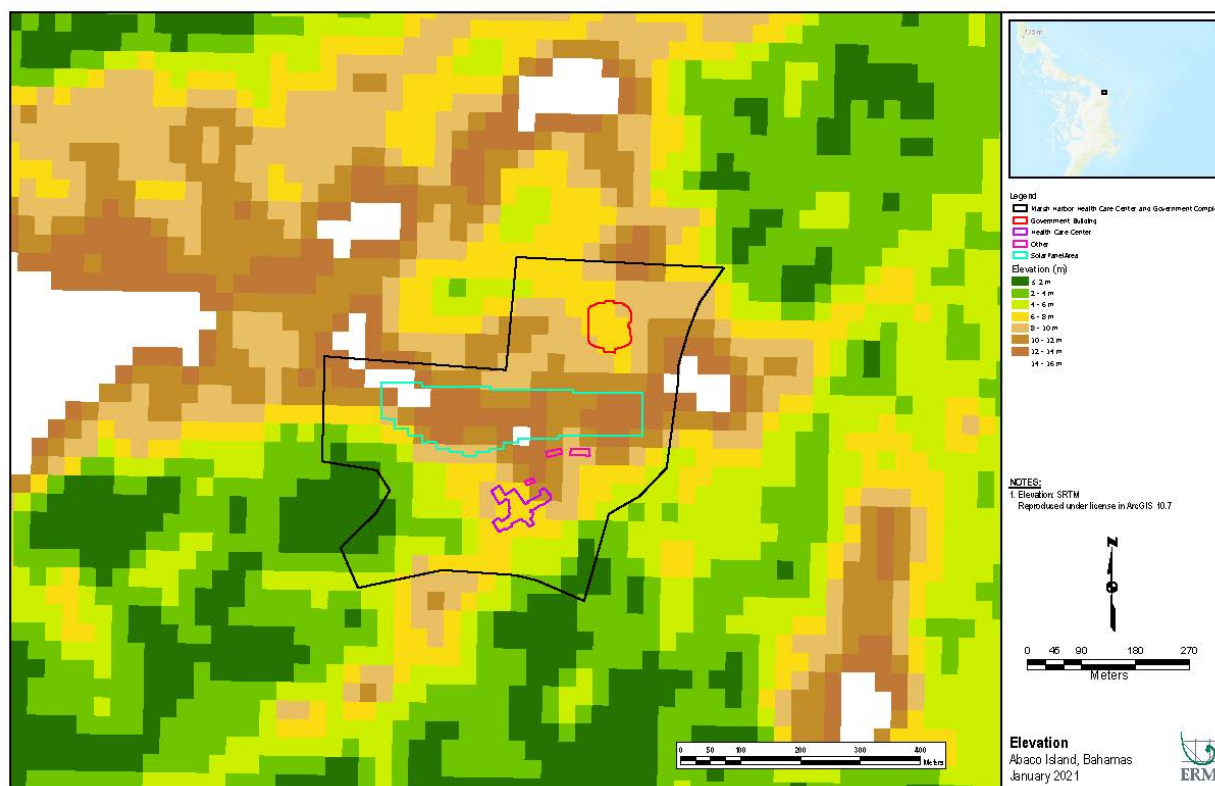
The Abacos are a large and complex island group, which includes a considerable number of cays along its eastern shore, a feature that makes it quite different from its Atlantic counterparts on the Great Bahama Bank. Abaco occupies most of the eastern half of the Little Bahama Bank and extends for some 185 km in

⁵ Oolitic limestone is made up of small spheres called oololiths that are stuck together by lime mud. They form when calcium carbonate is deposited on the surface of sand grains rolled (by waves) around on a shallow sea floor.

⁶ The Lucayan Formation is a geologic formation in the Bahamas. It preserves fossils dating back to the Early Pleistocene period.

an arc. The outer cays also extend for about the same distance but start and end some 36 km further north, and generally follow a straight NW-SE line. Abaco is in fact the second largest Bahamian island. For the most part the island is at least 8 km wide, but is broken up into smaller units at intervals by isthmuses in the south. Just north of Coopers Town there is in fact a complete separation into Great Abaco and Little Abaco Islands (Passerine, nd).

The surface of Abaco Island is composed entirely of mid to Late Quaternary carbonate deposits, rocks less than 1 million years old. Eolianite (dune) ridges, with elevations commonly over 24 m, form most of the relief on Abaco Island. The high cliffs along the eastern shore of Abaco Island are commonly the result of erosion of these eolianite deposits. The topography of the island is fairly flat. The high ridge, which forms the eastern flank of Abaco Island, peaks east of the site at approximately 34 m, although the ridge is generally at 18 m elevation. East of the ridge, the topography slopes to sea level (KES, 2008). The topography of the Project Site is somewhat elevated area that contains a small trending east-west ridge, with elevations that range from approximately 8 to 14 mamsl. The area also exhibits some outcrop areas where the elevations ranges from 14 to 16 mamsl as depicted in the below figure.



Source: ERM, 2021.

Figure 5-1: Project Site Topography

The soils of the Abaco Island consist mostly of calcareous particles, with some aluminous lateritic soils formed under humid tropical conditions. The soil materials can be divided by their major soil forming constituents, which include carbonate sediments, airborne dust, and immature humic materials, the result of decaying vegetation. These soils, known as azonal⁷ soils, are immature and have not yet developed to

⁷ Azonal soils lack distinct genetic horizons and resemble the parent material.

a stage of equilibrium with the local weathering regime. Typically, these soils tend to be localized. Soil thickness can vary and is usually thin, discontinuous and is thickest when concentrated in shallow solution pits. The predominant pedogenic features in the altered limestone are voids produced by the carbonate solutioning process, around the roots of plants. The soil moisture is characterized by frequent wetting and drying due to the high effective porosity of the underlying carbonates and the intermittent nature of the rainfall (KES, 2008).

5.1.3.2 Impacts and Mitigation

The following potential impacts to topography and soils are predicted to in the Construction phase:

- Increase soil erosion.
- Loss of topsoil (loss of growth media).

As described above, the soils found within the Abaco Island can be characterized primarily well drained and locally gravelly and stony, typical of limestone landscapes. Typical to similar tropical island landscapes, the Project Site soils possess good structure and a low fertility, and are characterized by having a very thin topsoil layer.

Implementation of the proposed project will result in the disturbance of approximately 5 ha of soil. One of the primary concerns during construction is soil erosion and sedimentation. Potential impacts to soils from erosion are expected to occur in areas where the bare soils are exposed wind and water. Erosion may also occur when surface water flows come into contact with areas of bare soil, especially on sloped terrain. Precipitation within the Project Site would also likely impact the exposed soil and increase surface run-off, resulting in loss of topsoil, which binds the soil together for more stability. Continued loss of topsoil would lead to increased levels of erosion.

Rainstorms during the wet season can increase the potential for erosion. In addition, the compaction of subsoils through site grading and levelling, and the presence of heavy vehicles and machinery during construction, would result in lower permeability of the soil and therefore decrease infiltration and increase run-off. Without appropriate mitigation measures, run-off from hardstanding areas, in addition to exposure to wind and rainfall, may increase erosion and alter the natural drainage characteristics of the soil.

Impacts to soil from soil erosion would be short term, during the construction phase, and largely limited to within 100 m of the Project Site. The impacts would be occasional, largely restricted to the site clearance phase of construction. In terms of nearby receptors, there are not residential communities adjacent to the Project Site. Therefore, the magnitude of the impact is considered Small, as it would occur over a temporary period, and the sensitivity of the receptors are considered to be High. As a result, the impact significance is assessed to be Moderate within 100 m of the Project Site.

To minimize the effects of the Project on soil erosion and sedimentation, the project executing agency proposes to implement the following Project control measures:

- Clearance of vegetation should not be conducted earlier than required (maintain vegetation cover for as long as possible) in order to prevent erosion;
- Soil removed from the foundation pits of the panels can be used to build basins to retain rain water running from the panels;
- Areas between and under the photovoltaic panels should be re-vegetated with low growing grass species to limit raindrop and wind energy, which will reduce soil erosion. This is highly recommended in order to maintain the natural biological soil life associated with the indigenous vegetation;
- Roads used to access the facility must be well drained in order to limit soil erosion.

- implement good management practices to control soil erosion, storm water runoff, and sedimentation control (e.g., silt fences, implementing progressive revegetation practices); and
- In addition, to further mitigate the impacts of the Project in the area topography and soils, the sponsor will develop and implement the Erosion and Sediment Management Plan presented at Chapter 6.0.

The potential for the loss of topsoil (i.e., organic and mineral topsoil layers) by mixing is present during the construction in the Project Site; during landscape vegetation clearance and re-contouring to ensure proper drainage; and during landscape grading. The mixing of the growth media with the overburden layers from these activities could impact the soils resources in the Project Site, because of the lost soil productivity and fertility, and the loss of viable seeds present in the surficial soil layers. Therefore, the impact of the proposed Project construction activities on the loss of the growth media layer by mixing is expected to be Moderate (Small magnitude; high sensitivity/vulnerability/importance).

To avoid or minimize the loss of the growth media, the growth media layer (topsoil layer and organic material) will not be mixed with the subsoil layer, if feasible and practical during the construction phase.

Following the described procedures and reclamation Project control measures, the impact of the proposed construction activities on the growth media will be Minor (magnitude small; medium sensibility).

5.1.4 Water Resources

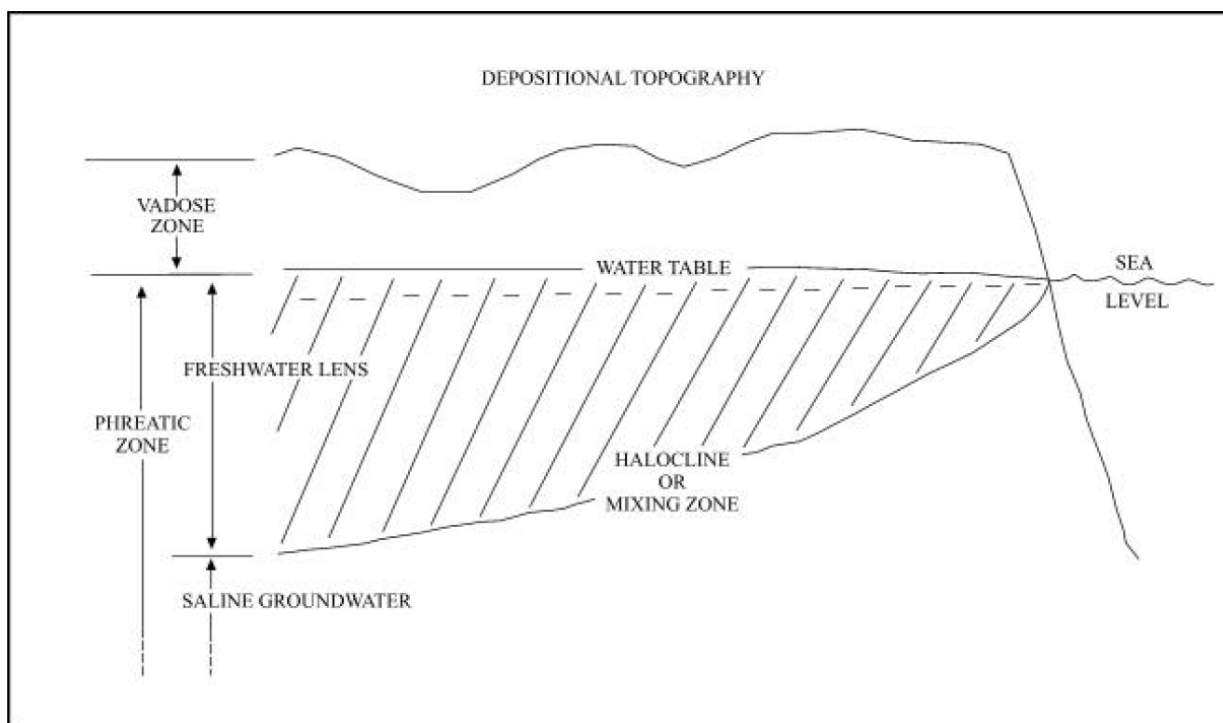
5.1.4.1 Hydrology and Water Quality

The hydrologic setting of The Bahamas, including the Abaco Island differs, from the usual continental setting in two ways: (i) the islands are completely covered by limestone (see Section 5.1.2 Geology and Geomorphology for details), so precipitation sinks as diffuse input into the limestone; and (ii) groundwater (fresh or brackish) occurs in a lens that floats on the saline marine water that permeates the islands from below (Curran and White, 1995). There are no true rivers or streams on the Bahamas due to the high permeability of the limestone surface permits the rainwater to percolate quickly to the water table, and the low relief of the land.

According to the Water Resources Assessment of The Bahamas conducted by the US Corps of Engineers in 2004, there are two types of aquifers in the country:

- Holocene sands aquifers (unconsolidated, loose sands) - Holocene sands comprise many of the coastal areas of the country. These well-sorted sands are fine-grained, oolitic in some areas, and highly porous, however, the pores are very small and surface tension is high. These characteristics allow the sands to retain small quantities of freshwater, even in close proximity to the seawater. Freshwater yields, when available, are small in these aquifers.
- Lucayan Limestone aquifers - The principal aquifer in Abaco and in The Bahamas in general, is the Pleistocene-aged Lucayan Limestone. The aquifer is comprised of poorly stratified oolitic limestone.

The major source of freshwater in the Lucayan Limestone is rainfall, which percolates through the thinly developed soils on the islands. The fresh water occurs as lenses that float on top of the denser brackish water (see Figure 5-2). The water in the Lucayan Limestone is influenced by a variety of sources including tidal action, rainfall, barometric variations, evapotranspiration, and groundwater discharge at the coast, as well as by urban development and withdrawal. Generally, the location and extent of fresh water in the Lucayan Limestone depends on the island size, shape, climate and the presence of less permeable discontinuity surfaces. The precipitation on Abaco is between 1,397- 1,524 mm annually, which recharges the freshwater lenses across the island.



Source: Walker, 2006.

Figure 5-2: Generalized Diagram of Fresh and Saline Water Groundwater Aquifer Lens in The Bahamas

Abaco Island possesses good freshwater resources from the Lucayan Limestone aquifer lenses. Very large to large quantities of water are available from four relatively large freshwater lenses: Normans Castle; Marsh Harbour-Lake City; Lake City- Crossing Rocks; and Crossing Rocks-Hole in the Wall. The lenses vary in thickness and the water table is encountered between 2 and 6 m below the surface (KES, 2008).

Freshwater resources in the Abaco Island are limited to very fragile freshwater lenses in the shallow limestone aquifers and since rainwater is the sole source of freshwater, aquifer recharge is controlled primarily by the quantity and distribution of rainfall, as well as vegetation, topography, and the permeability of surface materials and urban development.

Table 5-1 shows the long-term average internal renewable water resources (IRWR), which are estimated at about 700 million m³/year for The Bahamas and approximately 132 million m³/year Abaco (FAO, 2015).

Table 5-1: Internal Renewable Water Resources in The Bahamas

Renewable freshwater resources	Million m ³ /year
Abaco	131.70
Acklins	7.26
Andros	349.51
Bimini and Berry Island	0.28

Renewable freshwater resources	Million m ³ /year
Cat Island	11.32
Crooked Island	2.90
Eleuthera, Harbour Islands & Spanish Wells	13.54
Exuma & Cays	4.83
Grand Bahama	155.13
Great Inagua	1.43
Long Island	4.80
Mayaguana	1.08
New Providence	16.03
Ragged Island	0.02
San Salvador & Rum Cay	0.17
Bahamas	700.00

Source: (FAO, 2015).

The Bahamas is susceptible to storm damage from tidal surges and flooding from hurricanes, which can have dramatic effects on the groundwater supply.

On Great Abaco, the Water and Sewerage Corporation provides water through distribution systems serving Little Abaco as well as the Coopers Town, Treasure Cay, Marsh Harbour, Spring City, Casuarina Point, Crossing Rocks and Sandy Point communities. These systems are considered to be some of the best water supply systems in the Bahamas. Collectively, including Moore's Island and Grand Cay, they provide about 1.5 million gallons of water per day.

5.1.4.2 Water Condition

According to the information provided by the US Corps of Engineers in their 2004 Water Resource Assessment of The Bahamas report, in Abaco, nearly three quarters of the average annual rainfall occurs during the rainy season, which extends from May through October. Average annual precipitation is approximately 1010 mm (40 inches). The terrain of Abaco Island is largely flat and rocky. Surface water bodies cover less than 2 percent of the island and include blue holes, man-made lakes, and ponds. Six blue holes were discovered on Abaco. A blue hole near Treasure Cay airport measured 57 m (186 ft.) in depth and has a 15 m (50 ft.) column of freshwater overlying saline water. The depth of this blue hole is comparable to a large freshwater lens and may provide meager yields of water. It should not be considered a primary source of freshwater. The depths of the remaining blue holes on Abaco range from 10.4 to greater than 46 m (34 to greater than 150 ft.).

In the mid-1970's, man-made ponds resulted from the removal of limestone to provide material for road construction. Many of the pools penetrate a couple meters below the water table and may be 30 m (100 ft.) or so in diameter. These surface water bodies should not be used as primary water sources. Large-scale chemical or biological contamination of the surface water has not been reported.

Water quality is saline to brackish, however freshwater may occur in certain places. These sources may not be suitable for tactical purposes. Approximately 60% of Abaco Island is unsuitable for groundwater development. Chemical or biological contamination of the aquifers has not been reported for Abaco Island.

5.1.4.3 Impacts and Mitigation

The following potential impacts to water resources are predicted to in the construction, operation, and decommission phases:

- Alteration of runoff patterns and drainage characteristics, and catchment yield.
- Increased Sediment Load.

Alteration of runoff patterns and drainage characteristics, and catchment yield

The construction of the project will result in the alteration of the drainage patterns and water catchment of the area due to the disturbance of the land during site clearing, earthworks and construction of access roads, solar PV array and associated infrastructure. This is likely to result in increased runoff and mobilization of sediment. Flow velocity of runoff is likely to increase during precipitation events, and the water will be concentrated which could lead to increased erosion. The flow characteristics will also change and there will be an increased likelihood of standing or ponding of water due to the unnatural drainage lines which will be created.

During the operational phase, impacts will arise from runoff being concentrated, because it drains from impermeable solar panel surfaces. A lack of maintenance of storm water infrastructure and roads could result in obstructions due to debris being collected in storm water control structures. Inadequate storm water drainage systems which could lead to alteration of catchment yield and drainage patterns and a decrease in runoff volumes due to obstructions or drainage diversions. This could result in increased soil erosion due to inadequate storm water control systems and a loss of vegetation which leads to increased erosion and siltation of watercourses. The presence of the solar PV array will result in an increase in runoff volumes because the solar panels will cover a large area where rainwater used to infiltrate into the ground. This runoff will now be diverted to the nearest drainage ways causing an increase of water flow and velocity, which could soil erosion and sedimentation.

During decommissioning there will be a removal of water control structures such as drains, culvert or sediment handling infrastructure and the general decommissioning and rehabilitation of site and infrastructure. This will result in the increase and mobilization of sediment and increased soil erosion on open bare areas which could result in the loss of vegetation which leads to increased erosion and siltation of watercourses as well as the potential standing or ponding of water.

These impacts will occur mainly during the construction and decommissioning phases. During the operational phase the impact can be managed and after decommissioning the drainage patterns will be reinstated or improved. The impact on catchment yield can also be seen as positive because runoff may increase due to the impermeability of the panels. This is however insignificant in relation to the larger receiving catchments and the high yield of the larger catchment. The increase in yield can, on the other hand, also have other negative effects like flooding.

To minimize the effects of the Project on soil erosion and sedimentation, the project-executing agency proposes to implement the following Project control measures:

- Minimize disturbance of the natural topography and catchment characteristics by limiting large scale earthworks, vegetation removal and soil compaction where possible;
- Construct adequate storm water diversion structures to route runoff around affected areas;
- Rehabilitate the affected areas as close as possible to the natural condition during the decommissioning phase; and
- Ensure sediment traps are in place and maintained regularly.

Increased Sediment Load

During the construction phase the disturbance of the soil profile, land clearing operations and general construction of infrastructure (water control structures such as drains and culverts) will result in increased runoff from construction activities. This will increase the soil erosion and sedimentation in the project area.

In the operational phase impacts could arise from a lack of maintenance of water control structures such as drains, culverts or sediment handling infrastructure and inadequate storm water management and soil stabilization measures. Potential consequences will be the reduction of capacity of water control structures and potential damage to storm water infrastructure. This could lead to the increased mobilization of sediment and increased turbidity.

During the decommissioning phase impacts could arise from the removal of water control structures or sediment handling infrastructure and the decommissioning of roads. Inadequate storm water management and soil stabilization measures in cleared areas during decommissioning operations could result in the increased soil erosion and sedimentation.

The majority of impacts will occur during the construction and decommissioning phases until the bare areas have stabilized. During the operational phase impacts can be managed by means of embedded control measures. This impact has a negative impact on the downstream physical, biological and the social environment.

To minimize the effects of the Project on increase soil erosion and sedimentation, the sponsor proposes to implement the following Project control measures:

- Implement an erosion and sedimentation control plan;
- Dust suppression operations are recommended;
- Large areas should not be exposed for long periods of time and should be rehabilitated as soon as possible by establishing adequate vegetation to reduce increased sedimentation;
- If possible then the construction and decommissioning phases should be scheduled to take place during the dry season;
- Pluvial water on the surface shall be discharged in more than one point, to reduce the concentration of runoff at the surface; and
- Road traffic on exposed areas or off the designated roads shall be limited.

Overall, the magnitude of the potential impact of the Project on the water resources is considered Small during all phases of the Project. The sensitivity of the impacted resource is considered to be High. Therefore, the overall impact to water resources is expected to be Moderate. However, the proposed controls and mitigations are effective at reducing, leaving only a Small residual impact.

5.1.5 Natural Hazards

The primary natural hazards events that are expected to affect Abaco and have the potential to impact the Project Site include hurricanes and tropical storms (hurricanes and storm surge and high winds).

5.1.5.1 Hurricane and Tropical Storms

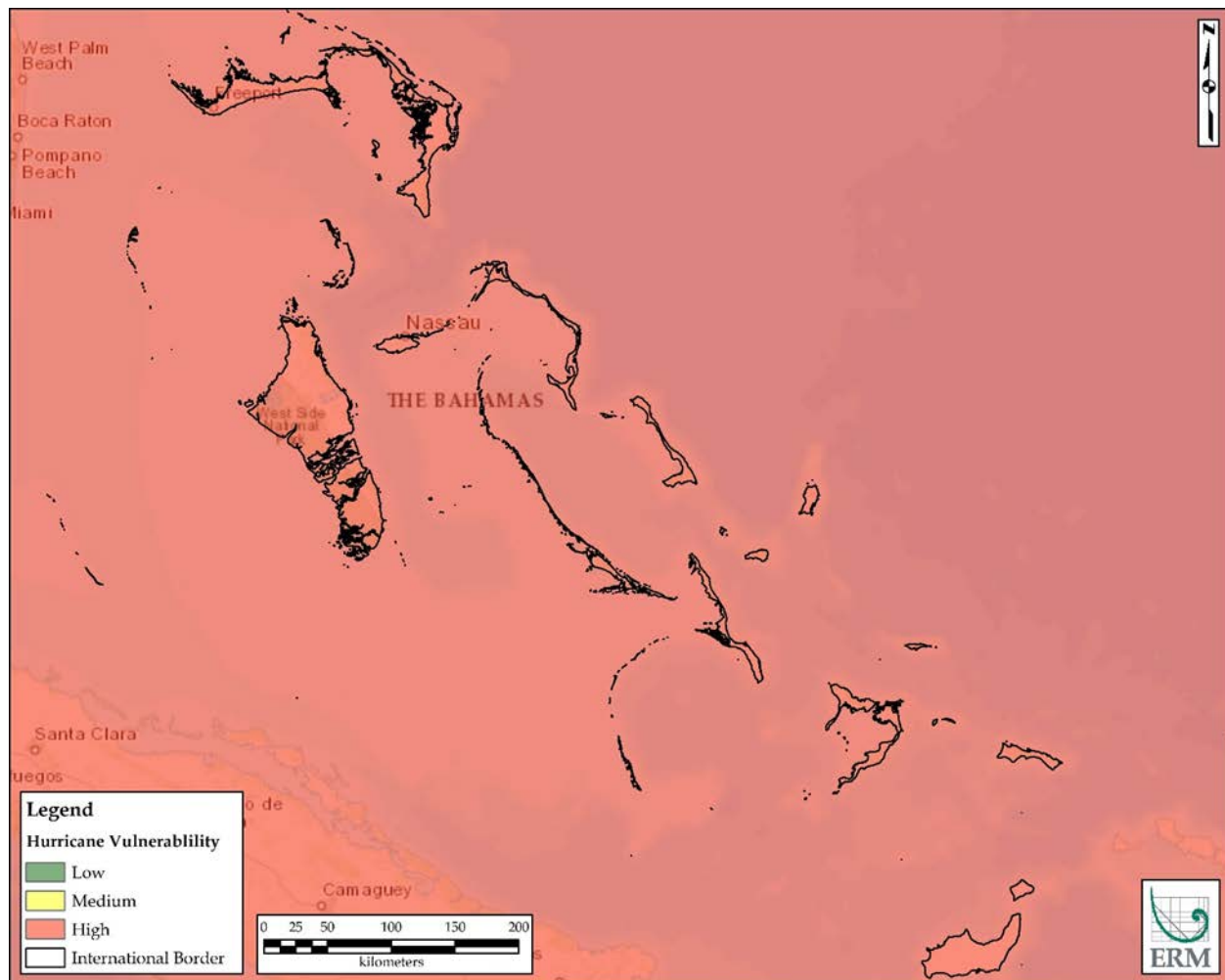
The island of Abaco is located within the Atlantic Tropical Cyclone basin. This basin includes much of the North Atlantic, Caribbean Sea and the Gulf of Mexico. On average, six to eight tropical storms per year form within this basin. The formation of these storms, and possible intensification into mature hurricanes, takes place over warm tropical and subtropical waters. Eventual dissipation or modification of these storms occurs on average seven to eight days later, typically occurs over the colder waters of the North Atlantic, or when the storms move over land and away from the sustaining marine environment. The hurricane season extends approximately from June to November (USACE, 2004).

According to ThinkHazard.org, a web-based tool developed by the Global Facility for Disaster Relocation and Recovery (GFDRR) in partnership with the World Bank Group and other institutions, and with data contributed by numerous organizations around the world, Abaco's risk of hurricane hazards is classified as *High* (ThinkHazard, 2021). This means that there is more than a 20 percent chance of potentially damaging wind speeds for projects developed in this area in the next 10 years. Based on this information, the impact of hurricanes must be considered in all phases of the Project, in particular during design and construction methods. Damages can also occur from hurricane-induced storm surge and high wind. Figure 5-3 depicts the hurricane vulnerability in The Bahamas.

Due to the destructive nature of these storms, landfall can result in significant damage to the solar panels, ancillary facilities, and the environment from storm surges, waves, and wind. Thirty five tropical storms and hurricanes have passed within approximately 100 km of the Bahamas from 2000 through 2020 (see Figure 5-4), as reported by the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center. In addition, Table 5-2 presents a summary on the number of tropical storms and hurricanes recorded from 1871 to 2018 in Abaco Island. According to these statistics, Abaco Island is ranked as the island with the second greatest probability of recurrence of being hit by a tropical storm or a hurricane (approximately every 1.81 years). In fact, Abaco Island is considered the "Hurricane Capital of the Caribbean" based on the number of hurricanes between 1851 and 2010 (UNFCCC, 2014).

As described in the Techno-Economic Assessment of the Marsh Harbour Microgrid, Abaco Report (2021), the proposed Project Site has an averaged elevation of approximately 10 mamsl (see Section 5.1.3 Landscape, Topography, and Soils). With the seashore only approximately 100 m away, indicating that the Project Site may be prone to flooding from storm surges, but the elevation of the makes that unlikely, especially as the site is surround by lower elevation areas.

In The Bahamas, the average wind speed of hurricanes when they hit the islands have historically ranged between 112 to 120 miles per hour (mph) [180 to 193 km/h]. In Abaco, the average wind speeds of hurricane hits is approximately 112 mph (see Table 5-2). These wind speeds, according to the Saffir-Simpson Hurricane Wind Scale, represent a Category 3 (major) hurricane. NOAA's National Hurricane Center describes the type of damages that may be caused by a Category 3 hurricane winds, and it includes: well-built framed homes may incur major damage or removal of roof decking and gable ends; trees snapped or uprooted, blocking numerous roads; electricity and water unavailable for several days to weeks after the storm passes. Figure 5-5 depicts areas in The Bahamas subject to hurricane wind hazard.



Source: ERM, 2021.

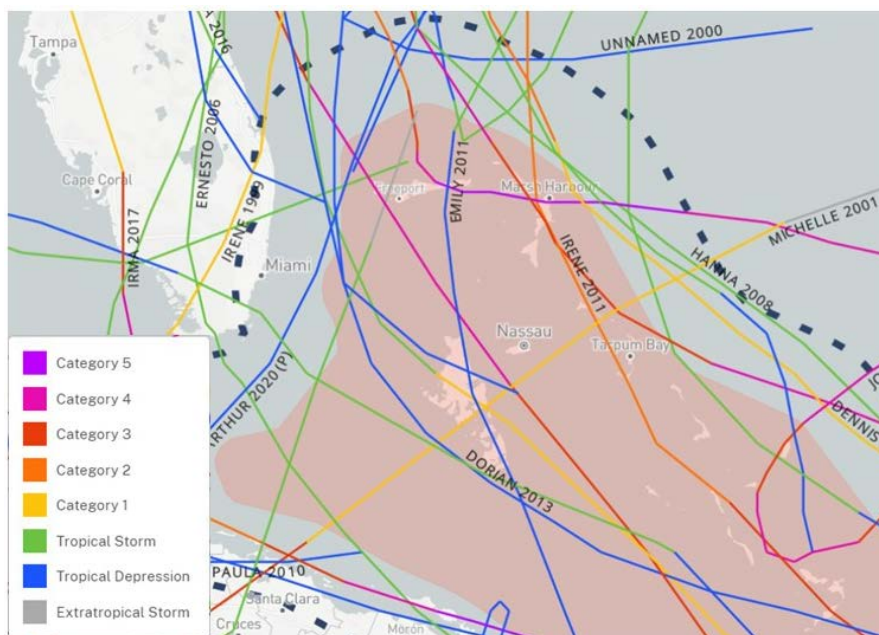
Figure 5-3: Hurricane Vulnerability in The Bahamas

Table 5-2: Number of Tropical Storms and Hurricanes Recorded from 1871 to 2018 and Averaged Probability of Recurrence in Years in Abaco

Islands	Total Number of Tropical Storms	Total Number of Hurricanes	Total	Average wind speeds of hurricane hits (mph)	Average time between direct hurricane hits (Years)	Average Probability of Recurrence* (Years)
Abaco	32	49	81	112	3.77	1.81

Notes: mph = miles per hour; * = this probability of recurrence takes into account the probability of the island to be affected (brushed or hit) by a hurricane and/or tropical storm.

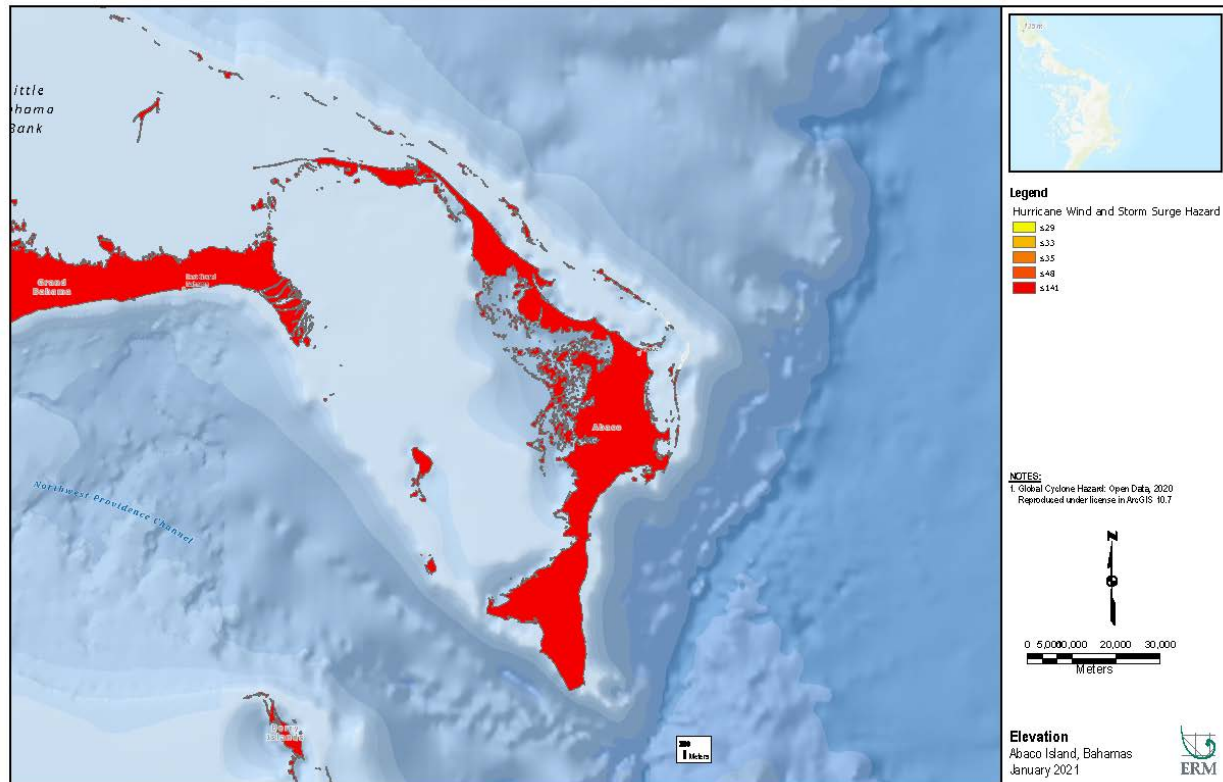
Source: ERM, 2020, adapted from <http://www.hurricanecity.com/2>



Source: ERM, 2021, adapted from: <https://coast.noaa.gov/hurricanes/>

Notes: Hurricane Category 1 = 19-153 km/h: Very dangerous winds will produce some damage; 2 = 154-177 km/h: Extremely dangerous winds will cause extensive damage; 3 = 178-208 km/h: Devastating damage will occur; 4 = 209-251 km/h: Catastrophic damage will occur; and 5 = 252 km/h or higher; Catastrophic damage will occur.

Figure 5-4: Hurricanes and Tropical Storms within 100 km of The Bahamas – Abaco Island (2000-2020)



Source: ERM, 2021.

Figure 5-5: Hurricane Wind Hazard in The Bahamas

Both hurricanes and waves from the Atlantic Ocean, generally during high tide combined with storm surge, generate extreme wave conditions. Flooding and erosion typically occur during these wave conditions. The waves erode protective beaches and dunes and cause surge and flood damage to the adjacent lands, buildings, infrastructure, and groundwater resources. This is especially significant since eighty percent of the Bahamas land mass is only about 1.5 mamsl and more than 90 percent of the freshwater resources are within 1.5 m of the surface. Storm surges can cause coastal inundation of seawater, and heavy precipitation can cause localized flooding (US Army Corps of Engineers, 2004). However, as described in Section 5.1.3, the Project Site is located in area with elevations that range from approximately 8 to 14 mamsl that is not conducive to inundation by seawater and flooding.

According to the Techno-Economic Assessment of the Marsh Harbour Microgrid, Abaco Report (2021), even though, the Caribbean region could be hit by hurricane winds of up to 290 km/h, solar PV plants in the Caribbean region are able to withstand these disrupting conditions and generate electricity the following day after the storm. However, some major damages are reported on a limited number of PV plants installed in the region. The reporting of cases of success in the region regarding the physical durability of this type of assets in the event of high-speed winds show that design solutions are available today in the market. At the same time, the cases of failure and massive destruction highlight the importance of analyzing roots of the failures and of applying the lessons learned in such a challenging environment.

5.1.5.2 Impacts and Mitigation

Due to its geographic location, the Island of Abaco is exposed to meteorological threats such as hurricanes and tropical storms, and strong winds (see Section 5.1.5.1, Natural Hazards).

The Project itself is vulnerable to these natural disasters, which could affect the Project during construction and operations. Natural hazards also pose a risk to Project workers. For example:

- **Hurricanes and Tropical Storms:** the Island of Abaco is located within the Atlantic Tropical Cyclone basin. In the past, hurricanes have caused significant damage to Abaco and its infrastructure. A high category hurricane can damage Project facilities due to high wind and heavy rains.

Careful attention in the design of Project components must be taken to ensure the Project is resilient to these natural disasters.

As part of and in addition to, risk prevention measures, there will be plans in place to assure emergency preparedness and response. During Project activities, the Project executing agency will implement and follow an Emergency Response Plan that describes procedures to be implemented both in the event of a forecasted event (e.g., hurricane or tropical storm). This will involve securing equipment and materials, stabilizing disturbed areas, and similar actions as well as procedures for site evacuation.

5.1.6 Physical Resources Impact Summary

The table below shows a summary of physical resources impacts pre and post mitigation.

Table 5-3: Physical Resources Impacts and Mitigation Measures

Resource	Impact	Sensitivity	Magnitude	Pre Mitigation Significance	Mitigation Measures	Residual Significance
Air Quality	Increase emissions	Low	Small	Negligible	<ul style="list-style-type: none"> ■ Removal of vegetation and soil cover will be restricted to that which is necessary for the Project; ■ Land clearance will be sequential and the smallest possible area for working will be exposed where ground and earthworks are undertaken; ■ Stripping of topsoil will not be conducted earlier than required (i.e., the Project will maintain vegetation cover for as long as possible) in order to prevent the erosion (wind and water) of organic matter, clay, and silt; ■ A speed limit of 25 km/h on unpaved surfaces will be enforced and national speed limits on public roads will not to be exceeded; ■ Transported materials will be covered with tarpaulins to prevent fugitive dust; ■ Stockpiles stored longer than six weeks will be vegetated or covered with sheeting, shade cloth, or tarpaulin to reduce soil loss from wind or storm water runoff; ■ Stockpiles will be located as far away from receptors as possible and will be covered with sheeting, shade cloth, or tarpaulin; and ■ Implement an erosion and sediment control plan. 	Negligible

Air Quality	Increase combustion emission	Low	Small	Negligible	<ul style="list-style-type: none"> ■ Minimize movement of construction vehicles and enforce a speed limit around the construction site; ■ Where available, use ultra-low sulfur diesel (ULSD) in diesel powered equipment, together with best management practices; ■ Vehicle / equipment air emissions should be controlled by adopting simple good practice procedures (such as turning off equipment when not in use); ■ Vehicle / equipment exhausts observed to be emitting significant black smoke in their exhausts should be serviced; ■ Regularly maintain all diesel-powered equipment and reduce idling time to avoid emissions of NO_x, PM₁₀ and SO₂; and ■ All non-road mobile machinery to use ultra-low sulfur diesel where available. 	Negligible
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Noise	Nearby Noise Receptors	High	Negligible	Negligible	<ul style="list-style-type: none"> ■ Ensure all fixed and mobile construction equipment are in good working order and are maintained regularly in accordance with manufacturer's specifications. Machinery found to produce excessive noise and vibration compared to industry normal standard should be inspected and the appropriate corrective measures be taken; ■ Minimize material drop heights into or out of trucks as much as possible and use rubber mats on truck beds to reduce noise and vibration impacts; and ■ Where practical, operate machinery at low speeds or power and switch off when not in use to avoid unnecessary idling. 	Negligible
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Geology and Geomorphology	Earthworks	Small	Low	Negligible	<ul style="list-style-type: none"> ■ Reduced to a minimum the affected area, so as to minimize the instability and collapse of soil; and ■ In case unstable areas are identified, it is important to implement measures to reinforce the support capacity of those soils, at the time of excavation work. 	Negligible
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Landscape, Topography, and Soils	Soil erosion and loss of topsoil	Small	High	Moderate	<ul style="list-style-type: none"> ■ Clearance of vegetation should not be conducted earlier than required (maintain vegetation cover for as long as possible) in order to prevent erosion; ■ Soil removed from the foundation pits of the panels can be used to build basins to retain rain water running from the panels; ■ Areas between and under the photovoltaic panels should be re-vegetated with low growing grass species to limit raindrop and wind energy, which will reduce soil erosion. This is highly recommended in order to maintain the natural biological soil life associated with the indigenous vegetation; ■ Roads used to access the facility must be well drained in order to limit soil erosion; and ■ To avoid or minimize the loss of the growth media, the growth media layer (topsoil layer and organic material) will not be mixed with the subsoil layer, if feasible and practical during the construction phase. 	Minor
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Water Resources	Water runoff and increased sediment loads	Small	High	Moderate	<ul style="list-style-type: none"> ■ Minimize disturbance of the natural topography and catchment characteristics by limiting large scale earthworks, vegetation removal and soil compaction where possible; ■ Construct adequate storm water diversion structures to route runoff around affected areas; ■ Rehabilitate the affected areas as close as possible to the natural condition during the decommissioning phase; and ■ Ensure sediment traps are in place and maintained regularly. ■ Implement an erosion and sedimentation control plan; ■ Dust suppression operations are recommended; ■ Large areas should not be exposed for long periods of time and should be rehabilitated as soon as possible by establishing adequate vegetation to reduce increased sedimentation; ■ If possible then the construction and decommissioning phases should be scheduled to take place during the dry season; ■ Pluvial water on the surface shall be discharged in more than one point, to reduce the concentration of runoff at the surface; and ■ Road traffic on exposed areas or off the designated roads shall be limited. 	Minor
Natural Hazards	Occurrence of natural hazards.	Medium	Medium	High to Moderate	<ul style="list-style-type: none"> ■ Emergency Response and Preparedness Plan 	Minor

5.2 Biological Resources

No field surveys were conducted for this specific ESA, due to the travel restrictions imposed by the COVID-19 pandemic; thus, a desktop study was conducted to develop a characterization of the Project Site, to complement any information already available from the SESA (ERM, 2020) and to understand the habitats and species likely to be present. Site visits and field surveys will be performed as soon as the travel bans will be lifted and the sanitary conditions will be declared sufficiently adequate in the country by both the local sanitary authorities and international health organizations (specifically by the World Health Organization).

So far, the following sources and reports were used in this analysis:

- Databases:
 - Important Bird Areas of Birdlife International
 - World Database of Protected Areas
 - Global Biodiversity Information Facility (GBIF)
 - The International Union for Conservation of Nature (IUCN) Red List of Threatened Species (2021)
 - Bahamas National Trust website
- Reports:
 - Pine Islands – Forest/Mangrove Innovation and Integration (Grand Bahama, New Providence, Abaco and Andros) report by United Nations Environmental Program.
 - Environmental Impact Assessment for Passerine at Abaco Resort Community Development by the Bahamas Environmental Science and Technology Commission, Government of the Bahamas, Nassau.
 - The National Invasive Species Strategy for The Bahamas (2003) by The Bahamas Environment, Science and Technology (BEST) Commission.
 - Conservation of amphibians and reptiles in The Bahamas by Knapp et al. (2007).
 - Bats of the Bahamas: Natural History and Conservation by Speer et al. (2015).
- IBAT proximity report from the SESA, based on New Providence Island, one of the Bahamian northern islands.

5.2.1 Biological Setting

Abaco is a large and complex island situated in the northern Bahamas, approximately 60 miles north of the capital, Nassau. The Abacos consist of two major islands, Great Abaco and Little Abaco, which form the backbone of the island group, creating a low-energy mangrove environment along the western shores and a semi-enclosed Sea of Abaco to the east. The Sea of Abaco is fringed by a myriad of small cays stretching along the platform margin of the eastern shore, offering some protection to the waters of the sea itself. Abaco Islands occupy a total of 167,795 ha and most of the eastern half of the Little Bahama Bank and stretching from North to South for some 115 miles (185 km) in an arc.

The relief is dominated by a complex ridge running along the eastern side of the island and reaching heights of 25 to 32 m, with a maximum of 37 m. Little Abaco Island lacks this ridge and is much flatter. Inland is largely flat rockland 1.5 to 5 mamsl, occasionally relieved by old beach ridges reaching 9 to 12 m. The western shore is extensive wetland with mangroves eventually grading into wide tidal flats and an area of numerous small cays known as the Marls.

Abaco supports many terrestrial ecosystems and, with its large expanse of ocean, a high diversity of marine ecosystems. These include ecosystem types and habitats of:

- Pine woodland,
- Coppice hardwoods –Whiteland and blackland,
- Coastal Mangrove forests,
- Wetlands with mangrove swamps and marshes,
- Beach dunes,
- Tidal flats and salt marshes,
- Island ponds,
- Seagrass beds,
- Coral Reefs,
- Other shallow water marine habitats – rock and unvegetated sediments, and
- Caves, sinkholes and blue holes.

The Project sits within Marsh Harbor of Great Abaco, a major town and commercial hub, and Bahamas' third largest city, on government owned land between the Government Complex and Hospital. The landscape in the Project Site is characterised by scattered vegetation that has been largely degraded (it can be classified as Modified Habitat), due to the urban environment and the recent devastation by hurricane Dorian.

5.2.1.1 Vegetation

Abaco Islands are one of the Northern Islands of the Bahamas, known for the dominance of pine forests. Historically, colonizers cut forests for timber to build boats and houses, for fuel wood and particularly to clear land for cane cultivation. The last extensive exploitation ended in the early 1970s when the pine forests were harvested for pulpwood. No commercial logging activity is currently being practiced on the pine islands and, consequently, these island forests are in a younger phase of re-growth. The Bahamas National Trust currently manages and protects many of these areas of standing forest from development and extraction. The pine forests protect the soil and help filter rainwater to replenish the fresh water lenses or aquifers.

Types of vegetation that can be found on Abaco Island can be found in Table 5-4.

Table 5-4. Vegetation types present on Abaco

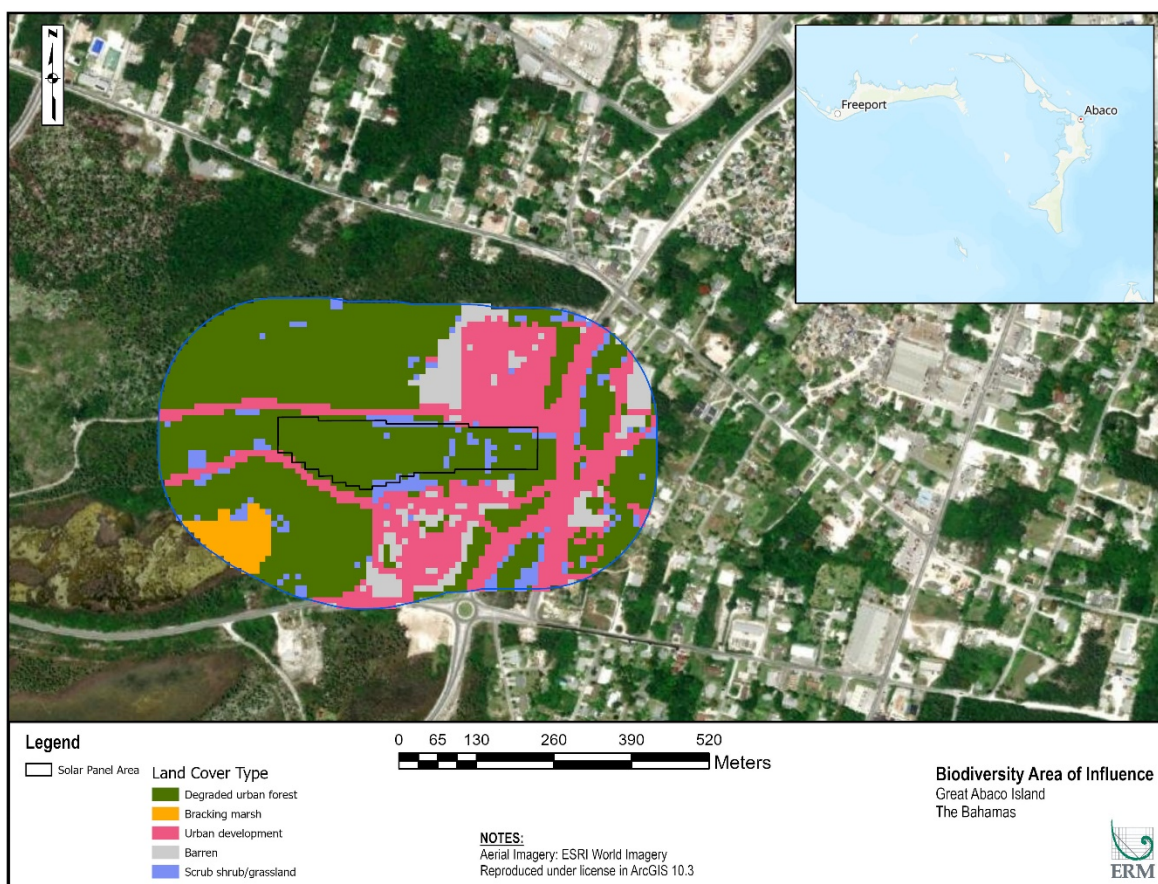
Vegetation Types	Description
Coastal Mangroves	Coastal mangroves occupy much of the western side of Abaco. Mangroves are characteristics of low- energy, soft-sediment coastal environments. Coastal mangroves vary in their specific structural and functional characteristics. All mangroves are generally found in areas sheltered from high- energy waves.
Interior mangroves/ Shrub thicket wetlands	Isolated and inland Basin mangrove wetlands develop over inland basins influenced by seawater and occupy the highest levels subject to tidal intrusion.

	Tidal flushing is less frequent than in fringes or over wash creek systems, and is sometimes limited to the highest tides of the year or during storms.
Coppice Forests	Moist-to-dry subtropical broad-leaved evergreen hardwood communities, with few pockets found on the windward (east) side of southern Abaco. Coppices have shrub-dominated understories, usually found well back from the shoreline, behind coastal dune and/or coastal shrub land communities. The two types of coppice that can be found are the Whiteland and Blackland coppice. Whiteland coppice tends to occur near to the ocean, while Blackland coppice occurs further in the interior on high-elevated regions. Coppice comprises the dense, upright and narrow-stemmed, regrowth of mixed hardwood tree species (<i>Bursera</i> , <i>Metopium</i> and <i>Swietenia</i>). Coppice expand during fire-free periods in competition with the Caribbean pine forests.
Caribbean Pine Forests	The Bahamian pine (<i>Pinus caribaea bahamensis</i>) makes up the Caribbean pine forest. In areas of historical harvesting, Abaco's pine forests are uniformly monotonous with all of the trees virtually the same age and an understory of grasses, while in other places of old-growth forest bracken fern dominate the understory.
Casuarina Forest/Invasive landscape	These areas represent a loss of habitat for native plants and animals. Two of the four most invasive and problematic plants species in the Bahamas are Casuarina (<i>Casuarina equisetifolia</i>) and Hawaiian Seagrape or Half-flower (<i>Scaveola sericea</i>).
Agriculture	Areas of agricultural have been developed for crops such as citrus, root vegetables, and bananas.
Coastal Strand and Beach vegetation	Coastal Strand Communities are dynamic and interconnected communities consisting of vegetation on sandy or rocky substrate with direct exposure to coastal wind and wave energies. These communities include the pioneer zone, foredune, backdune, and associated coastal wetlands and interdunal communities.
Grassy ephemeral wetlands	Wetlands include areas of saline or saturated soils, and are dominated by salt-tolerant grasses and herbs.

Source: ERM, 2021.

5.2.2 Biotic Area of Influence

The Biological Area of Influence (BAOI) includes the Project Site and the surrounding area that has the potential to be impacted by construction noise from the proposed installation of the solar PV panels, storage, and other infrastructure. Construction noise from heavy machinery such as drills, cutters, and tractors can reach up to 84 dBA. A noise buffer of 200 m was created around the Project Site to account for potential noise impacts that may mask acoustic behaviors, such as bird calling (60 dBA). This area of influence includes all Project components. The total BAOI is an area of approximately 6.7 ha (see Figure 5-6 and Table 5-5).



Source: ERM, 2021.

Figure 5-6: Biotic Area of Influence Based on Potential Noise Impacts

The BAOI is made up of 2.93 ha of natural and 3.78 ha of modified habitat. The Project sits within a majority of modified degraded urban forest vegetation with areas of scrub shrub/grassland.

Table 5-5. Natural and Modified Land Cover within the BAOI

Land Cover Type	Natural/Modified	Area (ha)	Percent
Degraded urban forest	Modified	1.11	16.5
Brackish marsh	Natural	0.99	14.75
Urban development	Modified	0.18	2.68
Barren	Modified	2.49	37.11
Scrub shrub/grassland	Natural	1.94	28.91

Total	6.71	100
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Source: ERM, 2021.

5.2.3 Flora

Protected species of trees in the Bahamas according to the Conservation and Protection of the Physical Landscape of the Bahamas Act, (No 12. of 1997) can be found in Table 5-5. According to this legislation, these species are protected and require relocation to a nursery or suitable undisturbed area. Additionally, these species must be replaced with two or more trees of the same species.

Table 5-6. List of Protected Species of Trees in the Bahamas

Scientific Name	Common Name	IUCN Status
<i>Juniperus bermudiana</i>	Red Cedar	CR
<i>Pinus caribaea var. Bahamensis</i>	Caribbean Pine	VU
<i>Swietenia mahogany</i>	Mahogany*	NT
<i>Ceiba pentandra</i>	Silk Cotton	LC
<i>Guapira discolor</i>	Beefwood/Blolly	LC
<i>Pera bumeliifolia</i>	Black Ebony/Bullwood	NE
<i>Caesalpinia vesicaria</i>	Brasiletto	NE
<i>Gochnatia ilicifolia</i>	Candlewood	NE
<i>Lysiloma sabiau var. bahamensis</i>	Horseflesh	NE
<i>Guaiacau sanctum</i>	Lignum vitae	NE
<i>Rauwolfia nitida</i>	Rawolfia	NE

Source: *Adapted from Passerine Abaco Resort EIA; CR= Critically Endangered, EN= Endangered, VU = Vulnerable, NT= Near Threatened, and LC= Least Concern

It is unlikely that these protected species are found within the modified and urbanized vegetation of the Project footprint.

Invasive flora species of concern on Abaco Islands include the Australian paper bark tree (*Melaleuca quinquenervia*), the Australian pine (*Casuarina equisetifolia*), Hawaiian Seagrape (*Scaveola sericea*; syn *S. tacada*), Brazilian pepper (*Schinus terebinthifolius*) and several aggressive grasses such as Napier grass (*Pennisetum purpureum*).

5.2.4 Fauna

The proposed Project components and its BAOI are entirely terrestrial, therefore despite the rich marine biodiversity supported in the marine habitats of surrounding this Island, the focus of this impact assessment will remain on terrestrial biodiversity values.

5.2.5 Birds

About 230 species of birds migrate to or live in the Bahamas islands. They include the Bahama parrot, Bahama wood star, hummingbird, woodpecker and West Indian flamingo. The Abaco Islands support wetlands, mangroves and coastal shore stand and dune communities that are critical for seabirds and migrating birds. This is evident with several Important Bird Areas (IBAs) located along Abaco and its surrounding cays (see Section 5.2.11 –Key Biodiversity Areas).

Table 5-6 summaries potential species of concern that occur on Abaco Island; these include one Critically Endangered (CR) species, three Endangered (EN), one Vulnerable (VU) and five endemics. Of these, four species possibly occur within the BAOI to feed or nest. Based on literature reviews, other species occurring on Abaco occur within primary habitat of mature pine forests or areas not found within the BAOI.

Table 5-7. Potential Species of Concern and Endemic Species of Avifauna in the BAOI

Scientific Name	Common Name	IUCN ^a	Migrant	Endemic (End) or Restricted (R)	IBAT ^b	Other sources	Potential to breed in BAOI
<i>Icterus northropi</i>	Bahama Oriole	CR		End & R	X		Extirpated
<i>Pterodroma cahow</i>	Bermuda Petrel	EN	X		X		Unlikely
<i>Tachycineta cyaneoviridis</i>	Bahama Swallow	EN	X	End & R	X	X	Possible
<i>Setophaga flavescens</i>	Bahama Warbler	EN		End & R		X	Unlikely
<i>Chaetura pelagica</i>	Chimney Swift	VU	X		X		Possible
<i>Amazona leucocephala</i>	Cuban Amazon	NT	X	End	X	X	Unlikely
<i>Geothlypis rostrata</i>	Bahama Yellow Throat	LC		End		X	Possible
<i>Nesophlox evelynae</i>	Bahama Woodstar	LC		End		X	Possible

End = Endemic to Bahama archipelago; CR= Critically Endangered, EN= Endangered, VU = Vulnerable, NT= Near Threatened, and LC= Least Concern.

^a The International Union for Conservation of Nature Red List.

^b Integrated Biodiversity Assessment Tool.

There is no evidence of occurrence of these species within the Project Site or its BAOI, albeit, it is recommended that the following bullet bird species be considered as priority species due to their threat status and endemism and possible presence within the BAOI.

- The Bahama Swallow (EN, IUCN 2021) nests in natural cavities and old woodpecker holes in pine *Pinus caribaea* woodlands, and in artificial cavities in human structures. It feed in open clearings, woodlands, marshes, fields and coastlines.
- Chimney Swift (VU, IUCN 2021), when breeding, this species is readily associated with urban environments, although it will forage over a range of habitat types. Main habitats include river-edge forest, the edge of tropical lowland evergreen forest and second-growth scrub.
- The Bahama Yellow Throat (LC, IUCN 2021) considered a common endemic on Abaco, inhabits dense low scrub and bracken. The species builds its nest very close to the ground, either in dense vegetation or in tree stumps.
- The Bahama Woodstar (Hummingbird; LC, IUCN, 2021) inhabits urban areas to subtropical dry and tropical moist lowland forest.
- The Cuban Amazon also known as the Bahama Parrot, does not likely occur within the BAOI given that its primary habitat and breeding area is mature Caribbean Pine forest. However, this species should be considered a priority species of special status given that the Southern Abaco National Park was established as a Protected Areas in order to preserve the species breeding habitat on the island and has since rebounded its population growth.

5.2.6 Herpetofauna

Nine amphibians and reptiles potentially occur within the BAOI of the Project (see Table 5-8). Of these five are considered least concern (IUCN, 2021) while the remaining four have not been evaluated and one species, the Abaco Island Boa, is endemic.

Table 5-8. List of Potential Herpetofauna within the BAOI

Number	Scientific Name	Common Name	IUCN Category ^a	IBAT ^b	Knapp et al. (2011)	Endemic
1.	<i>Osteopilus septentrionalis</i>	Cuban Treefrog	LC	X	X	
2.	<i>Eleutherodactylus planirostris</i>	Greenhouse Frog	LC	X	X	
3.	<i>Sphaerodactylus notatus</i>	Brown-speckled Sphaero	LC	X	X	
4.	<i>Cubophis vudii</i>	Bahamian Racer	LC	X	X	
5.	<i>Leiocephalus carinatus</i>	Northern Curly-tailed Lizard	LC	X	X	
6.	<i>Anolis distichus</i>	Hispaniolan gracile anole	NE		X	

Number	Scientific Name	Common Name	IUCN Category ^a	IBAT ^b	Knapp et al. (2011)	Endemic
7.	<i>Anolis sagrei</i>	Brown Anole	NE		X	
8.	<i>Epicrates exsul</i>	Abaco Island Boa	NE		X	End
9.	<i>Typhlops lumbricalis</i>	Earthworm Blind Snake	NE		X	

Note: all potential species have been confirmed on Abaco based on GBIF database records; NE=Not Evaluated, LC=Least Concern

^a The International Union for Conservation of Nature Red List.

^b Integrated Biodiversity Assessment Tool.

Invasive herpetofauna or species that have been introduced to the island include the Eastern Narrowmouth Toad (*Gastrophryne carolinensis*), the pig frog (*Lithobates grylio*), eastern rat snake (*Pantherophis alleghaniensis*), Common garter snake (*Thamnophis sirtalis*), the Indo-Pacific gecko (*Hemidactylus garnotii*) and the Tropical House gecko (*Hemidactylus mabouia*).

5.2.7 Mammals

On the Abacos Islands, there is an absence of native small mammals except for bats. There are six bat species that occur within Abaco, one of which is endemic to the Bahama archipelago (see Table 5-8).

Introduced and invasive mammals on the island include the black rat, feral pigs, dogs, cats and raccoons (*Procyon lotor*).

Table 5-9. List of potential bat species that occur within the BAOI

Scientific Name	Common Name	IUCN ^a	Endemic (End) or Restricted (R)	IBAT ^b	Speer et al. 2015
<i>Lasiurus minor</i>	Minor Red Bat	VU			X
<i>Chilonatalus tumidifrons</i>	Bahamian Lesser Funnel-eared Bat	NT	End	X	X
<i>Erophylla sezekorni</i>	Buffy Flower Bat	LC		X	X
<i>Macrotus waterhousii</i>	Waterhouse's leaf-nosed bat	LC		X	X
<i>Tadarida brasiliensis</i>	Brazilian Free Tailed bat	LC			X
<i>Eptesicus fuscus</i>	Big Brown Bat	LC		X	X

CR= Critically Endangered, EN= Endangered, VU = Vulnerable, NT= Near Threatened, and LC= Least Concern.

^a The International Union for Conservation of Nature Red List.

^b Integrated Biodiversity Assessment Tool.

Much of the above bat species roost in large caves and may only be observed in the BAOI feeding on insects or potential fruits. However, the Big brown bat (*Eptesicus fuscus*) is a solitary rare species that has been recorded as road kill on Great Abaco and roosts among the leaves of trees.

5.2.8 Arthropods: Terrestrial Crabs

Terrestrial land crabs, of the coppice pine floor, play an important ecological role as detritivores recycling plant matter. These abundant and important detritivores of Abaco Island include the land hermit crab, *Coenobita clypeatus*, and two types of land crabs in the Family *Gecarcinidae*, the black land crab, *Gecarcinus lateralis*, and white land crab *Cardisoma guanhumi*. The Black land crab is particularly numerous in the higher elevated broadleaf evergreen coppice areas, with thousands of individuals per hectare. The white land crab, is a large burrowing crab whose distribution on land is generally limited to within 5 km of the ocean. Locals harvest the white crab for consumption at the start of the rainy season. Locals reported large migrations of crab during the breeding season in the past; however, these migrations are only rarely observed today (Passerine, nd).

Coppice vegetation is found in the south of Abaco, however, it is possible that these species may occur within the BAOI. Neither of these species are listed as threatened according to the IUCN Red list (2021) nor protected by the Bahama government.

5.2.9 Protected Areas

Protected areas fall under the legislation of the 2014 Bahamas Protected Area Fund (BPAF) Act, which defines the system of protected areas in the Bahamas and requires the Board of the Fund to establish and maintain a register called the Register of Protected Areas (Bahamas Protected Areas Fund, 2017). The Bahama National Trust has oversight and management of National Parks in the Bahamas. The protected areas system includes forest reserves, protected forests, conservation forests pursuant to an Order made under the 2014 Forestry Act.

In total, 22 protected areas occur on Abaco Islands with different measures of protection and management types; these include 10 marine and 12 terrestrial areas (see Table 5-10 and Figure 5-7).

Eight of these parks are marine national parks and two are marine reserves, of which surround the islands of Abaco highlighting the ecological importance and value of the coral reefs, seagrass beds, rocky shore and sandy bottom habitats that hold an immense wealth of marine biodiversity.

Terrestrial areas officially protected by the Bahama government include one national park, and two national reserves, which conserve both mangrove and pine forest. Additionally, three conservation forests, two forest reserves, and four protected forests are located on Abaco Islands. These areas protect the northern Bahama pine forests, coppice forest and habitat for endemic and native wildlife such as the Bahama Parrot.

The Project Site is not within a protected area nor internationally recognized area of biodiversity. The closest areas of protection include the Marsh Harbor Forest Reserve, sitting 3 km south of the Project, and Marls of Abaco National Park, sitting at about 3.5 km SW of the Project site.

Table 5-10. Protected Areas of Abaco Island

Type	Name	Size (ha)
Terrestrial		
National Park	Abaco National Park	8,352
National Reserves	Black Sound Cay National Reserve	0.72
	Tilloo Cay National Reserve	4

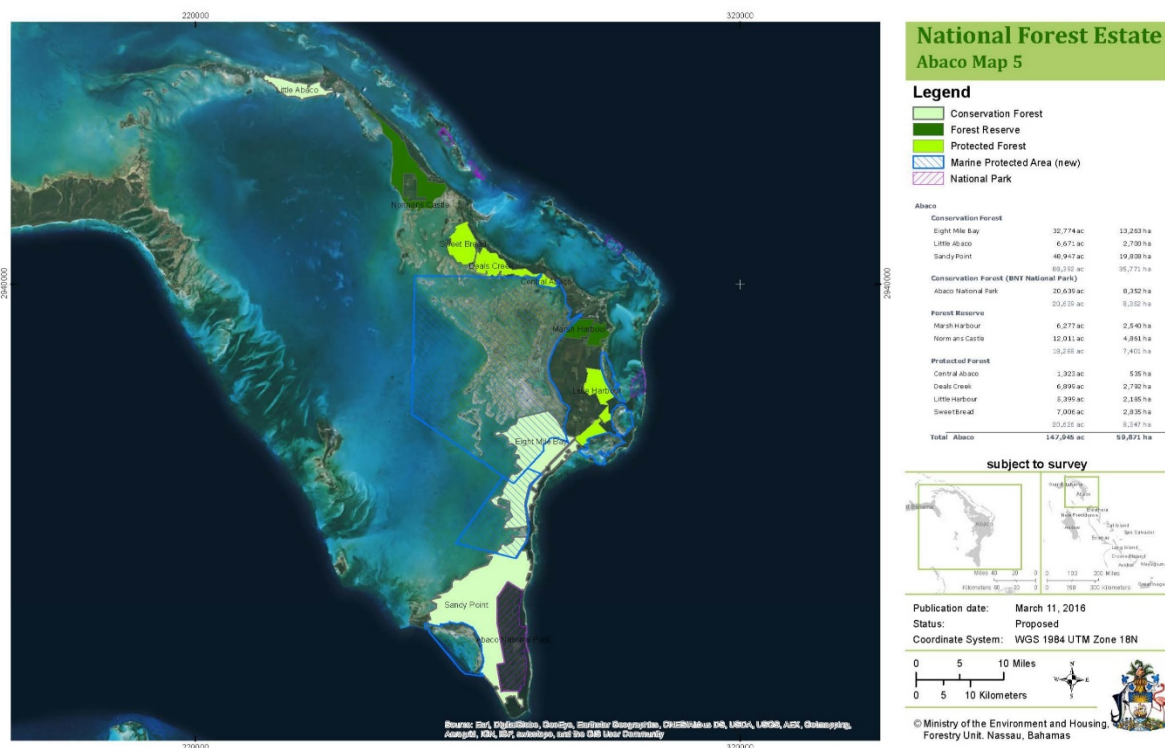
Conservation Forest	Eight Mills Bay	13,263
	Little Abaco	2,700
	Sandy Point	19,808
Forest Reserves	Marsh Harbour	2,540
	Normans Castle	4,861
Protected forests	Little Harbor	2,185
	Central Abaco	535
	Sweet Bread	2,835
	Deals Creek	2,792

Marine

Marine National Park	Marls of Abaco National Park	86,760
	Cross Harbour National Park	6,153
	South Abaco Blue Holes National Park	12,901
	East Abaco Creeks – The Bight	1,646
	East Abaco Creeks - Cherokee	2,392
	East Abaco Creeks - Snake Cays	1,330
	Pelican Cays Land and Sea Park	874
	Fowl Cays National Park	501
Marine Reserve	<i>No name</i> Cay Marine Reserve	390
	Crab Cay Marine Reserve	346

Note: Above protected areas are not reported to be protected under an IUCN category.

Source: ERM 2021, using World Database of Protected Areas.



Source: Ministry of Environment and Housing, Forestry Unit, 2016.

Figure 5-7: Forest protected areas on Abaco Islands

5.2.10 Key Biodiversity Areas

5.2.10.1 Important Bird and Biodiversity Areas

Three internationally recognized Important Bird Areas (IBAs) sit within 50 km from the Project Site. The closest of the IBAs is the North Atlantic Abaco Cays, sitting about 7 km N/NE of the Project site, while the other two are about 50 km in distance.

- North Atlantic Abaco Cays: a premier seabird nesting area that includes Bridled, Sooty, Roseate and Least Terns, Audubon's Shearwaters, White-tailed Tropicbirds, Magnificent Frigatebirds, Brown Boobies, Brown Noddies and many other species nest on these isolated rocks and cays each year.
- Little Abaco: supporting some of the oldest Caribbean pine forest, habitat for pine forest specialties such as Pine, Olive-capped, Yellow-throated Warblers. Bahama Yellowthroats, Hairy Woodpeckers, Loggerhead Kingbirds and Cuban Pewees.
- Southern Abaco: an area of undeveloped land set aside to protect the Bahama Parrot. In addition to the parrot, the area supports Loggerhead Kingbirds, Bahama Woodstars, Cuban Emeralds, Bahama Yellowthroats, Olive-capped Warblers and Pine Warblers, Zenaida Doves, Key West Quail Doves, Mangrove Cuckoos and Bahama Mockingbirds, as well as, the Atala hairstreak butterfly, (*Eumaeus atala*).

5.2.10.2 Other Internationally Recognized Areas of Biodiversity

There are no Alliance for Zero Extinction Sites nor Ramsar wetland sites on the Abaco Islands.

5.2.11 Biodiversity Impacts and Mitigation

This section describes the Project impacts on terrestrial biodiversity of the Project Site (immediate area of the Project) and the Project BAOI due to construction and operations phases of the Project. Information within the Project Description and Biodiversity Baseline was used to assist the evaluation of the potential impacts and their significance. The receptors selected to assess these potential impacts include terrestrial vegetation, protected flora species, wildlife; rare and endemic species; and protected areas. These receptors encompass the key terrestrial biodiversity components in the Project BAOI, which covers approximately 6.7 hectares (ha).

The proposed Project would result in a total of approximately 5 ha of habitat loss for vegetation removal and earth moving for installation of solar panels, an access road extending from the highway, and a transmission line. The impacts to biodiversity consider the pre-existing state and baseline influencing factors described in the biodiversity describe previously (i.e., disturbed habitat due to urban environment and hurricane degradation).

The methodologies specific to Biodiversity presented in this section build upon the general assessment methodology summarized in Section 4.1, which combines a receptors' sensitivity, vulnerability, or importance, and the magnitude of potential impacts to determine significance of the impact. The general methodology has been tailored to the specific biodiversity impacts arising from Project activities. This assessment takes into account receptors biodiversity value which has been described in Table 5-11 below.

Table 5-11: Criteria for Determining Biodiversity Receptor Importance

Importance	Characteristics
Low	Modified habitat and species of non-native origin, and/or where human activity has substantially changed an area's primary ecological functions and species composition; areas with no protected designation or recognition under local, national, or international laws or treaties; habitats and species that are of low conservation interest based on expert opinion.
Medium	Largely natural habitat of viable assemblages of plant and/or animal species of largely native origin; species that are endemic, or nationally restricted range species; nationally important concentrations of migratory or congregatory species; and the habitats of significant importance to these species., and/or species that are protected under local, national, or international laws or treaties or otherwise recognized by experts as having conservation interest; species listed on the IUCN Red List of Threatened Species as Vulnerable (VU), Near Threatened (NT), or Data Deficient (DD).
High	Habitats and species that are protected under local, national, or international laws or treaties or otherwise recognized by experts as having high conservation importance; species listed on IUCN Red List of Threatened Species as Critically Endangered (CR) or Endangered (EN); locally endemic species; regionally or globally important concentrations of migratory or congregatory species.; the habitats of significant importance to these species; and habitat or species that meets IFC PS 6 criteria for critical habitat.

Source: ERM, 2021.

Based on the above criteria, the biodiversity receptors used in this assessment have the following importance ratings:

- Terrestrial Vegetation and Habitat – Low importance as vegetation is characterized as modified within the Project Site and the BAOI. The vegetation in the Project Site has been degraded due to its location

within the commercial hub of the island, fragmented by development of roads and urban development, and degraded with a history of hurricanes.

- Protected Species of Flora – Medium importance as 11 species are protected under Bahamas legislation and may occur within the BAOI. One of these species, Red Cedar, is categorized as CR, and Caribbean Pine is categorized as VU according to IUCN (2021).
- Terrestrial Wildlife – Medium importance as native and endemic wildlife associated with natural and modified habitat may feed and roost in the Project Site and BAOI. According to the conducted literature review for this ESA, the wildlife that potentially occur within the Project Site include threatened species (Endangered to Least Concern according to the IUCN Red List 2021). However, considering the site is within an urbanized and modified habitat it is likely its inhabitants are abundant and adapted to urbanized vegetation.
- Rare and Endemic⁸ Species –Medium importance as five endemics potentially occur within the BAOI. These include three birds - the Bahama Swallow (*Tachycineta cyaneoviridis*), Bahama Yellow throat (*Geothlypis rostrata*), and the Bahama Woodstar (*Nesophlox evelynae*)-, one snake, the Abaco Island Boa (*Epicrates exsul*), and one endemic and rare bat, the Bahama lesser funnel eared bat (*Chilonatalus tumidifrons*).
- Protected Areas –Low/Medium importance because the Project does not occur within or adjacent to an officially protected area. However, a conservation area, the Marsh Harbor Forest Reserve, sits 3 km south of the Project and the Marls of Abaco National Park boundary sits about 3.5 km SW of the Project. Additionally, there are 13 official marine and terrestrial protected areas with an additional 9 forests with protection.

5.2.12 Discussion and Mitigation

Based on the proposed Project activities outlined in Chapter 3, Table 5-12 provides a summary of the potential sources of direct and indirect Project impacts on terrestrial biological resources.

Table 5-12. Summary of Direct and Indirect Impacts

Impact Type	Project Activities
Direct	<ul style="list-style-type: none"> ■ Ground works for Project infrastructure would result in the direct loss and disturbance of vegetation, wildlife habitat, injury and mortality to flora and fauna. ■ Vegetation clearance may introduce or spread invasive and exotic plant species within the Project Site. ■ The use of heavy machinery and increased vehicular traffic along access roads could result in direct mortality or injury of wildlife species, during construction and operations. ■ The installation of a solar PV panels will cause glare which may cause injury or mortality to birds. ■ Worker harassment may cause disturbance, injury and mortality to flora and fauna.

⁸ Endemism is defined, for the purpose of this ESIA, as occurring only within the Bahama Archipelago.

	<ul style="list-style-type: none"> ■ Run off contaminants or other waste may cause mortality or injury of burrowing fauna (crabs, birds, and reptiles). ■ Electrocution and/or collision of birds due to the operation of the transmission line.
Indirect	<ul style="list-style-type: none"> ■ Project-related vehicular traffic and site preparation activities may create dust, the accumulation of which can inhibit vegetative growth. ■ Operation of the heavy construction material would generate air emissions, the accumulation of which could inhibit growth of vegetation or adversely affect susceptible wildlife resources. ■ During Construction and Operations, the Project will create general security and safety artificial nighttime lighting that could cause disturbance to natural cycles, feeding behaviours and migration patterns of birds, bats and other terrestrial wildlife. ■ Noise and vibration will be generated from earthmoving works and construction of foundations (i.e. Excavators for excavation, dump trucks for transporting materials, welding equipment, dumper for compaction) causing wildlife displacement from surrounding vicinity. ■ Project debris from solar PV panel packaging may create pollution in land and seascape. ■ Vegetation management around and under solar panels may increase water and soil contamination with the use of herbicides. ■ Equipment from foreign countries may introduce invasive insect pests that could cause disturbance to natural vegetation species. ■ Project-related influx of workers in the area could indirectly increase hunting, and poaching of wildlife. ■ Project-related activities would indirectly result in the temporary degradation of habitat quality within the nearby sensitive area of Marls of Abaco National Park.

Source: ERM, 2021.

Table 5-13 provides a summary of potential impacts and the mitigation measures recommended (Best International Management Practices) to minimize and/or avoid the impacts to the biodiversity resources of the Project Site and BAOI (Also, see Section 6.1 of the ESMP).

Table 5-13. Summary Table of Biodiversity Impact Magnitude, Significance and Mitigation Measures

Receptor	Sensitivity	Impact	Magnitude	Pre- mitigation Impact Significance	Mitigation Measure	Residual impact Significance
<i>Terrestrial Vegetation</i>	<i>Low</i>	<i>Direct:</i> Ground works would result in the direct loss and disturbance of vegetation (loss of 5 ha of modified vegetation)	Small	Negligible	<ul style="list-style-type: none"> ■ Demarcate construction areas. ■ Revegetate areas below panels with native grasses. ■ Implement best practices when clearing vegetation and trees. 	Negligible
Protected Species of Flora	<i>Medium</i>			Minor	<ul style="list-style-type: none"> ■ Conduct a pre-construction screening by a biologist for protected species. ■ Transplant or relocate species to nurseries. ■ If replaced, species must be replaced with two or more trees of the same species. 	Negligible

Receptor	Sensitivity	Impact	Magnitude	Pre- mitigation Impact Significance	Mitigation Measure	Residual impact Significance
Terrestrial Vegetation	Low	<i>Indirect:</i> Project-related vehicular traffic and site preparation activities may create dust, the accumulation of which can inhibit vegetative growth.	Small	Negligible	■ Implement dust control procedures (e.g., watering) when needed to control dust.	Negligible
	Low	<i>Indirect:</i> Operation of machinery and equipment would generate air emissions, the accumulation of which could inhibit growth of vegetation.	Small	Negligible	■ Monitor air quality to meet IFC EHS standards.	Negligible
Terrestrial vegetation	Low	<i>Indirect:</i> Vegetation clearance may introduce or spread invasive and exotic plant species within the Project Area.	Medium	Minor	<ul style="list-style-type: none"> ■ Regular washing of Project related vehicles. ■ Inspection of all equipment with arrival of overseas equipment. ■ Implement invasive species management surrounding and under installed solar PV panels ■ Plant native grasses under and around solar panels, where possible 	Negligible
Protected Species of Flora	Medium			Moderate		Negligible

Receptor	Sensitivity	Impact	Magnitude	Pre- mitigation Impact Significance	Mitigation Measure	Residual impact Significance
Terrestrial vegetation	Low	<i>Indirect:</i> Equipment from foreign countries may introduce invasive insect pests that could cause disturbance to natural vegetation species.	Medium	Minor	■ Inspection of all equipment with arrival of overseas equipment	Negligible
Protected Flora	Medium			Moderate		Negligible
Terrestrial Wildlife	Medium	<i>Direct:</i> Mortality and Injury to fauna due to vegetation clearing and habitat loss	Small	Minor	<ul style="list-style-type: none"> ■ Conduct pre-construction field screening by trained biologist to repel, rescue and relocate fauna from area of direct influence. ■ Avoid clearing vegetation during bird breeding season. 	Negligible-
Rare and endemic fauna						
Terrestrial Wildlife	Medium	<i>Direct:</i> mortality or injury of wildlife species, during construction and operations with use of heavy machinery and increased vehicular traffic	Small	Minor	<ul style="list-style-type: none"> ■ Design and implement a Community Wildlife Management education training ■ Install road signs in areas of frequent wildlife crossings. 	Negligible
Rare and endemic fauna						

Receptor	Sensitivity	Impact	Magnitude	Pre- mitigation Impact Significance	Mitigation Measure	Residual impact Significance
Terrestrial Wildlife	Medium	<i>Indirect:</i> General security and safety artificial nighttime lighting could cause disturbance to natural cycles, feeding behaviors and migration patterns of birds and bats	Medium	Moderate	<ul style="list-style-type: none"> Minimize the amount of artificial lighting used at the site, use directional lighting (downward facing lighting) and direction accessories, and avoid the use of ultraviolet light. 	Negligible
Rare and endemic fauna						
Terrestrial Wildlife	Medium	<i>Indirect:</i> During construction, noise generated from heavy machinery will generate high noise levels causing wildlife displacement and mask acoustic calling, thus affecting mating and feeding behaviors, within the BAOI.	Small	Minor	<ul style="list-style-type: none"> Implement pre-construction surveys to relocate ground dwelling wildlife from the activity sites to the extent practicable. Install silencers to vehicles and heavy equipment. Survey areas for existing bat roosts and implement humane physical or acoustic exclusion measures to keep bats away from site. 	Negligible
Rare and endemic fauna						
<i>Terrestrial Wildlife</i>	Medium	<i>Direct:</i> Contaminants from solar panel washing during operations may cause	Negligible	Negligible	<ul style="list-style-type: none"> Utilize non-toxic and wildlife-safe cleaners 	Negligible

Receptor	Sensitivity	Impact	Magnitude	Pre- mitigation Impact Significance	Mitigation Measure	Residual impact Significance
Rare and Endemic Fauna		mortality or injury of burrowing fauna (crabs, birds, and reptiles).				
<i>Terrestrial Wildlife</i>	Medium	<i>Direct:</i> Mortality or injury to birds due to solar PV panel glare	Medium	Moderate	<ul style="list-style-type: none"> ■ Ensure panels are coated with anti-reflective substance. ■ Monitor bird mortality within the Project footprint and BAOI. 	Minor
Rare and Endemic Fauna						
<i>Terrestrial Wildlife</i>	Medium	<i>Direct:</i> Mortality or injury to birds due to electrocution and collision with the Transmission Line (TL)	Medium	Moderate	<ul style="list-style-type: none"> ■ Install bird diverters along TL length if need to be necessary. ■ Monitor area of direct influence for bird carcasses 	Minor
Rare and Endemic Fauna						
<i>Terrestrial Wildlife</i>	Medium	<i>Indirect:</i> Project related influx of workers in the area could indirectly increase	Large	Major	<ul style="list-style-type: none"> ■ Design and implement a Community Wildlife 	Negligible

Receptor	Sensitivity	Impact	Magnitude	Pre- mitigation Impact Significance	Mitigation Measure	Residual impact Significance
Rare and Endemic Fauna		hunting and poaching of wildlife			<p>Management education training.</p> <ul style="list-style-type: none"> ■ Implement Worker Health and Safety Management Plan or code of conduct that prohibits hunting and harassment of wildlife within Project vicinity ■ Prohibit the harvest of land crabs between July and October each year to protect the crabs during spawning migrations, and possession, purchase or sale of egg-bearing female land crabs. ■ Prohibit hunting within conservation or protected areas 	
Terrestrial and Coastal landscape	Medium	Indirect: Project debris from solar PV panel packaging may not be disposed of properly polluting land and seascape.	Large	Major	<ul style="list-style-type: none"> ■ Implement a waste management plan 	Minor

Receptor	Sensitivity	Impact	Magnitude	Pre- mitigation Impact Significance	Mitigation Measure	Residual impact Significance
Protected Areas	Low/Medium	<i>Indirect:</i> Project-related activities during Construction would result in the temporary degradation of habitat quality within the nearby Marls of Abaco National Park	Medium	Moderate	<ul style="list-style-type: none"> ■ Ensure Project areas are appropriately demarcated. ■ Ban hunting and harassment of wildlife. ■ Minimize the amount of artificial lighting used at the site, use directional lighting (downward facing lighting) and direction accessories, and avoid the use of ultraviolet light. ■ Implement waste management plan. 	Negligible

Source: ERM, 2021.

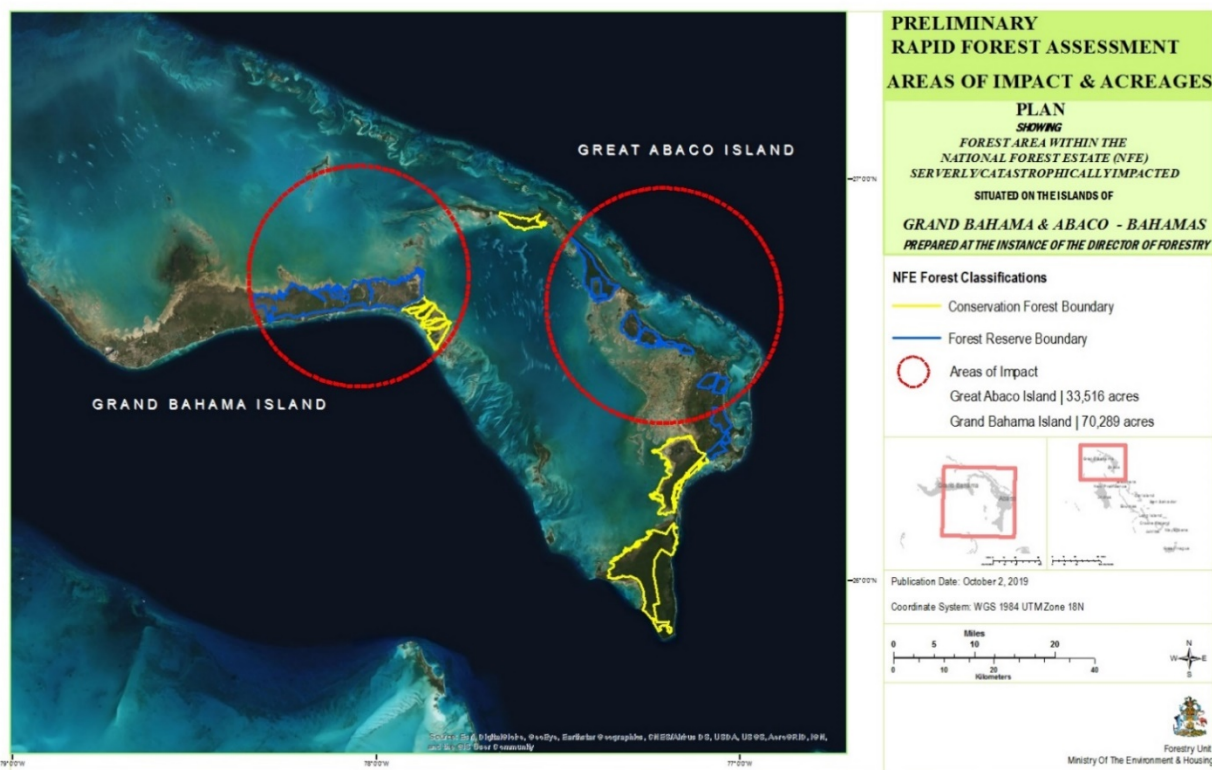
5.3 Socioeconomic Resources

5.3.1 Hurricane Dorian

On September 1, 2019, Hurricane Dorian, a Category 5 hurricane, passed directly over Marsh Harbor in Abaco Island and over the eastern portion of the Grand Bahama Island, significantly impacting mangroves, forestland, and communities.

The following excerpt from the Rocky Mountain Institute's Pre-Feasibility Report provides some socioeconomic context on Abaco pre-Hurricane Dorian: "Abaco is situated in the northern Bahamas, approximately 60 miles north of the capital, Nassau, New Providence. It is the second largest 'island' in The Bahamas, consisting of two major islands, Great Abaco and Little Abaco, and a myriad of small cays flanking the mainland. Prior to the passing of Hurricane Dorian, it was the third most populous island in The Bahamas, one of the largest economic and political hubs in the country, and many of the cays were popular tourist destinations. It is important to highlight that seven of the thirty-two Bahamian Government Administrative Districts are in Abaco Islands. The two major towns are Marsh Harbour, the commercial hub and the Bahamas' third largest city, and the resort area of Treasure Cay. The other major population centers of significance are Crown Haven, Coopers Town and Fox Town in the north and Wilson City, Little Harbour, 8 Mile Bay, Schoona Bay, Crossing Rocks, Cherokee and Sandy Point in the south. The Abaco islands have been long famous for shipbuilding. In recent times, tourism has become the major economic driver. In addition, the island maintains several chief exports including lumber, pulpwood, fruits, pearl shells and spiny lobsters. Most of these goods are exported to the United States." (Rocky Mountain Institute, 2019).

On Abaco, both the wind and the storm surges from Hurricane Dorian affected primarily developed areas and forested areas. According to the Ministry of the Environment and Housing, more than 30 percent of the standing trees in Abaco Island were destroyed and approximately 70,000 acres of forest were affected. Hurricane Dorian was the most intense tropical cyclone on record to strike the Bahamas and is considered the worst natural disaster in the country's history. It was also one of the most powerful hurricanes recorded in the Atlantic Ocean in terms of 1-minute sustained winds. Hurricane Dorian knocked out the power, water, telecommunications and sewage services on the Abacos. Figure 5-8 below presents the most severe areas of impact as per the Forestry Unit data (The Bahamas Ministry of The Environment & Housing, 2019).



Source: Forestry Unit, The Bahamas Ministry of The Environment & Housing, 2019.

Figure 5-8: Areas of Impact, Grand Bahama & Abaco

The resulting damage to the Bahamas was catastrophic; most structures were flattened or swept to sea, and at least 70,000 people were left homeless. An estimated 13,000 homes, constituting 45% of the homes on the Abacos and Grand Bahama, suffered severe damage or were completely destroyed. Chlorine tablets were given out by the Government to clean water while quality was restored to previous standards.

The official death toll was 60 for Abaco, and another 282 people remained missing after the hurricane. Former Bahamian Prime Minister Hubert Ingraham indicated hundreds of deaths in contrast to the official tally (Rolle, R., The Tribune, October 2019). Police Commissioner Anthony Ferguson stated that the final death toll from Hurricane Dorian will likely never be known due to the number of missing persons (Turnquest, A., The Tribune, September, 2019).

As per the IDB Mission Summary from September 30 to October 4, 2019, there were serious damages to transmission lines, houses, water services and sanitation, airports, roads and ports facilities in Grand Bahama and Abaco. More details on damage to public infrastructure is included in Section 5.3.6.

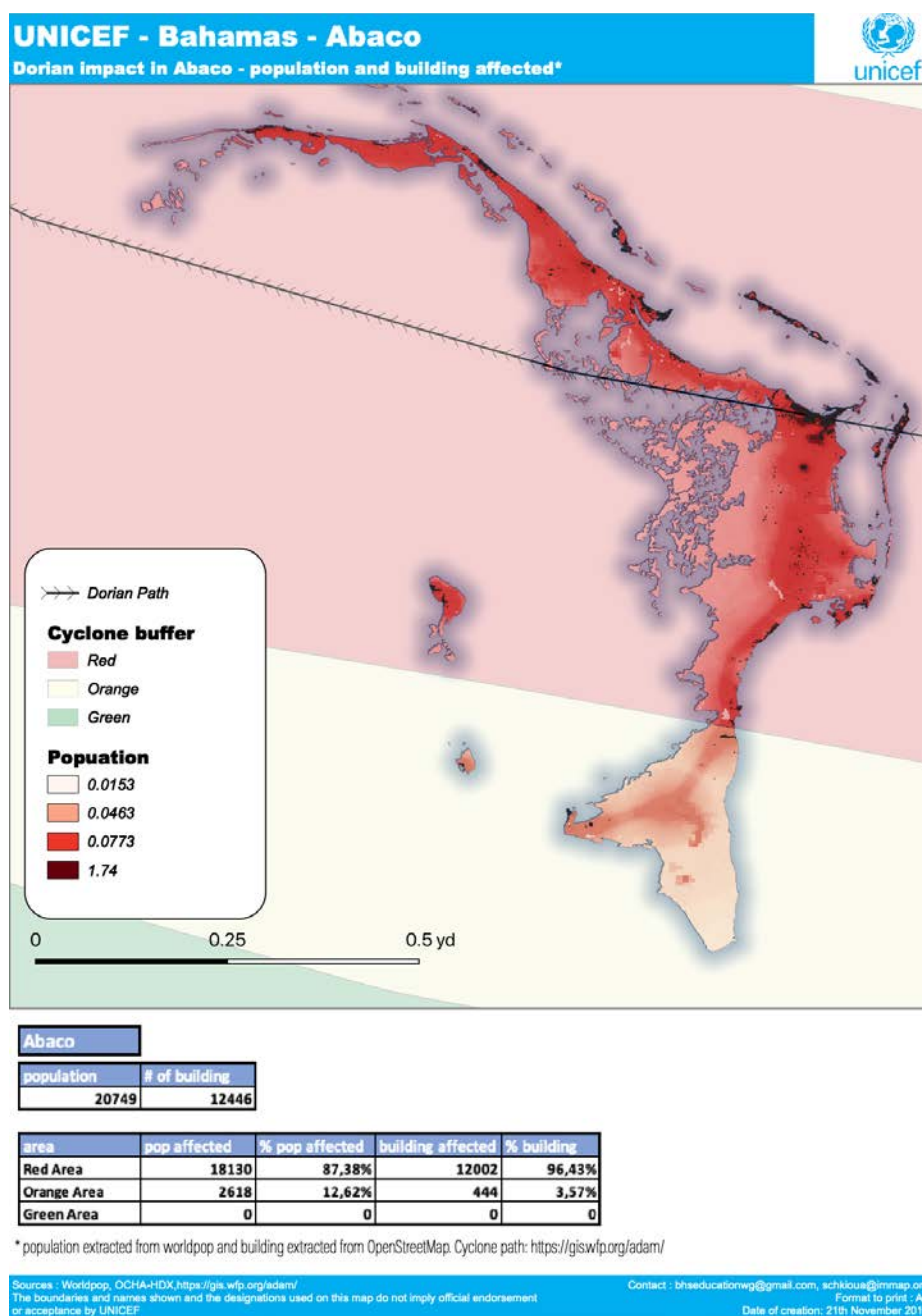
Figure 5-9 shows the extent to which trees were swept off the island, changing the landscape from green to brown, and the brightening of reefs and shoals as a result of sediments being stirred up around the island.



Source: (Miami Herald, 2019).

Figure 5-9: Before and After Abaco

Figure 5-10 shows the percentage of population and buildings affected in Abaco by the hurricane.



Sources: Worldpop, OCHA-HDX, <https://gis.wfp.org/adam/>

Figure 5-10: Population and Buildings Affected in Abaco

Figure 5-11 shows the Leonard M. Thompson International Airport on Great Abaco completely inundated with floodwaters after the Hurricane, inhibiting any rescue missions.



Google Earth; Terran Knowles/Our News Bahamas

Source: Terran Knowles/Our News Bahamas.

Figure 5-11: Leonard M. Thompson International Airport on Great Abaco

Figure 5-12 shows damage on the ground, where the storm ripped roofs off buildings, flattened others, flooded roads and washed up boats.



Source: Terran Knowles/Our News Bahamas.

Figure 5-12: Post-Hurricane Dorian on Great Abaco

Lastly, Figure 5-13 shows The Mudd, a neighborhood of makeshift houses that is home to many Haitian immigrants, which was completely reduced and inundated after Hurricane Dorian. More details on this neighborhood and the effects of the hurricane on vulnerable populations is included in Section 5.3.4.2.



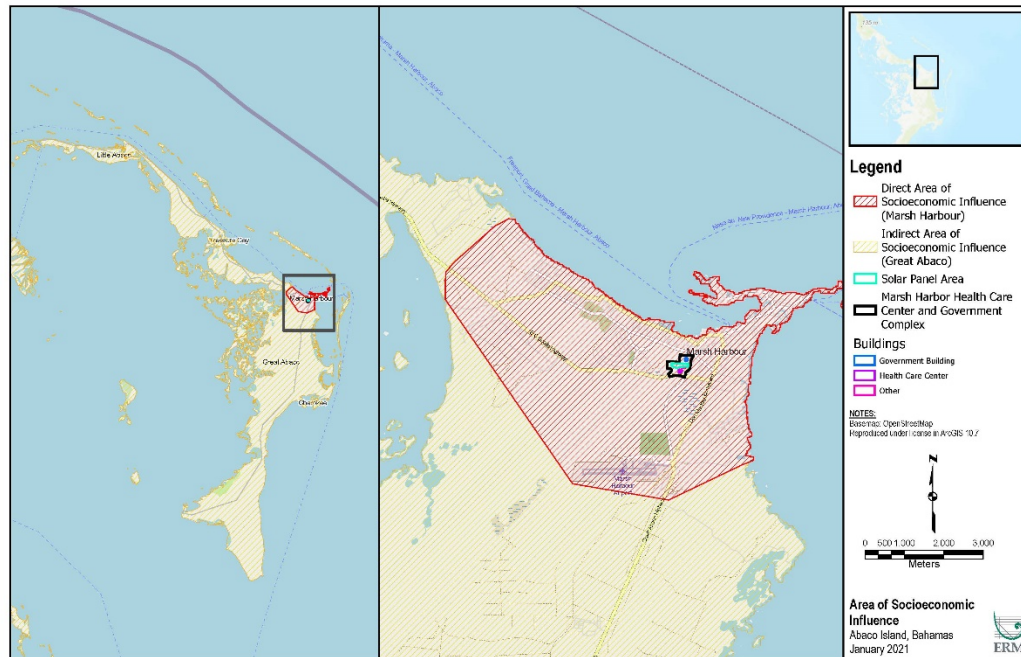
Source: Marinas.com; Google Earth; Terran Knowles/Our News Bahamas; Maxar Technologies.

Figure 5-13 The Mudd Before and After Hurricane Dorian`

Information regarding reconstruction programs is detailed in Section 2.1.2 and Section 5.3.6.

5.3.2 Socioeconomic Area of Influence

The Project's preliminary Area of Influence comprises Marsh Harbour (in the Area of Direct Influence, ADI) and the entire island of Great Abaco (the Area of Indirect Influence, AII).



Source: ERM, 2021.

Figure 5-14 Socioeconomic Area of Influence

5.3.3 Land Use

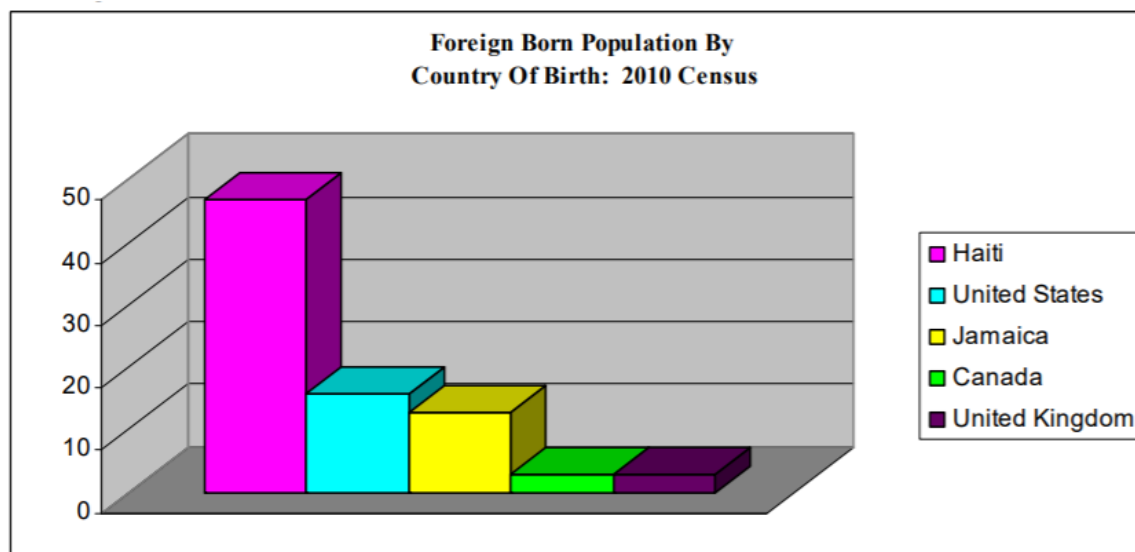
Although The Bahamas passed The Planning and Subdivision Act in 2010 guaranteeing that each island would publish a Land Use Plan, consistent with all National Land Use Development Policies, said plan was unavailable for Abaco (CEPAL, 2010).

For The Bahamas, in 2018 total land area was 10,010 square kilometers (sq. km) (Knoema, 2018). Of that, as of 2016, 5,150 sq. km, or 51.4%, was forest area (Knoema, 2018). In 2016, 1.4% of land in the Bahamas was used for agriculture, 0.8% of land was arable, and 0.4% of land was used for permanent crops (Knoema, 2018).

5.3.4 Migration and Vulnerable Populations

5.3.4.1 Migration

According to the Bahamas' 2010 Census, in 2010 there was a total immigrant population of 64,793. Of this total, slightly more than three quarters (51,170) were not born in the Bahamas. 47% were born in Haiti, 16% in the United States, 13% in Jamaica and 3% each in Canada and the United Kingdom, as shown in Figure 5-15 below.



Source: (Bahamas, 2010).

Figure 5-15 Immigrant Population by Country of Birth

Further, 50% of that population previously resided in Haiti, 13% in Jamaica and 12% in the United States (Bahamas, 2010). This reflects that there is a long history of Haitian migration to the Bahamas, starting in the late 1790s, during the Haitian Revolution, and continuing to the present (Louis, 2019). In fact, a 2018 needs assessment on Migration Governance stated that 25 % of the national population of the Bahamas are Haitian nationals – including both regular and irregular migrants (Eyewitness News, 2019).

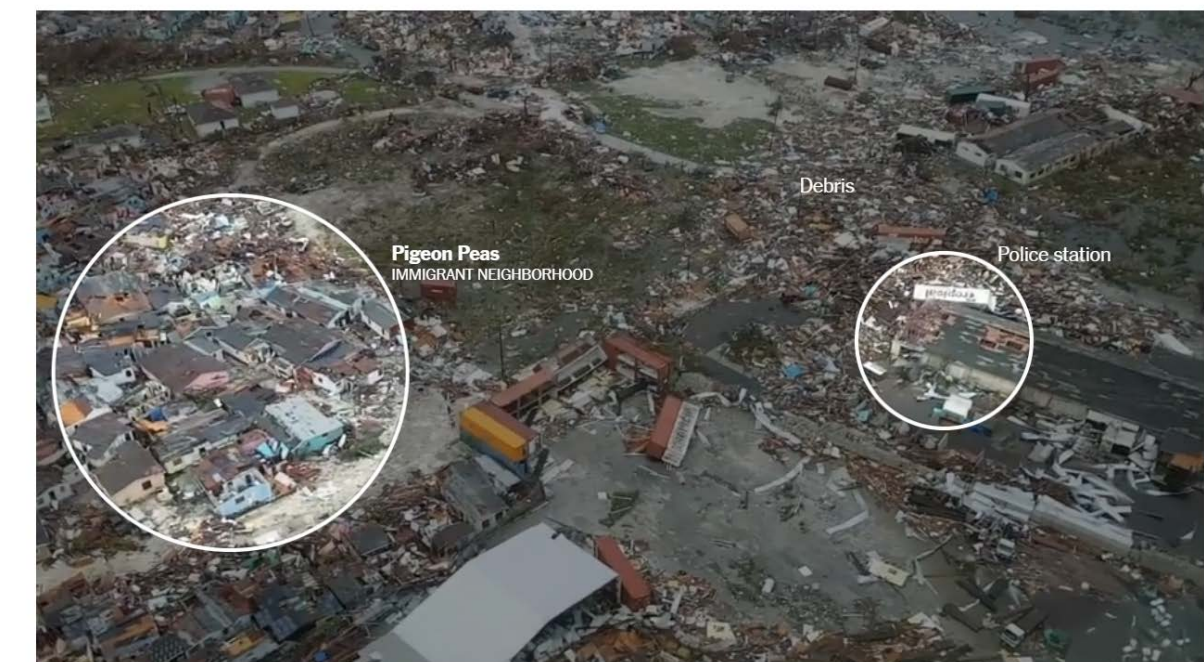
For Abaco specifically, 8.6%, or 4,386 people, of this foreign-born population lived in Abaco in 2010 and were evenly split between North and South Abaco (Bahamas, 2010). Recent immigrant population in Abaco consisted of 917 male immigrants and 890 female immigrants, totaling 1,807 immigrants (Bahamas, 2010). Outside the island of New Providence, Abaco was believed to have had the largest population of Haitians, many of whom resided in informal shantytowns (Knowles, 2019). The largest two, The Mudd and Pigeon Pea, in Abaco's capital, Marsh Harbour, suffered severe wind and flood damage from Hurricane Dorian

(Knowles, 2019). Images of extent of the damaged caused by the hurricane to The Mudd and Pigeon Pea are shown in Figure 5-16 and Figure 5-17.



Source: Terran Knowles/Our News Bahamas.

Figure 5-16: Damage to The Mudd



Source: Terran Knowles/Our News Bahamas.

Figure 5-17: Damage to Pigeon Pea

5.3.4.2 Vulnerable Populations

According to Shah, 2020, “on Abaco, communities refused to allow Haitians to settle in their neighborhoods, forcing Haitians to squat in shacks or on the edges of agricultural fields in ad hoc settlements that eventually developed into shantytowns like the Mudd. From there, residents went off each day to work at low-wage jobs tending gardens and cleaning Abaco’s lush resorts and private beachside mansions.” The fact that these shantytowns were often placed in low-lying areas of the island made these already vulnerable populations even more vulnerable to climate disasters, as shown by the devastating effects the hurricane had, shown in Figure 5-16 and Figure 5-17. Many of these Haitian workers are undocumented, earn minimum wage or less, and were left homeless by the hurricane (Louis, 2019).

After Hurricane Dorian, a nationalist group called “Operation Sovereign Bahamas” demanded that the government evict hundreds of Haitians from a shelter for hurricane victims (Louis, 2019). Marsh Harbour residents who survived the storm had been urged to evacuate to shelters on the island of New Providence (Knowles, 2019). The shelters, which housed more than 2,000 people at one point, were largely filled with Haitians and people of Haitian descent (Knowles, 2019).

Two weeks after the hurricane, at least 340 Haitian migrant workers were deported (IOM, 2019). Most of the returnees indicated that they resided in Abaco and were evacuees from Hurricane Dorian (IOM, 2019). Haitians have long faced discrimination and stigmatization in the Bahamas, as they are often associated with their undocumented status and lower earnings (Louis, 2019). Further, the issue of illegal immigration from Haiti to the Bahamas has spanned decades (Knowles, 2019). The aftermath of Hurricane Dorian seems to have exacerbated anti-Haitian sentiment, as evidenced by Operation Sovereign Bahamas’ call to deport Haitian migrants (Louis, 2019). Given conditions in Haiti, the International Organization for Migration (IOM), had warned that resettlement would be difficult and that Haitian migrants deported from the Bahamas risk becoming stateless people (Eyewitness News, 2019). In November, two months after the hurricane, the IOM called for the Haitian government to investigate Haitian deportee claims of physical and sexual abuse by immigration authorities (Eyewitness News, 2019). Allegations of mistreatment by immigration authorities were highlighted in an IOM situation report dated November 5, which followed the repatriation of 105 migrants to Port-au-Prince (Eyewitness News, 2019).

More recently, on Abaco, government-hired contractors bulldozed the ruins of the shantytowns and enclosed the flattened sites in fencing (Shah, 2020). In March, COVID-19 caused a partial nationwide shutdown and a curfew went into effect (Shah, 2020). On Abaco, residents and aid workers said that Bahamian soldiers surrounded the tents in which Haitian hurricane survivors had been living and told them to leave, rounding up some of them for deportation and justifying their actions as a public health effort (Shah, 2020).

5.3.5 Human Rights

One of the major human rights issues on Abaco is that related to potential violations with regard to vulnerable Haitian immigrants, described in the section above (Section 5.3.4.2). Additional significant human rights issues include violence by prison guards against prisoners (US Department of State, 2019). The government took action to prosecute police officers, prison officials, and other officials accused of abuse of power and corruption (US Department of State, 2019).

5.3.6 Public Infrastructure and Reconstruction Efforts

Hurricane Dorian exacerbated an existing infrastructure deficit that was previously branded “unquantifiable” by Desmond Bannister, Minister of Works (Hartnell, 2019). He revealed that the Ministry of Works’ \$93.736m Capital Works Budget for 2019-2020 was \$100m less than desired, with the former sum some \$27m below the prior year’s allocation (Hartnell, 2019). With \$53.512m of the \$93.736m earmarked for

projects already underway, there was then less than \$40m available to tackle physical infrastructure needs that are replicated across virtually every island in The Bahamas (Hartnell, 2019).

Abaco suffered 87 percent of the overall damage caused by the hurricane, with 66.8 percent of damage of the infrastructure sector taking place on Abaco (ECLAC, IDB, PAHO, 2020). Central Abaco (Marsh Harbour), Treasure Cay, and Hope Town were the most affected locations in terms of affected housing (ECLAC, IDB, PAHO, 2020). Telecommunications losses were estimated at \$54.4 million and the most significant losses occurred on Abaco, where services could not be provided to end users due to widespread destruction (ECLAC, IDB, PAHO, 2020). Losses estimates are projected until December 2021, as recovery is expected to take at least this time or even longer to return to normal levels (ECLAC, IDB, PAHO, 2020). Total damage in the power sector was estimated at \$131.3 million, of which the largest line items were \$80.4 million in damage to the transmission and distribution networks on Abaco (ECLAC, IDB, PAHO, 2020). The hurricane also severely damaged medical infrastructure, equipment and supplies on Abaco, damaging most of the healthcare facilities (ECLAC, IDB, PAHO, 2020). Educational facilities were also affected by the hurricane, which also caused lost instruction time (ECLAC, IDB, PAHO, 2020). Roads, airports and ports were damaged on Abaco, with losses also considering the decrease in tourism, as tourist flows were disrupted significantly because of damage to tourism infrastructure (ECLAC, IDB, PAHO, 2020). The damage in the tourist sector was \$530 million, a majority of which occurred in Abaco (ECLAC, IDB, PAHO, 2020). Fisheries, agriculture and commerce were also affected by the hurricane (ECLAC, IDB, PAHO, 2020).

As for energy, the IDB said electrification and power outage indicators were "below expected performance levels" (Hartnell, 2019). Pre-Dorian peak loads in Abaco was approximately 21MW (Rocky Mountain Institute, 2019). This demand/load was served by two generating plants located in Marsh Harbour and Wilson City; while the Marsh Harbour plant was severely damaged by the storm and is in very poor condition, the Wilson City Plant is in excellent condition and has approximately 50 MW of installed capacity (Rocky Mountain Institute, 2019).

After the hurricane, only 14 percent of the population had access to improved sewerage and sanitation facilities, with negative impacts on the environment and health (Hartnell, 2019). The affected islands were completely inundated with sea water, so safe, clean drinking water was a critical priority. The ECLAC, IDB, and PAHO 2020 report stated the following in terms of water and sanitation facilities "Damage to facilities and assets associated with water and sanitation were estimated at \$14.8 million. The hurricane primarily affected water pumping systems, storage tanks and distribution systems. Losses are related to interruption of piped water service both residential and other economic sectors, losses of volumes of water due to system leaks, sewerage and waste collection and estimated at \$36.6 million. The decrease in water demand during the recovery period due to the decline in tourist numbers and commercial activity is considered a loss through the end of 2019 for an estimated period of 28 months on Abaco as well as an estimated of loss of demand from 7,339 severely damage houses on both Abaco and Grand Bahama. Additional costs such as additional labor and construction equipment, emergency power generation and solid waste management is estimated at \$2.3 million. These costs also referred to the expense of managing cleaning activities, costs for disaster assessment and recovery teams deployed, and payment to fulfill restoration work."

Water Mission, a nonprofit organization, worked with UNICEF post-Dorian to address impacts to the water and sanitation sector (Relief Web, 2020). Water Mission is currently working on two community-based projects on Abaco (Relief Web, 2020). The first will create one of the largest solar arrays in the Bahamas, providing disaster resilience for WSC's municipal water systems in the Marsh Harbour wellfields in the Abaco Islands (Relief Web, 2020). The solarization effort is focused on restoring a previously-fragile water delivery system and ensuring reliable water access for thousands of citizens in the event of a future storm (Relief Web, 2020). This initiative would be complemented by the current Project, which would incorporate solarization for the Marsh Harbour Airport and Water Treatment Plant and Pumping Stations (Rocky

Mountain Institute, 2019). The second project provides safe water for six area schools (Relief Web, 2020). Other NGOs, such as Mercy Corps, also contributed to providing clean water. In May 2020, a portable water plant was installed on Abaco, bringing 10,000 gallons of potable water a day to residents (Rolle, 2020). Once clean water access is sufficiently restored on Abaco, the portable plant will be stored in Nassau in case of need for any future disasters (Rolle, 2020). Further, it appears that the Water and Sewerage Corporation is making progress towards restoring access to water, with twelve settlements having restored water by February 2020, and its offices in Abaco reopening in June 2020 (Water and Sewerage Corporation, 2020).

With respect to housing, there was extensive damage to structures on Abaco. The initial housing damage assessment indicated that 60% of the houses were inhabitable, 20% were habitable and 30% needed repair and retrofitting (Ministry of the Environment and Housing, 2020). The DRA is still working on a Small Home Repair Program to facilitate the reconstruction and restoration of homes in Abaco and Grand Bahama. To repair homes, partially destroyed homes will have to be demolished, which may pose serious health and environmental challenges (Ministry of the Environment and Housing, 2020). In conjunction with demolishing unsafe structures, remaining debris will need to be cleared and managed (Ministry of the Environment and Housing, 2020). Further, as was described in Sections 5.3.4.1 and 5.3.4.2, The Mudd and Pigeon Pea, two shantytowns that housed many of Abaco's Haitian immigrants, were completely destroyed by the hurricane. The government then decided to compulsorily acquire the shantytown land, which caused conflict with its former inhabitants. Rights Bahamas reported that it would not relent in taking legal action over the government's decision, branding the move "xenophobic and petty" (Russell, 2019). Attorney General Carl Bethel stated that it was unclear how many people would stand to be compensated under laws that uphold squatter's rights, nor could he say how much of the shantytown was privately owned (Russell, 2019). Rights Bahamas claimed that the inhabitants of these shantytowns cannot have their homes and possessions taken away from them, stating that these communities have been there for decades and many of the occupants have possessory rights under the law, so the government cannot use Dorian as an excuse to take away their property rights and discriminate against them (Russell, 2019). Further, in March 2020 109 people who were reportedly squatting at the A&B Church in Mash Harbour were arrested. According to a report by The Nassau Guardian quoting Immigration Director Clarence Russell, area residents moved onto the premises over the last several months without the permission of the church's trustees and the property owners (The Nassau Guardian, 2020). After the pastor died (post Hurricane Dorian) "it is believed area residents of foreign ethnicity moved in and took over the church property, turning it into a place not of worship but one of a residence, selling all manner of things" (The Nassau Guardian, 2020). Among the 109 people arrested, most were foreign-born, as the group counted only three Bahamians (The Nassau Guardian, 2020). 35 people were found to be illegally residing in The Bahamas and will be prosecuted, according to Russell (The Nassau Guardian, 2020).

One of the big priorities is still debris cleanup because of the scale of the hurricane and the devastation and damage it did in Abaco (WLRN, 2020). As the SESA states, conditions after hurricane Dorian left debris littering the island of Abaco. In many cases, it made roads impassable, served as a nuisance to community members, and presented a large risk to first responders responding to emergencies. The GoBH and other actors worked to gather this debris and dispose of it at the local landfills; however, these landfills were at capacity. The Ministry of the Environment's Debris Management Plan established a timeline of 180 days to the total removal of debris (Smith, 2020). It estimated there were 1.09 million cubic yards of debris in the Abaco districts (Smith, 2020). By January, it had been cleared from roads, but not necessarily picked up (WLRN, 2020). By March, \$20 million had been spent just on debris cleanup in Grand Bahama and Abaco, with much cleanup work still required (Bahamas Disaster Reconstruction Authority, 2020). The lack of specific equipment for managing certain debris streams and the problem of different debris streams, including hazardous materials, in conjunction with challenging volumes of debris, created additional stress to waste disposal facilities that were already struggling (Ministry of the Environment and Housing, 2020).

The COVID-19 pandemic in March of 2020 complicated and slowed efforts to continue reconstruction and reparation of hurricane-affected areas in The Bahamas, causing the nation to go into shut down with strict lockdown measures (Fernandez, 2020). While construction continued in the areas affected by the hurricane, COVID-19-related restrictions led to delays in the supply chain that slowed progress (Malteser International, 2020). It also put strain on volunteer-driven models, as it was almost impossible to safely and responsibly bring people to The Bahamas (Malteser International, 2020). Fortunately, many programs, such as the DRA's Small Home Repairs Program, are now continuing with reconstruction and recovery work by implementing COVID-19 safety guidelines.

There are nine police stations and one fire station on the Abacos. These are shown in Figure 5-18 below.

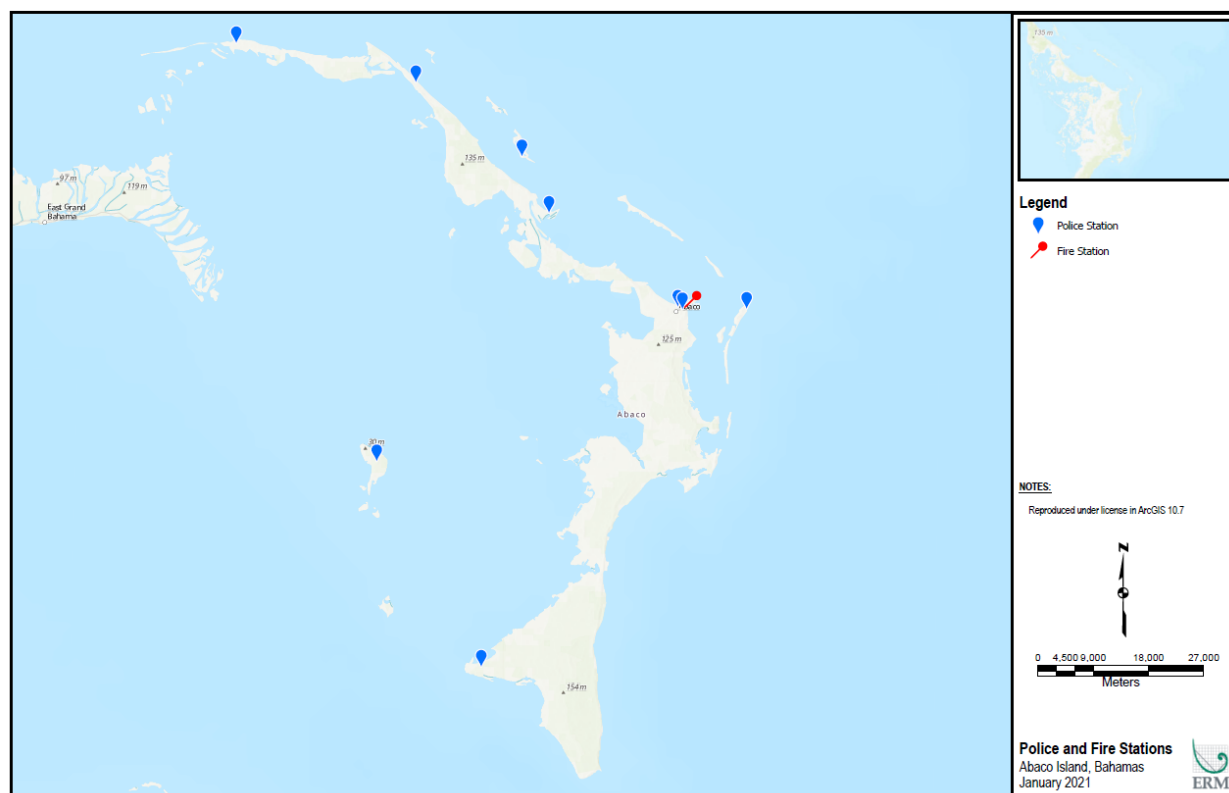
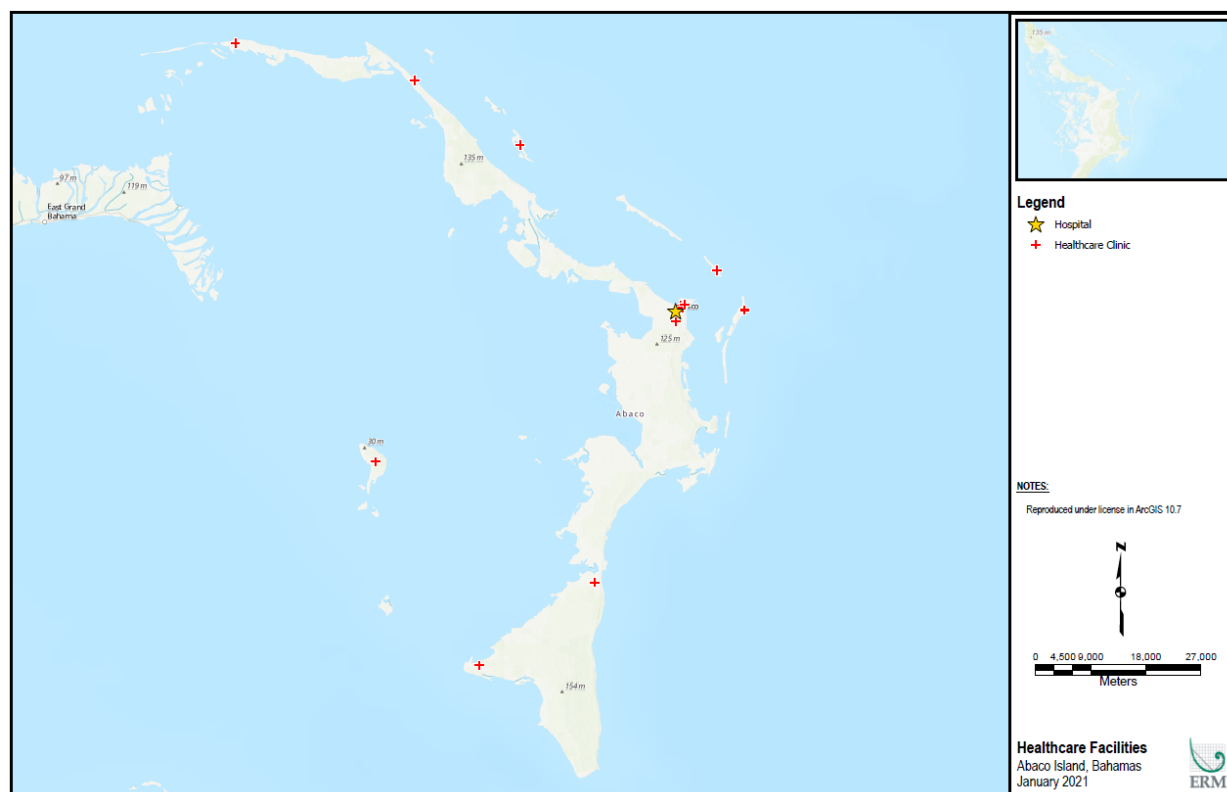


Figure 5-18: Fire Stations and Police Stations

There are also 9 clinics and one hospital on the Abacos. These are shown in Figure 5-19 below.



Source: ERM, 2021.

Figure 5-19: Clinics and Hospitals

5.3.8 Community Health and Safety

5.3.8.1 COVID-19

As of January 13, 2021, The Bahamas had reported 8,021 total confirmed cases of COVID-19, of which only 205 were on Abaco (Ministry of Health, 2021). Abaco had zero new cases of COVID-19 (Ministry of Health, 2021).

In order to curb the spread of the virus, the government of The Bahamas has put several safety measures in place. Everyone travelling to The Bahamas must obtain a negative COVID-19 RT-PCR (swab) test taken no more than 5 days prior to the date of arrival (The Islands of the Bahamas, 2020). Once in possession of a negative COVID-19 RT-PCR test, travelers can apply for their required Bahamas Travel Health Visa (The Islands of the Bahamas, 2020). There is currently a curfew in place for Abaco between 10p.m. and 5 a.m., and restaurants are only operating for outdoor dining, curbside pickup, takeaway and delivery services (The Islands of the Bahamas, 2020). Testing for COVID-19 is available at nine clinics in The Abacos (The Islands of the Bahamas, 2020).

The U.S. Center for Disease Control (CDC) stated that the risk of travel to The Bahamas is “Level 4: Very High”, and directed that travelers should avoid all travel to the Bahamas (CDC, 2021).

5.3.9 Transportation

A summary of damage to the transportation sector is included in Section 5.3.6.

Abaco can be reached by boat at Green Turtle Cay, Marsh Harbour, Spanish Cay, Treasure Cay, and Walker's Cay, and there are regular ferry services to cays and towns, including Green Turtle Cay, Elbow Cay, Man-o-War Cay and Great Guana Cay (Bahama Beach Club, 2020). Marsh Harbour International Airport and Treasure Cay Airport offer commercial flights.

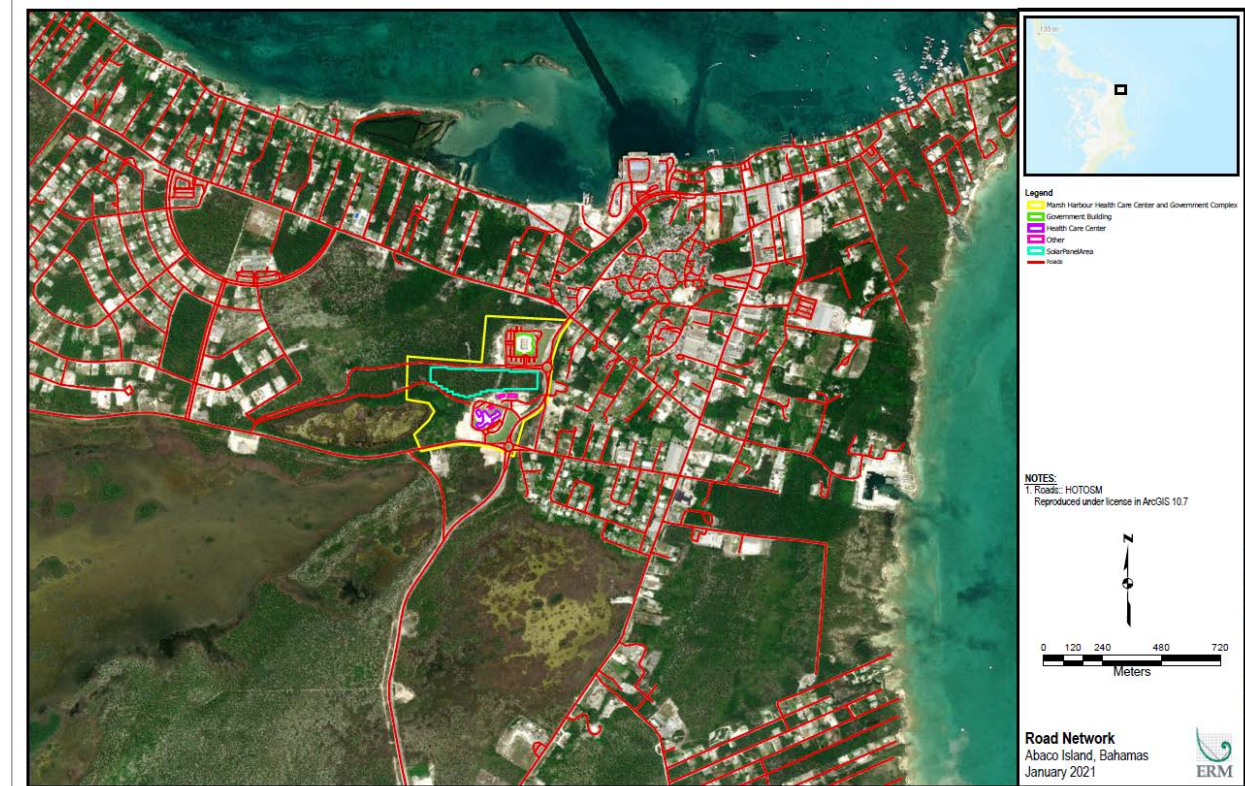
With regard to road infrastructure, there are 120 miles of highway on the Abacos. Taxis, bicycles, scooter and car rentals are available for transportation around the island (Bahama Beach Club, 2020). They are found mostly at the airports and ferry docks in Marsh Harbour and Treasure Cay (Bahama Beach Club, 2020). In some areas of the Abacos, golf carts are the most widely used forms of transportation (Bahama Beach Club, 2020). Figure 5-20 shows the main roads on Great Abaco, including the highway that traverses the island, as well as the location of the airports.



Source: (Abaco Sun, 2020).

Figure 5-20: Main Roads Great Abaco

Figure 5-21 shows the main roads in Marsh Harbor.



Source: ERM, 2021.

Figure 5-21: Marsh Harbour Roads

5.3.10 Impacts and Mitigation

5.3.10.1 Gender

The Project will likely affect men and women differently. This is because the type of employment opportunities provided by the Project are more likely to be directed towards men. Women typically benefit from any tourism-related impacts or opportunities that the Project may result in, as they are more likely to work in the tourism sector than the construction sector. Therefore, it is unlikely that women will benefit from the limited construction and operations-related employment opportunities that will be created by the Project, which risks creating gender-based exclusion.

Studies on gender equality in the construction sector have shown that the majority of men and women working in the construction industry get to know about job openings through friends and relatives (ILO Country Office for Pakistan, Baseline Study to Assess Gender Disparities in Construction Sector Jobs, 2011, from now on “ILO Baseline Study”). The survey shows that most women cannot avail job opportunities in the construction sector as they do not possess the necessary social connections (ILO Baseline Study). This finding highlights the need to mainstream job information for construction-related jobs, so that women can also have access to this information.

Further, women often lack relevant skills due in part to either the lack of information about training opportunities, or the actual lack of training opportunities, which means that they cannot compete in the job market with their male counterparts (ILO Baseline Study). This phenomenon ultimately leads to a situation

where women are less visible (ILO Baseline Study). Prior to mitigation, gender-related impacts could be considered to be *Moderate*.

Therefore, the Project has the potential to contribute towards gender equality by mainstreaming job opportunity information and emphasizing that they are open to women applicants, so women know that they can apply. Additional mitigation measures are listed below. After these measures, gender-related impacts will be *Positive*.

- Possible negative impacts that the Project's actions may generate will be identified, not only in relation to human life, but also in relation to gender;
- Prioritize the cultural factors of each area, to evaluate important issues:
 - Active female voice;
 - Women's loneliness in the case of male migration to work;
 - The types of help and assistance required these women to become an active voice in employee engagement.
 - A safe environment for women in the communities will be created or them to express themselves without fear of reprisal;
- All community meetings will be held at the best time for the female population of the region, always respecting their established schedules of domestic activities and attention to children and older focus groups, if necessary;
- A welcoming environment will be created for motherhood needs (e.g. take her child to a meeting);
- No woman, child, or elderly person will be put at risk or suffer any kind of reprisal;
- All of the Project's partnerships on the construction site will have contractual clauses to the detriment of:
 - Zero tolerance for moral and sexual harassment (Gender-based Violence Policy);
 - Minimum percentage of training and local female workforce in construction and project development;
 - Specific personal protection equipment for women's work; and
 - Flexible working hours if women are breastfeeding.
- The Grievance Mechanisms will be able to immediately act and resolve instances and complaints of gender-related discrimination (including harassment, bullying, sexual abuse, etc.). The Project will monitor and oversee the handling of complaints of gender-related discrimination.

KPIs should include, but not be limited to:

- Number of women employed by the Project (target of 15%)
- Number of women engaged by the Project
- Non-discrimination and gender-based violence (zero tolerance of any discrimination of any type)
- Track and evaluate grievances related to gender-issues through the Grievance Mechanism (100% reported, evaluated and solved grievances regarding discrimination complaints and gender-based violence in a timely manner).

5.3.10.2 Worker Influx

Given the migration and vulnerable populations context discussed in Section 5.3.4, the Project has potential to cause impacts related to worker influx. Further, influx may also result from increased expectations around Project activities, such as the expectation of employment. An increase in prostitution around Project sites and accommodations where foreigners are residing for extended periods is also common on construction projects, which may result in an increase in communicable disease rates amongst both foreign and local populations.

Mitigation measures should include:

- Prioritize local hiring by developing a Local Employment and Supplier Development Plan
- Implement Community Grievance Mechanism
- Evaluate need of security guards, fencing, and/or other security measures
- Code of Conduct for all Project employees and contracted staff including zero-tolerance policy for drug use, sale or purchase
- Project should issue a policy statement regarding sexually transmitted infections including HIV/AIDS, and this policy would be communicated internally to staff, and externally to Contractors
- Develop a Socioeconomic and Community Health and Management Plan to manage influx and recreation risks
- Workers Accommodation Plan and Checklist if necessary
- KPIs should include, but not be limited to:
- Engage monthly with local NGOs, civil society leaders and/or church leadership on local perceptions related to influx
- Document number of consultations and trainings with local communities on grievance mechanism
- Track and evaluate monthly grievances related to crime, prostitution, and conflict (target of 100% resolution)
- Liaise monthly with local health officials and police stations to track and evaluate any increase in crime and/or prostitution within the Project area
- Document number of workers and contractors who have signed Code of Conduct and zero-tolerance policy (target of 100%)
- Track and evaluate monthly internal and external grievances related to workers' accommodation

Subject to the above-described mitigations, the magnitude of worker influx will be *Medium*. In combination with *High* receptor sensitivity, worker influx will result in *Major* impacts.

Project operations will result in *Negligible* worker influx.

5.3.10.3 Public Infrastructure

Public infrastructure impacts arising from the construction and operations of the Project are likely to result in stress to Abacos' public infrastructure. This may include impacts to waste disposal, health infrastructure, road infrastructure (as described in Section 5.3.10.5), water and sanitation, and housing. These impacts may be exacerbated by the conditions following Hurricane Dorian and the ongoing reconstruction and recovery efforts. These impacts will likely only take place during construction, as they are tied to worker influx, and are therefore of *Medium* magnitude. However, due to the migration context and vulnerable

populations on the island, sensitivity is *High*. This results in *Major* impacts to public infrastructure pre-mitigation.

The following mitigation measures can be applied to reduced impacts to public infrastructure:

- Prioritize local hiring by developing a Local Employment and Supplier Development Plan
- Ensure there is a Community Grievance Mechanism
- Liaise with Department of Housing to assist in seeking suitable accommodations and setting rental rates to not drive up other costs in Project area
- Liaise with Ministry of Health to ensure proper protocols are in place for Project use of health infrastructure, and develop an Emergency Preparedness and Response Plan
- After mitigation measures, impacts to public infrastructure are *Minor*.

5.3.10.4 Community Health and Safety

Health and safety impacts arising from the construction and operations of the Project are likely to include the following:

- Increased risk of traffic hazards and incidents associated with Project construction routes (see Section 5.3.10.5);
- Increased noise;
- Exposure to Project-related hazards associated with construction and operational activities;
- Site security issues including public access to the plant;
- Community health impacts related to dust emission during construction that will exacerbate existing or cause new conditions (e.g. respiratory, eye, skin diseases); and
- Community health impacts related to COVID-19.

Project activities are expected to result in noise generation in the Project Area during construction. Specific noise data and assessments of thresholds for receptors can be found in Section 5.1. The sensitivity of receptors to noise is primarily dependent upon the activities that occur at the receptor location. For example, locations where people rest or sleep are considered to be more sensitive to noise than agricultural areas. Typically, noise impacts (particularly if occurring at night) may detract more from the quality of life for individuals than noise impacts during the day. The overall sensitivity of residents to noise-related impacts for this assessment is generally considered to be *Medium* during the day and *High* at night, except for recreational areas, medical institutions, and residential properties, which remain *High* day and night. Since there is a hospital adjacent to the Project site, the sensitivity of receptors is considered *High*. As shown Section 5.1, the magnitude of impact for noise is considered *Negligible*. Therefore, after mitigation, noise impacts will be considered *Negligible*.

Dust-related nuisance impacts from construction are anticipated to be *Minor* and short-term. Overall health impacts of the Project are therefore considered to be *Negligible*.

Community safety impacts from increased traffic and associated safety risks will be considered to have a potential impact of *Moderate* significance. However, impacts will likely be short-term and localized and risks will be highest during the peak construction period. Children and other vulnerable people and livestock may be more susceptible to traffic risks.

The following mitigation measures will be applied to reduce potential community health and safety impacts:

- The Project will be developed in line with WBG General EHS Guidelines.

- Provide a cultural education program for workers from outside the area to help reduce community conflict.
- Provide opportunities for women and women's groups to participate in the work force to the extent safe and practical, and assist them in having good quality work standards so they can train others and are able to work with other companies in the future.
- The Project and any contractors shall involve external stakeholders (i.e. police or local authorities) in any on or off-site security incidents and ensure that appropriate incident response procedures are implemented. A Worker Policy and Code of Behavior shall be developed which includes guidance on visits, prescribed actions for conduct violations and a grievance mechanism for complaints.
- An important aspect of minimizing the spread of communicable diseases within the community is worker health screening, particularly as many workers are local people and in the context of the COVID-19 pandemic. A worker health-screening program shall be developed and implemented, with measures to prevent the transmission of COVID-19.
- The Project will provide adequate and sufficient sanitation facilities for both female and male workers.
- Worker accommodation plans will be developed according to international requirements under IFC Performance Standard 2.
- Develop and implement a Workforce Code of Conduct that addresses issues such as anti-social behavior, drug and alcohol consumption, banning weapons, and including respect for women.
- Onsite health care shall be provided to ensure prompt medical attention.
- A Security Management Plan shall be developed in accordance with national law and the principles of good international industry practice. Access to the site will be controlled.
- The Project will train security guards on Human Rights issues. The security guards will not be armed. They will coordinate with local government security forces in case of need and will ensure that security and human rights of local communities' members are respected.
- Community Emergency Response Plans will be developed and tested including consideration of workers and nearby residents in the vicinity of Project-related traffic. These will include emergency response related to COVID-19, traffic accidents and potential releases of chemicals and other hazardous materials.
- Workers shall receive proper Personal Protective Equipment (PPE) and associated health and safety training including procedures for emergency response.

With the mitigation measures described above, the residual impacts are expected to be reduced to *Minor* significance, with the exception of Road Safety, which will be *Moderate*.

5.3.10.5 Transportation

The movement of Project equipment and materials to the island of Great Abaco will result in interactions between Project-related traffic and non-Project traffic, as well as the potential for travel delays and reduced public access, especially to roads and adjacent lands near the Project site. This section evaluates the significance of those potential impacts.

The receptors for transportation and traffic impacts are individuals who use the affected portions of the island's existing transportation system, the roads from the port to the Project sites, and roads used by workers and local suppliers to travel to the Project site. This includes drivers, cyclists, pedestrians, and vessel operators.

The Project will generate several potential traffic and transportation impacts, as discussed below. Table 5-14 summarizes the significance of these impacts.

Impacts on Marine Traffic and Port Capacity

Project supplies and equipment may arrive at Great Abaco via ports. However, based on typical project designs for solar projects, it is unlikely that Project-related cargo vessel activity will exceed Abacos' ports' cargo-handling capacity. Based on the small magnitude of impacts, and low receptor sensitivity, Project construction will have negligible impacts on marine traffic and port capacity.

- Project operations will result in minimal (if any) new vessel traffic, and will therefore have *Negligible* impacts on marine traffic and port capacity.

Impacts on Road Congestion and Delays

Currently, traffic in Abaco is very limited, as the island is relatively unpopulated. However, increased traffic and presence of heavy vehicles on local roads as a result of Project development increases the risk of road congestion and delays; because the poor conditions of the roads and the interference with other construction traffic/vehicles in the Island that needs to be coordinate and manage. A significant number of trucks would be needed during construction to transport construction equipment (materials, sand, soil, waste) and solar PV components to and from the Project Site. Operational traffic movements would be very low.

The following measures will be necessary to manage Project-related road congestion during construction:

- Provide and enforce a Journey Management Plan for truck deliveries that includes compliance with speed limits, safe driving practices, required use of escort vehicles for movements of cargo containers or other large equipment, and understanding of vehicle handling, community impact and response to spills or incidents.
- Provide traffic controls (flaggers) where conduit installation temporarily reduces road width. Clearly mark temporary detours, if needed.
- Provide buses for construction worker transport.
- For oversized vehicles, coordinate with local authorities, use escort vehicles, and provide advance notification to community leaders and representatives concerning details of schedule and potential impediments to travel.
- Minimize truck trips through scheduling and development of efficient vehicle manifests.
- During operations, make continued use of Journey Management Plans for truck deliveries.

Road users will have medium sensitivity to Project-related traffic congestion and delays. Road users will be capable of adapting to short-term, periodic traffic congestion and delays by using alternative routes and accepting minor delays.

Subject to the above-described mitigations, the magnitude of Project construction impacts on road congestion and delays will go from *Medium* to *Low*. In combination with *Medium* receptor sensitivity, Project construction will have *Minor* impacts on road congestion and delays.

Project operations will result in *Negligible* new vehicular traffic, and will therefore have *Negligible* impacts on road congestion and delays.

Impacts on Road Infrastructure

The heavy truck traffic required for Project construction will result in road wear and deterioration. Roads that have cracks, potholes or damaged edges can produce traffic delays and increase safety hazards. Delayed or deferred maintenance and repair of minor road surface deterioration can result in accelerated deterioration. The following mitigations can help to address damage to road infrastructure; however, full implementation will depend upon action by the Bahamas Ministry of Public Works.

- Require trailer transport of tracked vehicles.
- Conduct pre-construction inspection of the haul routes to the Project site.
- Monitor road conditions during construction and inspect the haul route at the conclusion of construction to identify damage that occurred during construction (regardless of the source of damage). Communicate with the Bahamas Ministry of Public Works about road maintenance and repair needs.

Road users will have medium sensitivity to Project-related road infrastructure deterioration. Drivers will be capable of adapting to short-term defects in road surface condition by adjusting their driving speed, and could accept short-term, minor delays during road repairs. Cyclists who travel on the roadways will have greater sensitivity to the safety hazards caused by damaged road edges.

- Subject to the above-described mitigations, the magnitude of Project construction impacts on road infrastructure will go from *Medium* to *Low*. In combination with *Medium* receptor sensitivity, Project construction will have *Minor* impacts on road infrastructure.
- Project operations will result in negligible new vehicular traffic, and will therefore have *Negligible* impacts on road infrastructure.

Impacts on Road Transportation Safety

Users of the roads along the Project haul route will experience an increased safety risk due to Project-related traffic, and especially from large vehicle movements. This risk will be highest for pedestrians and cyclists.

The measures necessary to manage Project-related transportation safety risk include the measures described above for road congestion and delay and road infrastructure, in addition to the following measures:

- Schedule truck deliveries during the middle of the day, specifically for hours when children are in school and most workers are at their place of employment.
- Engage with communities to promote awareness of road safety issues and practices. Include education on road safety for drivers and pedestrians, specifically around Project activities.
- Provide information to community leaders and organizations on scheduling and anticipated changes in traffic types and volumes due to Project construction.

Road users will have medium sensitivity to road safety. As described in the table below, drivers can adapt to temporary increases in truck traffic. However, pedestrians and cyclists who use the public roads to reach jobs, markets or schools are especially sensitive to increased traffic safety conditions.

- Subject to the above-described mitigations, the magnitude of Project construction impacts on road safety will be *Medium*. In combination with *Medium* receptor sensitivity, Project construction will have *Moderate* impacts on road transportation safety.

Project operations will result in *Negligible* new vehicular traffic, and will therefore have *Negligible* impacts on road transportation safety.

5.3.10.6 Socioeconomic Impact Summary

Table 5-14 below provides a summary of the socioeconomic related impacts, including community health, safety, and security related impacts, according to receptor. Within the respective impact assessments, a set of receptor-specific mitigation measures and project controls and mitigation measures have been identified. It is assumed these mitigations and controls will be put in place by the Project, and therefore the impact assessment takes these into consideration when defining the sensitivity and magnitude to derive residual impact significance.

Table 5-14: Socioeconomic Impacts by Receptor

Receptor(s)	Impact (Activity Phase)	Sensitivity	Magnitude	Pre Mitigation Significance	Mitigation Measures	Residual Significance
Residents and businesses near the Project	Stress on local infrastructure (During construction)	High	Medium	Major	Community Grievance Mechanism. Local Employment and Supplier Development Plan. Liaise with Ministry of Housing to assist in seeking suitable accommodations and setting rental rates to not drive up other costs in Project area. Liaise with Ministry of Health to ensure proper protocols are in place for Project use of health infrastructure, and develop an Emergency Preparedness and Response Plan.	Minor
Populations in the nearest settlements to the Project area	Stress on local infrastructure (During construction)	High	Medium	Major	See Stress on Local Infrastructure Project Controls above.	Minor
Residents and businesses near the Project	Noise (During construction)	High	Negligible	Negligible	See Section 5.1.1 and Section 5.3.10.4 for Noise Mitigations.	Negligible
	Traffic (During construction)	Medium	Medium	Moderate	Traffic and Transportation Management Plan. Emergency Preparedness and Response Plan. Minimize truck deliveries during peak hours. Enforce a Journey Management Plan for truck deliveries. Provide traffic controls (flaggers) where conduit installation temporarily reduces road width. Provide buses for construction worker transport. For oversized vehicles, coordinate with local authorities, use escort vehicles, and provide advance notification to community.	Minor

					Minimize truck trips through efficient vehicle manifests.	
	Dust (During construction)	Low	Low	Negligible	None.	Negligible
	Worker Influx (During construction)	High	High		<p>Prioritize local hiring by developing a Local Employment and Supplier Development Plan.</p> <p>Implement Community Grievance Mechanism.</p> <p>Evaluate need of security guards, fencing, and/or other security measures.</p> <p>Code of Conduct for all Project employees and contracted staff including zero-tolerance policy for drug use, sale or purchase.</p> <p>Project should issue a policy statement regarding sexually transmitted infections including HIV/AIDS, and this policy would be communicated internally to staff, and externally to Contractors.</p> <p>Develop a Socioeconomic and Community Health and Management Plan to manage influx and recreation risks.</p> <p>Workers Accommodation Plan and Checklist if necessary.</p>	Moderate
Populations in the nearest settlements to the Project area	Noise (During construction)	High	Negligible	Negligible	See Noise Project controls above.	Negligible
	Traffic (During construction)	Medium	Medium	Moderate	See Traffic Project Controls above	Minor
	Dust (During construction)	Low	Low	Negligible	None.	Negligible
	Worker Influx (During construction)	High	High	Major	See Worker Influx Controls above.	Moderate
Populations residing and working along roads from	Traffic (During construction)	Medium	Medium	Moderate	See Traffic Project Controls above	Minor

Project area to Port						
Residents and businesses in the Area of Influence	Community Health, Safety and Security (During all phases)	Medium	Medium	Moderate	See Community Health and Safety Mitigation Measures in Section 5.3.10.4 and Emergency Preparedness and Response Plan	Minor
Commercial Port Users and Vessels near Project ports	Traffic and port capacity (During construction phase)	Low	Low	Negligible	None.	Negligible
Road Users	Road Congestion and Delays (During construction)	Medium	Medium	Moderate	See Traffic Project Controls above.	Minor
	Road Infrastructure (During construction)	Medium	Medium	Moderate	Require trailer transport of tracked vehicles. Conduct pre-construction inspection of haul route from port to Project site. Monitor road conditions during construction and inspect haul route at conclusion. Communicate with the Ministry of Public Works about road repair needs.	Minor
	Road Safety (During construction)	High	Medium	Major	Schedule truck deliveries during the middle of the day, during hours when children are in school and most workers are at their place of employment. Engage with communities to promote awareness of road safety issues and practices for drivers and pedestrians. Provide information on scheduling and anticipated changes in traffic types and volumes due to Project construction	Moderate
Vulnerable groups (women)	Economic benefits (During construction)	Medium	Medium	Moderate	Mainstreaming job opportunity information and emphasizing that the Project is open to women applicants.	Positive

Source: ERM, 2021

6. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

6.1 Contractor Management Plan

The Project Executing Unit (PEU) is committed to ensuring the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

The PEU needs to implement technical and organizational measures to ensure all the work conducted by Contractors and Subcontractors is managed in a correct manner, in conformity with local, state and internal requirements.

6.1.1 Objective

The objective of this plan is to define the minimum requirements for contractors and subcontractors working on behalf of the PEU to minimize health, safety, environmental, and social (HSES) risks associated with the contracted services.

The Contractor Management Plan is a management tool that will be updated periodically to ensure the efficiency of contractor management.

6.1.2 Scope of Application

This plan will apply during the development of all Project activities and during the Project's life cycle. It is the PEU's responsibility to ensure that employees, contractors and subcontractors are evaluated according to their Environmental and Social Management Plans (ESMP) policies and procedures, which are aligned with international best practices.

Contractors will use this procedure and develop it further to provide specifics on how the various requirements from the Project-specific Environmental and Social Management Plans (ESMP) will be applied on the ground. The PEU will review and approve this document before any implementation.

6.1.3 Roles and Responsibilities

In order to properly implement the Contractor Management Plan, the involvement of the people listed below is required.

Table 6-1: Roles and Responsibilities

Role	Responsibilities
PEU	<ul style="list-style-type: none"> ■ Be familiarized, review and approve the Contractor Management Plan. ■ Ensure the availability of resources necessary for the implementation of the Contractor Management Plan.
Head of ESHS	<ul style="list-style-type: none"> ■ Assure the correct implementation of the Contractor Management Plan
ESHS Manager	<ul style="list-style-type: none"> ■ Assure the correct implementation of the Contractor Management Plan ■ Update the Contractor Management Plan. ■ Review and approve the contractors project-specific Contractor Management Plan.
Project Manager	<ul style="list-style-type: none"> ■ Implement the Contractor Management Plan.
H&S Manager	<ul style="list-style-type: none"> ■ Implement the Contractor Management Plan. ■ Ensure the generation of evidence and reports for compliance with the IFC PS as well as maintaining KPIs. In addition, ensure the internal coordination to follow the Contractor Management Plan.

Role	Responsibilities
Environmental Coordinator	■ Help with the implementation of the Contractor Management Plan
Community Relations Officer	■ Help with the implementation of the Contractor Management Plan
Labor Officer	■ Help with the implementation of the Contractor Management Plan
Contractor Company	■ Develop a project-specific Contractors Supervision Plan aligned with this Contractor Management Plan
Employees, Contractors and Subcontractors	■ Understand and carry out the activities set out in the Contractor Management Plan

Source: ERM, 2021.

6.1.4 Activities

The following sections explain the activities and requirements for the proper management of contractors and subcontractors.

6.1.4.1 Contractor Management Procedure

The PEU will contract out engineering, procurement and construction work to one or more contractors. Contractor management plays a key role in this Program. As of the date of this management plan, contractors have not been selected for the Project.

Furthermore, the PEU selects and approves its contractors, as well as product suppliers, through a pre-qualification process. Pre-qualification ensures that the PEU only works with suppliers of goods and services that are able to comply with their and IDB's policies.

Contractor management can be achieved through six steps:

1. Definition of the scope of work
2. Pre-qualification of the contractor
3. Contractor selection
4. Contract award and terms establishment
5. Contractor monitoring
6. Post contract review

Collaboration between Head of EPC, ESHS Manager and Project Manager is essential for the efficient implementation of these steps.

Definition of the scope of work

Once the project is defined, the Project Manager reviews the project description and prepares the ESHS-related requirements to be included in the tender specifications. These requirements will address ESHS needs and red flags identified during the Project design process. As appropriate, this will also reflect requirements found in project-related and authorizations (e.g., licenses and permits).

Special design requirements to avoid or mitigate potential impacts must also be included in the ESHS requirements to be disclosed to the contractors in the tender specifications.

If the bidders have any questions before submitting the proposal, the PEU management may meet with the bidder to provide guidance on how to comply with ESHS requirements. When considered appropriate, the bidders are given the opportunity to address gaps identified in their proposals. The Project Manager evaluates the proposals once they are received. The objective is to determine if the proposal adequately addresses ESHS requirements. Proposals that do not adequately address these requirements will be either rejected, or returned to the bidder for improvements.

Definition of the scope of work

Once the project is defined, PEU Management and Project Manager reviews the project description and prepares the ESHS-related requirements to be included in the tender specifications. These requirements will address ESHS needs and red flags identified during the Project design process. As appropriate, this will also reflect requirements found in project-related and authorizations (e.g., licenses and permits).

Special design requirements to avoid or mitigate potential impacts must also be included in the ESHS requirements to be disclosed to the contractors in the tender specifications.

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Pre-qualification of the contractor

It is important to assure ESHS compliance throughout the contracting process, to ensure that, contractors are aligned with the Project's and IDB's policies. The contractor's capacity will be evaluated and a short list of candidates will be developed. This ensures that only competent contractors are pre-qualified and allow more time to evaluate the performance of bidders. Pre-qualifying means that only approved and competent contractors are invited to tender for a Project's activity or work.

The PEU pre-qualifies contractors and suppliers by requesting specific information as part of the Solicitation of Interest. The specific information requested depends on the type of goods or services being procured, but will generally include some or all of the following:

- References from previous customers.
- Previous ESHS performance data, including past record of environmental accidents and history of ESHS claims, violations, and fines.
- Safety statistics, such as:
 - Employee hours worked during the last three years, separating office personnel and site workers; and
 - Total injuries and illnesses, specifying fatalities, Lost Time Injuries (LTI), and Work Related Illnesses.
- ESHS training programs.
- Qualifications of ESHS personnel.
- Expected ESHS impacts and risks (for the activities and services to be contracted).
- Commitment to work under the Project's ESMP or description of the management systems in place to manage ESHS issues, including:

- Management leadership and commitment;
 - ESHS policies, codes of conduct, worker conditions, objectives, and targets;
 - Organization, resources, and documentation;
 - Assessment and management of risks and impacts;
 - Identification and compliance with applicable regulations;
 - Other planning and procedures;
 - Management programs describing environmental controls and health and safety practices;
 - Emergency preparedness and response;
 - Grievance mechanisms;
 - ESHS Implementation Monitoring; and
 - Auditing and Review.
- Audit reports.
 - Supply chain and subcontractor management criteria. These will include contractual requirements for ensuring: compliance with the supplier's or contractor's ESHS policies; prohibition of the use of child and forced labor; and robust monitoring and auditing practices.
 - Evidence of third-party certification or accreditation.
 - Evidence of insurance coverage for risk jobs and for risks associated with the environment.

The information sent back by the contractor or supplier is evaluated ESHS Manager and the Project Manager, both have the authority to evaluate and approve, or reject, contractors or suppliers based on the responses and information provided.

The ESHS Manager together with the Head of EPC will maintain an updated database of contractors, which will include their prequalification or pre-evaluation. Both will ensure that only prequalified or pre-evaluated contractors are taken into account.

Contractor Selection

Contractor selection will be influenced by many factors such as the information provided for pre-qualification (past experience, safety statistics, resources, etc.), their technical proposal, and pricing.

As part of the selection process, each bidder must complete and submit a draft ESHS Plan aligned with the Project's Occupational Health & Safety Management Plan.

The ESH Manager together with the Project Manager will review the bidder profiles and all information submitted to ensure they collect the necessary evidence to comply with the IDB's standards.

Contractor Award

Once the contractor or supplier has been selected, a contract is drafted. At this point, the Project Manager with help of PEU's Legal Department includes the necessary clauses in the contract to allow the PEU to enforce compliance with the company's ESHS requirements.

Per the contract with the PEU the principal Contractor must align with the Project's ESHS standards and procedures, including communication methods, responsibility and contract monitoring.

Contractors responsibility

If not already in place, the Contractor will establish policies and procedures to manage and supervise its own subcontractors.

The responsibilities of the Contractors include, but are not limited to:

- Responsible for complying with all applicable host country ESHS regulations and permit or licenses commitments;
- Work safely to ensure the safety of their own employees, as well as that of other contractors, site visitors, the general public and the environment;
- Ensure that employees are properly trained, certified, qualified or competent for the activities they are expected to perform;
- Conduct or participate in the required meetings of Health, Safety and Environment;
- Provide and ensure that workers use all the required Personal Protection Equipment (PPE);
- Resolve any applicable corrective action that results from agency or PEU inspections, promptly and to the PEU's satisfaction;
- Report all incidents to the Project Manager.
- Conduct environmental monitoring for all relevant phases of work and report emerging risks to Project management.

Each Contractor is responsible for their employee's and subcontractor activities. Therefore, if the Contractor intends to subcontract part of the service, the third party must meet all the requirements described in this plan for the duration of the contract. The Contractor will be responsible for conducting supervision and enforcing the Project's and IDB's standards.

Review and approval of contractor ESHS documents

Contractors and subcontractors are required to send all of the ESHS plans and procedures that intend to utilize during the Project to the Project Manager, prior to the initiation of any activities controlled by these documents. PEU Management and the Project Manager, review the documents to ensure that contractors and subcontractors comply with the IDB's policies, and management plans, as well as with host country ESHS laws and regulation. The activities controlled by these documents cannot be initiated until the documents are approved by the PEU and the PEU Project Manager. The ESHS documents must be available for PEU review at the Contractor office and on-site whenever possible.

In the event that a contractor has ESHS documents that cover the same topics as Project documents, Project Management will determine which documents will apply to the contractor's work for the Project. Then, the documents that apply will be listed in a Bridging Document.

Contractor documents must clearly describe the objective, process, responsibilities, and relation to other elements of the ESHS documents. Specifically, management plans will include the following information:

1. Objectives;
2. Legal requirements;
3. Roles and responsibilities;
4. Training;
5. Process description;

6. Monitoring;
7. Performance indicators; and
8. Reporting and notification requirements.

6.1.5 Training and Competency

Prior to the start of any activity, contractors must ensure and provide evidence that their workers have received the necessary information and training to recognize the present work risks to protect their health, and to have the necessary skills to do the assigned activities.

Before starting the assigned work, employees must have, at least the following information:

- Knowledge of materials, equipment and tools;
- Identified risks associated to operations and the control measures;
- Potential risks for health and safety along with prevention measures;
- Health and safety norms that can be applied;
- PPE use;
- Emergency procedure;
- Incidents or accidents reporting method;
- Insurance for risks and environmental associated risks;
- Waste disposal standards;
- Environmental protection norms;
- Understanding of the grievance's mechanism;
- Existence of Human Resources Procedure or mechanism to make sure that work conditions are in agreement with national regulation; and
- Labor law elements.

6.1.6 Contractor Supervision Procedure

The PEU will establish an impartial evaluation of the contractors and subcontractors' environmental, social, health and safety occupational performance, during the Project's lifecycle. The result of this evaluation may be considered for future contracting processes to ensure the provision of quality services and strong commitment in the environmental, social, health and safety occupational dimensions.

Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMPs will be applied on the ground. The PEU will review and approve this document before any implementation.

6.1.6.1 Direct Supervision

Daily, and randomly, the Project Manager with help from the Environmental Coordinator, Community Relations Officer and Labor Officer will perform the supervision of the contractor, verifying that it complies with the environmental requirements and social aspects of the Project, according to requirements proposed in this plan, as well as the Project's management plans and policies. The observations made during the verification of the contractor's performance will be documented and follow up in registration forms.

Faults or deviations from compliance of the attention procedures to environmental and social issues that do not pose a significant risk for Projects are set as Site Findings Record.

In the case of faults or deviations (i.e. environmental, social, occupational health and safety) that do represent a significant risk for the Project, these will be recorded as non-compliance and must be attended immediately. It is important to point out that each not attended non-compliance will entail an economic penalty for the contractor.

For the health and safety performance supervision, the H&S Manager will conduct the contractors' supervision to verify the compliance of all the aspects or requirements set forth in the Health and Safety Plan and related plans (e.g. Emergency Plan or the Transportation Management Plan), by documentary review and on-site inspection during the execution of the activities of the Project. Among the requirements inspected are: compliance of workers' security and health management programs, risk preventive inspections, etc.

At the end of each inspection, if any non-compliance is observed, the H&S Manager will do a Site Findings Record for future follow-ups.

During on-site inspections, if any potential hazard that endangers the physical safety of staff and facilities is observed, it will be reported immediately by the H&S Manager to eliminate the danger before resuming activities.

6.1.6.2 Follow-up Meetings

On a weekly basis, the Project Manager will hold meetings with the contractor, in order to follow-up site findings and the non-compliances that are in the process. Thus, the follow-up will ensure an adequate management.

A Health and Safety Coordination meeting will be hold on a biweekly basis. In this meeting, agreements will be established for monitoring and compliance. Relevant statistics (e.g. accidents) will be discussed.

6.1.6.3 Reports

The contractor must deliver to the Project Manager the corresponding reports of the social and environmental activities carried out. Including:

- Environmental reports (e.g. activities, relevant findings, national legislations etc.) deliver monthly;
- Social reports (e.g. activities, relevant findings, compliance to national legislation) deliver monthly.

The contractor will also submit reports regarding occupational health and safety activities to the H&S Manager on a monthly basis. Among the information that will be included in the reports are:

- Compliance with the occupational health and safety aspects established in the corresponding Project-level procedures.
- Accident Statistics Report.
- Report of compliance.
- Follow-up report and compliance of audit's findings.

6.1.6.4 Monthly Audits

The Project Manager will carry out a monthly audit to the contractor, in order to verify the existence of the documentation requested by the Project and review it. Monthly audits will be scheduled. The documentation review will be randomly as well as the Key Performance Indicators (KPIs); as a result, the level of

performance of the contractor and subcontractors will be assessed. Thus, corrective measures will be defined, when applied, as well as the time of its completion.

The H&S Manager will hold monthly audits to the contractor in order to verify that activities are running according to established procedures work, in order to prevent incidents and accidents, while running the activities. The result of the audit is sent to the contractor for monitoring and compliance with the health and safety recommendations established in the audit.

6.1.6.5 Accommodation Auditing Protocol

Although the project expects to hire some local workers located within a daily commute distance of the Project site, specific information is currently unknown. Construction activities will require workers with specialty skills who will live have to come from other areas and will have to stay in local hotels and accommodations.

The migrant workforce is not expected to be significant; however, as some local hotels and accommodations will be used to lodge migrant workers an accommodation auditing protocol will be required.

The Accommodation Auditing Protocol is a tool to verify and check on the suitability and appropriateness of housing conditions for expatriate subcontractors working on the Project. The purpose of these audits is to detect, assess, support and control the problems and needs of the expatriate workers, enhancing autonomy and improving the quality of life of the worker for their better performance and productivity on the Project. The audits will be focused on the health of the expatriate workers, if the house complies with health standards, vector control standards, and has basic services (such as water, electricity, easy access to the project, and if the worker has access to transportation services).

Contractors will be responsible to carry out the Home Auditing Protocol to guarantee that the audits are completed according to what is established in this plan and that it is executed in an efficient way. Contractors will perform at least two visits per month to a random sample of the homes. The home visit will consist of the activities listed below.

1. **Planning of the Visit:** The Contractor's staff member (such as the HR manager or ESHS manager) will plan and organize the monthly visits to worker homes. The visits will be carried out every month, and will only take place on weekdays.
2. **Arrival at the house:** Once the date and time have been established, the worker is committed to be present at the house while the audit is taking place. A PEU staff member (such as the HR manager) will accompany the Contractor for the visit.
3. Upon their arrival, the team will greet the worker, introduce himself or herself, and personalize the contact. The number of people who live with the worker will be verified, as well as the type of housing in which he/she lives. In addition, the Contractor will verify if the house has basic services such as water and electricity, and whether the house is located in an area where it is easy to get to the Project site, as well as if the house is in an area that represents social risk or is high in crime. The visit will be focused on studying and observing the social and family environment.
4. **Survey:** Once the inspection has been completed, a survey form will be completed and submitted.
5. **Close of the visit:** Once the visit is over, the Contractor will present a summary report of the audit findings to the Project's ESHS Manager about the visit, who will determine the actions that will be carried out according to the social report presented.

6.1.6.6 Subcontractor Monitoring by the Contractor

The contractor is responsible for the performance supervision of the subcontractor's social, environmental and occupational health and safety performance. It is responsible for their compliance, their compromises and established plans.

6.1.7 Documentation and Monitoring

The Project will keep a record of the following documents:

- Contractor's pre-qualification documentation;
- ESHS Plan, and any other plans, developed by the Contractor;
- Evidence of compliance with national legislation in environmental, health and safety matters, including work conditions (training certificates, medical care records, work contracts, environmental license, among others); and
- Evidence of compliance with the standards and policies established in the ESMP.

The Contractor Management Plan is to be reviewed on a six-month basis for the initial two years and then annually or as necessary in consultation with contractors and subcontractors.

6.1.8 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 6-2: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool/ Frequency
Contractor's policies compliance	Contractor's compliance with labor conditions and policies	100% compliance with terms and conditions of employment, with human resources policy and code of conduct (or similar), with labor relations, with non-discrimination and equal opportunities and retrenchment	All Project phases	Contractor's policies and management plans / Quarterly
Worker's Health and Safety	Number of reports generated indicating the number of accidents and incidents	100% of reported accidents (total days and hours). Correct implementation of corrective measures when applicable.	All Project phases	Contractor's Monthly Reports / Monthly
	Contractor's compliance with H&S management plans	Compliance with 100% of H&S management plans	All Project phases	Contractor's Monthly Reports and Management Plans / Monthly
Environmental and Social Impacts	Contractor's compliance with Environmental and Social management plans	Compliance with 100% of Environmental and Social management plans	All Project phases	Contractor's Monthly Reports and Management Plans / Monthly

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool/ Frequency
Community Health and Safety	Contractor's compliance with the Community Health and Safety management plan	Full compliance with the Community Health and Safety management plan	All Project phases	Contractor's Monthly Reports and Management Plans / Monthly
Worker's accommodation	Compliance with the Accommodation Auditing Protocol	100% compliance with the Accommodation Auditing Protocol	All Project phases	Accommodation Auditing Protocol Checklist / Quarterly
Supervision	Number of reports, follow-up meetings and monthly audits	At least one meeting per week. At least one report per month. At least one audit per month.	All Project phases	PEU records / Weekly and Monthly

Source: ERM, 2021

6.2 Erosion and Sediment Control Plan

The Erosion and Sediment Control Plan (ESCP) has the purpose of ensuring the reduction of the project's potential impacts on the soils and the water resources in its area of influence, as well as documenting and monitoring the mitigation measures that will be implemented. The plan includes methods that will guide the personnel involved in the project to manage, mitigate and / or avoid (as much as possible) adverse effects with regards to soils. In general, erosion and sediment control is part of the design for construction activities that the contractor must prepare for any project.

6.2.1 Objective

The key objective of this Plan is to ensure that the effects of erosion and sedimentation on the environment are minimized by minimizing soil disturbance, degradation and erosion resulting from Project activities. The more general objectives of this plan include:

- Comply with the relevant country regulatory requirements;
- Avoid and control soil erosion and contamination;
- Follow best international management practices guidelines;
- Define the procedures, integrated controls and mitigation measures to be used in construction activities and project operation phases that have the potential to cause adverse impacts;
- Define the roles and responsibilities for the implementation of this Plan; and
- Define procedures for monitoring the efficiency of the mitigation measures, the generation of reports, interventions, and the adaptation of the plan.

6.2.2 Scope of Application

This procedure will apply during the Project's life cycle (construction, operations and decommissioning). It is PEU, established within the MoF, responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to Project's Environmental and Social Management Plan policies and procedures, which are aligned to international best practices.

The Erosion and Sediment Control Plan includes measures to ensure that direct impacts (land disturbance) are limited to the works area, and that secondary impacts do not impact adjacent areas. This plan shall be distributed to all contractors / subcontractors, and it shall be included in all contractual documentation and used as a basis for all specific Erosion and Sediment Control Plans to be prepared by all engaged parties. Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. The PEU will review and approve this document before Project activities commence.

6.2.3 Roles and Responsibilities

In order to properly implement the Erosion and Sediment Control Plan, the PEU requires the involvement of the people listed in Table 6-3.

Table 6-3: Roles and Responsibilities

Role	Responsibilities
PEU	<ul style="list-style-type: none"> Be familiarized, review and approve the Erosion and Sediment Control Plan Ensure the availability of resources necessary for the implementation of the Erosion and Sediment Control Plan
PEU Environmental, and Social Health and Safety (ESHS) Manager	<ul style="list-style-type: none"> Assure the correct implementation of the Erosion and Sediment Control Plan Update the Erosion and Sediment Control Plan Review and approve the contractor project-specific Erosion and Sediment Control Plan
PEU Environmental Coordinator or H&S Manager	<ul style="list-style-type: none"> Ensure the generation of evidence and reports for compliance with the IFC PS as well as maintaining KPIs. In addition, ensure the internal coordination to follow the Erosion and Sediment Control Plan
Contractor Company	<ul style="list-style-type: none"> Develop a project-specific Erosion and Sediment Control Plan
PEU, Contractors and Subcontractors	<ul style="list-style-type: none"> Understand and carry out the activities set out in the Erosion and Sediment Control Plan

Source: ERM, 2021.

6.2.3.1 Construction

Contractors are required to incorporate proposed mitigation measures and management controls in their own procedures and work plans, and in the Management Plans for each project. Their roles and responsibilities with regards to monitoring and implementation of mitigation measures will be clearly defined in these plans.

6.2.3.2 Operation

Monitoring of the condition of stormwater management structures will be performed during the routine site inspections to be performed by the Plant Managers. Any corrective actions will be implemented by the site General Maintenance personnel.

6.2.4 Key Impacts

The earth movement activities during land clearance and construction can lead to erosion, landslides, and sedimentation which can have the following impacts:

- Airborne dust
- Damage to native plants
- Pollution to local waterways and harm to aquatic animals within the local waterways
- Increase in flooding conditions.

Construction activities at the site include:

- Site clearing for solar panel support structures and other equipment
- Movement of heavy equipment
- Construction of infrastructure
- Installation of transmission lines

Once sites have been restored and/or rehabilitated, no erosion or sedimentation is expected during operational activities.

6.2.5 Mitigation Measures

6.2.5.1 Pre-Construction

During the design stage, erosion and sediment control measures will be included in the Project design to control runoff from construction areas. These designs will include temporary (for construction) as well permanent drainage systems (construction and operation), and will include gullies and stormwater conveyance systems with gentle slopes with the purpose of diverting stormwater away from the project infrastructure in a manner which does not cause soil erosion or sedimentation. Deforestation and site clearance activities will be minimized to the extent possible.

6.2.5.2 Construction

The EPC Contractor will develop an Erosion and Sediment Control Procedure that they and all Subcontractors will implement during all Project construction works. The Erosion and Sediment Control Procedure will incorporate a Landslide Management Procedure, which will contain measures to reduce potential impacts of landslides (slope stabilization, planting, sandbags etc.), and Stormwater Management Procedures (SMP).

In order to reduce erosion and sedimentation during Construction, the following general mitigation measures should be applied:

- The laying of overland flow diversion drains and preload fill should be completed preferably during the dry season and prior to the power plant construction earthworks commencing.
- Disturbance area will be minimized and clearly demarcated.
- Removal of vegetation and soil cover will be restricted to that which is necessary for the Project;
- Land clearance will be sequential and the smallest possible area for working will be exposed where ground and earthworks are undertaken.
- Stripping of topsoil will not be conducted earlier than required (i.e., the Project will maintain vegetation cover for as long as possible) in order to prevent the erosion (wind and water) of organic matter, clay, and silt.
- Clearance of vegetation should not be conducted earlier than required (maintain vegetation cover for as long as possible) in order to prevent erosion.
- Soil removed from the foundation pits of the panels can be used to build basins to retain rain water running from the panels.
- Areas between and under the photovoltaic panels should be re-vegetated with low growing grass species to limit raindrop and wind energy, which will reduce soil erosion. This is highly recommended

in order to maintain the natural biological soil life associated with the indigenous vegetation. Conduct a pre-construction screening by a biologist for protected plant species.

- Transplant protected species or relocate species to nurseries.
- If replaced, protected species must be replaced with two or more trees of the same species.
- Regular washing of Project related vehicles to avoid the transportation of invasive species.
- Inspection of all equipment with arrival of overseas equipment to check for invasive plant species.
- Works will only be conducted within the works zone.
- Vehicle movements will be restricted to the defined roads/tracks.
- Where possible, works area will be designed to ensure stormwater runoff drains into the site.
- Where runoff from the site is required, it will be via the longest flow path possible to ensure maximum sediment retention. Flows to undisturbed areas will be prioritized.
- Where required, sediment controls will be put in place. These will include, but not be limited to, sediment ditches, regulating dams such as rock check dams, sediment basins, sediment fences and silt socks. Silt curtains, fibrous mats etc. will be placed across as temporary stormwater drains to reduce the efflux velocity of the water and to aid settling of suspended sediment from the water.
- Develop banks and excavation slopes in accordance with the guidelines for geotechnical stability. All soil stockpiles that will not be immediately re-used will be seeded. Temporary stockpiles will be watered as required to suppress dust. Excavated earth should be strongly compacted and cut-off ditches should be dug in erosion prone areas to divert water away for the earthworks and to settling ponds before discharge to nearby water courses.
- Avoid building roads or access roads on slopes greater than 15% as a soil conservation measure.
- Deposit surplus material in previously approved areas or reuse it as fill material.
- Stabilization and progressive reforestation of affected areas with plants and vegetation native to the island.

Once the construction stage is complete, all areas, including access and service roads, which are not necessary for the project's operation will be restored to their original or better conditions.

6.2.5.3 Operation

The O&M Contractor will develop an Erosion and Sediment Control Procedure that they and all Subcontractors will implement.

The O&M Contractor will ensure the following provisions are satisfied:

- Site will have a stormwater system designed to capture and treat any runoff. Stormwater conveyance systems will be adequately maintained in order to ensure stormwater flow does not lead to erosion and sedimentation.
- The stormwater system will drain through a sump or settling pond. This would capture any runoff from the pad and settle out rubbish and sediment, while reducing flow velocities.
- Areas of the plant that are at risk of having contaminant discharges (such as around transformers or back-up generators) should be isolated, with their flows first draining through an oil water separator. The outflows from this separator could then drain to the sump/settling pond for further treatment.

- Diversion drains will be installed around the site, the capacity of these drains needs to convey adequate flood events to reduce the likelihood of this occurring.
- Stormwater collected in secondary storage facilities will be discharged once it has been inspected for contamination, at low flow rates through the existing stormwater conveyance systems to allow for infiltration into the ground at the site. If any signs of oil sheen or contamination are observed in the collected stormwater, then it shall be handled in accordance with the Waste Management Plan.

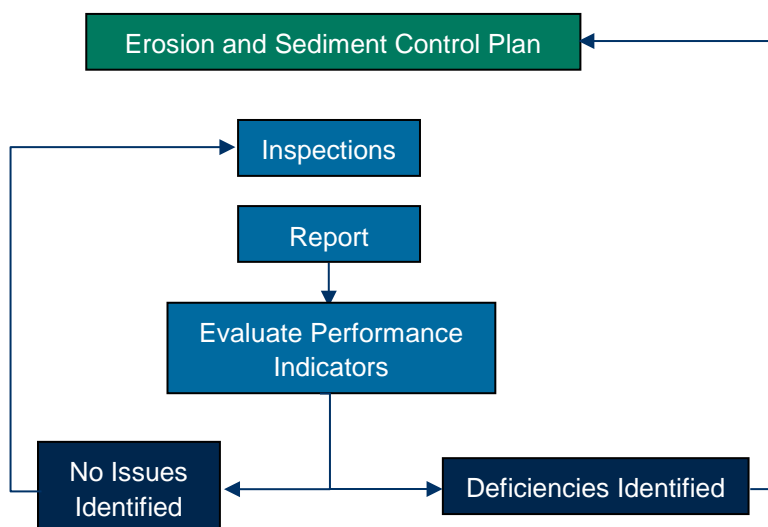
6.2.6 Monitoring and Reporting

6.2.6.1 Construction

Each construction Contractor will establish an inspection and audit program that will include:

- Identification of performance indicators to be monitored
- Periodic audits and inspections of the contractors' work front to verify the correct implementation of the erosion and sediment control measures and plans, as well as the installation of erosion control systems.
- Inspections (periodic and unannounced) of clearing activities (felling and pruning).

The following figure present the typical audit process flow diagram for erosion and sediment control.



Source: ERM, 2021.

Figure 6-1: Erosion and Sediment Control Audit Flow Diagram

Monitoring during construction activities will be a constant occurrence, with daily visual inspections of work site. Sediment controls will be reviewed during site inspections and/or after significant rainfall (more than 10mm in 24hrs resulting in site runoff).

If erosion or sedimentation resultant of the construction activities taking place is observed during the site inspections, an incident report for non-conformance of sediment control will be prepared. In addition, during week like site inspections, the location and condition of sediment control structures will be recorded.

If necessary, corrective actions will be carried out which will:

- Investigate cause of sediment control failure.
- Review flow path and determine most appropriate controls are in place, additional controls which can be place in-stream and/or changes that can be made to flow path
- Review similar controls on-site (even though these may not have failed) for similarities.

Specific Monitoring requirements are described below.

EPC Contractor Responsibilities

The EPC Contractor will ensure the following are satisfied.

- Inspection and maintenance – the EPC shall specify who is responsible for inspecting all physical elements of the erosion and sediment control measures. These shall be inspected daily to ensure they are installed and working correctly. Any defects shall be rectified before earthworks occur in that area of the site. Accumulated sediment shall be removed from all features when it reaches 25% of the available space. Records of all inspection and maintenance shall be kept.
- The discharge from the sedimentation ponds should be monitored during rain events. At least once per month for total suspended solids for comparison with discharge limits and to determine the effectiveness of the pond.

MoF's PEU Responsibilities

The PEU shall review and approve the EPC Contractor's Erosion and Sediment Control Procedure, including its Stormwater Management Procedure and landslide management procedure.

The PEU shall continuously audit the EPC Contractors adherence to their Procedure and to monitoring requirements and shall upon finding any non-compliance, provide an immediate written notice to the EPC Contractor requiring them to correct the issue within a defined time period. The PEU shall monitor that the EPC Contractor does in fact address all such matters; if the PEU finds the EPC Contractor fails to address the matters within the time period, the PEU shall advise the Engineer to the EPC Contract, whom shall consider the issuance of a "stop work" notice.

6.2.6.2 Operation

The PEU shall review and approve the O&M Contractor's Erosion and Sediment Control Procedure.

The PEU shall continuously audit the O&M Contractor adherence to their Procedures and monitoring requirements and shall upon finding any non-compliance, provide an immediate written notice to the O&M Contractor requiring them to correct the issue within a defined time period. The PEU shall monitor that the O&M Contractor does in fact address all such matters; if the PEU finds the O&M Contractor fails to address the matters within the time period, the PEU shall use whatever mechanisms are available within the O&M Contractor's contract to enforce compliance.

6.2.7 Training

All personnel will be trained on:

- General awareness and procedures concerning water management and the prevention of erosion and sedimentation;
- General awareness on key indicators of erosion and sedimentation in order to apply corrective actions; and
- The appropriate disposal methods of collected stormwater.

6.2.8 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 6-4: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method / Tool / Frequency
Soil and Water Resources	No evidence of significant sediment deposition outside the works area.	100% of inspections	Construction	Site inspections, Weekly and after rain events
Soil and Water Resources	Total Suspended Solids in discharges	< 50 mg/L	Construction	Monthly
Soil and Water Resources	No evidence of significant drilling, gullies or other instances of run-off erosion.	100%	Construction and Operation	Site inspections, Construction: Weekly and after rain events, Operation: Monthly and after major rain events.
Soil and Water Resources	Employees must have the appropriate training	100%	Construction and Operation	Documentation verification. Construction: Induction training, Operation: Yearly

Source: ERM, 2021.

6.3 Waste Management Plan

The Project Executing Unit (PEU) is committed to ensuring the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

To promote the Project's alignment to best international practices, PEU acknowledges that waste management measures are an essential part of any project. This Waste Management Plan details the steps to minimize environmental impacts through appropriate controls and site inductions of employees and sub-contractors. During the construction and operation phase of the Project, there is the possibility of generating solid, liquid, and hazardous wastes. This plan defines the various potential sources of waste and sets out how they will be controlled and monitored for the duration of the projects.

6.3.1 Objective

The objective of this plan is to comply with all relevant host-country environmental regulations, reduce waste volume, maximize recycling, reuse and recovery, and prevent any construction waste/litter entering the environment. In general, the objectives of this plan include:

- Avoid and control the generation of waste related to the Project during the construction and operation phases;
- Define the procedures, integrated controls and mitigation measures to be used during the activities from the construction and operation phases that have the potential to affect the environment and the neighboring communities; and
- Comply with the requirements of the host country regarding the management and disposal of different types of waste.

6.3.2 Scope of Application

This procedure will apply during the Project's life cycle. It is the PEU's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to PEU's ESMP policies and procedures, which are aligned to international best practices.

The Waste Management Plan includes measures related to the management of waste derived from Project activities. This plan shall be distributed to all contractors / subcontractors, and it shall be included in all contractual documentation and used as a basis for all specific Waste Management Plans to be prepared by all engaged parties. Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. The PEU will review and approve this document before any implementation.

6.3.3 Roles and Responsibilities

In order to properly implement the Waste Management Plan, the PEU requires the involvement of the people listed below.

Table 6-5: Roles and Responsibilities

Role	Responsibilities
PEU	<ul style="list-style-type: none"> ■ Be familiarized, review and approve the Waste Management Plan. ■ Ensure the availability of resources necessary for the implementation of the Waste Management Plan ■ Assure the correct implementation of the Waste Management Plan
PEU ESHS Manager	<ul style="list-style-type: none"> ■ Assure the correct implementation of the Waste Management Plan

	<ul style="list-style-type: none"> ■ Update the Waste Management Plan ■ Review and approve the contractor project-specific waste management plan.
PEU Environmental Coordinator or H&S Manager	<ul style="list-style-type: none"> ■ Ensure the generation of evidence and reports for national compliance and compliance with the IFC PS as well as maintaining KPIs. In addition, ensure the internal coordination to follow the Waste Management Plan ■ Approve the Contractors project-specific Waste Management Plan
Contractor Company	<ul style="list-style-type: none"> ■ Develop a project-specific Waste Management Plan
PEU, Contractors and Subcontractors	<ul style="list-style-type: none"> ■ Understand and carry out the activities set out in the Waste Management Plan

Source: ERM, 2021.

Typical roles and responsibilities are as follows:

- As project phases unfold, Contractors will be responsible for overseeing the implementation of the waste management plan. Contractors must develop and deliver a list of all waste management procedures, specific to each function.
- Prior to the start of work involving the generation of waste, each Contractor must prepare its own management plans and inspection procedures. Said management plans will be reviewed and approved by the PEU before the works begin, in order to ensure consistency between the waste management plans. In addition, Contractors will need to comply with all local rules and regulations including the correct classification, disposal and reuse of waste.
- Workplace supervisors will oversee health and safety factors for Contractors in relation to waste management and enforce established environmental incident prevention and safety practices. They will supervise waste activities comprised of classification, control, mitigation, transportation and disposal of all the waste generated by the projects.

6.3.4 Sources of Impacts

Most of the waste is expected from activities during the construction and decommissioning phases of the Project. The construction of the Project will generate typical industrial construction waste as well as typical household waste. During operation, personnel at security building will generate typical office and household wastes, while maintenance personnel will generate typical waste from maintenance activities.

If not properly managed, the potential impacts associated with the waste include:

- Visual impacts in the areas of the construction works;
- Contamination of soils and water resources;
- Impacts on animals;
- Impacts on human health;
- Odors from residues in surrounding areas; and
- Waste due to poor management of recyclable waste.

During decommissioning, in addition to your typical construction waste, the solar PV panels will have to be dismantled and appropriately managed.

6.3.5 Waste Generation

A number of wastes generated during the Project activities will be transported off-site for disposal. These wastes will be recycled or re-used if possible or transported and disposed of at an appropriate licensed municipal landfill facility or at an alternative approved site.

Where practicable, the following waste types will be recycled or reused:

- Recyclable waste materials such as paper, plastic, wood and glass;
- Scrap metal and other material; and
- Used oil, including lubricating and gear oil; solvents; hydrocarbon based detergents, and machine oil.

A licensed waste contractor at licensed waste facilities will dispose of the following wastes:

- Drums and containers containing residues (e.g. lubricating oil) that may have environmental effects; and
- Hazardous wastes.

6.3.6 Approach

The Project will comply with national laws and standards, as well as with the best international practices for waste management. It is important to minimize the generation and transportation of waste to disposal facilities. The general approach to waste management is described below:

- **Reduction:** Whenever possible, waste generation will be minimized, not only to save money but also to reduce the need for storage and transportation resources, and to promote sustainable work environments. During the construction phase of the projects, the contractors and operators of the construction works will be required to supply specific waste reduction plans and procedures. Workers and operating companies will avoid the excessive use of materials in their work activities. During the operation phase of projects, operators, those responsible for maintenance, and users will work in a sustainable way and encourage members of the surrounding communities to do the same.
- **Reuse:** it is expected that during the construction and operation phases of the projects multiple types of waste will be generated. When possible, all waste material that is salvageable and practical will be reused.
- **Recycling:** Recycling not only reduces the volume of waste, it also protects wildlife, reduces water pollution, creates jobs, and encourages sustainable behavior. When possible, the following items will be recycled: plastics, cans, glass, paper, cardboard, wood and metal. All recycling items will be collected, sorted and stored at the point of origin and placed in different containers or containers clearly identified with markings and colors. After sorting, items will be transported to pre-approved recycling centers.
- **Classification:** all waste materials (hazardous and non-hazardous) will be classified at the point of origin in separate areas for each type of waste. Materials that can be reused or recycled will be separated in additional locations or containers to minimize transportation and disposal of waste. Examples of acceptable materials for recycling were listed above. Hazardous and non-hazardous waste will be monitored and managed separately. Wastes can be classified in the following classifications:
 - General Waste: Waste must be considered as general waste when it does not have the characteristics to be classified as special handling waste or it does not have any specification included in the local regulation.

- Special Handling Waste: The waste that is required to have special handle during its disposal process and is not classified as hazardous waste must be considered as special handling waste.
- Hazardous Waste: The waste that have any danger specification or characteristics according to the local regulation, it must be consider as hazardous waste.
- **Disposal Transportation:** Waste materials that cannot be reused, recycled, or salvaged will be taken to a previously designated landfill and waste management facilities. Such facilities must meet and comply with all relevant regulations; as established by local laws. Contractors will document and record all transportation of waste, which will include information such as: type of waste, quantity, source of the waste, location of disposal site, and receiving facilities.

Household waste, such as garbage (bottles, cans, clothing, compost, disposable items, food packaging, food waste, newspapers, magazines, etc.) will be classified at the point of origin, placed in containers of different colors (supplied by contractors during construction and by the O&M Contractor during operation) and clearly identified, for example:

- Blue: plastic items;
- Green: cans and glassware;
- Red: residual waste;
- White: paper and cardboard; and
- Brown: food waste.

Industrial waste generated during the construction, operation and decommissioning phases of projects shall be classified at the point of origin in piles or in properly identified steel bins. Examples of the types of industrial solid and liquid wastes expected include:

- Metal waste;
- Plastics;
- Concrete;
- Wood waste;
- Oil-contaminated rags;
- Cardboard;
- Used oils and fats;
- Batteries;
- Paint containers; and
- Residues of chemical compounds (paints, adhesive materials, etc.)

6.3.7 Mitigation Measures

6.3.7.1 Construction

General Measures for Waste

The EPC Contractor is required to develop a Waste Management Procedure that they and all Subcontractors will implement during all Project construction works. During construction, the EPC Contractor shall be responsible for the clean-up of the Site on a daily basis. The Site is to be kept clean

and tidy at all times and clean-up shall be performed throughout the day with a final emphasis on site clean-up at the end of each shift. This clean-up emphasis is to contribute to the safe working conditions at the Site. Disposal of waste materials, both solid and fluid, shall be in accordance with local regulations, good hygiene and good construction practice, including the avoidance of oil or chemical spillage or run-off into local water ways. At a minimum, the waste management plans, specific to each activity, shall demonstrate compliance with the following:

- Particular attention should be given to the use and re-use of materials to minimize waste and, whenever practicable, using materials and products from sustainable sources. The Waste Management Procedure will be prepared in accordance with the waste hierarchy described above.
- Mechanisms for the collection, identification, temporary storage, and transportation of the waste before its transfer outside the Project areas. Waste will be stored in closed containers away from direct sunlight, wind and rain. Waste packaging will be in good condition, undamaged, corrosion and leak free. Waste will be stored so as to prevent or control accidental releases to air, soil, and water resources. In addition, waste will be stored in a manner that prevents the commingling or contact between incompatible wastes. Sufficient space is needed between incompatibles or physical separation such as walls or containment curbs.
- Waste signs will be put on all waste containers and collection areas. Each sign will be highly visible and easily seen by the person using the waste container or area. Each container or waste area sign will be labelled as Domestic Waste, Non-Hazardous Waste or Hazardous Waste and include the responsible person with contact information and how to handle the waste.
- Descriptions of responsible parties, procedures for registering and documentation of waste transfers, options for recycling, treatment and disposal of waste, including the proposed final destinations of those that cannot be reused, and measures for the reuse of waste;
- Solid waste produced during construction will be disposed of in compliance with the regulatory requirements and classification regulations and will be outlined in the Waste Management Procedure. Expected types and estimation of waste volumes should be provided in the Waste Management Procedures; and
- Trainings for staff awareness.

The following information shall be used as a guideline to develop the Waste Management Procedure. Although there are landfills available on Great Abaco Island for general solid waste, any hazardous waste generated will have to be disposed of off the Island. There are companies available that will transport and dispose these types of waste to the Island of Nassau; however, due to capacity concerns these wastes might have to be taken internationally.

Table 6-6: Waste Management Procedures

Waste Material	Disposal Route
Bio solids	Local Landfill
Construction Waste	Metal: to be recycled (exported) Plastics and other materials: if possible, organize a place for local people to consider re-use (to be duly organized), or landfilled
Earthworks overburden	Stockpiled for future use, or revegetated as permanent landscaping.
General waste	Recycling and Disposal in landfill
Oils	Oil: to re-use/recycle companies such as Bahamas Waste Oily waste (such as oily rags): to the landfill

Waste Material	Disposal Route
Vegetation	Local Landfill

Note: Burning of chemicals, treated wood, and/or plastic is forbidden

As there is only one certified/recognized waste disposal facility on Great Abaco Island (Great Abaco Sanitary Landfill), all solid waste to be disposed of off-Site shall be directed to them or other approved facility in Abaco. If at the time of Project implementation it is determined that this landfill does not have the capacity to handle Project waste, the EPC will need to organize and properly dispose the waste through a certified transportation and disposal company off of the Island.

Project contractors will need ensure that the transportation, treatment and/or disposal of waste are done correctly, and will implement the following controls:

- All loads arriving or leaving the site will be appropriately secured.
- Provide information regarding waste management in site-specific inductions, including waste separation and importance of securing vehicle loads.
- Ensure licensed contractors are used to collect controlled wastes.
- Sewage and other effluents generated must be discharged to local sanitary sewers managed by the Water and Sewerage Corporation (WSC).

Excavated Material

The EPC Contractor will make sure that excavated material is managed accordingly, as per the following provisions.

- Excavated topsoil will be transported to, and stockpiled in, designated topsoil storage areas.
- Prior to filling, sub-grade surfaces of depressions will be free of standing water and unsatisfactory soil materials will be removed.
- All unnecessary excavated materials will be transported and deposited outside of the site at an approved facility.
- Where excavated material is suitable to be used for fill and backfill, the material will be segregated and transported to a stockpile location at the construction site.

Hazardous Substances and Waste

The EPC Contractor will develop a Hazardous Substances Management Procedure that they and all Subcontractors will implement during all Project construction works. Under the Hazardous Substances Management Procedure, the EPC Contractor will induct their workforce to be made aware of hazardous substances, with reference to the applicable Safety Data Sheets (SDS). They will also attend mandatory safety training in the correct way to use and handle the hazardous substances. Training must be adjusted to be compliant with the Bahamian laws and any other relevant regulations prescribed by the competent authorities. For the handling of hazardous materials and waste:

- Workers will be provided with the appropriate Personal Protective Equipment (PPE) for the handling and use of hazardous substances.
- Emergency facilities, first aid points, clinics, eye wash fountains, emergency showers will be identified/provided where required.

- Other facilities that will be available include fire extinguishers, first aid, communication equipment, emergency doors and alarms.
- Smoking will be restricted to designated areas and all flammable liquids will be kept away from hot work areas.
- Oil, fuel and lubricants storage and dispensing stations will be restricted to established locations. Dispensing area should be located on an impervious surface and under shelter where possible.
- Oily and/or hazardous waste will be separately collected and disposed of by an appropriately licensed operator.
- Storage areas will be identified and unauthorized entry will be controlled by use of barriers warning signs and close supervision. All hazardous substances will be stored away from construction activities under covered stores. 'No Smoking' signs will be placed at these locations and all storage areas shall have minimum one dry powder type fire extinguisher.
- Hazardous and toxic wastes stored on site will be minimized by increasing the frequency of pick-ups where necessary. The producer of hazardous waste may store hazardous and toxic waste on-site for a maximum of 90 days. This period may be extended if the amount that is produced is less than 50 kg/day.
- Adequate ventilation will be provided where volatile wastes are stored.
- Secondary containment should be included wherever liquid wastes and hazardous substance are stored. The available volume of secondary containment should be at least 110% of the largest storage container, or 25% of the total storage capacity (whichever is greater), in that specific location.
- Triple rinsing must be undertaken before empty chemical containers can be treated as non-hazardous solid wastes.
- Hazardous waste will be directed to the approved contractors for proper disposal.
- Wherever possible, less hazardous substances will be obtained as substitutes.

Contractual clauses that describe the requirements for transportation and disposal instructions will be included so that they are handled appropriately and implement a “cradle-to-grave” approach where documentation for accountability is maintained from removal all the way to final disposal (noting quantities, types of materials, and names of people and companies handling the material).

Spill Management

The EPC Contractor will develop an Emergency Response Plan that they and all Subcontractors will implement during all Project construction works. This Plan must be approved by the PEU. General mitigation measures include:

- Vehicles will not be fueled on-site.
- All vehicle maintenance should be done in garages with appropriate measures to capture oil.
- In the event of a spill during construction, spill containment and clean up equipment will be located onsite. This will include equipment for:
 - Containing and cleaning any spill such as a shovel, broom, drain covers, sandbags, booms and absorbent material. All spills will be handled with compatible materials.
 - Storing and disposing of spilled material such as safe containers, bags, and drums.
 - Protecting the safety of staff through PPE.

Any spills will be contained and cleaned up immediately and disposed of at an approved facility. Soil contaminated with hazardous substance should be excavated, disposed of as a hazardous waste and replaced with clean fill to minimize (or prevent) groundwater contamination with treatment of any stormwater runoff or process water prior to disposal.

Incidents will be recorded and reported following the accident reporting system. This includes the preparation of an Accident/Incident Report.

6.3.7.2 Operation

The O&M Contractor shall adopt the EPC Contractors Waste Management Procedure and the Hazardous Substances Management Procedure and shall update them to ensure they are relevant for the ongoing operations and maintenance of the Facilities.

6.3.7.3 Decommissioning

The same procedures for typical construction waste will apply during decommissioning, except for the disposal of the PV Solar panels. For the removal of the solar panels, the following activities shall be performed:

- The mechanical and other elements in disuse will be removed, they will be transferred for reuse, recycling or they will be disposed of in accordance with current regulations in an authorized place.
- Once the useful life of the solar panels is over, they will be returned to the manufacturer or to a third party for recycling or final disposal.

6.3.8 Documentation and Monitoring

Monitoring and “cradle-to-grave” documentation of the generation, transportation, and disposal of waste materials is essential to projects. Measures and standards must be implemented to ensure compliance and to detect non-conformities with said standards. When a nonconformity is detected, a formal investigation will be conducted to determine its origin and establish the necessary corrective actions to comply with the standards.

6.3.8.1 Contractor Monitoring Responsibilities

In general, Contractors will carry out daily inspections, audits, monitoring and sampling activities (if necessary) in all areas associated with the generation and reception of waste. As part of the Waste Management Procedure a monitoring plan will be developed to inspect waste collection skips, to check wastes are being separated correctly and hazardous wastes are not being included with non-hazardous. Additionally, contractors will keep logs of waste volumes leaving the site with contractors and information on waste’s final destination. Checklists will be prepared for use during the inspections, which will be documented for reporting and monitoring purposes.

Inspection lists will include:

- Any spill, leak, absence of identification markings, containment problems and any other factor that may require corrective actions. The inspections should include a check of the waste skips and bins condition to be sure waste is being held securely and not able to impact the environment through leakage or being blown away. Regular inspections will check that wastes are being separated and deposited in the correct bins for recycling and disposal.
- Records and documentation of any corrective and follow-up action on issues identified.

- All bund enclosures will be regularly inspected for water and sheens prior to the collected water being discharged.
- Monitoring of any treated effluent shall be performed on a monthly basis (if applicable).

Additionally, inspections of all buildings related to the facilities will be carried out in order to establish their current conditions and maintenance, cleanliness and order, the contractor's performance, the classification process, and the assessment of additional processing areas. Housekeeping procedures should be provided in the Occupational Health and Safety Plan.

Any environmental incident involving wastes generated on site will be documented via an incident report. Corrective actions will include:

- Investigate cause of inappropriate waste disposal.
- Review cause of issue and develop response, such as variation to bin size, service schedule or waste separation awareness.
- Implement controls.

6.3.8.2 PEU's Monitoring Responsibilities

The PEU shall review and approve the EPC Contractor's Waste Management Procedure and the Hazardous Substances Management Procedure.

The PEU shall continuously audit the EPC Contractors adherence to their Procedures and shall upon finding any non-compliance, provide an immediate written notice to the EPC Contractor requiring them to correct the issue within a defined time period. The PEU shall monitor that the EPC Contractor does in fact address all such matters; if the PEU finds the EPC Contractor fails to address the matters within the time period, the PEU shall advise the Engineer to the EPC Contract, whom shall consider the issuance of a "stop work" notice.

Upon decommissioning, the PEU shall review the Waste Management Plans prepared by the decommissioning contractor to ensure all waste is handled accordingly (including the handling and disposal of solar panels).

6.3.9 Training

Before the start of the construction works for each project, all project personnel must have received specific training for their tasks, as well as participated in various induction training sessions. Employees and contractors will be provided detailed information about the importance of proper waste management, including its classification.

6.3.10 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 6-7: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
Soil and Water Resources - Accidental release of hazardous materials into the environment during transportation and/or storage.	Hazardous materials all appropriately disposed	100%	Construction and Operation	Monthly Inspections, Documentation verification.

Inappropriate disposal of hazardous materials.				
Soil and Water Resources	Waste materials appropriately disposed at landfill	100%	Construction and Operation	Monthly Inspections, Documentation verification.
Soil and Water Resources	Recycling of all recyclable construction waste	100%	Construction and Operation	Monthly Inspections, Documentation verification.
Soil and Water Resources	Waste Records maintained on site	100%	Construction and Operation	Monthly Inspections, Documentation verification.
Soil and Water Resources	Employees must have the appropriate training	100%	Construction and Operation	Documentation verification. Construction: Induction training, Operation: Yearly
Soil and Water Resources	% Waste reduction (all types)	Any % reduction	Operation	Documentation, monthly calculations
Soil and Water Resources	Increase in % recycled waste	Any % increase	Operation	Documentation, monthly calculations
Soil and Water Resources	100% Compliance with waste storage areas inspections	100%	Construction and Operation	Monthly Inspections
Soil and Water Resources	100% Compliance with local applicable permits and authorizations	100%	Construction and Operation	Documentation verification

Source: ERM, 2021.

6.4 Water Management Plan

The Project Executing Unit (PEU) is committed to ensuring the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

To promote the Project's alignment to best international practices, the PEU acknowledges that water management measures are an essential part of any project. This Water Management Plan details the steps to follow for the identification and the appropriate management of potential impacts to the water resources in the Projects AOI, including the necessary requirement for the water supply and wastewater discharged during activities associated with the Project.

6.4.1 Objective

The objective of this plan is to comply with all relevant host-country environmental regulations, identify project risks on water resources and provide appropriate mitigation. In general, the objectives of this plan include:

- Protect surface and groundwater quantity and quality for local users and the environment
- Define management procedures for all water-related functions including roles and responsibilities and training requirements;
- Comply with applicable regulatory requirements and recommended international guidelines (i.e., WHO, IFC, NOAA);
- Align with international best practices; and
- Define and implement monitoring and reporting procedures

In addition, identify project activities that require water consumption and minimize and monitor water usage, document the water sources, which must be authorized by local entities; and monitor wastewater discharge for compliance with any limits set by the Water and Sewerage Corporation (WSC).

Stormwater that accumulates in secondary containment areas will be discharged in a way that does not lead to negative impacts and in accordance with the Erosion and Sediment Control Plan.

6.4.2 Scope of Application

This procedure will apply during the Project's life cycle (construction, operations and decommissioning). It is the PEU's responsibility to ensure that Employees, Contractors and Subcontractors are evaluated according to their Environmental and Social Management Plan (ESMP) policies and procedures, which are aligned to international best practices.

The Water Management Plan includes measures related to the management of water and wastewater related to Project activities. This plan shall be distributed to all contractors / subcontractors, and it shall be included in all contractual documentation and used as a basis for all specific Water Management Plans to be prepared by all engaged parties. Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific Environmental and Social Management Procedures (ESMP) will be applied on the ground. The PEU will review and approve this document before any implementation.

6.4.3 Roles and Responsibilities

In order to properly implement the Water Management Plan, typical roles and responsibilities are as follows:

Table 6-8: Roles and Responsibilities

Role	Responsibilities
PEU	<ul style="list-style-type: none"> ■ Be familiarized, review and approve the Water Management Plan.

	<ul style="list-style-type: none"> ■ Ensure the availability of resources necessary for the implementation of the Water Management Plan
PEU Project Manager	<ul style="list-style-type: none"> ■ Accountable for ensuring the right resources are available to manage water use and wastewater within the plant and deliver on procedure objectives. ■ Responsible for approving corrective actions to address issues associated with water use and management with a focus on reducing consumptive use, and wastewater discharge. ■ Responsible for ensuring that water use and management and wastewater discharge are compliant with the applicable regulatory requirements and IFC standards. ■ Responsible for appointing a competent person (Engineer or equivalent) to monitor and manage water use within the plant. ■ Responsible for working with Engineers to agree follow up action to address water use and any water leakage issues identified by the Engineer. ■ Responsible for identifying water minimization opportunities such as equipment changes. ■ Responsible for identifying opportunities for reducing the pollution loading on wastewater discharges.
PEU Environmental Coordinator or H&S Manager	<ul style="list-style-type: none"> ■ Responsible for regular water management and usage monitoring, including analysing the data to identify trends in water use and reporting results to the Plant Manager. ■ Responsible for recommending, submitting to, and coordinating with the Plant Manager any identified changes/upgrades in response to any issues identified by the water usage survey program. ■ Responsible for identifying and responding to increased water use and water leakage, working with the Plant Manager. ■ Responsible for reviewing changes to the equipment that might require change management procedures and investigation. ■ Responsible for engaging suitably competent persons and contractors to undertake work to rectifying any leaks or other water and wastewater associated faults or maintenance.
Contractor Company	<ul style="list-style-type: none"> ■ Develop a project-specific Water Management Procedure aligned with this Water Management Plan.
PEU Employees, Contractors and Subcontractors	<ul style="list-style-type: none"> ■ Understand and carry out the activities set out in this Water Management Plan.

Source: ERM, 2021.

6.4.4 Activities

The construction of the Project would require water for construction activities (for example cleaning and mixing concrete), and for the portable worker restrooms and worker consumption. During operation, clean, low mineral content water is necessary for cleaning modules. Water could also be required for the administration and security building(s).

The wastewater generated on-site will be sanitary sewage resulting from the portable restroom facilities during construction and from module cleaning and restrooms and kitchens in the administration and security building(s) during operation.

6.4.4.1 Water

Construction

During construction activities, potable water for contractor will most likely be trucked in to the Site. No maintenance activities shall be performed on site. Vehicle and equipment washing on-site will be prohibited. In addition, the contractor must:

- Properly store and use of fuel and hazard materials so that they do not come into contact with water;
- Control soil erosion in construction areas (by use of hay bales and silt fences);

- Monitor and periodically remove accumulated silt from any sediment control ponds for proper disposal (landfill);
- Construct diversion drains and bunds to divert clean runoff away from construction areas and prevent contaminated water entering local water sources;
- Minimize disturbance of the natural topography and catchment characteristics by limiting large scale earthworks, vegetation removal and soil compaction where possible;
- Construct adequate storm water diversion structures to route runoff around affected areas;
- Rehabilitate the affected areas as close as possible to the natural condition during the decommissioning phase; and
- Ensure sediment traps are in place and maintained regularly;
- Dust suppression operations are recommended;
- Large areas should not be exposed for long periods of time and should be rehabilitated as soon as possible by establishing adequate vegetation to reduce increased sedimentation;
- If possible then the construction and decommissioning phases should be scheduled to take place during the dry season;
- Pluvial water on the surface shall be discharged in more than one point, to reduce the concentration of runoff at the surface; and
- Road traffic on exposed areas or off the designated roads shall be limited.

Operation

Water is available from the Municipality from the WSC. However, water resources may be under strain, compromised or not readily available within the Abaco Island; the Project could involve the use of a water storage tank to ensure a constant supply source. In general, solar power plants use a moderate amount of water, although the quantity of water required varies according to available cleaning technologies and the local climate, approximately 1.6 liters per m² of PV modules may be required (IFC 2011).

Measurement of Water Intake

A water meter will be installed at the intake from the main prior to the water entering the facility. This water meter will measure and record the inlet water flow rate and calculate the total cumulative water flow/volumes. The measurement will be continuous and data will be recorded on a continuous basis.

Water Use Monitoring

The water usage for the plant as a whole will be calculated at least monthly whether abstracted from the local water main or from the on-site water storage tank.

Consumption values will be compared to design calculations as well as previously recorded consumption values for those same operating conditions and the source(s) of any net loss/gain identified. Changes in consumption are accounted for to allow opportunities to identify leaks as well as to reduce consumptive use.

Recording of Leaks/Opportunities to Reduce Consumptive Use

By the implementation of a regular water monitoring program as well as facility inspections by the plant operators as part of relevant operational and maintenance procedures, significant leaks are identified and recorded, including their location, duration and approximate volumes of water lost. Corrective actions/nature of repairs undertaken are also recorded by the plant operators. Opportunities for reduction in consumptive water use are identified by the PEU where possible and as part of annual environmental improvement initiatives.

6.4.4.2 Wastewater

Construction

Sanitary Sewage

Portable toilets will be installed and used by workers to prevent contamination and releases of untreated wastewater during construction of the Project..

Industrial Discharges

Project activities do not anticipate large quantities of wastewater generated during Project construction. Any industrial wastewater generated prior to the installation of connections to the sanitary sewage shall be collected and discharged appropriately. Untreated industrial discharges are strictly prohibited.

Prohibitions

Any illicit discharges of industrial wastewater or chemicals/hazardous materials into the portable sanitary facilities is strictly prohibited. Equipment and vehicle washing is not allowed to be performed on-site. Any equipment brought to the Project Site or vehicle travelling to the site would be washed at their storage facility. Operation

Sanitary Sewage System

Although the final designs are not yet known, the site is located in an area serviced by utilities belonging to the municipality and managed by the WSC. Domestic wastewater from amenities at the power plant site will need be collected and discharged to the sanitary sewers. Discharge to the municipal sanitary sewer system must meet the pretreatment and monitoring requirements of the sewer treatment system into which it discharges as specified by WSC. An application needs to be filled out with WSC in order to connect and discharge to their system.

Industrial Wastewater

Industrial wastewater discharges could result from the cleaning of the solar panels. Although specific information about the cleaning technology to be utilized by the project are currently unknown (manual cleaning versus automated system), depending on the cleaning methodology selected, wastewater from this activity may have to be treated prior to discharge (due to high values of suspended solids or chemical used for cleaning). If it is determined that a cleaning product is necessary, an approved, low-toxicity, biodegradable product that enhances the cleaning effectiveness of deionized or plain water should be selected.

Prohibitions

Any illicit discharges of industrial wastewater or chemicals/hazardous materials into the sanitary sewer system is strictly prohibited.

Maintenance

The facility's sewer system will have to be operated, cleaned and maintained by a licensed contractor based on the schedule recommended by the manufacturer.

6.4.4.3 Stormwater

Construction

Stormwater will be diverted from the construction areas in accordance with the Erosion and Sediment Control Plan in order to avoid stormwater coming in contact with exposed soils or construction equipment. Stormwater collected in secondary containment areas (if required, for example for fuel and chemical tanks) will be checked for oil sheens and any signs of contamination before being discharged to the surrounding surface to allow for infiltration into the

ground. The laying of overland flow diversion drains and preload fill should be completed preferable during the dry season and prior to the power plant construction earthworks commencing.

Drainage water collection and oil traps (as needed) should be installed as a priority to prevent discharge to the adjacent areas. If there are signs of contamination, the stormwater will be pumped out of the secondary containment areas and collected, transported, treated or sent to disposal in compliance with the federal, state or municipal regulations.

Operation

If there are signs of contamination, the stormwater will be pumped out of the secondary containment areas and collected, transported, treated or sent to disposal in compliance with the federal, state or municipal regulations.

6.4.5 Documentation and Monitoring

Implementation of this procedure is reviewed through internal and external (when applicable and available) audit results and other inspection processes.

6.4.5.1 Construction

There will be no discharges of untreated water. There will be periodic site inspections and audit reports which shall be kept on-file. In the event there is a discharge of untreated water, an incident report will be filled.

The EPC Contractor monitoring activities during construction will include:

- Regularly inspecting all bund enclosures for water and sheens prior to the collected water being discharged.
- Monitoring of treated effluent from the Workers' packaged sewage treatment plant on a monthly basis (if applicable).
- As indicated above, measurements of water intakes will be performed and documents will be maintained on-site. Waste logs will also be maintained on-site.

6.4.5.2 Operation

Monthly reports on water usage would be maintained on-site to monitor water usage. Maintenance and inspection logs will be maintained on-site. Any permits relating to water supply will be maintained on site indefinitely.

Any wastewater resulting from industrial activities onsite will have to be treated prior to discharge or disposed of off-site.

6.4.6 Training

All activities will consider the reduction and adequate management of water consumption. All personnel will be trained to on:

- General awareness and procedures concerning water management and conservation.
- Emergency procedures in case of water leaks.
- The appropriate disposal methods of hazardous materials or industrial wastewater to ensure they are not disposed of in the facility's sanitary sewer system.

6.4.7 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 6-9: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool
Water Resources	% Water consumption	Any % reduction	Construction and Operation	Record quantity of water consumed and timing of consumption
Water Resources	% Water savings	Any % savings	Construction and Operation	Record quantity of water consumed and timing of consumption
Soil and Water Resources	Wastewater monitoring reports must be under the MPLs	100%	Construction and Operation	Monthly wastewater quality Monitoring (if applicable)
Soil and Water Resources	Employees must have the appropriate training	100%	Construction and Operation	

Source: ERM, 2021.

6.5 Transportation Plan

The Project Executing Unit (PEU) is committed to ensuring the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

This Transportation Management Plan establishes measures to minimize the effects of the Project's construction and operations on traffic, road infrastructure, and accident risk within the Area of Influence. This Plan focuses on the prevention or reduction of impacts and describes management measures, monitoring and reporting processes, Key Performance Indicators (KPIs), and responsibilities for implementation of the Plan.

6.5.1 Objectives

The objectives of this plan are to manage and reduce Project-related risks and minimize potential impacts resulting from Project-related traffic. The impact assessment for the Project identified transportation-related risks in terms of traffic congestion, safety for motorists, pedestrians and bicyclists, and degradation of road facilities, particularly during the Construction phase, and to a more limited extent during the Operations phase. This Plan presents strategies and measures to mitigate potential safety risks and transportation facility impacts for affected populations and areas.

The measures established in this plan are intended to:

- Provide a safe environment for drivers, passengers, pedestrians, workers, communities and fauna of the Area of Influence;
- Establish guidelines regarding route planning and site access;
- Identify preventive measures to avoid and minimize traffic accidents and disturbances to nearby communities;
- Minimize road infrastructure degradation; and
- Address transportation-related noise, vibration and dust.

6.5.2 Scope of Plan

This Management Plan applies to transportation of Project-related goods, services and personnel on publicly accessible roads during Project construction and operations. The geographical scope is the Project Area of Influence, which comprises two parts:

- The Area of Direct Influence, which includes the area occupied by the Project footprint (Project parcel, transmission line routes, substation);
- The Area of Indirect Influence (All), which includes other areas where the Project could generate traffic. This will depend on how equipment will be brought onto the island; whether by Ferry or Airplane and would include those routes.

6.5.3 Roles and Responsibilities

It is the PEU's responsibility to ensure that employees, contractors and subcontractors implement the Environmental and Social Management Plan (ESMP) policies and procedures, which are aligned to international requirements and best practices. Contractors will implement the practices established in this transportation management plan and will establish detailed procedures to apply the management practices on the ground. The PEU will review and approve this document before implementation.

In order to properly implement the Transportation Management Plan, the involvement of the people listed below is necessary.

Table 6-10: Roles and Responsibilities

Role	Responsibilities
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PEU	<ul style="list-style-type: none"> ■ Be familiar with, review and approve the Transportation Management Plan. ■ Ensure the availability of resources necessary for the implementation of the Transportation Management Plan.
Project Manager	<ul style="list-style-type: none"> ■ Be familiar with, review, and update as necessary the Transportation Management Plan.
ESHS Manager	<ul style="list-style-type: none"> ■ Assure the correct implementation of the Transportation Management Plan. ■ Review and approve each contractor's Project-specific Transportation Management Plan.
H&S Manager	<ul style="list-style-type: none"> ■ Ensure the generation of evidence and reports for compliance with the IFC PS and the KPIs established in this plan. ■ Verify implementation of the Transportation Management Plan.
Employees, contractors and subcontractors	<ul style="list-style-type: none"> ■ Understand and carry out the procedures and activities required by this Transportation Management Plan.

Source: ERM, 2021.

6.5.4 Activities

Traffic impacts will result from several types of Project-related activity, primarily during the construction period:

- Worker commuting. Although specific information is currently unknown for the Project, for a 2.25 MW plant, it is estimated that an average of about 20 employees will be needed during peak construction period and about 4 employees are needed during operation.
- Delivery of equipment, components, materials and supplies. Most deliveries are anticipated to come from the International Airport or by vessels. Supplemental water for a water storage tank could also be necessary for the Project. Construction equipment for a solar power plant is very typical of construction and is likely available on the Island.
- Transmission conduit installation along local roads between the new Plant and the existing substations and buildings could be necessary.

During operations, the Project will generate a very small volume of road traffic from worker commuting, deliveries, waste disposal and maintenance or repair needs.

6.5.5 Transportation Management Measures

The following sections describe measures to manage traffic, prevent degradation of road infrastructure, and mitigate safety risks related to project-generated traffic within the Area of Influence.

6.5.5.1 Key Traffic Impacts

Traffic impacts to the community will occur primarily during Project construction and include:

- Increased traffic from worker commuting and truck deliveries, resulting in potential for road congestion or delays during times of peak traffic volumes.
- Increased risk of vehicle collisions resulting in property damage, injury or mortality, including risk to pedestrians and bicyclists.
- Increased deterioration of road infrastructure.
- Dust and sediment transport from traffic leaving the Project site.
- Sensory disturbance resulting from the noise and vibration generated by vehicles.

Prior to the start of construction, the Projects must identify: (1) transportation safety risks and potential impacts; and (2) the receptors, within the Project's specific context and Area of Influence. Once these are identified, mitigation measures for each risk and impact will be proposed, implemented and monitored.

6.5.5.2 Traffic Management

The Project shall adopt and implement the following best practices to address the traffic and transport impacts described in the Impacts Section of this report.

Driver Safety Measures

The following measures address road safety risks related to driver competency, driver behavior, and vehicle operation.

- Implement driver safety programs to provide initial training and periodic reviews for all drivers in correct operation of trucks, buses or equipment. Include potential consequences of excessive speed and overloading, traffic laws, and road safety. Include training in defensive driving, use of vehicle safety systems, and appropriate precautions in adverse conditions such as fog or rain. Keep records of training for each driver.
- Provide training specific to particular travel routes, with emphasis on measures to protect pedestrians and bicyclists.
- Require drivers and operators to have appropriate licenses, insurance, and training specific to the vehicle or equipment that they will drive or operate.
- Establish maximum driving shift lengths and minimum rest times to avoid fatigue.
- Prohibit cell phone use while driving.
- Mandate compliance with all traffic signals and regulations.
- Require that all persons seated in the cabs of vehicles and bus operators use seatbelts while the vehicle is in motion. All passengers must be seated safely; riding on equipment or other non-passenger vehicles is prohibited.
- Establish random and/or for-cause drug and alcohol testing, consistent with applicable laws.
- Use vehicle speed monitoring or speed governors to ensure that vehicle operators comply with posted speed limits or (in the absence of posted limits) safe speed limits on public roads.
- Provide a Code of Conduct that drivers must sign, establishing standards and disciplinary measures for noncompliance. The Code will include the aforementioned driver safety measures.
- Provide and enforce a Journey Management Plan for truck deliveries that includes compliance with speed limits, safe driving practices, required use of escort vehicles for movements of cargo containers or other large equipment, and understanding of vehicle handling, community impact and response to spills or incidents. During operations, make continued use of Journey Management Plans for truck deliveries.

Vehicle Integrity

The following measures address road safety risks related to vehicle condition.

- Require scheduled preventative inspection and maintenance of vehicles and use of parts approved by the manufacturer, to reduce the risk of accident due to vehicle malfunction or premature failure.
- Implement mandatory training in and completion of a daily safety checklist prior to the movement of each vehicle onto the public road system, as well as a separate checklist for on-site vehicles and equipment.
- Immediately withdraw vehicles from service upon detection of defects; repair or replace vehicles as necessary.
- Keep a record of inspections, maintenance and repair for each vehicle.

Route Management

The following measures address traffic congestion and road safety risks related to route planning and management.

- Plan routes and timing of deliveries to minimize the interaction of pedestrians with delivery and construction vehicles.
- Collaborate with surrounding communities and relevant authorities to improve signage, visibility and general road safety, especially near schools or other places where there may be children.
- Organize worker bus service to reduce external traffic.
- Use traffic safety control measures, including road signs and flag personnel, to warn of and direct traffic around dangerous conditions.
- Minimize truck deliveries during morning and afternoon peak hours, as determined in accordance with traffic authorities. Use traffic control vehicles and notify public concerning details of schedule and potential impediments to travel.
- For oversized vehicles, coordinate with local authorities, use escort vehicles, and provide advance notification to community leaders and representatives concerning details of schedule and potential impediments to travel.
- Minimize truck trips on public roads through scheduling and development of efficient vehicle manifests.

Road Condition

The following measures address road condition, maintenance and repair.

- Provide traffic controls (flaggers) where conduit installation temporarily reduces road width. Clearly mark temporary detours, if needed.
- Coordinate in timely manner with local governmental authorities regarding condition and needed repairs to public roads. Notify authorities of road deterioration (cracks, potholes, damaged shoulders).
- Transport tracked vehicles on a truck rather than directly on the public road.
- Once construction is completed, coordinate with authorities and provide or contribute to repairs to roads used for deliveries, especially along the route from the airport/ferry to the Project site.

Noise, Vibration and Dust

The following measures help to address the impact on communities from noise, vibration and dust from Project-related vehicles travelling on public roads.

- As needed, wash vehicles leaving the Project site to avoid carrying dirt and dust from the site onto the public road.
- Securely cover loads on trucks to minimize spillage and dust.
- Do not overload trucks.
- Require that truck noise-controlling devices be in good operating condition.
- Avoid nighttime truck trips on roads that pass through residential areas.

Transportation safety within project site

The following measures address transportation safety within the project site.

- Implement signage and signaling on the Project site with high visibility elements to identify site access points, circulation routes, loading/unloading areas, and parking areas. Separate internal truck routes and loading/unloading areas from circulation and parking areas for workers commuting to the site.

- Also identify the following on-site features with signage or signaling:
 - Speed limits;
 - Pedestrian crossings (e.g. crosswalks, pedestrian paths);
 - Indications of direction of movement, prohibition of passage, stops;
 - Areas with prohibition on parking or stopping;
 - Emergency routes and exits;
 - Project locations (e.g. offices, other facilities, medical services, etc.); and
 - Waiting area when accessing the Project.
 - Restrict Project site access to authorized vehicles.

Communication with Community Stakeholders

The Stakeholder Engagement and Communication Plan and External Grievance Procedures will include opportunity and procedures for communication between the Project and community stakeholders. The communication must include information and opportunity for participation by the community in discussion of Project impacts related to traffic. Stakeholder communication will include the following provisions:

- Establish and enhance relationships with local stakeholders to gain understanding of risks particular to the proposed haul route from the airport/ferry to the Project site, such as locations with higher crash incidence, risk factors, pedestrian and bicycle traffic patterns, and community events that may lead to traffic congestion (i.e., holidays or special events).
- Use the Stakeholder Engagement and Communication Plan as a mechanism for initial and ongoing communication with stakeholders, such as road users and community residents, about traffic issues and anticipated routes/volumes of truck traffic.
- Use the External Grievance Procedures to allow community residents and road users to report grievances related to Project traffic.
- Provide community education programs on road safety and vehicle interactions. Increase road safety awareness for pedestrians, school children and other community members.

6.5.6 Documentation and Monitoring

Digital (including native and scanned files, as well as photography where appropriate) and written records of the Traffic Management Plan implementation will include the following records:

- Driver records:
 - Contractual requirements;
 - Registry of driver's licenses;
 - Records of driver training, testing, and adherence to Code of Conduct; and
 - Records of driver incidents or violations of policies, such as speed limits, other moving violations, drug or alcohol use, or other violations.
- Vehicle records:
 - Registry of the vehicles used, as well as evidence of their tenure payment and verification;
 - Registry of vehicles insurance policies;
 - Logbook of vehicle inspections; and
 - Maintenance and repair records.

- Traffic management records:
 - Vehicle manifests;
 - Record of travel plans for convoys and oversized loads;
 - Registry of notifications to affected communities of anticipated Project-related traffic;
 - Transport plan that identifies peak traffic periods and truck delivery schedule to identify timeframes for road transport that avoid times of peak pedestrian or road traffic volumes and nighttime travel through residential areas; and
 - Authorization of relevant authorities for occupation of public roads or for works on public roads;.
- Road condition records:
 - Records of road maintenance/repair needs reported by the Project to government authorities;
 - Pre-construction road survey and action plan, and post-construction update of road conditions; and
 - Records of any contracts or agreements regarding cost-sharing between Project and local authorities for road maintenance and repairs.
 - Stakeholder engagement records:
 - Record of communications with public authorities and community leaders;
 - Record of public education events, publications and meetings, including attendees and comments received; and
 - Record of road traffic-related grievances and resolution.
- Incident reports:
 - Records of breakdowns or collisions, including investigations and outcomes.

6.5.7 Review and Update

During Project Construction and Operation, the Project ESHS Manager will update the Traffic Management Plan when a significant change or event occurs.

6.5.8 Key Performance Indicators

The KPIs shown below will be useful to determine if the Transportation Management Plan has been effectively implemented. Based on the level of compliance with indicators, the Project can identify if changes are necessary and can consider improvement measures.

Table 6-11: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
Road Congestion	Number of complaints received through the Complaint Management Mechanism for Communities related to traffic management and road congestion.	100% grievances addressed and solved in a timely manner related to road traffic congestion	Primarily construction but continue during operations	External Grievance Mechanism database log / Quarterly
	Number of interactions with authorities and communities for	Frequent (at least monthly) interactions with communities during	Construction	Stakeholder Engagement and Communication

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
	consultation and disclosure.	construction; interactions with authorities as needed.		Plan; record of permits and authorizations from government / Quarterly
Risk of collision	Completion of analysis to identify locations along truck delivery routes with greater risk of collisions or conflict with pedestrian/bicycle travel; establish safety protocols	Analysis completed, with opportunity for community input and subsequent revision, prior to construction	Completed prior to Construction	Analysis completed by EHS Coordinator; refined through Stakeholder Engagement and Communication Plan / Once
	Number of minor accidents involving Project vehicles along the access roads (i.e., no injuries, minor property damage)	Zero incidents	Construction and operations	Accident and Incident Recording, Reporting and Investigation System / Monthly
	Number of major accidents involving Project vehicles along the access roads (i.e., personal injuries requiring medical attention, major property damage)	Zero incidents	Construction and operations	Accident and Incident Recording, Reporting and Investigation System
	Number of complaints received through the Complaint Management Mechanism for Communities related to traffic safety and driver performance.	100% grievances addressed and solved in a timely manner related to road traffic congestion	Primarily construction but continue during operations	External Grievance Mechanism database log
	Driver training	100% of workers, contractors and subcontractors have required licenses and receive driver training	Construction and operations	Driver records
	Driver compliance	100% of workers, contractors and subcontractors comply with Driver Code of Conduct	Construction and operations	Driver records
	Community education and awareness	One training for community members focused on road safety along delivery routes to the Project, at least 15 days before construction begins and repeated every three months during construction. Printed copies of information on road safety available at public buildings at all times	Construction	Stakeholder Engagement and Communication Plan
Road wear and deterioration	Survey of road conditions along primary delivery routes and along roads where conduits will be installed	Visual (windshield) survey with documentation (photographs) completed prior to construction; at least once every three months during	Construction	Survey completed by PEU and submitted to appropriate governmental authority

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
		construction; upon completion of construction		
	Number of vehicle trips, including truck trips.	Record of Project-related truck trips during construction	Construction	Community Relations Coordinator
Noise, vibration, dust	Vehicle inspection, maintenance and repair lots	Maintenance of vehicle noise-reducing devices as needed.	Construction	Vehicle logs
	Vehicle manifests	All vehicles loaded and tarped in compliance with capacity	Construction	Vehicle logs
	Number of complaints received through the Complaint Management Mechanism for Communities related to noise, vibration or dust.	100% grievances addressed and solved in a timely manner related to road traffic congestion	Primarily construction but continue during operations	External Grievance Mechanism database log

Source: ERM, 2021.

6.6 Natural Disaster Risk and Emergency Management Plan

Due to its geographic location, the Project is highly exposed to meteorological threats such as hurricanes. This plan presents guidelines and procedures to follow in the event of a natural disaster. The Project Executing Unit (PEU) is committed to ensuring the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

The island of Abaco is located within the Atlantic Tropical Cyclone basin. This basin includes much of the North Atlantic, Caribbean Sea and the Gulf of Mexico. On average, six to eight tropical storms per year form within this basin. The formation of these storms, and possible intensification into mature hurricanes, takes place over warm tropical and subtropical waters. Eventual dissipation or modification of these storms occurs on average seven to eight days later, typically occurs over the colder waters of the North Atlantic, or when the storms move over land and away from the sustaining marine environment. The hurricane season extends approximately from June to November (USACE, 2004).

According to ThinkHazard.org, a web-based tool developed by the Global Facility for Disaster Relocation and Recovery (GFDRR) in partnership with the World Bank Group and other institutions, and with data contributed by numerous organizations around the world, Abaco's risk of hurricane hazards is classified as High (ThinkHazard, 2021). This means that there is more than a 20 percent chance of potentially damaging wind speeds for projects developed in this area in the next 10 years. Based on this information, the impact of hurricanes must be considered in all phases of the Project, in particular during design and construction methods.

Disaster response planning involves determining, increasing, and organizing resources and capacities to achieve a degree of preparedness that enables a timely and effective response to a potential disaster. When a disaster strikes, plans must be monitored, evaluated and adapted to a given situation.

6.6.1 Objectives

The main objectives of this Plan are:

- Minimize or control damage from natural disasters to the project facilities;
- Establish procedures and response actions to respond to a natural disaster in a timely and efficient manner with the necessary resources;
- Prevent damage to human lives and the property of the company and third parties; and
- Maintain permanent control of equipment and facilities, through the performance of periodic inspections.

6.6.2 Roles and Responsibilities

In order to properly implement this Plan, the involvement of the people listed below is required.

Table 6-12: Roles and Responsibilities

Role	Responsibilities
PEU	<ul style="list-style-type: none"> ■ Be familiarized, review and approve the Natural Disasters Management Plan. ■ Ensure the availability of resources necessary for the implementation of the Natural Disasters Management Plan.
Head of ESHS	<ul style="list-style-type: none"> ■ Ensure the correct implementation of the Natural Disasters Management Plan.
ESHS Manager	<ul style="list-style-type: none"> ■ Assure the correct implementation of the Natural Disasters Management Plan ■ Update the Natural Disasters Management Plan. ■ Review and approve the contractor project-specific Natural Disasters Management Plans.

Role	Responsibilities
Environmental Coordinator or H&S Manager	<ul style="list-style-type: none"> ■ Ensure the generation of evidence and reports for compliance with the IFC PS as well as maintaining KPIs. In addition, ensure the internal coordination to follow the Natural Disasters Management Plan.
EPC Contractor	<ul style="list-style-type: none"> ■ Develop a project-specific Natural Disasters Management Plan.
PEU Employees, Contractors and Subcontractors	<ul style="list-style-type: none"> ■ Understand and carry out the activities set out in the Natural Disasters Management Plan
Community Relations Officer	<ul style="list-style-type: none"> ■ Inform stakeholders of the Natural Disasters Management Plan

Source: ERM, 2021.

6.6.3 General

In general, all project personnel are liable for the application of this plan and working in compliance to the plan. The PEU will select Emergency Response team members who are familiar with the occupational health safety and emergency issues to oversee the implementation of this Plan.

6.6.3.1 Construction Phase

During Construction, the responsibility for risk management is the responsibility of the Contractor who will select a Construction Site Manager/Emergency Manager (or shared by the different contractors and subcontractors involved with the Project at the moment). However, the PEU is responsible for guaranteeing that the actions of responsibility in the management of risks and contingencies are carried out. Therefore, it is required that contractors and/or subcontractors follow the procedures of this plan. The PEU is also responsible for communication and coordination with local authorities in response to a natural disaster.

The Construction Site Manager:

- Makes decision on:
 - Whether to call the local emergency organization (fire, ambulance, police, etc.);
 - if the site should be evacuated or if personnel can continue working;
- Organizes requisite trainings for personnel;
- Leads the Emergency Brigade/Response Team until the local emergency organization arrives;
- Makes arrangements safe evacuations and ensures all personnel gather at the assembly points (contacts the appropriate authorities if anyone is missing).
- Gathers information on the number of injuries and the scale of the damage and harm on equipment and assets;
- Ensures that the required information is conveyed to the Project owners and any subcontractors.

The Contractor shall ensure compliance with the standards of their construction works, and for each job and/or discipline, as mandatory to comply with the contract clause. Such obligations include:

- Provide workers with the resources and the personal protective equipment suitable for emergency response and for the activities to be carried out;
- Create an emergency brigade, which will receive specialized training in preparation and response to the different types of natural disasters to which they may be exposed depending on the location of the Project;
- Training for Project personnel regarding plans and procedures in an emergency situation caused by a natural disaster; and
- Coordination of drills.

6.6.3.2 Operation Phase

During the operation stage, the O&M Contractor is responsible for leading natural disaster risk management. New plans and specific procedures must be prepared, which are in accordance with the processes and vulnerabilities specific to each operation. The Site Manager has the same responsibilities as those described above during construction activities.

The operation must also have a properly trained Emergency Brigade, the personnel must receive periodic training, and drills will be carried out for each type of natural disaster to which the Project is exposed.

The Emergency Brigade/Response Team shall:

- Be trained in the appropriate use of fire extinguishing equipment and intervene as per the instruction Site Manager if the fire is not severe;
- Maintains up-to-date information for local emergency organizations (fire brigade, ambulance, police) during non-emergency times.
- Helps the Site Manager:
- Keep the area safe until the local emergency organizations arrive;
- Coordinate personnel at the assembly point, and if required, safe evacuation;
- Provides first aid to injured persons to the extent possible until medical personnel or ambulance arrives.

Security Personnel shall:

- Control the Site gates and only allows the entrance of the local emergency vehicles;
- Control traffic in and out of the site during emergencies.

6.6.4 Drills and Training

All personnel on site will receive training prior to starting work at the site and refresher training will be conducted at least yearly after that. After organizing the site's Emergency Brigade, they will be trained on the content of this Plan and their responsibilities and duties in case of each type of emergency will be explained. Emergency brigade titles will be given to the emergency response team for them to place on their helmets.

In addition to the training, emergency response drills will also be conducted at least yearly. The drills will be conducted without notice and the response times will be monitored and recorded.

The Emergency Response Plans will be reviewed and revised if improvements are needed after the drills. After the drill, trainings will be organized to resolve any faults encountered during the drills.

6.6.5 Procedures during a Natural Disaster Emergency

6.6.5.1 Informing the Emergency

The Site Manager must inform all site personnel and the PEU of any anticipated emergency in order to prepare the site or evacuate accordingly.

6.6.5.2 General Actions

In the event that a hurricane is or another natural disaster is anticipated, the Site Manager will decide on the appropriate course of action in collaboration with local authorities. In general, the following steps should be taken, depending on the risk to the Project site:

Prior to the Emergency

- Administer training exercises and drills to ensure workers are aware of and prepared in the event of each type of emergency and maintain records onsite documenting the training exercises and drills conducted.
- Prepare an action plan for each level of alert commensurate with the risk conditions for each level. This should include an evacuation plan and rescue procedures, which must take into account steps to safely abandon the operation (for example, de-energization, locking and or stopping of systems, and protection of equipment) and conditions under which the Project can return to normal operations and the procedures to document those conditions.
- Take measures to physically secure (for example anchoring to a wall) essential equipment or equipment that can cause fires or spills.
- Be prepared either to shelter in place or to evacuate. Review the evacuation plans and make sure that everyone understands them. If you haven't already done so, put together an emergency supply kit. Supplies should include the following:
 - Flashlight and extra batteries
 - First aid kit and manual
 - Emergency food and water
 - Sturdy shoes
 - Battery-powered radio

During the Emergency

- Take appropriate measures to monitor the threat: through periodic monitoring of information published by the entity responsible for monitoring weather activities on the island, including information on the establishment of a state of alert;
- Sound any alarms, including both visual and auditory alerts, to notify personnel and the public of emergency conditions;
- In case evacuation is required, follow authorities' instructions if they tell you to leave the area. Though it may seem safe to stay and wait out a hurricane, doing so could be very dangerous.

Preparing to evacuate

- Tune in the radio or television for updates;
 - Listen for disaster sirens and warning signals;
 - Review your emergency plan and gather your emergency supplies;
 - Prepare an emergency kit for your vehicle with food, flares, booster cables, maps, tools, a first aid kit, a fire extinguisher, sleeping bags, a flashlight, batteries, etc.;
 - Fill your vehicle's gas tank;
 - If no vehicle is available, make arrangements for transportation, or follow authorities' instructions on where to obtain transportation;
 - Place vehicles under cover, if at all possible;
 - Fill your clean water containers;
 - Fill sinks and bathtubs with water as an extra supply for washing.
- As you evacuate

- Take only essential items with you;
- If you have time, turn off the gas, electricity, and water.
- Disconnect appliances to reduce the likelihood of electrical shock when power is restored;
- Make sure your automobile's emergency kit is ready.
- Follow designated evacuation routes—others may be blocked—and expect heavy traffic and delays.
- Follow the Communication Procedures in the Emergency Response Plan for notifying all appropriate personnel;
- If you are told to take shelter where you are
 - Keep listening to your radio or television until you are told all is safe or you are told to evacuate. Local authorities may evacuate specific areas at greatest risk in your community.
 - Close and lock all windows and outside doors.
 - Organize your emergency supplies and make sure all personnel know where the supplies are.
 - Make sure the radio is working.
 - Go to an interior room without windows that is above ground level.
 - It is ideal to have a hard-wired (non-portable) telephone in the room you select. Call the emergency contact and have the phone available if you need to report a life-threatening condition. Remember that telephone equipment may be overwhelmed or damaged during an emergency.

After the Emergency

- Technical staff must report to the main office/go to areas where urgent technical support is required;
- Look for traces of short circuits before reconnecting;
- DO NOT light matches (or smoke) before making sure there are no leaks or spills of flammable material;
- Avoid approaching broken electrical cables;
- Act in accordance with the established procedures in case of fire and/or spill, depending on the situation;
- Resume operations as soon as it is certain that the operational conditions are safe;
- Proceed to clean any debris that obstruct operation;
- Clean and remediate any chemical spill;
- Repair fencing and barricades to secure the site and prevent unauthorized access;
- Repair or replace damaged water, electric or gas lines;
- After the emergency is over, damage to equipment and facilities must be evaluated, as well as preparing the reports required by government authorities, as recommended and within the established deadlines;
- In the event of an emergency that exceeds the design capacities of the project facilities and significant structural damage occurs, the operator must suspend operations, and follow the procedure defined for those cases; and
- Carry out an inspection and evaluation of the components of the facilities that have been affected. Inventory damaged construction, materials and equipment, and plan for replacement. Document with pictures for insurance purposes. Maintenance personnel will be required to report to the Site Manager any damage and the level of risk involved in entering damaged facilities.
- Once engineering and maintenance has given approval that entrance to a facility is secure, work activities may resume.
- Turn on water, power, and gas at source only once it is safe to do so.

6.6.6 Evaluating and Reporting

Evaluating an emergency response provides an opportunity to determine whether the concept of management systems, procedures, and plan processes effectively address the problems and needs of the operation.

At the end of the emergency, damage to personnel or facilities must be evaluated and a report must be prepared to the corresponding authorities. Likewise, the Emergency Brigade shall analyze the performance of the evacuation of personnel and coordinators.

The Emergency Brigade shall use previously established indicators and criteria to evaluate the different aspects of the plan in order to draw conclusions and lessons learned, and determine the necessary actions for improvement so that future emergency responses address problem areas.

6.6.7 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 6-13: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool/Frequency
Health and Safety	Employees must be in compliance with the training program (yearly)	100%	Construction and Operation	Training Records / Yearly
Health and Safety	Employees must be in compliance with the drills program and been instructed on incorrect actions and/or deficiencies (yearly).	100%	Construction and Operation	Training Records / Yearly
Health and Safety	Percentage of workers who have training on safety and emergency response.	100%	Construction and Operation	Training Records / Yearly

Source: ERM, 2021

6.7 Emergency Response Plan

This Emergency Responses Plan details actions to be taken for an effective response in the event of the emergencies that could potentially be experienced by the Project, including physical accidents to personnel fires, and sabotage. This Plan defines the roles and responsibilities during an emergency response.

This Plan is a live document that will remain active during the life of the project, updates will be made to all aspects of the plan including training activities and periodic drills for personnel, as well as continuously carrying out actions to review and update physical and operational data, equipment and products.

This Emergency Response Plan is to be implemented together with the Natural Disaster Risk Management Plan.

6.7.1 Objectives

The main objectives of this Emergency Response Plan are:

- Prevent or control operational emergencies or possible industrial accidents that may arise during all phases of the Project.
- Establish procedures and plans to respond in a timely and efficient manner, and with the necessary resources, to fires, accidents, attacks and any other emergency that may arise.
- Prevent the consequences of a major event (fire, spills of dangerous products) from affecting human lives and property.
- Manage and maintain equipment and installations through periodic inspections.
- Provide a safe working environment, to determine the risks that could jeopardize the project and the personnel beforehand and to take all measures and be prepared for any possible emergency is adopted.

The basic principle of this plan is to foresee and carry out preventive actions by performing risk assessments with the intention of resolving emergencies at the source before they happen, to be prepared by performing drills and trainings, and by knowing that an emergency could happen at any given moment.

6.7.2 Roles and Responsibilities

All personnel are responsible for knowing how to apply this plan and working in compliance with all of the Project Plans. All site employees will know where the assembly points are and follow given. They will also keep access roads to the working areas open and unobstructed in case of emergencies. All personnel will be familiar with the occupational health safety and emergency response measures in the ESMP for this Project.

Emergency Response Team members will be selected among the personnel and roles will be assigned by their superiors prior to initiating any work at the Project site. The Emergency Response Team will be comprised of the roles and responsibilities described below.

Table 6-14: Roles and Responsibilities

Role	Responsibilities
PEU	<ul style="list-style-type: none"> ■ Be familiarized, review and approve the Emergency Response Plan. ■ Ensure the availability of resources necessary for the implementation of the Natural Disasters Management Plan.
Environmental Coordinator or H&S Manager	<ul style="list-style-type: none"> ■ Ensure the generation of evidence and reports for compliance with the IFC PS as well as maintaining KPIs. In addition, ensure the internal coordination to follow the Emergency Response Plan.

Role	Responsibilities
EPC Contractor	<ul style="list-style-type: none"> ■ Develop a project-specific Emergency Response Plan.
Construction Site Manager (Construction) and Plant Manager (Operation)	<ul style="list-style-type: none"> ■ Will be the Emergency Manager Responsible for: ■ Appropriate implementation of this plan. ■ Providing supplies and resources necessary for emergency response. ■ Characterizing the level of the Emergency and therefore deciding who to call (fire brigade, ambulance, police, civil defense, etc.) ■ Leading the Emergency Response Team until the local emergency organizations (fire brigade, ambulance, police, civil defense, etc.) arrives at the scene and takes over. ■ Deciding if evacuations are needed. ■ Gathering information on the number of injuries and the scale of the damage and harm on the equipment and assets. ■ Ensuring that the required information is conveyed to Subcontractors. ■ Reviewing and approving corrective-preventive measures in order to update this Plan. ■ Communicating with the PEU and the relatives/safety contacts of any affected personnel.
Deputy Emergency Manager (to be assigned by the Contractors during construction, Plant Superintendent during operation)	<ul style="list-style-type: none"> ■ Maintaining the Emergency Manager up-to-date. ■ Taking charge if the Emergency Manager is not available or absent. ■ Taking head counts and ensuring all personnel are accounted for and gather at assembly point. ■ Verifying the safety of the site affected by the emergency. ■ Carrying out the review of the emergency response once it has been completed and provides suggestions for corrective-preventive measures in order to update this Plan. ■ Organizing requisite trainings for all personnel and maintaining documentation. ■ Making arrangements for evacuations. ■ Maintaining site personnel and contractors informed. ■ Shuts power, controls lighting, sounds fire alarms, if necessary, during the emergency.
The Emergency Response Team (assigned by Contractor during construction, all site employees during operation)	<p>Will be trained in fire extinguishing, search-rescue-evacuation and first aid, and are responsible for:</p> <ul style="list-style-type: none"> ■ Using a fire extinguisher if the fire is not severe and it can be done safely. ■ Helping the Deputy Emergency Manager - to the possible extent - while keeping the emergency area safe until the local emergency organizations arrive at the scene.

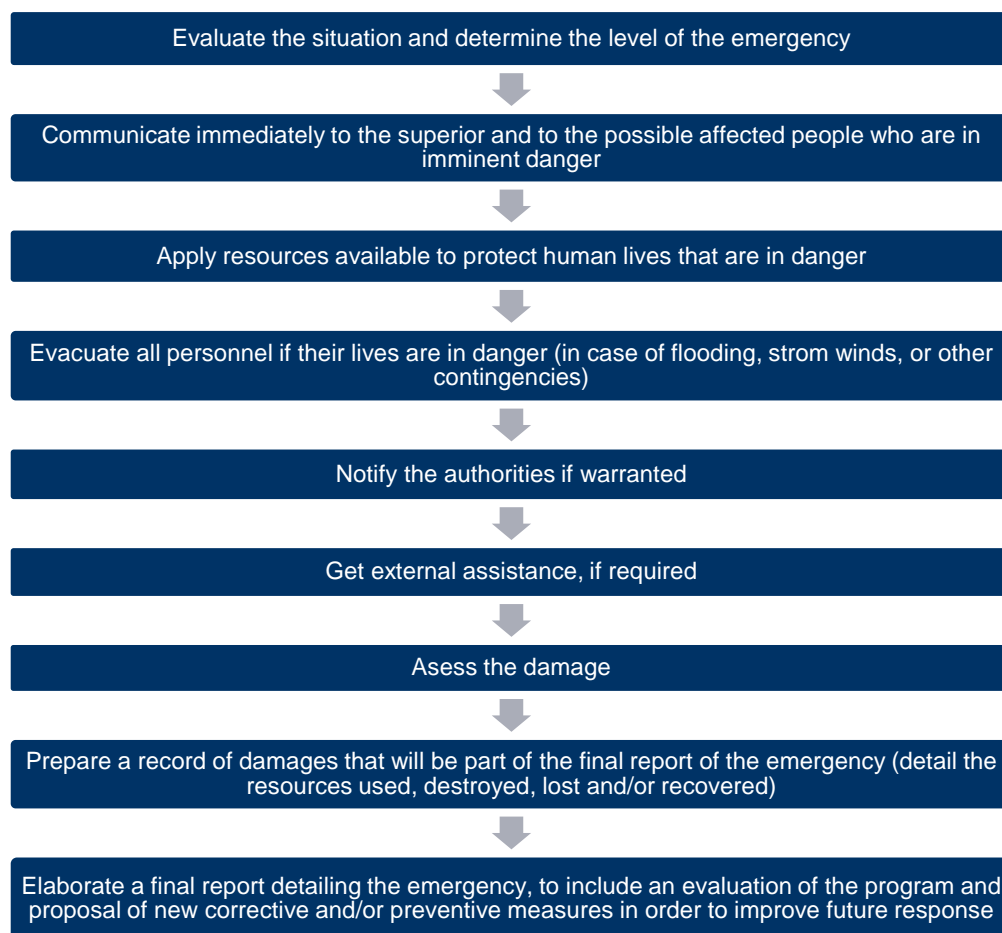
Role	Responsibilities
	<ul style="list-style-type: none"> ■ Supporting the local emergency organizations (fire brigade, ambulance, police, civil defense, etc.) during search and rescue activities. ■ Assisting personnel reach the assembly point. If required, helping with evacuation procedures. ■ To the extent possible, providing first aid and first aid equipment to the injured until medical personnel or ambulances arrive. ■ Securing personnel and assets once the emergency is under control.
Site Security Supervisor	<ul style="list-style-type: none"> ■ Controlling the entry-exit gates of the site and only allowing emergency vehicles to enter. ■ Helps local emergency vehicles access the scene. ■ Directs traffic during emergencies
PEU Employees, Contractors and Subcontractors	<ul style="list-style-type: none"> ■ Understand and carry out the activities set out in the Natural Disasters Management Plan ■ Ensuring the safety of their personnel and providing appropriate personal protective equipment (PPE) and training. ■ Ensuring that all his personnel are accounted for and gather at the assembly point. ■ Providing security of their area of responsibility. ■ Providing emergency access to their working areas. ■ Implements any corrective-preventive measures recommended by the Deputy Emergency Manager after an emergency response.
Community Relations Officer	<ul style="list-style-type: none"> ■ Inform stakeholders of the Emergency Response Plan

Source: ERM, 2021.

6.7.3 General Procedures

This Section describes the actions and procedures to be considered in case of emergencies and events that may arise. The general procedure in an emergency is presented in the following Figure.

Figure 6-2: General Emergency Procedures



Source: ERM, 2021.

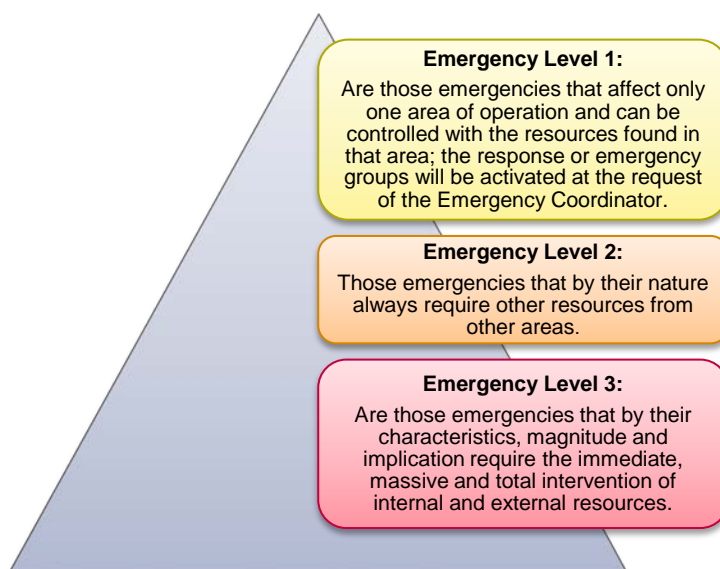
During construction, any contractor on site must lay out a sequence of actions to be followed in the event of an unplanned event or accident, which may be as follows:

- Notification: Inform all personnel of the accident.
- Verification and evaluation: Confirm that the notification provides an accurate representation of the status of the works and associated risk at the moment that the notification of the event is received.
- Their notification scheme must include the information provided in this Emergency Response Plan (the main local authorities, the local police, and/or the local firefighters).

6.7.3.1 Emergency Levels

Prior to any response, it is important to first characterize the emergency by seriousness of the situation in order to apply the appropriate level of response, see figure below.

Figure 6-3: Emergency Levels



Source: ERM, 2021.

6.7.3.2 Informing the Emergency

In case of emergency, witnesses to the incident will immediately inform the Emergency Manager by telephone or verbally. In addition to in this Plan, Emergency Communication Numbers will be displayed at the entry-exit gates of the site.

In cases when the informing is to be made verbally, the witness will immediately notify his superior or an authorized person. The witness should remain calm and be able to provide following information explicitly:

- Location,
- Type of incident,
- If an injury is of concern,
- Name of witness(es).

Together with the witness informing the emergency, the Emergency manager will investigate the emergency, set an order of priority according to the situation, inform the fire brigade, ambulance and public order team and the PEU.

Calling Plan

The calling plan consists of three types of communications, internal, external, and support.

- **Internal Calls:** The internal calls include the communication of the emergency to top management personnel, as well as the members of the Emergency Response Plan who are outside the facilities.
- **External Calls:** Communication of the emergency to the appropriate Government Authorities, depending on the type of occurrence.
- **Support Calls:** Support personnel in order to control the emergency (dependent on the type), for example the fire brigade, the national police, ambulance service, medical attention if necessary, government authorities, etc.

Emergency Contacts

Internal Calls

The following table provides the contact information for the internal emergency contacts.

Table 6-15: Site Emergency Contacts

Role	Name	Contact Information
<i>Construction</i>		
Emergency Manager/Construction Site Manager	TBD	TBD
Deputy Emergency Manager	TBD	TBD
Emergency Response Team Member	TBD	TBD
Emergency Response Team Member	TBD	TBD
Emergency Response Team Member	TBD	TBD
Site Security Supervisor	TBD	TBD
<i>Operation</i>		
Emergency Manager/Plant Manager	TBD	TBD
Deputy Emergency Manager	TBD	TBD
Emergency Response Team Member	TBD	TBD
Emergency Response Team Member	TBD	TBD
Emergency Response Team Member	TBD	TBD
Site Security Supervisor	TBD	TBD

- Note: To be determined prior to initiating construction and operation activities.

External and Support Calls

In case of emergencies, Emergency Services can be obtained by dialing the following numbers:

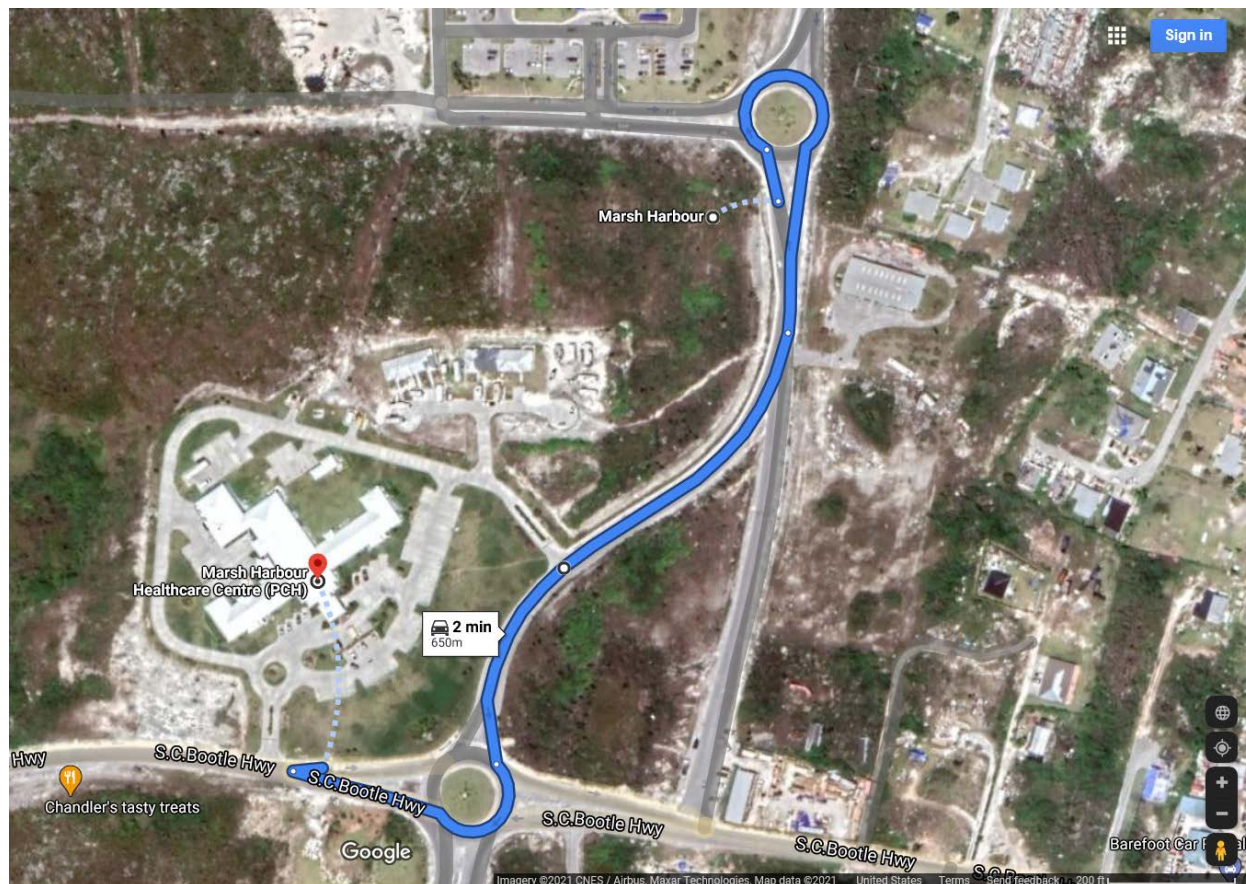
- Police: 919; +1 242-367-2560; +1 242-367-3437
- Ambulance: +1 242-367-2911; +1 242-359-6282
- Fire Fighters: +1 242-367-2000; +1 242-367-3752

The nearest hospital is the Marsh Harbour Healthcare Centre, which is located immediately south of the Site. Upon exiting the Project site, turn left (northbound) to the first roundabout, go all the way around and exit southbound on

the same road. At the next roundabout turn right (westbound) onto S.C. Bootle Hwy, and entrance to the hospital will be on the right.

- Marsh Harbour Healthcare Centre:
- Address: Government Road Charlestown, Nevis, St. Kitts & Nevis
- Phone: +1 242-367-2510

Figure 6-4: Map to Nearest Hospital



Source: Google Maps, 2021.

Fire and Rescue:

- Marsh Harbour Fire & Rescue
- Emergency Phone No. +1 242-367-2000

Marsh Harbour Police Station:

- Address: Dundas Town Road
- Phone: +1 242-367-2560

6.7.3.3 Prevention

The best way to control an event and the impact that these may have is to prevent them from happening by implementing preventive measures. General preventive measures are described below.

Personal Protective Equipment (PPE)

Personal protective equipment is mandatory. They will not prevent accidents, but will eliminate or reduce the severity of an injury. It is the responsibility of each contractor to provide their workers with the personal protection equipment required in the execution of any work that generates risks.

- The equipment will be new and of good quality.
- It is the responsibility of the immediate supervisor of each worker to determine the need for personal protective equipment and to ensure that the worker makes use of them.
- The worker will be responsible for the care, conservation and proper use of any equipment entrusted to him.

Organization and Order

During construction and decommissioning, prior to the start of the work, the Contractor will develop a safety, organization and order program in order to provide guidance on everything from inspections to risk identification, to the types of waste/trash collection receptacles provided for the different types of wastes (organic, inorganic waste, solid waste, liquid, and hazardous waste). Transportation and final disposal method, in accordance with the national regulations, must also be included.

During all phases of the Project, the following organization requirements will be fulfilled:

- Employees will keep their work site clean and in good condition.
- The employee will notify his/her supervisor about spills of oil, grease, etc., and they will be cleaned as soon as they occur.
- All tools, screws and any other material equipment used in the performance of a job will be kept in order, and these objects will not be placed in places where they can be dangerous.
- The flammable substances and wastes will be handled and stored accordingly in order to avoid the risk of spontaneous fire.
- There will be a staging area or adequate space for orderly storage of bulky objects, equipment, or materials.
- Every workplace will be provided with fresh and potable water in sufficient quantity for workers to use.
- The toilets and bathrooms (at least one toilet for every 20 workers) will be kept in optimal conditions and with sufficient supply of toilet paper, water and soap.
- The workplace will have a dedicated area for eating, protected from weather elements. No waste and debris will be left in place.

Training

Every worker, new or old, will receive operational training from their immediate supervisor in order to develop knowledge and skills for the safe execution of the assigned work, especially on:

- Industrial safety corresponding to construction.
- Occupational health.
- Fire Prevention.
- First aid.
- Personal protective equipment.
- Organization and order.
- Accident prevention.
- Accident analysis.

- Fire protection.
- Emergency control.
- Factors of physical risks (electrical, mechanical, noise and vibrations, lighting, heat, ventilation, etc.)
- Factors of chemical risks (smoke, gases in the environment (vapors, fumes), toxic, alkaline and corrosive substances, etc.)
- Other risk factors (health, third-party actions, environmental, etc.).

6.7.3.4 Evacuation and Assembly Points

If an evacuation is required during an emergency, the decision to evacuate will be made by the Emergency Manager and will be communicated by both telephone and verbally. After notification, supervisors will be responsible for spreading news of the emergency to the workers that they are in charge of and will direct them to the assembly point.

During an emergency, all work will be stopped at the affected area.

During construction and decommissioning, an assembly point will be designated at the construction site in an open area with visible signs. Information on this location will be provided to all personnel during their initiation training. If there are any changes, the plans must be updated and all personnel must be informed.

In case of an emergency, the Deputy Emergency Manager will do a head count to ensure that all personnel have gathered at the assembly point. They will in turn notify the PEU.

All access roads will be kept clear of equipment or goods so that the personnel can evacuate the area safely and effectively in case of emergencies. Walkways and building hallways/entry ways will also be kept clear.

Emergency lighting will be placed at the access routes. Buildings will be provided with evacuation maps and site layout plans. Supervisors will ensure the safe evacuation of any disabled personnel.

6.7.4 Types of Emergencies

The types of emergencies that may arise in the Project area are classified according to their origin:

- Operational emergencies or incidents normally caused by operations, fires, falling machinery, etc.
- Industrial accidents of personnel or contractors, normally caused by unsafe acts, unsafe conditions or as a consequence of the natural phenomena or operational emergencies previously stated.
- Social phenomena such as sabotage, terrorism, robberies, etc.
- Natural phenomena, such as earthquakes, hurricanes, etc. (covered under separate Plans).

6.7.4.1 General Emergency Response Actions

General emergency response actions include:

- Upon receiving notice of an emergency, the Emergency Manager will immediately evaluate the level of emergency and determine which response measures are necessary, notifying the corresponding response groups.
- If necessary and in accordance with the magnitude of the event, the Emergency Manager will order the evacuation of the area or facilities and initiate the respective response procedures.
- The Emergency Manager will notify the relevant authorities.
- If necessary, consult the emergency response procedures in order to verify the appropriate response for each emergency, ensure all the response procedures have been applied and record descriptive information of the event.

- Restrict access to the event area.

Communications must be made by cell phone or portable radio transmitters.

6.7.4.2 Spills

Equipment and Materials Needed for Spill Response

The following materials will be maintained on site to deal with spill incidents:

- Absorbent material, such as sand, sawdust, absorbent cloths (depending on spilled material).
- Barriers or sand bags to prevent the spread of a spill.
- Pumps to remove spilled substances from inside ditches or pits.
- Safety equipment such as gloves, respirators (if necessary), plastic aprons, goggles, and boots.
- Appropriate containers for the collected material.
- Photographic camera to document the incident.

Procedures

The procedures to respond to a spill depend on the type of substance, location and quantity spilled. A list of chemical types will be maintained on site (solvents, gasoline and similar combustible/flammable, abrasive, toxic, explosive chemicals that are stored collectively) to include their amounts and corresponding Material Safety Data Sheet (Safety Data Sheet - SDS). All materials will be labeled accordingly in order to determine the dangers/risks of each chemical, as required by the Hazardous Materials Management Plan. Material handling procedures will be instructed to all personnel during their initiation training and during their training updates.

In case of a spill, the impacted area will be closed off and only trained response team personnel with the proper personnel protective equipment will be allowed to enter. If it is safe to do so, the source of the spill will be stopped (via shutting-off valves, lowering of the pressure of the tanks, transferring the product, patching or plugging the source of the spill or absorbing the spill using the appropriate absorbent materials).

The Emergency Manager will decide on the need for notifying external emergency response (for example the fire brigade), depending on the type, volume, impacted resource (for example, soil or environment) and the magnitude of the impact.

6.7.4.3 Fires and/or Explosions

A fire can lead to serious damage to equipment or personnel, and will be taken care of as quickly as possible. The following measures will be taken in case of a fire.

Equipment

Equipment to control fires (such as fire extinguishers, hydrant system, pickaxe, shovel, hook, etc.) will be maintained on site. Inspections and inventory of the equipment will be performed every two months and documented on site. In addition:

- Fire extinguishers will be placed at every location where hot works are being performed, near storage areas and flammable materials, and inside all buildings. The site will be equipped with multiple types of extinguishers that work in different environments depending on the type of project (for example, Class A extinguishers for ordinary combustibles such as wood and paper, Class B extinguishers for use on flammable liquids like grease, gasoline and oil, etc.).
- Fire panels containing control tools will be placed at a central location of the construction site.
- Fire extinguishers will be found at the heavy machineries and they will be checked monthly.

Before a Fire

- All personnel will be trained through courses on fire practices and simulations of accidents, use of fire extinguishers, etc.
- Rigorous preventive maintenance programs will be implemented for all types of equipment, including inspecting and recharging fire extinguishers, etc. Extinguishers will be kept in good condition.
- Safe areas will have signs and evacuation routes will be established in all facilities or work fronts.
- First aid kits, battery-operated flashlights, extra batteries, etc. will be maintained on site at all facilities (including the security building), and work areas.

During a Fire

- Evacuate and or stop work in the area and / or facilities.
- Communicate with the local Fire Brigade, National Police and other entities depending on the severity of the emergency.
- Protect mouth and nose with damp cloths.
- Keep calm and avoid running.
- Assist affected people immediately, if any.
- If appropriate, try to put out the fire with the use of extinguishers and other existing means. Ensure extinguishers are periodically inspected to ensure they are in working condition.
- If any equipment is involved in the fire or explosion, the operator must manually disconnect the electrical power that feeds the equipment, as long as it can be done safely or without risk to human life.
- In the event that the fire cannot be fought directly with the extinguishers, or there is danger to the personnel, the actions to be taken are:
- Notify firefighters immediately for help.
- Evacuate to the assembly place as directed during the training and drills.
- Once the firefighters have determined that the emergency has ended, the Emergency Manager and the PEU will be notified.

After a Fire

- Clean the affected area.
- Remove all debris.
- Repair and / or demolish affected facilities in case of major damages.
- When the fire has been extinguished, proceed with the maintenance crew to prepare an inventory of damages and then make a detailed report on the matter.

Adequate Staff Training

Practices or simulations will be carried out every six months (can include coordination with the local Fire Department), and will include response procedures for all personnel.

Use and Disposal of Fire Extinguishers

- Fire extinguishers will be located in appropriate places and will be easily accessible.

- Every extinguisher will have a plaque with the information about the kind of fire for which it is suitable and its expiration date. Also, they will have operation and maintenance instructions.
- Each extinguisher will be inspected every two months, tested and maintained in accordance with the manufacturer's recommendations; similarly, they must carry a label with test dates and expiration date.
- If an extinguisher is used, it will be refilled immediately; or if necessary, it will be replaced immediately.

6.7.4.4 Falls from Heights, Cut Wounds, Electrocution and Burns

Equipment

First aid kits and stretchers will be maintained on site during construction and operation of the project. They will be easily accessible with signs showing their locations. These will be inspected every two months.

Before

- Training for personnel will include industrial safety so that they do not commit unsafe acts and use the appropriate protective equipment, such as a helmet, boots, safety glasses, restraint harness, etc.
- Personnel will be trained in the implementation of first aid, so that they may help injured coworkers or themselves, until the arrival of medical or paramedical personnel to the place of the accident or their transfer to a hospital for professional attention.
- All personnel will be provided with the appropriate protection equipment depending on their work. During construction, Contractors will be required to provide their own employees with the appropriate equipment to perform their work tasks safely.

During

In case of an accident, the staff will act as follows:

- If it is a minor accident, apply first aid to the injured person and transfer them immediately to the nearest clinic or hospital so that a doctor can see them, in order to rule out possible after-effects.
- If it is a serious fall from heights, shelter the injured person and request an ambulance for immediate transfer to a hospital.
- If a person is not breathing, provide rescue breathing (mouth-to-mouth breathing or mouth-to-nose) and request an ambulance for urgent medical attention.
- In case of burn, do not apply home remedies to the injured only water if it is a minor burn and request an ambulance for transfer to the clinic or hospital as soon as possible.
- For hemorrhage from a puncture wound, hold a gauze in place to avoid blood loss. If located in the extremities, make a tourniquet to cut blood loss, loosening the tourniquet every 10 minutes to avoid gangrene and move the injured person to safe location.
- If trapped with weight on the chest, lever the heavy element and remove it so that the victim does not suffocate, until the arrival of the ambulance.
- If the victim has suffered an electric shock, first ensure there is no other risk of electrocution, then ensure they are breathing, provide rescue breathing (mouth-to-mouth breathing or mouth-to-nose), and simultaneously request medical assistance or transfer to a clinic or hospital.
- Immediate attention to an injured person through knowledge of First Aid can save a life. Always seek the appropriate medical attention by a professional.

After

- Analyze the causes of the accident and the actions taken to assist.
- Prepare the preliminary and final report of the industrial accident.

6.7.4.5 Equipment or Infrastructure Failure

- The person who detects a fault or failure will immediately notify the Emergency Manager, identifying themselves and indicating the place and type of emergency.
- Try as much as possible to isolate the area or prevent vehicles or people from approaching.
- After overcoming the problem, analyze the root cause of the emergency/fault or failure.
- Prepare preliminary and final reports and submit to the appropriate authorities in a correct and timely manner.

6.7.4.6 Attacks and Sabotage

In order to prevent attacks and sabotage, the site will:

- Provide strict control of the entry of personnel into the facilities by use of security personnel, as well surveillance in strategic areas, as necessary.
- In the event of an attack or sabotage, the person who detects it will immediately notify the Emergency Manager of the emergency, indicating the place and equipment affected.
- The shift leader will immediately inform the Police and personnel in charge of the surveillance of the facilities, to neutralize the aggressors.
- If an attack leads to an emergency event (such as a spill or fire), the response strategy to the specific type of emergency will be determined and instructions will be given to the external support units: police, fire brigades, etc.
- Prepare preliminary and final reports and submit to the appropriate authorities in a correct and timely manner.

6.7.5 Drills and Training

6.7.5.1 Drills

Drills will be conducted every 6 months to ensure all employees know how to respond to an emergency and to rate the efficiency of this Emergency Response Plan. Personnel will be reminded of their duties and responsibilities before the drills. The drills will be conducted without notice and the response times will be monitored and recorded.

After the drills:

- If any issues or faults in behavior are encountered, then additional trainings will be organized to resolve these issues.
- Any other impediments, if any, will be corrected via corrective actions and additional instructions,

The Emergency Response Plan will be revised considering the results of the drills and the improvement suggestions of the Emergency Manager and Deputy Emergency Manager if any deficiencies are encountered.

6.7.5.2 Trainings

The emergency response team will be trained on the contents of the Emergency Response Plan and their responsibilities during an emergency will be explained to each team for their concurrence. Emergency response team members contact information is provided in Section 6.6.8 of this Emergency Response Plan as well as their signatures to ensure they understand their roles and are in agreement. The team will get refresher trainings every six months in all cases.

6.7.6 Evaluating and Reporting

The existing plan will be revised when modifications are required to any of the items detailed above. Modifications can be due to any of the following conditions:

- Deficiencies during drills,
- Amendments to regulations or regulatory requirements,
- The occurrence of serious accidents or incidents,
- Changes to the risk assessments,
- Changes in Project technologies, procedures, methods, materials or equipment,
- Any other unforeseen circumstance.

Even without any of the above, the Emergency Response Plan will be reviewed and updated every 6 months and updated if any changes are warranted.

All emergencies will be recorded and reported. If an emergency occurs, once the emergency is under control the Emergency Manager will begin the inspection process of the scene and document the following via written records to be maintained on site:

- Place of emergency,
- Date, hour and duration of emergency,
- Description of the emergency,
- Impact of the emergency (damage on personnel and assets),
- Measures to be taken and operations to be performed to continue the work,
- People responsible for the response measures and operations.

The reasons for every reported incident will be investigated and recommended corrective and preventive actions will be implemented. Any statistics and risk assessments from the accident-incident reporting will be used to develop a proactive approach to prevent these emergencies from re-occurring.

6.7.7 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 6-16: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool/ Frequency
Health and Safety	Employees must be in compliance with the training program (every six months)	100%	All phases	Training Records / every six months
Health and Safety	Employees must be in compliance with the drills program and been instructed on incorrect actions and/or deficiencies (every six months).	100%	All phases	Training Records / every six months
Health and Safety	Percentage of workers who have training on safety and emergency response.	100%	All phases	Training Records / Yearly

Health and Safety	Number of accidents and incidents that have required the activation of emergency protocols.	Zero incidents	All phases	Incident Reports / Monthly
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Source: ERM, 2021

6.7.8 Emergency Response Quick-Look Up Tables

The Tables below can be used in the Emergency Response Plan for quick look up. Individuals names will be determined prior to initiating construction and operation activities.

Emergency Manager

Name	Duty	Training	Telephone	Signature
		<input type="checkbox"/> First Aid <input type="checkbox"/> Fire Extinguisher <input type="checkbox"/> Spill Control		
		<input type="checkbox"/> First Aid <input type="checkbox"/> Fire Extinguisher <input type="checkbox"/> Spill Control		

Emergency Response Team

Name	Duty	Training	Telephone	Signature
		<input type="checkbox"/> First Aid <input type="checkbox"/> Fire Extinguisher <input type="checkbox"/> Spill Control		
		<input type="checkbox"/> First Aid <input type="checkbox"/> Fire Extinguisher <input type="checkbox"/> Spill Control		
		<input type="checkbox"/> First Aid <input type="checkbox"/> Fire Extinguisher <input type="checkbox"/> Spill Control		
		<input type="checkbox"/> First Aid <input type="checkbox"/> Fire Extinguisher <input type="checkbox"/> Spill Control		
		<input type="checkbox"/> First Aid <input type="checkbox"/> Fire Extinguisher <input type="checkbox"/> Spill Control		
		<input type="checkbox"/> First Aid <input type="checkbox"/> Fire Extinguisher <input type="checkbox"/> Spill Control		

Incident Communication

Title	Name	Telephone
Site Manager/Emergency Manager		
Deputy Emergency Manager		
Site Security Supervisor		
Ambulance		+1 242-367-2911; +1 242-359-6282
Fire		+1 242-367-2000; +1 242-367-3752
Police		919

Information Required

- Name of Informant
- Place/Location of Incident
- Time of Incident
- Incident Type
- Number of Injured/Affected
- Condition of Injured/Affected

6.8 Occupational, Health and Safety Management Plan

6.8.1 Introduction

The Project Executing Unit (PEU) is committed to ensuring the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

To promote its projects alignment to best international practices, the PEU acknowledges that health and safety measures are an essential part of the management of any project, in order to ensure the wellbeing of its workers directly and indirectly involved in its activities. The Occupational Health and Safety Management Plan (OHSMP) has been compiled to address the specific impacts and risks that are anticipated during the different phases of the Project. This plan sets out a formal system by which the PEU can manage and implement mitigation measures that will avoid or reduce the significance of impacts related to worker health, safety, and security.

6.8.1.1 Objective

The objective of this plan is to establish health and safety conditions for the Project, with the aim of preventing occupational risks of any personnel, contractors and subcontractors. More specifically, this plan intends to:

- Align with international best practices, which could facilitate international lenders participations in Project financing;
- Protect the health and safety of all workers and employees of the Project;
- Be proactive in identifying risks and activities that may affect the health and safety of workers;
- Prevent accidents and incidents due to the activities of the Project;
- Define the roles and responsibilities for implementing this Plan; and
- Define the monitoring, reporting, and intervention/adaptive management procedures for the Plan.

6.8.1.2 Scope of Application

This plan will apply during the development of all Project activities and during the Project's life cycle (construction, operations and decommissioning). It is the PEU's responsibility to ensure that employees, contractors and subcontractors are evaluated according to the PEU's ESMP policies and procedures, which are aligned to international best practices.

The OHSMP is applicable across the entire workforce at all skill levels, and deals with all aspects relating to the employees of the PEU and its contractors. The OHSMP includes measures related to the management of workers engaged by third parties, and also the management of workforce related risks within the supply chain. All activities to be performed on site must be carried out under good conditions of health, safety and environment considering the risks associated with each activity as well as the social needs and requirements. The physical safety of the workers, installations, surrounding properties and environment must be maintained.

The PEU's ESHS Manager, Human Resources Manager and General Construction Manager shall have an updated copy of this plan and the specific details will be communicated to other employees during specific training.

This plan shall be distributed to all contractors / subcontractors / service providers / suppliers, and it shall be included in all contractual documentation and used as a basis for all specific OHSMPs to be prepared by all engaged parties. Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific Environmental and Social Management Plans (ESMP) will be applied on the ground. The PEU will review and approve this document before any implementation.

6.8.2 Roles and Responsibilities

In order to properly implement the Workers Health and Safety Management Plan, the involvement of the people listed below is required.

Table 6-17: Roles and Responsibilities

Role	Responsibilities
PEU	<ul style="list-style-type: none"> ■ Be familiarized, review and approve the Workers Health and Safety Management Pan. ■ Ensure the availability of resources necessary for the implementation of the Occupational Health and Safety Management Pan ■ Be familiarized with the Occupational Health and Safety Management Pan.
ESHS Manager	<ul style="list-style-type: none"> ■ Assure the correct implementation of the Occupational Health and Safety Management Pan. ■ Update the Occupational Health and Safety Management Pan. ■ Review and approve the contractor Project-specific Occupational Health and Safety Management Plan.
H&S Manager	<ul style="list-style-type: none"> ■ Assure the correct implementation of the Occupational Health and Safety Management Pan. ■ Ensure the generation of evidence and reports for compliance with the IFC PS as well as maintaining KPIs.
Contractor Company	<ul style="list-style-type: none"> ■ Develop a Project-specific Occupational Health & Safety Management Plan. ■ Ensure all employees are trained on and understand the Occupational Health & Safety Management Plan.
Employees, Contractors and Subcontractors	<ul style="list-style-type: none"> ■ Understand and carry out the activities set out in the Occupational Health and Safety Management Pan.

Source: ERM, 2021.

6.8.3 Activities

This plan describes the actions that need to be taken to avoid or manage potential impacts associated with Occupational Health and Safety (OHS) issues, which may arise from activities related to the Project. The PEU will establish preventive and control measures in line with international best practices, such as the International Finance Corporation (IFC) Performance Standards.

Health and safety is an important objective of the Project. Injuries, occupational health and safety, and environmental incidents are preventable; thus, the Project's goal is to have zero incidents. The PEU will also encourage employees to adopt a safe, healthy lifestyle for themselves and their families. In order to achieve this, the following main requirements have been defined:

- Zero harm to people or the environment;
- The PEU's ESHS Manager is responsible for providing strong, visible leadership and commitment to maintain the OHSMP;
- OHS is of equal importance to Project production, economy and quality;
- All employees of the PEU/ contractors/ subcontractors / service providers / suppliers must follow the same H&S and/or OHS philosophy;
- The PEU must establish a high standard of H&S and OHS to promote motivation and efficiency;
- Maintain a low risk level in all activities as far as reasonably possible; and
- Maintain an updated, comprehensible and efficient OHSMP.
- This document shall be read in conjunction with all valid Management Plans, Policies and other applicable documents.

6.8.3.1 Risk Identification and Analysis

Risk identification and analysis is part of the pre-work planning process. The purpose of this activity is to ensure that the risks associated with the Project activities are clearly understood and properly managed.

Project Identification

H&S Manager must assure that each component of the Project has a description for the risk identification, this description contain at least the following information:

- Project's component name;
- Type of project (e.g. plant, transmission line, etc.);
- Project capacity;
- Project localization; and
- Basic infrastructure of the Project (including transmission lines).

Risk Identification

The H&S Manager will be responsible of identifying and classifying all the activities and sub activities carried out in the Project, some examples of activities can be:

- Supply and installation of equipment and materials,
- Work on site,
- Evaluate need of security guards, fencing, and/or other security measures,
- Structures, wiring, control and monitoring systems, safety systems, etc.

Risk Analysis

After the identification of risks, the evaluation is carried out. This evaluation allows risk prioritization according to severity and probability levels, with specific controls being defined for those risks that are considered significant in order to reduce them to an acceptable level. In this way, the highest risks with the greatest severity rating and the greatest probability of occurring are managed first, and lower risks with lower probability of occurrence and lower severity rating are handled in descending order of importance.

The methodology for risks assessment could change depending on the type of the Project's component.

Risk Management

Once the activities that may imply a risk have been identified, the H&S Manager must assure that the Project has specific plans to manage each risk; these plans must be aligned with the results of the risk assessment and the legal requirements.

The H&S Manager will assure the Identification of the respective Occupational Health and Safety legislation at each level (national, local, as well as following the best international practices).

6.8.3.2 High-Risk Activities and Work Permits

High-risk activities the ones with that are more likely to result in failure, harm or injury so, to ensure that these types of activities are carried out in a correct way it is necessary to develop a work permit process.

Some examples of high-risk activities are:

- Working on confined spaces;
- Hot works and heat;

- Noise;
- Working at heights;
- Electrical work; and
- Lifting activities.

A work permit assures that the worker and its supervisor are aware of the risks of the activity, and will assure that all the measures to minimize the risk are applied. The work permit must contain at least:

- The name of the authorized worker;
- The type of work to be carried out and the area or place where the activity will be carried out;
- The date and time of the start of the activities, and the estimated time of completion;
- The security measures applied in accordance with the results of the risk analysis for each activity, and
- The name and signature of the employer or the person designated to grant authorization.
- The work permit must be developed by the personnel carrying out the activity and reviewed by their direct supervisors, to ensure that they know the activity risks, PPE required, required emergency procedures and emergency equipment.
- Safe work permits are issued for a specific work and a defined period of time for specific workers.
- The H&S Manager, job supervisor and workers carrying out the activity (PEU personnel and/or contractors) must sign permits.

6.8.3.3 Personal Protective Equipment (PPE)

The Personal Protective Equipment (PPE) for each activity must be selected according to the hazards and risks identified in the risk analysis and work permit. The Project must require that PPE be provided by the employer to all Project employees depending on the type of work they are carrying out. This protective equipment must:

- Provide adequate and effective personal protection against the risks that motivate its use, without causing additional risks or unnecessary inconvenience;
- Be available to persons employed in the Project and must always be kept in conditions that allow its immediate use;
- Determine the using conditions of PPE and, in particular, when to use it, taking into account:
 - The severity of the risk;
 - The time or frequency of exposure to the risk;
 - The conditions of the job; and
 - The benefits of the team itself, taking into account its useful life and its expiration date.

Additionally,

- It will be workers' obligation to use the personal protection equipment placed at their disposal and the contractors must ensure that the workers make use of it;
- All personnel at the work site, regardless of the position or level will use helmets. There will be a reserve of protective helmets to guarantee compliance with this requirement;
- The construction and decommissioning personnel in addition to a helmet must have their safety belts, harnesses for work at heights, boots with steel tips, gloves and protective glasses;
- Necessary measures will be taken to quickly provide first aid to any injured person during the workday;

- First aid kits will be easily accessible and clearly marked, in order to provide first aid to any worker who is injured during their work. The first aid kits must be the charge of a responsible person, trained to provide first aid.

The PPE must be selected to protect the body part exposed to the risks identified, next is a list of the most common PPE used for Project activities:

- Head – helmet (against impact, dielectric, hood);
- Eyes and face - protective glasses, goggles, face screen, welding helmet, welding glasses;
- Ears – earplugs, earmuffs;
- Respiratory system – respirators (against particles, gases or vapors), disposable mask, autonomous respiratory equipment;
- Superior extremities – gloves (against chemical substances, dielectric, against extreme temperatures), sleeves;
- Trunk (chest, back) – apron (against extreme temperatures, against chemical substances) overall, coat, clothing against chemical substances; and
- Inferior extremities – occupational footwear, footwear against impacts, conductive footwear, dielectric footwear, spats, waterproof boots.

Other PPE used in a more specific way is:

- Protection against falls equipment; and
- Firefighting equipment.

6.8.3.4 Health and Safety Training

The H&S Manager must assure that the personnel on-site has the necessary training to carry out its activities, this includes PEU personnel, contractors and subcontractors.

Training will be based on and conducted through specific workshops and lectures to all workers. This training system will recognize that risks vary from contractor to contractor depending on the scope of work, the activities involved and the sensitive receptors and resources that may be impacted in the area of work. Risk-based approach training is therefore essential in determining which control measures are most important for the contractor to implement and manage. The risk-based approach is utilized at three stages:

- Applicability of management plans to individual scopes of work (internal review and assessment)
- Contractor review of control measures
- Pre-commencement-work review

Workers that shall carry out activities that require a specific health and safety training will complete the training at least 10 days before the work activities start.

The PEU will consider the ability of the contractor to understand and meet the requirements of the present OHSMP, the ESMP and associated plans during the qualification and selection process. As part of this process, contractors will be provided with the relevant management plans and the evaluation process will consider their ability to conform to these plans.

During contract award, the PEU will conduct a commence-work review to refine, clarify, prioritize, and focus on the key legislation, standards, risks and commitments as relevant to the contractor's scope of work to ensure that they meet set standards. New control measures that are identified will be discussed and agreed for inclusion in the relevant plans.

Contractors will be required to establish OHS management arrangements in coordination with the PEU to ensure conformance with management plans and other contractual commitments. These may include development of procedures and work instructions; training, definition of Key Performance Indicators (KPIs), monitoring and auditing schedules, reporting requirements, management reviews etc.

6.8.3.5 Personnel Health

The H&S Manager must ensure healthy conditions for its personnel, by making sure that the Project provides at least the basic necessities such as:

- Enough toilet facilities per number of workers (e.g. as a minimum two toilets for 16 to 35 employees, according to the Occupational Safety and Health Administration, OSHA);
- Toilets will be in in good conditions of preservation, hygiene and cleanliness, and will remain free of vapors. Separate toilets for men and women will also be guaranteed and not far from their workstations;
- Clean and potable water supply, on any construction site, the contractor shall guarantee sufficient sources of drinking water so that the workers can adequately replenish the liquids and avoid dehydration. These sources will be close to the workstations;
- When at least twenty-five workers work, the contractor or Project will guarantee a dining area so that the workers can eat their food comfortably and safely, with enough tables and chairs or benches. Adequate facilities will also be available to prepare food when local conditions or custom require it;
- Appropriate working hours;
- Medical Service (medical stations, first aid kits, nurse/doctor), medical stations and first aid kits will be inspected and maintained on a regular basis as some supplies may have expiration dates, in addition, each kit and/or location must be visibly marked; and
- Continuous medical check-up.

Contractors must submit to the PEU a monthly report with H&S statistics and incidence of diseases in their workforce. In order to manage this information, the Project shall establish a Health Surveillance and Monitoring System.

6.8.3.6 Emergency Response

The PEU has an Emergency Response Management Plan to establish preventive and response measures to respond efficiently and in a timely manner to emergencies that may take place during the execution of the Project and its components.

6.8.3.7 Traffic

Careful planning and consideration of site traffic control problems can reduce the likelihood of accidents.

Traffic on the site includes road traffic and pedestrian traffic. Road traffic contains commercial delivery vehicles (such as containers), internal vehicles (such as trucks, cranes and excavators) and cars for employees and visitors. Pedestrian traffic includes visitors and employees on their way to or from their normal workplace at the beginning or end of the workday, or as part of their work during the day. Vehicles and pedestrians will always be separated.

Traffic routes will be determined as access routes, through the delivery site, transport routes between buildings for on-site activities or emergency access routes for fire trucks and ambulances, for example. Drivers, employees on foot and pedestrians will be able to see and understand the appropriate routes.

- When parking a vehicle, a safe parking procedure for the vehicle must be followed. Controls must be neutralized, the brakes on and the engine off to prevent movement. Vehicles will not park in the blind area of another vehicle or on slopes;

- Contractors will install mandatory and prescribed safety signs in its construction areas. The signage will follow local legislation and be in English, following the international standard for obligation, prohibition, warning and rescue signage.
- Along roads frequently crossed by animals, contractors will install wildlife crossing signs within the Project to reduce possible vehicle accidents with wildlife.

For more details see the Traffic Management Plan.

6.8.3.8 Safety Instruction to Access the Project Site

The following instructions will be given to all visitors and workers who access the site for the first time. Each person who receives these instructions must sign a receipt, which will be maintained by the H&S Manager:

Safety instructions for access to the work:

- It is mandatory for visitors and workers who access this workplace to comply at all times with the instructions of the H&S personnel.
- Use the adequate PPE. If you do not have them, request them from the H&S personnel.
- Pay attention when driving through the site, avoid driving through areas with obstacles or mud and stepping on sharp objects.
- Always look both ways before crossing roads, traffic lanes, or open areas. Do not approach, or interfere with, construction machinery or vehicles.
- Avoid getting close to slab edges, decking edges, etc. unless they are fully protected.
- Do not disturb or harass wildlife found on site. If sick or injured animals are found, call security and trained wildlife management authorities.

In an emergency, remain calm and follow the orders of those responsible for the work at all times. Go to the designated meeting point and remain there until the end of the emergency.

6.8.4 Health and Safety Measures

6.8.4.1 In case of Managing Hazardous Substances

- Use appropriate personal protection equipment, namely breathing protection;
- Use adequate airing or ventilation on the maneuvering place;
- Maintain the containers properly labeled in order to facilitate first aid (in case of an emergency);
- Storage facilities with appropriate drip trays;
- Maintain the containers properly closed, in order to avoid leaks;
- Contain the spills with the available spill containment materials on site.

6.8.4.2 In case of Exposure to Heat

- Reduce the time required for work in elevated temperature environments and ensuring access to drinking water;
- Shield surfaces where workers come in close contact with hot equipment, including generating equipment, etc.; and
- Use of personal protective equipment (PPE) as appropriate, including insulated gloves and shoes.

6.8.4.3 In Case of Over-exertion

Over-exertion, and ergonomic injuries and illnesses, such as repetitive motion, over-exertion, and manual handling, are among the most common causes of injuries in construction and decommissioning sites. Recommendations for their prevention and control include:

- Training of workers in lifting and materials handling techniques in construction and decommissioning projects, including the placement of weight limits above which mechanical assists or two-person lifts are necessary;
- Planning work site layout to minimize the need for manual transfer of heavy loads;
- Selecting tools and designing work stations that reduce force requirements and holding times, and which promote improved postures, including, where applicable, user adjustable work stations; and
- Implementing administrative controls into work processes, such as job rotations and rest or stretch breaks.

6.8.4.4 In Case of Slips and Falls

Slips and falls on the same elevation associated with poor housekeeping, such as excessive waste debris, loose construction materials, liquid spills, and uncontrolled use of electrical cords and ropes on the ground, are also among the most frequent cause of lost time accidents at construction and decommissioning sites. Recommended methods for the prevention of slips and falls from, or on, the same elevation include:

- Implementing good house-keeping practices, such as the sorting and placing loose construction materials or demolition debris in established areas away from foot paths;
- Cleaning up excessive waste debris and liquid spills regularly;
- Locating electrical cords and ropes in common areas and marked corridors; and
- Use of slip retardant footwear.

6.8.4.5 In Case of Work in Heights

Falls from elevation associated with working with ladders, scaffolding, and partially built or demolished structures are among the most common cause of fatal or permanent disabling injury at construction or decommissioning sites. If fall hazards exist, a fall protection plan should be in place which includes one or more of the following aspects, depending on the nature of the fall hazard:

- Training and use of temporary fall prevention devices, such as rails or other barriers able to support a weight of 200 pounds, when working at heights equal or greater than two meters or at any height if the risk includes falling into operating machinery, into water or other liquid, into hazardous substances, or through an opening in a work surface;
- Training and use of personal fall arrest systems, such as full body harnesses and energy absorbing lanyards able to support 5000 pounds, as well as fall rescue procedures to deal with workers whose fall has been successfully arrested. The tie in point of the fall arresting system should also be able to support 5000 pounds; and
- Use of control zones and safety monitoring systems to warn workers of their proximity to fall hazard zones, as well as securing, marking, and labeling covers for openings in floors, roofs, or walking surfaces.

6.8.4.6 In Case of Struck by Objects

Construction and demolition activities may pose significant hazards related to the potential fall of materials or tools, as well as ejection of solid particles from abrasive or other types of power tools which can result in injury to the head, eyes, and extremities. Techniques for the prevention and control of these hazards include:

- Using a designated and restricted waste drop or discharge zones, and/or a chute for safe movement of wastes from upper to lower levels;

- Conducting sawing, cutting, grinding, sanding, chipping or chiseling with proper guards and anchoring as applicable;
- Maintaining clear traffic ways to avoid driving of heavy equipment over loose scrap;
- Use of temporary fall protection measures in scaffolds and out edges of elevated work surfaces, such as hand rails and toe boards to prevent materials from being dislodged;
- Evacuating work areas during blasting operations, and using blast mats or other means of deflection to minimize fly rock or ejection of demolition debris if work is conducted in proximity to people or structures; and
- Wearing appropriate PPE, such as safety glasses with side shields, face shields, hard hats, and safety shoes.

6.8.4.7 In Case of Electrocution

- Only trained personnel should handle electrical cables and equipment that require electricity for operation;
- Personnel handling cables and electrical equipment must follow the rules for work on power lines;
- Mandatory use of personal protective equipment such as glasses, helmet, gloves, etc., when working with electrical cables and equipment;
- Warning signs of danger in areas where power lines are located and work with equipment that needs electricity to operate; and
- Immediate aid for personnel who have suffered burns due to electrocution, provide necessary first aid, and depending to the severity of the accident, determine whether the patient needs to be transferred to the nearest health center or hospital.

6.8.4.8 In Case of Moving Machinery

Vehicle traffic and use of lifting equipment in the movement of machinery and materials on a construction site may pose temporary hazards, such as physical contact, spills, dust, emissions, and noise. Heavy equipment operators have limited fields of view close to their equipment and may not see pedestrians close to the vehicle. Center-articulated vehicles create a significant impact or crush hazard zone on the outboard side of a turn while moving. Techniques for the prevention and control of these impacts include:

- Planning and segregating the location of vehicle traffic, machine operation, and walking areas, and controlling vehicle traffic through the use of one-way traffic routes, establishment of speed limits, and on-site trained flag-people wearing high-visibility vests or outer clothing covering to direct traffic;
- Ensuring the visibility of personnel through their use of high visibility vests when working in or walking through heavy equipment operating areas, and training of workers to verify eye contact with equipment operators before approaching the operating vehicle;
- Ensuring moving equipment is outfitted with audible back-up alarm; and
- Using inspected and well-maintained lifting devices that are appropriate for the load, such as cranes, and securing loads when lifting them to higher job-site elevations.

6.8.4.9 In case of Works in Confined Spaces

- Engineering measures will be implemented to eliminate, to the degree feasible, the existence and adverse character of confined spaces;
- Permit-required confined spaces will be provided with permanent safety measures for venting, monitoring, and rescue operations, to the extent possible;
- The area adjoining an access to a confined space will provide ample room for emergency and rescue operations;

- Access hatches will accommodate 90% of the worker population with adjustments for tools and protective clothing;
- Prior to entry into a permit-required confined space:
 1. Process or feed lines into the space will be disconnected or drained, and blanked and locked-out.
 2. Mechanical equipment in the space will be disconnected, de-energized, locked-out, and braced, as appropriate.
 3. The atmosphere within the confined space will be tested to assure the oxygen content is between 19.5 percent and 23 percent, and that the presence of any flammable gas or vapor does not exceed 25 percent of its respective Lower Explosive Limit (LEL).
 4. If the atmospheric conditions are not met, the confined space will be ventilated until the target safe atmosphere is achieved, or entry is only to be undertaken with appropriate and additional PPE.
- Safety precautions will include Self Contained Breathing Apparatus (SCBA), life lines, and safety watch workers stationed outside the confined space, with rescue and first aid equipment readily available;
- Before workers are required to enter a permit-required confined space, adequate and appropriate training in confined space hazard control, atmospheric testing, use of the necessary PPE, as well as the serviceability and integrity of the PPE will be verified. Further, adequate and appropriate rescue and / or recovery plans and equipment will be in place before the worker enters the confined space.

Examples of confined spaces that may be present in construction or demolition sites include: silos, vats, hoppers, utility vaults, tanks, sewers, pipes, and access shafts. Ditches and trenches may also be considered a confined space when access or egress is limited. The occupational hazards associated with confined spaces and excavations in construction and decommissioning sites should be prevented according to the following recommendations:

- Controlling site-specific factors which may contribute to excavation slope instability including, for example, the use of excavation dewatering, side-walls support, and slope gradient adjustments that eliminate or minimize the risk of collapse, entrapment, or drowning;
- Providing safe means of access and egress from excavations, such as graded slopes, graded access route, or stairs and ladders; and
- Avoiding the operation of combustion equipment for prolonged periods inside excavations areas where other workers are required to enter unless the area is actively ventilated.

6.8.4.10 *In Case of Common Injuries and Accidents*

- Use rolling cats or other comfortable and easy-to-use equipment or tools to reduce material handling by hand;
- Place materials in easily accessible sites;
- To lift weight, the correct technique should be used: lifting weight by flexing the legs, not with the back; girdles and other protections should be used; and
- To avoid the exhaustion of personnel, sufficient liquids should be provided, mandatory breaks at small intervals of time, especially in hot weather to avoid to heat stroke and / or excess humidity; use light colored clothes and cotton.

6.8.4.11 *In case of Exposure to Noise*

- No employee will be exposed to a noise level greater than 85 dB(A) for a duration of more than 8 hours per day without hearing protection. In addition, no unprotected ear will be exposed to a peak sound pressure level (instantaneous) of more than 140 dB(C);

- The use of adequate hearing protection will be enforced actively when the equivalent sound level over 8 hours reaches 85 dB(A), the peak sound levels reach 140 dB(C), or the average maximum sound level reaches 110dB(A). Hearing protective devices (suggested PPE, ear plugs or ear muffs) provided will be capable of reducing sound levels at the ear to at least 85 dB(A);
- Although hearing protection is preferred for any period of noise exposure in excess of 85 dB(A), an equivalent level of protection can be obtained, but less easily managed, by limiting the duration of noise exposure. For every 3 dB(A) increase in sound levels, the 'allowed' exposure period or duration will be reduced by 50%;
- Prior to the issuance of hearing protective devices as the final control mechanism, use of acoustic insulating materials, isolation of the noise source, and other engineering controls will be investigated and implemented, where feasible;
- Periodic medical hearing checks will be performed on workers exposed to high noise levels.

6.8.4.12 *In Case of Exposure to Dust*

- Dust suppression techniques should be implemented, such as applying water or non-toxic chemicals to minimize dust from vehicle movements; and
- PPE, such as dusk masks, should be used where dust levels are excessive.

6.8.4.13 *In case of Injuries and Common Accidents*

- Only trained personnel will be allowed to carry out machinery activities that involve injury risks, including falls or cuts;
- It is mandatory to use the harness and the lifeline to perform work at heights, as well as the strict verification of this equipment before its use;
- The personnel carrying out works, will not be distracted, and must stay concentrated while the work is being done. It is important to remember that situations that arise from routine work are the first causes of distraction, loss of concentration and consequently incidents and accidents;
- Use rolling jacks, winches or other equipment and tools that are comfortable and easy to use to reduce material handling with your hands; place materials in easily accessible sites;
- Use correct techniques to lift weight: Lift weight by flexing your legs, not your back; strips and other protections must be used;
- To avoid the exhaustion of the personnel, they will be provided with enough liquid, take breaks in small intervals of time, especially when the weather is exhausting, either due to insolation and/ or excess humidity, or when workers are exposed to heat; use sunscreen and light colored clothing and cotton.

6.8.4.14 *In Case of Other Hazards*

Construction and decommissioning sites may pose a risk of exposure to dust, chemicals, hazardous or flammable materials, and wastes in a combination of liquid, solid, or gaseous forms, which should be prevented through the implementation of project-specific plans and other applicable management practices, including:

- Use of specially trained personnel to identify and remove waste materials from tanks, vessels, processing equipment or contaminated land as a first step in decommissioning activities to allow for safe excavation, construction, dismantling or demolition;
- Use of specially trained personnel to identify and selectively remove potentially hazardous materials in building elements prior to dismantling or demolition including, for example, insulation or structural elements containing asbestos and Polychlorinated Biphenyls (PCBs), electrical components containing mercury; and
- Use of waste-specific PPE based on the results of an occupational health and safety assessment, including respirators, clothing/protective suits, gloves and eye protection

6.8.5 Obligations and Forbidden Actions

Specific obligations and forbidden actions are presented below, both applicable for the Project's contractors and workers.

6.8.5.1 Contractors' Obligations

- According to the labor regulations and standards, the Project, contractors, and subcontractors at all levels, are obliged to comply with all current legal provisions regarding occupational health and safety.
- Each of the contractors, and their sub-contractors, if any, is responsible for labor security and their workers' behavior inside and outside work hours, establishing sanctions for those who commit acts that attempt against the moral and good behavior of the local population. Necessary basic services such as hygienic services must be guaranteed to the workers. Likewise, contractors are responsible for the collection and disposal of generated waste.
- Vehicles, machinery and equipment maintenance in the Project must be carried out as far as possible from water sources. Likewise, waste oils, spare parts or similar items that affect the quality of the environment may not be dumped into the ground or water sources, under any circumstance.
- In order to avoid air and water pollution, the contractor must perform periodic maintenance of construction equipment and machinery.
- The contractor must give, whenever possible, employment to the local population.
- Guarantee the placement of required safety signs and symbols, as well as requesting their maintenance and replacement when necessary.
- Guarantee the acquisition and delivery of personal and collective protection equipment, as well as demanding workers to use and safeguard them.
- Ensure compliance with the necessary measures to eliminate the causes of occupational accidents and occupational diseases in coordination with union representatives and health and safety audits.
- The contractor will guarantee pre-employment medical examinations to determine the workers' aptitudes, and regular examinations depending on the activity they perform, for the early detection of occupational diseases.

6.8.5.2 Workers' Obligations

- Comply with the Project's Health and Safety instructions and regulations, as well as employing safe work methods, habits and attitudes.
- Maintain and use the personal and collective protection equipment received and return it to the person in charge once the work has been completed.
- Provide the necessary assistance in case of incidents or imminent risks in which the assets of the company or of their co-workers are endangered.
- Collaborate in the fulfillment of Project's Health and Safety Plans, Emergency Plans and Code of Conduct.
- Collaborate in inspections carried out by competent authorities in matters of Occupational Health and Safety, as well as in the Investigation of Occupational Accidents and Occupational Diseases that may occur in the company and/ or Construction Project.
- Check the Personal Protection Equipment before and after work, to verify its state. Immediately inform the PEU's H&S Manager and/ or General Site Manager if equipment flaws are detected.
- Immediately report all H&S issues, accidents, risks or concerns to their supervisor, either directly or through the internal grievance mechanism.

6.8.5.3 Forbidden Actions for Workers and Contractors

- Execute acts that endanger their own safety, that of their co-workers or that of third parties, as well as that of establishments, workshops or places where they work.
- Workers are forbidden to take raw or processed materials from the site or their premises without corresponding permission and/ or authorization.
- Presenting themselves to their work while intoxicated or under the influence of toxic drugs.
- The workers will not be allowed to use the equipment that has been entrusted to them outside of the Project's work tasks. Likewise, they will not be allowed to take the equipment out of the workshop without permission.
- Smoking in restricted areas.
- Make hearths or fires to make food in inadequate places.
- Carry firearms and sharp weapons.
- Ingest alcoholic beverages or any psychotropic substance.
- Perform wildlife hunting activities or harassment of any kind to wildlife within the vicinity of the Project.
- Mobile phone usage at the construction site (outside the rest areas, such as the workers' dining area).

6.8.6 Documentation and Monitoring

The Project will maintain evidence of workers' health and safety management, which will include the attendance lists for H&S trainings, the work permits involving high-risk activities and specific certifications by personnel who carry out work activities that requires it, as well as any H&S incident that occurs at the Project.

To verify the implementation and application of this plan's management measures, the following monitoring activities will be undertaken as part of this management plan:

- Reports of accident incidents, illnesses and injuries including research and improvements shall be implemented;
- Workers' health controls shall be carried out to determine if there are disease increases that could be associated with the Project;
- Keep updated health and safety monitoring records; and
- Conduct regular evaluations with findings regarding the work sites' conditions.

6.8.7 Monitoring Systems

The PEU's H&S Manager will monitor the following systems, as well as liaise with contractors' H&S Managers, on a weekly basis to conduct the monitoring activities:

- **Internal Grievance Mechanism:** all grievances will be logged in the internal grievance mechanism, including health and safety issues and concerns raised by workers. The PEU's Human Resources will monitor the grievances by reviewing the internal grievance data base log which will include the measures taken to address issues, time frames, responsible personnel and any subsequent feedback that is required. PEU's Human Resources Manager in charge of monitoring the internal grievance mechanism will directly inform the H&S Manager and corresponding teams when health and safety issues are logged in. If a grievance presents a high risk, actions will be taken immediately to avoid health and safety incidents.
- **Accident and Incident Recording, Reporting and Investigation System:** this system will be used to record the number and type of accidents and incidents including near misses occurring in the workplace both at site and in offices. The details and outcomes of any required investigation, corrective actions required to address incidents, and trend analysis to detect subjects such as the recurrence of certain incidents will also be included.

In addition, the roles and responsibilities for recording, reporting and investigating incidents and for corrective action planning will be monitored to make sure all the people in charge are aware of their responsibilities.

- **Health Surveillance and Monitoring System:** this system will be used to record details of similar exposure groups in the workforce including the nature of health exposures, the exposure monitoring results of monitoring campaigns and actions to be taken to address any cases of detected exceedance of workplace exposure limits, recognizing that air quality is poor in the area due to levels of particulate matter. Information, data and records relating to the health surveillance carried out on individuals including the nature and type of exposure and any related health effects shall be kept in the Human Resources Employee Database. Information obtained from exposure monitoring and surveillance campaigns will be used to tailor health awareness campaigns and training programs for the workforce.

6.8.8 Key Performance Indicators

The Occupational Health and Safety Management Plan is to be reviewed on a six-month basis for the initial two years and then annually or as necessary in consultation with the H&S Manager. The Project will ensure that contractors update their plans at least once every six months during the first two years and then annually or as needed.

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 6-18: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
Workers' Health and Safety	Number of incidents/accidents classified by type/month and year.	Zero incidents or accidents	All Phases	Accident and Incident Recording, Reporting and Investigation System / Monthly
	Number of fatalities	Zero fatalities	All Phases	
	Number of non-fatal Injuries	Zero non-fatal injuries	All Phases	
	Total time lost non-fatal injuries, up to 3 days, more than 3 days	100% reported total time lost	All Phases	
	Number of reported incidents and accidents	100% reported, evaluated and solved incidents and accidents	All Phases	Health Surveillance and Monitoring System / Monthly
	Number of personnel reported occupational diseases	100% reported occupational diseases	All Phases	
	Number of grievances related to health and safety issues	100% grievances addressed and solved in a timely manner related to health and safety issues	All Phases	

Health and Safety Trainings	Number of personnel training courses / person / year	100% of trained personnel in a timely manner	All Phases	PEUs Human Resources in coordination with contractors. / Yearly
Audits/ Inspections	Number of inspections/ per quarter	At least one workers' health and safety inspection per quarter	All Phases	PEUs H&S Manager in coordination with contractors / Quarterly
	Number of findings (classified by type)/ inspections	100% reported findings corrective measures and lessons learnt.	All Phases	PEUs H&S Manager in coordination with contractors / Quarterly

6.9 Labor Conditions and Workers Selection Plan

6.9.1 Introduction

The Project Executing Unit (PEU) is committed to ensuring the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

The Labor Conditions and Workers Selection Plan, in alignment with the Project's Human Resources Policy, aims to create the framework of action to promote mutual benefits and ensure workers are involved with the vision, mission, objectives, principles and organizational values.

6.9.1.1 Objective

The overall objectives of the Labor Conditions and Workers Selection Plan are to:

- Base the recruitment, selection and hiring of personnel on merit and competitiveness;
- Establish, maintain and improve worker-manager relationship;
- Promote fair treatment, non-discrimination and equal opportunity of workers, and compliance with healthy and safe (H&S) working conditions; and
- Protect workers' wellbeing.

6.9.1.2 Scope of Application

This plan will apply during the development of all Project activities and during the Project's life cycle (construction, commissioning and operations, and decommissioning). It is the PEUs responsibility to ensure that employees, contractors and subcontractors are evaluated according to these ESMP policies and procedures, which are aligned to international best practices.

Contractors will use this procedure and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. The PEU will review and approve this document before any implementation.

6.9.2 Roles and Responsibilities

In order to properly implement the Labor Conditions and Workers Selection Plan, the involvement of the people listed below is required.

Table 6-19: Roles and Responsibilities

Role	Responsibilities
PEU	<ul style="list-style-type: none"> ■ Be familiarized, review and approve the Labor Conditions and Workers Selection Plan. ■ Ensure the availability of resources necessary for the implementation of the Labor Conditions and Workers Selection Plan.
Head of ESHS	<ul style="list-style-type: none"> ■ Be familiarized with the Labor Conditions and Workers Selection Plan.
ESHS Manager	<ul style="list-style-type: none"> ■ Update the Labor Conditions and Workers Selection Plan. ■ Review and approve the contractor project-specific Labor Conditions and Workers Selection Plan.
Calibration Committee	<ul style="list-style-type: none"> ■ Review the evaluation of its collaborators, as established in this plan.
Human Resources Manager	<ul style="list-style-type: none"> ■ Supervise the implementation of the Labor Conditions and Workers Selection Plan among internal stakeholders upon hiring and reinforce it as necessary. ■ Coordinate, together with the Community Relations Officer, the implementation of the temporary jobs program, according to the present plan.

	<ul style="list-style-type: none"> ■ Supervise the Performance Management Process, according to what is stated in this plan.
Community Relations Officer	<ul style="list-style-type: none"> ■ Coordinate, together with the Human Resources Manager, the implementation of the temporary jobs program, according to the present plan.
Contractor Company	<ul style="list-style-type: none"> ■ Develop a project-specific plan aligned with the Labor Conditions and Workers Selection Plan.
Employees, Contractors and Subcontractors	<ul style="list-style-type: none"> ■ Understand and carry out the activities set out in the Labor Conditions and Workers Selection Plan.

Source: ERM, 2021.

6.9.3 Activities

The PEU acknowledges the importance of basic rights of workers and the value of a solid worker-manager relationship, which will be achieved through a fair treat to direct and indirect workers and the provision of health and safety (H&S) working conditions.

In order to do so, the PEU has developed the Labor Conditions and Workers Selection Plan, which is composed of the steps presented herein.

6.9.3.1 Working Conditions and Management of Worker Relationship

A constructive worker-management relationship, and by treating workers fairly and providing them with safe and healthy working conditions, the PEU may create tangible benefits, such as enhancement of the efficiency and productivity of its operations.

6.9.3.2 Human Resources Policy

The PEU, through the Human Resources Manager, will develop, communicate, explain and make accessible to all the Project's workers an integrated Human Resources Policy upon taking employment.

The Human Resources Policy will provide workers with information regarding their rights under the applicable labor law, including their rights related to wages and benefits. It may also include the PEU's vision, mission, objectives, principles and organizational values.

6.9.3.3 Working conditions and terms of employment

As part of the recruitment process, the Human Resources Manager will evaluate the candidates' skills in relation to the minimum requirements of the position to be filled. The workforce will be composed of staff with the experience, education, training and the appropriate skills required for their job functions.

To this end, the Human Resources Manager will establish job descriptions based on the essential functions of the position, as well as knowledge, skills and abilities necessary to perform the required functions.

Prior to a hiring being done, the Human Resources Manager will let the new employee know what their role will be, their contribution to the organization and how this translates into the delivery of better services. Moreover, the Human Resources Manager will make sure the new employee is aware of the exact duration of their contract, this will prevent public false accusations against the company or rumors that could affect the PEU's reputation due to the termination of employment.

The Human Resources Manager will document and communicate to all new employees their working conditions and terms of employment, including wage, benefits, holidays, right to unionize in compliance with applicable local laws.

It is for the aforementioned, that the PEU has established an onboarding process that considers, among others, the following elements:

- Rights and duties of the collaborators and all those regulations that govern their behavior;
- Actions that promote a work environment based on mutual respect between men and women;
- Actions aimed to prevent, tackle and eradicate any type of discrimination;
- Specific induction actions when a person joins the company, to align them with the values and responsibilities in the management of their role within the organization;
- Specific actions that allow an adequate reincorporation of those people who are integrated after a prolonged medical leave, parental post-natal leave or some other situation that for a long time has distanced them from the Project;
- Specific actions in the induction of the position when a person changes functions within the organization, assuming new responsibilities and, especially, when it comes to positions of leadership and with responsibility in the direction of the persons, in such a way, to align them with the values and responsibilities in the management of people who are responsible for it.

6.9.3.4 Worker's Organizations

The PEU will not discourage workers from forming or joining workers' organizations or from bargaining collectively, and will not discriminate or retaliate against workers who participate, or seek to participate, in such organizations. The Bahamian Constitution specifically grants labor unions the right to free assembly and association.

6.9.3.5 Non-Discrimination and Equal Opportunity

The PEU will not make employment decisions on the basis of personal characteristics unrelated to inherent job requirements, it will base the employment relationship on the principle of equal opportunity and fair treatment, and will not discriminate with respect to aspects of the employment relationship, including:

- Recruitment and hiring;
- Compensation (including wages and benefits);
- Working conditions and terms of employment;
- Access to training;
- Promotion;
- Termination of employment or retirement; and
- Discipline.

The Project will meet the conditions stated in the International Finance Corporation's (IFC) Performance Standard (PS) 2 (e.g. freedom of association, abolition of forced labor, equal remuneration).

The Human Resources Manager will ensure that the principle of equality is applied to the company's daily development of activities, by eradicating the existence of preferences or differences that may exist due to gender, religion, country of origin, sexual orientation, ethnicity, pregnancy, age, disability, among others.

6.9.3.6 Gender Equality

The PEU is committed to promoting gender equality and diversity through its actions. It aims to identify opportunities and strategies to improve the workplace, so both women and men can perform their jobs well, and develop action plans to institute new or strengthen existing policies and practices to recruit, retain, and promote more women.

To this regard, the PEU has assumed the following compromises:

- The rates of violence against women will be part of the social studies of the region where the Project is located, so that mitigation actions can emerge if necessary;
- Possible negative impacts that Project actions may generate will be identified, not only in relation to human life, but also in relation to gender;
- Prioritize the cultural factors of each area, to evaluate important issues:
 - Active female voice;
 - Women's loneliness in the case of male migration to work;
 - The types of help and assistance required these women to become an active voice in employee engagement.
- A safe environment for women in the communities will be created or them to express themselves without fear of reprisal;
- All community meetings will be held at the best time for the female population of the region, always respecting their established schedules of domestic activities and attention to children and older focus groups, if necessary;
- A welcoming environment will be created for motherhood needs (e.g. take her child to a meeting);
- No woman, child, or elderly person will be put at risk or suffer any kind of reprisal;
- All of the PEU's partnerships on the construction site will have contractual clauses to the detriment of:
 - Zero tolerance for moral and sexual harassment (Gender-based Violence Policy);
 - Minimum percentage of training and local female workforce in construction and project development;
 - Specific personal protection equipment for women's work;
 - Flexible working hours if women are breastfeeding.
- The Grievance Mechanisms will be able to immediately act and resolve instances and complaints of gender-related discrimination (including harassment, bullying, sexual abuse, etc.). The PEU will monitor and oversee the handling of complaints of gender-related discrimination.

The Human Resources Manager will personally follow up on all workplace harassment complaints, as well as other gender related issues received through Project's Internal or External Grievance Mechanisms.

6.9.3.7 Retrenchment

If the Project anticipates the elimination of a significant number of jobs or a layoff of a significant number of workers that cannot be avoided, the Human Resources Manager will develop and implement a plan to mitigate the adverse issues, such as:

- The schedule of cutbacks;
- Retrenchment methods and procedures;
- Selection criteria (i.e. the selection criteria for those to be laid off will be objective, fair and transparent);
- Severance payments;
- Offers of alternative employment;
- Assistance in retraining efforts and job placement.

The PEU will notify affected workers, communities and/or governments, and communities in advance, so they are aware of the process that will unfold.

The PEU will also consult with employees and their organizations in developing the retrenchment plan for the Project. Consultations are essential for the development of plans to reflect workers' concerns, as well as their ideas about ways to avoid or minimize layoffs, criteria for selection and compensation payments.

The Internal and External Grievance Mechanisms adopted by the Project will both serve as communication channels to deal with claims that any provisions in the retrenchment plan were not followed.

Nonetheless, although exact numbers have not been defined, it is important to note that the Project does not expect significant retrenchments as the expected number of workers, even during peak construction and decommissioning periods will not include a large amount of workers (probably less than 30). During operations, approximately four people will be employed.

6.9.3.8 Grievance Mechanism

The Project will implement an Internal Grievance Mechanism for employees and all other internal stakeholders to raise workplace related concerns (see Internal Grievance Mechanism Plan). The Human Resources Manager will inform workers of the grievance mechanism at the time of hire, as well as through refresher trainings.

6.9.4 Workforce

The PEU acknowledges that the workforce is a valuable asset and a key ingredient in the sustainability of a company. Hence, it is committed to protect and prioritize its Project's workers integrity and wellbeing.

6.9.4.1 Child Labor

The PEU will not employ children in any capacity. The Project will follow national applicable laws and PS.2/ILO. The Bahamas has ratified both ILO Conventions No. 138 on the Minimum Age for Admission to Employment and No. 182 on the Worst Forms of Child Labor.

6.9.4.2 Forced Labor

The Project will not recur to forced labor, which consists of any work or service not voluntarily performed that is requested from an individual under threat of force or penalty. This covers any kind of involuntary or compulsory labor, such as indentured labor, bonded labor or similar labor-contracting arrangements.

The PEU will not hold on any personal documentation of workers at any point of the Project development under any circumstances.

6.9.5 Occupational Health and Safety

The Project has designed an Occupational Health and Safety Management Plan. The aim of this plan is to ensure workers perform their activities in a safe and healthy work environment, taking into account inherent risks in its particular sector and specific hazards in the Project's work areas, including physical, chemical, and biological risks.

The Project will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of those hazards.

6.9.6 Temporary Jobs

The temporary jobs that the Project could generate for the community members during its all phases of the Project play a very important role for the company, as they will allow the establishment of a good relationship with local communities.

The purpose of the generation of temporary jobs, using local, not specialized people, to carry out Project's activities, is to provide a temporary source of income for the people living near the Project. The supply of jobs in the Project's Area of Influence, although short term, could affect positively in the quality of life of the neighboring people.

This process is expected to happen mainly during the construction and decommissioning phases of the Project and will be coordinated by the Human Resources Manager, alongside the Community Relations Officer.

6.9.6.1 Hiring Requirements

The potential beneficiaries of the program will be, on an equal footing, men and women over 18 years old, in compliance with current labor legislation.

They must be mainly inhabitants of the communities in the Project Area of Influence who are not public servers and have the necessary skills to carry out the activities.

The PEU and its contractors will define clear hiring criteria, according to their internal procedures and in compliance with legal requirements, including the PEU's Human Resources Policy.

The Project will put an emphasis to attract diverse candidates, addressing bias in selection and will include gender recruitment targets to measure progress towards gender equity goals. These processes are described below.

Attracting Diverse Candidates

In order to attract diverse candidates the PEU and its contractors will:

- Check job descriptions for biased terms or gendered language: Gender-inclusive terms are more likely to signal gender inclusivity and opportunities for both men and women. For example, use gender-neutral language, such as “foreperson” instead of “foreman”;
- Revise job descriptions if necessary, to encourage gender diversity:
 - The PEU will describe the job requirements, not the person who will fill the job. For instance, for physically demanding jobs, the specific tasks will be described, rather than describing a “physically fit” candidate.
 - Clearly state required or desirable skills; state any formal training/qualifications required (but only require them when they are necessary for the job);
 - Specifically state that the job is open to all type of candidates;
 - Highlight opportunities for career progression;
 - Clarify whether a job requires standard on-site working hours, shift-work, and/or the potential for flexible work arrangements.
- Review job announcements and recruiting material (such as print, radio advertisement, etc.) for gender-biased language:
 - Do they present a gender-diverse and inclusive image?
 - Are men and women featured?
 - Are both men and women featured in operations roles?
 - Do voice-overs in radio, social media or television feature both men and women?
- Revise job advertisements and materials to present a more gender-inclusive and diverse image:
 - Include men and women in a variety of roles;
 - Use men's and women's voices;
 - Highlight career development potential for both men and women.
- Review job applications for questions that may prompt gender bias:
 - Applications will only ask for relevant information—and not request details such as marital status or age;

- Applications will include opportunities for candidates to highlight previous formal and informal work experiences that support their ability to do the job.
- Review job selection criteria that may create bias. For instance, a question asking for years of experience might not directly impact skills or qualifications; however, it could put at a disadvantage male or female applicants who have taken time out of work for family reasons.

Address Bias in Selection

In order to address possible bias in the selection process, the PEU and its contractors will:

- Ensure gender diversity in recruitment/selection teams: Selection teams will include at least one male and one female of equal seniority;
- Conduct bias training with HR and selection teams: This will help to identify and combat hidden biases, such as what work is appropriate for women, or how periods of absence from the workforce are judged;
- Ensure all members of selection teams are aware of relevant legislation related to non-discrimination;
- Test HR staff and selection teams for implicit bias: such as associations between women and men and different types of work;
- Develop a standardized, transparent recruitment process: This will ensure that all applicants have equal opportunity. Providing detailed criteria for all advertised positions will reduce reliance on subjective questions of “proper fit”;
- Set minimum targets for the number of shortlisted female candidates: If the PEU uses a recruitment firm, they will make sure the firm knows about the targets and is held accountable for meeting them;
- Develop a policy on appropriate interview questions: the PEU will avoid questions regarding marital status, children, intent to have children, or sexual orientation.

Recruitment Targets

Setting targets will help the PEU measure progress towards gender equity goals. They increase coordination and strengthen commitment to meeting these equity goals. While targets (and quotas) cannot address the underlying reasons for under-representation of women in particular parts of the workforce, they have been shown to be among the most effective means of addressing gaps in gender diversity.

Targets will be specific and challenging. In addition to quantitative metrics, they will include qualitative indicators of the ways in which people work together—for instance, targets that signal a more respectful workplace, more inclusive meeting practices, and more flexibility in work arrangements. Metrics also might include indicators like decreased absenteeism and turnover, and higher employee satisfaction. A table is presented below with targets in order to achieve gender equity in employment and have a gender-inclusive work environment.

Table 6-20: Targets

Type of Target	Target
Review HR Policies and Physical Infrastructure	<ul style="list-style-type: none"> ■ Review all job descriptions and recruitment material related to positions in all departments for gender-discriminatory or discouraging language; ■ Review HR policies regarding ergonomics, personal protective equipment (PPE), workplace safety, and equipment to ensure that these consider differences in safety needs between, men and women; ■ Ensure that all departments on site comply with HR policies on ergonomics, PPE, workplace safety and equipment; ■ Ensure all toilet and shower facilities to be compliant.

**Gender-Inclusive
Work Environment**

- Improve parity in perceptions on career development opportunities between male and female employees.

Source: ERM based on IFC, Unlocking Opportunities for Women and Business, A Toolkit of Actions and Strategies, 2020.

6.9.6.2 Communication Mechanisms

Different communication mechanisms will be developed as described in the Stakeholder Engagement Plan, in order to encourage the participation of communities located within the Project Areas of Influence.

Communication activities and the publication of vacancies will contain at least the following information:

- The requirements to be a candidate for the program;
 - Applicants will have the obligation to state their personal data, including name and address, which must be corroborated by the Company's Human Resources Area;
- The jobs offered will specify temporary and/or permanent conditions;
- They will be informed if any type of minimum training related to the position offered is required.

Once the temporary employment vacancies are announced, together with their requirements, those who are in compliance may apply and, on the dates indicated, the beneficiaries of the program will be published.

6.9.6.3 Workers Engaged by Third Parties

The Project developed the Contractors Management Plan to define the minimum requirements that contractors and subcontractors working on behalf of the PEU must meet, in order to ensure that the environmental, social, and occupational health and safety risks associated with the contracted services, products and equipment are reduced and avoided. The PEU will take into account the risks inherent to their particular sector and specific classes of hazards in work areas, including physical, chemical, and biological hazards.

6.9.7 Performance Management Process

The PEU has adopted a performance management process, so that each employee receives timely feedback regarding their performance, either positive to continue in their path of growth or professional development, or corrective, in order to implement corrective actions if necessary.

The process considers, among others, the following elements:

- Evaluation of cultural components, referred to the level of compliance of the competencies of each collaborator in the organization;
- Evaluation of work objectives, which involve three types:
 - Platform Success: The PEU's objectives as a whole;
 - Functional Component: Group or area objectives
 - Individual Component: Specific objectives and goals for each collaborator.

To obtain final performance grade of each collaborator, the responsible evaluator must submit his/her judgment to a calibration committee, formed by PEU's management team, in which the partial result of the evaluation of its collaborators in charge will be reviewed, as to be able to count on an integral appreciation of the performance of each collaborator.

Likewise, in the calibration committee, the responsible supervisor/evaluator may have solid and consistent arguments that justify the evaluation that will be delivered. Therefore, the evaluator can also have arguments agreed by the entire committee to deliver to the employee when giving feedback.

The performance evaluation process has a duration of one year, understood as the beginning of the evaluation period, the month of January of each calendar year.

6.9.8 Documentation and Monitoring

The Human Resources Manager will be responsible for the implementation of what is stated in this plane and will keep evidence of it (e.g. documentation on PEU's policies, recruitment documents and processes, working conditions, internal grievance mechanism, workers who come from local communities, number of women hired by the Project).

6.9.9 Key Performance Indicators

The Labor Conditions and Workers Selection Management Plan is to be reviewed on a six-month basis for the initial two years and then annually or as necessary in consultation with the Human Resources Manager. The Project will ensure that contractors update their procedures at least once every six months during the first two years and then annually or as needed.

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 6-21: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool Frequency
Working Conditions	Human Resources Policy distributed in all the onboarding inductions	100% of Inductions shall distribute the Human Resources Policy (as well as the Code of Conduct, and other relevant policies, e.g. Sexual Harassment Policy)	All Phases	Human Resources Records and Internal Grievance Mechanism / Quarterly
	Sign Terms of Employment	Terms of employment explained and signed by 100% of the Project's workforce	All Phases	
	Non-discrimination and gender-based violence	Zero tolerance of discrimination of any type. 100% reported, evaluated and solved grievances regarding discrimination complaints and gender-based violence in a timely manner	All Phases	
	Gender equality: percentage of women working in the Project	15% target	All Phases	
	Retrenchments	100% of informed workers regarding the schedule of cutbacks; the retrenchment procedures; transparent and fair selection criteria for those to be laid off; severance payments; and if applicable offers	All Phases	

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool Frequency
		of alternative employment; and assistance in retraining efforts and job placement.		
Workforce	Child Labor and Forced Labor	Zero child or forced labor.	All Phases	Human Resources Manager / Quarterly
Hiring	Recruitment Targets	100% recruitment targets met to attract diverse candidates and avoid biases during selection	All Phases	Human Resources Manager / Quarterly

Source: ERM, 2021

6.10 Internal Grievance Mechanism

The Project Executing Unit (PEU) is committed to ensuring the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

The Project is committed to maintaining lasting, transparent, culturally appropriate and efficient relationships with its internal and external stakeholders, through communication and engagement measures that allow receiving, analyzing and solving any concern, doubt, question regarding the environmental and social performance of the Project in all of its activities.

Based on the foregoing, the Project has developed an Internal Grievance Mechanism with the objective of identifying and managing the potential internal nonconformities and/or complaints in a timely and effective manner.

6.10.1 Objective

Establish an Internal Grievance Mechanism so that the Project can handle internal complaints, presented by its employees and internal stakeholders (e.g. direct workers and their organizations, workers hired by third parties, contractors, subcontractors, supply chain workers), during the development of its projects by giving them an adequate response, generating satisfactory agreements and implementing compensatory and corrective actions, when necessary.

By establishing an effective Internal Grievance Mechanism, the PEU will be able to manage potential conflicts of interest by segregating the roles and responsibilities of individuals involved in the concern, suggestion or grievance management process and avoiding placing individuals in a position where conflicts could be perceived to arise.

The plan does not replace the public mechanisms of resolution of conflicts in the Bahamas' legal system but covers the legal process in the Grievance Mechanism to minimize the management of grievances and escalation to the judicial system.

6.10.2 Scope of Application

This plan will apply during the development of all Project activities and during the Project's life cycle. It is the PEU's responsibility to ensure that employees, contractors and subcontractors are evaluated according to these ESMP policies and procedures, which are aligned to international best practices.

Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. The PEU will review and approve this document before any implementation.

6.10.3 Definitions

The main terms used in this document are defined below:

Table 6-22: Terms and Definitions

Term	Definition
Claim	Concern, suggestion, complaint, or grievance raised by an individual or group of individuals that need to be addressed.
Claimant	Person or group of people communicating a claim.
Concern	Requests for information or general negative perceptions unrelated to a specific Project impact or incident. If not addressed to the satisfaction of the claimant, concerns may become claims.
Conflict of interest	A conflict of interest exists where there is a divergence between the interests of an employee or contractor and his or her responsibilities or capabilities under this directive, such that an independent observer might reasonably question whether the actions of that person are influenced by his or her own interests.
Contractor	An individual or a company that has entered into a contract to provide goods or services to the PEU. The term covers parties directly contracted by the PEU and those contracted by a Contractor company, also referred to as subcontractors.
Grievance	A problem raised by an individual or group of individuals that needs to be addressed. Claims can result from either real or perceived impacts of PEU's operations. The terms "claim" and "grievance" can be used interchangeably.
Suggestion	Proposal, insinuation, or indication that is submitted with the aim of proposing an action to improve the PEU's internal processes.
Retaliation	Any adverse action taken against a Claimant, employee, or contractor whose purpose is to frustrate the operation of this directive.
Worker Representatives	People designated from the PEU or a contractor to represent Project workers. It can be a worker, supervisor, or union representative.
Workers Grievance Mechanism	A procedure through which a grievance can be raised by a worker, assessed, investigated and responded to. It is also a framework through which workers can gain access to remedy for any adverse impacts or damage they have suffered as a result of business activities.

Source: ERM, 2021

6.10.4 Roles and Responsibilities

In order to properly implement the Internal Grievance Mechanism, the involvement of the people listed below is required.

Table 6-23: Roles and Responsibilities

Role	Responsibilities
PEU	<ul style="list-style-type: none"> ■ Review and approve the Internal Grievance Mechanism. ■ Ensure the availability of resources necessary for the implementation of the Internal Grievance Mechanism.
HR Manager	<ul style="list-style-type: none"> ■ Ensure the correct implementation of the Internal Grievance Mechanism. ■ Communicate the Internal Grievance Mechanism among the PEU's internal stakeholders (i.e. employees, contractors and sub-contractors)
Head of ESHS	<ul style="list-style-type: none"> ■ Ensure the correct implementation of the Internal Grievance Mechanism.
Representative of PEU's Legal Area	<ul style="list-style-type: none"> ■ Evaluate and determine the origin of the complaints received and define the measures to be taken in response, as suitable according to what is stated in this plan.

Role	Responsibilities
Project Manager	<ul style="list-style-type: none"> ■ Communicate the Internal Grievance Mechanism among PEU's internal stakeholders (i.e. employees, contractors and sub-contractors) at a project level.
ESHS Manager	<ul style="list-style-type: none"> ■ Help with the implementation of the Internal Grievance Mechanism. ■ Review and approve the contractor project-specific Internal Grievance Mechanism Plan. ■ Update the Internal Grievance Mechanism.
Grievance Mechanism Team	<ul style="list-style-type: none"> ■ Manage the registration and follow up on to the feedback received. ■ Share the received feedback with the Project Manager, based on what is stated in this document. ■ Sign all responses before being communicated to the employee and/or interested parties. ■ Share the feedback of subcontractors, with the appropriate contractor when applicable
Employees, contractors and subcontractors	<ul style="list-style-type: none"> ■ Read and be familiarized with the Internal Grievance Mechanism. ■ In case of not having a proper mechanism of their own, inform their employees working in Project operations about the existence of this mechanism and monitor its implementation

Source: ERM, 2021.

6.10.5 Activities

The Internal Grievance Mechanism Plan establishes the guidelines for internal stakeholders to submit complaints, grievances and concerns arising from any project's activities and operations, ensuring the accessibility and effectiveness of the process.

6.10.5.1 Principles

This plan has to guarantee the same level of integrity and respect for all the people involved, as well as for any type of claim. To this regard, the Project's Internal Grievance Mechanism will be:

- **Understandable and reliable** (e.g. the affected stakeholders must understand the management plan, the confidentiality of the person filing the complaint must be protected, the expected deadline for receiving a response must be shared);
- **Culturally appropriated and accessible** (e.g. complaints can be filed in the local language, the technology required to file a complaint must be of common use, illiterate people can file complaints verbally);
- **Free of charge** (e.g. raising a complaint will not have any cost);
- **Anonymity** (e.g. the claimant will have the option to remain anonymous);
- **Proportional** (e.g. to provide the appropriate level of management to address the grievance promptly);
- **Rights-Compatible** (e.g. outcomes and remedies will be in line with internationally-recognized human rights legislation and national law. No aspect of the mechanism will prevent workers from enforcing their legal rights. Workers will be protected against retaliation for having raised complaints);
- **Inclusive and non-discriminatory** (e.g. all grievances, from all workers regardless of age, ethnicity, mental or physical disability, race, religion, gender, sexual orientation or gender identity, will be accepted, reviewed and solved as needed);
- **Transparent** (e.g. every complaint will be treated seriously, and dealt with consistently and in an impartial, confidential and transparent manner. The process is transparent and provides timely feedback to the claimant).

The present plan establishes the guidelines of the Internal Grievance Mechanism and describes how each Project along with its Grievance Mechanism Team⁹ will proceed in order to adequately and satisfactorily address the possible complaints expressed by its internal stakeholders. Complaints related to affected communities and external stakeholders are covered by the External Grievance Mechanism Plan.

The Internal Grievance Mechanism aims to prevent social contingencies and conflicts with the people directly involved in the development of the Project, since it will provide, at all times, effective attention, and it has the obligation to respond to the requests of all claimants.

The PEU has established a process for the reception, registration, review, analysis, resolution and evaluation of complaints, claims and concerns to be implemented in all of its projects. The process will be documented through a physical record file and will end with the closure and written agreement on the resolution of both parties (i.e. the claimant and the Project).

6.10.5.2 *Publication of the Mechanism*

Based on the Stakeholder Engagement Plan the Project will inform internal stakeholders about the Grievance Mechanism and the communication channels to submit complaints, claims or suggestions regarding any activities related to the Project, as well as how and where to submit them. This information will be shared through:

- Direct dialogue;
- Printed material such as brochures and posters;
- Informative presentations of the Project;
- Trainings;
- Didactic educational tools (e.g. games, videos, books, etc.).

6.10.5.3 *Grievance Mechanism Procedure*

In order to ensure the proper implementation of the Internal Grievance Mechanism, and the resolution of the feedback received. This mechanisms is divided into four main steps. These steps are presented in the figure below.

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⁹ The Grievance Mechanism Team is led by the Head of HR ant the Head of ESHS.

Figure 6-5: Grievance Mechanism Procedure



Source: ERM, 2021.

These steps are designed based on the recommendations of the International Finance Corporation (IFC), through which a communication channel and responsible for monitoring in each of them is designated.

Reception and Registration

Once the Grievance Mechanism has been presented to the internal stakeholders, any manager of the Project, Company and/or contractors will be able to personally receive any feedback, which must then be delivered to the Grievance Mechanism Team.

In addition of the feedback collected by the managers, the feedback will be submitted through the following reception channels:

- Website – To be determined prior to the start of construction and operation activities;
- Telephone – To be determined prior to the start of construction and operation activities;
- A Grievances Mailbox placed within the Project's facilities. The mailbox's precise location will be shared with workers during their hiring process.

Any complaint or suggestion that is entered by the aforementioned means must follow an Internal GM form, which shall contain the following information:

- Place and date of the complaint or suggestion;
- Reason for the feedback, with details of the events;
- Claimant's contact information (In case the grievance is not anonymous);
- Claimant's proposed solution to the issue.

The process will begin with the receipt of a complaint or suggestion by the Grievance Mechanism Team and notify the claimant that the claim has been received, will be reviewed and taken for analysis. Once the suggestions and/or complaints have been received, the Grievance Mechanism Team will complete the Communication Report and the information collected regarding the complaint and/or suggestion will be captured in an Internal GM Database to register the complaints and/or suggestions.

If the claim is readily resolvable (e.g., a request that can be immediately granted or an easy solution can be applied without an investigation process), the person receiving the claim (i.e., immediate manager, human resources or worker representative) takes action to address the issue directly and records the details in the Internal GM Database. If the claim subject is considered sensitive by the claimant (e.g., in cases regarding abuse,

sexual harassment, or other forms of gender-based violence), a special point of contact with adequate training will be provided. The claimant will have the option to talk to a point person of their same gender, if requested.

Claims will not be applicable in cases when:

1. It is not directly related to the PEU, its contractors, or subcontractors;
2. It is out of the PEU's influence;
3. Its nature exceeds the scope of the present Internal Grievance Mechanism;
4. The claimant has no standing to file; and/or
5. There are other formal mechanisms/institutions or community procedures more appropriate to address the issue.

When the claim is classified as **non-applicable** following the above criteria, the PEU will clearly communicate the reasons why it cannot be considered to the claimant, and when possible, provide information to help them redirect their claim to the right institution or party.

The Internal Grievance Database should be updated weekly to reflect the current state of the claim until the claim has been resolved according to the claimant. Reception of the claim will be acknowledged within three (3) days after the claim is received. If an investigation is needed, this will take up to 15 days (low risk claims), up to 10 days (medium risk claims) and 5 days (high risk claims).

The Project will provide a means by which all workers will be able to raise **anonymous complaints**. This gives the most vulnerable workers confidence that they will not be retaliated against for raising concerns, and can be fundamental to shifting power dynamics in the workplace. Therefore, in case of an anonymous case, the resolution will be published on a visible and accessible notice board on site and communicated in regular staff meetings.

Review, Analysis and Investigation

Once the complaints have been filed, the review, analysis and investigation process will unfold as follows:

1. The Grievance Mechanism Team will collect on a weekly basis the complaints presented, whether submitted physically or via website, and will review the nature of the complaint, as well as the company's departments potentially involved;
2. The Grievance Mechanism Team will make an initial assessment of severity in coordination with the H&S Manager, if necessary. The grievances will be classified in four categories:
 - a. **Non-Admissible** (e.g. claims that are not directly related to the Project, its contractors or subcontractors, out of the PEU's influence);
 - b. **Low Risk** (e.g. claims that do not require resolution per se, but instead only require information or a certain clarification to be provided to the claimant. If there are recurring complaints that have been previously received and addressed by the Project, the PEU will reconsider elevating the importance of the complaint, as this might be a sign that the response to the grievance has been insufficient or inadequate);
 - c. **Medium Risk** (e.g. claims that require resolution and are related to minor risks associated with health, the environment, construction, transportation, and contractor and subcontractor personnel. Although important, they do not pose an immediate risk); and
 - d. **High Risk** (e.g. claims related to the security and safety of Project personnel and community stakeholders, as well as those that, according to criteria of the Human Resources team, require immediate response as the claim poses an immediate major health and safety risk or a risk to an individual, to a large or small group or several groups of stakeholders. This includes claims regarding illegal and abusive activities).
3. The HR Manager will prepare the Communication Report, that includes the information listed below:
 - Internal tracking folio number provided to the claimant;

- Type of feedback,
 - Area potentially involved;
 - Claimant's information (In case the grievance is not anonymous);
 - Date the complaint or suggestion was originated;
 - Grievance Risk Category (Low, Medium or High);
 - Brief description of the complaint or suggestion;
 - Area responsible for monitoring and solution;
 - Recommended solution;
 - Term of resolution.
4. Once the complaint, claim or concern has been reviewed, the investigation must be carried out in the first instance by a member of the Grievance Mechanism Team. In case the feedback transcends and involves more areas of the Project, the suggestions and/or complaints will also be channeled to the Project Manager and the HR Manager, as appropriate, to coordinate resolution with the departments involved, depending on the scope of each, and to determine the actions to follow.
- Regardless of the categorization of the claim, the claimant must always be informed that her or his grievance has been received and is being investigated. The answer must be given in written and/or verbal form, in a clear and precise language, preferably respecting the claimant's language. In cases where the complaint is anonymous, the response will be published in the same way in which the complaint was submitted (through the website or in the module). The deadline for the resolution of a complaint or claim is according to the categories shown in the following table.
5. The evaluation of each complaint claim or concern must be in accordance with the following categories.

Table 6-24: Timeframe per Claim Category

Claim Category	Responsibilities	Response Time
Non-Admissible	Grievance Mechanism Team notifies the claimant	These suggestions and/or complaints will be communicated within fifteen (15) business days once the categorization is done.
Low Risk	The Manager of the area responsible for the resolution receives and follow up the complaint.	These suggestions and/or complaints will be addressed and answered in an average of ten (10) business days. If the complaint could not be resolved within this timeframe for reasons beyond the Project, the claimant will be notified and the time of response will be determined, considering a maximum period of three (3) months.
Medium Risk	The Manager of the area responsible for the resolution receives and attends the complaint.	The response will be carried out within an average of five (5) days after categorizing the complaint or concern, indicating that the resolution period will be of fifteen (15) business days from the complaint's registration. If the complaint could not be resolved within this timeframe for reasons beyond the Project, the applicant will be notified and the time of response will be determined, considering a maximum period of three (3) months.
High Risk	The Manager of the area responsible for the resolution receives and responds to the	The response time must be immediate (within 24 hours of its submission)

Claim Category	Responsibilities	Response Time
	<p>complaint immediately and communicates it to the Project Manager via email/phone call.</p> <p>Once registered and communicated internally, the ESHS Manager will proceed to provide support for the follow-up and resolution of the complaint, collectively with the Manager of the responsible area and the Project Manager.</p>	<p>In the event that, for reasons beyond the Project, the complaint could not be resolute within this timeframe, the claimant will be notified, and the time of response will be determined on a case-by-case basis. However, the resolution period will not be longer than five (5) days.</p>

Source: ERM, 2021.

In high-risk situations, where there is a possibility of serious danger (e.g., death, sexual harassment), the PEU will consider involving other member teams to weigh in on the resolution strategy. In these type of cases, an alternative timeline will be established for addressing and involving third parties as needed, such as police and hospitals. The Project will always protect the confidentiality of the claimant. The special procedure for High Risk Claims is described below.

1. The claim enters an expedited process for investigation and resolution by HR and if applicable other senior management, such as the H&S Manager, when appropriate.
2. The PEU initiates the investigation immediately and coordinates with local authorities to appropriately address the matter for claims related to allegations of illegal or abusive acts.
3. HR meets the claimant to gather additional information as necessary. Subsequently, he or she investigates the claim (e.g., meets with members of the security team involved in the claim), develops, and implements corrective actions in collaboration with other project staff, as necessary.
4. If both the HR staff and other staff involved in the resolution of the claim are all the same gender, and the claimant prefers to speak to a person of his or her same gender, the PEU will facilitate this request. This option will be disseminated when disclosing the procedure. If additional investigations are needed, these are promptly undertaken.

If the person responsible of the claim is not able to obtain a resolution within 5 days of the reception of the claim, he or she submits the claim to Human Resources, who notifies and seeks advice from the H&S Manager.

If the H&S Manager and Human Resources do not reach an agreement on a resolution within the following 5 days, Human Resources arranges meetings and discussions with relevant higher hierarchy personnel and the claimant, as well as other relevant departments, to agree on a final solution.

Before the final resolution is issued, the agreed resolution will be reviewed by the claimant, or his or her worker representative, and will confirm his or her agreement with the solution proposed.

Resolution

Once the complaints have been categorized and reviewed, the resolution and closure process will unfold as follows:

1. The first step for the resolution is the determination of the timeframe (considering the periods defined in the Table above) and its inclusion in the registration file previously elaborated.
2. The complaint or claim will be discussed by the managers of the areas involved. However, if a Manager is directly involved in the grievance, that person cannot play a role in the Internal Grievance Mechanism process in order to prevent conflicts of interest. In the case of complaints related to allegations of illegal or abusive acts,

the Project will immediately initiate the investigation to adequately address the matter. Based on the investigation, the complaint may or may not proceed.

3. Depending on the risk category, the approach will be defined. The management of the responsible areas, together with a representative of the Legal Area will evaluate and determine the origin of the complaint and define the measures to be taken in response. The ESHS Manager must sign all responses before they are communicated to the employee and/or interested parties.
4. If the complaint is not admissible, the claimant will be notified.
5. The Grievance Mechanism Team and the Project Manager will have performed an analysis of all the viable resolutions, seeking to, at all times, provide solutions that respond to the claimant, from a position of dialogue and respect. A complaint will be dismissed only when all the instances of solution have been exhausted, explaining in writing to the claimant, in a clear and indubitable manner, the reasons for the refusal on the resolution of the complaint.
6. All documentation issued during the process by the company to interested parties must be sent by email or written notification. In any case, the answer must have the corresponding record (the folio of complaint or suggestion) and will be properly archived as part of the process.

Right to Appeal

A worker who is not satisfied with the procedure or resolution can contest the PEU's decision. The claimant will have a maximum period of fifteen (15) business days to express any disagreement with the response and appeal it. Once the deadline has elapsed and there are no new grounds for complaint, the process will be considered closed.

In the event that a claimant wishes to challenge/appeal the PEU's decision or propose a counter offer, the In-Country Director and the Project Director will decide whether the PEU can resolve the dispute or it is necessary to involve a third party (e.g. a mediator, technical expert, local authority, or ombudsman) to reach an agreement between the parties and resolve the dispute. The claimant will always have the right to seek other legal or administrative resources. The last resort will be the national judicial process.

When a resolution agreement is established, both parties, the Human Resources Manager, acting as the representative of the PEU and the claimant, will sign it in writing. Once the solution is implemented, both parties in recognition of compliance with the agreement will sign a compliance agreement again.

Evaluation and Follow Up

It will be the responsibility of the Grievance Mechanism Team to follow up on all responses to suggestions and/or complaints in written and/or verbal form, especially those of medium and high priority, so as to confirm that the response given to the interest group was adequate, given the circumstances and criteria applicable at the time of filing the complaint. The Internal GM Database will be used to follow up each claim until it is resolved and closed.

6.10.6 Confidentiality and Protection from Retaliation

The Project is committed to protecting the identity of claimants and anyone else involved in the claim, and to handling personal information in accordance with legal requirements. This duty extends to all employees and representatives of the PEU and its contractors who participate in the Internal Grievance Mechanism process.

Information about a claim is shared within the company on a need-to-know basis and only to the extent necessary to complete the steps in this directive. The PEU will not share personal information with third parties unless required by law or authorized by the claimant.

When a claim relates to a specific PEU or contractor employee, that person cannot play a role in the Internal Grievance Mechanism process in order to prevent conflicts of interest.

The PEU does not tolerate retaliation against claimants, be they an employee or contractor. When concerns about retaliation are raised, Human Resources is responsible for leading an investigation into the alleged retaliation under the PEU's Human Resources Policy and Code of Conduct.

6.10.7 Documentation and Monitoring

Once every two months, the Grievance Mechanism Team will send the Internal GM Database to the Project Manager with information on the feedback received through a consolidated report showing the status of each claim and its indicators.

This plan will be monitored continuously and is designed to facilitate the integration of lessons learned during its execution. The Project will be able to respond adequately to situations as soon as they develop.

The Internal Grievance Mechanism Plan will be reviewed annually however, if required, the mechanism could be updated as necessary. It will also ensure that contractors update their procedures at least once a year.

6.10.8 Key Performance Indicators

The table below present the key performance indicators that will evaluate the implementation of this plan:

Table 6-25: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Method/Tool / Frequency
GM attainment	PEU will review the Internal Grievance Database, including complaints closed and those unresolved. Number of grievances received per month versus number of grievances resolved.	100% of grievances resolved in a timely manner	Internal Grievance Mechanism Database and Human Resources Manager / Quarterly
GM time efficiency	PEU will review the Internal Grievance Database, especially the number of days between the grievances submission until its resolution and closure to calculate the average length of time needed to resolve grievances.	Low risk grievances: Max. 10 days Medium risk grievances: Max. 5 days High-risk grievances: Max. 24 hours	Internal Grievance Mechanism Database and Human Resources Manager / Quarterly
GM Focus/ Risk Areas	PEU will review the Internal Grievance Database and if necessary talk to managers of technical areas or departments, to breakdown the grievances topics (e.g. health, safety, etc.) and grievance source	Resolve 100% of grievances from all sources and about all topics. Disseminate information regarding the different solutions when there are recurrent complaints in order to decrease recurrent grievances.	Human Resources Manager in coordination with contractors / Quarterly
Method of grievance reporting	PEU will review the Internal Grievance Database and engage with workers to check the use and success of the different grievance reporting methods (e.g., number of grievances received by phone, at the office, website, and boxes).	100% of reporting methods will be functional and accessible at all times.	Human Resources Manager through direct interviews with workers / Quarterly

Impact	Indicator	Performance Goals/ KPIs	Method/Tool / Frequency
GM dissemination	PEU will monitor all GM informational documents, meetings, and events where the GM was disclosed and explained.	GM dissemination of information in at least 70% of events and regular meetings with staff, including contractors and subcontractors.	Human Resources Manager Records (trainings, meetings, orientation sessions, etc.) / Quarterly

Source: ERM, 2021.

6.11 Community Health and Safety Plan

The Project Executing Unit (PEU) is committed to ensuring the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

To promote its projects alignment to best international practices, the PEU acknowledges that health and safety measures are an essential part of the management of any project, in order to ensure the wellbeing of the stakeholders (e.g. communities) directly and indirectly involved in its activities. Additionally, the PEU recognizes that the development of its operations, as well as the equipment and infrastructure of a Project, can increase the chances of the neighboring communities of being exposed to potential risks and impacts.

The PEU has adopted risk prevention as one of its main concerns and, through the Community Health and Safety Management Plan, seeks to avoid or minimize the potential risks and impacts to health and community safety that may result from activities related to any of its projects during the construction and operations phase, specially focusing on vulnerable groups.

6.11.1 Objective

The objective of this plan is to establish the necessary mechanisms to prevent the occurrence of incidents and accidents related to the Project that could affect neighboring communities during the different phases of the Project. More specifically, this plan intends to present the appropriate measures to respond to:

- Changes in the health of affected communities, including exposure to disease or changes in the availability and quality of water sources;
- Changes in livelihoods and income generation opportunities that affect the affected communities' access to social infrastructure;
- Changes in the security of the affected communities related to emergencies, unplanned events, crime and conflict; and
- Ensure that the safeguarding of personnel and property is carried out in a legitimate manner that avoids or limits risks to the community's safety and security.

6.11.2 Scope of Application

This plan will apply during the development of Project activities and during the Project's life cycle. It is the PEU's responsibility to ensure that employees, contractors and subcontractors are evaluated according to these ESMP policies and procedures, which are aligned to international best practices.

Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. The PEU will review and approve this document before any implementation.

The geographical scope is described by the Project Area of Influence (AOI), which comprises two parts:

- The physical footprint of the project, comprising the area occupied by direct components and Associated Facilities (Area of Direct Influence, ADI). Direct components are centered on the Project's parcel, transmission line routes, substation and transportation routes to and from the airport or from the port facility.

6.11.3 Roles and Responsibilities

In order to properly implement the Community Health and Safety Plan, the involvement of the people listed below is required.

Table 6-26: Roles and Responsibilities

Role	Responsibilities
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PEU	<ul style="list-style-type: none"> ■ Be familiarized, review and approve the Community Health and Safety Plan. ■ Ensure the availability of resources necessary for the implementation of the Community Health and Safety Plan.
PEU Project Manager	<ul style="list-style-type: none"> ■ Be familiarized with, review and update as necessary the Community Health and Safety Plan.
PEU ESHS Manager	<ul style="list-style-type: none"> ■ Be familiarized and implement the Community Health and Safety Plan. ■ Review, evaluate and verify the Community Health and Safety management plans. ■ Review and approve the contractor project-specific Community Health and Safety Plan. ■ Update the Community Health and Safety Plan.
PEU H&S Manager	<ul style="list-style-type: none"> ■ Review, evaluate and verify the Community Health and Safety management plans. ■ Present, alongside the Community Relations Officer, a monitoring report to the Project Manager.
PEU Community Relations Officer	<ul style="list-style-type: none"> ■ Coordinate and supervise the communication of information activities regarding this plan to the affected communities. ■ Present, alongside the H&S Manager, a monitoring report to the Project Manager.
Contractor Company	<ul style="list-style-type: none"> ■ Develop a project-specific Stakeholder mapping Plan aligned with the Community Health and Safety Plan.
Employees, contractors and subcontractors	<ul style="list-style-type: none"> ■ Read and be familiarized with the Community Health and Safety Plan. ■ Develop a project-specific Community Health and Safety Plan.

Source: ERM, 2021

6.11.4 Activities

This plan describes the actions that need to be taken to avoid or manage potential impacts associated with Community Health and Safety (CHS) issues, which may arise from activities related to the Project. The PEU will establish preventive and control measures in line with international best practices, such as the International Finance Corporation (IFC) Performance Standards.

6.11.4.1 Health and Safety Risk Identification Associated to Affected Communities

Prior to starting operations, the affected communities within the Project Area of Influence must be identified. Likewise, stakeholders will also be identified through the Stakeholder Mapping procedure (see Stakeholder Engagement Plan). At the same time, the risks associated with CHS will be determined and evaluated considering the planned and unplanned events associated with all stages of the Project. This prefeasibility assessment is the basis for defining the mitigation measures of the identified impacts and must be considered as a minimum:

- Water quality and availability;
- Increase in local population due to the migration of the Project's workers;
- Community exposure to air, noise and water pollution;
- Design and safety of infrastructure and equipment;
- Road safety;
- Handling, storage and transport of hazardous materials and waste;
- Availability and quality of ecosystem services;
- Community exposure to communicable and non-communicable diseases, as well as vector control;
- Security personnel; and
- Emergency preparedness and response.

A specific plan will be developed to mitigate each of these impacts. The affected communities will be consulted during the aforementioned assessment process to ensure a collaborative perspective and common understanding. Likewise, stakeholder engagement activities will be conducted to inform affected communities and other external stakeholders on the potential risks identified and prevent confusion, rumors or misunderstandings. This is done through the Stakeholder Engagement Plan.

6.11.4.2 Emergency and Preparedness Response Plan

The H&S Manager must assure that, the Emergency Response Plan is implemented by the Project, in all its facilities, as well as by all the contractors and subcontractors. The Emergency Response Plan (ERP), considers all the possible emergency scenarios that could have an impact on the CHS of the Project's area of influence. The ERP also considers the roles and responsibilities for implementing the Plan, as well as the equipment, resources and skills needed to effectively apply it. All scenarios identified during the prefeasibility assessment will be tested and documented on a regular basis.

6.11.4.3 Community Health and Safety Measures

A series of Project specific plans will be developed based on the identification and environmental and social prefeasibility assessment of CHS and the ERP (e.g. Traffic Management Plan, Waste and Water Management Plans), with the aim of ensuring the safety of communities within the Project Area of Influence; these plans will include the necessary controls to manage the risks. The ESHS Manager along with the H&S Manager will review, evaluate and verify the development of this plan.

The PEU will select and implement the physical, engineering, and administrative controls. The responsibilities of these plans must be communicated and documented.

CHS management measures will be reviewed, evaluated and verified by the H&S Manager of the Project and then presented to the ESHS Manager, who will give final approval before they can be implemented.

6.11.4.4 Communication of Information

The potential Project affected communities, shall be informed in a culturally appropriated manner on the specific content of this Plan and the ERP (emergency scenarios and its emergency response actions), as well as of the rest of the ESMP procedures that directly involve them (e.g. Stakeholder Engagement Plan and the External Grievance Mechanism Plan). The CHS Plan will be communicated alongside the Stakeholder Engagement Plan; this process will be coordinated by the Community Relations Officer.

The information will include the type and nature of the risks identified, the actions proposed to avoid and manage those risks, as well as the monitoring activities planned. When evaluating the communication and consultation

activity, the Project will consider within the communication its employees, contractors, affected communities, and other relevant stakeholders.

The affected communities shall have the opportunity to express their views on the identified risks, impacts, opportunities and mitigation measures of the company. The PEU will consider such views and seek to respond to them appropriately.

The Community Relations Officer will gather the requests, concerns and questions of the affected communities and will ensure that they receive an adequate response in accordance with the External Grievance Mechanism Plan. Specific activities and measures are included below regarding the communication and disclosure of information about health and safety to each relevant stakeholder group.

Communication to the Affected Communities

The Project will communicate relevant health and safety information to communities that may be affected by potential emergency or health and safety situations generated at Project facilities or due to their activities. The communication aims at making them aware on what to do in the event of an emergency and the importance of emergency preparedness and response.

The Project will distribute the Community Health and Safety Management Plan to the communities in the Project's area of influence through different channels:

- PEU's website;
- Printed copies will be made available at PEU's Community Relations Office;
- Project's Newsletters for the communities/etc. (for more information about the Newsletter, see the Stakeholder Engagement Plan).

Information will be disclosed before emergency drills that involve the community take place, these will be diffused through the same channels named above. Special emphasis will be put in the difference between a drill and a real emergency. Notifications of drills will be made in a timely manner to the communities.

The PEU plans to work in conjunction with industry partners, government agencies and community groups to develop programs and/or campaigns that enhance the communities' awareness of safety concerns that can be directly attributed to the Project.

In addition, the Project will monitor the community grievance mechanism, which allows all levels of the community and stakeholders to provide feedback and/or raise concerns about the Project, including health and safety concerns. To achieve this, the Project has an External Grievance Mechanism Management Plan. The Project is committed to providing adequate procedures for the community to provide feedback on the Project and will maintain a database register, which will provide information for future decision making, stakeholder engagement and reporting.

The Project will measure, audit and publicly report Health, Safety, Security and Environment (HSSE) performance and maintain open dialogue with stakeholder groups and with communities where the Project operates.

Communication to Local Authorities, Governmental Departments and External Resources

The PEU will share the final Community Health and Safety Plan and the emergency plans with the local governmental organizations and external resources that have roles in emergency response scenarios and with authorities required by applicable local regulations.

The PEU will communicate frequently with local emergency response resources, at least once every month during construction and once every quarter during operations, to maintain them informed about the Project's progress and collaborate in drills when necessary.

Communication to Workers, Contractors and Subcontractors

The ESHS Manager ensures that the Community Health and Safety Plan, as well as the other emergency response and security plans are provided to all contractors. Employees and contractor employees are provided with the applicable plans and notified regarding their roles and responsibilities in the event of an emergency that might affect the community through training. In addition, every member of the Emergency Response Teams is trained in his or her responsibilities and the PEU will ensure that they have an adequate level of competency to carry out these responsibilities in the event of an emergency.

The specific training requirements for personnel and contractors consider the following:

- Training and simulations address the requirements of authorities and any existing mutual aid agreements;
- Relevant personnel receive training after significant updates or changes to this plan;
- Refresher training is conducted at a predetermined frequency for all members of the emergency response organization (typically annually); and

Each of the emergency response position alternates also attend the full training program.

Communication to Visitors

Visitors are provided with basic safety instructions and information on evacuation routes before entering a Project facility. If a drill is planned that day, they will be informed about it. Assembly points are clearly identified at the facility. In addition, they are accompanied at all times while at the Site.

6.11.5 Training

The Project will ensure that personnel responsible for the execution of tasks and requirements in this Plan are competent on the basis of education, training, and experience. Health and safety trainings will be carried out through community focal groups at least once a quarter.

Project training activities associated with the Community Health and Safety Management Plan shall be appropriately documented by a training matrix/plan and records of training undertaken. Training will include, but not be limited to:

- COVID-19 prevention awareness;
- STI and HIV/AIDS prevention and awareness training for all employees;
- Respiratory illness and infectious disease management;
- Vector-borne disease awareness including malaria and dengue;
- Speed restrictions in populated areas, safe driving in rural areas, safe driving in dusty environments, defensive driving and basic first aid;
- Benefits of vaccinations and disease prevention;
- Wildlife Management; and
- Adverse impacts of drug and alcohol usage.

6.11.6 Documentation and Monitoring

The Community Health and Safety Management Plan is to be reviewed on a six-month basis for the initial two years and then annually or as necessary in consultation with key stakeholders. This plan will be monitored continuously and is designed to facilitate the integration of lessons learned during its execution. The Project will be able to respond adequately to situations as soon as they develop.

Once every two months, the H&S Manager and the Community Relations Officer will collectively share with the Project Manager a consolidated report showing the status of the indicators presented below.

6.11.7 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 6-27: Key Performance Indicators

Impact	Indicator	Performance KPIs	Goals/ Project Phase	Method/Tool / Frequency
Communities Health and Safety	Number of incidents/accidents or emergencies affecting the community per year	Zero incidents, accidents or emergencies	All phases	Accident and Incident Recording, Reporting and Investigation System / Yearly
	Number of grievances from the community related to health and safety issues	100% grievances addressed and solved in a timely manner related to health and safety issues	All Phases	Community Relations Officer in collaboration with the ESHS Manager. External Grievance Mechanism database log / Quarterly
Health and Safety Trainings	Number of community members trained in health and safety topics and focused groups per year	One training/ focus group with community members 15 days before construction begins. One health and safety training for community members focused on emergency scenarios and road safety near the Project, 15 days before construction begins	15 days before construction Once every six months during all phases	Human Resources in coordination with Contractors / Yearly
	Number of workers and contractors trained in: Community Health and Safety, Code of Conduct, Fit for Work and Drug and Alcohol policies, and Emergency Trainings	100% of trained workers, contractors and subcontractors	All phases	Human Resources Training Records / Yearly
Disclosure of Information	Number and topics of health and safety information disclosed for the communities in the Project's area of influence	At least once per quarter during construction and decommissioning, and once per six months during operations	All phases	Newsletter for the Communities / Quarterly during construction, bi-annually during operations
	Health and Safety posters and/or flyers	Printed copies available at all times regarding health and safety measures for the community	All phases	Community Relations Officer / Quarterly

Source: ERM, 2021.

6.12 External Grievance Mechanism

The Project Executing Unit (PEU) is committed to ensuring the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

The Project is committed to maintaining lasting, transparent, culturally appropriate and efficient relationships with its internal and external stakeholders, through communication and engagement measures that allow receiving,

analyzing and solving any concern, doubt, question regarding the environmental and social performance of the Project in all of its activities. The External Grievance Mechanism is an instrument to guarantee transparency and commitment between the Project and the local population.

Based on the foregoing, the Project has developed an External Grievance Mechanism with the objective of identifying and managing the potential external nonconformities (e.g. from the affected communities) and/or complaints in a timely and effective manner.

6.12.1 Objective

Establish an External Grievance Mechanism so that the Project can handle external complaints, presented by stakeholders outside the Project (e.g. affected communities, external stakeholders, interested groups, etc.), during the development of its projects by giving them an adequate response, generating satisfactory agreements and implementing compensatory and corrective actions, when necessary.

By establishing an effective External Grievance Mechanism, the Project will be able to manage potential conflicts of interest by segregating the roles and responsibilities of individuals involved in the concern, suggestion or grievance management process and avoiding placing individuals in a position where conflicts could be perceived to arise. The Project recognizes that unforeseen impacts may occur, and that the maintenance of an open line of communication with the communities and/or those potentially affected by the Project is important to maintain transparent and cordial relations. In addition, international standards require the establishment of an External Grievance Mechanism in order to address the interested parties' concerns.

The procedure does not replace public mechanisms of resolution of conflicts in the Bahamas legal system but covers the legal process in the Grievance Mechanism to minimize the management of grievances and escalation to the judicial system.

6.12.2 Scope of Application

This plan will apply during the development of all Project activities and during the Project's life cycle. It is the PEU's responsibility to ensure that reception complaints are aligned to international best practices.

6.12.3 Definitions

The main terms used in this document are defined below:

Table 6-28: Terms and Definitions

Term	Definition
Claim	Concern, suggestion, complaint, or grievance raised by an individual or group of individuals that need to be addressed.
Claimant	Person or group of people communicating a claim.
Concern	Requests for information or general negative perceptions unrelated to a specific Project impact or incident. If not addressed to the satisfaction of the claimant, concerns may become claims.
Conflict of interest	A conflict of interest exists where there is a divergence between the interests of an employee or contractor and his or her responsibilities or capabilities under this directive, such that an independent observer might reasonably question whether the actions of that person are influenced by his or her own interests.
Contractor	An individual or a company that has entered into a contract to provide goods or services to the Project. The term covers parties directly contracted by PEU and those contracted by a Contractor company, also referred to as subcontractors.
Grievance	A problem raised by an individual or group of individuals that needs to be addressed. Claims can result from either real or perceived impacts of the Project's operations. The terms "claim" and "grievance" can be used interchangeably.

Suggestion	Proposal, insinuation, or indication that is submitted with the aim of proposing an action to improve the Project's internal processes.
Retaliation	Any adverse action taken against a Claimant, employee, or contractor whose purpose is to frustrate the operation of this directive.
External Grievance Mechanism	A procedure through which a grievance can be raised by a member of the community, assessed, investigated and responded to. It is also a framework through which workers can gain access to remedy for any adverse impacts or damage they have suffered as a result of business activities.

Source: ERM, 2021

6.12.4 Roles and Responsibilities

In order to properly implement the External Grievance Mechanism, involvement of the people listed below is required.

Table 6-29: Roles and Responsibilities

Role	Responsibilities
PEU	<ul style="list-style-type: none"> ■ Review and approve the External Grievance Mechanism. ■ Ensure the availability of resources necessary for the implementation of the External Grievance Mechanism.
PEU Head of ESHS	<ul style="list-style-type: none"> ■ Ensure the correct implementation of the External Grievance Mechanism.
Representative of PEU's Legal Area	<ul style="list-style-type: none"> ■ Evaluate and determine the origin of the complaints received and define the measures to be taken in response, as suitable according to what is stated in this plan.
PEU Project Manager	<ul style="list-style-type: none"> ■ Be familiarized with the External Grievance Mechanism and provide the necessary resources to ensure its proper implementation.
PEU ESHS Manager	<ul style="list-style-type: none"> ■ Ensure the correct implementation of the External Grievance Mechanism. ■ Review and approve the contractor project-specific External Grievance Mechanism. ■ Update the External Grievance Mechanism.
PEU Grievance Mechanism Team	<ul style="list-style-type: none"> ■ Be familiarized and disseminate the External Grievance Mechanism among external stakeholders. ■ Prepare the Communication Report, and follow up on the feedback received. ■ Share the External Grievance Mechanism Database with the Project Manager. ■ Share the received feedback with the Project Manager.
PEU Community Relations Officer	<ul style="list-style-type: none"> ■ Collect on a weekly basis the complaints presented, whether submitted physically or via website. ■ Review the nature of the complaint, as well as the company's departments potentially involved. ■ Solve, as immediate as possible the feedback received, if there are conditions to do so. ■ Keep a record of the solutions that were given for documentation, monitoring or verification of the solution applied.
Employees, contractors and subcontractors	<ul style="list-style-type: none"> ■ Read and be familiarized with the External Grievance Mechanism.

Source: ERM, 2021

6.12.5 Activities

The External Grievance Mechanism Plan establishes the guidelines for external stakeholders to submit complaints, grievances and concerns arising from any project's activities and operations, ensuring the accessibility and effectiveness of the process.

6.12.5.1 Principles

The PEU recognizes that this plan has to guarantee the same level of integrity and respect for all the people involved, as well as for any type of claim. To this regard, the Project's External Grievance Mechanism will be:

- **Understandable and reliable** (e.g. the affected stakeholders must understand the procedure, the confidentiality of the person filing the complaint must be protected, the expected deadline for receiving a response must be shared);
- **Culturally appropriated and accessible** (e.g. complaints can be filed in the local language, the technology required to file a complaint must be of common use, illiterate people can file complaints verbally);
- **Free of charge** (e.g. raising a complaint will not have any cost);
- **Anonymity** (e.g. the claimant will have the option to remain anonymous);
- **Proportional** (e.g. to provide the appropriate level of management to address the grievance promptly);
- **Rights-Compatible** (e.g. outcomes and remedies will be in line with internationally recognized human rights legislation and national law. No aspect of the mechanism will prevent community members from enforcing their legal rights. Community members will be protected against retaliation for having raised complaints);
- **Inclusive and non-discriminatory** (e.g. all grievances, from all community members regardless of age, ethnicity, mental or physical disability, race, religion, gender, sexual orientation or gender identity, will be accepted, reviewed and solved as needed);
- **Transparent** (e.g. every complaint will be treated seriously, and dealt with consistently and in an impartial, confidential and transparent manner. The process is transparent and provides timely feedback to the claimant).

The present plan establishes the guidelines of the External Grievance Mechanism and describes how the Project along with its Community Relations Team will proceed in order to adequately and satisfactorily address the possible complaints expressed by the community or other external stakeholders. Complaints related to internal stakeholders (e.g. workers, contractors, subcontractors, etc.) are covered on the Internal Grievance Mechanism Management Plan.

The External Grievance Mechanism aims to prevent social contingencies and conflicts with the people that might be affected by the development of the Project, since it will provide, at all times, effective attention, and it has the obligation to respond to the requests of all claimants.

The Project has established a process for the reception, registration, review, analysis, resolution and evaluation of complaints, claims and concerns to be implemented in all of its projects. The process will be documented through a physical record file and will end with the closure and written agreement on the resolution of both parties (i.e. the claimant and the Project).

6.12.5.2 Publication of the Mechanism

Based on the Stakeholder Engagement Plan, the HR Manager and the Project Manager will inform the affected communities and other external stakeholders about the Grievance Mechanism and the communication channels to submit complaints, claims or suggestions regarding any activities related to the Project, as well as how and where to submit them. This information will be shared through:

- Direct dialogue;

- Distribution of printed material such as brochures and posters, which will be proposed by the ESHS team and reviewed by the Marketing and Communication management of the PEU;
- Available information at the Project's Community Relations Office;
- Press and media;
- Didactic educational tools (e.g. games, videos, books, etc.).

6.12.5.3 *Grievance Mechanism Procedure*

In order to ensure the proper implementation of the External Grievance Mechanism, and the resolution of the feedback received, this mechanism is divided into four main steps. These steps are presented in the figure below.

Figure 6-6: Grievance Mechanism Procedure



Source: ERM, 2021.

These steps are designed based on the recommendations of the International Finance Corporation (IFC), through which a communication channel and responsible for monitoring in each of them is designated.

Reception and Registration

The Community Relations Team will manage the External Grievance Mechanism. The external claimants will be able to submit their grievances through the following reception channels:

- Website – To be determined prior to the start of construction and operation activities;
- Telephone – To be determined prior to the start of construction and operation activities;
- A Grievances Mailbox placed at the Project's Community Relations Office. The mailbox's precise location will be shared with the community during public consultation and other disclosure of information events.

Any complaint or suggestion that is entered by the aforementioned means must follow an External GM form, which shall contain the following information:

- Place and date of the complaint or suggestion;
- Reason for the feedback, with details of the events;
- Claimant's contact information (In case the grievance is not anonymous);
- Claimant's proposed solution to the issue.

The process will begin with the receipt of a complaint or suggestion by the Community Relations Team and notify the claimant that the claim has been received, will be reviewed and taken for analysis. Once the suggestions and/or complaints have been received, the Community Relations Team will complete a Communication Report and the information collected regarding the complaint and/or suggestion will be captured in an External GM Database to register the complaints and/or suggestions.

If the claim is readily resolvable (e.g., a request that can be immediately granted or an easy solution can be applied without an investigation process), the person from the Community Relations Team receiving the claim takes action to address the issue directly and records the details in the External GM Database. If the claim subject is considered sensitive by the claimant (e.g., in cases regarding abuse, sexual harassment, or other forms of gender-based violence), a special point of contact with adequate training will be provided. The claimant will have the option to talk to a point person of their same gender, if requested.

Claims will not be applicable in cases when:

1. It is not directly related to the Project, its contractors, or subcontractors;
2. It is out of the PEU's influence;
3. Its nature exceeds the scope of the present External Grievance Mechanism;
4. The claimant has no standing to file; and/or
5. There are other formal mechanisms/institutions or community procedures more appropriate to address the issue.

When the claim is classified as **non-applicable** following the above criteria, the PEU will clearly communicate the reasons why it cannot be considered to the claimant, and when possible, will provide information to help them redirect their claim to the right institution or party.

The External Grievance Database is updated weekly to reflect the current state of the claim until the claim has been resolved according to the claimant. Reception of the claim will be acknowledged within three (3) days after the claim is received. If an investigation is needed, this will take up to 30 days (low risk claims), up to 15 days (medium risk claims) and 5 days (high risk claims).

The Project will provide a means by which all external stakeholders will be able to raise **anonymous complaints**. This gives the most vulnerable members of the affected communities, the confidence that they will not be retaliated against for raising concerns, and can be fundamental to shifting power dynamics in between the Project and the communities. Therefore, in case of an anonymous case, the resolution will be published on a visible and accessible notice board at the Community Relations Office.

Review, Analysis and Investigation

Once the complaints have been filed, the review, analysis and investigation process will unfold as follows:

1. The Community Relations Team will collect on a weekly basis the complaints presented, whether submitted physically or via website, and will review the nature of the complaint, as well as the company's departments potentially involved;
2. The Community Relations Team will make an initial assessment of severity in coordination with the H&S Manager, if necessary. The grievances will be classified in four categories:
 - a. **Non-Admissible** (e.g. claims that are not directly related to the Project, its contractors or subcontractors, out of the PEU's influence);
 - b. **Low Risk** (e.g. claims that do not require resolution per se, but instead only require information or a certain clarification to be provided to the claimant. If there are recurring complaints that have been previously received and addressed by the Project, the PEU will reconsider elevating the importance of the complaint, as this might be a sign that the response to the grievance has been insufficient or inadequate);
 - c. **Medium Risk** (e.g. claims that require resolution and are related to minor risks associated with health, the environment, construction, transportation, and external stakeholders. Although important, they do not pose an immediate risk); and
 - d. **High Risk** (e.g. claims related to the security and safety of the community stakeholders, as well as those that, according to criteria of the Community Relations team, require immediate response as the claim poses an immediate major health and safety risk or a risk to an individual, to a large or small group or several groups of stakeholders. This includes claims regarding illegal and abusive activities).
3. The Community Relations Team will prepare the Communication Report that includes the information listed below:

- a. Internal tracking folio number provided to the claimant;
 - b. Type of feedback,
 - c. Area potentially involved;
 - d. Claimant's information (In case the grievance is not anonymous);
 - e. Date the complaint or suggestion was originated;
 - f. Grievance Risk Category (Low, Medium or High);
 - g. Brief description of the complaint or suggestion;
 - h. Area responsible for monitoring and solution;
 - i. Recommended solution;
 - j. Term of resolution.
4. Once the claim has been reviewed, the investigation must be carried out in the first instance by a member of the Community Relations Team. In case the feedback transcends and involves more areas of the Project, the suggestions and/or complaints will also be channeled to the Project Manager and the HR Manager, as appropriate, to coordinate resolution with the departments involved, depending on the scope of each, and to determine the actions to follow.
- Regardless of the categorization of the claim, the claimant must always be informed that her or his grievance has been received and it is being investigated. The answer must be given in written and/or verbal form, in a clear and precise language, preferably respecting the claimant's language. In cases where the complaint is anonymous, the response will be published at the Project's Community Relations Office. The deadline for the resolution of a complaint or claim is according to the categories is presented below.
5. The evaluation of each complaint claim or concern must be in accordance with the following categories.

Table 6-30 Timeframe per Claim Category

Claim Category	Responsibilities	Response Time
Non-Admissible	Community Relations Team notifies the claimant	These suggestions and/or complaints will be communicated within thirty (30) business days once the categorization is done.
Low Risk	The Manager of the area responsible for the resolution receives and follow up the complaint.	These suggestions and/or complaints will be addressed and answered in an average of thirty (30) business days. If the claim cannot be resolved within this timeframe for reasons beyond the Project, the claimant will be notified and the time of response will be determined, considering a maximum period of three (3) months.
Medium Risk	The Manager of the area responsible for the resolution receives and attends the complaint.	The response will be carried out within an average of five (5) days after categorizing the complaint or concern, indicating that the resolution period will be of fifteen (15) business days from the complaint's registration. If the complaint could not be resolved within this timeframe for reasons beyond the Project, the applicant will be notified and the time of response will be determined, considering a maximum period of three (3) months.
High Risk	The Manager of the area responsible for the resolution receives and responds to	The response time must be immediate (within 24 hours of its submission)

	<p>the complaint immediately and communicates it to the Project Manager via email/phone call.</p> <p>Once registered and communicated internally, the ESHS Manager will proceed to provide support for the follow-up and resolution of the complaint, collectively with the Manager of the responsible area and the Project Manager.</p>	<p>In the event that, for reasons beyond the Project, the complaint could not be resolute within this timeframe, the claimant will be notified, and the time of response will be determined on a case-by-case basis. However, the resolution period will not be longer than five (5) days.</p>
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Source: ERM, 2021.

In high-risk situations, where there is a possibility of serious danger (e.g., death, sexual harassment), the PEU will consider involving other member teams to weigh in on the resolution strategy. In these type of cases, an alternative timeline will be established for addressing and involving third parties as needed, such as police and hospitals. The Project will always protect the confidentiality of the claimant. The special procedure for High Risk Claims is described below.

1. The claim enters an expedited process for investigation and resolution by the Community Relations Team and if applicable other senior management, such as the H&S Manager, when appropriate.
2. The PEU initiates the investigation immediately and coordinates with local authorities to appropriately address the matter for claims related to allegations of illegal or abusive acts.
3. The Community Relations Team meets the claimant to gather additional information as necessary. Subsequently, he or she investigates the claim (e.g., meets with members of the security team involved in the claim), develops, and implements corrective actions in collaboration with other project staff, as necessary.
4. If both the Community Relations Team staff and other staff involved in the resolution of the claim are all the same gender, and the claimant prefers to speak to a person of his or her same gender, the PEU will facilitate this request. This option will be disseminated when disclosing the procedure. If additional investigations are needed, these are promptly undertaken.

If the person responsible of the claim is not able to obtain a resolution within 5 days of the reception of the claim, he or she submits the claim to Community Relations Team, who notifies and seeks advice from the H&S Manager.

If the H&S Manager and Community Relations Team do not reach an agreement on a resolution within the following 5 days, Community Relations Team arranges meetings and discussions with the In-Country Director or relevant higher hierarchy personnel and the claimant, as well as other relevant departments, to agree on a final solution.

Before the final resolution is issued, the agreed resolution will be reviewed by the claimant, or his or her worker representative, and will confirm his or her agreement with the solution proposed.

Resolution

Once the complaints have been categorized and reviewed, the resolution and closure process will unfold as follows:

1. The first step for the resolution is the determination of the timeframe (considering the periods defined in the Table above) and its inclusion in the registration file previously elaborated.
2. The claim will be discussed by the Community Relations Team, and if necessary, the managers of the areas involved. In the case of complaints related to allegations of illegal or abusive acts, the Project will immediately initiate the investigation to adequately address the matter. Based on the investigation, the complaint may or may not proceed.
3. Depending on the risk category, the approach will be defined. The Community Relations Team, together with a representative of the Legal Area will evaluate and determine the origin of the complaint and define

the measures to be taken in response. All responses must be signed by the ESHS Manager before being communicated to the employee and/or interested parties.

4. If the complaint is not admissible, the claimant will be notified.
5. The Community Relations Team and the Project Manager will have performed an analysis of all the viable resolutions, seeking to, at all times, provide solutions that respond to the claimant, from a position of dialogue and respect. A complaint will be dismissed only when all the instances of solution have been exhausted, explaining in writing to the claimant, in a clear and indubitable manner, the reasons for the refusal on the resolution of the complaint.
6. All documentation issued during the process by the company to interested parties must be sent by email or written notification. In any case, the answer must have the corresponding record (the folio of complaint or suggestion) and will be properly archived as part of the process.

Right to Appeal

If an external stakeholder who is not satisfied with the procedure or resolution, she or he can contest the PEU's decision. The claimant will have a maximum period of fifteen (15) business days to express any disagreement with the response and appeal it. Once the deadline has elapsed and there are no new grounds for complaint, the process will be considered closed.

In the event that a claimant wishes to challenge/appeal the PEU's decision or propose a counter offer, the In-Country Director and the Project Director will decide whether the PEU can resolve the dispute or it is necessary to involve a third party (e.g. a mediator, technical expert, local authority, or ombudsman) to reach an agreement between the parties and resolve the dispute. The claimant will always have the right to seek other legal or administrative resources. The last resort will be the national judicial process.

When a resolution agreement is established, both parties, the Head of HR acting as the representative of the PEU and the claimant, will sign it in writing. Once the solution is implemented, both parties in recognition of compliance with the agreement will sign a compliance agreement again.

Evaluation and Follow Up

It will be the responsibility of the Community Relations Team to follow up on all responses to suggestions and/or complaints in written and/or verbal form, especially those of medium and high priority, so as to confirm that the response given to the interest group was adequate, given the circumstances and criteria applicable at the time of filing the complaint. The External GM Database will be used to follow up each claim until is resolved and closed.

6.12.6 Confidentiality and Protection from Retaliation

The Project is committed to protecting the identity of claimants and anyone else involved in the claim, and to handling personal information in accordance with legal requirements. This duty extends to all employees and representatives of the PEU, its contractors and community members who participate in the External Grievance Mechanism process.

Information about a claim is shared within the company on a need-to-know basis and only to the extent necessary to complete the steps in this directive. The PEU will not share personal information with third parties unless required by law or authorized by the claimant.

When a claim relates to a specific Project contractor or employee, that person cannot play a role in the External Grievance Mechanism process in order to prevent conflicts of interest.

The PEU does not tolerate retaliation against claimants, be they an employee, contractor or external stakeholder. When concerns about retaliation are raised, Human Resources/ Community Relations Team is responsible for leading an investigation into the alleged retaliation under PEU's Human Resources Policy and Code of Conduct.

6.12.7 Documentation and Monitoring

Once every two months, the Community Relations Team will send the External GM Database to the Project Manager with information on the feedback received through a consolidated report showing the status of each claim and its indicators.

This plan will be monitored continuously and is designed to facilitate the integration of lessons learned during its execution. The Project will be able to respond adequately to situations as soon as they develop.

The External Grievance Mechanism Plan will be reviewed annually, however, if required, the mechanism could be updated as necessary. It will also ensure that contractors update their procedures at least once a year.

6.12.8 Key Performance Indicators

The table below present the key performance indicators that will evaluate the implementation of this plan:

Table 6-31: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Method/Tool/ Frequency
GM attainment	PEU will review the External Grievance Database, including complaints closed and those unresolved. Number of grievances received per month versus number of grievances resolved.	100% of grievances resolved in a timely manner	External Grievance Mechanism Database and Community Relations Team / Quarterly
GM time efficiency	PEU will review the External Grievance Database, especially the number of days between the grievances submission until its resolution and closure to calculate the average length of time needed to resolve grievances.	Low risk grievances: Max. 30 days Medium risk grievances: Max. 15 days High-risk grievances: Max. 5 days	External Grievance Mechanism Database and Community Relations Team / Quarterly
GM Focus/ Risk Areas	PEU will review the External Grievance Database and if necessary talk to the Community Relations Team to breakdown the grievances topics (e.g. health, safety, etc.) and grievance source	Resolve 100% of grievances Disseminate information regarding different solutions when there are recurrent complaints in order to decrease recurrent grievances.	External Grievance Mechanism Database and Community Relations Team / Quarterly
Method of grievance reporting	PEU will review the External Grievance Database and engage with community members to check the use and success of the different grievance reporting methods (e.g., number of grievances received by phone, at the office, website, and boxes).	100% of reporting methods will be functional and accessible at all times.	Community Relations Team / Quarterly
GM dissemination	PEU will monitor all GM informational documents, meetings, and events where the GM was disclosed and explained to the affected communities.	GM dissemination of information in at least 70% of disclosure of information events, consultations and other activities.	Community Relations Team Records / Quarterly

Source: ERM, 2021.

6.13 Stakeholder Engagement Plan

6.13.1 Introduction

The Project is committed to ensure the compliance of the implementation of the Environmental and Social Management Plans (ESMP) policies and procedures.

Stakeholder engagement is an essential part of the ESA and project development process. It ensures that stakeholders, including Project-affected communities, are provided with timely and transparent information regarding the Project, and allows stakeholders to provide input on potential issues of concern relating to the Project.

This Stakeholder Engagement Plan (SEP) outlines the program of engagement for the communities in the Project's Area of Influence. Development, update and implementation of this SEP are the responsibility of the Project. This SEP conforms to international good practice and has been developed to align with the IFC's Guidelines for meaningful stakeholder consultation, and to enable a positive community change through community participation. The Project acknowledges the importance of an adequate management of the environmental and social risks and impacts associated with its Project, alongside the expansion of the positive effects of its activities. The Project believes that a two-way communication and participation with internal and external stakeholders is essential for the development and success of its operations.

This SEP is designed for an ongoing exchange of information that allows the Project to 1) identify, understand and address community/stakeholders priorities and concerns, and 2) improve decision-making and transparency. Furthermore, this is an evergreen document that will evolve according to Project activities.

Aligned to the above, the Stakeholder Engagement Plan establishes the guidelines for the:

- Identification of Stakeholders within the Project's Area of Influence (AOI) and definition of their characteristics;
- Stakeholder Mapping and prioritization of stakeholders;
- Disclosure of information and community participation;
- Defining the appropriate communication tools;
- Scheduling communication and engagement activities; and
- Keeping a record of the interactions with stakeholders.

6.13.1.1 Objective

This SEP will be developed to meet the expectations of the company, regulators and the communities. The SEP will describe the stakeholder identification process and outlines an engagement program to promote meaningful, timely and effective engagement with stakeholders.

Engaging stakeholders is an important aspect of managing ongoing social and environmental performance and non-technical risks. The objectives of stakeholder engagement are to:

- Promote the development of respectful and open relationships between stakeholders and the Project;
- Identify stakeholders and understand their interests, concerns and influence in relation to ongoing activities;
- Provide stakeholders, both interested and affected stakeholders, with timely information about the Project's activities, in ways that are appropriate to their interests and needs;

- Guarantee the active participation and consultation of the stakeholders throughout the life of the Project. During the consultations there will not be any form of manipulation, interference, coercion or external intimidation;
- Support alignment with the international requirements, corporate standards and guidelines for stakeholder engagement;
- Record feedback and resolve any grievances that may arise through a formal feedback mechanism;
- Identify the resources and responsibilities for the SEP execution, including the monitoring activities; and
- Monitor and evaluate the actions carried out to adapt or modify the SEP as necessary.

6.13.1.2 Scope of Application

This plan will apply during the development of the Project's activities and during the Project's life cycle. It is the Project's responsibility to ensure that employees, contractors and subcontractors are evaluated according to the Project's ESMP policies and procedures, which are aligned to international best practices.

Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP will be applied on the ground. The Project will review and approve this document before any implementation.

The geographical scope of the stakeholder engagement plan is described by the Project's preliminary Area of Influence, which comprises Marsh Harbour (in the Area of Direct Influence, ADI) and the entire island of Great Abaco (in the Area of Indirect Influence, AII).

6.13.2 Roles and Responsibilities

In order to properly implement the Stakeholder Engagement Plan, the Project requires the involvement of the people listed below.

Table 6-32: Roles and Responsibilities

The roles and responsibilities for the Project will be finalized at a later stage.

Role	Responsibilities
CEO	Be familiarized, review and approve the Stakeholder Engagement Plan.
Head of Finance	Ensure the availability of resources necessary for the implementation of the Stakeholder Engagement Plan.
Marketing and Communications Manager	Assist in the implementation of the Stakeholder Engagement Plan.
Project Manager	Be familiarized with the Stakeholder Engagement Plan and provide the necessary resources to ensure its proper implementation.
ESHS Manager	Comply with this plan and coordinate, together with the Community Relations Officer, the implementation of the relationship and communication actions. Review and approve the contractor project-specific Stakeholder Engagement Plan. Review and update the Stakeholder Engagement Plan.
Labor Officer	Assure the communication of relevant information to internal stakeholders.
Community Relations Officer	Implement the Stakeholder Engagement Plan. Coordinate, together with the ESHS Manager, the implementation of the relationship and communication actions. Ensure a constant communication channel with the Project Stakeholders.

Role	Responsibilities
Contractor Company	Develop a project-specific Stakeholder Engagement Plan.
The Project's employees, contractors and subcontractors	Read and be familiarized with the Stakeholder Engagement Plan.

Source: ERM, 2021.

6.13.3 Activities

The identification, mapping and analysis of stakeholders will be a dynamic and continuous exercise in the execution of any project, since it allows a deep understanding of its context and guarantees the effectiveness and adaptation of engagement strategies. The activities found in this SEP establish the guidelines for the management of external communication channels, as well as the mechanisms to manage the participation of interested stakeholders.

6.13.3.1 Stakeholder Identification

The identification of stakeholders is essential, since it provides the basis for designing the relationship strategies with each interest group in order to achieve the greatest possible participation and social acceptance. To the extent that as the participation and acceptance grows, social impacts and risks may be minimized in greater proportion.

Likewise, the mapping helps to define which interest and affected groups the Project will contact and how to manage the risks. This section of the SEP focuses on the stakeholder identification and mapping identified for the early stages of the Project.

Considering previous experiences, direct sources of information (e.g., interviews, surveys) and publicly available information, the Project's stakeholders will be identified by:

- Analyzing who could be affected by the Project activities and how. For doing so, the Project geographical location as well as its activities and potential impacts will be considered (e.g. primary site, related facilities, transport routes, etc.); and
- Avoiding limited criteria for the identification of stakeholders affected and prioritizing groups of neighboring people.

Methodology

One of the first steps in stakeholder engagement planning is the identification of stakeholders. Stakeholders typically include government officials, regulators, members of the community and public at large, Non-Governmental Organizations (NGOs) and civic leaders, media, employees and contractors, and industry associations. Stakeholders can be individuals working on a project, groups of people or organizations, or even segments or sectors of a population. A stakeholder may be actively involved in a project's work, affected by the project's outcome, or in a position to affect the project's success.

After identifying the stakeholders, it is key to understand their needs and expectations for engagement, and their priorities and objectives in relation to the Project.

As part of this process, it is particularly important to identify individuals and groups who may find it more difficult to participate and those who may be differentially or disproportionately affected by the project because of their marginalized or vulnerable status. It is also important to understand how stakeholders may be affected – or perceive they may be affected – so that ongoing engagement can be tailored to inform them in an appropriate manner and address their views and concerns.

While an interest in an effort or organization could be just that – intellectually, academically, philosophically, or politically motivated attention – stakeholders are generally said to have an interest in an effort or organization based on whether they can affect or be affected by it. The more they stand to benefit or lose by it, the stronger their interest

is likely to be; and the more heavily involved they are in the effort or organization, the stronger their interest is as well.

Stakeholders' interests can be many and varied. A few of the more common interests include:

- Labor
- Social Change
- Economics
- Indigenous Peoples Rights
- Environment
- Natural Resources
- Safety and Security

The identification of stakeholder groups for the Project will be made through publicly available information, local knowledge from the Project team and data collected during stakeholder engagement events. The stakeholder groups will be "mapped" according to their influence, interest and probable position in relation to the Project. This assignment will be based on knowledge of the social, cultural, political, environmental, and factors associated with the development of the Project.

Vulnerable groups who may be differentially or disproportionately affected by the Project because of their disadvantaged or vulnerable status will also be identified as part of the stakeholder mapping. This group of affected stakeholders will be determined based on factors such as gender, ethnicity, culture, physical or mental disability, poverty or economic disadvantage and dependence on unique natural resources.

Once the stakeholder groups are identified, their position, interest and influence regarding the Project are evaluated. Position is defined as the degree of acceptance by the interest group towards the Project. The criteria are presented in the table below.

Table 6-33: Assessment of Position Criteria

Assessment	Position
In favor	The interest group's position in relation to the Project is favorable; given that it perceives that, it has or will have a positive performance in relation to its topics of interest.
Neutral	The stakeholder's position in relation to the Project is neutral, indefinite. You may have the expectation that he/she will have a position to minimize the existing impacts. However, he/she needs more information, since it is not clear to him/her how the Project will be developed in the future.
Against	The position of the group of interest in relation to the Project is unfavorable, since it identifies more negative aspects than positive ones in the current or future development of the Project.

Source: ERM, 2021.

Interest is defined as the stakeholder's interest degree that he/she has on the issues associated with the Project. The evaluation criteria are presented below.

Table 6-34: Interest Evaluation Criteria

Assessment	Interest Position
Low	The interested party does not know or recognizes few links between the Project and their own interests, and shows little interest in knowing more about it.
Average	The interested party recognizes some relations between the Project and its interests.
High	The interested party recognizes a set of common interests with the Project and shows a strong interest to know more information about it.

Source: ERM, 2021.

Finally, influence is defined as the degree of articulation with other actors and the capacity to generate mobilization as seen on the table below.

Table 6-35: Influence Evaluation Criteria

Assessment	Influence Position
Low	The interested party has little capacity for mobilization and/or few networks and relationships with local actors.
Average	The interested party has the ability to articulate and mobilize media, exerts influence in social networks with important connections with local actors such as inhabitants, workers, tourists, politicians, among others.
High	The interested party has a high capacity for articulation and mobilization with significant local networks and actors such as inhabitants, workers, tourists, politicians, among others.

Source: ERM, 2021.

The identification and mapping of stakeholder groups will be presented in the sections below.

Stakeholder Groups

Stakeholder groups are individuals, groups or institutions that have a stake or a particular interest in the Project. They may be affected by it (either positively or negatively) or they may have an interest in it and be in a position to influence its outcomes. Therefore, the stakeholder groups have been classified as:

- Interested groups, which can be Project beneficiaries and commonly favor the Project; and
- Affected groups, which are individuals or groups adversely affected by the Project and consequently some might oppose the Project.

The Project will follow a different consultation rationale per stakeholder group. The Project will closely monitor, engage and consult the affected groups in the AOI. Meetings with these groups, described below, are prioritized by the Project. On the other hand, the Project engages with interested groups to keep them informed about the Project, to collaborate in topics related to common issues, such as health and safety measures, and provide specific information when they request it. While the consultation rationale towards interested groups is not as intense and frequent as with the affected groups, the Project is committed to maintain a close relationship and frequent communication with government entities and financial institutions, among others.

Table 6-36: Affected and Interested Stakeholder Groups in the Project's AOI

The affected and interest stakeholder groups for the Project will be finalized at a later stage.

Affected Stakeholder Groups	Interested Stakeholder Groups
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<i>Communities in the Area of Influence and landowners near the Project site:</i> Residential communities in the Project's wider socio-economic Study Area.	<i>Government entities relevant to the Project:</i> Government agencies, elected officials and public service providers that may be at the local or national levels.
<i>Tourism sector:</i> This sector includes different groups within the sector.	<i>Neighboring Projects:</i> Projects located within the ADI.
<i>Vulnerable groups in the AOI:</i> This stakeholder group could include women, children and elderly, indigenous people, families and individuals in extreme poverty, people with physical and psychological disabilities, and individuals that depend on natural resources. These groups are commonly more vulnerable to social inequality. In addition, vulnerable groups have a higher sensitivity to potential Project impacts, in many cases do not have the means to defend their interests and concerns and it is more challenging for them to benefit from the Project's benefits.	<i>Financial Institutions:</i> Financial Institutions that will finance the Project.
<i>NGOs, Associations and civil organizations:</i> Local and regional NGOs and associations that could generate opinions about the development of the Project or that could participate in conflict resolution that could take place within the communities.	<i>Mass media:</i> It refers to media present in the Area of Influence, including social media platforms linked to the Project.
	<i>Contractors:</i> It includes the Project's contractors and sub-contractors.
	<i>Workers and Staff:</i> It includes all of the Project's workers and staff.

Source: ERM, 2021.

Stakeholder Analysis

The table below will present each stakeholder group description, identified actors, and their potential position, interest and influence. Ten categories of interest groups have been identified: i) Communities and landowners in the Area of Influence, ii) Neighboring Projects, iii) Tourism Sector, iv) Government Entities, v) NGOs and Associations, vi) Financial Institutions, vii) Mass Media, viii) Contractors, ix) Workers, and x) Vulnerable Groups.

The stakeholder groups for the Project will be finalized at a later stage.

- A list of individual stakeholders will be included here at a later stage

Table 6-37: Analysis and Identification of Stakeholder Groups

The analysis and identification of stakeholder groups for the Project will be finalized at a later stage.

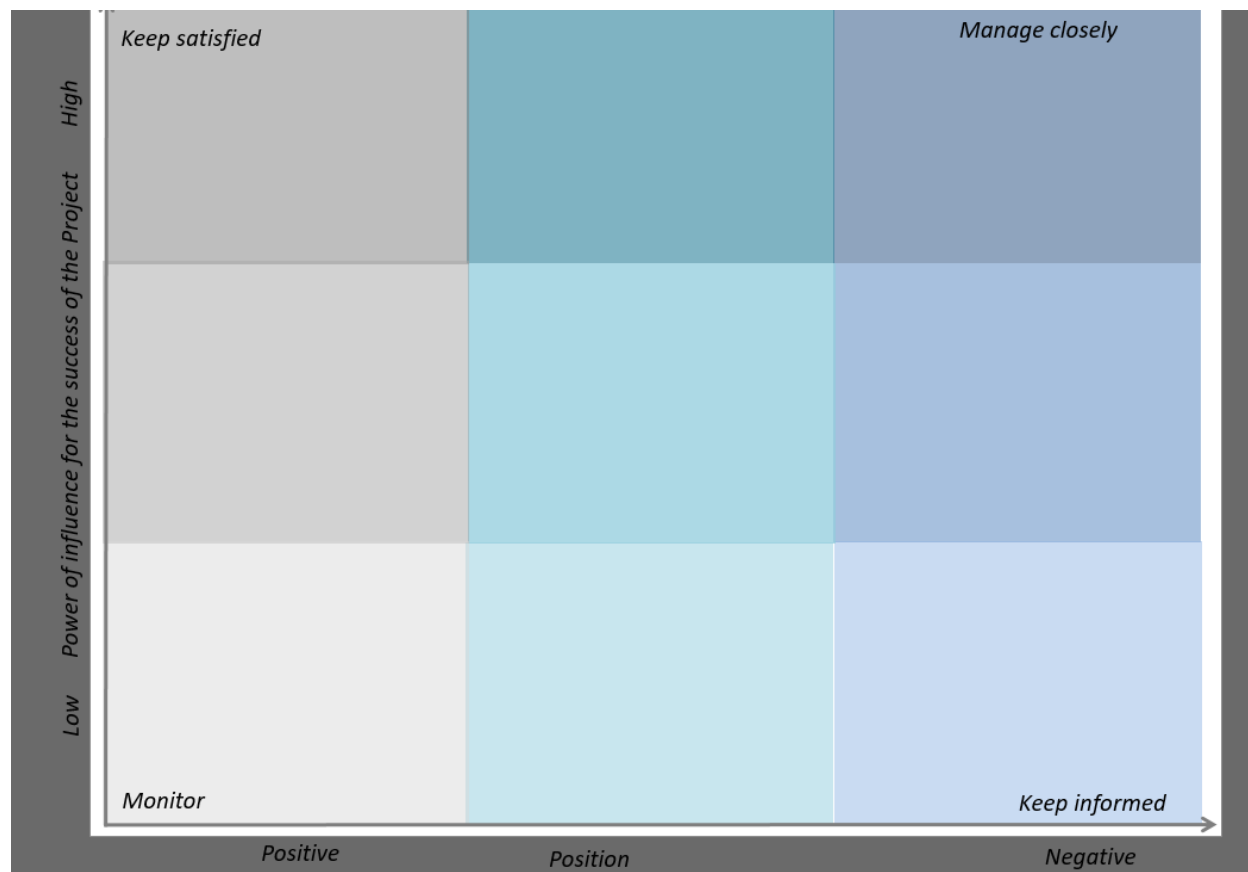
Stakeholder Group	Description	Identified Actors	Potential Position (Against, Neutral, favor) In	Interest (Low, Average, High)	Influence (Low, Average, High)
Communities in the Area of Influence and landowners near the Project Site	It refers to those locations that are within the perimeter of the Project or neighboring areas and may be affected by the Project.	XX	xx	xx	xx
Local Authorities and Government entities relevant to the Project	It refers to Abacos' island authorities that might be affected by the Project.	XX	xx	xx	xx
Tourism Sector	Businesses in the tourism sector, such as restaurants, hotels, or the tourism department.	XX	xx	xx	xx
Neighboring Projects	Refers to any projects that are being developed by the Project site	XX	xx	xx	xx
Vulnerable Groups in the AOI	This category includes identified vulnerable groups in the AOI	XX	xx	xx	xx
NGOs and Associations	Local and regional NGOs and associations that could generate opinions about the development of the Project or that could participate in conflict resolution that could take place within the communities.	XX	xx	xx	xx
Contractors	It includes the Project's contractors and sub-contractors.	The Project's clients, suppliers, contractors and subcontractors. They will be defined once the Project begins.	xx	xx	xx
Workers and Staff	It includes all of the Project's workers and staff.	The Project's workers.	xx	xx	xx
Financial Institutions	Includes financial institutions interested in financing the Project	XX	xx	xx	xx

Mass Media	Includes mass media in the Project area.	XX	xx	xx	xx
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Source: ERM, 2021.

The following figure will show the identified actors that have been engaged with and their probable position and influence on the Project according to the qualitative analysis.

The categories of stakeholder groups are assigned in an X-Y axis according to their position (X-axis) and the influence (Y-axis) with respect to the Project. A qualitative mapping criteria scale is applied in order to position the stakeholders on the X-Y axis. The level of influence of each interest group is determined as High, Average or Low. The probable position is determined as *Positive* (grey), *Negative* (blue) or *Neutral* (light blue). Stakeholder mapping for the Project will be finalized at a later stage.



Source: ERM, 2021

Figure 6-7: Mapping of the Stakeholder Groups

6.13.3.2 Community Participation

Effective participation requires sharing information related to the Project with affected communities and other key stakeholders, facilitating a well-informed consultation process and the contribution of interested citizens to the design and planning of the Project.

In order to promote a better understanding of the Project and instill confidence among its stakeholders, the Project will ensure transparency in the communication of relevant information by:

- Disclosing information on a timely manner;
- Disclosing relevant information by managing expectations adequately (e.g. employment opportunities) and avoiding downplaying the potential negative aspects (e.g. inconvenience during the construction phase);
- Disclosing relevant information in a culturally appropriated manner to facilitate the participation of local population;
- Disclosing information in a way that supports the consultation process, allowing enough time to pass between the communication of information and the start of the consultations; and
- Disclosing the existence of the External Grievance Mechanism and its communication channels.

Public Consultation

A virtual public consultation was held on April 28, 2021. A summary of the public consultation is presented in Appendix A. It includes a list of questions received, photographs from the event and a description of the public consultation effort.

Disclosure of Information

The Project will select which information will be communicated, taking into account the following:

- Project phase, activities and schedule;
- Analysis of previous interactions between the Project and the stakeholders;
- Area where the information will be communicated;
- Stakeholder type (affected vs. interested and considering their potential influence and position regarding the Project);
- Tool chosen to share the information;
- Type of information to be communicated;
- Date of communication; and
- Responsible for sharing the information (whether the Project or a contractor).

The Community Relations Officer, together with Project Management, will select what type of environmental, social, or occupational or community health and safety documentation regarding the Project's phases and activities will be communicated. This information will be confirmed with the contractor at each site and addressed taking into account the identified key stakeholders.

The main topics to consider during engagement activities with stakeholders are:

- Project status update: Publicize all the activities and stages of the Project;
- Project objectives in the short, medium and long term, to avoid creating misguided expectations among stakeholders;
- Information and update regarding positive and negative impacts, when applicable: Provide information on the impacts generated during each phase of the Project, as well as the mitigation measures to be implemented or already being implemented;

- Grievance mechanism: take into consideration the opinions of stakeholders to continually improve the external grievance mechanism procedures (e.g. preferred location of grievance boxes), and continue to reinforce its communication, according to positive or negative experiences;
- Disaster Risk and Emergency Management Plan and Community Health and Safety Plan: Share the procedures of the Project Emergency Plan and the Community Health and Safety Plan to all communities and related stakeholders for their knowledge and implementation;
- Aspects of the Project that have attracted stakeholders' attention: Contemplate the opportunity to learn about the perception of stakeholders that may not have been formally transmitted through the grievance mechanism (e.g. retrenchment plans of the Project);
- Invitations to meetings or information communication sessions where general information on the Project will be provided (stages, activities, times); and
- Other relevant plans such as the, Traffic Management Plan.

The Project will keep photographic evidence of all the relevant activities carried out with stakeholders as well as Project related developments (e.g., construction development, labor training, flora and fauna rescue and preservation activities). This will complement the communication process with stakeholders.

The Project is aware that the lack of information can lead to an erroneous perception of the Project, and trust from local communities may be affected. The Project will continue to share and distribute meaningful and relevant information among the Project's stakeholders throughout the Project's life cycle.

In order to do this, the Project will build solid relationships with external stakeholders (e.g., government institutions, universities, other academic entities) who can help the Project to be known among local communities and people directly or indirectly involved in the Project (e.g. through press announcements). The Project will work with these stakeholders to perform actions that could represent an improvement in the quality of life of community members and/or the region where the Project is located.

Depending on the type of stakeholder the means of communication will be defined, such as through the Project's website, by phone, memos, letters, email, informative sessions or meetings, brochures and copies of relevant documents placed in accessible and strategic locations.

Consultation and Participation Action Plan

Public consultation is a process that promotes a two-way dialogue between local communities and the Project, which will aim to ensure the establishment and maintenance of constructive relationships throughout the life of the Project. For local communities, the consultation process offers the opportunity to obtain information about the Project's activities, to update the company of the local context in which the Project is framed, to share problems and concerns, to ask questions and even, to make suggestions.

The consultation process and participation plan with local communities will follow the five basic steps detailed below, which can be repeated as many times as necessary throughout the different phases of the Project.

1. Plan ahead, before beginning a process of consultation with local communities, it will be clear who will be consulted, on what issues and for what purpose;
2. Conduct the consultations applying the basic principles of the recommended practices and adapted to the local situation and to the local communities;

3. Consider the opinions and observations received and make every effort to resolve the issues raised;
4. Document the consultation process and its results; and
5. Prepare reports for stakeholders, in order to keep them informed about which of the concerns raised will be addressed and how, and explain what suggestions have not been taken into account and the reasons, so as to promote credibility, control expectations and maintain interest.

The table below will present the consultation and participation plan per each stakeholder group. The table will include the consultation and participation methods, the consultation topics, shared information and objectives, the Project phase and frequency, the priority and person in charge.

Engagement in Extraordinary Situations

The Project will endeavor to maintain engagement with stakeholders throughout the project's continuity. In the case of health-related crises, pandemics and or epidemics, the Project will develop, when necessary, an action plan for engagement with stakeholders in this scenario.

The action plan must be developed in order to guide the Project's performance during this period, and must contain at least the following items: (i) target audience; (ii) organizational structure; (iii) communication channels; (iv) risk prevention and mitigation measures for the teams involved in the engagement actions; and (v) list of actions.

Table 6-38: Consultation and Participation Action Plan

The consultation and participation action plan for the Project will be finalized at a later stage.

Stakeholder Groups	Consultation and Participation Methods	Consultation Topics, Shared Information and Objectives	Project Phase and Frequency	Priority	Person in Charge
<i>Interested Stakeholder Groups</i>					
Government entities	Meetings with representatives, either in groups or individually	Identify any concerns regarding Project impacts and progress. Answer their questions regarding the Project.	Construction: At least once a month Operations: at least once per six months	High	Community Relations Officer
Neighboring Projects	Meetings with Water Department	Receive feedback about the Project's social management plans, health and safety measures, community communications and community grievance mechanism.	Construction: At least bi-monthly Operations: at least once per six months	Medium	Community Relations Officer
Financial Institutions	Meetings with representatives, either in groups or individually		Construction: At least once a month Operations: at least once per six months	High	H&S Manager
Mass media	Meetings with representatives,		Construction: At least bi-monthly	Medium	Community Relations Officer

	either in groups or individually		Operations: at least once per six months		
Workers	Meetings with representatives, either in groups or individually		Construction: At least once a month Operations: at least once per six months	High	HR Manager
Contractors	Meetings with representatives, either in groups or individually		Construction: At least once a month Operations: at least once per six months	High	HR Manager

Affected Stakeholder Groups

Communities and landowners near the Project site	Group meetings (virtually) with people from nearby residences, including women, young people and other vulnerable groups	Identify any concerns regarding Project impacts and progress. Answer their questions regarding the Project. Receive feedback about the Project's social management plans, health and safety measures, community communications and community grievance mechanism.	Construction: At least once a month Operations: at least once per six months	High	Community Relations Officer
Tourism sector	Meetings with tourism representatives, either in groups or individually		Construction: At least bi-monthly Operations: at least once per six months	Medium	Community Relations Officer
Vulnerable populations in the Area of Influence	Vulnerable groups will be invited and encouraged to attend the community meetings If a group identifies a need to meet with the Project, the Project will organize an individual meeting with the person or particular group.		Construction: At least once a month Operations: at least once per six months	High	Community Relations Officer
NGOs	Meetings or communication exchange by email or phone call	Identify their concerns regarding the Project's impacts and progress Answer their questions regarding the Project.	Construction: At least bi-monthly Operations: at least once per six months	Medium	Community Relations Officer

		<p>Receive feedback about the Project's social management plans, health and safety measures, community communications and community grievance mechanism.</p> <p>Discuss collaboration opportunities (e.g. environmental and social programs).</p>			
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Source: ERM, 2021

6.13.3.3 Registration Process: Stakeholder Database

Every time a communication or activity is carried out with any stakeholder, the Community Relations Officer will register the details in a Stakeholder Engagement Database, in order to reflect the development of the relationship with each stakeholder and the evolution of the respective negotiations.

The stakeholders' database will include a summary of each contact, participants, issues or agreements with stakeholders, including, but not limited to:

- Stage and activity of the Project;
- Stakeholder being represented;
- Type of interaction;
- Date of interaction;
- Place of the interaction;
- Background of the interaction with the stakeholder (if applicable);
- Reason for the interaction (e.g. information disclosure, follow-up meeting);
- Type of information provided (if applicable); and
- Reference to evidence supporting the interaction (e.g., minutes, photographs).

In the event that complaints or feedback are received, these will be dealt through the External Grievance Mechanism (see the External Grievance Mechanism Plan) as appropriate.

6.13.4 Documentation and Monitoring

Evidence of meetings and interactions with stakeholders will be maintained through the Stakeholder Engagement Database. When possible, evidence will be collected, such meeting minutes, videos, attendance lists and photographic evidence. The Community Relations Officer will be responsible to maintain the documentation and records.

6.13.5 Key Performance Indicators

The Stakeholder Engagement Management Plan is to be reviewed on a six-month basis for the initial two years and then annually or as necessary in consultation with key stakeholders.

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 6-39: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
External Grievance Mechanism	Number of confirmed grievances by community	Total number reducing each year	Construction, Operations	External Grievance Database / Quarterly
	Number of confirmed grievances resolved in a timely manner	100%	Construction, Operations	External Grievance Database / Quarterly
	Audit the grievance mechanism to ensure implementation and that grievances are being adequately addressed	Every six months, the first two years, and then once a year.	Construction, Operations	Community Relations Officer / Yearly
Local Community & Stakeholders	Number of resolved incidents involving local community members	100% resolved incidents	Construction, Operations	Stakeholder Engagement Database, External Grievance Database and the Community Relations Officer / Quarterly
	Number of consultation and participation activities	100% reported meetings and activities, with evidence when possible	Construction, Operations	Stakeholder Engagement Database and the Community Relations Officer / Quarterly
	Type, materials and methods of Disclosure of Information	Cover 100% of the relevant topics as established in the Consultation and Participation Action Plan	Construction, Operations	Stakeholder Engagement Database and the Community Relations Officer / Quarterly
	Report back and feedback to the local community and stakeholders when needed (e.g. implementation of the grievance mechanism, conflicts solved and implemented solutions, etc.)	Delivery of reports to the community and communication channel chosen	Construction, Operations	Community Relations Officer / Quarterly
	Audit the stakeholder engagement activities	Every six months, the first two years, and then once a year.	Construction, Operations	Community Relations Officer / Yearly
Community Relations Staff/ Team	The Project will monitor the number of new community relations staff and staff changes per period. This	Every six months.	Construction, Operations	Community Relations Officer / Quarterly

	will be reported on the community engagement performance report.			
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Source: ERM, 2021

6.14 COVID-19 Contingency Plan

The Project Executing Unit (PEU) is committed to ensuring the compliance of the implementation of the Environmental and Social Management Plan (ESMP) policies and procedures.

This plan aims to establish good practices to be adopted by the Project with regards to the current new coronavirus (COVID-19) pandemic, including minimum procedures and strategies that must be observed by the PEU, its subsidiaries and its employees. The Project aims to develop its activities in safe conditions, especially concerning health and safety conditions, as well as preserving its jobs and activities.

This document will be shared with the Project's contractors and subcontractors to incorporate the presented best practices throughout all their activities.

6.14.1 Objective

The overall objectives of the COVID-19 Contingency Plan are to:

- Define guidelines and practices regarding COVID-19;
- Establish procedures and strategies to contain and protect workers, contractors and subsidiaries from COVID-19;
- Develop activities in healthy and safe conditions;
- Promote fair treatment, non-discrimination and equal opportunity of workers, and compliance with healthy and safe (H&S) working conditions; and
- Protect workers', contractors' and local community members' wellbeing, health and safety.

6.14.2 Scope of Application

This plan will apply for the duration of the pandemic while the development of Project activities take place. It is the PEUs responsibility to ensure that employees, contractors and subcontractors are evaluated according to the Environmental and Social Management Plan (ESMP) policies and procedures, which are aligned to international best practices.

Contractors will use this plan and develop it further to provide specifics on how the various requirements from the project-specific ESMP and COVID-19 measures will be applied on the ground. The PEU will review and approve this document before any implementation.

6.14.3 Roles and Responsibilities

In order to properly implement the COVID-19 Contingency Plan, the involvement of the people listed below are required.

Table 6-40: Roles and Responsibilities

Role	Responsibilities
PEU	<ul style="list-style-type: none"> ■ Be familiarized, review and approve the COVID-19 Contingency Plan. ■ Ensure the availability of resources necessary for the implementation of the COVID-19 Contingency Plan.
Project Manager	<ul style="list-style-type: none"> ■ Be familiarized with, review and update as necessary the COVID-19 Contingency Plan.
ESHS Manager and HR Manager	<ul style="list-style-type: none"> ■ Be familiarized and implement the COVID-19 Contingency Plan. ■ Review, evaluate and verify the COVID-19 Contingency Plan. ■ Review and approve the contractor project-specific COVID-19 Contingency Plan. ■ Update the COVID-19 Contingency Plan.
H&S Manager	<ul style="list-style-type: none"> ■ Review, evaluate and verify the COVID-19 Contingency Plan. ■ Present, alongside the Community Relations Officer, a monitoring report to the Project Manager.
Community Relations Officer	<ul style="list-style-type: none"> ■ Coordinate and supervise the communication of information activities regarding this plan to the affected communities. ■ Present, alongside the H&S Manager, a monitoring report to the Project Manager.
Contractor Company	<ul style="list-style-type: none"> ■ Develop a project-specific COVID-19 Contingency Plan.
Project employees, contractors and subcontractors	<ul style="list-style-type: none"> ■ Read and be familiarized with the COVID-19 Contingency Plan. ■ Develop a project-specific COVID-19 Contingency Plan.

Source: ERM, 2021

6.14.4 Activities

The PEU acknowledges the importance of basic rights of workers and the value of a solid worker-manager relationship, which will be achieved through the provision of healthy and safe working conditions.

In order to do so, the Project has developed this COVID-19 Contingency Plan, which is composed of the steps presented herein.

In the light of the declaration of Public Health Emergency of International Importance (ESPII) by the World Health Organization (WHO) in January 2020, international, national and local health authorities have issued a series of recommendations. The PEU will adopt and recommend preventive and mitigating measures as well as best practices as described below throughout the Project's development and implementation and its corporate activities.

The best practices and recommendations are directed to prevent the spread and contagion of COVID-19 in the work environment and work activities. The PEU is committed to maintaining safe working conditions for the people involved in the development and implementation of the Project, especially for those people whose activities and functions require face-to-face action.

6.14.4.1 COVID-19 Committee

The Project I will designate an internal COVID-19 Committee to:

- Provide support and information to assist the Project Directors' decision-making process regarding crisis management related to COVID-19.
- Define and monitor the guidelines for this Contingency Plan and its updates.
- Call meetings and disseminate the results to all participants.
- Archive the documents generated in the execution of the contingency plan and other actions related to COVID-19.
- Ensure the active participation of all PEU areas involved in the Committee.

The COVID-19 Committee may suggest the creation of specific Working Groups, including groups between the PEU and its contractors in order to monitor compliance with actions to control the spread of the virus among workers and the community; or other actions such as enabling communication between the Project and contractors and subcontractors, among others.

6.14.4.2 Monitoring of Normative Acts and COVID-19 Cases

Daily, through the COVID-19 committee and their regulatory and legal areas, the Project will monitor the measures adopted by the National and Public Administration entities to contain the spread of COVID-19, strengthen the health system and safeguard the economy. All information will be shared on internal communication channels and serve as a reference for adapting measures to prevent and respond to the pandemic internally.

The COVID-19 committee will monitor the number and location of COVID-19 cases in the world, especially in the Caribbean region, in the Bahamas, and locally in Great Abaco Island on a daily basis. When necessary, and taking into the account the evolution of the statistics, this Contingency Plan will be further adjusted to prevent and respond to the pandemic in the Project's areas of influence.

6.14.4.3 Disclosure of Information

The Project will reinforce the importance of communication and information disclosure and trainings to reduce the risks of COVID-19 both internally (workers and contractors) and for the nearby communities in the Project's areas of influence. The Project will adopt the following main initiatives:

- Reinforcement of communications and information disclosure on best practices for preventing COVID-19 transmission, especially regarding specific recommendations on social distancing and hygiene measures;
- Training of teams to be able to recognize the COVID-19 symptoms;
- Identification of the Project's focal points and communication channels (WhatsApp, e-mail, internal social network, internal grievance mechanism) to address workers' concerns about COVID-19 on a regular basis;
- Creation of a specific working group in charge of the institutional communication actions between the PEU and its contractors; and
- Adaptation of the PEU's internal communication materials and those of the contractors to distribute them to external stakeholders, as a way of reinforcing social responsibility and the joint work between the PEU and its contractors.

As long as there are preventive measures and recommended guidelines from the health authorities in favor of social distance, the Project will suspend activities that require direct contact with the local community

and replace them with virtual tools. In addition, the Project will enable internal communication channels for its workers and its contractors (toll-free phone, email, website and direct communication with Project teams) to ensure access and interaction between employees, the local community and the Project when needed.

In addition, while the pandemic continues, Project Stakeholder Engagement activities will also be adjusted to avoid in-person events. The Project will put a special emphasis to distribute information regarding the external grievance mechanism and other tools to disclose information, such as participating in local radio programs or distributing a monthly newsletter, for more details see the section below.

6.14.4.4 *Social Actions and Community Engagement*

- As a preventive measure and in order to respect the health authorities' guidelines that recommend social distancing, all activities that require direct contact with the local community will be either postponed or replaced with virtual tools. The External Grievance Mechanism and other available communication channels (toll-free phone, e-mail, website and direct communication with Project teams) will continue to function normally. When possible, the Project will collaborate with the local authorities to contribute to the fight against the spread of COVID- 19.

In order to have a positive impact in reducing the pandemic cycle, from prevention to response, the Project plans to implement the following lines of action:

- **Disclosure of Information:** In order to prevent the spread of COVID-19, the Project will disseminate clear and accurate information and guidance documents, using simple and accessible language to reach the largest number of people;
- **Support the most vulnerable population in the AOI:** One of the side effects of the pandemic is the economic crisis, mainly affecting the population in a situation of socioeconomic vulnerability. The Project aims to contribute with actions specifically aimed at the vulnerable groups located in the Project's AOI.

6.14.4.5 *Identification of Essential Activities to Begin and Continue the Project*

The Project aims to identify and define the services and activities essential to begin and continue the Project, considering activities of design, pre-construction and construction, and if applicable later on for the operations phase by monitoring the evolution of the pandemic, the competent authorities' guidelines, regulatory aspects, recommendations from shareholders and financiers, among others. Furthermore, attention will be given to technical criteria regarding the number of workers needed without compromising the practice of social distancing and the preservation of everybody's health and safety throughout the different activities.

6.14.4.6 *Social Distancing Measures*

Scientific studies have demonstrated there is a spread of expelled micro droplets, not only during sneezing or coughing, but also during human speech, capable of carrying the virus over long distances, especially in closed and poorly ventilated environments. Consequently, the Project will implement strict social distancing measures, preferably 2 meters (6 feet apart), in all activities and environments, including transportation, accommodation, cafeterias, bathrooms, meeting rooms, and workstations, in order to minimize the potential COVID-19 contagion.

Social distancing measure will also be implemented for the field and construction activities. Thus, as a good practice for the continuity of the activities considered essential during the emergency period, it is advisable that the contractors (especially EPC directly involved in the implementation of the Project) act in order to

respect the 2 meters-social distancing in all their activities. Social distancing in the field and construction areas is considered critical and necessary to maintain optimal health and safety conditions at the Project during the emergency period and avoid exposure and contagion of workers. All activities in closed environments with little ventilation will be forbidden. The following specific measures will be adopted in order to implement health and safety guidelines at work:

- Maintain a safe distance (2 meters between people) in places where people work or meet regularly.
- Identify all places where people normally work within 2 meters of each other and adjust those areas to meet the safe distancing requirements, as well as establishing a regular inspection routine in offices, control rooms, meeting rooms, construction sites, work fronts. A checklist and photographic records will be completed in order to confirm adherence. In places where 2 meters of spacing cannot be reached, the possibility of expanding the workplace in previously vacant areas or placing acrylic dividers between workplaces will be evaluated.
- Increase the frequency of cleaning and spacing of sanitary appliances and offices.
- Install marks or signs on the floor, indicating safe distances, where people normally wait in lines (access to buses, turnstiles, time clock, cafeteria, among others).
- Expand the use of videoconferencing to replace face-to-face meetings, safety dialogues and trainings, as well as the possibility of distributing videos of HSE campaigns to workers and contractors through WhatsApp and PEU social networks.
- Establish alternate working days or extra shifts to reduce the total number of workers at any given time, allowing workers to maintain the recommended distance between them and, at the same time, ensuring the completion of work activities and comply with the construction schedule.

6.14.4.7 *Activity Security Analysis and Work Permit*

Based on the field activities' assessment, those considered critical and necessary to start during this emergency period will need to reinforce in the routine of such activities the need to avoid exposure of workers to social proximity less than 2 meters (whenever possible) and precautionary measures for carrying out activities in closed environments, such as places with poor ventilation. Each activity will be described in the Activity Safety Analysis and, eventually, in the Work Permit. These documents will be completed as evidence of the application of COVID-19 preventive measures at work.

6.14.4.8 *Control Measures and Working Conditions*

The Project will distribute surveys to identify the workers' physical and health conditions to prevent potentially ill workers from feeling under pressure to show up for work, risking the transmission of the virus to the rest of the workforce. The surveys will contain a simple checklist with information on the workers' conditions, which can be confirmed by establishing a routine inspection.

In addition, the PEU and its subcontractors will ensure that their employees have access to in-person or remote medical consultation services (by phone or video call) if they encounter COVID-19 symptoms. The Project will closely collaborate with local authorities to benefit its workers and the local community.

The PEU and its contractors will provide and enforce face protection masks for all people in the working areas. The PEU will specify the type of mask required, the replacement frequency and will provide appropriate training. The Project and its contractors will make 70% alcohol gel available in all working areas.

6.14.4.9 Food Supply and Preparation Measures

The Project will evaluate the possibility of hiring meal delivery services from local restaurants that have already been mapped and previously contacted. The Project will also let employees bring their own meals from home if preferred.

6.14.4.10 Control Measures for Mobilizing Workers

If mobilization of workers from other communities or regions is required for the Project, both the PEU and its contractors will take the following measures:

- Lists of workers and their arrivals will be reviewed at least 7 days in advance, to analyze the workers that might come from high-risk areas (areas with higher community transmission rates). These cases must be subjected to prior isolation for 15 days before starting work and access the Project area.
- Monitor the list of workers, indicating the city of origin, estimated start of work and address at which the worker(s) will be kept in isolation.
- Ensure that when accessing to the Project area, all workers are wearing identification badges and essential service documentation.

The Project will observe the travel restrictions imposed by the local, national and international authorities, as well as the recommendations of the health authorities.

6.14.4.11 Control Measures for potential Workers' Accommodations

The Project does not expect to have a significant number of workers that will need accommodation, as the Project will focus on hiring locally. Nonetheless, if a reduced number of workers need accommodation, they will be either placed in hotels or rented homes.

The following best practices will be applied in the workers' accommodations:

- Promoting, respecting and applying occupancy density limits in workers' accommodation;
- If new workers arrive from countries or areas with high COVID-19 risk, these people will have to complete a proper quarantine in accordance with local regulations and/ or recommendations of relevant international organizations;
- Whenever possible, the accommodation coordinator or the persons in charge of managing the accommodation will coordinate the daily health and safety measures of the residents, such as taking the persons' body temperature with thermometers to prevent contagion;
- Carry out the necessary measures and efforts in order to ensure that all workers have access to medical professionals, including adopting measures that remove possible language barriers, in the case of foreign workers.
- Provision of hand soap for workers in all bathrooms, as well as the adoption rigorous daily cleaning routine.
- Implement the necessary measures and efforts in order to ensure that door handles, taps, TV/ media devices, kitchen equipment, controls, buttons and any other common objects located in the areas that are touched regularly are cleaned several times a day. The cleaning frequency will be determined by each installation. Likewise, ensure that necessary measures are taken to ensure that common surfaces, including those on vehicles that transport workers from their accommodations to the

workplace, counters, floors and walls, will be treated as potentially contaminated areas and therefore will be cleaned regularly.

- Keep a minimum distance of 2 meters between the beds, as well as reducing the number of people in a single room, when possible let only one person per bedroom.
- Carry out actions to maximize natural or forced ventilation within the limitations of comfort, safety and privacy, as well as considering any changes in the installation to allow ventilation during working hours.
- Mandatory use of a mask, also during off-hours. Additionally, exits that are not for the purpose of essential needs should be avoided, and it is important to have clear rules for the use of common areas in the accommodation.

6.14.4.12 Preventive Measures for Drinking Water Supply, Sanitation and Solid Waste Management

This section presents the main guidelines to prevent the contagion of COVID-19 through the drinking water supply, sanitary sewage and solid waste management services in all Project activities and its contractors (offices, construction sites, work areas). The content was adapted from the Interim guide about Water, sanitation, hygiene, and waste management for COVID-19, published on March 19, 2020 by the World Health Organization.

Safe Water Supply

The Project will take several measures to improve the water supply, by protecting the water source; treat water at the point of distribution, collection or consumption; and ensure that treated water is safely stored at in regularly cleaned and covered containers.

For effective centralized disinfection, there must be a residual concentration of free chlorine of ≥ 0.5 mg / L after at least 30 minutes of contact time at pH < 8.0 . A chlorine residual must be maintained throughout the distribution system.

Safe Management of Waste Water and Feces Waste

Best practices to protect the health of workers in sanitation treatment facilities must be followed. Workers must wear appropriate personal protective equipment (PPE), which includes protective clothing, gloves, boots, glasses or face shield and mask; they must wash their hands frequently; and avoid touching their eyes, nose and mouth with unwashed hands.

Hand Hygiene

Hand hygiene is extremely important. Hand cleaning with soap and water or an alcohol-based hand scrubber will be carried out according to the instructions as stated in "My 5 moments for hand hygiene" (WHO, Infection prevention and control) available at <https://www.who.int/infection-prevention/campaigns/clean-hands/5moments/en/>.

When the hands are not visibly dirty, the preferred method is to perform hand hygiene with alcohol (rub your hands for 20 to 30 seconds using the appropriate technique). When hands are visibly dirty, they will be washed with soap and water for 40 to 60 seconds using the appropriate technique. Hand hygiene must be carried out before putting on the PPE and after removing it, when changing gloves, after any contact with a patient with suspected or confirmed COVID-19 infection or its residues, after contact with some respiratory secretion, before eating and after using the bathroom.

Functional facilities to wash the hands must be present for all workers throughout the Project site and in areas where PPE is placed or removed. These facilities must be available within 5m of bathrooms, as well as in public areas.

Cleaning Practices

The recommended cleaning and disinfection procedures must be followed consistently and correctly. Clothes will be washed and surfaces in all environments will be cleaned at least once a day. Many disinfectants are made to kill virus, such as COVID-19, including commonly used hospital disinfectants. WHO currently recommends the use of:

- 70% ethyl alcohol to disinfect small areas between uses, such as dedicated reusable equipment (for example, thermometers);
- 0.5% sodium hypochlorite (equivalent to 5000 ppm) for disinfecting surfaces.

Disposal of Dirty Water from Washing PPE, Surfaces and Floors

The WHO recommends to clean public utility gloves or heavy reusable plastic aprons with soap and water and decontaminate them with 0.5% sodium hypochlorite solution after each use. Disposable gloves (nitrile or latex) and aprons must be discarded after each use and not reused; hand hygiene will be performed after removing the PPE. If the gray water includes disinfectant used in the previous cleaning, it will not need to be chlorinated or treated again. However, it is important that this water be discharged into drains connected to a septic or sewer system or into a drainage well. If gray water is discharged into a submerged pit, the pit will be enclosed within the health facility to prevent tampering and to avoid possible exposure in the event of an overflow.

Sanitation and Hygiene Practices at Homes, Accommodations and Communities

Maintaining best practices for drinking water supply, sanitation, hygiene and solid waste management at home and in communities near the Project is also important to prevent the spread of COVID-19 and to care for patients at home. Regular and correct hand hygiene is of particular importance.

- Hand Hygiene: Regular hand washing is one of the most important measures that can prevent COVID-19 infection. In homes, schools and crowded public spaces - such as markets, places of worship, train or bus stations, regular washing of hands will occur before preparing food, before and after eating, after using the bathroom or changing a child's diaper and after touching animals. Functional hand washing facilities with soap and water must be available within 5 meters of the bathroom.
- Other recommendations:
 - The safe management of human excreta will be considered, starting with ensuring access to regularly cleaned, accessible and functioning toilets or latrines, as well as containment, transportation, treatment and eventual disposal of sewage.
 - When there are suspected or confirmed cases of COVID-19 in the home environment, immediate measures will be taken to protect healthcare professionals and other family members from the risk of contact with respiratory secretions and excrement that may contain the COVID-19 virus.
 - Surfaces that are touched frequently throughout the patient care area will be cleaned regularly, such as next to tables, beds and other bedroom furniture. Bathrooms will be cleaned and disinfected at least once a day. Regular household soap or detergent will be used for cleaning

first and then, after rinsing, a common household disinfectant containing 0.5% sodium hypochlorite (i.e. equivalent to 5000 ppm or household bleach with 1 part hydrochloride sodium to 5% water and 9 parts water) be applied. PPE will be used while cleaning, including wearing a mask, goggles, liquid-resistant apron and gloves, and hand hygiene with a hand rubbing alcohol or soap and water will be carried out after removing the PPE.

Rapid Tests to Diagnose COVID-19

Rapid antibody tests for the new coronavirus (Sars-CoV-2) can be used to support the assessment of the immune status of workers who have symptoms of COVID-19. This type of examination indicates whether or not the person had contact with the virus, through the detection of antibodies produced as a defense mechanism of the organism. According to ANVISA (<http://portal.anvisa.gov.br/coronavirus>), the examination is done using blood, serum or plasma samples. The method used is called immunochromatography, which is the generation of color from a chemical reaction between antigen (substance foreign to the organism) and antibody (defense element of the organism). The results obtained are called IgM and IgG. IgM and IgG are the body's defenses against an external agent, such as the virus that causes Covid-19.

All contractors will perform rapid tests for the diagnosis of COVID-19 following technical criteria that consider good industry practices, guidance to health agencies and specificities of each service provision contract (e.g. location, duration, occupational risks, number mobilized workers, and need for accommodation). The following testing strategy is suggested:

- Monitoring of workers who might need testing by applying a rapid test every 15 days;
- Application of a rapid test to all non-local workers after a quarantine period of 15 days on arrival in Charlestown;

Application of a rapid test in suspected cases, from the seventh day after the onset of flu-like symptoms (fever with a body temperature above 37.6 ° C, cough, dyspnea, myalgia, upper respiratory symptoms, fatigue and more rarely, gastrointestinal symptoms). This minimum time of 7 days is necessary to ensure that there are enough antibodies in the body that can be detected by the rapid tests available on the market.

Internal Grievance Mechanism and Employment Protection

Within the measures related to the pandemic period, it is important to note the need and concern of the PEU to protect its employees, their jobs and health and safety. The Project will also emphasize this to its contractors, to take the necessary care so that the employment protection measures are also applied to their employees, reducing the workers' general insecurity and concerns in the pandemic scenario.

The internal grievance mechanism will be monitored regularly in order to identify claims and concerns regarding COVID-19 or any grievance related to the pandemic circumstances.

6.14.4.13 Measures for the Office Spaces

The Project will adopt specific corporate preventive and mitigating measures at the offices in the Project and for its subcontractors, if applicable.

Preventive Measures at Work

The Project will reinforce all guidelines and recommendations for medical health and hygiene care in the work environment, especially in the corporate environment. The Project will disclose information through its

communication channels, as well as constantly refilling the alcohol gel containers placed in different locations of the Project offices and working areas for the hygiene of its employees and people who have access to the facilities.

More frequent cleaning will take place in areas where exposure to possible contamination is higher, such as meeting rooms, pantry, bathrooms, material/ work equipment, etc. In cases when a suspected case of contamination is reported or confirmed, a thorough cleaning process will be carried out.

The Project will take the individual body temperature using digital infrared thermometers, twice a day. If the temperature is 37.7°C or above, preventive social isolation measures, medical assistance and monitoring will be recommended.

The Project will disclose information constantly, including Health and Safety guidelines for employees and contractors, on hygiene measures to prevent the spread and contagion of the virus, such as washing hands with soap and water or alcohol gel whenever possible, maintain preventive social isolation and avoid greeting with a hand or hug.

If a worker suffers any of the symptom associated with COVID-19 (fever, cough, difficulty breathing), the employee will be instructed to stay at home and contact the health teams available to assist employees and their families. Workers shall also inform the Human Resources team, by email and/ or telephone. The HR team shall provide the necessary support and immediate referral to medical care, whenever this is recommended by the medical evaluation. HR is responsible for gathering and controlling the employees' information related to symptoms and / or suspicious cases, as well as monitoring their situation during the duration of the contingency period.

6.14.4.14 *Management of Meetings or Events*

The PEU and its contractors' organizers of meetings and events will be required to evaluate the need and potential risk from a COVID-19 infection due to:

- The risk of people attending the meetings or event might be unwittingly bringing the COVID-19 virus to the meeting. Others might be unknowingly exposed to COVID-19.
- While COVID-19 is a mild disease for most people, it can make others very sick and even risk their lives. Around one of every five people who are infected with COVID-19 need hospital treatment.

Key considerations to prevent or reduce COVID-19 risks in meetings or events:

BEFORE the meeting or event, the PEU and its contractors will:

- Double-check the authorities' advice where the meeting or event takes place. The PEU and its contractors will follow the official guidance and advice.
- Develop and agree a preparedness plan to prevent infection at the meetings or events.
- Consider whether a face-to-face meeting or event is needed. Should the face-to-face meeting or event be replaceable, the PEU and its contractors must choose a teleconference, videoconference or any other online mean for such meeting or event.
- Evaluate the number of people for the meeting or event is required. In case of the number of attendees could potentially be lower, the number of people will be reduced even further.
- Ensure and verify information and communication channels in advance with key partners such as public health and health care authorities.

- Pre-order sufficient supplies and materials, including tissues masks and hand sanitizer for all participants.
- Advise participants in advance that if they have any symptoms or feel unwell, they are not allowed to attend.
- Make sure all organizers, participants, caterers and visitors at the event provide contact details: mobile telephone number, email and address where they are staying. State clearly that their details will be shared with local public health authorities if any participant becomes ill with a suspected infectious disease. If they disagree with these measures, they will not be allowed at the event or meeting.
- Develop and agree a response plan before the meeting occurs, in case someone at the meeting becomes ill with symptoms of COVID-19 (dry cough, fever, malaise). This plan will include at least:
 - Identification of a room or area where someone who is feeling unwell or has symptoms can wait alone (no contact with other coworkers or meeting participants) until he/she can be safely evacuated or transferred to receive proper medical attention.
 - A plan for safely transfer meeting participants with symptoms, or meeting participants that have had contact with someone who is confirmed to have the disease, to a health facility.
 - The PEU will make its best efforts to identify meeting participants who might have a higher risk factor or be more affected/sensitive to the disease, for instance people older than 60 years old, pregnant women, people with chronic diseases such as a cardiovascular illness, diabetes, or any other condition advised by the governmental authorities. This type of personal information will be kept as confidential and obtained based on medical records. People with this kind of conditions will not participate in meetings.
 - Inform local authorities if a meeting participant, staff member or service provider appears to have COVID-19 symptoms during or just after the meeting.

DURING the meeting or event:

- The organizers will provide information or a briefing, preferably both orally and in writing, on COVID-19 and the measures that have been taken to make the event safe for participants, such as:
 - Avoid touching common surfaces.
 - Encourage regular hand washing or use of an alcohol rub by all participants at the meeting or event.
 - Encourage participants to cover their face with the bend of their elbow or a tissue if they cough or sneeze. Supply tissues and closed bins to dispose of them in.
 - Provide contact details or a health hotline number that participants can call for advice or to provide information.
 - Display dispensers of alcohol-based hand rub prominently around the venue.
- If there is space, arrange seats so that participants are at least two meters apart.
- Open windows and doors whenever possible to make sure the venue is well ventilated.

AFTER the meeting:

- Organizers will retain the names and contact details of all participants for at least one month. This will help public health authorities trace people who may have been exposed to COVID-19 if one or more participants become ill shortly after the event.
- If someone at the meeting or event was transferred to a room alone without any contact with other persons as a suspected COVID-19 case, the organizer will let all participants know this. They will be advised to monitor themselves for symptoms for 15 days and take their temperature twice a day.
- If someone develops even a mild cough or low-grade fever (i.e. a temperature of 37.3 C or more) will stay at home and self-isolate. This means avoiding close contact (2 meters or nearer) with other people, including family members. They will also call their healthcare provider to give them details of their recent travel and symptoms.
- The room where the meeting or event took place shall be cleaned and disinfected thoroughly.

6.14.4.15 *Visitors*

The PEU will not allow visitors at the Project sites or offices for an indefinite period until the COVID-19 pandemic is resolved. Any exceptions to the recommendations described here must be dealt with on a case-by-case basis and approved directly by the PEU's Chief Executive Officer.

6.14.4.16 *Remote Work (Home Office)*

If possible, and to prevent the spread of the virus, the PEU will enable remote work (home office) for employees that solely carry out administrative activities at the Project, in order to maintain a minimum number of employees in the office, whose activity is related to functions that cannot be performed remotely.

The PEU will generally consider these three case scenarios:

1. Employees whose remote presence severely impacts the continuity of Project activities, with the physical presence of the employee being indispensable, even in the contingency scenario.
2. Employees whose remote presence impacts the continuity of Project activities, making it possible to work in the home office.
3. Employees whose remote presence has a slight impact on the continuity of Project activities, making it possible to work in the home office.

The assessment of remote work (home office) requests will also take into account the higher-risk groups who could suffer from more severe consequences of a possible viral contamination, such as, older employees (over 60 years old), employees with pre-existing respiratory diseases or immunodepressants, employees who live with elderly people or with family members who suffer from respiratory diseases, or immunodepressants.

The remote work options will be evaluated and resized, with the possibility of implementing a rotation system among employees allocated within each level, depending on work demands, in order to guarantee the continuity of activities and workers' safety.

6.14.5 *Documentation and Monitoring*

The Human Resources Manager and Health and Safety Manager will be responsible for the implementation of what is stated in this plan and will keep evidence of it (e.g. checklists, COVID-19 cases at the Project, working conditions, internal grievance mechanism, workers who come from other communities, etc.).

The COVID-19 Contingency Plan is to be reviewed on a monthly basis until the pandemic is resolved in consultation with the Human Resources Manager and Health and Safety Manager. The Project will ensure that contractors update their procedures as needed.

6.14.6 Key Performance Indicators

The table below presents the key performance indicators that will evaluate the implementation of this plan:

Table 6-41: Key Performance Indicators

Impact	Indicator	Performance Goals/ KPIs	Project Phase	Method/Tool / Frequency
Health and Safety Conditions at Work	Availability of preventive COVID-19 material (cleaning products, disinfectant, masks, gloves, alcohol gel, etc.)	All Project areas shall have cleaning materials and available PPE at all times.	Until the pandemic is resolved.	Human Resources, Internal Grievance Mechanism and Health and Safety Manager / Daily
	Hand hygiene facilities	One sink available to wash the hands per 20 workers. Alcohol gel available in all Project areas at all times.	Until the pandemic is resolved.	
	Internal Grievance Mechanism	100% reported, evaluated and solved grievances regarding COVID-19 claims or concerns	Until the pandemic is resolved.	

Source: ERM, 2021

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APPENDIX A PUBLIC CONSULTATION REPORT

RECONSTRUCTION WITH RESILIENCE

IN THE ENERGY SECTOR OF THE BAHAMAS

PUBLIC
CONSULTATION

April 28, 2021
2 p.m. - 4 p.m.

Register for the event
tinyurl.com/energybah



Appendix A

Public Consultation held on April 28, 2021

Environmental and Social Assessment for
Proposed Abaco Island Solar PV Plant and
Energy Storage Project

April 2021

Project No.: 0582081

1. Public Consultation

People have a right to be consulted. According to the IDB's Guidelines on Consultation and Stakeholder Engagement in IDB Projects, "people should be able to receive accurate, comprehensible information about the objectives, scope, timing and potential impacts and risks associated with a project. It means that they will be given the opportunity to express their concerns, fears, and doubts, will be allowed to share their knowledge, insights, and understanding, and will be able to recommend modifications or changes in the operation. It also means that their concerns, fears and recommendations will be seriously considered and, wherever possible, addressed" (IDB, July 2013¹).

To support the diversification of the Energy Matrix of The Bahamas and to increase security and reliability of the network, the IDB is undertaking the operation "Reconstruction with Resilience in the Energy Sector in The Bahamas" (the "Operation"), coded BH-G0003. The objective of the Operation is to support the Government of The Bahamas (GoBH) with the rehabilitation of critical energy infrastructure and restoration of electricity service in the islands heavily affected by hurricane Dorian, while facilitating the integration of renewable energy in the country.

The Operation represents an additional source of funding, offered by the European Union – Caribbean Climate Investment Facility (EU-CIF) under the Framework Administrative Agreement signed between the European Union (EU) and the IDB, to expand the scope of the IDB's Conditional Credit Line for Investment Project (CCLIP) "Advancing Renewable Energy In The Bahamas" (approved by the IDB in January 2020 and coded as BH-O0006). In January 2020, as part of the CCLIP approval process, a Strategic Environmental and Social Assessment (SESA) and an Environmental and Social Management Framework (ESMF) were prepared to identify the potential social and environmental impacts related to the CCLIP and establish adequate management guidelines for the components of the Operation.

The Operation will support the following two components of the CCLIP:

- **Component 1:** Reliable and renewable electricity in New Providence and family Islands to support the reconstruction efforts.
- **Component 2:** Strengthening skills for the energy reconstruction effort across the Bahamas.

In support of Component 1, the Operation will finance the installation of a 2.25 Megawatts (MW) Solar Photovoltaic (PV) Plant and an equivalent capacity of battery energy storage (occupying an area of approximately 5 hectares of governmental land) to primarily supply the Marsh Harbor Government Complex and the Marsh Harbor Healthcare Center (the "Hospital") in the Island of Great Abaco. This project will support the resilient reconstruction and rehabilitation efforts of the electric system, following the destruction caused by Hurricane Dorian in 2019.

In January 2021, an Environmental and Social Assessment (ESA) was submitted for a Solar Photovoltaic Project (the "Project") in Abaco as part of Component 1 of the Operation. This report summarizes the results from the public consultation for the Project; it includes an overview of participation in the consultation and provides evidence from the consultation process.

¹ Inter-American Development Bank, *Guidelines on Consultation and Stakeholder Engagement in IDB Projects*, July 2013. Available at: <https://publications.iadb.org/publications/english/document/Guidelines-on-Consultation-and-Stakeholder-Engagement-in-IDB-Projects.pdf>

1.2 Public Consultation Objectives

The Public Consultation had the following objectives:

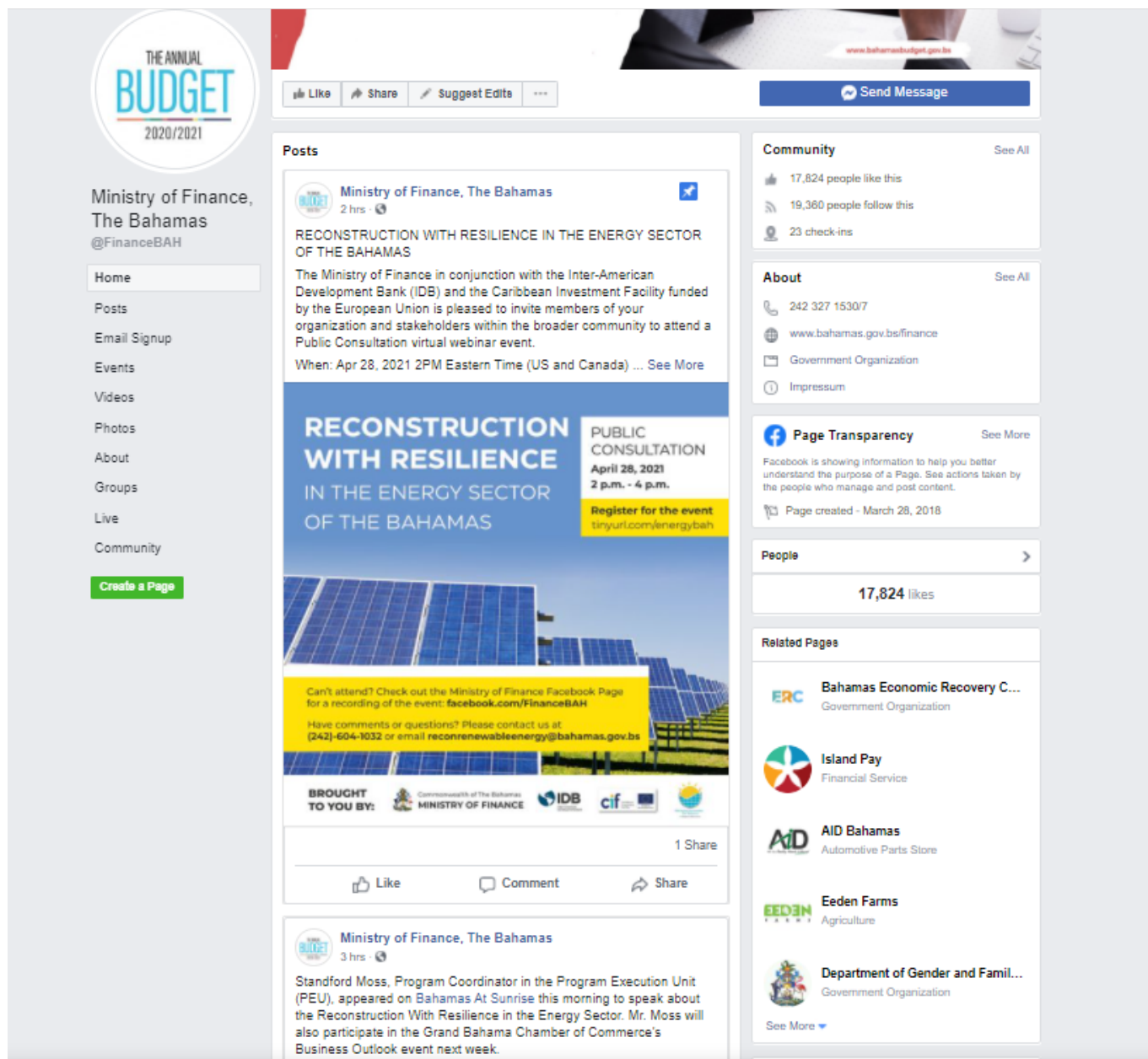
- 1) Present and Communicate the Scope of the Project: Reconstruction with Resilience in the Energy Sector in The Bahamas;
- 2) Present the Resilience Approach;
- 3) Present and Communicate the outcomes of the preliminary Environmental and Social Assessment (ESA) undertaken for the Program and its First Operation; and
- 4) Share and hear the stakeholders' feedback, ideas, comments and Bahamians' opinions on the Program and its high-level impacts.

1.3 Public Consultation Logistics

In accordance with the IDB's Directive B6, a Public Consultation was held via Zoom, on April 28, 2021 at 2pm.

The IDB, ERM (consulting firm in charge of the ESA) and the Bahamas Ministry of Finance conducted the event. The meeting was attended by 68 stakeholders via Zoom, and it was live streamed in the Facebook page of the Ministry of Finance and through the University of the Bahamas Facebook page to facilitate the participation of other stakeholders; the event was followed by around 240 participants.

Invitations were sent prior to the event by email to representatives of the community and local authorities (See **Appendix F**). Furthermore, to extend the invitation to the wide public in a more efficient manner, the event was advertised in the social media (on the Facebook page of the Ministry of Finance) during the week and days previous to the event. The invitation to the event was published on Facebook on April 23, 2021 through the Ministry of Finance Page (see Figure below).



Source: Facebook, Ministry of Finance 2021.

Figure 1-1: Public Consultation Announcement on Facebook (Ministry of Finance Page)

The attendants to the Public Consultation included stakeholders from the public sector, private sector, civil society and others (see Zoom Registration List in *Appendix C*). Attendance at the meeting was significant and attendees were participatory, which resulted in a meaningful discussion with the Project proponent.

There were opening remarks for approximately 15 minutes by members of the Ministry of Finance, including Marlon Johnson, the Acting Financial Secretary, and by the IDB's Country Representative for the Bahamas. This was followed by an introduction of the public consultation and resilience approach by the IDB. Then there was an overview of the Project and Parties involved, followed by ERM's presentation of the outcomes of the Environmental and Social Assessment (ESA), focusing on the potential environmental and social

impacts, which lasted approximately 30 minutes. After the presentations, the attendees had the opportunity to ask questions and make comments throughout the presentation, and for approximately half an hour at the end while Project representatives provided the necessary responses. The meeting lasted for approximately one and a half hours.

The appendices to this report include the following:

- ERM Presentation Slides for the Public Consultation (*Appendix A*);
- Flyer used for the Facebook announcement and stakeholder invitations (*Appendix B*);
- Zoom Registration List (*Appendix C*);
- Questions and Answers Register-Verbatim (*Appendix D*);
- Photographic evidence from the public meeting (*Appendix E*); and
- List of Stakeholders who Received Invitations (*Appendix F*).

1.4 Key Questions and Comments from Attendees

Following the presentation, a Question and Answer session was held. The stakeholders' questions for the Minister of Finance predominated during the Q/A part of the public consultation. The key issues and concerns expressed by the stakeholders revolved mainly around issues linked to the loan, the price of energy, the Government's position on renewable energy, opportunities for local renewable companies and energy sources to diversify the grid. The only environmental and social aspects raised from the community were with regard to local hiring and training. ERM indicated that access to training is included as a component in the ESMP and further details will be developed by the PEU and EPC.

The Ministry of Finance shared an email address and phone number to gather any additional comments following the event.

1.5 Conclusion

The participating stakeholders raised no significant environmental and social issues during this session. Based on the type of questions raised during the public consultation, there seems to be interest in the technical aspects of the loan and the design of the Project. The consultation was delivered in a meaningful manner, involving different categories of stakeholders and was conducted in a transparent manner, equitable and non-discriminatory. Overall, the consultation was inclusive. Stakeholder engagement and consultations shall continue throughout the next steps and phases of the Program.

Appendix A –Presentation Slides

RECONSTRUCTION WITH RESILIENCE

IN THE ENERGY SECTOR IN
THE BAHAMAS

**PUBLIC
CONSULTATION**

April 28, 2021 | 2 p.m. - 4 p.m.

LIVE WEBINAR



Commonwealth of The Bahamas
MINISTRY OF FINANCE



RECONSTRUCTION WITH RESILIENCE

IN THE ENERGY SECTOR IN THE BAHAMAS



Agenda

Time	Topic	Participants/Speakers
2:00 – 2:05	Welcome & Opening of Webinar	Sherrill Poitier, Communications Manager, Ministry of Finance
2:05 – 2:15	Opening remarks	Marlon Johnson, Acting Financial Secretary, Ministry of Finance Daniela Carrera Marquis, Representative Country Office Bahamas, Inter-American Development Bank (IDB)
2:15 – 2:20	Introduction and objective of the Public Consultation & Resilience approach	Malaika Masson, Energy Sector Senior Specialist, IDB
2:20 – 2:35	Overview of the Project & parties involved	Stanford Moss, Program Coordinator, Reconstruction with Resilience in The Energy Sector in The Bahamas (RRESB)
2:35 – 3:05	Environmental and social studies	Environmental Resources Management (ERM)
3:05 – 3:35	Questions and comments from the audience	



MARLON JOHNSON

Acting Financial Secretary
Ministry of Finance, The Bahamas

Opening Remarks



DANIELA CARRERA-MARQUIS

Country Representative for The Bahamas
Inter-American Development Bank (IDB)



DR. MALAIKA MASSON

Senior Regional Energy Specialist
Inter-American Development Bank (IDB)

Introduction & Objective of the Public Consultation & Resilient Approach

Background

- We work to improve lives in Latin America and the Caribbean (LAC).
- Through financial and technical support for countries working to reduce poverty and inequality, we help improve health and education, and advance infrastructure.
- With a history dating back to 1959, today we are the leading source of development financing for LAC.
- We maintain a strong commitment to achieving measurable results and the highest standards of integrity, transparency, and accountability.
- The Bank new Administration's current focus areas include three development challenges¹:
 - ❑ Work towards sustainable and inclusive economic growth (reactivate the productive sector,...);
 - ❑ Identify a Pathway to accelerate the recovery (climate change, by helping countries foster resilience, mitigation, and adaptation,...);
 - ❑ Present a value proposition (to increase efficiency in processes,...)



Build Back Forward



- The Caribbean region has the natural resources to be a model for decentralized, sustainable, future-forward resilience but face challenges such as **lack of quality infrastructure, limited fiscal space, low technological absorption, and slow recovery**.



- To close the infrastructure deficit in the Caribbean **requires investments of approx. 5% of GDP**.



- By building better and smarter, Caribbean countries can close the infrastructure gap, **improve productivity, and stimulate economic growth and job creation**.



- Build Forward is an ambitious program to help the Caribbean **recover sustainably from disasters by using innovative technologies, employing strategic solutions and facilitate access to multi-donor facility to support initiatives**.



The EU-CIF

Established in 2012, the **Caribbean Investment Facility (CIF)** is one of the **European Union's regional blending facilities**, aimed at contributing to economic development and growth, regional integration, poverty reduction and environmental protection.

CIF acts as a **catalyst to mobilize funding for development projects by combining EU grants with financial resources from European and regional financial institutions, governments and the private sector.**

Currently, CIF is financing projects in key sectors that are essential for the achievement of the Sustainable Development Goals (SDGs), such as **renewable energy, water** and wastewater systems, sustainable transport, environment, information and communication technology, health, education and other social services, and to small and medium-sized enterprises (SMEs).



Objective of Today's Consultation:

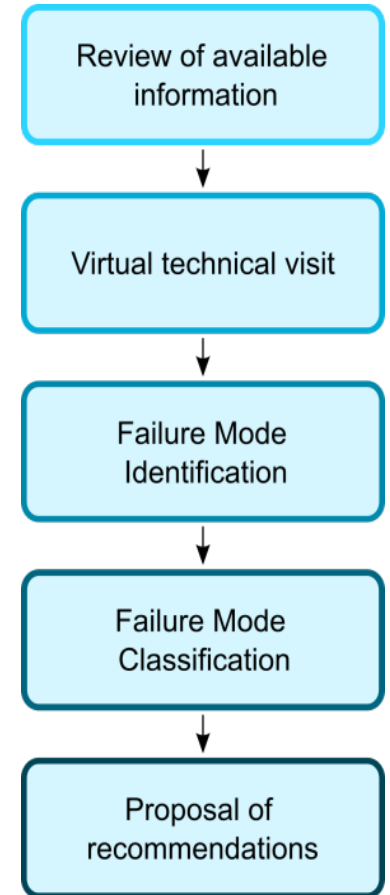
- **Present and Communicate** the Scope of the Project:
Reconstruction with Resilience in the Energy Sector in The Bahamas;
- **Present the Resilience Approach;**
- Present the preliminary **Environmental and Social Analysis and Management** undertaken for the Program and its First Operation;
- **Share and hear your feedback**, ideas, comments and Bahamians' opinions on the Program and its high-level impacts.





Resilience Approach

- Qualitative disaster and climate change risk analysis was done for solar PV plant in Marsh Harbour.
 - 13 Failure Modes were identified – 3 produced by rainfall, 5 from high winds, 2 from storm surge, and 3 other general events.
 - **Main Recommendations:** (i) reinforcing the plant design against strong winds and floods by designing strong panel structures and foundations, (ii) implementing anti-corrosion measures using underground cables and (iii) implementing watertight connections.
- The Disaster Risk Emergency Management Plan (DREMP) details the characteristics of the system, the scenarios of when it should be applied, how to proceed in case of an event, and who is responsible for each task, which includes:
 - Description of the PV-plant; Roles and Responsibilities; Emergency detection; Emergency evaluation and classification; Communications; Emergency notification chart; Supplies and Resources
- Having the DREMP helps to **reduce the impacts that hurricanes and other natural hazards** could have as well as to re-establish the normal operation of the solar plant after the extreme events.



Overview of Project & Parties Involved

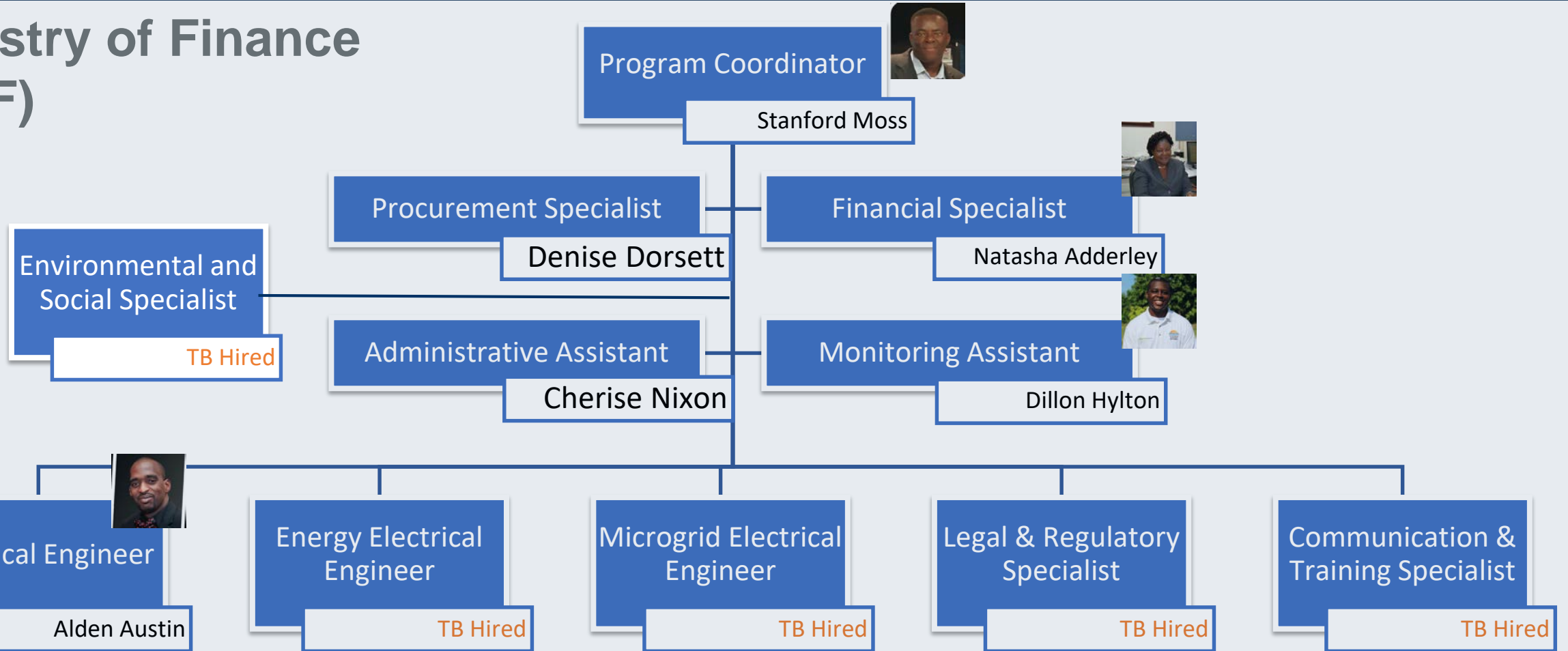


STANFORD MOSS

Program Coordinator in the
Program Execution Unit (PEU)

The PEU How we are organized to execute the program?

Ministry of Finance (MoF)



Introduction & Overview of the Project



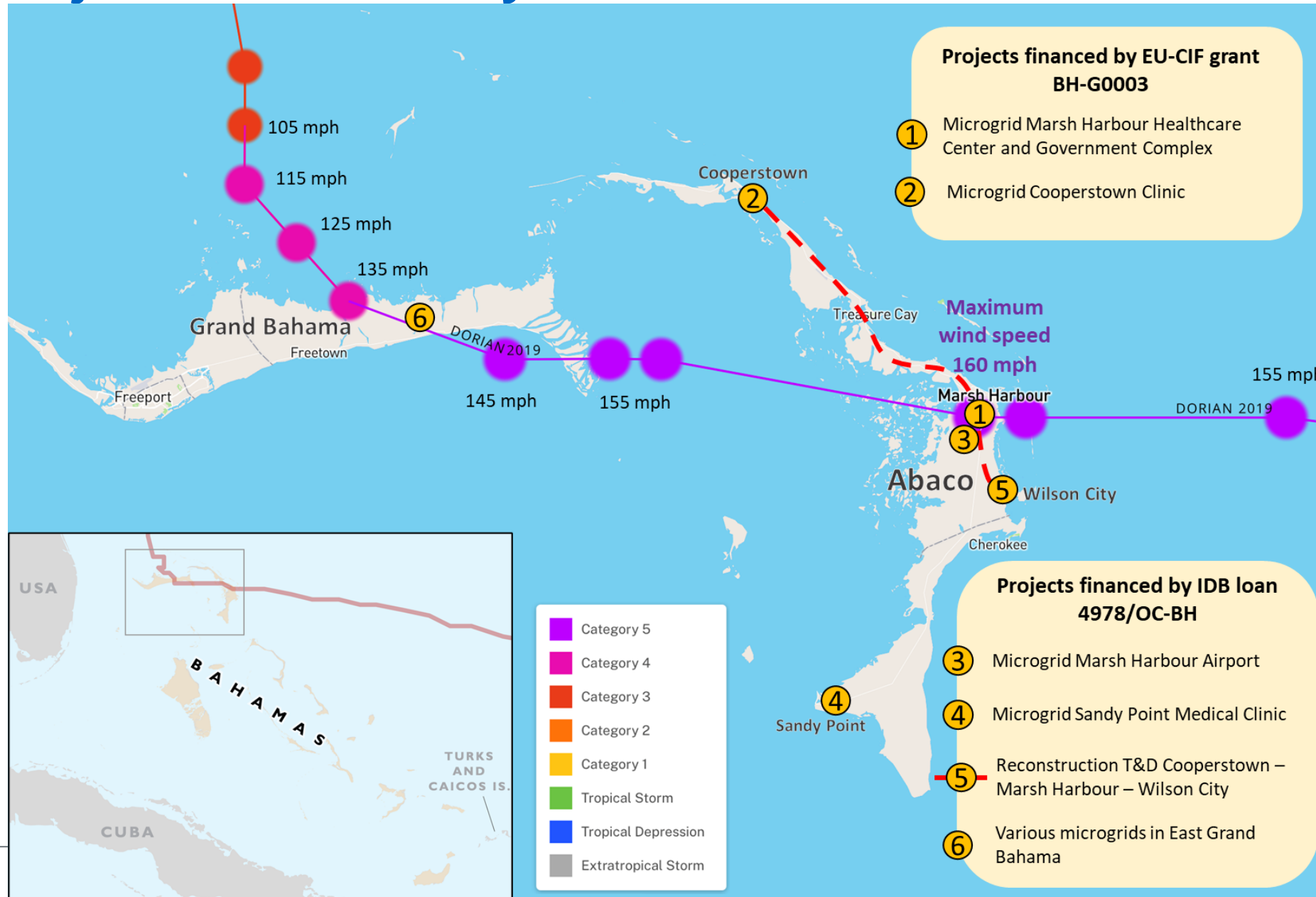
Objectives of the Project

- ❑ The objective of this operation is to support the Government of The Bahamas restore and enhance security of the electricity service through the adoption of climate-resilient renewable energy infrastructure.

- ❑ The specific objectives are:
 1. promote the adoption of resilient Solar Photovoltaic (PV) technologies;
 2. develop local skills for services related to solar PV generation systems, fostering participation of women and Persons with Disabilities.

- ❑ The scope of this Grant complements the scope of the BH-L1048 Loan “Reconstruction with Resilience in the Energy Sector in The Bahamas” (microgrids, rooftop solar PV projects and training).

Projects financed by the EUCIF Grant and IDB Loan



Summary of Program costs

Components	Total IDB		%
	EUR (€)	US\$ Equivalent	
Component 1. Reliable and Renewable Electricity in New Providence and Family Islands	7,508,000	8,250,550	91.6
Component 2. Support the strengthening skills for the development of new installed RE	310,000	340,659	3.8
Other costs	382,000	419,780	4.6
a. IDB lead fees	200,000	219,780	2.4
b. Consulting services related to PEU	120,000	131,868	1.5
c. Consulting services related to communication and dissemination of the program's deliverables	62,000	68,132	0.8
Total	8,200,000	9,010,989	100.0



1:10

**RATIO CONTRIBUTION
EU-CIF**

Component 1

Component 1. Reliable and Renewable Electricity in New Providence and Family Islands

- ❑ Deployment of decentralized solar PV plants, rooftop systems and innovative microgrids with battery storage capacity, together with grid modernization technologies to improve the reliability and resiliency of the power network in the islands.

Microgrids

- ❑ Installation of a Solar PV plant of around 2.25MW and an equivalent capacity of battery energy storage to primarily supply the Marsh Harbour Healthcare Center and the Government Complex in central Abaco.
- ❑ Installation of a Solar PV plant of approximately 0.25 MW for the Coopers Town Medical Clinic, located in northern Abaco, which will include a storage capacity of around 2 MW.

Component 1

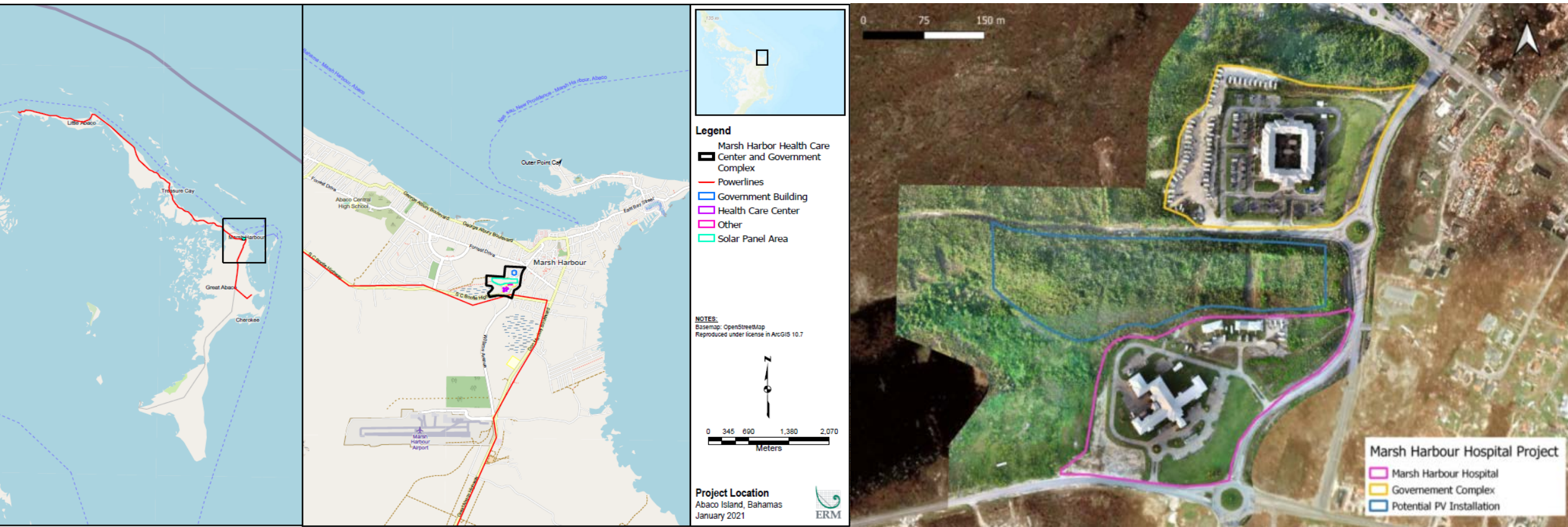
Rooftop solar PV projects

- ❑ Deployment of 3 rooftop solar PV plants in New Providence, which will add an approximate capacity of 407 kW.

- ❑ Projects considered so far include:
 1. University of The Bahamas (291 kW);
 2. C.I. Gibson Senior High School (49 kW); and
 3. Customs Headquarters (67 kW).

Marsh Harbour Healthcare Clinic and Government Complex

The first microgrid will be constructed on a government-owned 5-hectare (ha) parcel in Marsh Harbor on Great Abaco Island, between the Marsh Harbor Healthcare Center and the Marsh Harbor Government Complex.



Orthophoto of the Marsh Harbour Hospital and the Government Complex.

Coopers Town Medical Clinic

Component 1. Reliable and Renewable Electricity in New Providence and Family Islands



Prospective land
for Microgrid

Coopers Town
Medical Clinic

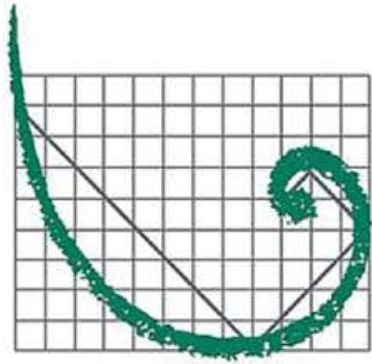
Component 2

Component 2. Support the strengthening skills for the development of new installed RE

- ☐ This component will finance training activities in installation and maintenance of solar PV systems, services in supply chain and solutions within the solar industry to foster local participation in these services, with an emphasis on services provided by women and vulnerable communities (such as Persons with Disabilities -PWD) and local contractors.

- ☐ Funding from the EU-CIF will train around 30 people, of which 50% will be women.

- ☐ In partnership with local institutions or NGOs working with PWD



ERM

Environmental & Social Assessment

**ENVIRONMENTAL
RESOURCES MANAGEMENT**

ESA Purpose

- The purpose of the ESA is to provide an **independent and factual, and technical basis** of the project's **potential impacts**.
- The ESA considers impacts on **social**, **physical**, and **biological** resources and receptors with potential to be affected– and include receptors such as:



Livelihoods



Community
health



Worker
health
& safety



Services & Air quality
infrastructure



Water



Fauna

ESA Methodology

- Receptors are studied to determine existing / baseline conditions.
- Based on the potential impacts' **magnitude** and the receptors' **vulnerability**, potential impacts are identified and assigned one of six **significance** ratings:



- Management measures are proposed to reduce the magnitude of potential impacts. Examples of management measures include:

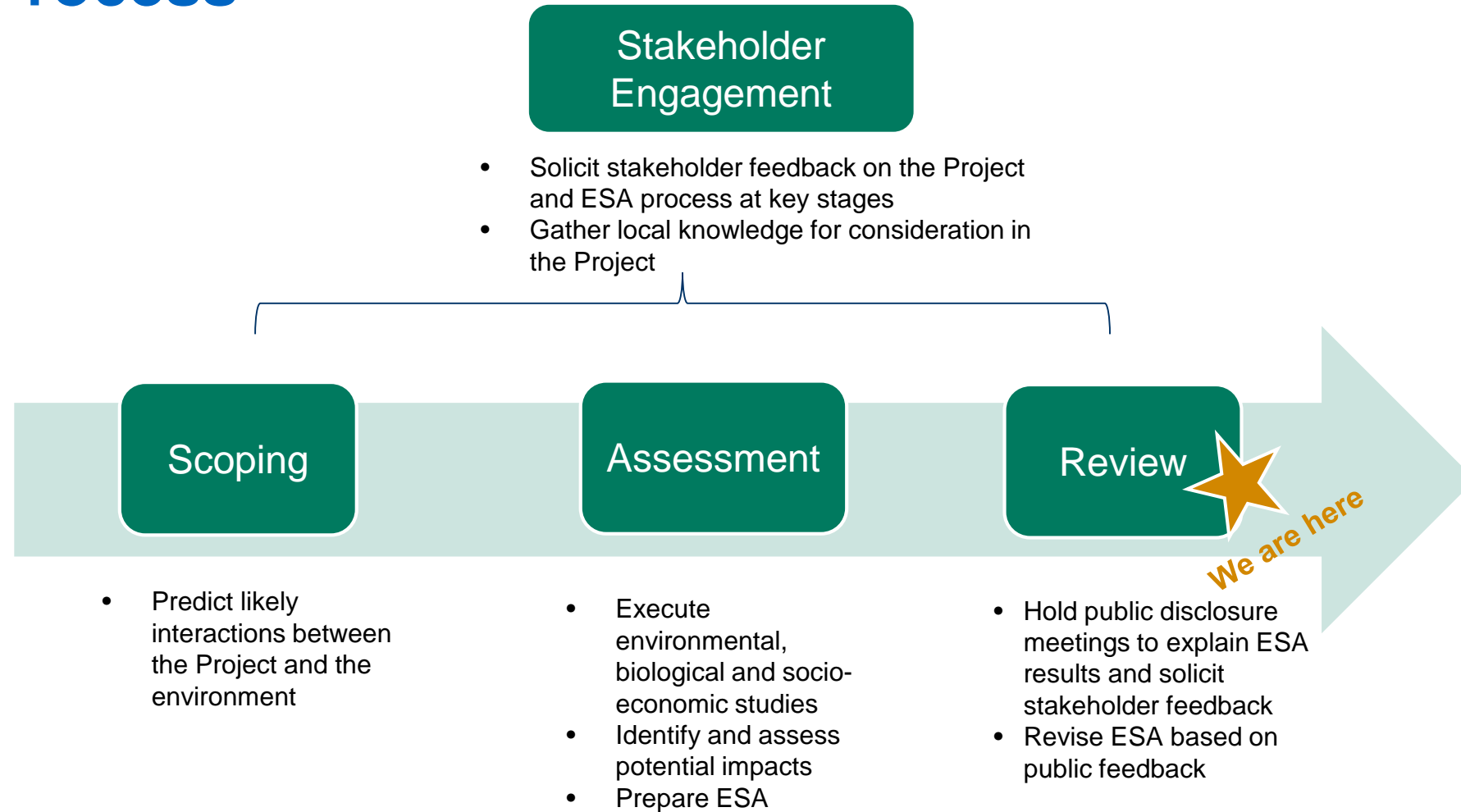


Stakeholder
engagement



Development of an
Emergency Response
Plan

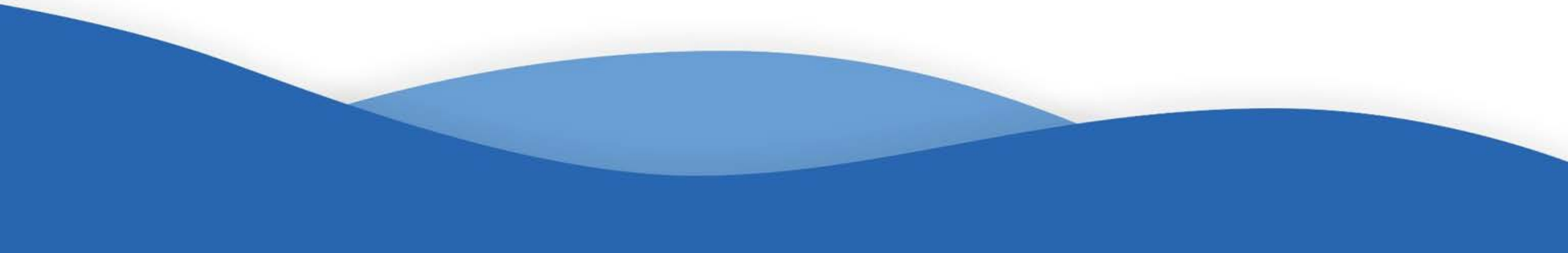
ESA Process



ESA Outcomes and Next steps

- This operation is **not** expected to generate **significant adverse impacts**;
- Potential adverse environmental and social impacts can be managed through typical **management and monitoring practices**;
- **Additional surveys, appraisals and management plans** will be prepared during the future stages of the development of this operation, in accordance with the requirements of the local legislation and good international industry practices.

Environmental & Physical Resources







Terrestrial Wildlife

Existing Conditions:

- The Abaco Islands support wetlands, mangroves and coastal shore stand and dune communities that are critical for seabirds and migrating birds.
- Nine amphibians and reptiles potentially occur within the area of influence.
- On the Abacos Islands, there is an absence of native small mammals except for bats.



Bermuda Petrel

Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
Terrestrial Wildlife: the Project may result in mortality or injury of wildlife species and degradation of habitats, during construction and operations with use of heavy machinery and increased vehicular traffic, as a result of to vegetation clearing and habitat loss, as a result of hunting or poaching. It may also result in disturbances as a result from lighting, noise, glare, and chemical hazards.	<ul style="list-style-type: none">✓ Pre-Construction Screening✓ Design and implement a Community Wildlife Management training	<div><div></div><div></div></div> <div>Collision with TL; solar panel glare. All others.</div>




Terrestrial Vegetation



Existing Conditions:

- It is unlikely that any protected species occur in the Project site. Further site inspections to be undertaken. **Caribbean Pine**
- Invasive flora species of concern on Abaco Islands include the Australian paper bark tree (*Melaleuca quinquenervia*), the Australian pine (*Casuarina equisetifolia*), Hawaiian Seagrape (*Scaveola sericea*; syn *S. tacada*), Brazilian pepper (*Schinus terebinthefolious*) and several aggressive grasses such as Napier grass (*Pennisetum purpureum*).

Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
Terrestrial Vegetation: the Project may result in impacts related to traffic and site preparation activities; disturbance of vegetation; vegetation clearance; and equipment from foreign countries potentially bringing in invasive species.	<ul style="list-style-type: none">✓ Pre-Construction Screening✓ Revegetate areas below panels with native grasses✓ Implement dust control procedures✓ Monitor air quality✓ Invasive species management and equipment inspections	



Protected Areas

Existing Conditions:

- 22 protected areas occur on Abaco Islands with different measures of protection and management types; these include 10 marine and 12 terrestrial areas.
- The closest areas of protection include the Marsh Harbor Forest Reserve, sitting 3 km south of the Project, and Marls of Abaco National Park, sitting at about 3.5 km SW of the Project site.



Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
Protected Areas: Project-related activities during Construction would result in the temporary degradation of habitat quality within the nearby Marls of Abaco National Park.	<ul style="list-style-type: none">✓ Ensure Project areas are appropriately demarcated.✓ Ban hunting and harassment of wildlife.✓ Minimize the amount of artificial lighting used.✓ Implement Waste Management Plan.	




Air Quality



Saharan Dust plumes over Bahamas

Existing Conditions:

- Air quality data for Abaco is limited. Ambient air quality in most of The Bahamas is relatively good due to: (i) strong winds, (ii) small industrial base, and (iii) low population density.
- Major pollutants include transportation and fossil fuels.


Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
Air Quality: increased emissions due to construction.	<ul style="list-style-type: none">✓ Dampen the haul roads/construction site✓ Restrict removal of vegetation and soil cover✓ Land clearance will be sequential and the smallest possible area;✓ Stripping of topsoil will not be conducted earlier than required✓ Maintenance programs for construction vehicles	



Noise

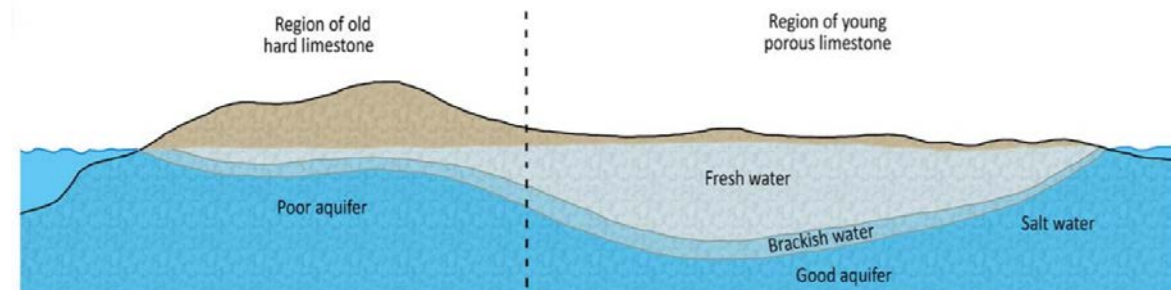
Existing Conditions:

- The Project Site is located in a vegetated area that is surrounded by an open vegetated field to the west, a hospital complex to the south, a government-building complex to the northeast, and a mixed urban/residential to the east. In general, the existing sources of noise at the Project Site are associated with mixed-use urban land use (residential and institutional), with a low to moderate volume of local traffic.

Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
Noise: construction related noise will impact nearby noise receptors.	<ul style="list-style-type: none">✓ Ensure equipment is in good working order✓ Minimize material drop heights✓ Operate machinery at low speeds or power when practical	




Water Resources



Groundwater in The Bahamas

Existing Conditions:

- The hydrologic setting of The Bahamas, including Abaco, differs from the usual continental setting in two ways: (i) the islands are completely covered by limestone so precipitation sinks as diffuse input into the limestone; and (ii) groundwater (fresh or brackish) occurs in a lens that floats on the saline marine water that permeates the islands from below
- Freshwater resources are finite and vulnerable in The Bahamas. Water is considered 'scarce' according to United Nations criteria, and rainwater is the only source of freshwater


Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
Water Resources: The Project activities may cause water resources contamination. Project may compete with other users for access to water resources.	<ul style="list-style-type: none">✓ Pollution management practices, to limit the risk of water resources contamination✓ Water Management Plan, describing strategies for water sourcing and consumption savings, verifying the availability of inland water resources and its quality and adequacy for Project purposes.	



Waste Management

Existing Conditions:

- Waste disposal services on Abaco may be inadequate and are under strain. In order to facilitate land clearance and the disposal of debris disposal during the reconstruction operations, the local authority allowed the use of two emergency waste dumping sites in Cay Site and Spring City. Uncontrolled waste dumping, cases of arsons, and extremely poor operational standards have been reported for these sites, so their use in the context of this project should be restricted to emergency purposes only or avoided. The EPC contractor will be required to identify alternative options for waste disposal, especially in relation to waste categories that are classified as hazardous.

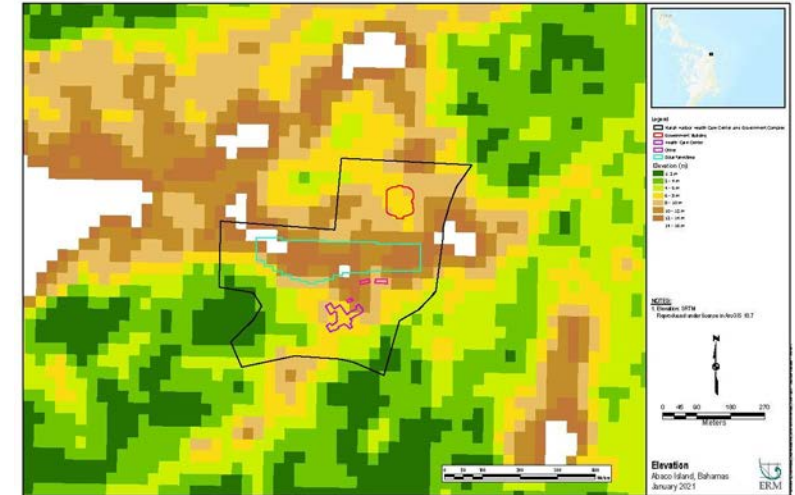
Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
Waste Management: Project activities will generate waste, and waste management facilities and services on the island are compromised.	<ul style="list-style-type: none">✓ The ESMP specifies good international practices for solid waste and hazardous waste management (handling, transportation, disposal) for construction and operation activities.✓ Furthermore, the ESMP requires segregation of contaminated materials and verification that the final disposal point is authorized and appropriate for disposal of hazardous materials. A more specific operational waste management plan will be prepared by the EPC contractor before the commencement of the construction works.	



Landscape, Topography and Soils

Existing Conditions:

- The Abacos are a large and complex island group, which include a considerable number of cays along its eastern shore, a feature that makes it quite different from its Atlantic counterparts.
- The soils of Abaco Island consist mostly of calcareous particles, with some aluminous lateritic soils formed under humid tropical conditions.
- This type of soils presents certain vulnerability to erosion effects.



Project Site Topography

Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
<u>Landscape, Topography and Soils:</u> Project activities will cause soil erosion and topsoil.	<ul style="list-style-type: none"> ✓ Erosion and Sediment Control Plan ✓ Use well-drained roads ✓ Growth media layer will not be mixed with subsoil ✓ Clearance of vegetation will not be conducted earlier than required 	




Geology and Geomorphology – Existing Conditions

Existing Conditions:

- The Bahama Islands have a foundation (i.e., the Bahamian Platform) of fossil coral, but much of the rock is oolitic limestone.



Oolitic Limestone

Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
<u>Geology and Geomorphology:</u> risk of soil instability, to be further investigated.	<ul style="list-style-type: none">✓ Reduce the Project area to a minimum✓ In case unstable soils are identified, reinforce their support capacity✓ Erosion and Sediment Control Management Plan	

Social Environment






Public Infrastructure

Existing Conditions:

- Abaco suffered 87% of the overall damage caused by the hurricane, with 66.8% of the damage to the infrastructure sector taking place on Abaco. There were telecommunications losses, housing losses, medical infrastructure damage, and utilities damage, among others.



Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
Public Infrastructure: the Project is likely to result in stress to Abacos' public infrastructure. This may include impacts to waste disposal, health infrastructure, accommodations, road infrastructure and medical infrastructure.	<ul style="list-style-type: none">✓ Emergency Preparedness and Response Plan✓ Grievance Mechanism✓ Local Employment and Local Supplier Plan✓ The PEU and the EPC contractor will verify any potential interference that construction activities may have with other interventions on the island, and, where necessary, establish coordination.✓ The EPC Contractor will develop sanitation, health, and safety protocols that will especially focus on hygiene standards for food and water consumption, workers accommodation, and protection from rodent and insect-borne diseases.✓ The EPC contractor will evaluate sanitary conditions for Abaco and determine if additional medical provisions should be considered.	






Transportation



Existing Conditions:

- Roads, airports and port facilities in Abaco suffered serious damages as a result of Hurricane Dorian.

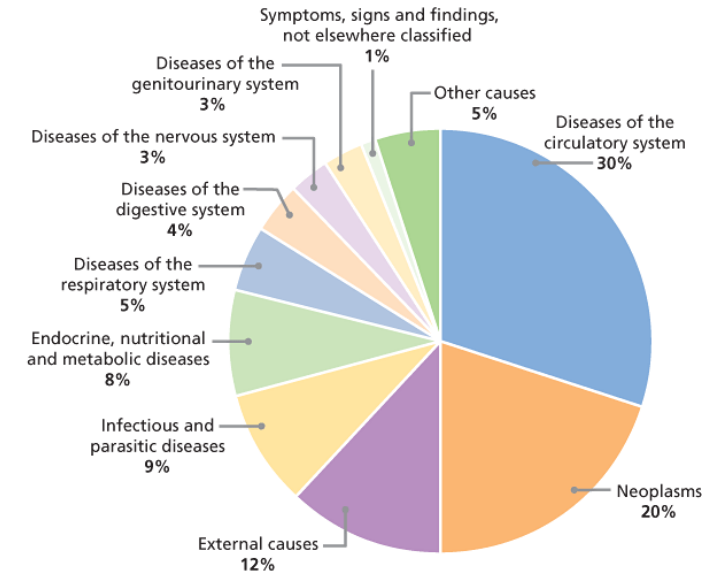
Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
<p><u>Transportation:</u> The movement of Project equipment and materials will result in interactions between Project traffic and non-Project traffic, as well as the potential for travel delays and reduced public access. This may impact road infrastructure, marine port capacity, road delays and road safety.</p>	<ul style="list-style-type: none"> ✓ Transportation Management Plan ✓ Emergency Preparedness and Response Plan ✓ Journey Management Plan for truck deliveries ✓ The PEU and the EPC contractor will verify any potential interference that the construction activities may have with other interventions occurring in the island, and, where necessary, establish the appropriate coordination. 	<div>  <p>Road Safety during Construction</p> </div> <div>  <p>Road Infrastructure and Road Delays during Construction</p> </div> <div>  <p>Road Infrastructure and Road Delays during Operation; Marine Port Capacity</p> </div>





Community Health and Safety

Existing Conditions:

- Circulatory diseases are the leading cause of death, and cancer is the second leading cause of death in the Bahamas. According to the 2010 census, 47.2% of the general population has health insurance.



Source: PAHO Health Information Platform (PHIP).
Leading Causes of Death, 2014

Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
Community Health and Safety: Health and safety impacts arising from the construction and operation of the Project are likely to include increased road safety risks, increased noise, exposure to Project-related hazards, site-security issues, dust emission and potential impacts related to COVID-19.	<ul style="list-style-type: none"> ✓ Community Grievance Mechanism ✓ COVID-19 Contingency Plan ✓ Community Health and Safety Management Plan 	<div>  Road Safety </div> <div>  All others </div>




Gender

Existing Conditions:

- As of 2018, in the judiciary, women held 68% of the positions of justices, registrars, and magistrates; in politics, 5% of Cabinet Ministers, 12% of parliamentarians, and 43% of Senators were women; and in the public service, women held 78% of the Director posts and 57% representation in local governments.



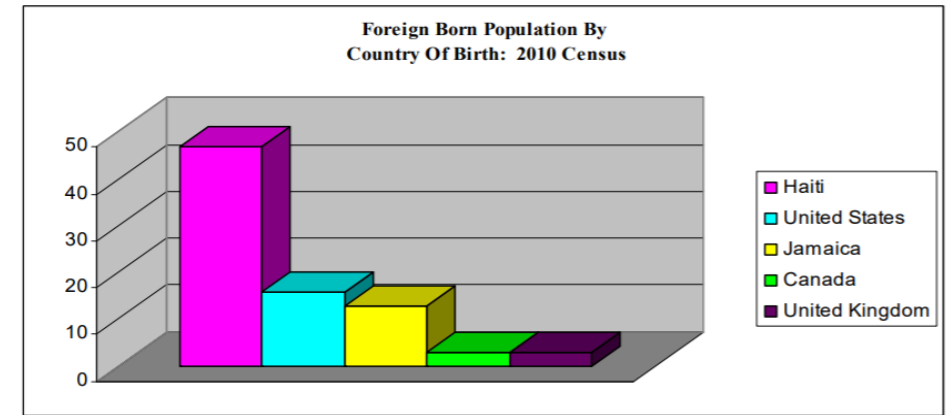
Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
Gender: The Project will likely affect men and women differently, as the type of employment opportunities provided by the Project are more likely to be directed towards men.	<ul style="list-style-type: none">✓ Community Grievance Mechanism✓ Engagement with women✓ Target employment goals for women✓ Non-discrimination and gender-based-violence policies	



Worker Influx

Existing Conditions:

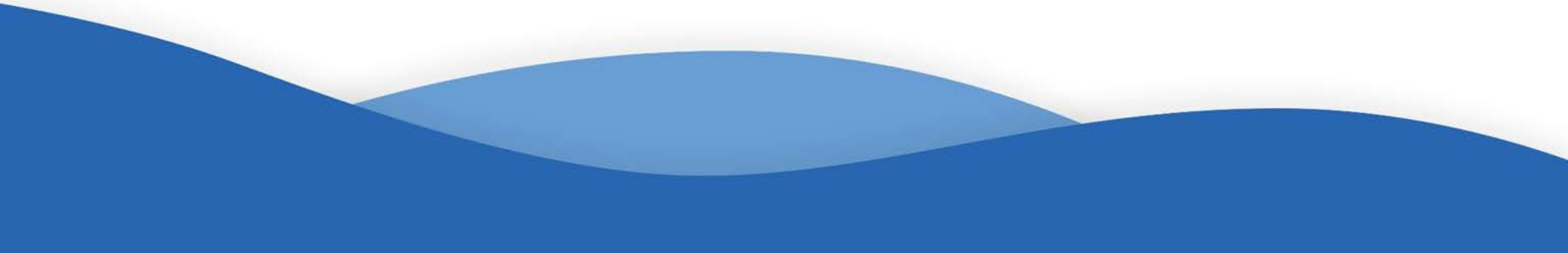
- According to the Bahamas' 2010 Census, in 2010 there was a total immigrant population of 64,793. 47% were born in Haiti, 16% in the United States, 13% in Jamaica and 3% each in Canada and the United Kingdom. Haitian immigrants are in a vulnerable situation in Abaco.



Foreign-Born Population (2010 Census)

Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
Worker Influx: There will be an increase in population influx during construction, operations and closure activities.	<ul style="list-style-type: none">✓ Security Management Plan✓ Grievance Mechanism✓ Local Employment and Local Supplier Plan✓ Workers' Accommodation Plan and Checklist✓ COVID-19 Contingency Plan	

Management Plans



Environmental and Social Management Plans (ESMP)

- ☐ Contractor Management Plan
- ☐ Erosion and Sediment Control Management Plan
- ☐ Waste Management Plan
- ☐ Water Management Plan
- ☐ Transportation Plan
- ☐ Natural Disaster Risk and Emergency Management Plan
- ☐ Emergency Response Plan
- ☐ Occupational Health and Safety Management Plan
- ☐ Labor Conditions and Workers Selection Plan
- ☐ Internal and External Grievance Mechanisms
- ☐ Community Health and Safety Plan
- ☐ Stakeholder Engagement Plan
- ☐ COVID-19 Contingency Plan

Grievance Mechanism



Grievance Mechanism

- Community and internal workers' grievance mechanisms will be available.
- These will provide a framework through which to ask questions, raise suggestions or file complaints.
- Protection from retaliation and confidentiality are guaranteed

MoF will ensure that the mechanisms are:

Understandable and reliable

Culturally appropriate and accessible

Free of charge

Anonymous

Proportional

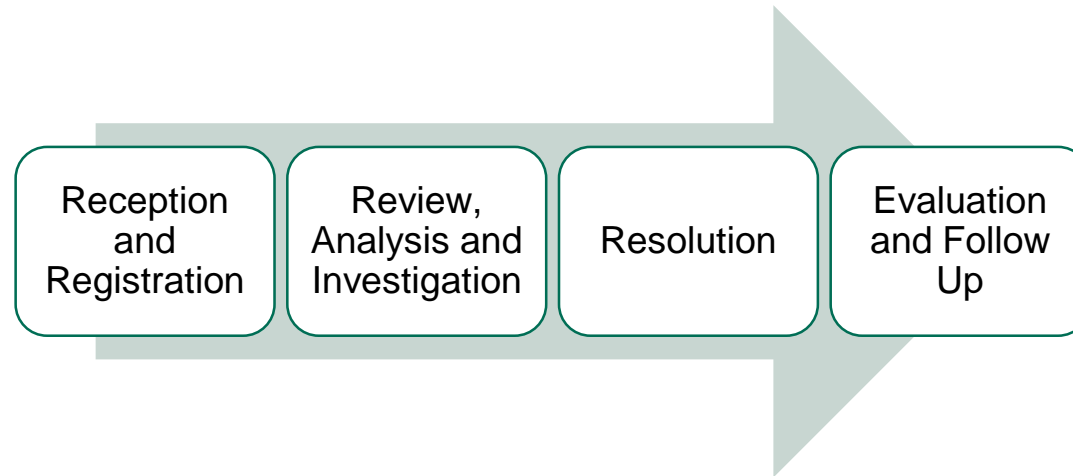
Rights-Compatible

Inclusive and non-discriminatory

Transparent

Grievance Mechanism Continued

In order to ensure the proper implementation of the Grievance Mechanisms, and the resolution of any feedback received, this mechanism is divided into four main steps. These steps are presented in the figure below.



Grievance Mechanism Ct'd

- Reception channels (email, telephone number) will be made available for issuing questions, suggestions or complaints.
- A Workers' Grievances Mailbox placed within the Project's facilities. The mailbox's precise location will be shared with workers during their hiring process.
- A Community's Grievances Mailbox will be also available. The mailbox's precise location will be shared with the community during public consultation and other disclosure of information events.

Questions & comments from the audience



THANK YOU!

EMAIL: RECONRENEWABLEENERGY@BAHAMAS.GOV.BS

PHONE: (242)-604-1032



Commonwealth of The Bahamas
MINISTRY OF FINANCE



Appendix B –Information Flyers for Stakeholders

**RECONSTRUCTION
WITH RESILIENCE**
IN THE ENERGY SECTOR
OF THE BAHAMAS

**PUBLIC
CONSULTATION**
April 28, 2021
2 p.m. - 4 p.m.


Register for the event
tinyurl.com/energybah


Can't attend? Check out the Ministry of Finance Facebook Page
for a recording of the event: facebook.com/FinanceBAH

Have comments or questions? Please contact us at
(242)-604-1032 or email reconrenewableenergy@bahamas.gov.bs

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MINISTRY OF FINANCE**

 **IDB**
Inter-American Development Bank

 **cif**
Climate Investment Funds

 **Climate Change
Adaptation**

Appendix C – Zoom Registration List

Attendee Report

Report Ge	4/28/2021 15:36									
Topic	Webinar ID	Actual Start Time	Actual Duration (minutes)	# Registered	# Cancelled	Unique Viewers	Total Users	Max Concurrent Views		
Reconstru	991 3588 8337	4/28/2021 13:37		115	86	0	57	88	0	
Host Details										
Attended	User Name (Original Name)	Email	Join Time	Leave Time	Time in Session (minutes)	Country/Region Name				
Yes	Master Control	burton@movigroup.bz	4/28/2021 13:44	4/28/2021 15:31	108	Bahamas				
Panelist Details										
Attended	User Name (Original Name)	Email	Join Time	Leave Time	Time in Session (minutes)	Country/Region Name				
Yes	JPADES	JPADES@iadb.org	4/28/2021 14:05	4/28/2021 15:31	86	United States				
Yes	Broadcast 2	av@themovigroup.com	4/28/2021 13:49	4/28/2021 15:31	103	Bahamas				
Yes	Malaika Masson (MALAIKAC)	MALAIKAC@iadb.org	4/28/2021 13:49	4/28/2021 15:31	103	Jamaica				
Yes	Daniela Marquis (DANIELAC)	DANIELAC@iadb.org	4/28/2021 14:05	4/28/2021 15:00	55	Bahamas				
Yes	Stanford Moss	STANFORMOSS@BAHAMAS.GOV.BS	4/28/2021 13:37	4/28/2021 13:37	1	Bahamas				
Yes	Stanford Moss	STANFORMOSS@BAHAMAS.GOV.BS	4/28/2021 13:37	4/28/2021 15:31	115	Bahamas				
Yes	Sophia Rathel	Sophia.Rathel@erm.com	4/28/2021 14:00	4/28/2021 15:30	91	United States				
Yes	Sonia Cuesta	sonia.cuesta@erm.com	4/28/2021 13:37	4/28/2021 15:31	115	United States				
Yes	Marlon Johnson (Mavis Culm	mavisculmer@bahamas.gov.bs	4/28/2021 13:48	4/28/2021 15:31	104	Bahamas				
Yes	SYRETAR	SYRETAR@iadb.org	4/28/2021 13:49	4/28/2021 15:10	82	Bahamas				
Yes	Alessandro Sidore (ASIDORE)	asidore@iadb.org	4/28/2021 13:37	4/28/2021 15:31	115	United States				
Yes	ALBERTOEL	ALBERTOEL@IADB.ORG	4/28/2021 13:37	4/28/2021 15:31	115	Bahamas				
Yes	Fritz Brave	fritz@movigroup.bz	4/28/2021 13:37	4/28/2021 15:31	115	Canada				
Yes	Herbert Pirela	Herbert.Pirela@erm.com	4/28/2021 13:37	4/28/2021 15:31	115	United States				
Yes	Maricarmen Esquivel (MARIC	maricarmene@iadb.org	4/28/2021 13:59	4/28/2021 15:31	93	United States				
Yes	SHERILL POITIER	SHERILLPOITIER@bahamas.gov.bs	4/28/2021 14:17	4/28/2021 15:31	75	Bahamas				
Yes	FABIOLABC	fabiolabc@iadb.org	4/28/2021 13:51	4/28/2021 15:13	82	Guatemala				

Attendee Details

Attended	User Name (Original Name)	First Name	Last Name	Email	Organization	Registration Time	Approval Status	Join Time	Leave Time	Time in Se	Country/Region Name
Yes	Avrom Thompson	Avrom	Thompson	athompson@urcabah	The Utilities Regulation	4/26/2021 12:26	approved	4/28/2021 14:55	4/28/2021 14:57	2	Bahamas
Yes	J Graham	J	Graham	Jgraham@mmtraders	MMT SOLAR	4/23/2021 15:18	approved	4/28/2021 13:58	4/28/2021 15:31	94	Bahamas
Yes	Leona Hylton	Leona	Hylton	leona@hilton@gmail.com		4/28/2021 13:56	approved	4/28/2021 13:57	4/28/2021 14:04	8	Bahamas
Yes	Leona Hylton	Leona	Hylton	leona@hilton@gmail.com				4/28/2021 14:05	4/28/2021 15:26	82	Bahamas
Yes	Pratik Desai	Pratik	Desai	Pratik@perlemax.com	Perlemax Ltd.	4/27/2021 5:31	approved	4/28/2021 13:56	4/28/2021 15:08	72	United Kingdom
Yes	Jermaine Clarke	Jermaine	Clarke	ceasbahamas@hotma	Certified Energy Auditor	4/23/2021 14:58	approved	4/28/2021 13:58	4/28/2021 15:17	80	Bahamas
Yes	Broadcast 2	Broadcast		av@themovigroup.com		4/28/2021 13:49	approved	4/28/2021 13:49	4/28/2021 13:49	1	Bahamas
Yes	Zoltan Szasz	Zoltan	Szasz	besolarsupplies@gmail	Bahamas Energy & Solar	4/24/2021 4:42	approved	4/28/2021 13:59	4/28/2021 15:09	70	Hungary
Yes	Krysta Carey	Krysta	Carey	krystacarey@gmail.co	QTech	4/27/2021 11:19	approved	4/28/2021 14:11	4/28/2021 14:31	20	Bahamas
Yes	Dwayne Bethell	Dwayne	Bethell	dbethell15@yahoo.co	The University of the Bahamas	4/24/2021 21:33	approved	4/28/2021 14:08	4/28/2021 15:31	84	Bahamas
Yes	Stephen Lester	Stephen	Lester	stephen.lester@flinter	Flint Engineering	4/27/2021 4:07	approved	4/28/2021 13:56	4/28/2021 14:41	45	United Kingdom
Yes	Andy Stoffeth	Andy	Stoffeth	astoffeth@bypusa.org	SBP	4/27/2021 11:18	approved	4/28/2021 14:15	4/28/2021 14:23	9	Bahamas
Yes	Menno Valkenburg	Menno	Valkenburg	menno.valkenburg@e	MVCC	4/24/2021 11:19	approved	4/28/2021 13:58	4/28/2021 15:18	81	Italy
Yes	Menno Valkenburg	Menno	Valkenburg	menno.valkenburg@gmail.com				4/28/2021 15:18	4/28/2021 15:31	14	Italy
Yes	Shantel Taylor	Shantel	Taylor	shanteltaylor@baham	ATT General Office	4/28/2021 14:32	approved	4/28/2021 14:32	4/28/2021 15:13	42	Bahamas
Yes	Whitney Hylton	Whitney	Hylton	whylton@enlightennr		4/28/2021 14:02	approved	4/28/2021 14:02	4/28/2021 15:31	90	Bahamas
Yes	John Chambers	John	Chambers	jchambers@quimerae	Quimera Energy Ltd	4/27/2021 9:26	approved	4/28/2021 13:59	4/28/2021 15:10	71	United Kingdom
Yes	Jonathan Hudson	Jonathan	Hudson	jhudson@urcabaham	URCA	4/27/2021 7:43	approved	4/28/2021 13:59	4/28/2021 15:31	92	United States
Yes	Wilfred Smith	Wilfred	Smith	wsmith@wsmholding	Green Fuel Enterprises,	4/24/2021 8:02	approved	4/28/2021 13:53	4/28/2021 15:31	99	Bahamas
Yes	Natario Mckenzie	Natario	Mckenzie	nmckenzie@bahamas	Eyewitness News	4/28/2021 13:58	approved	4/28/2021 13:59	4/28/2021 15:17	79	Bahamas
Yes	Rahul Jain	Rahul	Jain	rahul.t.jain@pwc.com	PwC	4/24/2021 18:52	approved	4/28/2021 14:07	4/28/2021 15:28	82	United States
Yes	Rahul Jain	Rahul	Jain	rahul.t.jain@pwc.com				4/28/2021 15:28	4/28/2021 15:31	3	United States
Yes	Maria E Roca	Maria E	Roca	mariaero@iadb.org	IADB	4/27/2021 23:44	approved	4/28/2021 14:04	4/28/2021 15:31	87	Bahamas
Yes	Andrew Symonette	Andrew	Symonette	andrew.symonette@gmail.com		4/23/2021 15:01	approved	4/28/2021 14:01	4/28/2021 14:49	48	Bahamas
Yes	Wayne Williams	Wayne	Williams	wayne@isi.consulting	Interconnection System	4/23/2021 15:15	approved	4/28/2021 14:00	4/28/2021 15:31	92	United States
Yes	Karenda Swain	Karenda	Swain	kswain@bahamas.com	Ministry of Tourism	4/28/2021 13:49	approved	4/28/2021 13:49	4/28/2021 15:04	75	Bahamas
Yes	Owen Lewis	Owen	Lewis	owlewis.contractor@rm	RMI	4/28/2021 13:37	approved	4/28/2021 13:59	4/28/2021 15:31	93	Anguilla
Yes	David McGregor	David	McGregor	david.mcgregor@eme	GBPC	4/26/2021 7:40	approved	4/28/2021 13:54	4/28/2021 15:31	98	Bahamas
Yes	Joanne Smith	Joanne	Smith	joanne@coralwave.co	Media Enterprises Ltd	4/25/2021 9:18	approved	4/28/2021 14:08	4/28/2021 15:31	83	Bahamas
Yes	Beryl Ferguson	Beryl	Ferguson	berylferguson@yahoo	com	4/28/2021 14:37	approved	4/28/2021 14:50	4/28/2021 14:56	7	Bahamas
Yes	Beryl Ferguson	Beryl	Ferguson	berylferguson@yahoo	com			4/28/2021 14:37	4/28/2021 14:50	13	Bahamas
Yes	Brandon Grosvenor	Brandon	Grosvenor	brandon.grosvenor@c	OPITO	4/26/2021 13:51	approved	4/28/2021 13:59	4/28/2021 15:25	86	United States
Yes	Heidi Fishpaw	Heidi	Fishpaw	heidif@iadb.org	IADB	4/28/2021 10:19	approved	4/28/2021 13:50	4/28/2021 15:16	86	United States
Yes	Blanca Ruiz	Blanca	Ruiz	BLANCA.RUIZ@shireo	Shire Oak	4/26/2021 15:45	approved	4/28/2021 14:12	4/28/2021 15:31	80	Colombia
Yes	Antonia Hylton	Antonia	Hylton	antonia@hilton@gmail	com	4/28/2021 13:41	approved	4/28/2021 13:59	4/28/2021 14:58	60	Bahamas
Yes	Samuel Samdon Thompson	Samuel Samdon	Thompson	stthompson@urcabah	Utilities Regulation and	4/26/2021 13:04	approved	4/28/2021 13:58	4/28/2021 15:31	94	Bahamas
Yes	Natasha Adderley	Natasha	Adderley	adderley_co@hotmail	Project Execution Unit	4/28/2021 10:11	approved	4/28/2021 13:56	4/28/2021 15:31	96	Bahamas
Yes	Trifeena	Trifeena		stellagrove1979e@gmail	com	4/28/2021 14:28	approved	4/28/2021 14:28	4/28/2021 15:11	44	Bahamas
Yes	Ronnie Stevenson	Ronnie	Stevenson	ronnie.stevenson@bu	University of the Bahamas	4/23/2021 16:22	approved	4/28/2021 13:55	4/28/2021 15:31	97	United States
Yes	Catherine Allinson	Catherine	Allinson	futureearthmail@gma	Future Earth Ltd	4/26/2021 15:41	approved	4/28/2021 14:01	4/28/2021 14:02	1	United Kingdom
Yes	Catherine Allinson	Catherine	Allinson	futureearthmail@gmail	com			4/28/2021 14:04	4/28/2021 14:36	32	United Kingdom
Yes	Catherine Allinson	Catherine	Allinson	futureearthmail@gmail	com			4/28/2021 14:59	4/28/2021 15:10	11	United Kingdom
Yes	Elvis A. Hepburn 1#	Elvis A.	Hepburn 1,	hepburn.elvis@yahoo	The Hepburn Energy Gr	4/28/2021 10:17	approved	4/28/2021 14:07	4/28/2021 15:31	85	Bahamas
Yes	Kevin Basden	Kevin	Basden	kbasden@gmail.com	K A Basden & Associate	4/23/2021 20:35	approved	4/28/2021 13:56	4/28/2021 15:31	96	Bahamas
Yes	José Schiavi	José	Schiavi	Jose.Schiavi@aggreko	Aggreko PLC	4/27/2021 7:09	approved	4/28/2021 13:57	4/28/2021 15:31	95	United States
Yes	Philip S Weech	Philip S	Weech	Pswbest@gmail.com		4/23/2021 15:11	approved	4/28/2021 13:52	4/28/2021 15:31	100	Bahamas
Yes	Daniela Romero	Daniela	Romero	DANIELAZUL@IADB.O	IDB	4/23/2021 15:11	approved	4/28/2021 14:03	4/28/2021 14:45	43	United States
Yes	Daniela Romero	Daniela	Romero	DANIELAZUL@IADB.ORG				4/28/2021 14:48	4/28/2021 15:01	13	United States
Yes	Christopher Evanich	Christopher	Evanich	christopher.evanich@	SE	4/26/2021 21:15	approved	4/28/2021 15:18	4/28/2021 15:18	1	United States
Yes	Dillon Hylton	Dillon	Hylton	dillon@hilton@gmail	com	4/28/2021 10:02	approved	4/28/2021 13:49	4/28/2021 15:31	103	Bahamas
Yes	Pablo Gambin Belinchón	Pablo	Gambin Belinchón	p.gambin@energynau	Energynautics GmbH	4/28/2021 13:54	approved	4/28/2021 13:54	4/28/2021 14:48	54	Germany
Yes	Burnadene Falconer	Burnadene	Falconer	burnadene.falconer@p	wc.com	4/26/2021 8:58	approved	4/28/2021 14:10	4/28/2021 15:13	63	United States
Yes	Horacio Lopez Manzitti	Horacio	Lopez Manzitti	horacio.manzitti@hiv	Hive Energy	4/26/2021 14:20	approved	4/28/2021 13:57	4/28/2021 13:59	2	Argentina
Yes	Horacio Lopez Manzitti	Horacio	Lopez Manzitti	horacio.manzitti@hive	energy.co.uk			4/28/2021 13:59	4/28/2021 14:48	50	Argentina
Yes	Audrey Ward	Audrey	Ward	audrey.ward@erm.com		4/23/2021 10:37	approved	4/28/2021 14:01	4/28/2021 15:31	91	United States
Yes	Kevin Cambridge	Kevin	Cambridge	kevin.cambridge@pww	PwC	4/27/2021 18:00	approved	4/28/2021 14:27	4/28/2021 14:29	2	Bahamas
Yes	Kevin Cambridge	Kevin	Cambridge	kevin.cambridge@pwc	com			4/28/2021 14:29	4/28/2021 15:30	61	Bahamas
Yes	Kevin Cambridge	Kevin	Cambridge	kevin.cambridge@pwc	com			4/28/2021 14:30	4/28/2021 14:30	1	Bahamas
Yes	Kevin Cambridge	Kevin	Cambridge	kevin.cambridge@pwc	com			4/28/2021 15:30	4/28/2021 15:30	1	Bahamas
Yes	Derick King	Derick	King	dwing406@gmail.com		4/28/2021 10:37	approved	4/28/2021 14:01	4/28/2021 14:04	3	Bahamas
Yes	Derick King	Derick	King	dwing406@gmail.com				4/28/2021 14:04	4/28/2021 15:31	88	Bahamas
Yes	Leonard Hülsmann	Leonard	Hülsmann	l.huelsmann@energy	Energynautics	4/28/2021 3:54	approved	4/28/2021 14:01	4/28/2021 15:31	90	Germany
Yes	Derek Apfel	Derek	Apfel	derek@apfel.care	Island Solar Power	4/27/2021 18:00	approved	4/28/2021 13:56	4/28/2021 15:31	95	United States
Yes	Latrell R	Latrell	R	latrell@iadb.org	IDB	4/27/2021 9:05	approved	4/28/2021 14:04	4/28/2021 15:31	88	Bahamas
Yes	ANTHONY HAMILTON	ANTHONY	HAMILTON	aknhlaw@yahoo.com	CIVIL SOCIETY BAHAMA	4/27/2021 11:26	approved	4/28/2021 13:48	4/28/2021 14:14	27	Bahamas
Yes	ANTHONY HAMILTON	ANTHONY	HAMILTON	aknhlaw@yahoo.com				4/28/2021 14:16	4/28/2021 15:31	76	Bahamas
Yes	Thomas Uptagrafft	Thomas	Uptagrafft	Powerlupbahamas@	Powerlup Bahamas	4/25/2021 7:10	approved	4/28/2021 13:59	4/28/2021 15:31	93	Bahamas
Yes	Patrice Ingraham	Patrice	Ingraham	patriceingraham@baf	MOF-CCU	4/27/2021 11:02	approved	4/28/2021 14:08	4/28/2021 15:31	84	Bahamas
Yes	Quentin Knowles	Quentin	Knowles	qknowles@flameless	Bahamas Society of Eng	4/23/2021 15:00	approved	4/28/2021 14:01	4/28/2021 15:31	90	Bahamas
Yes	ALDEN AUSTIN	ALDEN	AUSTIN	aaustid1@gmail.com	RRESB	4/28/2021 9:14	approved	4/28/2021 14:00	4/28/2021 15:31	92	Bahamas
No	Philip	Holdom		Info@apsbahamas.co	Alternative Power Supp	4/23/2021 19:24	approved	--	--	--	
No	James	Hygate		james@greenfuels.co	Green Fuels Ltd.	4/26/2021 13:56	approved	--	--	--	
No	Denica	Thompson		DenicaThompson@gn	Dvine7Management	4/26/2021 13:52	approved	--	--	--	
No	Brian	Smith		lmc_lumber242@yah	Albuid Hardware & Lur	4/25/2021 22:08	approved	--	--	--	
No	Floda	Pearce		floda_pearce@hotmail	com	4/27/2021 22:20	approved	--	--	--	
No	Kidan	LaCroix		kidanbrown@gmail	com	4/28/2021 11:27	approved	--	--	--	
No	Philipp	Feller		philipp@compass-pow	Compass Solar Systems	4/26/2021 16:40	approved	--	--	--	
No	Gehrig	Schultz		gehrig.schultz@epig	EPI Ltd	4/27/2021 4:37	approved	--	--	--	
No	Jerusa	Ali		jerusa.ali@gmail.com	British High Commissio	4/26/2021 9:01	approved	--	--	--	
No	Juan	Valdes		juan.valdes@drababah	Disaster Reconstruction	4/23/2021 14:40	approved	--	--	--	
No	Shevonn	Cambridge		scambridge@urcabah	Utilities Regulation & C	4/26/2021 12:27	approved	--	--	--	
No	Steve	Whettingsteel		Steve.w@krysteline	cc Krysteline Technologies	4/26/2021 15:31	approved	--	--	--	
No	Bianca	Munroe		Biancamunroe@outlook	com	4/23/2021 16:01	approved	--	--	--	
No	Jessica	Jessica	Whitfield	jessica@barefootmrk	Barefoot Marketing	4/23/2021 14:47	approved	--	--	--	
No	Ned	Ned	Minns	ned.minns@itpenerg	ITP Energised	4/27/2021 12:27	approved	--	--	--	
No	Natario	Natario	Mckenzie	nmckenzie@ewnews	Eyewitness News	4/27/2021 14:52	approved	--	--	--	
No	Rick	Gambetta	rick.gambetta@green	GreenCord Partnershi	4/27/2021 10:00	approved	--	--	--	--	
No	Mark	Eastwood	mark.eastwood@glob	Global Tower Solutions	4/26/2021 14:51	approved	--	--	--	--	
No	Ancilleno	Ancilleno	Davis	ancilleno@scienceand	Science and Perspective	4/25/2021 18:26	approved	--	--	--	
No	Martin	Martin	Vogt	m.vogt@mpc-energ	MPC Energy Solutions	4/27/2021 9:06	approved	--	--	--	

No	Neilsen	Neilsen	Beneby	neilsen.beneby@emeracaribbean.com	4/26/2021 9:09	approved	--	--	--
No	Estella	Estella	Lewis	Stellasgrove@hotmail.com	4/24/2021 15:23	approved	--	--	--
No	Leopoldo	Leopoldo	López	Leopoldo.lopez@aggr Aggreko	4/27/2021 9:30	approved	--	--	--
No	Bryann	Bryann	Hepburn	bhepburn@urcabahar URCA	4/26/2021 12:30	approved	--	--	--
No	Darren	Darren	Berman	d.berman@nakedener Naked Energy	4/26/2021 13:55	approved	--	--	--
No	Fidel	Fidel	Neverson	fneverson.contractor@ RMI	4/26/2021 8:49	approved	--	--	--
No	John	John	Williams	johnrwilliams@baham CCU	4/27/2021 11:28	approved	--	--	--
No	Tevin	Tevin	Bannister	tevinbannister@baham Bahamas Government	4/26/2021 10:17	approved	--	--	--
No	Adrian	Adrian	Ortega	adrianor@iadb.org IDB	4/26/2021 10:11	approved	--	--	--

Appendix D – Questions and Answers Register (Q&A Function)

Question	Asker Name
1 How big is the audience on this webinar?	Wayne Williams
2 Good afternoon; Dr. Masson when was the \$170 million secured by the Ministry of Finance? Was the \$170 million a loan, what was the interest rate and what is the years for repayment?	Wilfred Smith
3 Is the resilient analysis for the Marsh Harbour microgrid publicly available? If yes, could you please share the link to it?	Pablo Gambin Belinchón
4 We are a national (USA) EPC Renewable Energy organization. We have been looking at different opportunities in the Caribbean. Currently we are in discussions with several parties within the Bahamas. What is BPL's appetite to allow renewables onto their grid?	Wayne Williams
5 Will a copy of the presentations be provided to the participants?	ANTHONY HAMILTON
6 How do we get on the list for these requests for proposals? We would have liked the opportunity to bid on the projects Stan just spoke about. I realize they are gone, but the future ones are of great interest.	Wayne Williams
7 Thank you Dr. Masson.	Wilfred Smith
8 Good afternoon Mr. Moss: What is the cost per (kWh) for the 2.25MW Solar PV and battery storage project mentioned.	Wilfred Smith
9 Good afternoon everyone:	Dwayne Bethell
10 Thank you so much.	Wayne Williams
11 What is the current carbon foot print of The Bahamas relating to carbon emissions ?	Dwayne Bethell
12 Thank you Mr. Moss.	Wilfred Smith
13 Received with thanks. I really appreciate it.	Dwayne Bethell
14 Is there any coordination with the Disaster Reconstruction Authority as it relates to the Environment Studies and the Resilience Plan?	Kevin Basden
15 Dear Mr. Moss, the above figures don't look correct. Maybe some confusion with kW and kWh.... and/or installed cost per kW vs. Long Term Energy Cost per kWh?	David McGregor
16 Who will own the system(s)? What will be URCA, BPL role? who will be responsible for maintenance and insurance for replacement in the event of Loss from hurricanes?	Philip S Weech
17 One of the presenters mentioned training what are the plans and when will the program start?	Derick King
18 Thank you	ANTHONY HAMILTON
19 Are there any special considerations by the Bahamas' government with regards to waiving of duties or VAT for these renewable energy projects? Due to the limited skills and experiences of Bahamian business persons throughout the Commonwealth, what protection privileges will Bahamian businesses or owners be assured of with given the first opportunity?	Wayne Williams
20 Do microgrids fall under BPL jurisdiction if they are not connected to the grid?	Wayne Williams
21 Will this concessionary loan infrastructure investment lower the cost of electrical energy to consumers, and help reduce the level of government subsidy to BPL?	David McGregor
22 Will Bahamas Customs Duties and VAT be Waived?	Elvis A. "Hepburn 1
23 Thank you Financial Secretary and the MOP	Wilfred Smith
24 I represent Powerplus Bahamas and have participated in a number of government bid processes over the years and have included some of our international partners. However; these recent RFP's seem to have new financial standards and requirements that make it difficult for small to medium locally licensed alternative energy businesses or companies from participating. We have already seen a number of solar projects that have gone to construction companies and does not seem to be supportive of promoting licensed alternative energy companies. What is driving these new high end standards and financial requirements?	Thomas Uptagrafft

Answer(s)
Dear Wayne, the webinar at the moment counts with 67 participants - the recording of the event will be posted in the Ministry of Finance Facebook page, for those who were not able to attend. Thanks!
All information on the CCLIP and its first loan/project (BH-L1048) can be found on IDB website https://www.iadb.org/en/project/BH-L1048
Dear Pablo - thanks for your interest, the resilience analysis will be made available in the following webpage: " https://www.iadb.org/en/project/BH-G0003 " - by the next two weeks. Thanks!
We are working with BPL, URCA and other key energy stakeholders to promote resilient, renewable energy in the Bahamas
Dear Anthony, the full recording of the presentation will be available in the Facebook page of the Ministry of Finance (https://www.facebook.com/FinanceBAH/) - thanks!
live answered
–
Hello Mr. Wilfred Smith, thanks very much for your question. The program execution unit will provide you with the cost per (kWh) for solar PV system installed, which averages around \$2.73. The cost per (KWh) for the 2.25MW microgrid system will be forthcoming.
Good afternoon Dwayne - thanks for participating!
–
Dear Dwayne, the estimated CO2 emissions (metric tons per capita) for The Bahamas are provided below: https://data.worldbank.org/indicator/EN.ATM.CO2E.PC?locations=BS
Thanks!
Dear Kevin, thanks for your question. During the development of the project and prior to the commencement of the construction activities, the PEU and the EPC contractor will make all the due arrangements with all authorities, including the DRA, to account for other interventions occurring in the island (affecting, for example, transportation and accessibility to the site, access to services and utilities), and, where necessary, establish the appropriate coordination.
Hello Mr. McGregor, thanks for your comments, we will pursue this discussion further. Please email us your question.
Dear Philip, Thanks for your question. The role of different stakeholders is under discussion and revision and will be communicated during the bidding processes of the systems.
The Environmental and Social Assessment's Management Plans include provisions for training under each Management Plan. Most of these training guidelines will apply to Project workers. In addition, to promote local hiring, there will be an initiative to provide access to training to Bahamians. This plan will be developed in further detail by the PEU and EPC.
which will be developed by the PEU and EPC contractor."
All microgrids financed by the program will connect to the public network but will have the ability to work in an islanded mode to increase resiliency of the system. In that sense interconnection of those systems with the grid will be regulated and coordinated with the corresponding utility.
the IDB and the European Union for being transparent and accountable."

Please note that the event is also been livestreamed in Ministry of Finance Facebook page - (<https://www.facebook.com/FinanceBAH/>)

Dear Wayne, please visit the website <https://www.iadb.org/en/projects/project-procurement> for current and future procurement opportunities for this program.

wsmith@wmsholdings.com

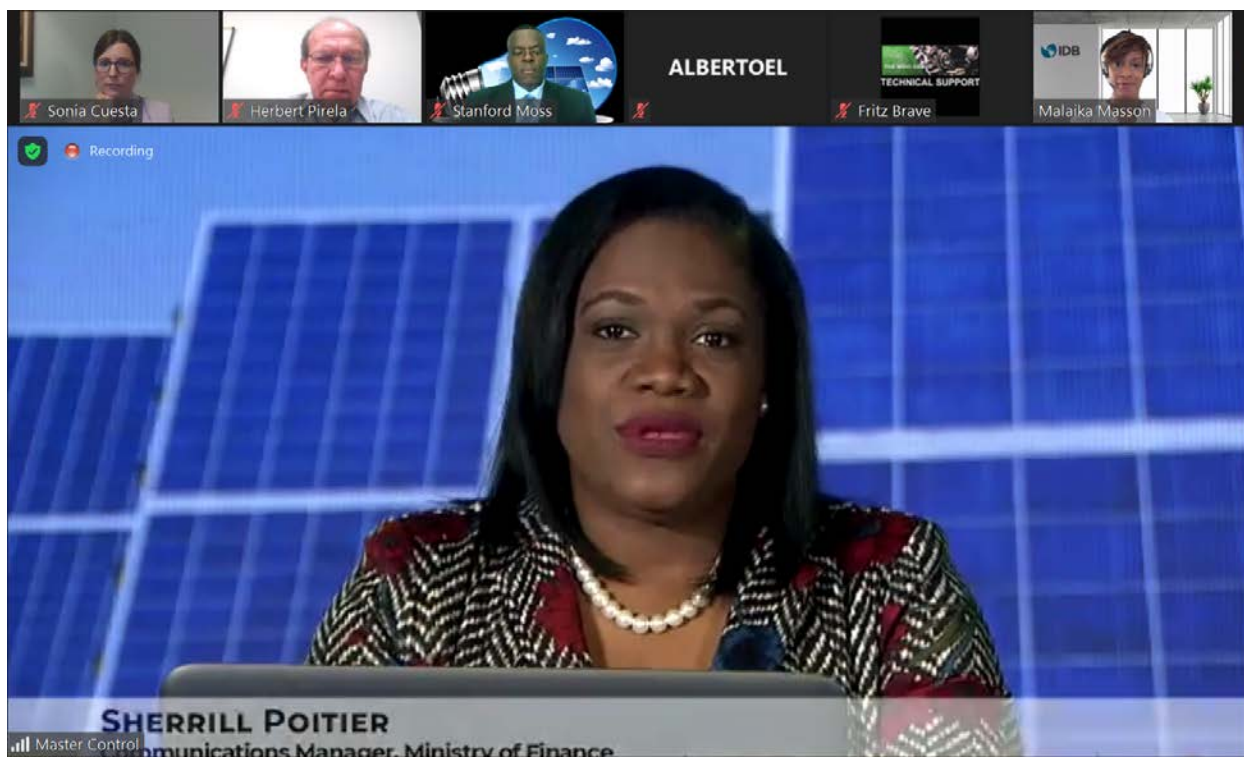
Appendix E – Photographic Evidence (April 28, 2021)



Marlon Johnson – Acting Financial Secretary – Opening Remarks



Daniela Carrera – IDB Country Representative – Opening Remarks







Sherrill Poitier – Communications Manager MoF – Moderator

Recording

RECONSTRUCTION WITH RESILIENCE

IN THE ENERGY SECTOR IN THE BAHAMAS

Background



- We work to improve lives in Latin America and the Caribbean (LAC).
- Through financial and technical support for countries working to reduce poverty and inequality, we help improve health and education, and advance infrastructure.
- With a history dating back to 1959, today we are the leading source of development financing for LAC.
- We maintain a strong commitment to achieving measurable results and the highest standards of integrity, transparency, and accountability.
- The Bank new Administration's current focus areas include three development challenges¹:
 - ❑ Work towards sustainable and inclusive economic growth (reactivate the productive sector,...);
 - ❑ Identify a Pathway to accelerate the recovery (climate change, by helping countries foster resilience, mitigation, and adaptation,...);

Malaika Masson – IDB – Program Introduction and Background, Funding

Recording

RECONSTRUCTION WITH RESILIENCE

IN THE ENERGY SECTOR IN THE BAHAMAS

The PEU How we are organized to execute the program?

Ministry of Finance (MoF)

```

graph TD
    PC[Program Coordinator  
Stanford Moss] --- PS[Procurement Specialist  
Denise Dorsett]
    PC --- FS[Financial Specialist  
Natasha Adderley]
    PC --- EA[Environmental and Social Specialist  
TB hired]
    PC --- AA[Administrative Assistant  
Cherise Nixon]
    PC --- MA[Monitoring Assistant  
Dillon Hyton]
    PC --- EE[Electrical Engineer  
Aiden Austin]
    PC --- EEE[Energy Electrical Engineer  
TB hired]
    PC --- MEE[Microgrid Electrical Engineer  
TB hired]
    PC --- LRS[Legal & Regulatory Specialist  
TB hired]
    PC --- CTS[Communication & Training Specialist  
TB hired]
  
```

Stanford Moss – Program Coordinator, PEU – Project Introduction and Overview, Executing Agency

Open (3)

Answered (1)

Dismissed

PG

Pablo Gambin Belinchón 02:26 PM

Is the resilient analysis for the Marsh Harbour microgrid publicly available? If yes, could you please share the link to it?

Answer live

Type answer

WW

Wayne Williams 02:27 PM

...

We are a national (USA) EPC Renewable Energy organization. We have been looking at different opportunities in the Caribbean. Currently we are in discussions with several parties within the Bahamas. What is BPL's appetite to allow renewables onto their grid?

Answer live

Type answer

WS

Wilfred Smith 02:31 PM

Good afternoon; Dr. Masson when was the \$170 million secured by the Ministry of Finance? Was the \$170 million a loan, what was the interest rate and what is the years for repayment?

Answer live

Type answer

Open (3)

Answered (3)

Dismissed



Wayne Williams 02:14 PM



How big is the audience on this webinar?

[Collapse all \(2\)](#)



Alessandro Sidore 02:21 PM



Dear Wayne, the webinar at the moment counts with 67 participants - the recording of the event will be posted in the Ministry of Finance Facebook page, for those who were not able to attend. Thanks!



Alessandro Sidore 02:31 PM



Please note that the event is also been livestreamed in Ministry of Finance Facebook page - (
<https://www.facebook.com/FinanceBAH/>)

Type answer



Pablo Gambin Belinchón 02:26 PM

Is the resilient analysis for the Marsh Harbour microgrid publicly available? If yes, could you please share the link to it?

[Collapse all \(1\)](#)



Alessandro Sidore 02:36 PM



Dear Pablo - thanks for your interest the resilience analysis will

Live Q&A during consultation and example of answered questions

Recording

RECONSTRUCTION WITH RESILIENCE

IN THE ENERGY SECTOR IN THE BAHAMAS

Projects financed by the EUCIF Grant and IDB Loan

Projects financed by EUCIF grant 811-G0903

- 1 Microgrid Marsh Harbour Healthcare Center and Government Complex
- 2 Microgrid Cooperstown Clinic

Projects financed by IDB loan 4978/OC-8H

- 3 Microgrid Marsh Harbour Airport
- 4 Microgrid Sandy Point Medical Clinic
- 5 Reconstruction 160 Cooperstown - Marsh Harbour - Wilton City
- 6 Various microgrids in East Grand Bahama

Master Control

Unmute

Stop Video

68

4

Share Screen

More



Leave

Presentation showing Q&A features and number of participants

Recording

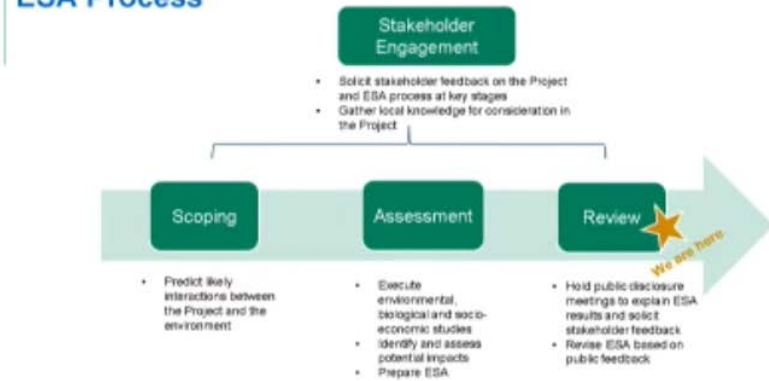
RECONSTRUCTION WITH RESILIENCE

IN THE ENERGY SECTOR IN THE BAHAMAS

Master Control

ESA Process




ESA Bahamas Solar Project


Recording

Waste Management

Existing Conditions:

- Waste disposal services on Abaco may be inadequate and are under strain. In order to facilitate land clearance and the disposal of debris disposal during the reconstruction operations, the local authority allowed the use of two emergency waste dumping sites in Cay Site and Spring City. Uncontrolled waste dumping, cases of arsons, and extremely poor operational standards have been reported for these sites, so their use in the context of this project should be restricted to emergency purposes only or avoided. The EPC contractor will be required to identify alternative options for waste disposal, especially in relation to waste categories that are classified as hazardous.

Impact Description	Potential Mitigation Measures	Impact Significance Post-Mitigation
Waste Management: Project activities will generate waste, and waste management facilities and services on the island are compromised.	<ul style="list-style-type: none"> ✓ The ESMP specifies good international practices for solid waste and hazardous waste management (handling, transportation, disposal) for construction and operation activities. ✓ Furthermore, the ESMP requires segregation of contaminated materials and verification that the final disposal point is authorized and appropriate for disposal of hazardous materials. A more specific operational waste management plan will be prepared by the EPC contractor before the commencement of the construction works. 	



Master Control

Project



Live Q&A Session

Appendix F – Stakeholder List

BH-G0003 PUBLIC CONSULTATION: STAKEHOLDER LIST

No	Name	Institution	E-mail
1	Deborah H. Deal	Bahamas Chamber of Commerce and Employer's Confederation (BCCEC)	contemporarybuilders@gmail.com
2	Jeffrey Beckles	Bahamas Chamber of Commerce and Employer's Confederation (BCCEC)	jbeckles@thebahamaschamber.com
3	Quentin Knowles	Bahamas Society of Engineers	qknowles@flameless.com
4	Kevin Basden	Bahamas Society of Engineers	kbasden@gmail.com
5	Neilsen Beneby	Bahamas Society of Engineers	na.beneby@gmail.com
6	Robert Sands (President)	Bahamas Hotel and Tourism Association	bhta@bahamashoteltourism.org
7	Dennis Martin	Bahamas Gaming Operators Association (BGOA)	rg@bghoa.org/bahamasgaming@coralwave.com
8	Dwayne Wallace	Rotary Abaco	ageast@rotarybahamas.com
9	Amanda Lindroth	Lindroth Development Company	orders@amandalindroth.com
10	Michael Neutelings	Childrens Bay Cay	michel@miloresorts.com
11	Philipp Feller	Super Green Solutions Bahamas	p.feller@supergreensolutions.com
12	Rande Nicolls	Super Green Solutions Bahamas	r.nicolls@supergreensolutions.com
13	Philipp Feller	Compass Solar	philipp@compass-power.com
14	Philip Holdum	APS Bahamas	philip@apsbahamas.com
15	Guilden Gilbert	Alternative Power Systems	guilden@apsbah.com
16	Marvin Wilfred Smith	WMS	marvinsmith92@hotmail.com
17	Bruce Claridge	Nassau Hotel and Restaurant Supplies	bruce.nhrs@gmail.com
18	Graham Weatherford	Sure Solar	grahamweatherford@icloud.com
19	Darren McCartney	Solar Freedom	solarfreedom242@gmail.com
20	Sam Duncombe	Solar Power Shower	solarpowershower@gmail.com
21	Raynard McDonald	Mac Electrical and Solar Contracting	info@macelectricalco.com
22	Mr. Graham	MM Traders	SMMTraders@mmtradersltd.com
23	Noel	Bahama Solar	noel@bahamasolar.com
24	Zoltan Szasz	Integrated Technology Services	nassauszasz@gmail.com
25	Christopher N. Evanich	Schneider Electric	christopher.evanich@se.com
26	Jermaine Clarke	CEAS	jclarke1974@hotmail.com
27	Keith Cronin	SunHedge	kcronin@sunhedge.com
28	Ben Handley	Beacon	Ben.Handley@becn.com
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30	Justin Cunningham	Compass Power	justin@compass-power.com
31	Ancilleno Davis	Science & Perspective	ancilleno@scienceandperspective.com
32	Eric Carey	Bahamas National Trust	ecarey@bnt.bs
33	Matt Winslow	Wildstar Partners	matt.winslow@wildstarpartners.com
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38	David McGregor	Grand Bahamas Power Company (GBPC)	David.McGregor@gb-power.com
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44	Shantel Taylor	Ministry of Finance	SHANTEL.TAYLOR@BAHAMAS.GOV.BS
45	Sherrill Poitier	Ministry of Finance	sherrillpoitier@bahamas.gov.bs
46	Noelle Nicolls	Ministry of Finance	NOELLENICOLLS@BAHAMAS.GOV.BS
47	Stanford Moss	Project Execution Unit (PEU)	stnfrdm@gmail.com
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49	Alden Austin	Project Execution Unit (PEU)	aaust012@gmail.com
50	Dyllon Hylton	Project Execution Unit (PEU)	dhylton@enlightennrg.com
51	Denise Dorsett	Project Execution Unit (PEU)	dwanae32@yahoo.com
52	Menno Valkenburg	Project Execution Unit (PEU)	menno.valkenburg@gmail.com
53	Rochelle McKinney	Bahamas Power and Light (BPL)	rimckinney@bplco.com
54	Burlington Strachan	Bahamas Power and Light (BPL)	bfstrachan@bplco.com
55	Ian Pratt	Bahamas Power and Light (BPL)	IDPRATT@bplco.com
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57	Jonathan Hudson	URCA	jhudson@urcabahamas.bs
58	Richard Brown	URCA	rbrown@urcabahamas.bs
59	Tevin Bannister	Prime Minister's Delivery Unit (PMDU)	tevinbannister@bahamas.gov.bs
60	Katherine Smith	Disaster Reconstruction Authority (DRA)	katherine.smith@drabahamas.org
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68		Abaco Department of Environmental Health	
69	John Pinder	Abaco Department of Labor	johnpinder@bahamas.gov.bs
70	Terrece Bootle	Abaco Local Government Township	terrecebootle-bethel@bahamas.gov.bs
71	Donald Rolle	Central and South Abaco Board of Representatives	donaldrolle@bahamas.gov.bs
72	Maxine Duncome	Abaco Administrator's Office	maxineduncome@bahamas.gov.bs
73	Philip Weech	The Bahamas Environment, Science and Technology Commission (BEST)	philipweech@bahamas.gov.bs
74	Stephen Russell	National Emergency Management Agency (NEMA)	nema@bahamas.gov.bs stephenrussell@bahamas.gov.bs
75	Pakesia Edgecombe	Ministry of Disaster Preparedness, Management and Reconstruction	pakesiaparker-edgecome@bahamas.gov.bs
76	Dion Foulkes	Ministry of Transport and Local Government	dionfoulkes@bahamas.gov.bs
77	Karen Seymour	Ministry of Tourism	kseymour@bahamas.gov.bs
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80	Maria Oriakhi	University of The Bahamas	maria.oriakhi@ub.edu.bs
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82	Pablo Gambin Belinchón	Energynautics GmbH	p.gambin@energynautics.com
83	Leonard Hülsmann	Energynautics GmbH	l.huelsmann@energynautics.com
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91	Franklin Espiga	IDB	FRANKLINE@IADB.ORG
92	Daniel Fernando Fonseca	IDB	DANIELFO@iadb.org
93	Adrián Ortega Andrade	IDB	ADRIANOR@IADB.ORG
94	Alessandro Sidore	IDB	ASIDORE@iadb.org

95	Maricarmen Esquivel	IDB	MARICARMENE@iadb.org
96	Daniela Zuloaga	IDB	DANIELAZUL@IADB.ORG
97	Gines Suárez	IDB	giness@IADB.ORG
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