ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA)
ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

EAST GRAND BAHAMA, THE BAHAMAS
APRIL 2024

Prepared By:

Waypoint Consulting Ltd.
P.O. Box N4805
Nassau, The Bahamas
Telephone: 1-242-376-1448
Email: malexiou@waypointltd.net

Engineering & Technical Services
Nassau, The Bahamas
Tel: 1-242-356-0500
Email: ETSBahamas@gmail.com

Table of Contents

Table of Figures

Table of Tables

Executive Summary

This Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) pertains to the 'Environmental, Social, and Geotechnical Study for Resilient micro-grids projects in East Grand Bahama' in support of the "Reconstruction with Resilience in the Energy Sector in The Bahamas BH-L1048" project executed by the Ministry of Finance, Government of the Commonwealth of The Bahamas.

On September 1, 2019, Hurricane Dorian, a category 5 hurricane, made landfall on the archipelagic nation of The Bahamas. Primarily impacting the islands of Grand Bahama and Abacos, Hurricane Dorian inflicted total damages of US$3.4 billion or one percentage point of the country's Gross Domestic Product (GDP). Recurrent extreme climatic events such as Hurricane Dorian have impacted and will continue to impact The Bahamas.

The rehabilitation and modernization of the Bahamas' energy system represents an opportunity to strengthen isolated and interconnected grid networks with reliant Renewable Energy (RE), designed to withstand the increasing frequency and severity of extreme weather events. It also presents an opportunity to raise awareness about the RE as new energy subsector and about the employment and economic opportunities that this industry represents for Bahamian citizens.

To respond to the immediate and long-term needs of the country, the Interamerican Development Bank (IADB) activated the Conditional Credit Line for Investment Project (CCLIP)" Advancing Renewable Energy in The Bahamas" (BH-O0006), "Reconstruction with Resilience in the Energy Sector in The Bahamas" (RRESB)(BH-L1048).

Five (5) locations were identified on East Grand Bahama as meeting criteria suitable for the installation of PV-Battery Energy Storage Systems (BESS). These five locations include: Freetown, High Rock, McClean's Town, Sweeting's Cay, and Water Cay. The ESIA/ESMP will document existing site conditions including environmental and social aspects to support impacts analysis and management relative to the installation of renewable energy for future energy resilience to climatic events.

Overall, the purpose of the study is to recognize and evaluate the environmental and socio-economic impacts of the Project. It must record the current site's physical and biological conditions before any construction activities are undertaken in the proposed areas. These conditions will be used to highlight current or potential impacts/issues, and to provide recommendations and mitigation strategies, plans and measures to minimize any adverse effects on the immediate area and its environs.

Biological Findings

Biological field investigations were performed at the five (5) sites in February 2024. A total of thirty-four (34) different flora were recorded on the five sites in East Grand Bahama. Of these, twenty-two (22) were native species, eight (8) were protected species, and four (4) were invasive species. Native biodiversity was densest in the coppice forest habitat with non-native and invasive species prevalent towards the edge of the site areas. Biological field investigations included protected tree surveys. A permit to Harvest a Protected Tree will be filed with the Forestry Unit where a protected is identified and unavoidable in the area of direct impact. Biological findings align with a significant climatic event, Hurricane Dorian; pine woodlands incurred mature pine mortality near 100%. A brief summary by site follows:

- Freetown, High Rock, McLean's Town and Sweeting's Cay are "typical" pine woodlands with the upper canopy dominated by pine trees while palmettos, poison wood and bracken ferns comprise the understory. Mature pine trees were significantly impacted by Dorian and only the occasional pine tree less than 10 feet high was seen in isolated patches from Freetown to Sweeting Cay.

- Sweeting's Cay has a distinctly different community of plants consisting of native pine and mixed slow growing hardwood trees. Mature pine individuals exhibited lower mortality at roughly 30% with hard wood trees having recovered. The site is on the west side of a small hill and was partially sheltered by the raised water storage tanks to the east.

- Water Cay's habitat is distinctly different from other sites. No pine trees were observed on the elevated raised platform or within the thirty acres (30) acres which comprise the settlement. Straggler Fig trees dominated the area, and covered abandoned wooden homes, undermined concrete structures, and were mixed into a dense hardwood community of Gammalame, Poison wood and Buttonwood trees. Numerous bird calls were heard and an occasional small bird, primarily Warblers, was found.

Social Findings

Stakeholder engagement is a critical component to socioeconomic impact assessments. The Heritage Partners met with stakeholders in February and March 2024. Information gleaned through survey interviews and desktop research informed the vulnerability and magnitude designations for this impact assessment.

- The economy of Grand Bahama like much of The Bahamas is heavily reliant on the tourism industry in addition to the manufacturing and industrial sectors. Grand Bahama's economy was impacted from Hurricane Dorian and the degree to which it has recovered is difficult to assess.

- Survey respondents note that many community members have emigrated to other parts of Grand Bahama or outside the area of indirect influence due to housing insecurity resulting from the storm, cost of living concerns, and lack of employment opportunities.

- Though presently sparsely populated, Water Cay previously hosted a population of a couple hundred people. Water Cay's lack of a dock hinders the flow of supplies and construction materials including the reconnection of electrical infrastructure damaged by Dorian. Reconstruction of the dock will facilitate construction of the island's microgrid and encourage redevelopment.

Conclusion

Climatic events such as Hurricane Dorian expose known and unknown vulnerabilities impacting the social and environmental setting. Restoration of power to communities on Grand Bahama took nearly a year with some individuals still relying on temporary power as reconstruction of homes is still on-going. The Social Impact Assessment notes that the project is classified as a positive impact as it would incentivize rebuilding efforts, alleviate cost of living concerns, and encourage community members to return to the area of direct influence. In terms of biological aspects, there are no findings that would preclude construction of the five (5) microgrids. Habitat communities vary amongst the project sites with the pine woodlands having incurred significant mortality following

Hurricane Dorian. Any loss of habitat is mitigated by the advancement of renewable energy to offset reliance on fossil fuels. All construction activities will adhere to the Environmental and Social Management Plan to manage potential impacts through the implementation of best management practices. Overall, improving the reliability and resilience of energy systems against natural disasters is considered beneficial for the communities of East Grand Bahama and Water Cay.

1 Introduction

This Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) pertains to the 'Environmental, Social, and Geotechnical Study for Resilient micro-grids projects in East Grand Bahama' in support of the "Reconstruction with Resilience in the Energy Sector in The Bahamas BH-L1048" project executed by the Ministry of Finance, Government of the Commonwealth of The Bahamas.

Five (5) locations were identified on East Grand Bahama as meeting criteria suitable for the installation of PV-Battery Energy Storage Systems (BESS). These five locations include: Freetown, High Rock, McClean's Town, Sweeting's Cay, and Water Cay. The ESIA/ESMP will document existing site conditions including environmental and social aspects to support impacts analysis and management relative to the installation of renewable energy for future energy resilience to climatic events.

Overall, the purpose of the study is to recognize and evaluate the environmental and socio-economic impacts of the Project. It must record the current site's physical and biological conditions before any construction activities are undertaken in the proposed areas. These conditions will be used to highlight current or potential impacts/issues, and to provide recommendations and mitigation strategies, plans and measures to minimize any adverse effects on the immediate area and its environs.

1.1 Project Background

On September 1, 2019, Hurricane Dorian, a category 5 hurricane, made landfall on the archipelagic nation of The Bahamas. Primarily impacting the islands of Grand Bahama and Abacos, Hurricane Dorian inflicted total damages of US$3.4 billion or one percentage point of the country's Gross Domestic Product (GDP). Recurrent extreme climatic events such as Hurricane Dorian have impacted and will continue to impact The Bahamas.

The rehabilitation and modernization of the Bahamas' energy system represents an opportunity to strengthen isolated and interconnected grid networks with reliant Renewable Energy (RE), designed to withstand the increasing frequency and severity of extreme weather events. It also presents an opportunity to raise awareness about the RE as new energy subsector and about the employment and economic opportunities that this industry represents for Bahamian citizens.

To respond to the immediate and long-term needs of the country, the Interamerican Development Bank (IADB) activated the Conditional Credit Line for Investment Project (CCLIP)" Advancing Renewable Energy in The Bahamas" (BH-O0006), "Reconstruction with Resilience in the Energy Sector in The Bahamas" (RRESB)(BH-L1048).

1.2 Project Objective

The objective of the operations is to advance the installation of RE within The Bahamas, improving the reliability and resilience of the energy system against climate-related natural disasters, while rehabilitating critical infrastructure. More specifically, these operations consist of three (3) components:

1) Supporting the rehabilitation of the electricity transmission and distribution system, and the installation of new and resilient RE capacity in Abaco and East Grand Bahama;
2) Promoting the adoption of solar photovoltaic technologies in the Family Islands;
3) Contributing to the improvement of the regulatory framework for RE technologies and the mechanisms for its deployment.

1.3 Project Proponent

The management of the Program is the responsibility of the executing agency, the Ministry of Finance (MoF), which will work in coordination with the IADB. To strengthen the capacity of MoF in the project's execution, a specialized Program Executing Unit (PEU) was created. The PEU will manage the implementation of the Program and liaise with relevant stakeholders, including public administration entities and utilities.

1.4 Scope of Works

The Scope of the Consultation is to assist the PEU in the attainment of the Certificate of Environmental Clearance (CEC) by developing the necessary ESIA and ESMP studies to meet the regulatory and policy requirements of the Department of Environmental Planning and Protection (DEPP) within the Ministry of the Environment and Natural Resources and requisite social and environmental requirements of the IADB. A Geotechnical Assessment will accompany the ESIA & ESMP to identify and document the natural and physical properties of soil. A CEC is required for construction activities to commence.

The scope of works for the ESIA include:

- A detailed project description including project rationale supported by the Government of The Bahamas.
- Establish project ESIA/ESMP Terms of Reference to meet international financing and local environmental permitting requirements.
- Baseline data collection including environmental and social data to support impacts analysis.
- Assessment of impacts based on primary data collection, review of existing literature, stakeholder consultation, and economic data in the area of influence.
- An environmental management framework to manage known and unknown environmental and social impacts through avoidance, minimization, and management.
- A plan to mitigate known environmental and social impacts.

1.5 Purpose of the Study

The purpose of this ESIA/ESMP report is to assess and document the environmental impacts associated with the proposed project components in relation to the natural setting.

The purpose of this ESIA/ESMP study is to:

- Document existing baseline biological site conditions (botanical, and avian) and social setting;
- Importantly, an ESIA is used for planning purposes to consider project features and impacts prior to construction. Establish the area of influence and the affected stakeholders;
- An ESIA 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. Identify, assess, and mitigate potential environmental and social impacts within the area of influence;
- Detail best management practices to manage known and unknown impacts during project implementation;
- Establish an effective environmental management system to ensure employment of BMPs through monitoring and compliance reporting.
- Meet international financing institution lending environmental due-diligence and local environmental governing regulations and policies.

1.6 Applicable Reference Framework

The ESIA/ESMP TOR is prepared to meet the policy and expectations of DEPP. In addition, the ESIA/ESMP is based on the following applicable reference frameworks:

- Local country regulations (The Bahamas) – Applicable national and local environmental and social laws, regulations, policies, procedures and guidelines;
- International Best Practice Standards and Guidelines

1.7 ESIA/ESMP Team

The ESIA/ESMP Team includes:

- Waypoint Consulting Ltd. Environmental Consulting Services, Nassau, The Bahamas
- Engineering & Technical Services (ETS), Engineer, Nassau, The Bahamas
- Heritage Partners, Social Consultants, Nassau, The Bahamas
- Philip Weech, Hydrologist, Nassau, The Bahamas
- Jamil Jibriulu, Biologist, Nassau, The Bahamas

2 Geographic Setting & Project Location

2.1 Geographic Location

The archipelago of The Bahamas consists of over 700 islands that span 100,000 square miles of sea. With a total land mass of 5,833 sq. miles, the islands of The Bahamas extend along a northwest to southeast axis to the east of Florida and to the north of Cuba. Only 30 islands are populated with a majority of the population residing on New Providence. Under international law, The Bahamas' exclusive economic zone (EEZ) is estimated to be 245,000 square miles[1]. Grand Bahama is situated on the southern margin of the Little Bahama Bank, the eastern margins of which are occupied by Great and Little Abaco.

Grand Bahama is a narrow peninsula which extends along a east/west axis with the shallow Little Bahama Bank to the north. The eastern end of the island forms a peninsular of small cays aligned south-east along the edge of the Bank which continues to Sandy Point, Abaco. For the purposes of the Project the reference as "East Grand Bahama" includes the communities or settlements of High Rock, Freetown, McLean's Town and Sweeting's Cay along the southern coast, east of Freeport City. Water Cay on the northern shallow platform, is located thirteen (13) miles to the northwest north of the closest East Grand Bahama project settlement of Freetown. Water Cay is accessible from Freeport by some 12 miles west, of the Grand Lucaya Waterway northern most access point for a boat. The south-facing coast has access to the deep water of the Northwest Providence Channel.

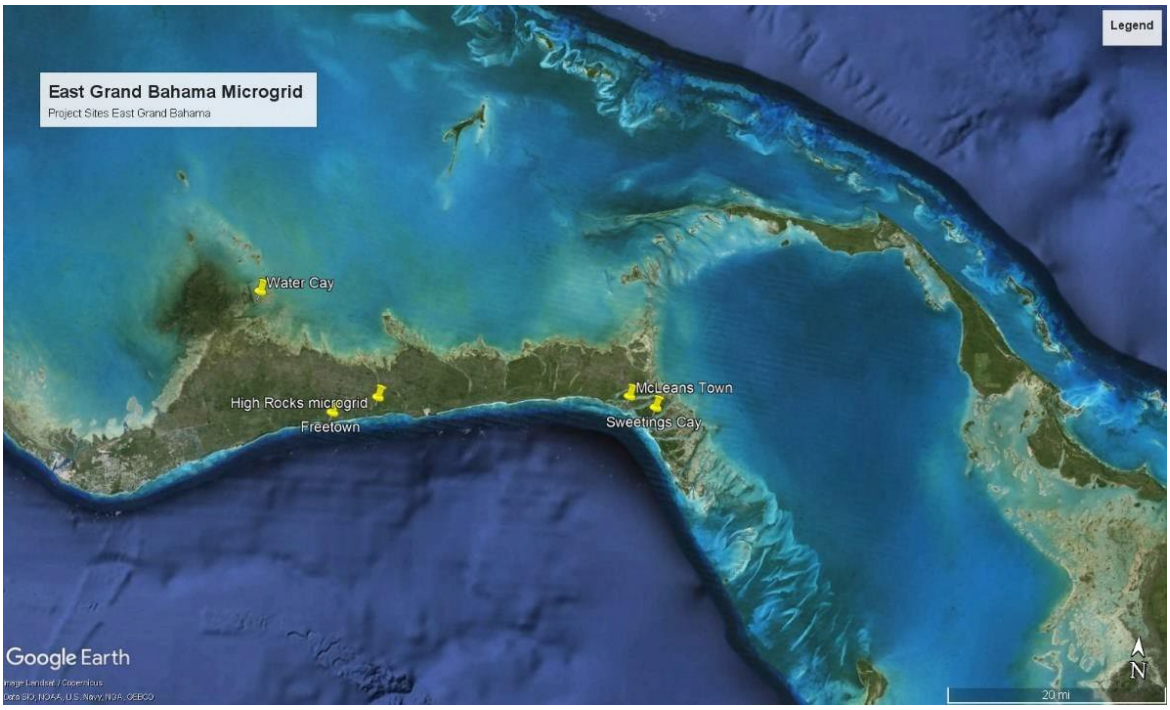


Figure 2-1: Map of The Bahamas[2]

[1] Bahamas Maritime Authority. Ministry of Transport and Aviation. (2015). *The Bahamas' National Maritime Policy - Draft*
[2] Map of The Bahamas. Source: Google Earth. Accessed January 17, 2017.

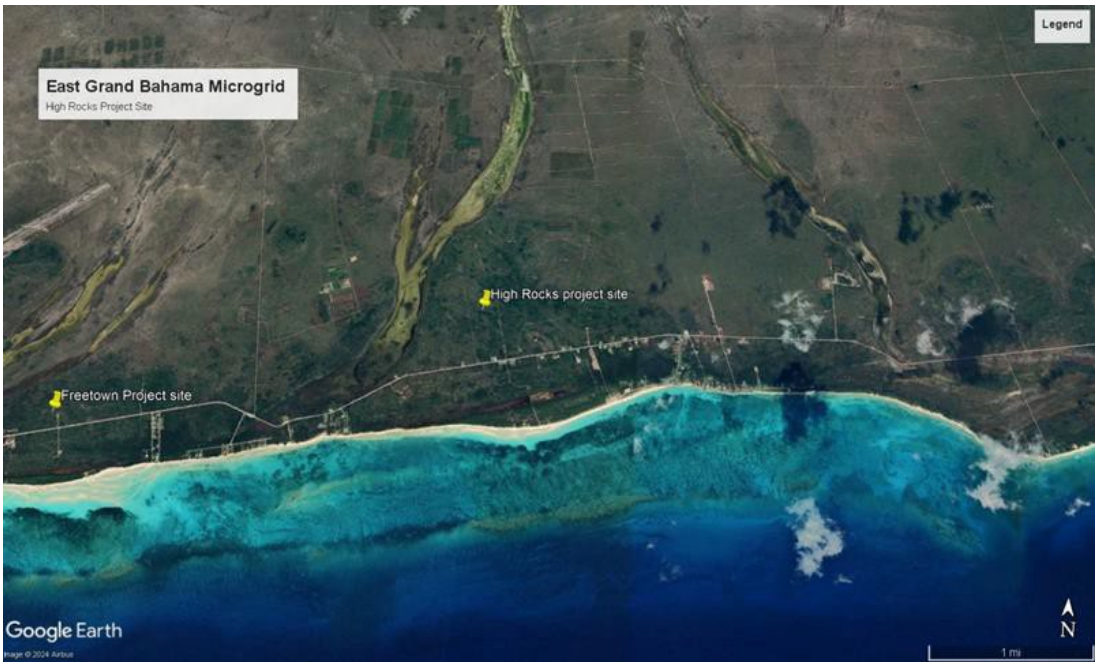


Figure 2-2 Freetown & High Rock Locations, East Grand Bahama

2.2 Freetown

The Freetown proposed project site is a ten (10) acre site approximately one-half mile inland from the coastline and five hundred (500) feet on the northern side of Kings Highway **(**26°36'57.96"N 78°20'55.26"W).

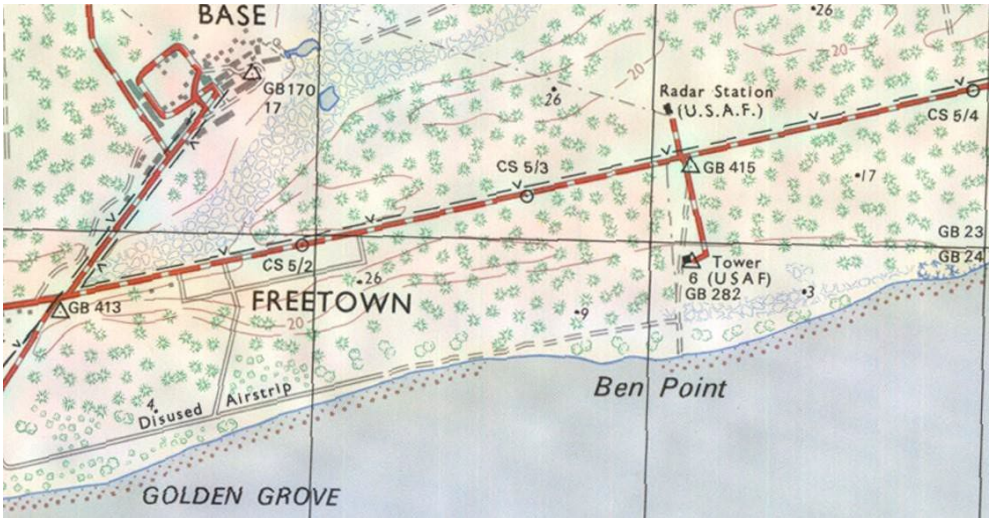


Figure 2-3 Topographic Map of the Freetown Settlement, Department of Lands & Surveys

2.3 High Rock

The High Rocks settlement comprises two adjacent plots totaling twenty-seven (27) acres. Freetown and High Rocks are sited approximately one-half mile inland from the coastline, thirteen hundred (1300) feet from Kings Highway on the west side of an existing unpaved access road (26°37'43.66"N 78°18'28.51"W).

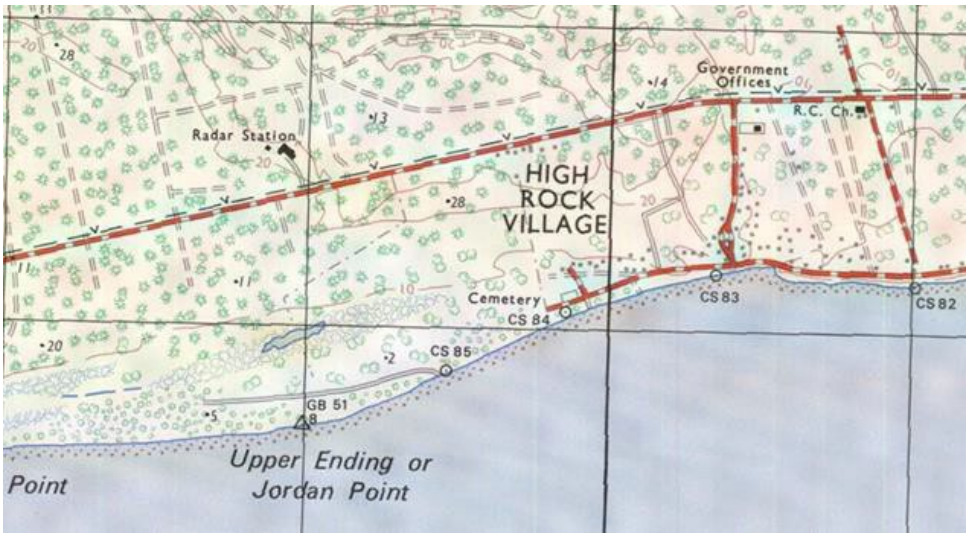


Figure 2-4 High Rock Settlement Department of Lands and Surveys

2.4 McLean's Town

The Mclean's Town site is smaller, less than two (2) acres of low-lying pine forest (26°38'53.77"N 77°56'13.87"W)

Figure 2-5 McLean's Town Settlement, Department of Lands & Surveys

2.5 Sweeting's Cay

Sweeting's Cay is oriented north to south. It is flat with elevations well below 10 feet above mean sea level with its settlement located on the cross-island waterway on the eastern shore. Access to the Cay from McLean's Town is along the southern coast which accesses the waterway between the cay and the adjacent Russell Cay to the east..

Sweeting's Cay is a much smaller site. It is a one (1) acre site of vacant Crown Land adjacent to the water supply system, sports field and nurse's cottage. The site (26°36'40.42"N 77°53'1.12"W) is adjacent to the Water and Sewerage Corporations reverse osmosis plant and its above-ground elevated freshwater storage reservoirs.

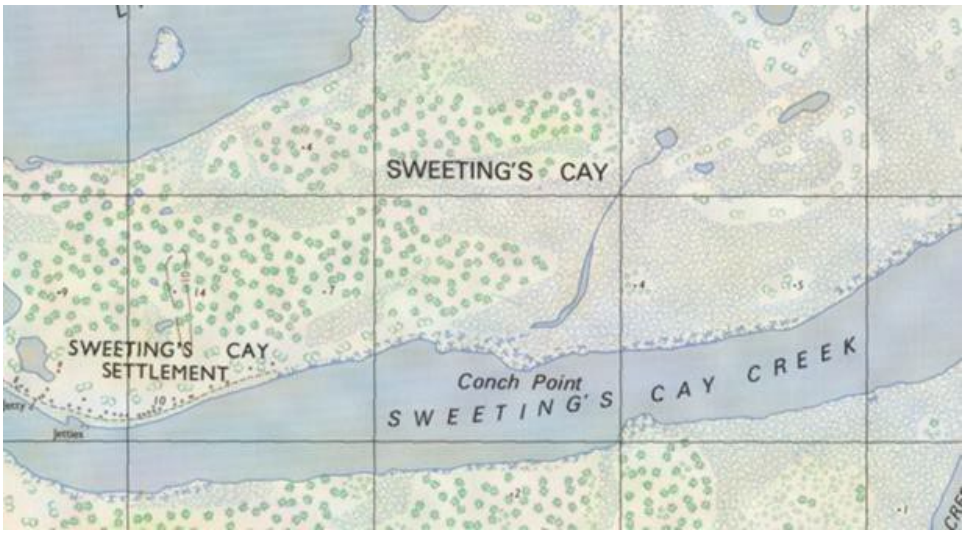


Figure 2-6 Sweeting's Cay, Department of Lands & Surveys

Figure 2-7 Sweeting's Cay Project Site, Google Earth Image

Figure 2-8 Sweeting's Cay Mirco Grid Site, WSC Water Supply System

2.6 Water Cay

Water Cay is located north of Freeport City and is accessed by sea from the northern extremity of the Grand Lucayan Waterway. Passage from the waterway is across five miles of shallow tidal flats, along channels between the elevated small islands. The settlement is on the southern end of the Cay which has a ridge system that runs north to south with a distinct rise across the Cay from east to west; the project site is on the western side of the ridge some 7 to 10 feet above the creek's level to the west.

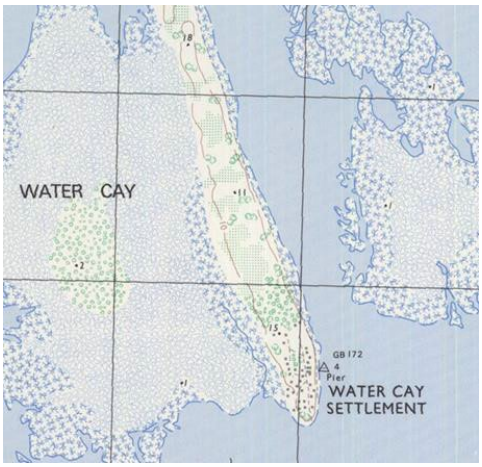


Figure 2-9 Water Cay Settlement, Department of Lands & Surveys

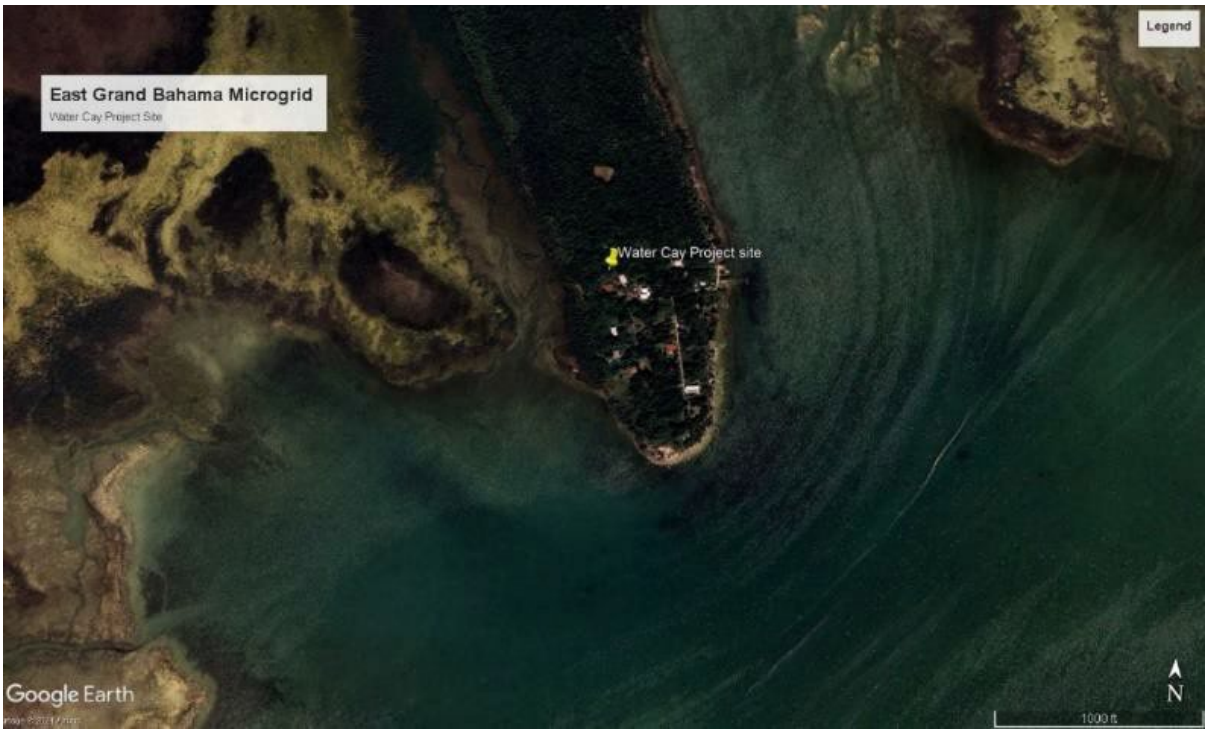


Figure 2-10 Water Cay Project Site, Google Earth Image

3 Project Description

The objective of the proposed Program is to build resilience to climatic events such as Hurricane Dorian. There are five (5) sites for the project. Various locations were investigated regarding their suitability for the installation of PV-Battery Energy Storage System (BESS). The selection was driven by site visits, consultation with the Department of Lands & Surveys and prefeasibility study based on the following criteria:

- Land areas are under public ownership which is a requirement for publicly funded projects;
- Sufficient altitude above sea level to prevent flooding during hurricanes;
- Proximity to towns;
- Suitable road access;
- Sufficient distance from wetlands and waterways.

Site		Description/Project Specifics
Freetown Coordinates (Square) 26°37'00.1"N 78°21'06.6"W 26°37'01.9"N 78°20'57.6"W 26°36'56.4"N 78°20'56.4"W 26°36'54.7"N 78°21'05.4"W	Description	Three (3) sites were considered in Freetown of which the middle one was chosen. It is a 10-acre site to generate approximately 130kW.
	Environmental Setting	The area is undeveloped and dominated by Pinelands.
High Rock Coordinates (Square) 26°37'44.8"N 78°18'28.5"W 26°37'44.8"N 78°18'13.3"W 26°37'36.2"N 78°18'13.3"W 26°37'36.2"N 78°18'28.5"W	Description	Two (2) sites had been identified, of which the site with the closer proximity to the Grand Bahama Highway being chosen. It is a 27-acre site to generate 200kW of solar power.
	Environmental Setting	The area is undeveloped and dominated by Pinelands.
McClean's Town Coordinates (Square) 26°38'55.8"N 77°56'15.9"W 26°38'57.2"N 77°56'14.3"W 26°38'56.0"N 77°56'13.1"W 26°38'54.6"N 77°56'14.7"W	Description	The identified site for the installation of the PV-BESS system is located on a square area approximately 2 acres in size to generate 180kW of power.
	Environmental Setting	The area has emergent pinelands located in close proximity to coast.
Sweeting's Cay	Description	The identified site for the installation of the PV-BESS system is located on a square area

Coordinates (Square) 26°36'40.2"N 77°53'01.0"W 26°36'40.6"N 77°52'58.7"W 26°36'42.8"N 77°52'59.1"W 26°36'42.4"N 77°53'01.4"W		comprising approximately 1 acre to produce 130kW of solar power.
	Environmental Setting	A coastal setting with pinelands and an understory of coppice.
Water Cay Coordinates 26°45'18.3"N 78°29'48.1"W	Description	During a site visit performed in July 2021, a suitable site was identified for the installation of the PV-BESS system.
	Environmental Setting	An undeveloped site of upland coppice formation immediately north of two single family homes.

3.1 Description of Project Activities

3.1.1.1 Site Preparation & Land Clearing

Site preparation will take place as the first phase of RE installation. General site preparation includes vegetation clearing, remnant trash and debris removal (if applicable), delineation of boundaries, and site access.

3.2 Project Work Plan & Schedule

Per the Ministry of Finance, the time required for the ESIA/ESMP and geotechnical studies is estimated to be not longer than 6 months including field, laboratory testing, and desk studies. The time period commenced following award of the contract.

Deliverables

1) Work Plan & Schedule. To be submitted 2 weeks after contract signature.
2) Geotechnical Study. To be submitted 2 months after contract signature.
3) Environmental and Social Impact Assessment. To be submitted 3 months after contract signature.
4) Public Consultation Report. To be submitted 4 months after contract signature.
5) Environmental and Social Management Plan. To be submitted 5 months after contract signature.

4 Administrative Framework

This section of the report outlines the applicable reference framework that will guide this project and its components and includes both National policies and regulations that are applicable for this Project as well as international standards.

4.1 Applicable Environmental and Social Acts Regulations

Table 4-1: National Environmental Legislation

Environmental Law, Regulation, Policy	Subject	Summary
Antiquities, Monuments, and Museum Corporation Act 1998, Chapter 51	To protect antiquities	An Act to provide for the preservation, conservation, restoration, documentation, study and presentation of sites and objects of historical, anthropological, archaeological and paleontological interest, to establish a National Museum, and for matters ancillary thereto or connected therewith.
Antiquities, Monuments, and Museum Corporation Regulations, 1999	To establish the National Register of Historic Places and provide application for permits and licences	Regulations to establish the National Register of Historic Places, and provide procedures for application for a permit, application for a licence, fees for permits and renewal application.
Archipelagic Water and Maritime Jurisdiction Act, 1993	To establish the Water of The Bahamas and its exclusive economic zone	An Act respecting the territorial sea, archipelagic Water, internal Water and the exclusive economic zone of The Bahamas. Archipelagic Water and Maritime Jurisdiction Act (Exclusive Economic Zone and Territorial Seas Limits Order) 2012 established the delimitation of boundaries between The Bahamas and Cuba.
Bahamas National Trust Act, 1959 Bahamas National Trust Amendment, 2013	Designation and management responsibility for National Parks	This Act and Amendment founded the Bahamas National Trust and grant it authority for the provision and oversight of National Parks in The Bahamas.
Bahamas Protected Areas Fund Act 2014	To establish the Bahamas Protected Areas Fund	The Bahamas Protected Area Fund is a regulated organization for oversight of protected areas to ensure sustainable financing and management activities under the Caribbean Challenge Initiative and Caribbean Biodiversity Fund. It has responsibility for programs established for the management of an area protected for biodiversity, carbon sink, water resources, wetlands/blue holes, degraded or threatened ecosystem as such subjects are defined by the UN Convention to Combat Desertification, UN Framework Convention on Climate Change.
The Bahamas Protected Areas	A Notice of MPA Maps	A notice by the Ministry of Environment and Housing to the public advising the following maps depict Marine Protected Areas within The Bahamas under the Global Environment Facility (GEF) Full Size Project (FSP).
Bahamas Public Parks and Beaches Authority Act, 2014	To establish the parks and beaches authority and its responsibilities	An Act to establish the Public Parks and Beaches Authority, to provide for the property rights and liabilities of the Authority and to identify, regulate, maintain, develop, and conserve public parks and beaches and for connected purposes.
Bahamas Spatial Data Infrastructure Act 2014	To establish the Bahamas National Geographic Information Services Centre as a department of Government	The Bahamas National Geographic Information Services Centre is to be a focal point for the collection of geospatial data, geographic information systems coordination of programs and regulations, GIS training, and GIS data
The Biological Resources and Traditional Knowledge Protection and Sustainable Use Act, 2021	To provide for the regulation and access to biological resources and associated traditional knowledge.	An Act to provide for the regulation and access to biological resources, and associated traditional knowledge, sustainable use of its components, prohibiting unlawful genetic and bio-prospecting and gathering and for search for The Bahamas and its people fair and equitable sharing of the benefits arising out of the use of biological resources, traditional knowledge, and to establish the necessary administrative structures and processes for the

		implementation and enforcement of such principles and for matters connected therewith or incidental thereto.
Coast Protection Act, 1968 Chapter 204	To protect the coast	An Act to make provision for the protection of the coast against erosion and encroachment by the sea and for the purposes connected therewith. Coast protection work means any work or construction alteration, improvement, repair, maintenance, demolition or removal for the purpose of the protection of any land, and includes the sowing or planting of vegetation for said purpose. Protection means protection against erosion or encroachment by the sea. The Coast Protection Act stipulates in Section 3(1) that the Minister (MOW) may carry out coast protection work as appears to be necessary or expedient. Consultation requirements for coastal protection works other than maintenance or repair require public notice. Section 4(1) the Minister must publish notice in a newspaper where he may consider for inclusion the provisions of (a-d). Following publication, Section 4(2), any person has 28 days to serve the Minister objection on any grounds mentioned in subsection (4).
Conservation and Protection of the Physical Landscape of The Bahamas, 1997 Chapter 260	Excavation, Landfill, Quarrying, Mining, Protected Trees Listing	This Act makes provisions for the regulation of activities including excavation, landfill, quarrying, and mining in The Bahamas for the purpose of conservation of maintenance of the environment. Application for Permit to Carry out Excavation or Landfill Operation: a permit for activities relating to excavation, sand mining, quarry mining, land clearing including the excavation of canals.
Environmental Planning and Protection Act, 2019	To establish the Department of Environmental Protection	An Act to establish the Department of Environmental Planning and Protection (DEPP); and to provide for the prevention or control of pollution, the regulation of activities, and the administration, conservation and sustainable use of the environment for connected purposes. The Act defines procedures for environmental impact assessments and environmental reporting requirements for protection of natural resources.
Environmental Planning and Protected (Extension of Application Order), 2020	To extend the Act	The Environmental Planning & Protection Act, 2019 shall apply throughout the territory of The Bahamas including every island and cay.
Environmental Impact Assessment Regulations, 2020	To provide procedures for a Certificate of Environmental Compliance	The Regulations provide procedures for the review of proposed projects inclusive of public consultation, notice of submission, monitoring, and compliance requirements. The Regulations dictate the requirements for a Certificate of Environmental Compliance.
Environmental Health Services (Collection and Disposal of Wastes) Regulations 2004	To administer and outline waste collection and management facilities	Environmental Health Services (Collection and Disposal of Wastes) Regulations 2004 establish the collection and control of waste including waste facilities and other matters relating to wastes.
Environmental Health Services (Fees and Services) Regulations 2000	To establish fees and services performed by the Department of Environmental Health Services	The Fees and Services regulations outline services and associated fee rates performed by the Department of Environmental Health Services. The Department may provide testing for air quality, water quality, and radioactive materials.
Environmental Health Services Act 1987	To promote and protect the public health and to provide for the conservation and maintenance of the environment	An Act to promote the conservation and maintenance of the environment in the interest of health for proper sanitation in matters of food and drinks, and generally for the provision and control of services, activities, and other matters connected therewith or incidental thereto.

Fisheries Act 2020	To regulate fisheries resources of The Bahamas	An act to provide for the regulation of the fisheries resources of the Bahamas; to provide for the long-term conservation, management and sustainable development of fishery resources by the application of the precautionary and ecosystem approaches to enhance the livelihood of communities dependent on fishing and to meet the needs of future generations; to provide for licensing of commercial fishers and fishing vessels; to deter, prevent and eliminate illegal, unreported and unregulated fishing in Bahamian Water; to repeal the Fisheries Resources (Jurisdiction and Conservation) Act, 1977 and for connected purposes.
Fisheries Resources (Jurisdiction and Conservation) Regulations, 1986 Chapter 244	To regulate fisheries resources of The Bahamas	Regulations to implement measures to provide protection and oversight of activities in fishery resource Water.
Forestry Act of 2010	To protect the forests and make declarations to use	The Act provides for utilization of forest products and non-timber forest products from the forest estate. It sets forth the management and conservation of the Forest estate and associated industries.
Forestry (Declaration of Protected Trees) Order, 2021	To declare protected trees	A declaration of protected trees under the Forestry Act for Part I endemic or endangered or threaten protected trees, and Part II cultural or historical and economic protected trees.
Forestry Amendment 2023	To amend fees	To amend the *Second Schedule* in the Forestry Act 2014 by substituting fees for a permit.
Health and Safety at Work Act 2002	To protect human health and safety at work	The purpose of the Act is to: - secure the health, safety and welfare of persons at work- protect persons other than persons at work against risks to health or safety arising out of or in connection with the activities of persons at work- control the storage and use of explosive or highly flammable or otherwise dangerous substances, and generally preventing the unlawful acquisition, possession and use of such substances.
Merchant Shipping (Oil Pollution) Act, Chapter 275	To address oil pollution by ship and to effect to International Conventions relating to pollution of the sea	An Act to make provision concerning oil pollution of navigable Water by ship; to provide for the civil liability for oil pollution by merchant ships; to give effect to certain International Conventions relating to pollution of the sea; and for matters connected with and incidental to the foregoing.
Ministry of the Environment Act, 2019	To establish the Ministry of the Environment	An Act to establish the Ministry of The Environment to oversee the integrity of the environment of The Bahamas, to make the Minister responsible therefor a corporation sole, to establish the environmental administration fund and the environmental trust fund and for matters connected thereto.
Planning and Subdivision Act, 2010 Planning and Subdivision Regulations (Application Requirements), 2011	To regulate the built environment	This Act regulates the development of the built environment though physical planning protocols across the archipelago of The Bahamas. The Act stipulates the process for subdivision approval subject to specific conditions with respect to the features of the proposed development.
Port Authorities Act 1962	To provide regulation for the management and control of navigational areas	An Act to provide for the constitution and appointment of port authorities for New Providence and the Out Islands whereby the various ports and harbours of The Bahamas and the pilots and pilotage thereof and therein may be better regulated and controlled.
Public Works Act 1963	To provide for the physical development of The Bahamas	An Act to provide for the construction, management and development of public works, buildings, and road.

Water and Sewerage Act 1976	To establish the Water and Sewerage Corporation and to control water resources	An Act to establish a Water and Sewerage Corporation for the grant and control of water rights, the protection of water resources, regulating the extraction, use and supply of water, the disposal of sewage and for connected purposes
Wild Animals Protection Act 1968	To protect wild animals of The Bahamas	The Act provides a listing of protected animal species in The Bahamas
Wildlife Conservation and Trade Act 2004	To implement CITES	An Act to implement the Convention on International Trade in Endangered Species of Wild Fauna and Flora with a view to the protection of wild species from harm through unsustainable exploitation.
Wild Birds Protection Act 1987 Wild Bird Protection Act (Reserves),	To protect wild birds of The Bahamas	The Act protects the wild birds of The Bahamas and makes provision for the dedication of time periods for the hunting of specific species.

4.2 National Environmental Policies

The Bahamas has developed National Environmental Policy papers that guide internal policy planning and policy. These policies are not regulations and serve to guide policy making and internal Ministerial decision-making. National Policy documents also guide implementation or meet the requirements of International Conventions to which The Bahamas is party. These National Policy documents drive internal decision-making practices within various Government Ministries and Departments and are outlined on the next page.

Relevant National Policies		
Bahamas National Maritime Policy, 2015	The National Maritime Policy provides a guidance to expand the maritime sector through safe and sustainable practices.	The Objectives of the Bahamas National Maritime Policy are: 1) to expand the maritime sector for future economic development 2) to provide employment opportunities for Bahamians both nationally and internationally 3) to facilitate the training of mariners consistent with international norms 4) to establish programmed and protocols that enhance the safety of mariners and vessels 5) to upgrade port infrastructure and port services throughout the country
National Energy Policy 2013-2033	The National Energy Policy 2013 - 2033 outlines a plan for a modern diversified and efficient energy system that is affordable and secure while ensuring sustainability prosperity.	The National Energy Policy outlines four (4) goals: 1) Bahamians will embrace conversation through exploration of energy efficiency 2) The Bahamas will enhance generation capacity to provide a safe and reliable energy supply 3) The Bahamas will strive to be a leader in the opportunity for a diverse range of energy supplies to support the economy 4) The Bahamas will have the appropriate governance structures. The National Energy Policy acknowledges the influence of atmospheric greenhouse gas emissions as contributors to global climate change. Reducing dependence on fossil fuels while increasing investment for renewable energy sources show commitment by The Bahamas to adapt to climate change.
National Policy for the Adaptation to Climate Change 2005	Climate change assessment for the immediate and project adaptation techniques for The Bahamas	The National Policy for the Adaptation to Climate Change outlines a national framework to meet the goals and objectives of the United Nations Framework Convention on Climate Change (UNFCC). The Bahamas is committed to reduce greenhouse gases and address climate change impacts. As a Small Island Developing State, The Bahamas is vulnerable to the impacts of climate change.
The Bahamas National Wetland Policy	The goal of the National Wetlands policy is to conserve, manage, and restore wetland wisely in conjunction with sustainable development practices.	The Bahamas National Wetland Policy outlines a national framework to meet the goals and objectives of the Ramsar Convention, which The Bahamas signed on June 7, 1997. This policy paper provides direction to the Government for the management of wetlands and to identify wetlands of national importance. The National Wetland Policy highlights the importance of wetland features. While neither wetlands nor individual plant species such as mangroves are protected by law, this policy document guides internal decision-making to review any project components that may interact with wetlands as defined by Ramsar.

National Invasive Species Strategy for The Bahamas, 2013	Identifies and recommends a management framework for the control and eradication of invasive species.	The National Invasive Species Strategy for The Bahamas originally published in 2003, was updated in 2013 as part of the Global Environment Facility funded project, Mitigating the Threats of Invasive Alien Species in the Insular Caribbean (MITIASIC). It sets forth a management framework for the control and eradication of invasive species. Since 2003, The Bahamas has incurred problems with lionfish and cane toads, both considered invasive species. Invasive species are a threat to island biodiversity. Invasive species are a threat to island biodiversity and enhancing climate resilience must consider the influences of these species on the coastal environment.
National Biodiversity Strategy and Action Plan, 1999	A plan to maintain biodiversity through sustainable development for a small island developing nation.	The Bahamas government is committed to conserve biodiversity and to pursue sustainable development. This document highlights the role of biodiversity in the Bahamian social and environmental context and recommends measures to ensure its compatibility with future development.

Table 4-2: Relevant National Policies

4.3 International Conventions and Agreements

An outline of relevant international conventions to which The Bahamas is a signatory is provided on the next page. While The Bahamas is a signatory to numerous International Conventions with relevance to coastal zone management and climate change, The Bahamas may not yet have supporting legislation to enact the Convention due to: 1) The Convention being not ratified; or 2) proposed legislation having not yet been tabled as a bill to Parliament. Where it exists, the legislation and/or policy document is cited below as to having relevance to the specific International Convention.

Table 4-3: International Conventions

International Convention/Organization	Subject	Summary	Related Legislation, Policy, Permits, If Applicable
Basel Convention on the Control of Transboundary Movement of Hazardous Wastes Signed: August 12, 1992	To regulate the transboundary movement of hazardous wastes	The Convention regulates the transboundary movements of wastes and ensures that parties to the Convention manage and treat waste according to sound environmental practices. Main Principles: - Transboundary movement of hazardous wastes should be reduced to a minimum - Hazardous wastes should be treated and disposed of as close as possible to the source - Hazardous waste generation should be reduced at the source	Environmental Health Services Act Environmental Planning & Protection Act, 2019 Permit for transboundary movement of materials shipped out of The Bahamas is required by shipper. The permit must be submitted to DEHS and DEPP.
Cartagena Convention Ratified: June 24, 2010	An agreement for the protection and development of the marine environment in the wider-Caribbean region	The Convention provides a legal framework for cooperation in the wider Caribbean region. Three technical agreements support the Convention which include: - Protocol for Co-Operation in Combating Oil Spills - Protocol for Specially Protected Areas and Wildlife (SPAW) - Protocol Concerning Pollution from Land-based Sources and Activities (LBS) Contracting parties must adopt measures to prevent, reduce, and control pollution from: ships, dumping, sea-bed activities, airborne pollution, and pollution from land-based sources and activities.	Environmental Health Services Act Conservation and Protection of the Physical Landscape Act, 1997 Marine Mammal Protection Act 2005 & Regulations 2005
Convention on Biological Diversity Signed: June 12, 1992	To preserve species diversity	The Bahamas is a signatory to the Convention on Biological Diversity which came into force December 1993. It has three main goals: a) The conservation of biological diversityb) The sustainable use of components of biological diversityc) The fair and equitable sharing of the benefits arising out of the utilization of genetic resources	National Biodiversity Strategy and Action Plan, 1999 Conservation and Protection of the Physical Landscape of The Bahamas, 1997. The Act provides a listing of protected tree species. A permit to remove a protected tree species is now under the Forestry Act 2010. Bahamas National Trust Act 1959.
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Signed: March 20, 1979	To protect species through the regulation of wildlife trade	CITES regulates the trade of wildlife through a classification system that restricts movement of endangered species. Trading of species may require permits as dictated by the Convention.	Marine Mammal Protection Act 2005 & General Regulations 2005 Wildlife Conservation and Trade Act 2004

Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention) Signed: June 7, 1997	This convention provides a framework for the international protection of wetlands as contributors for human resources and moreover, for avifauna which do not adhere to international boundaries.	The Bahamas is a 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 moreover, for avifauna which do not adhere to international boundaries. Ramsar defines wetlands as 'areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters'. The Bahamas has 1 site, Great Inagua National Park, designated as Wetlands of International Importance (Ramsar Sites).	Planning and Subdivision Act 2010, wetlands are defined according to the Ramsar Convention. The Act considers wetlands as sensitive environmental features. National Wetland Policy refers to Ramsar Convention to prioritize the protection of wetland features. Wild Birds Protection Act 1987 and Wild Bird Reserves Bahamas National Trust Act 1959 and Amendment
Montreal Protocol on Substances that Deplete the Ozone Layer Signed: May 4, 1993 Kigali Amendment Ratified: May 30, 2023	To control the production and consumption of ozone depleting substances	The Montreal Protocol provides a timeline to the phased removal of harmful substances to the ozone layer. Time frames for phased removal vary by developed or developing nation status. The Kigali Amendment calls for the gradual reduction in use and production of hydrofluorocarbons (HFCs).	The Bahamas regulates the import/export of controlled substances. The National Ozone Unit is part of the Department of the Environmental Health Services - Montreal Protocol (Controlled Substances) Chapter 216A 2006 - Montreal Protocol (Import/Export Licensing System of Controlled Substances) Regulations 2008
Stockholm Convention on Persistent Organic Pollutants Signed: March 20, 2002	To protect human health and the environment from persistent organic pollutants	The Convention protects human health and the environment from chemicals that remain intact in the environment for long periods, become spatially distributed, accumulate in fatty tissue, and have negative impacts on human health or the environment. Parties to the convention shall adopt measures to reduce or eliminate the spread of persistent organic pollutants.	Environmental Health Services Act 1987 Montreal Protocol Act 2006 & Regulations 2008

United Nations Convention on the Law of the Sea Signed: July 29, 1983	To govern the sea with delineation of national boundaries and rights	The Bahamas ratified the Law of the Sea in 1983 and the Convention came into force in 1994. The premise of UNCLOS is to provide for good ocean governance, define the exclusive economic zone (EEZ), and establish innocent passage and the rights of States to limit the rights of innocent passage related to marine resources conservation and pollution control.	National Biodiversity Strategy and Action Plan, 1999 Bahamas National Maritime Policy 2015
United Nations Convention to Combat Desertification and Drought Signed: November 10, 2000	To combat desertification and to mitigate the effects of drought	The Convention is a proponent for sustainable development by addressing social and economic issues that directly impact land degradation.	Bahamas Protected Areas Fund 2014 Forestry Act 2010 Planning and Subdivision Act 2010
United Nations Framework on Climate Change Signed: June 1992 Kyoto Protocol Signed: April 9, 1999 Paris Agreement Ratified: August 22, 2016	To stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with climate systems	The Bahamas is a signatory to UNFCC which entered into force in March 1994. The UNFCC was the culmination of climate negotiation at the Rio Earth Summit in 1992. This summit established a framework with an aim to stabilize atmospheric greenhouse gas. Subsequent annual Conferences of Parties have attempted to create a legally binding and universal agreement on climate and control of anthropogenic outputs. The Kyoto Protocol was developed under the UNFCC to provide emissions targets and timetables for developed countries. The Paris Agreement as put forth at the Conference of the Parties (COP21) in December 2015. The agreement has not yet come into force as it requires at least 55 parties to have ratified the agreement. The agreement sets forth a global action plan to combat climate change by limiting global temperature rise to below 2 degrees Celsius. Furthermore, the agreement seeks to accelerate actions and investments needed for a sustainable low carbon future.	The Bahamas has no specific legislation related to the control of greenhouse gas emission. Related Legislation: Forestry Act 2010 Bahamas Protected Area Fund 2014 Environmental Planning & Protection Act 2019 National Documents: National Energy Policy 2013-2033 aims to reduce greenhouse gas emissions with a goal of 30% renewables in the energy mix by 2033 National Policy for the Adaptation to Climate Change, 2005 The First National Communication Report of The Commonwealth of The Bahamas Under the Framework Convention on Climate Change, 2001 The Second National Communication Report of The Commonwealth of The Bahamas Under the Framework Convention on Climate Change, 2014 First Biennial Update Report (BUR1) of the Commonwealth of The Bahamas to the United National Framework Convention on Climate Change, December 2022

Hamilton Declaration on Collaboration for the Conservation of the Sargasso Sea Signed: September 2016 Not yet in force	To conserve the Sargasso Sea	The Hamilton Declaration is currently signed by seven (7) nations, including The Bahamas. The Sargasso Sea covers nearly 5 million square kilometers and is so named for the seaweed, Sargassum. Sargassum mats and windrows act as major nursery and spawning areas. Of note, it is the only place where the European and American eel are known to spawn.	Merchant Shipping (Oil Pollution) Act Environmental Health Services Act Conservation and Protection of the Physical Landscape Act, 1997 Marine Mammal Protection Act 2005 & Regulations 2005 Coast Protection Act, 1968 Archipelagic Water and Maritime Jurisdiction Act, 1993

4.4 Roles and Responsibilities of Government Departments

The Government of The Bahamas is based on the Westminster system. As a Commonwealth nation it recognizes His Majesty King Charles II as the Head of State where the Governor-General serves as the King's representative in The Bahamas. The Executive branch is comprised of the Cabinet, which provides direction and control over government affairs. The Legislative branch is Parliament including the House of Assembly and the Senate, which creates laws. The Judicial branch, including the Supreme Court and Court of Appeal, upholds the Constitution of The Commonwealth of The Bahamas and practices under common law.

The Ministry of Works and Ministry of Environment and Natural Resources will have oversight and Ministerial responsibility during project execution, planning and construction stages, with operational oversight.

Ministry or Department	Responsibilities	Relating to the Proposed Program
Ministry of Works	The Ministry of Works has oversight for the built environment and administers the Building Control Act and Regulations	Permits relating to buildings and the Department of Physical Planning Excavation Permit Dredge Permit Building Permit Demolition Permit
Department of Physical Planning	The Department of Physical Planning is within the Ministry of Works and Urban Development. It administers the Planning and Subdivision Act 2010, permitting requirements for the Conservation and Protection of the Physical Landscape Act.	Site Plan Application
Ministry of the Environment and Natural Resources	The Ministry of the Environment and Natural Environment has responsibility for oversight for matters relating to the environment and housing including the following agencies and departments: Department of Planning & Protection, Forestry Unit, Environmental Health Services, Bahamas National Geographic Information Services	Certificate of Environmental Clearance (CEC) Permit to Harvest a Protected Tree
Department of Environmental Planning & Protection (DEPP)	DEPP was established under the Environmental Planning & Protection Act 2019. DEPP manages the implementation of multilateral environmental agreements and review environmental impact assessment and management plans for development projects within the Bahamas.	Referral department for discussion on applicability of EIAs, EMPs, or general environmental review of project components Certification of Environmental Clearance
Bahamas National Geographic Information Services (BNGIS)	BNGIS is responsible for the collection of spatial data.	Spatial Data Repository
Forestry Unit	The Forestry Unit is the regulatory authority for permitting the harvesting of a tree listed on the Protected Tree Order 2021.	Permit to Harvest a Protected Tree
Department of Environmental Health Services	DEHS is responsible to promote and protect human health and the environment as mandated by the Environmental Health Services Act, 1987 and Environmental Health Services Regulations. Divisions of DEHS include the National Ozone Unit (Montreal Protocol) and Environmental Monitoring and Risk Assessment Division. Other responsibilities for DEHS include assistance with oil and pollution spill clean-up, solid waste management, effluent discharge and any emissions permits.	National Ozone Unit Oil Spill Clean-up Response Environmental Monitoring and Risk Assessment Division Solid Waste Management Effluent Discharge/Emissions Permits

Ministry of Transport and Energy	The Ministry of Transport and Energy has authority over the transportation sector including the port department.	
Bahamas Power and Light Company, Ltd.	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 utility and public corporation. BPL's mission is 'to provide The Bahamas with safe and reliable electrical power'. BPL is the only state-owned electric utility and is governed by a board of directors appointed by the Government. It operates 30 generating plants across 25 island locations and provides service to approximately 100,000 customers.	
Grand Bahama Power Company	Grand Bahama Power Company (GBPC) is a privately-owned electrical utility company tasked with supplying electrical energy to Grand Bahama's 18,800 customers throughout the island of Grand Bahama. GBPC is a totally integrated utility company with a gross generating capacity of 98MW. GBPC is a majority owned subsidiary of Emera Inc, a Canadian company.	
Port Department	The Port Department has oversight for changes in coastal water and with navigation.	Notice of Activity for the Coastline Permit for a Marina
Grand Bahama Port Authority	Freeport is a 230-square mile free trade zone on Grand Bahama Island established in 1955. The Grand Bahama Port Authority Limited (GBPA) is a privately held corporation that acts as the municipal authority for Freeport and operates the free trade zone under special powers conferred by the Hawksbill Creek Agreement Act. GBPA is horizontally integrated with property development, municipal services, airport, harbour operations, and shipyard concerns.	
Ministry of Public Service		
Department of Labour	To foster good industrial relations between Employer and Employee while promoting a high level of employment. Areas of responsibility include *inter alia* labour relations, manpower and employment, inspections and safety and workmen's compensation.	

4.5 Environmental Permit Requirements

4.5.1 Certificate of Environmental Clearance (CEC)

In 2019, The Bahamas enacted the Environmental Planning & Protection Act 2019 establishing the foundation of an environmental regulatory framework. This legislation created the Department of Environmental Planning & Protection (DEPP) under the purview of the Ministry of the Environment and Natural Resources. The Environmental Impact Assessment Regulations 2020 further strengthened the regulatory framework with the implementation of a Certificate of Environmental Clearance (CEC). All projects meeting the definition of a 'project' undertaken in The Bahamas shall obtain a CEC prior to construction start.

In The Bahamas following the issuance of a CEC, monitoring has become an integral component during the construction of development projects. Acceptance and adoption of this practice by Government allows for institutional oversight and encourages communication between the developer and Government during the construction process. Involvement of Government strengthens institutional capacity for identification, implementation, and monitoring of health, safety, and environmental best management practices. Effective management and frequent monitoring provide the tools necessary to manage potential impacts and to introduce corrective action when required.

4.5.2 Permit to Harvest a Protected Tree

Upon publication of the Protected Tree Order 2021 in the *Gazette,* the permit to Harvest a Protected Tree formally came under the purview of the Forestry Unit, the responsible agency established under the Forestry Act 2010. Trees listed on the Protected Tree Order and meeting eligibility criteria, such as height, require a permit to be felled, translocated, or used for other purposes.

4.5.3 Other Applicable Environmental Standards

Standards for air quality, noise quality, and vibration do not exist; international standards are applied in the absence of standards and regulations.

4.6 Non-Governmental Organizations (NGOs)

Non-governmental organizations supporting environmental outreach and education include the Bahamas National Trust, The Nature Conservancy (TNC), Bahamas Reef Environment and Education Foundation (BREEF), Friends of the Environment (FRIENDS).

4.7 Public Consultation

Public consultation will follow the regulations of the Government of The Bahamas and international frameworks, whichever is more stringent.

4.7.1 Environmental Impact Assessment Regulations 2020 – Public Consultation

In The Bahamas, the Environmental Impact Assessment Regulations 2020 mandates public consultation for projects requiring an EIA. The EIA regulations outline statutory timeframes and publications for notices to the public. These requirements are further detailed under DEPP policy guidelines including frequency of

publication of public notices, location and duration of public meetings, meeting formats, and the contents of a Public Consultation Report (PCR). All public meetings are facilitated by the project proponent and moderated by DEPP.

4.7.2 Other Regulatory Public Consultations

Public notice, not to be confused with public consultation, is a regulatory requirement under the Coast Protection Act for coastal protection works other than for maintenance or repairs. This notice is to be published in a newspaper and may outline the project components at the Minister's discretion. The Act does not require public consultation in the form of a meeting merely written notice in a newspaper. Similarly, the Conservation and Protection of the Physical Landscape Act provides the Director of Physical Planning with the option to provide public notice prior to issuance of a permit, i.e. excavation but does not require public consultation.

5 Approach and Methodology

5.1 Introduction

The environmental assessment for the project follows a systematic approach to both quantify and qualify impacts based on site-specific field conditions. An ESIA identifies potential environmental impacts based on site investigations and recommends measures for minimizing or mitigating those potential impacts with reference to local legislation, international conventions and/or best practices. This ESIA was prepared in accordance with DEPP ESIA guidelines to secure CEC. A CEC is required for full construction activities to commence.

In accordance with this ESIA document and with the proper planning, application, and monitoring of the EMP, and if best management practices (BMPs) are conscientiously planned, engineered and implemented, many of the impacts that are generated during construction and operation should be minimized or completely eliminated for the proposed project.

5.2 Screening

The EIA Regs 2020 created the CEC effectively establishing a screening mechanism for DEPP to determine preliminary impacts based on project plans and location. A project proponent shall make an application, the CEC, for preliminary review of the proposed project and 'upon receipt of the application, the Director shall examine or cause to be examined the documents for accuracy and completeness and shall determine whether an EIA, EMP, or further studies are required'[3]. The Director may request additional information to support the project application if the submitted documentation is insufficient to determine the necessary level of environmental due diligence.

Upon review of the CEC Application, DEPP will issue formal communication identifying the environmental documentation required, if any. The screening verifies the authenticity of the project proponent. Screening components:

- CEC Application submitted by project proponent to initiate environmental permitting process.
- The CEC Application details project plans, verifies land ownership, identifies the project proponent, and where applicable, documents general acceptance by the Government of The Bahamas through the Bahamas Investment Authority for project preliminary approval.

5.3 Scoping

If the CEC Application warrants further study, the project proponent develops a Terms of Reference (TOR) to establish the scope of environmental documentation. A project proponent submits the TOR to DEPP for

[3] Environmental Impact Assessment Regulations, 2020. Environmental Planning and Protection Act (No. 40 of 2019). S.I. No. 150 of 2020. Part II 4(3) Extraordinary Official Gazette The Bahamas, Published by Authority. Nassau. 16th September, 2020.

review and discussion prior to the full document, ESIA and/or ESMP, submission. The TOR facilitates discussion with DEPP to identify necessary technical investigations to support impacts analysis for satisfactory project environmental documentation and assessment. Scoping Components:

- Project proponent submits an ESIA and/or ESMP TOR to facilitate document contents.
- Project proponent identifies relevant technical investigations to support project document.
- The TOR identifies the project location, project Master Plan, sensitive environmental features within the area of influence, and potential issues of environmental concern, and recommendations for environmental management during construction.
- The project team and DEPP perform a site visit to discuss environmental aspects of concern and significance. The site visit allows in situ discussion about project plans and the existing natural setting.
- Project proponent identifies preliminary options to mitigate project impacts.
- Biological baseline studies may have been performed to establish existing site conditions as considerations for due diligence during real estate transaction. Baseline conditions may influence conceptual site plan design during the planning stage.

5.4 Project Description

A project description establishes the project's components set within a site-specific area featuring an existing natural setting. The CEC Application lists construction activities required to execute and develop the project. These activities influence the magnitude of environmental and social impacts.

5.5 Environmental and Social Baseline Conditions

Environmental and social impacts are assessed through a combination of background desktop study, scientific literature, and field assessments. Baseline field studies provide the foundation for impact analysis.

5.5.1 Environmental and Social Data Collection & Analysis

In order to establish the baseline physical and biological conditions within the ZOI, relevant primary and secondary data were collected and reviewed - a comprehensive field visit was undertaken, and a number of specialist studies were carried out. This process also included consultation with various relevant agencies including Government Departments, and members of the local community. The data generated allowed the Project team to better understand the complex interplay between the various biotic and abiotic factors within the ZOI and to accordingly establish the baseline conditions. Once this baseline was established, it was used as a reference point to identify potential changes to the environment that may occur as a result of the proposed project activities, as well as to allow development of measures to prevent, mitigate or manage these potential impacts.

5.5.1.1 Primary Environmental and Social Data Collection

Biological baseline field investigations were performed from the 15th to the 17th of February, 2024. Field investigations included botanical composition, wildlife surveys, and geotechnical investigations. The

Heritage Partners performed a household and sentiment survey to establish existing social conditions to support social impacts analysis.

5.5.1.2 Secondary Environmental and Social Baseline Data Collection & Literature Review

A literature review was performed online and in person through various search engines to identify relevant documents from trusted sources such as the Bahamas National Trust, and governmental websites such as the DEPP, Department of Lands & Surveys, the Department of Statistics. Preference is given to peer-reviewed literature.

Additional secondary data sources consulted:

1) Birdlife Data Zone. BirdLife International identifies Endemic Bird Areas (EBAs) and Important Bird Areas (IBAs) within The Bahamas. It also provides a list of site-specific parameters including: bird species, threats, habitat sensitivity, and supporting documentation. Not all areas identified as EBAs and IBAs are protected in The Bahamas. http://datazone.birdlife.org/home
2) IUCN Red List for Threatened Species Online Version. Baseline data collection species lists identify IUCN classification from Least Concern (LC) to Critically Endangered (CE). https://www.iucnredlist.org/

5.6 Stakeholder Consultation

The project proponent performed a range of stakeholder consultations including meeting with members of the local community, local government, and government officials in Grand Bahama and Nassau. The Heritage Partners held consultations with the community.

The Heritage Partners performed a Sentiment Survey February and March 2024. Baseline data collection in person and via desktop research supported social and economic analysis for the impacts, positive and negative, on the communities within the area of influence and greater Bahamas.

5.6.1 Consultation Methods and Materials

A range of stakeholder consultation and engagement methods have been applied as represented by community, local government, and central government needs. The Stakeholder Engagement Plan for the East Grand Bahama Microgrid Project is appended to this report.

Consultations and engagement methods included the following:

- Sentiment Survey. The Heritage Partners conducted a Sentiment Survey that included house-to-house interviews based on a prepared survey with closed and open questions.
- In-Person Community Meetings.
- Meeting with Government and Local Government Officials.

5.6.2 Research Methodology

The Heritage Partners developed the Social Impact Assessment by considering the main socioeconomic indicators that allow for characterization of the living conditions of the population of the target community.

For this purpose, various sources of secondary information were used, mostly from public sources of information at the national levels. Data disaggregated to the level of community is rare.

In addition to the search, systemization and analysis of secondary information, the Heritage Partners used qualitative methodology by conducting field studies and follow-up telephone calls and in person interviews. These interviews focused on demographics of the target communities as well as indicators and socioeconomic variables that could be affected by the activities of the Project with an emphasis on energy and climate change. We also considered as part of the interviews questions related to the feelings of the population in relation to the Project.

5.7 Impact Assessment Methodology

The impact assessment section identifies and evaluates potential environmental, social (socio-economic), and public health impacts resulting from the proposed project during site development and construction, operation and maintenance stages. The potential impacts are evaluated to assess possible consequences of the project activities to determine the severity and extent of identified potential impacts, and aid in the development of mitigation or enhancement measure to reduce or negate those identified potential impacts.

5.7.1 Identification of Potential Impacts

Identification of potential impacts is an objective exercise to determine what could potentially happen to the environment as a consequence of the project and its associated activities. This effort builds on the identification step in scoping, whereby the potential interactions between the Project and the baseline environment are identified. From these interactions, the potential impacts to the various resources or receptors are identified and are described to the extent possible.

5.8 Environmental and Social Mitigation Measures

Measures to mitigate known and unknown impacts occur at the planning, construction, and operational phases. By understanding the baseline biological and social conditions, the project proponent may avoid adverse impacts by amending the Master Plan. If avoidance is unavailable, then the following techniques are offered:

1) Avoid impact though planning, pre-liminary construction activities, monitoring, and engineering control.
2) Minimize and manage the impact through implementation of best management practices to control the extent, duration, and location.
3) Mitigate impacts through project design to restore, replace, or create a positive environmental and social contribution either on-site or off-site at an approved location.

5.9 Environmental and Social Management Plan

Environmental management is a systematic approach that integrates environmental policy and planning with continuous monitoring of implementation techniques to improve environmental compliance to achieve the goals of sustainable development. Hazards to human health and safety and the environment

can be managed through careful planning, vigilance and strong communication during works and continual improvement to the overall environmental management program.

The preferred management approach is to avoid, minimize, and control adverse impacts to human health, safety, and the environment. Where adverse impacts cannot be avoided, BMPs should be employed to mitigate human and environmental harm. The ESMP is a dynamic document with revisions anticipated throughout the various stages of the project. A copy of the ESMP will be kept onsite at all times.

5.9.1 Environmental Monitoring

Environmental compliance is achieved through frequent and consistent site inspection and strong communication with the contractor. Construction monitoring documents the contractor compliance to the ESMP with respect to but not limited to site safety and health, protection of ground water, general housekeeping, hazardous waste disposal, noise and air quality control, and protection of natural resources. The monitoring checklist is the mechanism within the environmental management system to document onsite practices, provide recommendations, and note when corrective action is required.

5.9.2 Grievance Redress

Grievance redress for employees, neighbours, and adjacent property owners is a management tool to identify, assess, and provide resolution of complaints during a project cycle. Implementing a system of grievance redress early in a project's cycle allows for resolution of minor issues before escalation. Grievance redress mechanisms (GRMs) are a core component of managing project operational risk.

6 Baseline Data

6.1 Physical Aspects

6.1.1 General Climate of The Bahamas

The climate of The Bahamas is considered sub-tropical; it lies in a transition zone between the temperate and tropical zone. The archipelago spans 450 miles in longitudinal extent from 21°N to 27.5°N. The northern Bahamas experiences cooler winters and higher amounts of rainfall compared to the southern Bahamas, where annual temperatures deviate less, and the climate is markedly drier. The climate of The Bahamas is influenced by the sea, particularly, the Gulf Stream, which lies between Florida and the Great Bahama Bank.[4]

Grand Bahama and Abaco's vegetation, avian, faunal characteristics and biodiversity differs in life zones (pine forest, coppice, dune systems wetlands, lakes and ponds) from other islands north to south-southeast across the Bahamas. These differences are also seen on Grand Bahama as pine forest, cross - island creeks, wetlands and ponds have differing vegetation.

The Bahamas Department of Meteorology published a Means & Extreme Values of Climatic Elements 1991-2020 based on data collected at the Lynden Pindling International Airport, New Providence, The Bahamas. For New Providence, rainfall is highest between the months of May and November, with peaks during June and October.

Generally, prevailing winds are from the northeast, with a rotation to the southeast during the summer months, May to September. In winter, wind may shift to the northwest due to cold fronts emanating from North America. According to The Bahamas Department of Meteorology, the average wind speed is 8 knots.

6.1.2 Natural Hazards

6.1.2.1 Hurricanes

The Bahamas is situated in the hurricane zone. Hurricane season begins June 1 and ends November 30, although tropical cyclones may form outside this period. According to the coastal dataset of the NOAA Coastal Service Center, 109 tropical disturbances (tropical storms and hurricanes) have come within 60 nautical miles of Grand Bahama between 1852 and 2023 (Figure 7-7).[5] The most recent tropical disturbance being Hurricane Nicole in 2022 which passed over Grand Bahama as Category 1 storm.

Hurricane Dorian, one of the strongest hurricanes on record, made landfall at Elbow Cay, Abaco, in September 2019, with sustained winds of 160 knots.

4 Sealey, Neil E. Bahamian Landscapes. 3rd Edition. 2006

5 Hurricane history tracker and database can be found at this link: http://coast.noaa.gov/hurricanes/

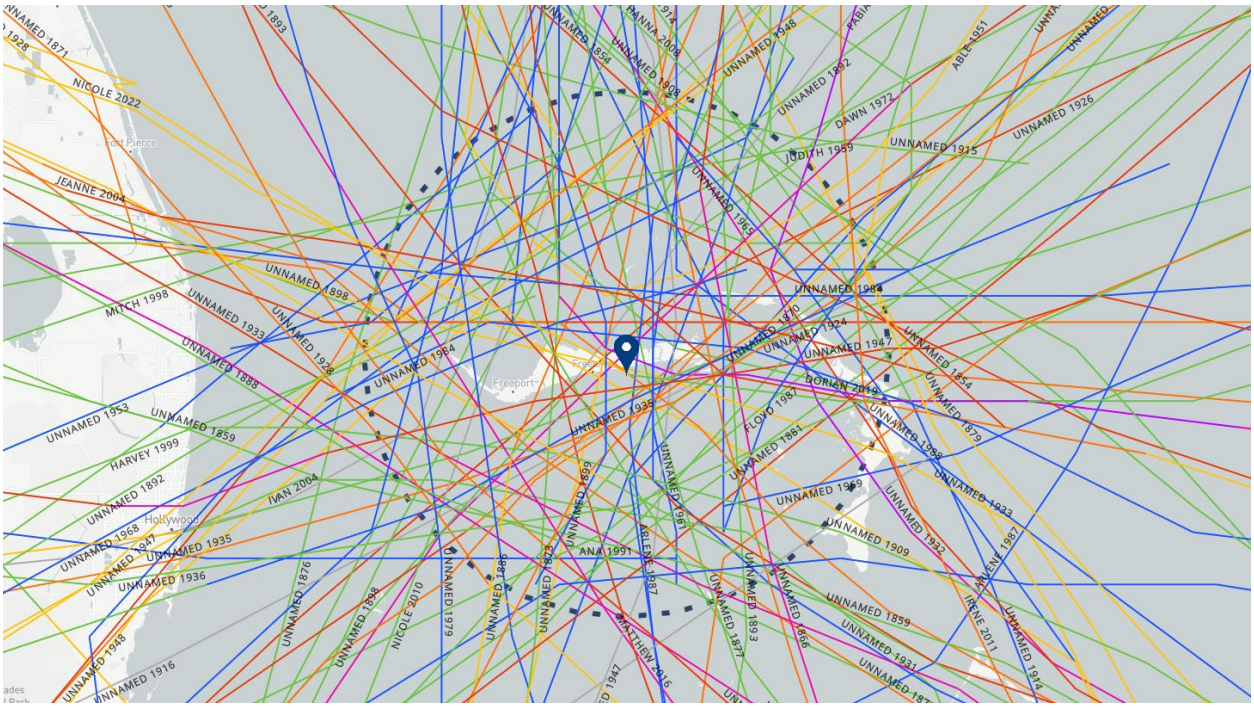


Figure 6-1 Hurricane Tracks, Grand Bahama

6.1.3 Geology & Soils

The surface geology of The Bahamas consists of large, relatively flat areas of marine deposited sediments and oolitic sands. Atop the deposited sediments and sands are ridges representing ancient shorelines and beach deposits with more elevated windblown and shaped dune ridges. Sediments of marsh origin mixed with beach sands are also observed. In sinkholes across the Bahamas Sahara dust (wind blown organic clays) accumulated over historical timescales mixed with leaves and other organic matter to form potholes characteristics of “pot hole” farming in sinkholes, across the Bahamas.

The Grand Bahama pine barrens, which comprise the largest portion of its land mass have humus (leaf and organic debris) derived soils of shallow depths of not more than two (2) to three (3) inches. The soils and debris are derived from bracken ferns, poison wood trees, other mixed coppice, hardwood shrubs, palmettos, pinecones and pine needles. This material occurs on the surface and in depressions and is often mixed with limestone fragments in the top few inches of soil. Occasionally, the humus profile thickens and may include brown mineral soils in larger depressions often containing saw grasses, algal mats , freshwater water plants and bullrushes. More evident along disturbed lands, Casuarinas and Brazilian Pepper trees are found which increases the leaf debris, particularly observed along roadways. Storm surges have also driven marine debris across land and can be observed along the Kings Highway, particularly on the verges of standing water behind the coastal dune system.

Figure 6-2 Pine Barrens, Project Site, East Grand Bahama

6.1.3.1 Geotechnical Site Investigations

Geotechnical investigations were performed by Engineering Technical Services (ETS). Existing soil conditions identify the natural and physical properties of soil, address construction concerns, and guide construction materials. Geotechnical site investigations took place between March 13th and March 17th, 2024. The Geotechnical Work Plan and Schedule are appended to this report.

6.1.4 Hydrogeological Resources

Grand Bahama geology is dominated by flat low-lying lands separated by creeks and wetlands which is capable of holding rainwater so that an extensive freshwater lens are encountered below the surface, floating on seawater to depths of over fifty feet below the surface. Extensive fractures in the rock have created caverns and sinkholes and blue holes found in the Lucayan National Park in eastern Grand Bahama. All Water, surface, below ground, seawater and freshwater are tidally linked. Ultimately groundwater discharges to the sea or into the atmosphere, naturally way of the extensive Grand Lucayan Waterway system, creeks and wetlands west of the project area. Extensive sea water flows driven by daily tidal changes into and through the subterrain system based on the tidal cycle.

Figure 6-3 Cross Island Creek System, View North to South on August Creek to the North of McLean's Town

Figure 6-4 East Grand Bahama Shoreline in Vicinity of Lucayan National Park, View to the East Showing Shoreline and Creek Systems towards Freetown and High Rock

6.1.4.1 Freshwater Resources

In The Bahamas, groundwater comprises the fresh, brackish, saline and hypersaline Water found in the near and deep subsurface and in the lakes and ponds that intercept the surface. The Bahamas has no fresh surface water and therefore, no freshwater lakes, rivers, or creeks.

Freshwater resources in The Bahamas originate from rainfall only and accumulate in Ghyben-Hertzberg lenses. The Ghyben-Hertzberg lens consists of three lateral zones: 1) freshwater where chloride ranges from 90 to 400 parts per million (ppm); 2) a transition zone (brackish), approximately 1 to 2 m thick where

chlorides increase rapidly from 400 to 1200 ppm; and 3) a saline zone where chlorides rise above 1,200 ppm. Freshwater is less dense than salt water, thus sits above the saline zone, separated by a brief mixing layer of brackish water.

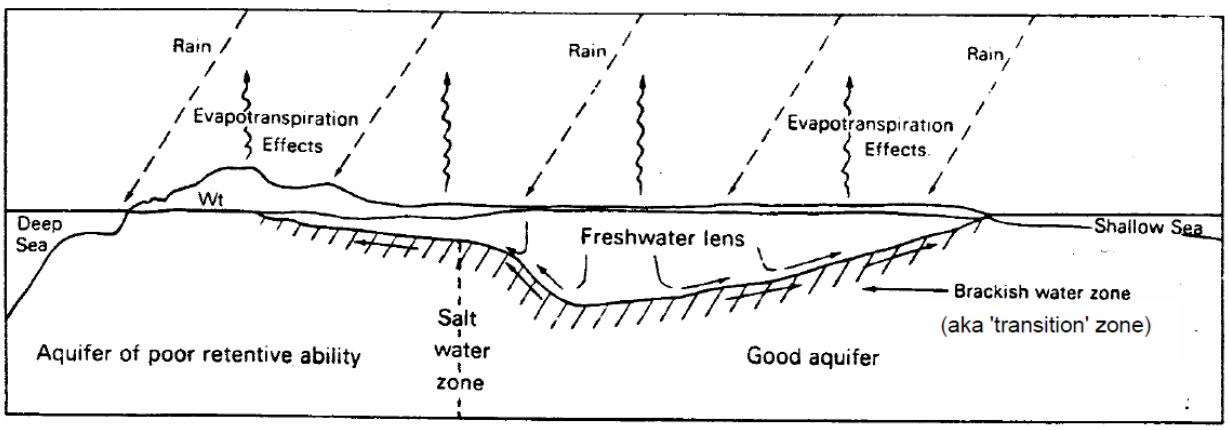


Figure 5. Schematic of Ghyben-Hertzberg Lens

Source: B. G. Little et al., *Land Resources of the Bahamas: A Summary*, Surrey, England: Land Resources Division, Ministry of Overseas Development, 1977, pp. 35.

Figure 6-5 Schematic of Gyhben-Hertzberg Lens

On average, the freshwater lens occurs at a depth of 2 to 5ft below the surface. Ninety percent of freshwater lens resources in The Bahamas are within 5 ft of the surface. Given the proximity of fresh water to the surface and the high porosity of limestone, over-extraction and pollution may lead to depletion, saltwater intrusion, and/or contamination, impairing the fragile layer of freshwater over salt. Threats to groundwater resources include the following.

- Saltwater Intrusion. Saltwater intrusion to groundwater may occur due to 1) storm surge generated by tropical disturbances; 2) sea level rise due to climate change; and 3) over-pumping/extraction of freshwater aquifers.
- Development/Building Features. Canals and marinas have the potential to disturb subsurface freshwater lens by allowing the sea to connect at the inland surface.
- Climate Change. Based on the United Nations Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report and the Coupled Model Intercomparison Project 5 (CMIP5), climate change will alter existing rainfall patterns in The Bahamas. Climatology data suggest that The Bahamas region will incur a 3 percent decrease in monthly rainfall averages, with an increase of intensity of rainfall events between October and February. Overall, total rainfall is expected to decrease, placing additional pressure on freshwater resources.
- Contamination. Groundwater is susceptible to contamination from untreated sewage, industrial wastes, and leaking fuels; this vulnerability is particularly true for New Providence. New Providence is the most populated island and has the highest population density.

6.1.5 *Topography*

Various sources describe Grand Bahama as a platform mostly low lying, with few ridges. The highest elevation is fifty (50) feet above sea level at Gold Rock Point. Most of the ridges are within two miles of the southern coast separated by north to south cross island creeks and to the south by marshes separated by coastal dunes along the south coast. Some 85 % of the elevated land is within 5 feet of mean sea level.

6.2 Existing & Previous Land Use

The proposed East Grand Bahama Project areas (Freetown, High Rock, McLean's Town and Sweeting's Cay) are classified ungranted Crown Lands and Pine Lands in official government publications. Extensive logging was undertaken in the 1950's by timber concessions across Grand Bahama. The area logged has a network of logging trails and fire breaks which are linked to the forest road running east to west, then north to the main shipping dock located at Riding Point (26°43'49.07"N 78° 9'45.04"W). An extensive network of logging trails crisscrosses the area providing access to sites in east Grand Bahama connected by the Kings Highway, along which overhead power supply lines run from west to east.

6.3 Biological Aspects

Generally, for Grand Bahama, its natural vegetation is dominated by pine trees, palms and coppice trees on the dryland which give way to dense evergreen coppice along the coastline in some places adapted to the sandy oolitic sands. Freshwater and saltwater marshes occupy the cross-island creeks and are found in marshes along the southern coast. Mangrove, Buttonwood and salt tolerant vegetation are predominantly found on the northern coast extending across the Little Bahama Bank to the Abaco Cays to the north and northwest, and eventually to the deep Water of the Northern Bahamas. Forest fires occur naturally in the dry season and form part of the system life cycle with nutrients being redistributed and the forest being thinned.

A total of thirty-four (34) different flora species were recorded on site five sites in East Grand Bahama. Of these, twenty-two (22) were native species, eight (8) were protected species, and four (4) were invasive species. Native biodiversity was densest in the coppice forest habitat found on site. Non-native and Invasive species were more prevalent towards the edge of the site areas, where land was cleared for homes and businesses and, the overhead transmission lines traverse the island from east to west.

6.3.1 *Methodology*

The vegetation species list used in this baseline assessment draws upon information from the Protected Tree Order 2021 under the purview of the Forestry Unit, The Bahamas National Trust (BNT) and also by the Levy Preserve in Eleuthera.

6.3.2 *Vegetation Communities*

Three eco-tones were observed:

- Pinelands, consisting of pine trees; containing palmettoes representing two species of palms thatch and top palmettoes, poison wood, vines and bracken ferns occur in the understory.

- Native coppice areas found on the coast associated with sandy soils and freshwater and brackish environment, subject to flooding in low laying areas; and,
- Humans altered communities, with a mix of native and imported fruit or ornamental trees.

6.3.2.1 Pinelands (Freetown & High Rock)

The Freetown a ten (10) acre site, and High Rock comprises two adjacent plots totaling twenty seven (27) acres. Freetown and High Rock are sited approximately one half a mile inland from the coastline on the northern side of Kings Highway. Elevations at both sites and approximately 7-15 feet above sea level to be verified by a surveyor. Pine trees, palm trees with the occasional coppice species are found on the two larger sites. It is evident that the passage of Hurricane Dorian resulted in total devastation of the pine trees as toppled trees were uprooted or the trunks twisted and snapped by hurricane force winds. The underbrush is littered with fallen mature pine trees, with the occasional younger saplings, most are less than five feet tall, in the palm understory.

The Bahamas pine forest is characterized by the presence of the Caribbean Pine (*Pinus caribaea var. bahamensis*). These pines are well-adapted to the limestone rock and soils and can withstand harsh conditions. The pine thrives in well-drained sandy soils, often in close proximity or above sources of fresh water. Caribbean Pine can be described as water intensive, and when found, it often indicates the presence of a healthy freshwater lens system nearby. While Caribbean Pines can tolerate fire, they are incapable of tolerating prolonged exposure to salt water. Apart from the dominant pines, the understory vegetation includes a mix of shrubs, grasses, and herbaceous plants adapted to a sandy substrate. Invasives were not observed within the native pine forest.

6.3.2.2 Coastal Pinelands (McLean's Town & Sweeting's Cay)

McLean's Town, and Sweeting's Cay are much smaller sites. Macleans Town site is smaller less than two acres of low-lying pine forest with freshwater sinkholes present. The elevation across the site is less than three feet above the creek to the east. Sweeting's Cay is a one (1) acre site of vacant Crown Land adjacent to the water supply system to the east of the mainland, and the pine forest was damaged by Hurricane Dorian but not destroyed. A thick coppice understory was found with a significant number of pine saplings three to five feet tall in the understory.

6.3.2.3 Coppice (Water Cay)

Water Cay is the smallest of the project sites with an area of less than one quarter of an acre, its well offshore to the north of the main landmass its ridge system runs north to south with a distinct rise across the cay from east to west with the project site on the western side of the ridge some 7 – 10 feet to be verified by a surveyor. (need to verify when drill rig is on the island) above the creek level to the west. Thick coppice was found with larger fig trees, mature gumelemme, and poison wood and vines in the understory. The evidence of Hurricane Dorian impact is not as prominent on Water Cay when compared to the four other project sites. but have different characteristics.

The coppice environment typically exhibits a layered vegetation structure. The tall, slender trunks of the palm trees rise above the lower other palm species, shrubs and herbaceous plants. Other vegetation

components may include broadleaf shrubs, grasses, ferns, and vines, as was observed. In a palm-dominated coppice environment, palm trees play a prominent role in the vegetation composition. Various species of palms, such as thesilver thatch palm(*Coccothrinax argentata*) and thethatch palm(*Leucothrinax morrisii*), dominate the coppice understory or form stands within the habitat observed.

The coppice environments tend to provide ecological services and habitats for various species. They also contribute to soil stabilization, water retention, and nutrient cycling. These habitats also support diverse wildlife, including birds, reptiles, and small mammals, which rely on the diverseplant species and structural complexity of the forest.

Palm-dominated coppice environments in the Bahamas have been traditionally and historically utilized by humans. The palm-based coppice has provided resources such as timber, thatch for roofing, and firewood. Additionally, the understory of the coppice may have been used for subsistence agriculture, grazing livestock, or other traditional practices.

It is important to note that the composition and characteristics of palm-dominated coppice environments can vary depending on specific locations, local environmental conditions, and the impacts of human activities, natural disturbances, and previous uses of the Cay/island.

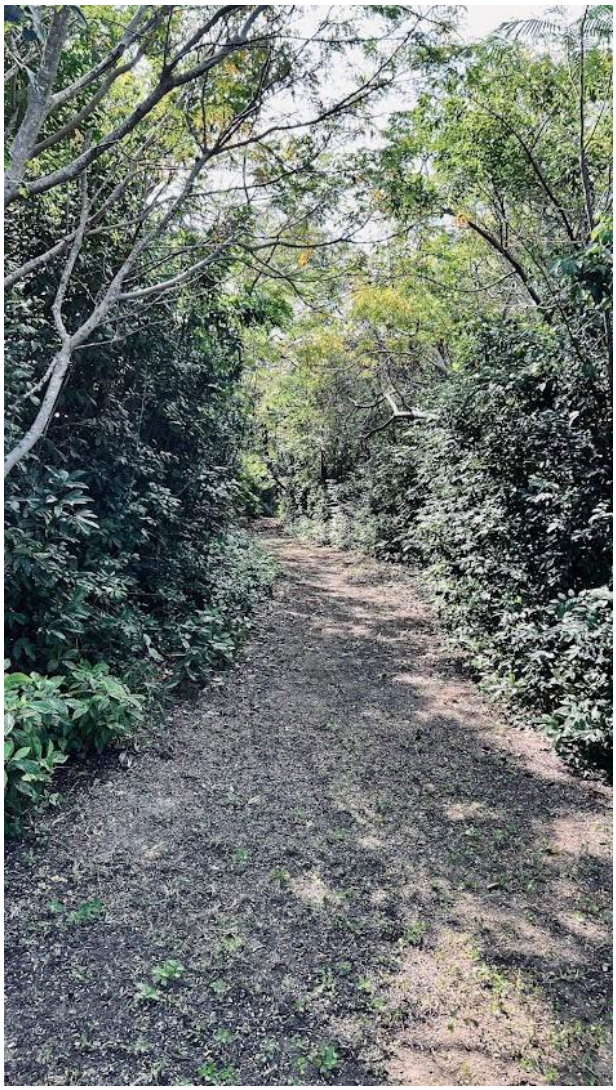


Figure 6-6 Water Cay, Coppice Vegetation Bordering a Path

6.3.2.4 Human Altered

A human-altered habitat refers to an environment that has been significantly modified or influenced by human activities. These alterations can range from subtle changes to complete transformations of natural landscapes.

6.3.3 Species Diversity

Water Cay exhibited most diverse site followed by Sweeting's Cay, both offshore communities. Bird calls were more common on the offshore cays. The creek system bordering Sweeting's Cay had a variety of seagulls, bobby and herons. Buzzards observed, finches in the understory and herons in the creek, bobby on way to Cay.

High Rock and Freetown were "typical" pine lands dominated pine trees which were significantly impacted by Dorian, the palm understory has recovered with mixed coppice comprising poison wood in the

understory. Only the occasional hardwood coppice tress were observed ground vines of various species grew along and across the old logging roads. Fish Hawk, Kestrel, buzzards seen.

#	Common Name	Scientific Name	Status
1	Bahama Century Plant	*Agave bahamana*	Protected
2	Maidenhair Anemia	*Anemia adiantifolia*	Native
3	Neem	*Azadirachta indica*	Native
4	Gammalamme	*Bursera simarouba*	Protected
5	Love Vine	*Cassytha filiformis*	Native
6	Australian Pine	*Casuarina equisetifolia*	Invasive
7	Coco Plum	*Chrysobalanus icaco*	Native
8	Satin leaf	*Chrysophyllum oliviforme*	Native
9	Silver Thatch Palm	*Coccothrinax argentata*	Protected
10	Pigeon Plum	*Coccoloba diversifolia*	Native
11	Bermuda Grass	*Cynodon dactylon*	Invasive
12	Golden creeper	*Ernodea littoralis*	Native
13	Butter Bough	*Exothea paniculata*	Native
14	Bahamas Hibiscus	*Hibiscus clypeatus*	Native
15	Morning Glory	*Ipomoea indica*	Protected
16	Jumbey	*Leucaena leucocephala*	Invasive
17	Thatch Palm	*Leucothrinax morrisii*	Protected
18	Wild Tamarind	*Lysiloma latisiliquum*	Native
19	Poison wood	*Metopium Toxiferum*	Native
20	Prickly Pear	*Opunita stricta*	Native
21	Caribbean Pine	*Pinus caribaea var. bahamensis*	Protected
22	Jamaican Dogwood	*Piscidia piscipula*	Native
23	Southern Bracken Fern	*Pteridium aquilinum*	Native
24	Wild Coffee	*Psychotria ligustrifolia*	Native
25	Sabal Palm	*Sabal Palmetto*	Protected
26	Saltwort	*Salsola soda*	Native
27	Bulrush	*Schoenoplectus robustus*	Native
28	White Scaevola / Hawaiian Scaevola	*Scaevola taccada*	Invasive
29	Canker berry	*Solanum bahamense*	Native
30	Mahagony	*Swietenia mahagonii*	Protected
31	Five Finger	*Tabebuia bahamensis*	Native

32	Ming tree	*Terminala spinsosa*	Native
33	Fig/ Almond tree	*Terminalia catappa*	Native
34	Wedelia	*Wedelia bahamensis*	Native

6.3.4 Invasive Species

Four (4) invasive species were found on site. The following recommendations were made in accordance with the "The Bahamas national invasive species strategy 2013." *Department of Marine Resources* (2013).

1. Australian Pine (*Casuarina equisetifolia*)
   - Distribution: On the edge of the project site, near the road.
   - Recommendation: Complete eradication & continued removal of seedlings that arise
2. Bermuda Grass (*Cynodon dactylon)*
   - Distribution: Predominately located across the path edge, and in areas of clear vegetation.
   - Recommendation: Monitor and Control
3. Jumbay *(Leucaena Leucocephala)*
   - Distribution: On the edge of the property
   - Recommendation: Control
4. White Scaevola / Hawaiian Scaevola (*Scaevola Taccada*)
   - Distribution: On the edge of the project site, near the road.
   - Recommendation: Complete eradication & continued removal of seedlings that arise .

6.3.5 Protected Species

Eight (8) protected species listed in the "Forestry Declaration of Protected Trees Order" *Ministry of the Environment and Housing* (2021) were found on-site. They are:

1. Bahama Century Plant (*Agave bahamana)*
   - Found in isolated pockets in very few areas across the site.
   - Will be replanted prior to any activities, commencing when and where identified within the project zone.
2. Gammalame (*Bursera simarouba*)
   - Found within the Coppice habitat, in very few select areas across the site.
   - All large individuals will be left in place, and smaller saplings to be replanted prior to any activities commencing when and where identified within the project zone.
3. Morning Glory (Ipomoea indica)
   - Found in pockets mainly on the edge of the road in random clusters.
   - Will be transplanted, where possible, with few select species to be harvested when relocation is not possible.
4. Silver Thatch Palm (*Coccothrinax argentata)*
   - Located within the understory, creating a palm dominated habitat.
   - Will be transplanted, where possible, with few select species to be harvested when relocation is not possible.
5. Thatch Palm (*Leucothrinax morrisii)*
   - Located within the understory, creating a palm dominated habitat.

- Will be transplanted where possible with few select species to be harvested when relocation is not possible.

6. Caribbean Pine *(Pinus caribaea var. bahamensis)*
   - Found across the site.
   - All tree saplings under four (4) feet will be relocated. All Larger tree species exhibited a high mortality rate from Hurricane Dorian (estimated at 99%+)
7. Sabal Palm (*Sabal Palmetto)*
   - Sporadically located within the understory
   - Will be transplanted, where possible, with a few select species to be harvested when relocation is not possible.
8. Mahogany (*Swietenia mahagonii)*
   - Found within the Coppice habitat, in very few select areas across the site.
   - All large individuals will be left in place, and smaller saplings replanted, prior to any activities commencing, when and where identified within the project zone.

6.3.6 *Protected Tree Survey*

The Forestry Act Declaration of Protected Trees Order 2021 lists 127 vascular plant species as protected. Eighty-six species are listed as endemic or endangered or threatened and 41 are listed as cultural or historical and economic.

A total of 8 protected species were recorded on the site, including endemic or endangered or threatened and cultural or historical and economic.

6.3.6.1 Method Statement

The methodology outlined in the Terms of Reference for the survey on Grand Bahama required data being collected by walking methodically along survey paths, followed by random sample points and points of further interest throughout the entire proposed project site. A drone was used to identify and map variations in vegetation cover and differences in vegetation classes. Special attention was given to areas of interest and vegetation types were then confirmed by walking along existing trails. All vegetation within visual range of ten (10) feet was recorded. Each vegetation type's vascular plant species was recorded and used to create a floral list.

Methodology used by the Forestry Unit for plant counts was utilized for the project sites. Drone images were used extensively along with observations from the site survey, undertaken in February 2024, to complete the table below. Drone photography was also used to further identify the more representative locations to allow a more detailed analysis of the site. The Point Centered (PCQ) Quarter Method was used to identify and focus on vegetation types and herbaceous plants of significant cultural and or ecological importance. Where possible, observations in the Lucayan National Park and other surveys were also examined to allow comments on changes observed over time.

6.3.6.2 Point-Centered Quarter (PCQ Method)

A survey of plant biodiversity using the Point-Centered Quarter (PCQ) method, on the recommendation of the Forestry Unit, was completed in February 2024. The Department of Forestry deems it to be an effective and rapid method to gather information on density, frequency, and coverage of plant species found in forest environments. This method was utilized to study the vegetation at the sites in more detail.

Information collected, utilizing the PCQ method, provided an estimate of the number of individual trees encountered, how often a certain tree occur sand how common the tree is compared to other trees. Compared to the standard plot analysis, the Point-Centered Quarter method is more efficient.

A representative tree count was calculated by using a fixed-area plot sampling of 10 meters (33 feet) in a full 360-degree view with a portion of the total area of the forest examined. From this subplot, density was determined by counting and identifying each tree.

The ratio between the size of the subplot and the overall forest size is then used to determine the density for the entire site.

6.3.6.3 Protected Tree Survey By Location

See Next page.

6.3.6.4 Freetown

The average number of all vegetation species across the project site was obtained utilizing an estimated area count based on data sourced from the site. This is a representation of the botanical diversity typical of the vegetation types observed in the understory species of the area.

Plants average count For Freetown		
Common Name	***Scientific Name***	**Numbers Identified**
Bahama Century Plant	*Agave bahamana*	5
Gammalame	*Bursera simarouba*	10
Silver Thatch Palm	*Coccothrinax argentata*	40
Thatch palm	*Leucothrinax morrisii*	35
Caribbean Pine	*Pinus caribaea var. bahamensis*	15
Mahagony	*Swietenia mahagonii*	2

Figure 6-7 Vegetation in the vicinity of the proposed Freetown Microgrid system, view to the north

6.3.6.5 High Rock

The average number of all vegetation species, across the project site, was obtained utilizing an estimated area count based on data sourced from the site. This is a representation of the botanical diversity typical of the vegetation types observed in the understory species of the area.

Plants average count for High Rocks		
Common Name	***Scientific Name***	**Numbers Identified**
Bahama Century Plant	*Agave bahamana*	2
Gammalame	*Bursera simarouba*	5
Silver Thatch Palm	*Coccothrinax argentata*	45
Thatch palm	*Leucothrinax morrisii*	45
Caribbean Pine	*Pinus caribaea var. bahamensis*	10
Mahagony	Swietenia mahagonii	1

Figure 6-8 Vegetation showing Pinelands in the Proposed High Rock Microgrid Site, view to the south

6.3.6.6 McLean's Town

The average number of all vegetation species, across the project site, was obtained utilizing an estimated area count based on data sourced from the site. This is representative of the botanical diversity typical of the vegetation types observed in the understory species of the area.

Plant average count for McLean's Town		
Common Name	***Scientific Name***	**Numbers Identified**
Gammalame	*Bursera simarouba*	3
Silver Thatch Palm	*Coccothrinax argentata*	10
Thatch palm	*Leucothrinax morrisii*	10
Morning Glory	*Ipomoea indica*	10
Caribbean Pine	*Pinus caribaea var. bahamensis*	10

Figure 6-9 McLean's Town Proposed Microgrid Site Showing Ground Vegetation, View to the east from the road

6.3.6.7 Sweeting's Cay

The average number of all vegetation species across the project site was obtained utilizing an estimated area count based on data sourced from the site. This is representative of the botanical diversity typical of the vegetation types observed in the understory species of the area.

Plants average count for Sweeting's Cay		
Common Name	***Scientific Name***	**Numbers Identified**
Bahama Century Plant	*Agave bahamana*	2
Gammalame	*Bursera simarouba*	5
Silver Thatch Palm	*Coccothrinax argentata*	45
Thatch palm	*Leucothrinax morrisii*	45
Morning Glory	*Ipomoea indica*	10
Caribbean Pine	*Pinus caribaea var. bahamensis*	10
Mahagony	Swietenia mahagonii	1

Figure 6-10 Sweeting's Cay Proposed Microgrid Site Showing Understory of Pine Trees, Palmettos with Overgrowth of Love Vine

6.3.6.8 Water Cay

Across the project site, the average number of all vegetation species was obtained utilizing an estimated area count based on data sourced from the site. This can be a representation of the botanical diversity typical of the vegetation types observed in the understory species that was observed in the area.

Plants average count on the Water Cay		
Common Name	***Scientific Name***	**Numbers Identified**
Gammalame	*Bursera simarouba*	45
Silver Thatch Palm	*Coccothrinax argentata*	5
Small Leaf Blolly	*Guapira discolor*	10
Thatch palm	*Leucothrinax morrisii*	5
Morning Glory	*Ipomoea indica*	10
Mahagony	*Swietenia mahagonii*	5

Figure 6-11 Water Cay - View of Vegetation on the Shoreline to the North at the Site of the Destroyed Bonefish Lodge

6.3.7 *Botanical Summary*

Freetown, High Rocks, McLean's Town and Sweeting's Cay are "typical" pine lands with the upper canopy dominated by pine tree while palmettos, poison wood and bracken ferns, with various species of vines grew along and across the old logging roads found in the palm understory (ground level to 15 feet).

Mature pine trees were significantly impacted by Dorian and only the occasional pine tree less than 10 feet high was seen in isolated patches from Freetown to Sweeting Cay. Mixed coppice species dominated by palms and poison wood were observed to be recovering in the pine land understory and the occasional hardwood coppice tress was observed among the ground vines.

The pine Forests are dominated by destroyed mature native Pine Trees with 100% mortality of the pine trees found. Pine trees had been sheared off from their root systems and tree trunks twisted from cyclonic winds were commonly observed across the sites. The understory of Poison Wood, Sable and Pond Palm trees and vines, had a significant volume of leaf litter, tree debris, pinecones and needles. Limestone rubble from uprooted Pine tree root systems partially blocked access to the path. The risk of fire based on the volume of litter is considered significant.

Figure 6-12 Pine tree destroyed in Hurricane Dorian

McLean's' Town was less severely impacted was where the native pine and stunted mixed hardwood habitat, as the mature trees were fewer in number. The elevation relative to sea level and proximity to the cross-island creeks appear to have moderated the hurricane's intensity, however, evidence of seawater

inundation was found on the site. Additionally, the presence of depressions containing fresh and salt water tolerant plants were more common. The understory of Poison Wood, Palms and other species was significantly shorter in height and debris from vegetation was found, but not in the same density.

Sweeting's Cay has a distinctly different community of plants consisting of native pine and mixed slow growing hardwood trees habitat. The area adjacent to the Water and Sewerage (WSC) water supply system was largely undisturbed except for access tracks used by surveyors. Pine trees were destroyed but the number of trees was lower, approximately 30%, and the mixed slow growing hardwood trees had recovered, and vines made passage through the clear survey lines difficult. Tree litter was more dense and juvenile pine trees less than five feet tall were more frequently encountered. The site is on the west side of a small hill and was partially sheltered by the raised water storage tanks to the east.

Water Cay's habitat and insect community, based on observations, is distinctly different from other sites. No Pine trees were observed on the elevated raised platform or within the thirty acres (30) acres which comprise the settlement. Straggler Fig trees dominated the area, and covered abandoned wooden homes, undermined concrete structures and were mixed into a dense hardwood community of Gammalame, Poison wood and Buttonwood trees. The tree canopy was in excess of twenty-five (25) feet and covered large sections of the overhead power lines, shaded the concrete roadway and encroached to within five feet of all walkways. The west side, a lower elevation, transitioned form a mixed hardwood, into fringing Buttonwoods and an extensive mangrove and wetland system. Numerous bird calls were heard and an occasional small bird, primarily Warblers, was found.

6.4 Wildlife Assessment

This wildlife assessment is limited to a desktop review of work undertaken after Hurricane Dorian (2019), Reptiles, birds, snails and other species which inhabit the pine and native coppice communities have coping mechanisms of either evading hurricane, retreating or sheltering to minimize impact, returning as the native systems regenerate over time.

"The State of the Environment" Bahamas National Trust Report[11] remains the most comprehensive assessment available and relevant to the Grand Bahama project sites. The report is extensive as it covers hurricane damage to the entire Little Bahama Bank with the islands of Abaco and Grand Bahama being its principal focus. Generic observations made by the State of the Environment Report apply to the project sites as the wildlife and terrestrial communities are similar. The extent of the damage was widespread and devastating to human life and livelihoods, animal life and the environment.

BNT survey methodologies related to Hurricane Dorian's impacts on birds and forests, as outlined in the report, is based on field observations made in a small window of work in February 2020. The overarching conclusion presented is:

"A significant portion of the Pine Forests --- were catastrophically damaged during the hurricane, with implications for bird species that depend on these habitats."

After the hurricane, the International Union of Conservation of Nature (IUCN) declared The Bahama Warbler (*Setophaga avescens*) as endangered due to habitat loss, as it lives solely in Bahamian pine forests and its complete disappearance from the island of Grand Bahama (Bird Life International, 2020).

ETS's field (initial) survey of the project areas in February 2024, supports this general observation. However, recovery for the five project sites is evident, though at differing rates, subsequent to BNT's 2020 assessment.

Native vegetation which provides protection, food and shelter for seasonal migrations and foraging birds, insects and reptiles is the principal driver of the avifaunal diversity in and across all the project sites. Commonly available and identifiable sources of food for birds included, but was not limited to, berries and seeds from fruit bearing trees such as Gammalamme, Poison Wood, Pigeon Plum, Casuarina and pinecones on Native Pine trees.

Flowering plants, shrubs and bushes support the insects, reptiles and invertebrates such as bees, wasps and lizards, observed during the survey. Large scavengers and Turkey Buzzards, feeding on dead birds, and a Kestrel, and one large Fish Hawk overflying were observed. Pelicans, Boobies, Herons, and various species of Seagulls were encountered in passages into the creeks and or across the sea on the way to Water Cay and Sweeting's Cays.

6.4.1 Avian Assessment

An avian survey was conducted in February 2024 to identify the presence, abundance, and habitat utilization of avian species in the project sites and generally across the East Grand Bahama landscapes. Surveys were conducted in the project areas of Freetown, High Rocks, McLean's Town, Sweeting's and Water Cay to identify the presence, abundance, and habitat utilization of avian species within the sites. The survey area covered all project areas. The creeks between McLean's Town to Sweeting's Cay and the waterway to Water Cay were also surveyed by boat.

The avifauna of the area was also assessed in walking transects along the boundaries of the sites and within the site, when possible. Particular attention to the coppice habitat and pine forest was also given to bird calls, however the transects and area searches were restricted due to a lack of accessibility with some areas proving to be impenetrable, due to the vegetation. All species recorded were compiled in an effort to produce an estimate of all observed birds. The presence of bird droppings was also noted on Water Cay as it was considered unusual.

During the observation, species were observed mainly in the interior of the pine habitat and beginnings of the coppice habitat, with the coppice area being the densest vegetation in the area and providing the best shade cover and potential food source. It is worth mentioning that conducting thorough surveys in this area was very challenging due to the uneven terrain located throughout the coppice forest area and thick vegetation.

Several species migrate to The Bahamas specifically to breed, and many species of resident birds reproduce around the time this survey was conducted. There were no signs of bird nesting, or breeding activity during the survey, with no active or nesting sites observed on site.

6.4.2 Method Statement

An avian observation was conducted in February 2024. The avifauna of the area was assessed and recorded by conducting area searches and walking transects along the site, with particular attention spent in the

palm- dominated coppice habitat and pine forest. Transects and area searches were restricted due to accessibility, with some areas also proving to be impenetrable, due to the vegetation. However, all species recorded were compiled for final abundance estimates.

6.4.3 *Avifaunal Diversity*

The range of a species is the geographic areas where the birds can be consistently found e.g., migrant birds have seasonal ranges while restricted range species remain on the same island or in same region year-round.

A total of Twelve (12) avian species were recorded during the surveys. The total count of species recorded is shown in the table below. A separate table is included for Water Cay to show differences in the numbers found, across the areas.

Table: Species observed in all surveyed areas for the project zone.

Common name	***Scientific name***	**Total number**	**Range** See key below table
Aves	***Pelecanidae***		
Brown Pelican	*Pelecanus occidentalis*	2	BPR
Cathartes	***Cathartidae***		
Turkey Vulture	*Cathartes Aura*	12	BPR
Cuckoos	***Cuculiformes***		
Smooth-billed Ani	*Crotophaga ani*	6	BPR
Pandion			
Osprey	*Pandion haliaetus*	2	BPR
Perching Birds	***Passeriformes***		
Bananaquit	*Coereba flaveola bahamensis*	2	BPR, ESS
Common Yellow Throat	*Geothlypis trichas*	5	BPR
Northern Mockingbird	*Mimus polyglottos*	2	BPR
American Redstart	*Setophaga ruticilla*		BPR
European Starling	*Sturnus vulgaris*	3	BPR
Pigeons, Doves	***Columbiformes***		
Common Ground Dove	*Columbina passerina*	8	BPR
Eurasian Collared Dove	*Streptopelia decaocto*	4	BPR
Mourning Dove	*Zenaida macroura*	2	BPR

Table Key:

Range Status

BPR = Breeding Permanent Resident, **BSR =** Breeding Summer Resident, **NWR =** Non-Breeding Winter Resident, **ES =**

Endemic species, **ESS** = Endemic subspecies, **TS =** Transient, **INT =** Introduced

6.4.3.1 Water Cay-Avian Species Observed

Common name	*Scientific name*	Total number	Range See key below table
Cathartes	***Cathartidae***		
Turkey Vulture	*Cathartes Aura*	6	BPR
Caprimulgiformes	***Caprimulgidae***		
Antillean Nighthawk	*Chordeiles gundlachii*	4	BPR
Cuckoos	***Cuculiformes***		
Smooth-billed Ani	*Crotophaga ani*	2	BPR
Aves	***Leuconotopicus***		
Hairy Woodpecker	*Leuconotopicus villosus*	3	BPR
Pandion	***Pandionidae***		
American Kestrel	*Falco sparverius*	5	BPR
Osprey	*Pandion haliaetus*	4	BPR
Perching Birds	***Passeriformes***		
Bananaquit	*Coereba flaveola bahamensis*	1	BPR, ESS
Common Yellow Throat	*Geothlypis trichas*	3	BPR
Northern Mockingbird	*Mimus polyglottos*	1	BPR
Cuban Emerald	*Riccordia ricordii*	2	BPR
La Sagra's flycatcher	*Myiarchus sagrae*	6	BPR
American redstart	*Setophaga ruticilla*	2	BPR
Pigeons, Doves	***Columbiformes***		
Common Ground Dove	*Columbina passerina*	8	BPR
Mourning Dove	*Zenaida macroura*	2	BPR

Table Key:

Range Status

BPR = Breeding Permanent Resident, **BSR =** Breeding Summer Resident**, NWR =** Non-Breeding Winter Resident, **ES =**

Endemic species, **ESS** = Endemic subspecies, **TS =** Transient, **INT =** Introduced

6.4.4 Habitat Utilization

Species were observed mainly in the interior of the pine habitat and beginnings of the palm coppice habitat, with the coppice area being the densest vegetation in the area and providing the best shade cover and potential food source. It is worth mentioning that conducting thorough surveys in this area was very challenging due to the uneven terrain and thick vegetation located throughout the coppice forest area.

7 Socio-Economic Overview

The Heritage Partners prepared a Social Impact Assessment with a summary of the report and their findings provided in this section; a full copy of the report is provided in the appendix.

7.1 General Economic Overview

Post-COVID 19, The Bahamas economy rebounded 2022 to reach real GDP of 14.4% and unemployment fell to 8.8%[6]. However labour force participation, particularly among men, remained below pre-pandemic levels. In 2023, international flight and cruise arrivals rose well above their pre-pandemic levels leading to a projected 4.3% expansion in the year. After peaking at 7.1% in July 2022, inflation has fallen steadily to 2.3% in July 2023, largely driven by the fall in global energy prices[7].

Socio-Economic Indicators –Bahamas[8][9]	
Parameter	Value
Population, 2019	381,000
GDP (US $ millions), 2019	13,579
GDP per capita (US$), 2019	35,664
Life Expectancy at Birth, 2019	73.6
Adult Literacy Rate, 15 and up, 2007	96%
Poverty Rate, 2013	12.8%
Unemployment Rate, May 2019	9.5%
Infant Mortality Rate (per 1,000 live births), 2018	8.3
Human Development Index (rank), 2019	60

Table 7-1 Socio-Economic Indicators, Bahamas

7.1.1 Area of Influence

The Area of Direct Influence) ADI primarily includes the Project sites as well as the communities comprising Eastern Grand Bahama, where Project infrastructure will have an impact. The ADI is considered as the area that could be directly impacted; however, the Project would also have implications for employment, the economy, planning, and service provision in Grand Bahama

[6] Mission Concluding Statement. Bahamas: Staff Concluding Statement of 2023 Article IV Mission. November 27, 2023. IMF. Bahamas: Staff Concluding Statement of the 2023 Article IV Mission (imf.org)

[7] Ibid.

8 Adapted from IMF, The Bahamas – *Request for Purchase Under the Rapid Financing Instrument – Press Release; Staff Report; and Statement by the Executive Director for The Bahamas.* Country Report No. 20/191. June 2020 https://www.imf.org/en/Publications/CR/Issues/2020/06/04/The-Bahamas-Request-for-Purchase-under-the-Rapid-Financing-Instrument-Press-Release-Staff-49489

9 Adapted from IMF, The Bahamas – *IMF Executive Board Concludes 2020 Article IV Consultation with The Bahamas. Press Release:* No. 21/23. January 26, 2021

Island as a whole. Therefore, the entire Grand Bahama Island will be considered the Area of Indirect Influence (AII).

Grand Bahama is generally considered to be divided into three sections: East End, West End, and Freeport/Lucaya. East End is inclusive of the Project sites, as well as other settlements such as Gambier Point, Pelican Point, Bevans Town, Thomas Town, Rocky Creek, and Deep Water Cay (which had a fishing lodge and has its own airstrip). Two of the Project sites - Sweeting's Cay and Water Cay - are off the mainland of Grand Bahama.

7.1.2 Demographic Profile

The Bahamas has a population of 399,314 persons, of which 74% reside on New Providence. According to the preliminary Census count for 2022, between 2010 and 2022, the population of The Bahamas increased by 13.6% (or 47,853 person), an annual growth rate of 1.1%. This growth rate is lower than previous intercensal increases which peaked in 1963 at 4.4% average annual growth[10].

Of this, Grand Bahama has a population of 47,475 persons representing 11.89% of the total population of The Bahamas. Between 2010 and 2022 Grand Bahama's population decreased by -7.58%.

Comparatively, 296,522 persons reside on New Providence, the most populated island of The Bahamas. Collectively, New Providence, Grand Bahama, and Abaco represent 90 percent of the population. New Providence is the most densely populated island, with a population density of 3,707 persons per square mile an increase of 20.4% over 2010 figures versus Grand Bahama with 90 persons per square mile.

Key Demographic and Social Indicators – Grand Bahama 2010 versus 2022 Census			
Parameter	2010	2022	% Change
Population	51,368	47,475	-7.58%
Male	24,996	22,892	-8.42%
Female	26,372	24,583	-6.78%
% Total Bahamas Population	14.62%	11.89%	
Population Density			
Area (Square Miles)	530 sq mi		
Population Density/Square Mile	97	90	-7%
Households		Households	
Total Number of Households	15,140	17,820	
Average Household Size	3.39	2.66	

[10] Bahamas National Statistical Institute. Census Office. Census of Population and Housing: CENSUS 2022. *Preliminary results.* April 2023.

Table 7-2 Key Demographic and Social Indicators, 2010 vs. 2022 Census

For Grand Bahama the island supervisory district, total population, male and female, number of households and average household size is presented in the Table below from the 2022 report.

Island/Supervisory District	Total	Male	Female	Households	Average Household size
Grand Bahama	47,475	22,892	24,583	17,820	2.66
West Grand Bahama	5,960	2,874	3,086	2,170	2.75
Central Grand Bahama	11,497	5,543	5,953	4,354	2.64
Pineridge	8,081	3,897	4,185	2,871	2.81
Marco City	10,526	5,076	5,451	3,813	2.76
East Grand Bahama	11,411	5,502	5,909	4,612	2.47

Table 7-3 Population by City, Grand Bahama

The Project sites are located in the following communities and will collectively be referred to as the 'target communities' in this ESIA.

- High Rock, Grand Bahama
- Free Town, Grand Bahama
- McLean's Town
- Sweeting's Cay
- Water Cay

7.2 Grand Bahama's Recent History & Land Use[11]

The 1950s witnessed a transformative era for Grand Bahama, which was largely pioneered by American investor Wallace Groves and later by British financier Sir Charles Hayward. Groves negotiated with the Bahamian government for the signing of the Hawksbill Creek Agreement (the "Agreement") in 1955, by which the Grand Bahama Port Authority (the GBPA) was founded. The Agreement created the "Port Area" of Grand Bahama, and led to the establishment of Freeport, a free-trade zone designed to stimulate economic activities and attract international investment.

The GBPA was mandated responsibility for, *inter alia,* the development, administration, management, and provision of services within the Freeport area, as well as for nurturing and regulating all commercial and residential development within Freeport. Under the Agreement, the GBPA is not required to pay any income, real estate, or capital gains taxes.

[11] The Heritage Partners. Social Impact Assessment. East Grand Bahama Microgrid Project. March 2024

The GBPA played a pivotal role in developing Freeport as a center for trade, commerce, and tourism. From the 1950s onward, the island experienced rapid economic growth, driven by the development of industries, infrastructure, and a surge in tourism. Beginning in the 1960s, Freeport became known as "the Magic City", a really exciting place to be. "Freeport was a boomtown with nightclubs jammed to capacity nightly and some restaurants remaining open all night." *(Bahamas Chronicle)*

There was significant movement in the western section of Grand Bahama as well - the official capital of the island is in fact West End (not Freeport as many believe), and resort tourist development began there before it did in Freeport.

7.2.1 'East End'

The easternmost settlements of the island of Grand Bahama, known collectively as East End, did not experience the large-scale, fast-paced development and economic expansion that took place in the rest of the island during the mid-20th century. Instead, the communities seemed to continue at the sleepy pace that characterized development in much of the Family Islands of The Bahamas at that time.

That is not to say that no development has occurred - in the 1950s the United States Air Force established a tracking station for guided missiles on a 3,500 acre site near the High Rock settlement. The station was one of several situated in The Bahamas, and provided launch support up until the late 1980s. Up to 300 persons were employed at the station, including Bahamian women (mostly as housekeepers) (*Grand Bahama Museum*).

In 2005, several decades after the station was decommissioned, the Bahamas government entered into a Heads of Agreement with Gold Rock Creek Enterprises, to lease the site of the missile station and build a $76 million dollar, state-of-the-art recording and film production studio there, that was intended to include a theme park, hotel, and retail stores (*Bahamas Weekly*). Filming for two major Hollywood productions took place at the Bahamas Film Studios, which later became entangled in protracted legal battles, leading the Bahamas government to take steps to reclaim the property (*Jones Bahamas*).

Aside from these developments, East End has maintained its reputation as a collection of sparsely populated, scenic, and quaint fishing villages.

7.2.2 Grand Bahama Today

Despite its initial success, Grand Bahama has faced a lot of challenges and what was once the Magic City became just a memory - a memory that many still hold on to for hope. The expiration of tax incentives and a shifting global economic landscape, coupled with limited diversification efforts, have contributed to the decline of some key industries, leading to business closures and a contraction in economic activity. Factors such as the global financial crisis of 2008 as well as natural disasters such as hurricanes, have further compounded the economic woes of the island, resulting in persistent stagnation.

7.3 Labour Force & Economic Activities

In May 2023, the Bahamas National Statistical Institute conducted its first labour force survey since November 2019. This labour force survey included New Providence, Grand Bahama, Abaco, North

Eleuthera, Long Island, and San Salvador[12]. As of May 2023, the total labour force stood at 219,465 persons with a gender distribution of 54% being women and 46% men[13]. The Employed Labour Forced stood at 200,175 persons with 61% engaged in the private sector and 21% were government employees. Unemployment at the national levels stood at 8.8% with 19,290 persons unemployed. Regarding educational attainment, 55% of the labour force completed secondary school, 26% completed university, and 4% had schooling only to the primary school level, or none at all.

61% of the employed labour force (recorded as 200,175 persons) were engaged in the private sector, and 21% were government employees. The "hotel and restaurant" industrial group accounted for 17% of employed persons, and the "community, social and personal service" industrial group (including the public service, police service and domestic service) accounted for 39% of the workforce. The percentage of self-employed workers (with and without employees) was 16% for Grand Bahama.

There were 19,290 unemployed persons in The Bahamas, resulting in a national unemployment rate of 8.8%. In Grand Bahama, the unemployment rate was 10.8%. More men were unemployed than women (9.1% vs 8.5% respectively).

The number of discouraged workers (defined by the ILO as "persons without work and are available for work, yet were not actively seeking work because they are not hopeful about their prospects of finding work") in the country was recorded as 2,035, and 200 for Grand Bahama (*NSI*).

7.3.1 Income

The Bahamas is typically assessed as a "high-income economy" - according to data released by the World Bank, the GDP (per capita), or income level for The Bahamas for the year 2022 was $31,458.30. In that same year, the country ranked 55 out of 191 countries on the UNDP's Human Development Index (HDI) with an HDI of 0.812, and is considered a "high-developed country" by this standard.

However, according to the International Monetary Fund, The Bahamas is considered a "developing country". A developing country is defined as one whose standard of living, income economic and industrial development remain more or less below average.

In 2013, the NSI conducted a Household Expenditure Survey, which sought to provide a comprehensive analysis of the socioeconomic conditions under which the people of The Bahamas live. The last time such a survey was conducted was in 2001.

This 2013 Survey found that at the time of the survey 12.5% of the population of The Bahamas lived in poverty conditions (up from 9.3% in 2001) and that the poverty rate was significantly higher in the Family Islands (17.2%). In Grand Bahama, the poverty rate was 9.4%.

7.4 Target Community Profiles

[12] Bahamas National Statistical Institute. Press Release: Preliminary Results Labour Force Survey. May 2023.
[13] Ibid.

The following target community profiles describe in brief the 5 settlements where the Project sites are located. Demographic and other pertinent information for each community is provided, along with the salient history and heritage of each community. These profiles were largely informed by the information provided to us by survey respondents, and were corroborated through a comprehensive primary and secondary source data analysis. Stakeholder voices play a central role in the engagement process; through the sharing of their experiences, concerns, and visions for the future, we are provided with valuable context and nuance that informs the profile.

7.4.1 Water Cay

Water Cay is a cay located off mainland Grand Bahama, to the east of the island. Because the waters around the cay are so shallow, it can only be safely accessed by boat during high tide - travelling to mainland Grand Bahama during low tide can take over 2 hours (as opposed to some 40 minutes during high tide), and may result in running aground and getting left "high and dry".

Once a vibrant, close-knit community, and considered by some (mostly its former residents) to be the "heart of East Grand Bahama", Water Cay now stands as a testament to the challenges faced by small island developing states in the wake of climate change.

7.4.1.1 History

Water Cay is thought to have earned its name due to the abundance of freshwater sources that can be found there. In 1949, Water Cay was a prominent settlement in Grand Bahama, with a population of 248 (the 4th most populous community in Grand Bahama at the time, and the most populous in East Grand Bahama) (*Grand Bahama Museum*). It is thought that Water Cay was first settled in the 1800s by a number of "shareholding families" from elsewhere in Grand Bahama and the archipelago, who purchased the landmass from the Bahamas government, and moved there to seek shelter from storms. By some accounts, however, evidence of human settlement on Water Cay dates back to the 1600s[14].

7.4.1.2 Demographic Overview

Currently, there are only two full-time residents remaining on Water Cay, a Bahamian couple in their 60s. Population decline is reported as being continuous in the preceding decades - residents and Water Cay descendants with whom we spoke report that in the 1960s the residents of Water Cay numbered in the hundreds, but by the 1980s the population was less than 50.

[14] We were informed by one of the two remaining Water Cay residents that at one time, there was a tombstone on the Cay that dated back to the 1600s (it has apparently been taken from the island). Said resident also spoke of a number of cemeteries on the Cay that were on the island before the arrival of the shareholding families, as well as cotton mills where cotton was raised and spun.

Prior to Hurricane Dorian, Water Cay was home to a small community of around ten residents, who were primarily older individuals who had spent all their lives in Water Cay. Extreme weather events (Hurricane Matthew in 2016 and then Hurricane Dorian in 2019) inflicted tremendous damage to homes, infrastructure, and community on the cay, which prompted an exodus of the remaining residents in search of safety and stability.

Residents and descendants of Water Cay are primarily of African descent. Prior to the stark population decline which resulted from Hurricane Dorian, the full-time residents of the island were primarily women and children - as one resident told us, “while the men left the Cay to go to Freeport for work, it was the mothers and grandmothers that sustained the Cay. They were the ones to take care of the children and made sure that they went to school and went into the field.” Through a lens of social analysis, it becomes evident that women played a pivotal role in sustaining daily life and maintaining community on the Cay.

7.4.1.3 Economic Landscape

Historically, Water Cay's economy revolved around agriculture, fishing, and trade. Crops such as corn, potatoes, watermelons, bananas, grapefruits, oranges and various fruits were grown on the Cay and exported to mainland Grand Bahama and to other islands, while the fishing industry flourished. Water Cay descendants with whom we spoke told us that in the past, the cay was referred to as "Little Egypt" by its residents, due to its fertile soil, abundant freshwater sources, and thriving fishing grounds.

Aside from fishing and farming, residents report that the only other source of employment on the island was with the Bahamas government (e.g. custodians at the school and government offices, operator at the telecommunications company).

A number of factors seem to have brought about economic challenges for Water Cay. In the mid-20th century, communities across The Bahamas experienced a decline in traditional livelihoods like farming and fishing, and Water Cay was no different. However, because there was no other industry on the Cay, residents were forced to relocate to Freeport and other settlements in Grand Bahama or elsewhere, for employment opportunities.

Water Cay’s accessibility issues due to its surrounding shallow waters make it difficult for people to easily travel to and from on a daily basis. Residents would therefore leave the Cay for work on Sunday or Monday morning and return on Friday to spend their weekends on the Cay. Eventually, they would end up settling permanently in the settlements where they worked. (Contrast this with Sweetings Cay, where a large number of residents work and study on mainland Grand Bahama, but travel by boat to and from the island every day with relative ease.)

Prior to Hurricane Dorian there were two main businesses on the island, the Water Cay Eco-Lodge and the Fishbone Restaurant. Both were completely destroyed by the storm.

7.4.1.4 Education and Healthcare

There was one school on Water Cay, the Water Cay All Age School (which in later years functioned as a primary school). Due to the significant decline of the number of school-aged children, the school closed in the 2000s.

Access to healthcare has generally been limited, as there were no medical clinics or facilities on the Cay. Residents report that medical practitioners would come to the Cay on a periodic basis to treat residents; otherwise, residents would leave the Cay and travel to mainland Grand Bahama to obtain medical services.

7.4.1.5 Infrastructure and Services

During our site visit to Water Cay, our team noted around 40 building structures on the island (a mixture of concrete and wooden), in varying states of repair. Less than 10 structures appear to be in livable condition; the majority are completely uninhabitable. Much of this damage is attributed to the impacts of Hurricane Dorian.

There is little to no vehicular traffic on Water Cay. During our site visit, our team noted one golf cart (but residents informed us that use of golf carts is uncommon).

We are informed that electricity was introduced to the cay around 2000 and was supplied by GBPC; prior to that, residents report that they relied on private diesel generators for power (and would also use kerosene lamps). Electrical supply has not been re-introduced by GBPC since Hurricane Dorian. Currently, the only source of power on the island is said to be a number of solar panels located at the only church on the island. Access to running water was reportedly established approximately 15 years ago, but challenges persist, particularly in the aftermath of Hurricane Dorian - former residents tell us that there is presently an electric pump at a home by the church that they now use for water supply.

The dock to the island was destroyed during Hurricane Dorian and has not yet been repaired. The lack of a dock poses logistical challenges for transportation and the delivery of goods and services. There is no urgency in addressing these needs, seemingly because of the population size.

7.4.1.6 Present Day

As of the date of this report, residents are still working to rebuild Water Cay in the aftermath of Hurricanes Matthew and Dorian. Support from the government has reportedly been limited - one of the residents with whom we spoke informed us that only 6 months ago, the government, due to public pressure, made the decision to give homeowners $2,500.00 per house toward home repairs (such amount is considered by residents to be insufficient). For years, the male descendants of the community have been traversing back and forth from their current places of residence to Water Cay on the weekends to slowly rebuild their homes - we encountered a family of 4 such men (the oldest in his 60s and the youngest in his 20s) during our site visit.

Persons with whom we spoke expressed a desire to return to Water Cay, permanently. According to them, a large number of descendants share that desire. Residents and descendants envision Water Cay as a tourist destination and have plans to establish fishing charters and bonefishing businesses there, and open restaurants and lodges.

Residents feel that the lack of electricity is a hindrance to their plans to repair their homes and return to Water Cay, in any capacity. They expressed support for the Project.

Our team noted, when speaking with residents, their collective action and self-reliance in ensuring that their community is restored. Their active engagement in the process of reconstruction reflects not only a commitment to preserving their heritage and way of life, but their strong belief in the power of collective action to overcome adversity.

7.4.2 Freetown

Freetown in Grand Bahama is one of three settlements named Freetown throughout The Bahamas. The name Freetown is symbolic because the name originates from the city of Freetown in Sierra Leone. Like many of the settlements throughout Grand Bahama, it was the liberated African apprentices who formed Freetown, now known as Old Freetown and New Freetown. There is a geographical distinction between Old Freetown and New Freetown. According to residents Old Freetown no longer has inhabitants due to restructuring efforts spearheaded by the Grand Bahama Port Authority which led to the emergence of New Freetown. This prompted the relocation of many residents from Old Freetown to a new community. The Old Freetown, is said to be located approximately 13 miles east of the Grand Lucayan Waterway on Grand Bahama Island and holds a rich history dating back to the early 1800s.

7.4.2.1 Demographic Overview

Currently, less than 100 residents are said to be living in New Freetown. Prior to hurricane Dorian there were 200-300 residents living in New Freetown. The age distribution in New Freetown is wide range, with residents spanning various age groups. However, the majority of Freetown's current population is aged over 45, which reflects a mature demographic profile within the community. Like many of the settlements, Hurricane Dorian brought about a drastic decrease in the population.

7.4.2.2 Economic Landscape

Historically, Old Freetown residents were known for their skills. During its peak with residents, the skilled labor force from Freetown played a pivotal role in driving the success of the lumber industry in Freeport. In particular, it was a Freetown resident who made history by cutting the first pine tree, marking the dawn of Freeport's development. Later, with the establishment of the USAF missile tracking base near New Freetown, many inhabitants found employment opportunities there. Today, Freetown’s residents and descendants are described as having an entrepreneurial spirit and being industrious.

7.4.2.3 Education and Healthcare

Prior to Hurricane Dorian, Freetown had one school which closed due hurricane damages and is not reopened because of the significant decline of the number of school-aged children.

Access to healthcare is a available at the High Rock Clinic

7.4.2.4 Cultural Heritage

The Hermitage, Freetown's oldest structure, was initially erected in 1901 as a Baptist Church before transforming into a hermitage for a Trappist monk.

7.4.3 High Rock

High Rock is the capital of East End and got its name from its prominent geological feature which is a 30-foot high rocky bluff between the coastal road and the sea.

7.4.3.1 Demographic Overview

The 2010 census reported the population of High rock as being 10,127. The 2022 census reported the total population of East Grand Bahama as being estimated to 11,411. These census reports combined the population count of High Rock, McLeans Town, and Sweetings Cay and did not give a breakdown of settlement size in the overall count.

7.4.3.2 Economic Landscape: High Rock

As the capital of East Grand Bahamas, High Rock has the highest concentration of businesses in East End, which makes it a vital economic hub for that side of the island. It is also the settlement with key government offices for East End such as the Administrator's office. There are also restaurants and the clinic for East Grand Bahama.

7.4.4 McLeans Town and Sweetings Cay

McLeans Town and Sweetings Cay are two distinct settlements located in the East End district of Grand Bahama. Due to their small size and limited population, data for each settlement individually is scarce or non-existent. Therefore, for the purpose of census and statistical reporting, these settlements are often combined. Despite their unique identities, they share similar characteristics, which reflects the close-knit community and common heritage of the East End district.

In Sweeting's Cay, residents reflect on their community's origins, tracing back to Lightbourne Cay, situated nearby. Following the devastation caused by hurricanes *from way back in the day* the original residents sought refuge on Sweeting's Cay, where they established new homes and livelihoods. Even Though they migrated and established new homes, generations of Sweeting's Cay residents-maintained ties to Lightbourne Cay, primarily for agricultural purposes, cultivating crops on their farms located there.

Similarly, in McLean's Town, residents recount the migration of the original residents from Crabbing Bay to Sweeting's Cay, although the exact reasons behind the move remain unclear. It is speculated that factors similar to those prompting the migration of Sweeting's Cay's original residents may have influenced this relocation. Some residents with whom we spoke informed us that the original name of the settlement was "Self Cay", and told us that the settlement's current name is derived from a teacher of Scottish origin who taught in the school at the settlement some years ago.

7.4.4.1 Economic Landscape: McLean's Town, and Sweeting's Cay

McLean's Town and Sweeting's Cay are coastal communities in East Grand Bahama with economies deeply rooted in the fishing industry. However, there is a common challenge faced by the fishermen in these settlements is the limited number of suppliers, resulting in a slowdown in economic activity. The fishing industry serves as the backbone of the economies in these three settlements. The fishermen rely on fishing as a primary source of income. Despite the abundance of fish caught by them, economic activity in these communities is hindered by the presence of only one buyer. The monopoly in the buyer market creates

challenges for fishermen, who may face difficulties negotiating fair prices for their catches or finding alternative markets for their products.

The presence of a single buyer contributes to economic slowdowns in these three settlements The Fishermen may experience delays in selling their catches or encounter bottlenecks in the supply chain, leading to reduced incomes and financial instability for families reliant on fishing-related activities. Some residents are exploring opportunities for economic diversification beyond fishing that they hope could help mitigate the impacts of reliance on a single buyer. Some alternative revenue streams that are being pursued are ecotourism and aquaculture.

7.4.4.2 Education and Healthcare: High Rock, McLean's Town and Sweeting's Cay

Following the devastation caused by Hurricane Dorian, access to education and healthcare in High Rock, McLeans Town, and Sweetings Cay, has undergone significant changes. There are currently no schools in the East End district. Consequently, most students from these settlements must commute to Freeport to attend school. This poses logistical challenges, particularly for students residing in Sweetings Cay, who must first take a ferry to the mainland before traveling to Freeport. The lack of local schooling options has led many parents to relocate to Freeport to ensure their children have access to education. This migration trend has impacted the demographic makeup of these settlements, contributing to changes in population distribution and community dynamics.

While educational facilities may be limited, healthcare services are provided through a clinic located in High Rock. This clinic serves the entire East End district. To ensure the quality and standards of healthcare delivery, a team from the Public Hospitals Authority (PHA) conducts monthly assessments of the clinic. These assessments are essential for evaluating the clinic's infrastructure, staffing, and medical services, with the aim of maintaining compliance with PHA standards and meeting the healthcare needs of the local population.

7.4.4.3 Cultural Heritage

The combined cultural heritage of High Rock, McLeans Town, and Sweetings Cay reflects the shared history, traditions, and values of these interconnected settlements. Despite their individual characteristics, they collectively contribute to a vibrant mosaic of Bahamian culture. One of the defining elements of the cultural heritage of these settlements is their deep-rooted connection to the sea. As coastal communities, High Rock, McLeans Town, and Sweetings Cay have historically relied on fishing and maritime trade for sustenance and livelihoods. This shared maritime legacy is evident when visiting the communities.

Food plays a central role in the combined cultural heritage of these settlements, with a focus on fresh seafood and local ingredients. Bahamian dishes such as conch fritters, grouper stew, and johnnycake are staples of the diet, showcasing the settlement's rich culinary heritage.

7.4.5 Heritage & Archaeological Resources

As part of this exercise, we have established a preliminary Heritage Profile of East Grand Bahama, in order to gain an understanding of the community's cultural identity. This falls in line with The Bahamas' ratification for the 2003 Convention for Safeguarding of the Intangible Cultural Heritage.

The method used to build this cultural heritage profile is community-based documentation. The respondents who shaped this profile are residents who spent their entire lives in East Grand Bahama or longtime residents, living in East Grand Bahama for 20 years or more. The respondents were asked if *they are aware of any cultural heritage landmarks in their settlement or in East Grand Bahama* to help inform us about the cultural heritage assets of the community.

This profile presents an analysis of the rich heritage and cultural diversity of these settlements, through the eyes of its residents.

Of note is that the types of celebrations that are held in East Grand Bahama involve the commitment from the churches, schools, local government community organizations. We notice that the way of life such as farming and fishing has been passed on from generation to generation. For some, it is a means of survival and for others it is a hobby that is thoroughly enjoyed.

We hold the view that this community's story is bound to be lost if not safeguarded. The knowledge from community elders is typically not transmitted to the next generation. It would be advantageous to expand this heritage profile, for the benefit of East Grand Bahamians and for Bahamians at large. As the Convention states, *intangible cultural heritage that is recognized by the communities as theirs and that provides them with a sense of identity and continuity is to be safeguarded.*

Below is a synopsis of what the target communities identify as their cultural heritage resources.

Tangible	Intangible	Community Activities
Ebenezer Baptist Church (Water Cay)	Agricultural Practices (Water Cay)	Crack Conching Festival (McClean's Town)
Small school building built by the community (Water Cay)		
Graveyards (Old Freetown)		High Rock Homecoming (High Rock)
Springs with Fresh Water (Freetown)		High Rock Seafest (High Rock)
Turtle Pond (Sweeting's Cay)		Old Freetown Fire Heart Food and Heritage Festival (Freetown)
Sagittarius Cave (Sweeting's Cay)		Sweeting's Cay Heritage Festival

Gill and Bow pond with the parrot fish (Sweeting's Cay)		
Underwater Caves (McLean's Town)		
Tamarind tree that has been in the community for over 100 years (Sweeting's Cay)		
Lighthouse (High Rock)		

Table 6: Cultural Heritage Resources of Water Cay, Freetown, High Rock, McClean's Town, Sweeting's Cay

8 Stakeholder Engagement

Stakeholder engagement and public disclosure are essential to the Project development process and were directed by the Heritage Partners. These mechanisms assert and recognize "the importance of open and transparent engagement between [the Project] and stakeholders, especially project-affected people, as a key element that can improve the environmental and social sustainability of projects, enhance project acceptance, and contribute significantly to the Project's successful development and implementation" (ESPS Standard 10).

The objectives of stakeholder engagement are:

- To establish a systematic approach to stakeholder engagement that will help the Project identify stakeholders, especially project-affected people, and build and maintain a constructive relationship with them.
- To assess the level of stakeholder interest in and support for the project and to enable stakeholders' views to be considered in project design and environmental and social performance.
- To promote and provide the means for effective and inclusive engagement with project-affected people throughout the project's life cycle on issues that could potentially affect or benefit them from the project.
- To ensure that appropriate information on environmental and social risks and impacts of the project is disclosed to stakeholders in a timely, understandable, accessible, and appropriate manner and format.
- To provide stakeholders with accessible and inclusive means to raise questions, proposals, concerns, and grievances and allow the Project to respond and manage them appropriately.

The following presents a summary and documentation of the public consultation and stakeholder engagement activities conducted to date.

Field studies were conducted in the target communities in February and March 2024, and follow-up telephone interviews were conducted in March 2024. In order to gain the requisite insight into the perceptions of the target communities regarding the Project, semi-structured oral interviews were conducted with 53 residents of East Grand Bahama.

8.1 Stakeholder Engagement/Public Consultation/Surveys

These interviews focused on demographics of the target communities, as well as indicators and socioeconomic variables that could be affected by the activities of the Project, with an emphasis on the economy and energy supply. The Project also considered, as part of the interviews, questions related to the feelings of the population in relation to the Project.

The majority of the interviews were collected by going door-to-door to homes and businesses in the target communities. Answers were recorded by inputting notes into an online survey form. All interviews were anonymous. Interview length ranged from 5 minutes to 25 minutes.

The Project further engaged key stakeholders, namely, the local government representatives for the target communities, as well as stakeholders from the GBPC.

8.1.1 Stakeholder Field Surveys and Interviews

8.1.1.1 Survey Respondent Demographics

The Project received survey responses from 53 persons, 31 males or 58.49% of respondents, and 22 females or 41.51% of respondents.

All survey respondents provided information pertaining to their age. The breakdown by age group of the respondents is as follows:

Age Range	Number and Percentage of Respondents
18-24	2 (3.77%)
25-34	4 (7.55%)
35-44	10 (18.87%)
45-54	13 (24.53%)
55-64	13 (24.53%)
65+	11 (20.75%)

Table 7: Breakdown of Respondents by age

Each respondent but one provided information about their nationality. 1 respondent (1.92%) identified as a Jamaican national; the other 51 respondents (98.08%) identified as Bahamian nationals.

2 out of the 53 respondents (3.77%) are descended from the ADI but live in Freeport. The other 51 respondents (96.23%) reside in the ADI. Of these, 17 respondents (32.69%) life in Sweetings Cay, 14 (26.92%) live in McClean's Town, 10 (19.23%) live in High Rock, and 9 (17.31%) live in Freetown. 1 respondent works in McClean's Town and lives in Rocky Creek, a settlement bordering McClean's Town.

A majority of the respondents (36, or 67.92%) provided that they had lived in the ADI for their entire lives. 1 respondent (1.89) has spent less than 5 years in the ADI. The remaining respondents lived in the ADI for periods of time ranging from 5 years to over 20 years.

The majority of respondents (29, or 54.72%) provided that they were self-employed. 14 respondents (26.42%) said that they were employed full-time, 2 respondents (3.77%) said that they were employed part-time, 8 respondents (15.09%) provided that they were retired. No respondents told the Project that they were unemployed.

Respondents were most frequently employed in the maritime/fishing sector (19 respondents or 35.19% of persons who answered this question). 8 respondents (14.81%) were employed in the food-restaurant sector, 6 (11.11%) in the tourism/hospitality sector, and 4 (7.41%) in the construction/contractor sector. Other respondents were employed in the government/public services sector, in maintenance and housekeeping, and in law enforcement, among other professions.

We received responses from 44 of the survey respondents pertaining to monthly income range. 33 respondents (75%) reported a monthly income range of $2,000.00 or less. 10 respondents (22.73%) reported a monthly income of $2,001.00 - $5,000.00 and only 1 respondent (2.27%) reported a monthly income of $5,000.00 to $10,000.00. No respondents reported a monthly income range of over $10,000.00.

In addition to those who undertook the anonymous survey, the Project interviewed one of the two residents who presently lives full-time on Water Cay. The Water Cay resident is the male counterpart of a married couple. He is in the 65+ age range and is presently retired. He did not report his income and reports that he has lived on Water Cay for his entire life.

8.1.2 Community Concerns Regarding Electricity Supply

Respondents generally spoke of being greatly impacted by Hurricane Dorian, especially with regard to energy supply: according to them, they were without electricity for almost a full year (some Sweetings Cay residents told our team that they were without power for up to 2 years). A great number of respondents left the ADI due to storm damage, and relocated to other parts of Grand Bahama or off-island.

The majority of those who remained in East Grand Bahama used fuel-powered electric generators for energy supply; these were either purchased by the residents in question or were donated to residents by NGOs operating in Grand Bahama post-Dorian. The cost of fueling the generators was reported as ranging between $60.00 a week to $500.00 a week, depending on the energy needs of the household in question. Residents also resorted to the use of kerosene lamps, as well as solar hand lights that were supplied to them by NGOs.

To date, electricity supply has been fully restored by GBPC throughout the ADI, with the exception of Water Cay. Each survey respondent but one (a Freetown resident who is in the process of rebuilding his home), is currently being provided with electrical power from GBPC. Electric power is the primary source of energy supply for all such respondents. We were informed by survey respondents that there are a number of residents in the ADI who are still using generators.

Several respondents plan to convert to solar energy in the future, and a good deal more expressed an interest in solar energy for personal household use. Use of renewable energies was reported as being uncommon in the ADI - respondents living in McCleans Town and Sweetings Cay referenced certain government buildings and churches on which solar panels are installed. In Water Cay, solar panels are fitted on the church building.

A number of respondents (10, or 18.86%) provided that they are on "temporary power" as opposed to "full power". GBCP defines temporary service as "service required for a short period such as for construction projects, fairs, bazaars, boathouses, etc." (*GBPC: 2023 Power Rates*) Representatives from GBPC (see section 16.2.2) informed our team that temporary power is supplied to customers who are applying for power for construction purposes; once they have completed their rebuilding process and have been granted approval from the Ministry of Works/GBPA and are in receipt of an occupancy permit, GBPC will convert their supply from temporary to permanent/full.

Although temporary power is typically intended for construction purposes, it appears to be a common practice for residents who are in the process of rebuilding while living in their homes, to use temporary power to supply their homes with electricity. Temporary service is more expensive than permanent service ($0.2585 per kWh for temporary compared to $0.1756 per kWH for 0-200 kWh up to $0.2731 for >800 kWH) (*GBPC: 2023 Power Rates*), and the supply is limited, so respondents on temporary power report that they must ration which appliances they can use at any one time, or else their circuit breaker will trip.

Said one respondent, a married mother of 2 from Rocky Creek: "On temporary power…you can't run all your stuff or the lights will dim and the breaker will trip. For me, it almost caused a fire when my stuff started to spark…. I don't have a heater, no AC, no microwave. I have one TV, two lightbulbs in my whole house. One fan and only a gas stove. I don't understand why my power bill is so high, because I don't be running nothing like that. I only turn my lights on at night, so why I paying $80 or $90 a month?"

Despite temporary service being more expensive than permanent service, a number of respondents informed us that they preferred temporary service, and feel that once electricity usage is monitored effectively, it is the more economical choice for them. Respondents who were once on temporary power and have since switched to permanent service, seem to prefer permanent service.

We asked respondents about how satisfied they were with their electricity supply, and received responses from 49 persons. The majority of respondents who answered (37 or 75.51%) were either satisfied (33 persons, or 67.35%) or very satisfied (4 persons or 8.16%) with their current electricity supply. 3 respondents, or 6.12% were not very satisfied, 5 or 10.20% were not satisfied at all, and 1 or 2.04% was somewhat satisfied.

When questioned about any concerns about their current electricity supply, 46 respondents provided answers. Cost was the number one response, given by 39 respondents, or 72.22%, and reliability (load shedding/outages, etc.) was the response given by 6 or 11.11% respondents. 2 respondents (3.70%) named resilience after storms.

Respondents were asked to describe the cost of electricity for them personally. 22 of those who responded, or 47.83%, provided that electricity was very costly, 15 or 32.61% provided that it was somewhat costly, and 7 or 15.22% stated that it was not very costly.

43 respondents provided information about their average monthly electricity bill, as follows:

- 13 respondents (30.23%) - over $200.00
- 7 respondents (16.28%) - between $50.00 - $100.00
- 6 respondents (13.95%) - between $200.00 - $350.00
- 5 respondents (11.63%) less than $50.00
- 5 respondents (11.63%) between $100.00 - $150.00
- 4 respondents (9.30%) - over $350.00
- 3 respondents (6.98%) between $150.00 - $200.00

8.1.3 Support for Project

We asked survey respondents whether they were in support of or against the Project. We received responses from 50 respondents.

44 respondents (88%) provided that they are in support of the Project, and 3 respondents (6%) provided that they are against the Project. 3 respondents (6%) were unsure as to whether or not they are in support of the Project; their support seemed to be contingent on receipt of additional information on the Project.

8.1.4 Survey Respondents Project Concerns

When asked whether they had any concerns about the Project and renewable energy, 44 respondents provided answers. The vast majority of those who answered (31 persons, or 68.88%) provided that they had no concerns with the Project and renewable energy in general.

Of those 13 or (31.12%) respondents who did express some degree of concern, several questioned how storms would impact the microgrids and their reliability - said one person interviewed, “Nothing could survive a storm”. Others had queries about how overcast weather conditions would impact the microgrids and their efficacy. Concerns were raised about whether the microgrids could impact community health, through emitting radiation or “5G” technology, and whether residents would have to pay to access the microgrids.

8.1.5 Key Stakeholder Interviews

The Table below summarizes interviews held with key stakeholders.

Date Contacted	Stakeholder Name(s) and Organization	Comments
17 February 2024	Marcus Cooper, Chief Councillor, East Grand	In support of Project.

	Bahama Local Government District	Opinion - Project will impact community positively, but that this would be dependent on Project design - advocated for Project to provide energy independent of GBPC, so that in the event of another storm, the people of East Grand Bahama would not have to wait for an excessively long period for restoration. Advocated for the Project to create long-term jobs for residents, get local input and feedback, and ensure community engagement. Advised that there are a number of contractors and pre-phase electricians operating in East Grand Bahama who may be able to assist the Project (but who would likely need training in solar installation).
19 March 2024	Deon Feaster, Chief Councillor, Sweetings Cay Local Government District	In support of Project. Opined that majority of his constituents would be in support of Project. Pressed for more information to be provided to his constituents concerning the Project. Advocated for a community town meeting where the residents of Sweetings Cay were addressed in particular.
19 March 2024	Nikita Mullings, Chief Operating Officer, Grand Bahama Power Company Cleopatra Russell, Director, Communications, Grand Bahama Power Company	In support of Project. Aware of Project prior to contact with Project team. Provided that GBPC would need assurance and coordination from the Project as an Independent

		Power Producer and how it would relate to GBPC's framework as the sole power company on the island.

Table 8: Key Stakeholder Interviews

8.2 Public Consultation

Public consultation will occur in coordination with the Ministry of Finance and the Department of Environmental Planning and Protection.

9 Environmental Impact Analysis

Impact assessment considers the interaction between the physical, ecological, social, cultural, and human health factors with the proposed project activities. Environmental impacts were assessed through a combination of background desktop study, scientific literature, and onsite field assessments.

Terrestrial surveys, including botanical and wildlife surveys were performed to document existing site conditions. The terrestrial survey recorded observed flora and fauna to identify present vegetation communities. Botanical and wildlife assessments were performed between February 15th and 17th, 2024.

9.1 Phase 1: Potential Impacts During Site Preparation & Construction

Summary of Activities

- Site Preparation & Land Clearing
- Increased Human Users
- Construction Activity
- Operation of Heavy Equipment
- Installation, Construction, and Operation of Utility Infrastructure

9.1.1 Impacts to the Physical Environment

Impacts to the physical environment are unavoidable in the construction footprint, however, impacts can be managed and mitigated by employing BMPs during construction and operation. Physical impacts pertain primarily to the land clearing activities requiring vegetation removal for development.

9.1.1.1 Erosion and Sediment Impacts

Erosion and sediment impacts associated with the overall development are largely dependent on adherence to BMPs. Construction activities will require management of vegetation clearing and land grading, and land-based pollutants, which fall under an ESMP. Moreover, development introduces impervious surfaces, which exacerbate the volume and speed of runoff flow, particularly during storm events with periods of heavy downpours. Runoff is a vehicle for the introduction of land-based pollutants into the natural environment.

9.1.1.2 Hydrologic Impacts

No impacts are anticipated to freshwater resources, if any, are present onsite.

9.1.1.3 Noise Impacts

Noise impacts will be limited to short durations of heavy machinery use during construction. Brush density and distances will buffer sound effects from construction activities.

9.1.1.4 Air Quality Impacts

Air quality will only be minimally affected in short durations by heavy equipment and construction associated with the project. BMPs will be utilized for the safety of workers and to reduce impacts to surrounding flora and fauna. BMPs will be in place to keep sediment and/or excavation material piles moist and prevent dust from becoming an issue.

9.2 Biological Impacts

Biological impacts are associated with the unavoidable loss of habitat necessary for land clearing to accommodate renewable energy microgrids. These impacts are anticipated to be short-term with no long-term adverse impacts.

9.2.1 Habitat Loss and Degradation Impacts

Coppice habitat, is the most biodiverse vegetation community in The Bahamas and the predominant vegetation community onsite, followed by coastal and wetland habitat, respectively. Seven (7) protected tree species were identified during the baseline biological assessments. Subject to permit criteria, any mature protected tree species identified and within the limit of works for clearing will require a permit for removal under the Forestry Act, as listed under the Protect Tree Order 2021. Permits for the harvesting of a mature protected tree species will be obtained through the Forestry Unit prior to construction start.

Water Cay, pictured, is dominated by coppice vegetation compared to the pine woodlands of Freetown and High Rock.

Figure 9-1 Water Cay, Grand Bahama

Figure 9-2 Freetown, Grand Bahama, Microgrid Site

9.2.2 *Impacts to Biodiversity*

Biodiversity refers to the irreplaceability and vulnerability of a habitat or community within a specific geographic context. The Bahamas is party to the Convention on Biological Diversity, which recognizes the interconnectedness of climate change and biodiversity.

Threats to biodiversity including the introduction of invasive species, changes in micro-climates, habitat loss and fragmentation, and changes in air and water quality from emissions, effluents, and sedimentation.[15] Small island nations are uniquely vulnerable to the introduction of invasive species. The importation of landscaping material presents opportunity for the introduction of non-native and invasive species, such as the cane toad, notably on New Providence. Invasive species are a nuisance and may be difficult to manage without adequate vigilance and quick eradication efforts.

Identified invasive species will be managed in accordance with the National Invasive Species Strategy 2013. These species were identified predominantly on previously disturbed land along the various site peripheries.

9.2.3 *Wildlife Impacts and Avifauna & Bats*

A total of twelve (12) avifauna species were recorded during the investigation. Noise associated with heavy equipment may cause a temporary adverse impact which is anticipated to lessen upon construction completion and operation.

15 Graham, Watkins et al. Guidance for Assessing and Managing Biodiversity Impacts and Risks in Inter-American Development Bank Supported Operations. IDB-TN-932. November 2015.

9.3 Project Cumulative Impacts

9.3.1 Land Use Impact

The five (5) sites do not reside near any settlements, known nesting grounds, freshwater resources, nor any cultural or archaeological resources; cumulative impacts to upland environments will be limited to the project site. Renewable energy installation mitigates the loss of flora.

Figure 9-3 Sweeting's Cay, View to the South

9.3.2 Aesthetic Impact

The extent of aesthetic impacts may be subject to individual preferences, particularly as it relates to the beauty of coppice formation and pine woodlands. Pine woodlands experienced significant mortality following Hurricane Dorian and removal of dead trees may be beneficial to prevent the spread of pests, disease, and excess fuel for forest fires.

9.3.3 Impacts to Sensitive Environmental Features

There are no anticipated impacts to sensitive environmental features. All sites will adhere to the ESMP to implement best management practices to avoid sediment and erosions impacts, prevention of pollution of groundwater resources, and waste management. Protected trees, where identified in the project construction footprint, will not be removed until a permit is issued by the Forestry Unit to Harvest a Protected Tree.

Figure 9-4 McClean's Town & Tidal Creeks

9.4 Solid, Liquid, and Hazardous Waste Impacts

Waste materials associated with construction and operation of the project will be located at specific designated waste disposal locations. Equipment refueling will be required periodically onsite, a Spill Prevention & Contingency Plan will provide the procedures and BMPs which will be followed with regards to fuel storage and fueling.

Disposal will be mulching of plant debris for use onsite, labeling and storage of hazardous material, and reusing waste to the greatest extent possible.

9.5 Potential Impact from Unplanned Event

9.5.1 Hurricane Risks

The Bahamas lies in the Atlantic hurricane zone and is subject to indirect or direct hurricane landfall from time to time. Moreover, The Bahamas is affected by storm impacts including storm surge and elevated tides due to nearby low-pressure storm systems. The developer will adhere to the Bahamas Building Code and, where possible, use hurricane resistant materials to withstand winds of 150 miles per hour.

Hurricane Dorian, a Category 5 hurricane, made landfall on Elbow Cay, Abaco in September 2019 and moved slowly east over Grand Bahamas before turning north. It is estimated to have caused $3.4 billion in damages representing 27% of 2018 nominal GDP. New Providence experienced inclement weather but was outside tropical storm conditions.

9.5.2 Fire Risks

Fire is an inherent risk during construction and operation of a development. Roadways should make adequate provision for fire emergency services. Fire-fighting equipment such as fire extinguishers must be

available onsite at all times. The inventory of materials shall identify any substances requiring additional specialty fire-fighting equipment. A list emergency numbers should be available onsite at all times.

Fires may also ignite in dry vegetation and be fuelled by heavy leaf litter and high winds. Residents and construction personnel should be vigilant for fires during the dry season, particularly March through May.

9.5.3 Disease and/or Outbreak of Illness

The worldwide COVID-19 pandemic severely restricted economic activity at a local level under the Emergency Power Orders. With the expiration of the Emergency Power Orders, economic activity resumed though tourism remained depressed due to international travel requirements and local stipulations. The International Monetary Fund (IMF) estimates 2020 Project Real GDP to decline by -8.3% before rebounding in 2021.

9.6 Socio-Economic Impacts

This section identifies and assesses the potential Project impacts on the existing socioeconomic environment and community health (including community safety and security). The social baseline and cultural heritage data was used to assist with the evaluation of the potential impacts and their significance. These sections are cross-referenced where appropriate.

9.6.1 Methodology

The primary purpose of this SIA is to predict the impacts resulting from the Project. Impacts can be direct (occurring as a direct consequence of and at the same time and place of the Project), indirect (occurring as a result of the Project, but taking place later in time or further in distance from the Project), induced (resulting from non-Project activities but occur as a consequence of the Project), or cumulative (resulting from the incremental effects of the Project when added to the effects of other past, present, and reasonably foreseeable actions).

To determine the significance of potential impacts, this Report considers two main factors: impact magnitude and receptor sensitivity/vulnerability. Magnitude is a measure of the changes to a receptor that will potentially result from the Project, while sensitivity/vulnerability is a measure of how sensitive or vulnerable/susceptible a receptor is to these changes.

Potential receptors with respect to socioeconomic impacts of a Project typically fall within two categories - these are (1) Project-affected communities, including residents, landowners, businesses, and settlements near the Project sites, and (2) Other affected stakeholders, including the workforce and existing potential workforce near the Project sites, vulnerable groups, and tourists.

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*. In the case of positive impacts, it is generally recommended that no magnitude be assigned unless there is ample data to support a more robust characterization. It is usually sufficient to indicate that the Project will result in a positive impact, without characterizing the exact degree of positive change likely to occur.

In addition to characterizing the magnitude of impact, the sensitivity/vulnerability/importance of the impacted receptor is characterized. As in the case of magnitude, the sensitivity/ vulnerability/importance designations are universally consistent (i.e. *Low*, *Medium*, and *High*), but the definitions for these designations will vary on a receptor basis.

It is important to note that stakeholder engagement is a critical component to socioeconomic impact assessments. The information obtained from stakeholders which is presented in the Project's Stakeholder Engagement Plan and in Section 16, as well as information received from stakeholders during the survey interviews, has informed the vulnerability and magnitude designations for this impact assessment.

9.6.2 Scoped Out Social/Community Health Safety & Security Impacts

A range of potential impacts have been scoped out on the basis that the impacts will be *Negligible,* and therefore, further mitigations are not required. These are described below.

Impact	Reason for Scoping Out
Impacts to Indigenous Peoples	There are no Indigenous Peoples in the ADI
Physical or Economic Resettlement	The Project will not result in physical or economic displacement. The Project sites are each on vacant land, and are located along existing rights of way that are clear of occupation. There are no residences or businesses located near to the Project sites.
Influx of Workers	Peak employment will be 50 persons and the Project will attempt to hire locally. It is therefore unlikely that the workforce will stress local infrastructure, and hiring locally will be prioritized, leading to a reduced influx of workers.
Stress on local medical facilities	Peak employment during construction activities will be 50 people, and as such it is not expected that the workforce will add significant stress on existing medical facilities
Human rights	There are no significant adverse potential impacts identified from a human rights perspective. The Project is not considered high risk from a socioeconomic standpoint and there are no significant adverse potential impacts identified that would not be mitigated through community engagement and implementation of the GRM, as

	well as through adherence to existing policies, plans, and procedures.

Table 9-1 Scoped Out Social Impacts

9.6.3 Economic Conditions

The economy of Grand Bahama, like much of The Bahamas, is heavily reliant on the tourism industry, as well as on the manufacturing and industrial sector. The island's economy did suffer as a result of Hurricane Dorian, though some recovery has been made since that time, especially in the tourism sector.

In the ADI, economic conditions have improved since Hurricane Dorian, but it is difficult to assess the degree of such improvements. The few tourist accommodations that were present in the ADI were in the main, either significantly damaged or completely destroyed after Hurricane Dorian, and the majority have not been rebuilt to date. Respondents to our survey cite that many community members have emigrated to other parts of Grand Bahama or outside of the AII, due to housing insecurity resulting from the storm, cost of living concerns, and lack of employment opportunities.

The Project would presumably incentivize rebuilding efforts, alleviate cost of living concerns, and encourage community members to return to the ADI. As such, this is classified as a *Positive* impact.

9.6.4 Employment and Livelihoods

9.6.4.1 Job Creation

As of 2023, the unemployment rate in Grand Bahama was 10.8%. There is no available employment data for the ADI. More than half of the survey respondents (54.72%) reported that they are self-employed; of these, more than half (51.72%) are from Sweeting's Cay.

The Project is estimated to create up to 50 jobs in the ADI during the construction period, and will require the appointment of local workforce. These workers are expected to be sourced from the ADI where possible and either the AII or from other places in The Bahamas.

The construction period will range from 6 to 12 months (considered short-term). After the construction period, there is expected to be ongoing operations and maintenance at the Project sites. As the Project moves out of the construction phase and into the operations phase, there will likely be a subsequent decrease in the workforce requirements.

The Project will require various vendors, suppliers, and service providers to meet its daily operating needs, as well as the domestic needs of its workforce. This could include goods and services such as food vendors, laundry, supply of vehicles and transportation services, security patrols, as well as some construction equipment.

In addition, other economic activity will be generated by the Project, due to the presence of Project workers. There will be opportunities for utilizing local goods and services for the Project and related activities, and may induce growth in other industries such as retail, transportation, hospitality, etc. Where accommodations are able to be rented, this will also result in revenue generation for local residents.

The creation of beneficial direct and indirect employment is considered a *Positive* impact.

9.6.4.2 Transient Workforce

It is a possibility that some of the workforce needed for the Project will be sourced from other Bahamian islands and potentially other islands in the Caribbean. The level and range of skills and applicable working experience available in the ADI and the AII may be limited by education and relevant skills training. As a result, the ability to acquire a position, and successful performance once hired, will favour experienced (skilled) personnel for professional roles.

Below are copies of (a) a flyer and (b) a screenshot from a social media post, disseminated from the MOF and circulating on social media, advertising a "Solar Photovoltaic Systems Programme Installation and Maintenance" national training initiative which is set to begin in May 2024. The flyer provides that the initiative is seeking candidates from a number of communities in The Bahamas, including East Grand Bahama. We are advised that this initiative relates to this Project, and consider this to be strong evidence of the intention of the MOF to source workers from the ADI.

Figure 9-5Flyer and Social Media Post advertising training initiative for the Project

Notwithstanding this initiative, it is likely that at least a portion of the labour force may come from outside of the AII or even abroad. With any transient workforce, there are risks to the communities in the ADI, as a result of transient worker-community interactions. Specific risks include the spread of communicable diseases such as sexually transmitted infections (STIs) and petty crimes.

There is also the potential for negative sentiment coming from within the ADI, in relation to the employment of non-local labour. Such negative sentiment may specifically arise related to:

a) resentment between local Project employees and local people who were not hired by the Project;
b) resentment between local and non-local workers, if non-local workers are perceived to receive better pay or conditions for carrying out the same job;

c) unfulfilled skill development and training expectations; and
d) increased tensions over access to jobs and due to the presence of non-local workers in the ADI.

As the Project construction period is short-term and employment during the operations phase is minimal, and as the construction work is mainly restricted to the Project sites, the impact magnitude of the Project is considered to be *Small* (perceptible difference from baseline conditions, local, rare, affecting a small proportion of households and of a short duration). The sensitivity of the receptors - the Project-affected communities as well as the workers - is considered to be *Low to Medium*, (they have some, but few, areas of vulnerability due to their position post-Hurricane Dorian and have some coping strategies in place). The impact significance is therefore assessed as being *Low to Moderate.*

The Project has a GRM which is accessible to workers and community members. The Project should apply a labour management and code of conduct for its workforce, ensure that workers receive appropriate training, and provide workers with free medical care. The potential for negative sentiment from the community related to non-local labour must be monitored and managed closely.

9.6.4.3 Worker Accommodations and Indirect Employment

Hurricane Dorian resulted in the damage and destruction of many of the residences in East Grand Bahama, and the subsequent displacement of community members. To date, the rebuilding efforts have been steady (though hindered by economic concerns), and a sizable portion of the displaced population has since returned to the ADI. There is a concern as to whether sufficient housing exists to meet the needs of the Project workforce, especially in the case of non-local workers. Additional housing may therefore be needed.

The impact magnitude of the Project is considered to be *Small*, and the receptor sensitivity is considered to be *Low to Moderate.* As a result, the impact significance is assessed to be Moderate.

The Project should establish Worker Accommodation Requirements consistent with the International Finance Corporation's Worker Accommodations Processes and Standards.

9.6.4.4 Community Safety and Security

Crime and safety issues in East Grand Bahama generally appear to be minimal.

There are some community-related risks resulting from using a transient workforce (see above).

There are also some risks associated with operations, such as the threat of property theft, squatting, or trespassing at/on the Property sites.

The risks associated with operations would be permanent and would be restricted to the Project sites; as such the impact magnitude is considered to be *Medium*. The receptor sensitivity is considered to be *Low to Moderate*. As a result, the impact significance is assessed to be *Moderate*.

The Project has a GRM for community members and a SEP. The Project should also post signage with regard to the microgrids at the Project sites, and should train and employ security at the Project sites.

9.6.5 Social Infrastructure and Services

Some of the existing social infrastructure and services in the EDI were destroyed or abandoned because of Hurricane Dorian. Schools in each of the Project sites and throughout the ADI were closed after Hurricane Dorian and to date have not been re-opened. As a result, children residing in the ADI have to attend schools in Freeport, Grand Bahama. They are typically bussed into and out of the communities. Parents to whom we spoke as a part of our survey experience have expressed extreme displeasure with this state of affairs.

In East Grand Bahama, electricity supply was disrupted by Hurricane Dorian and for a number of residents, such supply has either not been re-connected as yet or residents are on "temporary supply" (see Section 16.2.1 above).

The Project will help facilitate the redevelopment of social infrastructure that was destroyed and the recommencement of social services, namely electricity, that were suspended due to Hurricane Dorian. This is classified as a *Positive* impact.

9.6.6 *Conclusions*

The Project is assessed as having either Positive impacts or impacts that are not major and for which mitigation measures are identifiable.

9.6.6.1 Enhancement Measures

The following measures will contribute to the enhancement of benefits associated with the Project:

a) Ensure that a transparent hiring process is conducted to help the community understand the Project's staffing decisions;
b) Develop and continue skill transfer and capacity building programmes and initiatives (in line with the initiative being described in the flyer at Figure 1) for the benefit of persons living in the ADI. These can include community skills workshops, or other interventions co-designed with community partners;
c) Establish a local skills bank or utilize already-existing skills bank (such as the Bahamas Online Skills Bank maintained by the Bahamas Department of Labour, which seeks to match job vacancies to suitable job seekers) that will publicize job vacancies and put in place initiatives to ensure that community members, including those in vulnerable groups, are able to access employment opportunities;
d) Encourage contractors to provide apprenticeship opportunities to local people and encourage supply chain partners to recruit local people;
e) Ensure that local businesses will be contacted immediately prior to the construction stages; and
f) Ensure that grievances raised by local businesses will be managed in an appropriate and timely manner.

9.7 Cultural

The results of the cultural heritage baseline study for this Project demonstrate that there are a number of heritage assets found within the ADI. The cultural heritage assessment conducted within this report have not found that there are any such assets at any of the Project sites.

Notwithstanding this, there is the potential for known or undiscovered cultural heritage resources to be directly impacted (i.e. physically damaged) and/or indirectly impacted (impacts to a resources setting or environment through the addition of intrusive elements) by the Project.

In addition to the cultural heritage baseline studies conducted for this Project, a Cultural Heritage Management Plan with Chance Finds Procedure has been developed for this Project. Please see the full report in the appendix.

10 Mitigation

Proposed mitigation methods and measures including significant and residual impacts. Measures for environment and social protection and management. Mitigation is achieved through avoidance, minimization, rehabilitation, compensation, or offsetting. Where feasible, avoidance of impacts is pursued as a priority mitigation strategy. Where avoidance is not an option, strategies are presented to mitigate known and unknown impacts.

10.1 Climate Change Mitigation and Adaptation Plan

Climate change will contribute to greater climate variability where changes may occur to precipitation patterns, increase in frequency and intensity of storm events, extreme heat, global sea level rise, and alteration of wave patterns leading to shoreline erosion. Given this climate variability, engineering and building designs should plan for a scenario for future high anthropogenic greenhouse gas emissions. The Bahamas' low-lying topography makes it highly susceptible to sea level rise with 80% of the Bahamas' landmass within 1.5 meters of sea level and freshwater resources even more so with 90% within 1.5 meters.

To mitigate forecasted climate vulnerabilities, the following adaptation techniques are proposed:

10.1.1 Deforestation Mitigation & Prevention of Desertification

Based on the IPCC 5th Assessment Report and the Coupled Model Intercomparison Project 5 (CMIP5); climate change will alter existing rainfall patterns in The Bahamas. Climatology data suggest that The Bahamas region will incur a three percent (3%) decrease in monthly rainfall averages with an increase of intensity of rainfall events between October and February.

Overall, total rainfall is expected to decrease placing additional pressure on freshwater resources. Freshwater resources in The Bahamas originate from rainfall only and accumulate in Ghyben-Hertzberg lenses. On average, the freshwater lens occurs at a depth of two feet (2ft.) to five feet (5ft.) below the surface. Ninety percent (90%) of freshwater lens resources in The Bahamas are within five feet (5ft.) of the surface. Given the close proximity of fresh water to the surface and the high porosity of limestone, over-extraction and pollution may lead to depletion, saltwater intrusion, and/or contamination, impairing the fragile layer of freshwater over salt. Saltwater intrusion to limited freshwater resources is a threat.

Land degradation is defined by the IPPC as a 'negative trend in land condition, caused by direct or indirect human induced processes, including anthropogenic climate change, expressed as a long-term reduction and as loss of at least one of the following: biological productivity, ecological integrity, or value to humans.[16] Land degradation contributes to the effects of desertification where vegetation cover is decreased and carbon dioxide is released to the atmosphere. Removal of vegetation replaced by impervious surfaces and

[16] IPPC. Climate Change and Land. Summary for Policymakers. 2020

black asphalt, may result in a heat island effect where urban temperatures are higher, most notably at night, than compared to surrounding more vegetated areas.

By maintaining a natural perimeter, limited construction footprint, the heat island effect and impacts to overall desertification can be lessened. Where feasible, the project will retain as much of the natural vegetation as possible to limit habitat degradation as a contributor to climate change.

10.2 Habitat Fragmentation Mitigation

Cumulative removal of vegetation has led to habitat degradation and fragmentation at a global level and at a local level across the island of New Providence. Fragmentation is the division of habitat into smaller and isolated parcels of land reducing biodiversity and impairing ecosystem functions. Habitat fragmentation produces greater exposure of edges to anthropogenic pollutants eroding natural buffers needed to maintain ecosystem functions.

10.2.1 Mitigation and Management for East Grand Bahama Microgrid

The following are recommended best management practices to mitigate habitat fragmentation:

- Avoidance of Sensitive Features. Natural karst formations exist along the northwestern periphery. It is recommended that where feasible, these features are left in their natural state. Reduced parking mandates would support avoidance of sensitive features.
- Storm-water & Sediment/Erosion controls. Storm water controls will avoid runoff and potential pollutants to the environment. Moreover, sediment and erosion controls during construction will limit impacts to undisturbed areas during the phased development.
- Invasive Species Management Plan. An Invasive Species Management Plan for the proposed development is outlined in the following section.

10.3 Invasive Species Management

The Bahamas National Invasive Species Strategy 2013 (NISS) updated policies to mitigate the threat of invasive species via the prevention of introduction as well as the management and eradication of listed species[17]. Invasive species management protects the natural environment, genetic diversity of flora and fauna, ecosystem services, and quality of life. This National Policy is further strengthened in Environmental Planning and Protection Act, 2019, which defines invasive alien species as 'a species that is non-native or alien to the ecosystem under consideration, and its introduction causes or is likely to cause harm to the economy, environment, or human health'.

[17] Moultrie, S. (2013). *The Bahamas National Invasive Species Strategy 2013*. Nassau: Department of Marine Resources.

Small Island Developing States (SIDS) like the Bahamas have high native species diversity and endemism counts due mainly to physical isolation from the mainland. This isolation is both a vulnerability and an advantage for invasive species management.[18]

As an archipelagic nation, The Bahamas is uniquely vulnerable to invasive alien species due to multiple invasion border pathways requiring a complex management approach and the distribution of islands each harboring a site-specific habitat matrix with limited defenses to aggressive and opportunistic invaders. Climate change exacerbates this threat with intensifying storm events resulting in significant habitat degradation and loss facilitating rapid colonization by alien invaders. Moreover, climatic changes may be conducive for the spread of tropical disease.

Public educational campaigns and media have highlighted several alien species including: Lionfish, Cane toad, Australian pine, and White Inkberry. These widely recognizable species threaten native populations through competition of resources, predation, and displacement. Other environmental threats associated with invasive species include:

- Loss of genetic diversity;
- Introduction of disease;
- Change in the physical properties of the environment;
- Changes to ecosystem functions;
- Changes in nutrient cycles

Invasive species not only threaten the natural environment but also the underlying economy and culture. Competition for subsistence harvesting and degradation of culturally important habitats and resources may also be affected[19]. Economic impacts from invasive species include:

- Loss of biodiversity, rare and endemic species;
- Interference with fisheries, agriculture, and silviculture;
- Disruption to tourism products;
- Damage to infrastructure;
- Decreased property value;
- Costs of clean up & control;
- Costs of treatment or quarantine;
- Health costs and loss of productivity.

10.3.1 Invasive Species Identified on East Grand Bahama Project Sites

Four (4) invasive species were found on site. The following recommendations were made in accordance with the "The Bahamas national invasive species strategy 2013." (2013).

1. Australian Pine (*Casuarina equisetifolia*)

[18] Bullard, JM. (2013). Critical Situation Analysis of Invasive Alien Species Status and Management, The Bahamas. Nassau. Department of Marine Resources.

[19] Moultrie, S. (2013). *The Bahamas National Invasive Species Strategy 2013*. Nassau: Department of Marine Resources.

- Distribution: On the edge of the project site, near the road.
- Recommendation: Complete eradication & continued removal of seedlings that arise

2. Bermuda Grass (*Cynodon dactylon)*
   - Distribution: Predominately located across the path edge, and in areas of clear vegetation.
   - Recommendation: Monitor and Control
3. Jumbay *(Leucaena Leucocephala)*
   - Distribution: On the edge of the property
   - Recommendation: Control
4. White Scaevola / Hawaiian Scaevola (*Scaevola Taccada*)
   - Distribution: On the edge of the project site, near the road.
   - Recommendation: Complete eradication & continued removal of seedlings that arise .

10.3.2 Management Protocols

Invasive species management protocols for Venetian Village focus on:

- The introduction pathway;
- Eradication and control of existing invasive species, and;
- Routine preventative maintenance for future establishment.

Continued vigilance following construction build-out is key to long-term preservation of biodiversity.

10.3.2.1 Introduction Pathway

Preventing the introduction of an invasive alien species through invasion pathway management is the most effective practice to avoid unwanted species establishment. Most vectors arrive via human-assisted transport such as planes and ships. These transport mechanisms move organisms outside their natural environs. As an island nation, The Bahamas imports myriad good including food, ships, tires, pallets, construction materials, and landscaping. Intentional introductions are often motivated by economic, environmental, and social means for example agricultural, landscaping, and even environmental control measures.[20] In the absence of National policies to avoid the import of invasive alien species, the following best management practices are recommended:

Introduction Pathway Management BMPs

- Landscaping – Native Palate. The landscaping palate should promote a predominantly native species array with ornamental species reviewed for inclusion on the National Invasive Species Strategy 2013 lists.
- Landscaping – Purchase Local. Where feasible, landscaping should be purchased via a local supplier where trees and shrubs are grown locally avoiding the human-assisted transport invasion pathway.
- Materials Review. Upon arrival, construction materials should be reviewed for unwanted vectors. All earth moving-equipment should be washed down prior to site arrival to prevent transport of

[20] Bullard, JM. (2013). Critical Situation Analysis of Invasive Alien Species Status and Management, The Bahamas. Nassau. Department of Marine Resources.

invasive seeds, i.e. Casuarina, and/or material. Disturbed areas are ideal habitats for invasive seedlings to establish.

- Vector Control. Vector control onsite should consist of approved methods and agents. Biological control of vectors such as rats shall not include the introduction of a non-native species.

10.3.2.2 Eradication and Control

NISS lists invasive species and also provides a recommendation for control: eradication, control, or none listed. Eradication is the preferred approach to restore and maintain biodiversity; however, it is also the most costly and difficult to implement. Established populations of invasive species, such as the Australian pine, would take significant resources and years of committed action to accomplish eradication.

Of critical importance is the disposal mechanism for the removed invasive species. Felling of botanical species without removal may result in unintentional seed dispersion.

Control techniques include:

- Physical Control – removal by hand, mechanical harvesting, or the creation of physical barriers.
- Chemical Control – chemical dosing, use of toxic baits, and application of herbicides and pesticides.
- Biological Control – the introduction of natural enemies, such as pests and pathogens, from the invaders origin.

It is recommended that the project pursue physical control via the removal and/or mechanical harvesting of invasive species on site. It is anticipated that individuals will be removed in order to accommodate built infrastructure. Where invasive alien species exist outside the built infrastructure, it is recommended that the developer continue to undertake physical control to eradicate the prevalence of NISS 2013 listed species on site.

10.3.2.3 Monitoring

Routine maintenance and monitoring for the establishment of invasive alien species, particularly, those on the NISS list for eradication, should be on-going. The most cost-effective approach is preventing the establishment of NISS listed species.

- Removal of IAS saplings. Casuarina seedlings quickly become established in disturbed areas such as cleared roadways and paths. These areas should be routinely monitoring for the sprouting of IAS saplings. These saplings should be removed immediately.
- On-going Monitoring of Introduction Pathways BMPs. Policies related to the choice of landscaping palates and vendors should be continually reviewed for adherence to the Invasive Species Management Plan.
- Education. Residents and businesses should be educated on NISS species. Community efforts to identify unknown plants, birds, and invertebrates/mammals should be encouraged. All unknown species should be photographed for identification by informed personnel.
- Outreach. Upon identification of an IAS, the developer should inform and work with the relevant authorities to devise an appropriate plan to manage, control, and eradicate the intruder.

11 Recommendations

Review any available data and provide recommendations, if necessary, for additional data or new data to be acquired.

1) Reconstruction of a public dock at Water Cay would facilitate the island's redevelopment. At present, the lack of infrastructure to access the cay hinders movement of goods and people. Moreover, materials for construction and installation of the BESS system would need to be transported by vessel and offloaded to Water Cay.

12 Environmental and Social Management Plan

12.1 ESMP Objective

Environmental management is a systematic approach that integrates environmental policy and planning with continuous monitoring of implementation techniques to improve environmental compliance to achieve the goals of sustainable development. Hazards to human health and safety and the environment can be managed through careful planning, vigilance and strong communication during works and continual improvement to the overall environmental management program.

The preferred management approach is to avoid, minimize, and control adverse impacts to human health, safety, and the environment. Where adverse impacts cannot be avoided, BMPs should be employed to mitigate human and environmental harm.

The ESMP is a dynamic document with revisions anticipated throughout the various stages of the project. A copy of the ESMP will be kept onsite at all times.

12.2 Project Description

The rehabilitation and modernization of the Bahamas' energy system represents an opportunity to strengthen isolated and interconnected grid networks with reliant Renewable Energy (RE), designed to withstand the increasing frequency and severity of extreme weather events. It also presents an opportunity to raise awareness about the RE as new energy subsector and about the employment and economic opportunities that this industry represents for Bahamian citizens.

To respond to the immediate and long-term needs of the country, the Interamerican Development Bank (IADB) activated the Conditional Credit Line for Investment Project (CCLIP)" Advancing Renewable Energy in The Bahamas" (BH-O0006), "Reconstruction with Resilience in the Energy Sector in The Bahamas" (RRESB)(BH-L1048).

Five (5) locations were identified on East Grand Bahama as meeting criteria suitable for the installation of PV-Battery Energy Storage Systems (BESS). These five locations include: Freetown, High Rock, McClean's Town, Sweeting's Cay, and Water Cay.

12.3 Summary of Environmental & Social Risks

Table 12-1 Table of Environmental and Social Aspects

No.	Project Activity	Aspect	Potential Impact	Mitigation Measures
Stage 1: Pre-Construction Activities				
1	Site Preparation & Land Clearing	Terrestrial	Loss of habitat Disturbance to wildlife	• Site preparation requires the removal of surface materials including trees. Organic material will be stockpiled for use as mulch or soil for distribution to the community • Stockpiles will be located away from the coastline, where necessary, and reused as fill, where feasible, for capital works such as road installation and elevating property • Preclearance activities will identify and relocate, where feasible birds' nests, or avoid removal of a bird's nest during the breeding season • Protected Trees, where identified, will not be felled until a Permit to Harvest a Protected is issued by the Forestry Unit.
		Water Quality	Impacts to Water Quality (ground and surface) due to runoff	• Construction materials and wastes will be stockpiled away from the coast • Dewatering will be directed away from the coast and wetland areas • Contractor will adhere to BMPs for sediment and erosion management • Wetlands will not be affected within the area of influence. Any low lying may be lined with silt fencing to prevent sediment impacts
2	Employee and Other Users Transportation	Increase in Road Traffic	Increase of road traffic and community health and safety	• Road conditions will be monitored for and any damage of road or structures, utilities, shall be remedied immediately to reduce the potential for significant impacts to local communities

				• Signage will be posted for site entrance and exist • New traffic patterns, if any, will be identified with signage and notification to nearby communities, • Pollution control measures will be implemented to control and mitigate noise and dust emissions
3	Construction Activity & Available Resources	Occupational Health & Safety	Accidents and injuries associated with the operation of heavy equipment and construction activities	• Site office and Project Manager will have a list of Emergency Contacts including medical personnel in the case of an emergency. • An Emergency Protocol will be in place for severe accidents and access to an Air Ambulance for transport to a comprehensive medical facility • Freshwater resources will be available at all time • Sanitary facilities will be available on site and cleaned at scheduled frequency, wastewater will be pumped and discarded at a DEHS approved location
4	Source of Workforce for Construction Activity & Opportunities for Local Enterprises	Socio-Economic	Beneficial impact on local job creation and economic opportunity	• Community Grievance Redress plan to address community inquiries • Hiring of skilled and semi-skilled workers by contractors • Skills training
	Operation of Heavy Equipment & Utilities	Subsurface Impacts	Pollution Prevention Potential for fuel spills	• Emergency Response Plans will include a spill and pollution prevention plan • Use of diesel generators for power, if needed, fuel storage on site, and equipment refueling present the potential for fuel spills • Spill kits will be available on site at all times; any spill in excess of 55 gallons will prompt immediate notification to DEPP and DEHS

				• Hazardous substances including petroleum products will be discarded and contained in appropriate methods
		Noise Impacts	Noise Attenuation Techniques	• Though communities are not located within the area of influence, noise attenuation techniques should be applied to project equipment • Equipment should undergo regularly scheduled maintenance • Contractors shall adhere to noise guidelines published by NIOSH or IFC standards
6	Fugitive Dust Emissions from Grading Activities	Air Quality	Fugitive emission of dust and potential to degrade ambient air quality	• Construction materials to be stored in a designated storage area • Speed restrictions to limit dust • Frequent watering on active roadway to control fugitive dust • Use of tarpaulins by dump trucks, waste vehicles

12.4 Roles & Responsibilities for Environmental & Social Management

An organizational chart and communication plan facilitate a network of strong internal and external communication. It also establishes protocols for emergency response and community grievance redress. The project team will have a designated Environmental Manager and Safety Manager, the positions can be combined.

Weekly site meetings or as determined will highlight items of immediate environmental concern; a compilation of environmental issues will be highlighted and presented to DEPP. The Environmental Manager will engage in frequent communication with DEPP. Additionally, coordination of construction activities will entail notification and meetings with local government, community leaders, and the public.

Environmental Specialist will:

- Review the EMP and make revisions thereto based upon site conditions, as required;
- Attend meetings when necessary and address any environmental shortcomings identified, and;
- A review of the environmental monitoring data and its management, and;
- A review of issues of non-compliance that have arisen and how these have been dealt with;
- Advise on the need for expert assistance when required;
- Compliance with all environmental requirements, and;

The monitoring strategies, recording, reporting and liaison with all interested parties.

12.5 Training and Capacity Building Requirements

The EMP is a written guide for the workforce that outlines roles and responsibilities for human health and safety, and the protection and preservation of the natural environment. All personnel will be required to attend an environmental induction session followed by on-going training to reinforce environmental stewardship. On-going training may include a weekly Toolbox talk to address specific concerns and preparation for future works.

12.6 Best Management Practices (Mitigation & Management) for Construction & Operation

The following subsections outline best management practices relevant to the East Grand Bahama Microgrid project.

12.6.1 Good Housekeeping Practices

Good housekeeping practices help maintain a safe and healthy workplace by eliminating hazards. While seemingly simple, a well-kept site improves productivity and worker health, thereby aiding in accident and fire prevention. A tidy work site, organized and free of clutter, allows for more effective use of the site.

General guidelines for good housekeeping practices include but are not limited to the following:

- Identification and marking of physical hazards, such as open trenches
- A designated materials storage area with adequate space and organization for supplies

- Preventive maintenance on tools and machinery to reduce the threat of spills and accidents
- A waste management program that provides and frequently empties bins for litter, dumpsters, and a designated area for construction debris
- Daily street cleaning to prevent elevation of dust particles and mud during rainfall events

12.6.2 Site Safety and Health for Communities & Workers

Personnel onsite will have access to sanitary conveniences, potable water, and when deemed necessary for the task, appropriate personal protective equipment (PPE). PPE protects the body from safety and health risks at work. Additional PPE will be available for work sites near water or open trenches with standing water and will include ladders, safety harnesses, and training.

PPE may include but is not necessarily limited to the following:

- Steel-toed boots
- Safety vests
- Hard hats
- Gloves
- Eye protection
- Hearing protection

All personnel will undergo an initial site safety and health training, followed by periodic refresher training. Employees should be trained on how to use PPE properly and effectively. PPE shall be inspected and maintained in good condition and if it becomes worn or broken, new PPE shall be distributed and used.

Potable drinking water will be available onsite at all times. Sanitary conveniences will be available for use onsite and regularly emptied.

Adequate lighting will be provided for work that continues during night-time hours.

A first-aid kit and emergency contact list will be available at all times. Hazards such as open trenches and utilities will be marked by caution tape. Security and signage will identify hazards to public safety.

12.6.3 Materials Storage

Materials stored according to BMPs prevent spills through hazard avoidance. Materials shall be stored in a designated and secured area. Every material requires specific handling procedures because materials differ by composition, size, and weight. Materials shall be handled and stored according to specifications found in the Material Safety Data Sheet (MSDS). MSDSs shall be kept onsite at all times.

Flammable materials will be stored away from ignition sources to prevent fire. The contractor shall have fire extinguishing equipment onsite at all times.

12.6.4 Waste Management

Waste management identifies a project's waste streams, makes provision for timely and effective removal, and allocates responsibility for waste disposal. General housekeeping should keep the work areas free of litter and construction debris.

All solid waste materials will be placed in a designated dumpster or bin to be emptied on a fixed schedule and disposed of at a facility as directed by DEHS. Sanitary conveniences will be emptied at regular intervals by an approved sewage disposal company. Hazardous materials, if any, will be identified, appropriately stored, and disposed of in coordination with DEHS.

12.6.5 Protection and Preservation of Natural Resources/Sensitive Environmental Features

Employment of BMPs will minimize adverse impacts to natural resources and ensure viability of sensitive environmental features such as wetlands and nearshore habitats.

- A walkover survey is performed to identify affected protected tree species and subject to permit criteria, to apply for a permit to harvest a protected tree under the purview of the Forestry Unit under the Protected Tree Order 2021, Forestry Act 2010.
- Erosion and sediment control measures will minimize sedimentation impacts and constitute a form of pollution control.
- Spill prevention practices include designated refuelling and fuel storage areas with adequate containment measures, preventive heavy vehicle and machinery maintenance, and onsite spill clean-up kits, and waste management.

12.6.6 Stormwater

Removal of vegetation and development construction increases the amount of impervious surface areas, which increases the rate of surface water runoff. These high stormwater flow rates can lead to erosion and flooding. Stormwater may be contaminated with oil and grease, metals, particulate matter, and other pollutants released by vehicles. Stormwater may also contain nutrients and herbicides used for the management of vegetation in the right-of-way.

Stormwater management practices slow peak runoff flow, reduce sediment load, and increase infiltration. Infiltration is increased via vegetated swales, filter strips, terracing, detention ponds or basins, infiltration trenches/basins, and constructed wetlands.

General stormwater management practices include the following:

- Methods to reduce/slow peak runoff flow
- Installation of energy dissipation measures
- Regular maintenance of erosion and runoff control measures

12.6.7 Erosion and Sediment Control

Sediment impacts may occur during heavy storm events where flash flooding may erode surfaces and transfer suspended sediments to another location. Turbid conditions may adversely affect light penetration through the water column, impairing photosynthesis for marine species.

BMPs for erosion and sediment control include but are not limited to the following:

- Dewatering hoses, if any, will be placed away from sensitive environmental features and allow time for suspended sediment to fall out.
- Installation and ongoing maintenance for sediment and erosion control devices such as silt fencing, check dams, and/or mulch berms.
- Revegetation and/or otherwise stabilizing of a cleared area.

12.6.8 Prevention of Pollution of Groundwater Resources

Employment of BMPs will minimize adverse impacts to natural resources and ensure viability of sensitive environmental features such as wetlands and nearshore habitats. Erosion and sediment control measures will minimize sedimentation impacts and constitute a form of pollution control.

Spill prevention practices include the following:

- Designated refuelling and fuel storage area; with adequate containment measures (110 percent of capacity)
- Preventive heavy vehicle and machinery maintenance
- A designated wash-down area away from surface Water and sensitive environmental features
- A waste management program
- Onsite spill clean-up kits

12.6.9 Air Quality and Noise Attenuation

12.6.10 Air

The contractor shall implement measures to maintain ambient air quality. Fine sediment may become airborne during the dry season, which typically begins in November and ends in late May. Dust mitigation strategies during construction may include:

- Vehicle speed restrictions
- Site watering, as necessary, during the dry season

It should be noted that due to the isolated nature of the site and there being no adjacent neighbours, air, noise, and dust mitigation will require less mitigative measures than if situated in a densely populated area.

12.6.11 Noise

Noise prevention and mitigation begins at the source of noise. Noise reduction at the source prevents extraneous noise output. Noise reduction options may include but are not limited to the following:

- Selecting equipment with lower sound power levels
- Installing suitable mufflers on engine exhaust and compressor components
- Installing acoustic enclosures for equipment casing radiating noise
- Installing vibration isolation for mechanical equipment

- Limiting hours of operation for specific pieces of equipment or operations, especially mobile sources operating through community areas

12.6.12 Fire and Hurricane Risks

The North Atlantic tropical cyclone season begins June 1 and ends November 30. However, tropical disturbances may form prior to the start and after the close of this time period. The Bahamas lies within the hurricane zone, so it is expected that tropical disturbances, tropical depressions through Category 5 hurricanes, may periodically make landfall. Risks associated with tropical cyclones include storm surge, high winds, and heavy rainfall. All construction will adhere to the Bahamas Building Code.

In terms of fire-fighting capabilities, the potable water systems will include a high-service pumping station for fire and potable water. The inventory of materials shall dictate any substances requiring additional specialty fire-fighting equipment. A list emergency numbers should be available onsite at all times.

12.7 Environmental Monitoring

Environmental compliance is achieved through frequent and consistent site inspection and strong communication with the contractor. Construction monitoring documents the contractor compliance to the EMP with respect to but not limited to site safety and health, protection of ground water, general housekeeping, hazardous waste disposal, noise and air quality control, and protection of natural resources. The monitoring checklist is the mechanism within the environmental management system to document onsite practices, provide recommendations, and note when corrective action is required.

12.8 Grievance Redress

Grievance redress for employees, neighbours, and adjacent property owners is a management tool to identify, assess, and provide resolution of complaints during a project cycle. Implementing a system of grievance redress early in a project's cycle allows for resolution of minor issues before escalation. Grievance redress mechanisms (GRMs) are a core component of managing project operational risk.

Grievance redress is a management tool to identify, assess, and provide resolution of complaints during a project cycle. Implementing a system of grievance redress early in a project's cycle allows for resolution of minor issues before escalation to high-profile and expensive disputes at the local and national level. Support is garnered from local communities which have access to a system for complaint filing and resolution. Grievance redress mechanisms (GRMs) are a core component of managing project operational risk. A system to receive, catalogue, and respond to community concerns is important.

According to the *World Bank's Approach to Grievance Redress in Projects* the following steps should be taken:

Step 1 Assessment of Risks and Potential Grievances and Disputes

Step 1 is the identification of potential issues, stakeholders, and existing institutional capacity for dispute resolution.

Step 2 Capacity Assessment

Step 2 reviews the capacity for local and national institutions to address and resolve project concerns. Institutions will be reviewed through a credibility assessment with the following criteria: legitimacy, accessibility, predictability, fairness, rights compatibility, transparency, and capability.

Step 3 Action Plan

Step 3, the Action Plan, creates tangible steps to be implemented during project planning and execution to enable effective grievance management for dispute resolution. Successful grievance management systems contain the following components:

- Access Point(s) for Complaints, i.e. Help Desk
- Grievance Log Database
- Assessment, Acknowledgement, and Response to Complaint(s)
- Appeals Process
- Resolve and Follow-Up

13 Emergency Response Plans

13.1.1 Hurricane Preparedness

The North Atlantic tropical cyclone season begins June 1st and ends November 30th. However, tropical disturbances may form prior to the start and after the close of this time period. The Bahamas lies within the hurricane zone so it is expected that tropical disturbances, tropical depressions through Category 5 Hurricane, may periodically make landfall. Risks associated with tropical cyclones include storm surge, high winds, and heavy rainfall. Given the island setting, the drainage system must be able to effectively dispose runoff during heavy storm events.

The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained wind speed. This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preparatory measures. In the western North Pacific, the term "super typhoon" is used for tropical cyclones with sustained winds exceeding 150 mph. This affects one or more U.S. territories (i.e. Guam and the Mariana Islands).

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	• 74-95 mph • 64-82 kt • 119-153 km/h	**Very dangerous winds will produce some damage:** Well-constructed frame homes could have damage to roof, shingles, vinyl siding and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	• 96-110 mph • 83-95 kt • 154-177 km/h	**Extremely dangerous winds will cause extensive damage:** Well-constructed frame homes could sustain major roof and siding damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	• 111-129 mph • 96-112 kt	**Devastating damage will occur:** Well-built framed homes may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water

	• 178-208 km/h	will be unavailable for several days to weeks after the storm passes.
4 (major)	• 130-156 mph • 113-136 kt • 209-251 km/h	**Catastrophic damage will occur:** Well-built framed homes can sustain severe damage with loss of most of the roof structure and/or some exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	• 157 mph or higher • 137 kt or higher • 252 km/h or higher	**Catastrophic damage will occur:** A high percentage of framed homes will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

Tropical disturbances can also produce storm surge; an abnormal and dangerous rise of water pushed onto the shore by strong winds. Storm surges can increase the normal high tide by 15 ft or more which necessitates evacuations of low-lying lands and areas prone to surge.

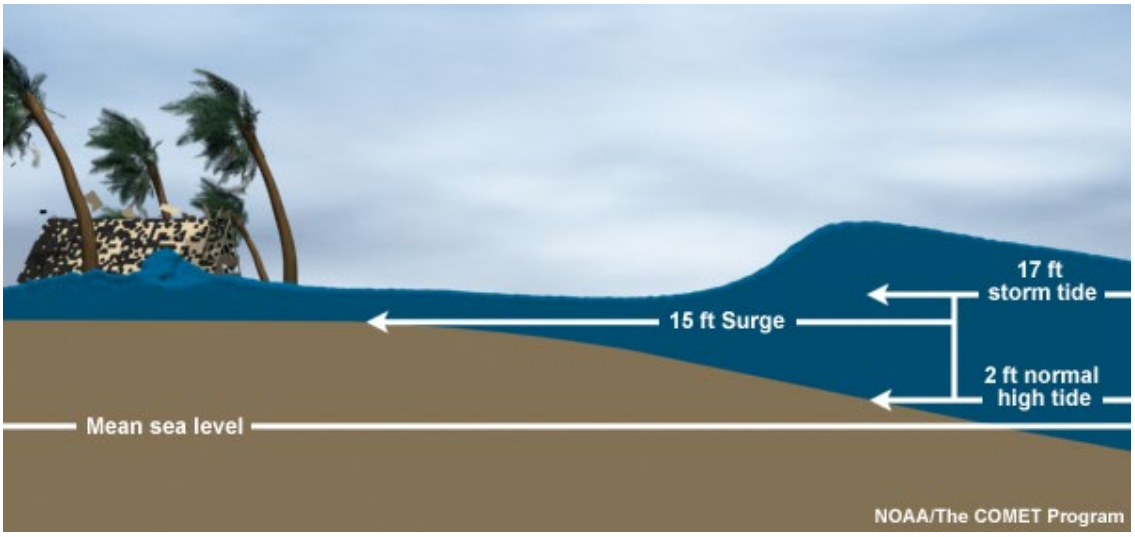


Figure 13-1 Storm Surge, NOAA

13.1.2 Hurricane History

The Bahamas is situated in the hurricane zone. Hurricane season begins June 1 and ends November 30, although tropical cyclones may form outside this period. According to the coastal dataset of the NOAA Coastal Service Center, 109 tropical disturbances (tropical storms and hurricanes) have come within 60 nautical miles of East Grand Bahama between 1859 and 2022.[21]

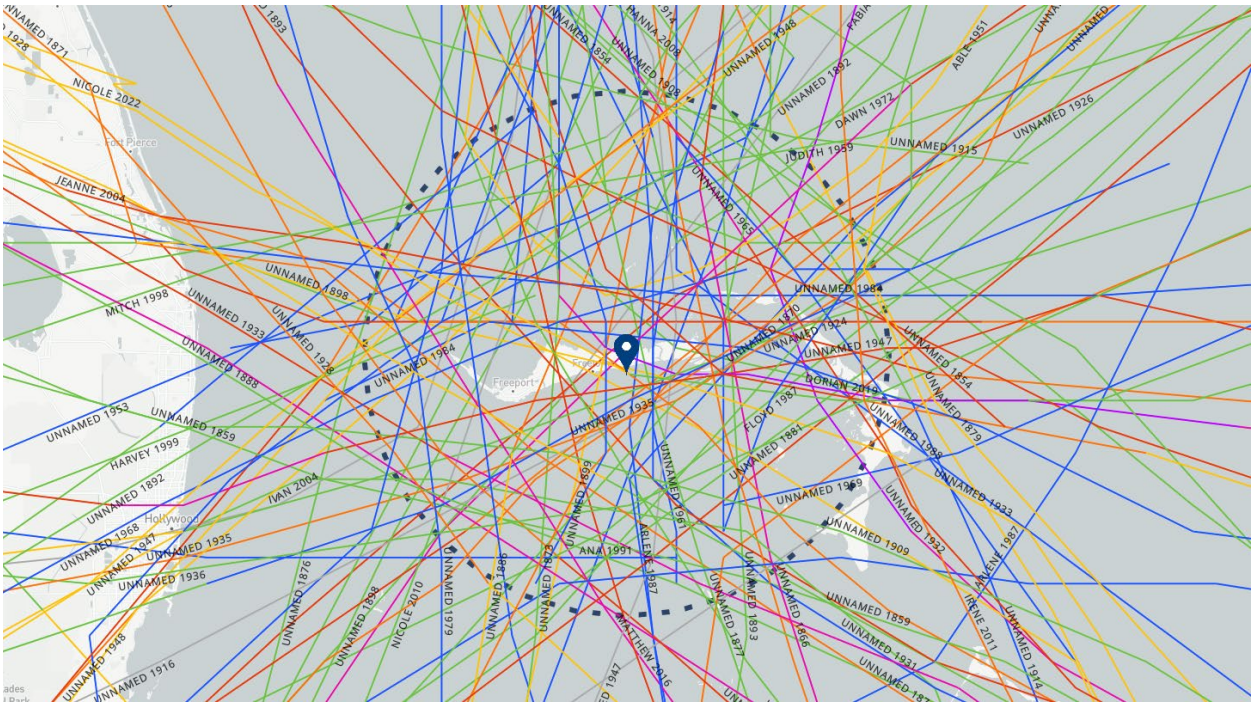


Figure 13-2 Hurricane Tracks, East Grand Bahama

13.1.3 Preparedness & Planning

Being prepared for inclement weather and tropical storms is important. The potential threat posed by a hurricane requires a prepared response of all site and project personnel. Keep in mind that no emergency follows a script.

The Contractor will monitor weather developments, communicate all required hurricane-related activity and oversee hurricane damage assessment and remediation. Participation will be required from each project unit. Managers will be responsible for requesting participation of their subordinates as needed. COMMUNICATION IS PARAMOUNT.

In addition to having evacuation plans in place, it is important to be familiar with the warning terms used for hurricanes, as well as your local community's emergency plans, warning signals, and shelters. **Hurricane/Tropical Storm watches** mean that a hurricane or tropical storm is possible in the specified area. **Hurricane/Tropical Storm warnings** mean that a hurricane or tropical storm is expected to reach the area, typically within 24 hours.

21 Hurricane history tracker and database can be found at this link: http://coast.noaa.gov/hurricanes/

13.1.3.1 Prior to Hurricane Season (Before June 1st)

Preparation planning entails reviewing the procedures prior the start of hurricane season.

1. Identify the Crisis Management Team (CMT) and organizational chart for responsibilities. Ensure contractors are aware of the plan and provide training. The Crisis Management Team will also designate a Damage Survey Team for post hurricane recovery efforts.

2. Review the Hurricane Preparedness & Response Plan. Verify and update the list of emergency telephone numbers for the CMT.

3. Review weather-monitoring resources including satellite television (Bahamas Department of Meteorology, The Weather Channel), AM/FM Radio, weather radio, and other communication resources as directed by the Government of the Bahamas. Ensure devices have extra batteries and/or power sources to charge communication devices. Satellite phones are recommended.

4. Verify emergency equipment is ready to use and in normal operating condition.

5. Check inventory and emergency supplies stockpiled for the hurricane season including fuel for generators, potable water, and food.

6. Survey all buildings and grounds to identify windstorm or flood related exposures that can be mitigated by repair or emergency measures before a storm. Repairs should be completed before June 1st.

7. Identify resources that would be needed if the site was flooded. Verify sandbag need and placement to protected possible water entry points and vital protection equipment.

8. Develop a Damage Survey and Repair Team that will be the first on site to assess damage and make the site safe enough for the return of the workforce.

13.1.3.2 Preparing for Tropical Disturbance After Formation Pre-Weather Arrival (24-72 Hours)

1. Activate Plan. Prepare for securing of personnel, equipment, and general facility/site.

2. Monitor media outlets for announcements by NEMA and the Bahamas Department of Meteorology.

3. Ensure that all loose scrap material is gathered up and disposed of in the dumpsters. Empty all dumpsters prior to storm conditions; otherwise cover to prevent debris from becoming airborne.

4. Ensure equestrian and livestock areas are secure and animals housed in an appropriate setting to withstand hurricane force winds and are away from flood risk.

5. Chemicals, fertilizers, and other toxic materials should be stored in secure buildings and according to MSDS.

6. Ensure dewatering, standby, and diesel-powered equipment is ready to operate.

7. Perform landscaping preparation. Remove objects with potential to become airborne, such as coconuts. Check the conditions of trees within 25-75ft of buildings and prune/trim any trees with rotting limbs or posing the potential to cause harm.

8. Remove all unsecured items including trash bins, portable toilets, scaffolding, etc.

9. Identify vehicle access routes and diversions due to flooding.

10. Secure all documentation and work records.

11. Review the evacuation plan for Frank Watson Development Corp and evacuate.

13.1.4 Evacuation Plan

It is important to have an evacuation plan in place to ensure that workers can get to safety in case a hurricane may affect the area. Only designated essential workers will remain on the island, or the island be evacuated in its entirety depending on storm category. A shelter will be designated in an elevated and protected area with provisions to accommodate hurricane conditions. The shelter will adhere to the Bahamas Building Code.

A thorough evacuation plan should include:

- Conditions that will activate the plan
- Chain of command
- Emergency functions and who will perform them
- Specific evacuation procedures, including routes and exits
- Procedures for accounting for personnel, customers and visitors
- Evacuated personnel let the CMT know location and contact information
- Equipment for personnel
- List of Shelters on New Providence

Be prepared to follow instructions from the local authorities and to evacuate if instructed to do so.

- Ensure that all workers know what to do in case of an emergency.
- Practice evacuation plans on a regular basis.
- Update plans and procedures based on lessons learned from exercises.

13.1.5 Emergency Numbers

The following are emergency numbers provided by the Royal Bahamas Police Force.

MEDICAL SUPPORT

PMH HOSPITAL AND AMBULANCE- 322-2861
ACCIDENT & EMERGENCY (PMH)- Tel. (242) 326-7014
AIR AMBULANCE- 327-7077
AAS LIFE FLIGHT (Air Ambulance)- Tel. (242) 377-1606 or (242) 323-2186
MED EVAC- Tel. (242) 322-2881
DOCTORS HOSPITAL AMBULANCE SERVICES- Tel. (242) 302-4747
BAHAMAS HYPERBARIC CENTER- Tel. (242) 362-5765 OR (242) 422-2434
NATIONAL EMERGENCY MEDICAL SERVICES- Tel. 911, 919, (242) 323-2586
BASRA- 646-6395 / 359- 5561/4
RED CROSS- Tel. (242) 323-7370

POLICE

POLICE- Tel. 911, 919, (242) 322-4444
CRIME STOPPERS- Tel. (242) 328-8477
FIRE- Tel. 919

DOMESTIC VIOLENCE AND ABUSE

OBJTHE BAHAMAS CRISIS CENTRE- Tel. (242) 328-0922
CHILD ABUSE HOTLINE- Tel. (242) 322-2763
SOCIAL SERVICES- Tel. (242) 326-0526
v ABUSE SUPPORT- Tel. (242) 325-8864, (242) 322-741, (242) 727-4888, (242) 359-4888
NEMA- Tel. (242) 322-6081

UTILITIES

WATER AND SEWERAGE- Tel. (242) 325-0505 or (242) 325-4504 (24 hours)
BEC POWER OUTAGE- Tel. (242) 323-5561/4
BTC TELEPHONE REPAIRS- Tel. (242) 225-5282

13.1.6 During the Storm

1. STAY INSIDE. NO WORK TO OCCUR.

2. MONITOR WEATHER AND MEDIA OUTLETS.

3. MAINTAIN CONTACT BETWEEN CMT AND DESIGNATED INDIVIDUALS IN NON-AFFECTED AREAS.

13.1.7 After the Storm

Employees return will only be allowed upon the All Clear given by the Government of The Bahamas and the CMT. In coordination with the CMT, the Damage Survey Team will assess the state of the island post-hurricane.

1. The Damage Survey Team will inspect the job site, identify and document the damage, prioritize repairs, complete Job Hazard Analysis and Site Plans of Action, and then initiate repairs.

2. Assess island access locations. Review damage to the runway and all dock locations. Designate a safe point of entry if emergency services are required.
3. Class A hazards will have priority and must be abated before the return of the entire workforce.

4. Do not touch loose or dangling wires. Report such damages to an electrician, the utility company, or Royal Bahamas Police Force.

5. Stay clear of disaster areas where first responders are providing aid. Be prepared to aid with equipment.

6. Stay alert for fires. Check water lines for pressure servicing hydrants and make note of available of firefighting capabilities.

7. Inform employees to return to work. Some employees may need additional care; contact the Bahamas Red Cross: 1-242-323-7370.

8. Recommence work and operational activities

9. Assess the effectiveness of the plan and response activities.

10. Revise plan as necessary to increase effectiveness.

13.2 Spill, Prevention, Control, and Countermeasure Plan (SPCC)

A Spill Prevention, Control, and Countermeasure Plan (SPCC) implements best managements to prevent the discharge of pollutants and/or petroleum products. It is a proactive measure to manage the storage, use in order to avoid a release of a pollutant into the environment. Key preventative measures include proper materials storage, material use, and equipment preventative maintenance.

At its core, SPCC is part of the environmental management system such as ISO14001 of Plan, Do, Check, Act.

Key SPCC Procedures:

1. Operating BMPs to Prevent Spills. Environmental awareness training and toolbox talks shall incorporate spill prevention practices to educate employees about standard operating procedures to avoid a spill event. These BMPs include:

- Materials Storage Information. Materials should be stored according to MSDS. Petroleum products should be stored on elevated surfaces or with an impervious layer separating the container from the ground. Appropriate containment and if needed, secondary containment should be capable of 110% storage. Oil sources shall not be stored near floor drains or sensitive environmental features, such as wetlands. Petroleum products should be stored in a secured area.
- Product Transfer and Refueling. Refueling and fuel transfer should use pads, drip pans, and/or funnels when using petroleum products. Any refueling done on site shall be in a previously agreed designated area with employed spill prevention techniques to prevent the release of a petroleum product to the environment. Tanks should be filled to no more than 90-95% due to the potential for overflow from expansion in hot weather. No smoking during equipment refueling or any fueling exercise.
- General Housekeeping. General housekeeping principles to keep a site clean and free of debris can contribute to culture of cleanliness and vigilance for storage and handling practices that may cause a release.

2. Control Measures - Spill Clean-up Kit. In the event of a spill, spill-kits should be easily identified and readily available on site. These kits should include absorbent products such as pad, sawdust, kitty litter, pillow and booms. All personnel on site should be aware of the spill clean-up kit location. All spills shall be reported immediately to the Environmental Manager or On-Site Manager.

3. Oil Spill. When an oil product is released to the environment, employees should be trained in first-response measures.

The following steps should be followed:

- Utilize oil spill response training prior to spill
- Immediate use of spill kit or measures to contain spill safely
- Contact Environmental Manager or On-site Manager at the time of spill
- Notification to DEPP within 24 hours or in the event of major spill (release from a 55 gallon drum), notification to DEPP immediately.

4. Clean up. Clean-up efforts are most effective when employed quickly following a spill.

- If a spill occurs on a paved surface, it is best to keep the spill contents away from drains. Use absorbent pads or socks to contain the spill.
- If a spill occurs on soil, it is best to keep the spill away from waterways. Use absorbent pads or socks to contain the spill. Spills to soils should be excavated immediately. All contaminated soils, by visual and odour detection, should be placed on an impervious surface such as a tarp and covered. DEHS should be contacted to determine proper method for disposal. The contractor should keep receipt of the disposal of contaminated materials by DEHS.
- Large spills may require sampling to determine extent and prolonged monitoring during remediation efforts. Major spills, release from a 55 gallon drum, will require clean-up in coordination with DEHS. Efforts using the spill kits including absorbent materials and containment measure should be employed while waiting instruction.

13.3 Stormwater Management Plan

Construction or widening of roads increases the amount of impervious surface areas which increases the rate of surface water runoff. These high stromwater flow rates can lead to erosion and flooding. Stormwater may be contaminated with oil and grease, metals, particulate matter, and other pollutants released by vehicles. Stormwater may also contain nutrients and herbicides used for the management of vegetation in the right of way.

Stormwater management practices slow peak runoff flow, reduce sediment load, and increase infiltration. Infiltration is increased via vegetated swales, filter strips, terracing, detention ponds or basins, infiltration trenches/basins, and constructed wetlands.

General stormwater management practices:

- Methods to reduce/slow peak runoff flow
- Installation of oil/water separators
- Regular maintenance of erosion and runoff control measures

13.3.1 Erosion and Sediment Control

Sediment and erosion control measures such as silt fencing, turbidity curtains, and revegetation will be deployed as required. Sediment impacts may occur during heavy storm events where flash flooding may erode surfaces and transfer suspended sediments to another location. Turbid conditions may adversely affect light penetration through the water column impairing photosynthesis for marine species.

BMPs for erosion and sediment control include but are not limited to the following:

- Dewatering hoses will be placed away from sensitive environmental features and allow time for suspended sediment to fall out.
- Installation and on-going maintenance for sediment and erosion control devices such as silt fencing and/or turbidity curtains
- Revegetation and/or sodding of a cleared area
- Turbidity barriers selected are appropriate for water conditions
- Construction debris will be placed away from surface waters and with containment measures
- Excavated materials, if any, and/or fill stockpiles will be stored in pre-approved locations
- Equipment wash-down will occur in a pre-approved location to capture runoff

14 Appendix

14.1 Geotechnical Report (ETS)

See Next Page.

Geotechnical Work Plan and Schedule

for

Environmental, Social, and Geotechnical Study for Resilient Micro-Grids Projects

East Grand Bahama
BAHAMAS

prepared by:

Lambert Knowles P.E.

engineering and technical services, ets
nassau, bahamas
242-356-0500
etsbahamas@gmail.com

February 2024

GEOTECH WORK PLAN AND SCHEDULE

- **PURPOSE AND BACKGROUND**

The Geotechnical Study for the Resilient Micro-grids projects in East Grand Bahamas pertains to the "Reconstruction with Resilience in the Energy Sector in The Bahamas" program (BH-L1048) executed by the Ministry of Finance, Government of The Bahamas.

To achieve the geotechnical component an assessment of the existing soil conditions is required to identify the natural and physical properties of soil, construction concerns, and construction materials.

The East Grand Bahama Hybrid Microgrid Solar project includes the following five (5) sites:

1) Freetown
2) High Rock
3) McClean's Town
4) Sweeting's Cay
5) Water Cay

- Methodology

To achieve the state goals the objectives the following proposed work plan and schedule will implemented:

1. ***Preliminary Geotechnical Investigation – February 2 to 4, 2024.***
   Complete a geotechnical preliminary investigation at each of the sites consisting of photographs, drone imagery, shallow soil sampling with hand tools, minor clearing with hand tools, and a visual assessment of the surrounding geology.

   This preliminary site investigation will not require land clearing or the use of heavy equipment.

2. ***Geotechnical Site Investigation – March 13 to 17, 2024***
   Further to the findings of the preliminary investigation, a field investigation plan shall be developed that minimizes any required clearing. It is proposed to limit the investigation to between 4 and 6 test pits per site utilizing a backhoe machine, except for Water Cay and Sweetings Cay where a hand-held gas-powered auger will be used. Site clearing is not required at Sweeting Cay and Water Cay. Figures 1 t0 5 indicate the proposed location of the test pits, hand auger, and the proposed route for access clearing.

   Prior to commencing any clearing the proposed route will be surveyed by the Environmental Officer who will advise if adjustments to the proposed route are required.

   The clearly will be carried out with a backhoe machine and will be less than 8 feet in width. Wherever possible the clearing will be limited to existing cleared tracts or roads.

   Each test pit will be no more than three (3) feet square in plan and no more than six (6) feet in depth. The soil surface will be tested for hardness at various depths. Once the test is complete each test will be filled with the removed excavated material and compacted. The ground surface will be restored and graded accordingly to match the existing terrain.

At Sweetings and Water Cay, we will use a 3-inch diameter bit to drill into the ground and test the soil at various depths to a maximum depth of six (6) feet below the surface. The boring hole will be filled with drilling the drilling spoils and the surface graded accordingly.

Upon completion of the field testing samples rock samples will be boxed and shipped to our lab in Nassau for testing.

- Schedule

The following are milestone dates for the project:

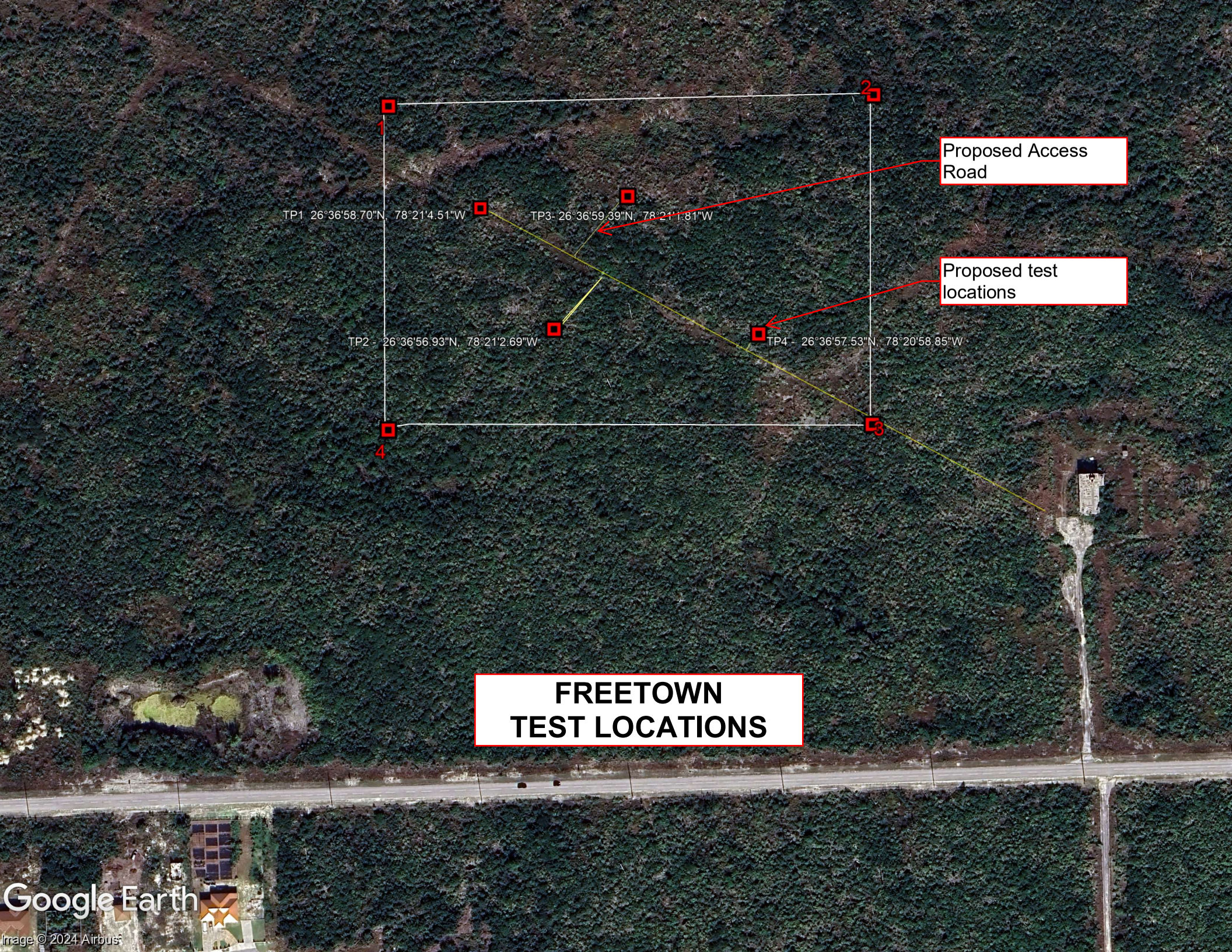
- Preliminary Geotechnical Study: February 4, 2024
- Site Investigation: March 13, 2024

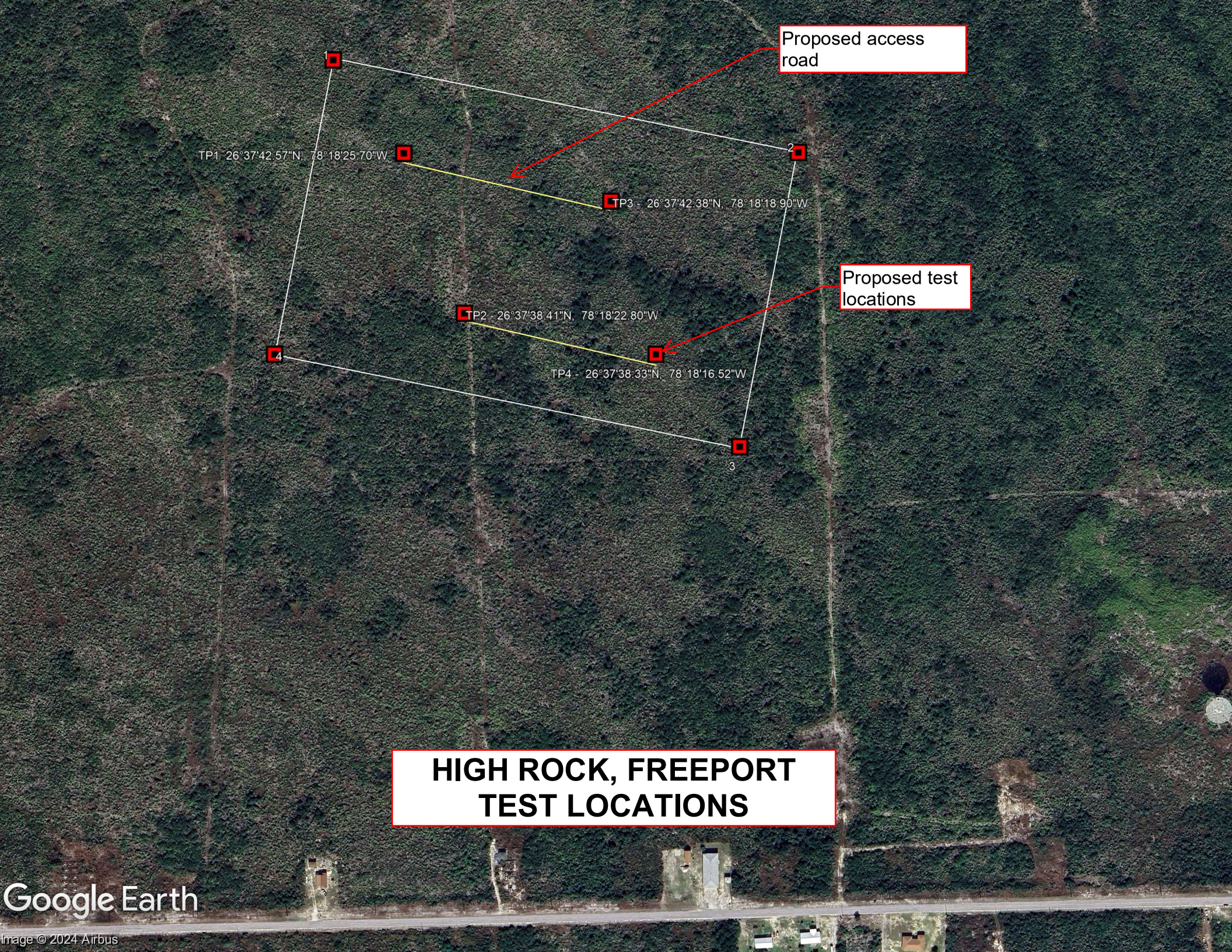
Please do not hesitate to contact us if you have any questions or would like to discuss any aspect of the proposal.

Yours truly

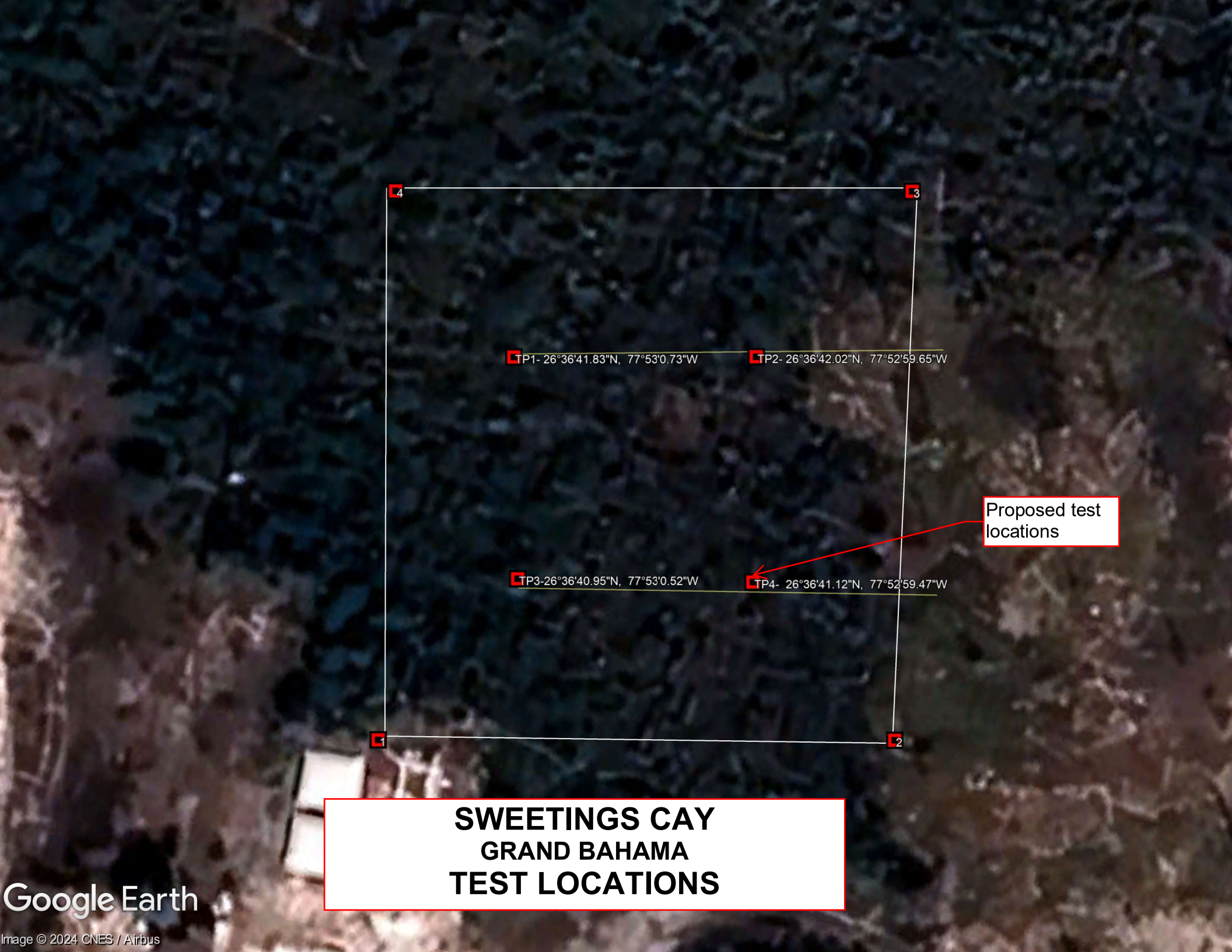
ENGINEERING & TECHNICAL SERVICES, LTD.

Lambert Knowles, P.E.


1
2
3
4
Proposed Access Road
Proposed test locations
TP1 26°36'58.70"N, 78°21'4.51"W
TP3- 26°36'59.39"N, 78°21'1.81"W
TP2 - 26°36'56.93"N, 78°21'2.69"W
TP4 - 26°36'57.53"N, 78°20'58.85"W
FREETOWN
TEST LOCATIONS
Google Earth
Image © 2024 Airbus


Proposed access road
1
2
TP1 - 26°37'42.57"N, 78°18'25.70"W
TP3 - 26°37'42.38"N, 78°18'18.90"W
Proposed test locations
TP2 - 26°37'38.41"N, 78°18'22.80"W
4
TP4 - 26°37'38.33"N, 78°18'16.52"W
3
HIGH ROCK, FREEPORT
TEST LOCATIONS
Google Earth
Image © 2024 Airbus


2
Proposed access road
TP3 - 26°38'56.44"N, 77°56'14.47"W
1
TP1- 26°38'55.89"N, 77°56'15.20"W
TP4 - 26°38'55.85"N, 77°56'13.86"W
3
TP2- 26°38'55.31"N, 77°56'14.57"W
Proposed test locations
4
McLEANS TOWN
GRAND BAHAMA
TEST LOCATIONS
Google Earth
Image © 2024 Airbus


4
3
TP1- 26°36'41.83"N, 77°53'0.73"W
TP2- 26°36'42.02"N, 77°52'59.65"W
Proposed test locations
TP3-26°36'40.95"N, 77°53'0.52"W
TP4- 26°36'41.12"N, 77°52'59.47"W
1
2
SWEETINGS CAY
GRAND BAHAMA
TEST LOCATIONS
Google Earth
Image © 2024 CNES / Airbus

WATER CAY
GRAND BAHAMA
TEST LOCATIONS

14.2 Stakeholder Engagement Plan (Heritage Partners)

See Next Page.

DRAFT Stakeholder Engagement Plan

March 2024

EAST GRAND BAHAMA HYBRID MICROGRID SOLAR PROJECTS

1) Introduction

This Stakeholder Engagement Plan ("SEP") seeks to establish the methodology of engagement throughout the implementation and progress of the East Grand Bahama Hybrid Microgrid Solar Projects (the "Project"). Stakeholder Engagement is an integral component of informed decision-making and responsible development. This SEP supports the development of strong, constructive and responsible relationships with project stakeholders that are important to and integral for the successful management of the project's environmental and social risks.

The scope of this Stakeholder Engagement Plan seeks to be proportionate to the nature and scale of the project and its potential risks and impacts.

2) Purpose and Scope

The purpose of this SEP is to define the project approach to consultation and disclosure. The specific objectives of this SEP are to:

A. Meet the regulatory requirements for obtaining a certificate of environment clearance
B. Identify key stakeholders that are affected and/or influence the project
C. Identify the most effective methods to disseminate project information
D. Ensure regular, accessible, transparent and appropriate consultation
E. Build and maintain mutually respectful, beneficial and lasting relationships with stakeholders
F. Assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account through the project cycle
G. Promote and provide opportunities for effective and inclusive engagement with stakeholders throughout the Project life cycle on issues that could potentially affect them
H. Establish formal grievance/resolution mechanisms
I. Ensure that appropriate project information is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format
J. Create an atmosphere of understanding

K. Define roles and responsibilities for the implementation of the SEP
L. Define reporting and monitoring measures
M. Improve and facilitate decision-making

3) Project Description

The Project concerns operations initiated by the International Development Bank (IDB) related to the planned rehabilitation and modernization of The Bahamas' energy system by strengthening isolated and interconnected grid networks with resilient Renewable Energy (RE), designed to withstand the increasing frequency and severity of extreme weather events. In particular, this Project involves the rehabilitation of the electricity Transmission and Distribution system and the installation of new and resilient RE capacity in East Grand Bahama.

The management of the Project will be under the responsibility of The Bahamas' Ministry of Finance (MoF) in close coordination with the IDB.

4) Stakeholder Identification and Analysis

Stakeholders are individuals or groups who are directly or indirectly affected by a project, as well as those who may have interests in a project and/or the ability to influence its outcome, either positively or negatively.

The main stakeholders for this Project are as follows:

Internal/Direct Stakeholders

Internal/direct stakeholders are those who are directly associated or involved in a project and who are within the organizational structure of a project. Internal stakeholders for this Project include the Project Sponsor (IDB), Executing Agency (Ministry of Finance, Government of The Bahamas) Program Executing Unit (PEU), members of the Project team, consultants, contractors and subcontractors as well as construction employees.

External/Indirect Stakeholders

External/indirect stakeholders are those who are not directly involved with a project and who do not contribute to its internal operations, but who are impacted by that project and are affected somehow by the actions and outcomes of that project. Key external/indirect stakeholders for this Project include:

Government Entities

Government ministries, departments and agencies are integral to the overall success of the Project. They are critical to the establishment of the physical, technical, legal and regulatory framework of the Project and are responsible for approvals and permits required for the Project to progress. It is expected that all government entities will benefit from the Project. The key government entities that will be consulted include:

- Department of Environment Planning and Protection (Ministry of the Environment and Natural Resources) - The mandate of this Department (DEPP) is to provide for the prevention or control of pollution, the regulation of activities and the administration, conservation and sustainable use of the environment and for connected purposes. DEPP also manages multilateral environmental agreements.

- Department of Environmental Health (Ministry of the Environment and Natural Resources) - This Department's mission is to promote and maintain a clean health environment and protection of the public's health through vigorous and consistent monitoring and the application of environmental education and enforcement.

- Department of Physical Planning (Ministry of Works & Utilities) - This Department's mission is to provide the strategic framework for the proper management of change in our physical environment and to facilitate the participation and education of the public regarding planning issues, while promoting sustainable and attractive communities.

- Department of Local Government (Ministry of Agriculture, Marine Resources and Family Island Affairs) - Through the provisions of the Local Government Act 1996, Local Government Authorities on Family Islands including Grand Bahama have been given the mandate and responsibility to, inter alia, govern the Road Traffic Authority, Port Authority, and Town Planning Committee of the Family Island in question, grant, renew, transfer and cancel hotel licences, and grant, transfer, and cancel liquor licences. The relevant local government authority in East Grand Bahama is the East Grand Bahama District Council.

- Ministry for Grand Bahama - The Ministry for Grand Bahama was established to specifically cater to the affairs of the residents of Grand Bahama. The Ministry's purpose is to bridge the gap between all the associated government ministries on the island and their stakeholders, and to deliver the relief needed by residents from East to West Grand Bahama to restore prosperity.

Municipal Authorities & Corporations

- Grand Bahama Port Authority - Freeport is a 230-square mile free trade zone on Grand Bahama Island, established in 1955. The Grand Bahama Port Authority Limited (GBPA) is a privately held corporation that acts as the municipal authority for Freeport, and operates the free trade zone under special powers conferred by the Hawksbill Creek Agreement Act. GBPA is horizontally integrated with property development, municipal services, airport, harbour operations, and shipyard concerns. The Project sites fall outside of the Freeport area, but many of the actions of GBPA impact the whole of Grand Bahama, including East Grand Bahama.

- Grand Bahama Power Company (GBPC) - Grand Bahama Power Company is a vertically-integrated utility and sole provider of electricity on Grand Bahama Island. GBPC provides services to East Grand Bahama.

Civil Society and Non-Governmental Organizations (NGOs)

In The Bahamas civil society groups consist of a wide variety of organizations, including private sector entities, chambers of commerce, NGOs, environmental organizations (which may wish to review the environmental documentation and/or comment on environmental matters of concern) and other groups. Civil society groups and NGOs that will be included in the stakeholder consultation process are listed below:

- Bahamas National Trust - The Bahamas National Trust is a science-based organization dedicated to effectively managing national parks to conserve and protect Bahamian natural resources.

- BREEF Bahamas - BREEF is a non-governmental nonprofit Bahamian foundation concerned with educating our people about the value of and need for conserving our marine environment.

- Waterkeepers Bahamas - Waterkeepers Bahamas is a non-profit organization which works to preserve and protect the lands, waters, and ecosystems of The Bahamas, and seeks to ensure that the waters of The Bahamas, including Grand Bahama, are safe for swimming and fishing for future generations.

- Grand Bahama Chamber of Commerce - The Grand Bahama Chamber of Commerce is a non-profit organization that represents a wide cross-section of private sector businesses on the island of Grand Bahama, and aims to encourage growth and expansion in the Grand Bahama economy.

Other Interested Groups and Affected Parties

Generally, the Project has the potential to have an impact on all aspects of society in the participating nations. Therefore, other interest groups and interested parties may include individual members of the target community, schools, churches, businesses, hotels, and other development projects which are either being implemented or in the planning stage for implementation.

Vulnerable Groups

Throughout The Bahamas in general, and in the target community of East Grand Bahama in particular, there are several identifiable disadvantaged or vulnerable groups who because of their prevailing characteristics face the risk of being excluded from the benefits of this project if not adequately engaged. These include low-income communities, women, the disabled and immigrant communities. In order to ensure that the Project does not further exacerbate existing exclusion errors, special efforts will be made to engage persons from these vulnerable groups and mitigate risks of social exclusion and elite capture (whereby public resources are biased for the benefit of socially advantaged groups to the detriment of disadvantaged groups).

Specifically, stakeholder analysis will disaggregate data by age, gender, nationality, and level of education to measure progress. Other factors that may impede full participation are tabled below along with possible mitigation measures.

Table 1: Factors Impacting Vulnerable Populations

Factors	**Vulnerable Population**	**Mitigation Measures**
Language	Hearing/Vision impaired; Non-English speakers	Providing virtual closed-captioning for virtual meetings; providing meeting transcriptions and notes upon request; providing translated meeting transcriptions in language of prevailing non-English speakers upon request
Time/Availability	Those needing more time/notice to access consultation methods	Investigating the time/day where most members of target communities will be available for meetings; ensuring adequate notice of consultation is provided to community members; providing virtual access to meetings and consultation efforts
Meal	Low-income/Everyone	Ensuring light refreshments are provided at

		meetings
Location	Low-income; Physically disabled	Ensuring meetings are conducted in central locations that are easy to access; ensuring meeting locations are wheelchair accessible; providing virtual access to meetings; conducting interviews at people's places of employment or homes (where permitted)

5) Stakeholder Contact List

A comprehensive stakeholder contact list should be developed and maintained through the life of the project.

Table 2: Stakeholder Contact List

Last Name	First Name	Position	Organization	Telephone Contact	Email
Rolle	Marco	Program Coordinator of the PEU	Ministry of Finance		marcorolle@bahamas.gov.bs
Major	Michael	Director	Department of Physical Planning	(242) 322-7550/2	
Neely	Rhianna	Director	Department of Environmental Planning and Protection (Ministry of the Environment and Natural Resources)	(242) 322-6005, 6	rhiannaneely@bahamas.gov.bs
Mckenzie	Melony	Director	Department of Environmental Health (Ministry of the Environment	242) 322-8037 (242) 323-2295	

			and Natural Resources)		
Sweeting	Hon. Clay	Minister of Works & Family Island Affairs	Department of Local Government (Ministry of Works and Family Island Affairs)	(242) 328-2700	publicworks@bahamas.gov.bs
Moxey	Ginger	Minister for Grand Bahama	Ministry for Grand Bahama		grbageneral@bahamas.gov.bs
Mullings	Nikita	Chief Operating Officer	Grand Bahama Power Company		nikita.mullings@gb-power.com
Anderson-Rolle	Lakeshia	Executive Director	Bahamas National Trust	242-393-1317	bnt@bnt.bs
McKinney-Lambert	Casuarina	Executive Director	BREEF Bahamas	242-327-9000	breef@breef.org
Darville	Joseph	President	Waterkeepers Bahamas	242-373-7558	connect@waterkeepersbahamas.com
Carey	James	President	Grand Bahama Chamber of Commerce	242-352-8329	info@gbchamber.org
Cooper	Marcus	Chief Councillor - East Grand Bahama	East Grand Bahama Local Government District Council	242-727-2227	
Feaste	Dion	Chief Councillor - Sweetings Cay	Sweetings Cay Local Government District Council	242-804-7455	
Thompson	Shandrose	Administrator	East Grand Bahama Local Government District Council	242-353-5313; 242-424-8718	shandrosethompson@bahamas.gov.bs

6) Stakeholder Analysis

Stakeholder analysis via stakeholder mapping is an important assessment tool which will aid the Project team in assessing how stakeholders can collaborate with or hinder the realization of what has been planned, and to begin identifying good ideas for defining strategies to work with these actors.

The *Interest x Influence* matrix at Table 3 below helps in the assessment and prioritization of the identified stakeholders, and allows the Project team to design strategies addressed to the different groups. The result of the interaction of the factors in this matrix suggests the type of management to be done with each group.

Table 3: Stakeholder Analysis Matrix

Stakeholder	Objectives or Targets	Level of Interest	Level of Influence	Possible Stakeholder Actions	Strategies for Engagement
IDB	Sponsoring the Project	High	High	Can approve project; can act as internal and external "champion" of project Withdrawing support/funding for project; stopping or pausing project	Should be managed closely. Frequent communication.
Bahamas Ministry of Finance (Executing Agency)	Approving the Project; Executing the Project	High	High	Can approve Project; can act as internal and external champion of project Can withdraw support of project; stopping or pausing project/project delays	Should be managed closely. Frequent communication.
Bahamas Government	Approving the Project	Low	High	Can approve Project; can act as external champion of project Can withdraw support of project; stopping or pausing	Should be kept informed at key political junctures.

				project/project delays	
Department of Environment-al Planning & Protection (DEPP)	Approving the Project	High	High	Can approve project Can stop or pause project; project delays	Should be managed closely. Frequent communication.
Other Government Agencies/ Utility Corporations/ Municipal Authorities/ Local Government	Facilitating the Project (through provision of utilities etc)	Medium	Medium	Can facilitate project Can cause project delays	Should be kept informed of project progress, changes, and risks
Project Team (PEU, Contractor, Project Manager, etc)	Manages the Project; Responsible for Project's technical, administrative, and operational management, etc.	High	High	Positive: Meet project objectives Negative: Project delays	Should be managed closely. Frequent communication.
NGOs, Community Groups, Neighboring Communities		High	Low	Show public support for project Public opposition to project	Should be kept informed of project progress Organize meetings and awareness events Should mitigate any negative stakeholder actions

7) Stakeholder Engagement Programme

An engagement and consultation strategy will be developed for this Project which will guide how stakeholders are engaged throughout the Project life cycle. Methods of engagement will be tailored for each stakeholder group.

Methods of Engagement

There are a variety of engagement techniques used to build relationships with stakeholders, gather information from stakeholders, consult with stakeholders, and disseminate project information to stakeholders. A list of common consultation techniques and the most appropriate application of these techniques are provided in Table 4 below. Consultation techniques to be used for specific stakeholder groups are outlined in Table 5 below.

Engagement will be conducted in a variety of ways in manners that are accessible and culturally appropriate. Methods that will be used to consult with each of the stakeholder groups identified above will be tailored based on the findings of the analysis and will include (but are not limited to) those outlined in the below tables.

The following criteria should be taken into consideration in determining the appropriate and most effective form of communication to be used for a stakeholder:

- Stakeholder proximity to the Project
- Number of persons impacted
- Degree of impact (positive or negative)
- Magnitude/significance of impact
- Extent of stakeholder influence on the Project
- Purpose of engagement
- Audience to be addressed

Table 4: Consultation techniques and appropriate application

ENGAGEMENT TECHNIQUE	**MOST APPROPRIATE APPLICATION OF TECHNIQUE**

Phone/Email/Text/ WhatsApp messaging	• Distribute project information to government officials, organizations, agencies and companies • Invite stakeholders to meetings
Print media, social media, and radio announcements	• Disseminate project information to large audiences, and illiterate stakeholders • Inform stakeholders about consultation meetings • Advertise jobs
One-on-one interviews	• Solicit views and opinions • Enable stakeholders to speak freely and confidentially about controversial and sensitive issues • Build personal relations with stakeholders • Address grievances
Formal meetings	• Present project information to a group of stakeholders • Allow the group of stakeholders to provide their views and opinions • Build impersonal relations with high level stakeholders • Distribute technical documents • Facilitate meetings using PowerPoint presentations • Record discussions, comments/questions raised and responses
Public meetings	• Present project information to a large audience of stakeholders, • Allow the group of stakeholders to provide their views and opinions • Distribute non-technical project information • Facilitate meetings using PowerPoint presentations, posters, models, videos and pamphlets or project information documents

	• Record discussions, comments/questions raised and responses
Surveys	• Gather opinions and views from individual stakeholders • Gather baseline data • Use WhatsApp to distribute survey • Use online survey tools (eg JotForm, Survey Monkey) to analyze responses • Develop a baseline database for monitoring impacts

Table 5: Methods that will be used to consult and engage each stakeholder group

STAKEHOLDER GROUP	**CONSULTATION METHODS**
Government entities, Municipal Authorities, and Corporations	• Phone / email • One-on-one interviews • Formal meetings
Neighboring communities and businesses	• Print media, radio announcements, WhatsApp messages • Public meetings • Focus group meetings • Surveys • Information Centre • Poster/Signage
Civil society groups and NGOs	• Phone / fax / email / text messaging • One-on-one interviews • Focus group meetings • Information Centre

A website should be set up to disseminate information and receive feedback on the project. Key pages should include:

- About: Provide Background information on the project and project proponents
- Documents: Provide link to download project documents such as ESIA and ESMP
- Feedback: Provide the opportunity for the public to post comments and or questions on the project-
- Contact Us: Provide additional methods for communication

8) Stakeholder Feedback and Documentation

Feedback from stakeholders will be solicited at every stage of the Project life cycle. For public meetings, workshops, and focus groups, comments will be recorded through detailed meeting minutes. The Community Liaison Officer for the Project will be responsible for recording any queries, concerns or complaints against the Project in a stakeholder engagement log which shall record all stakeholders, contact details, dates of engagement with comments and include follow-up requirements. Comments and decisions made on comments will be collated and reported back to stakeholders once the final decision on the course of action related to the comments has been made. Records will also be maintained on the methods used to inform stakeholders on dates and/or locations where they can gather project information and provide feedback.

Stakeholders will also be allowed to file complaints against the Project through the Grievance Redress Mechanism detailed in Section 9 of the SEP. All records relating to this mechanism including grievance forms, grievance log, notes, interviews, meeting minutes, release forms, etc. will also be stored.

Additionally, the Project's Environmental Manager will capture stakeholder engagements in the Project's environmental reporting to be submitted to the Department of Environmental Planning & Protection on a bi-weekly basis.

The SEP is a living document that will be refined and modified throughout the life of the project and should be updated as needed.

Information derived from stakeholder feedback should be taken into consideration in construction design, methodology and operational management.

9) Grievance Redress Mechanism

A grievance is a concern or complaint raised by an individual or group affected by the Project's activities. Grievances do not include a question or suggestion on the Project or request for assistance.

In order to ensure the implementation of the Project in a timely manner and effectively address any anticipated and unanticipated risks that would be encountered during implementation, including the development of the necessary actions of mitigation and avoidance, this Grievance Redress Mechanism (GRM) has been developed. The GRM will enable the Project Authorities to address any grievances against the Project.

Objectives of the GRM

The objectives of the GRM are as follows:

A. Ensure that the International Development Bank Environmental and Social Policy Framework is adhered to in all Project activities;
B. Address any negative environmental and social impacts of all Project activities.
C. Provide stakeholders with a clear process for providing comments and raising grievances.
D. Allow stakeholders the opportunity to raise comments/concerns anonymously.
E. Structure and manage the handling of comments, responses and grievances in a proportional manner, and allow monitoring of the effectiveness of the GRM.
F. Ensure a process that is inclusive and non-discriminatory (e.g. all grievances, from all community members regardless of age, ethnicity, mental or physical ability, race, religion, gender, sexual orientation or gender identity, will be accepted, reviewed, and solved as needed).
G. Mandate that the GRM is culturally appropriate and accessible (e.g. complaints can be filed in the local language(s), the technology required to file a complaint must be of common use, illiterate people can file complaints verbally).
H. Ensure that the process is free of charge and there is no cost to make a complaint.

I. Create transparency among stakeholders, including affected persons, by handling grievances in a fair, timely, impartial, confidential, and transparent manner, in line with internal policies and international best practice, and through an established communication system that ensures that stakeholders will be protected against retaliation for having raised complaints.
J. Bolster the relationship of trust among the Project team and stakeholders.

Roles and Responsibilities

The involvement of the people listed below is required to properly implement the GRM:

Role	**Responsibilities**
Community Liaison Officer (CLO)	Receiving and handling grievances. The CLO will coordinate the investigation and response to grievances as well as the ongoing monitoring and review of the effectiveness and efficiency of the grievance process.
Project Manager (PM)	Be familiarized with the GRM and provide the necessary resources to ensure its proper implementation.
Representative from Project-Affected Communities	Review and approve the GRM; sit on the GRC
Grievance Redress Committee (to consist of, *inter alia,* PM and Community Representative)	Receive, review, respond to, and supervise Level Two grievances
Employees, Contractors & Stakeholders	Read and be familiarized with the GRM

Grievance Redressal Process

The key stages involved in the Project's grievance redress process are described in the sections that follow.

Level One

A. Receive Grievance. A grievance can be received to the Project in any of the following ways:

- During regular meetings held between stakeholder and project representatives;
- During informal meetings with project representatives;
- Through communication directly with management – for example a letter addressed to site management, or other operational offices;
- Through Grievances boxes located in easily accessible locations such as community centres, health centres, police stations, etc. The precise locations of these boxes will be shared with the community during public consultation and other disclosure of information events;
- Directly by e-mail;
- Through social media platforms that will be established in respect of the Project;
- Through the Project website; and
- Through the CLO.

For grievances that have been submitted informally, the CLO will arrange for a meeting where the comment/grievance can be explained in full and written down on a grievance information form (Annex 1). For all comments the CLO will be the main point of contact, responsible for responding to the complainant.

B. Register Grievance. Once a grievance has been received it must be logged in the Project's Grievances Register (Annex 2).

C. Acknowledge Grievance. The stakeholder that lodged the initial grievance will be contacted by the CLO within 15 days by telephone, or in writing using the Grievance Acknowledgement Form (Annex 3) within 15 days of receipt. The complainant will be informed of the approximate timeline for addressing the complaint, if it can't be addressed immediately. The CLO will seek to ensure the speedy resolution of the grievance.

D. Investigate Grievance. If a comment or grievance requires further investigation, the Project will aim to complete the investigation within 15 days of the grievance first being logged.

Depending on the nature of the grievance, the approach and personnel involved in the investigation will vary. A complex problem may involve external experts. A simpler case may be easier, and quicker to investigate. The investigation will include, but will not be limited to, meetings with the complainant, site visits, meetings/interviews with Project staff and collection of relevant documentation and other forms of evidence.

The CLO will continually update the complainant on the progress of the investigation and the timeline for conclusion.

E. Resolve Grievance. The findings of the investigation should normally be completed within 25 working days of receipt of the grievance and notified to the complainant through the Disclosure Form (Annex 4). The Project will outline the steps taken to ensure that the grievance does not reoccur. If the grievance has been satisfied, then the PM should be included on the response.

Level Two

If the grievance has not been resolved, the CLO will inform the complaint of the existence of the GRC. The GRC shall dedicate days when they are available to receive and resolve complaints. Once the GRC receives a complaint it will register the complaint, investigate, and recommend and action within a 15-day period.

Level Three

If the complainant does not agree with the resolution at the second level, or there is a time delay of more than 60 working days in resolving the issue, the complainant can opt to consider taking it to the third level. This level involves the complainant taking legal recourse within the judicial system of The Bahamas.

Level Four

If a complainant feels that his/her issues have not been satisfactorily addressed, he or she can file a complaint to the IDB's Independent Consultation and Investigation Mechanism (which is the independent accountability office of the IDB, tasked with managing complaints about possible environmental and social harm arising from IDB-financed projects) by using the following methods of contact:

Email address: mecanismo@iadb.org

Mailing address: Independent Consultation and Investigation Mechanism
1300 New York Avenue, NW
Washington, D.C. 20577
United States

Record Keeping

All comments, responses, and grievances are to be logged using the annexed Grievance forms and registers. This process shall include logging details of the grievance, the commenter/aggrieved, the steps taken to resolve the grievance and reference to any accompanying documentation, e.g. written statements, photographic evidence, or investigation report.

ANNEX 1 - GRIEVANCE INFORMATION FORM

Date Received	**Date: (dd-mm-yyyy):**	
Name of Grievant		□ You can use my name, but do not use it in public. □ You can use my name when talking about this concern in public. □ You cannot use my name at all.
Company (if applicable)		□ You can use my company name, but do not use it in public. □ You can use my company name when talking about this concern in public. □ You cannot use my company name at all
Contact Information	**Phone:** **Email address:** **Address:** (Kindly indicate the preferred method of communication)	
Details of grievance: (Who, what, when, where)	□ One-time incident/complaint □ Happened more than once (indicate how many times): _____ □ Ongoing (a currently existing problem)	

How would you like to see issue resolved?	
Attachments to the grievance/complaint: (e.g. pictures, reports etc.)	List here:

Grievant/Complainant Signature **Date (dd-mm-yyyy)**

Project Personnel Signature
(to confirm receipt only) **Date (dd-mm-yyyy)**

ANNEX 2 - GRIEVANCE REGISTER

No.	Name of Grievant/ Complainant	Date Received	Grievance Description	Name of Grievance Owner	Requires Further Intervention	Action(s) to be taken	Resolution accepted/not accepted & Date of acceptance/non - acceptance

ANNEX 3 - GRIEVANCE ACKNOWLEDGEMENT FORM

The project acknowledges receipt of your complaint and will contact you within 15 working days.

Date of grievance/complaint: (dd/mm/yyyy)	
Name of Grievant/Complainant:	
Complainant's Address and Contact Information:	
Summary of Grievance/Complaint: (Who, what, when, where)	
Name of Project Staff Acknowledging Grievance:	
Signature:	
Date: (dd/mm/yyyy)	

ANNEX 4 - DISCLOSURE/RELEASE FORM

Result of Grievance Redressal

Grievance No.	
Name of Grievant/Complainant	
Date of Complaint	
Summary of Grievance/Complaint	
Summary of Resolution	
Date of Grievance Resolution	

Grievant/Complainant Signature to confirm acceptance of Resolution

Date (dd-mm-yyyy)

Communications Liaison Officer Signature

Date (dd-mm-yyyy)

Project Manager Signature

Date (dd-mm-yyyy)

14.3 Social Impact Assessment Report (Heritage Partners)

See Next Page.

SOCIAL IMPACT ASSESSMENT REPORT
[DRAFT]

Conducted For

EAST GRAND BAHAMA MICROGRID PROJECT

Prepared by:

The Heritage Partners
#1 Oak Court
Skyline Lakes
New Providence, The Bahamas
W: www.myheritagepartners.com

APRIL 2024

Authors:

Andrea Moultrie
Francine Russell

TABLE OF CONTENTS

Tables

ACRONYMS AND ABBREVIATIONS

ADI - AREA OF DIRECT INFLUENCE
AII - AREA OF INDIRECT INFLUENCE
AMMC - ANTIQUITIES, MONUMENTS AND MUSEUM CORPORATION
AMMA - ANTIQUITIES, MONUMENTS AND MUSEUM ACT
BIS - BAHAMAS INFORMATION SERVICES
BPL - BAHAMA POWER & LIGHT
BSD - BAHAMIAN DOLLARS
CDB - CARIBBEAN DEVELOPMENT BANK
DEPP- DEPARTMENT OF ENVIRONMENT PLANNING AND PROTECTION
ESPF - IDB'S ENVIRONMENTAL AND SOCIAL POLICY FRAMEWORK
ESPS - IDB'S ENVIRONMENTAL AND SOCIAL POLICY STANDARDS
FAO - FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
GBPA - GRAND BAHAMA PORT AUTHORITY
GBPC - GRAND BAHAMA POWER COMPANY
GDP - GROSS DOMESTIC PRODUCT
GRM - GRIEVANCE REDRESS MECHANISM
HDI - HUMAN DEVELOPMENT INDEX
IDB - INTERAMERICAN DEVELOPMENT BANK
ILO - INTERNATIONAL LABOR ORGANIZATION
ITA - INTERNATIONAL TRADE ASSOCIATION OF THE UNITED STATES OF AMERICA
kWH - KILOWATT HOURS
MOF - MINISTRY OF FINANCE
NSI - BAHAMAS NATIONAL STATISTICAL INSTITUTE (FORMERLY THE BAHAMAS DEPARTMENT OF STATISTICS)
PAHO - PAN AMERICAN HEALTH ORGANIZATION
PHA - PUBLIC HOSPITALS AUTHORITY
RE - RENEWABLE ENERGIES
SIA - SOCIAL IMPACT ASSESSMENT
SEP - STAKEHOLDER ENGAGEMENT PLAN
UNDP - UNITED NATIONS DEVELOPMENT PROGRAMME
UNESCO - THE UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION
UNPF - UNITED NATIONS POPULATION FUND
UN - UNITED NATIONS
URCA - UTILITIES REGULATION AND COMPETITION AUTHORITY
USA - UNITED STATES OF AMERICA
USD - AMERICAN DOLLARS
WB - WORLD BANK
WHO - WORLD HEALTH ORGANIZATION

1. PROJECT DESCRIPTION

The Project concerns operations initiated by the International Development Bank (IDB) related to the planned rehabilitation and modernization of The Bahamas' energy system by strengthening isolated and interconnected grid networks with resilient Renewable Energy (RE), designed to withstand the increasing frequency and severity of extreme weather events. In particular, this Project involves the rehabilitation of the electricity Transmission and Distribution system and the installation of new and resilient RE capacity in East Grand Bahama.

The management of the Project will be under the responsibility of The Bahamas' Ministry of Finance (MoF) in close coordination with the IDB.

2. RESEARCH METHODOLOGY

This social impact assessment has been developed considering the main socioeconomic indicators that allow for characterizing the living conditions of the population of the target community. For this purpose various sources of secondary information were used, most from public sources of information at the national levels. Data disaggregated to the level of community is more rare.

In addition to the search, systemization, and analysis of secondary information, we used qualitative methodology, by conducting field studies and follow-up telephone and in-person interviews. These interviews focused on demographics of the target communities, as well as indicators and socioeconomic variables that could be affected by the activities of the Project, with an emphasis on energy and climate change. We also considered, as part of the interviews, questions related to the feelings of the population in relation to the Project.

3. INSTITUTIONAL AND LEGAL FRAMEWORK

3.1 Legal Framework

The Commonwealth of The Bahamas is a parliamentary democracy. Its system of law and government is based on the Westminster model, which allows for three distinct branches of State - the Executive, Parliament, and the Judiciary. The judicial system comprises a number of courts including the Stipendiary and Circuit Magistrates Courts, the Court of Appeal, the Supreme Court and the Privy Council, which is the final Court of Appeal of the Commonwealth of The Bahamas.

The Bahamian legal regime that governs the social impact of the Project is limited. The relevant environmental laws have been considered in the Environmental Impact Assessment. In particular, the laws mandating environmental impact assessments in The Bahamas do not provide for or mandate assessments of social impacts.

3.1.1 National Legislation

The most relevant national legislation to this Report are as follows:

- Environmental Planning and Protection Act, 2019 - An Act to establish the Department of Environmental Planning and Protection; and to provide for the prevention and control of pollution; the regulation of activities, and the administration, conservation and sustainable use of the environment and for connected purposes. The Act defines procedures for environmental reporting requirements for protection of natural resources.

- Environmental Impact Assessment Regulations, 2020 - The Regulations provide procedures for the review of proposed projects inclusive of monitoring and compliance requirements. The Regulations dictate the requirements for a Certificate of Environmental Clearance (CEC).

- Employment Act, 2001 - An Act which provides comprehensive legislation on conditions of employment in The Bahamas. This will impact employment concerns prior to commencement of the Project as well as impact hiring and employment relations when the Project commences and hiring begins.

- Antiquities, Monuments, and Museum Corporation Act, 1998 - An Act to provide for the preservation, conservation, restoration, documentation, study and presentation of sites and objects of historical, anthropological, archaeological and paleontological interest, to establish a National Museum, and for matters ancillary thereto or connected therewith.

- Electricity Act - The Bahamas energy sector is governed by the Electricity Act, which established the Bahamas Electricity Corporation (BEC), the Out Island Electricity Act and the Out Island Utilities Act. For the electricity sector, a significant constraint in the use of renewable energy sources is the Electricity Act of 1956, which does not allow independent power producers (IPPs) to sell to the national grid. The Out Island acts provide an opportunity for supplying electricity to the Family Islands, if it is demonstrated to be "in the nation's best interest". The **Hawksbill Creek Act** also provides for an electricity franchise holder in select areas, including areas controlled by the Grand Bahama Port Authority.

- The Hawksbill Creek, Grand Bahama (Deep Water Harbour and Industrial Area) Act, 1955 - The Act, and its subsequent amendments, authorized the creation of the Hawksbill Creek

Agreement, which established a city and free trade zone on Grand Bahama (Freeport) with an aim of spurring economic development in the area.

- Local Government Act, 1996 - This Act divides the Family Islands into 23 districts, each administered by a District Council. With this Act, much authority has devolved from Central Government to the District Councils. The Council and their respective Town Committees are responsible for town planning, licensing and administering budgets. They are also mandated to create open spaces for community use, including recreational parks and to provide community services, such as water, health care, sanitation, and waste collection and disposal.

3.1.2 National Institutions

Relevant Bahamian institutions are described below.

- 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.

- Department of Public Works (Ministry of Works & Utilities) - This Department's areas of responsibility include, inter alia, the construction, maintenance, and upkeep of public infrastructure inclusive of government buildings, roads, docks, and bridges and cemeteries.

- Department of Physical Planning (Ministry of Works & Utilities) - This Department's mission is to provide the strategic framework for the proper management of change in our physical environment and to facilitate the participation and education of the public regarding planning issues, while promoting sustainable and attractive communities.

- Department of Environment Planning and Protection (Ministry of the Environment and Natural Resources) - The mandate of this Department (DEPP) is to provide for the prevention or control of pollution, the regulation of activities and the administration, conservation and sustainable use of the environment and for connected purposes. DEPP also manages multilateral environmental agreements.

- Department of Environmental Health (Ministry of the Environment and Natural Resources) - This Department's mission is to promote and maintain a clean health environment and protection of the public's health through vigorous and consistent monitoring and the application of environmental education and enforcement.

- Department of Local Government (Ministry of Agriculture, Marine Resources and Family Island Affairs) - Through the provisions of the Local Government Act 1996, Local Government Authorities on Family Islands including Grand Bahama have been given the mandate and responsibility to, inter alia, govern the Road Traffic Authority, Port Authority, and Town Planning Committee of the Family Island in question, maintain public buildings, and upkeep settlement roads, parks, playgrounds, beaches, cemeteries, and road verges.

- Department of Labour - This Department's mission is to foster good industrial relations between Employer and Employee while promoting a high level of employment. Areas of responsibility include, *inter alia*, labour relations, manpower and employment, inspections and safety, and workmen's compensation.

- Grand Bahama Port Authority - Freeport is a 230-square mile free trade zone on Grand Bahama Island, established in 1955. The Grand Bahama Port Authority Limited (GBPA) is a privately held corporation that acts as the municipal authority for Freeport, and operates the free trade zone under special powers conferred by the Hawksbill Creek Agreement Act. GBPA is horizontally integrated with property development, municipal services, airport, harbour operations, and shipyard concerns.

- Grand Bahama Power Company - Grand Bahama Power Company (GBPC) is a privately-owned electrical utility company tasked with supplying electrical energy to Grand Bahama's 18,800 customers throughout the island of Grand Bahama. They are a totally integrated utility company with a gross generating capacity of 98 MW. GBPC is a majority owned subsidiary of Emera Inc., a Canadian company.

- Bahamas Power and Light Company, Ltd. - 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.

3.2 International Conventions and Agreements

The following international conventions and agreements which may impact the social impacts of the Project have been ratified by The Bahamas:

- ILO Social Policy (Basic Aims and Standards) Convention (No. 117)

- ILO Discrimination (Employment and Occupation) Convention, 1960 (No. 111)
- U.N. International Covenant on Economic, Social and Cultural Rights (A/6316 of 1996)
- U.N. International Convention on the Elimination of All Forms of Racial Discrimination (A/6014 of 1996)
- U.N. Convention on the Elimination of All Forms of Discrimination against Women, (A/34/46 of 1981)
- UNESCO 1972 Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention)

3.3 **Interamerican Development Bank**

The IDB has established its own policies and safeguards to ensure that projects financed by the IDB group are sustainable. In October 2021, the IDB approved an Environmental and Social Policy Framework (ESPF) that modernizes many of its former requirements into one consolidated and comprehensive framework that better responds to environmental and social challenges, focusing on issues related to social inequality, climate change, and depletion of natural capital. The Framework includes a policy statement and ten Environmental and Social Performance Standards (ESPS) that reflect the environmental and social commitment for IDB-financed projects, while minimizing risks and negative impacts on people and the environment.

3.3.1 Environmental and Social Performance Standards (ESPS)

The IDB is committed to supporting Borrowers in the development and implementation of IDB-financed projects that are environmentally and socially sustainable, and to enhancing the capacity of Borrowers' environmental and social frameworks to assess and manage the environmental and social risks and impacts of projects. To this end, the ESPF defines specific ESPSs that are designed to avoid, minimize, reduce, or mitigate the adverse environmental and social risks and impacts of IDB-financed projects. The ESPSs describe the requirements that the Borrower must meet in the development and implementation of IDB-financed projects. The Bank will provide assistance to Borrowers to facilitate their application of the ESPSs.

Performance Standard	**Description**	**Objectives**

ESPS 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.	● To identify and evaluate environmental and social risks and impacts of the project. ● To adopt a mitigation hierarchy and a precautionary approach to anticipate and avoid, or where avoidance is not possible, minimize, and, where residual impacts remain, compensate/offset for risks and impacts to workers, project-affected people, and the environment. ● To promote improved environmental and social performance of Borrowers through the effective use of management systems. ● To ensure that grievances from project- affected people and external communications from other stakeholders are responded to and managed appropriately. ● To promote and provide means for adequate engagement with project-affected people and other stakeholders throughout the project cycle on issues that could potentially affect them and to ensure that relevant environmental and social information is disclosed and disseminated.
ESPS 2: Labor and Working Conditions	Recognizes that pursuit of eco-nomic growth through employment creation and income generation should be accompanied by protection of the fundamental69 rights of workers.	● To respect and protect the fundamental principles and rights of workers. ● To promote the fair treatment, non-discrimination, and equal opportunity of workers. ● To establish, maintain, and improve the worker-employer relationship. ● To ensure compliance with national employment and labor laws. ● To protect workers, including workers in vulnerable situations such as women, people of diverse sexual orientations and gender identities, persons with disabilities, children (of working age, in accordance with this ESPS) and migrant

		workers, workers engaged by third parties, and primary supply workers. ● To promote safe and healthy working conditions, and the health of workers. ● To prevent the use of child labor and forced labor (as defined by the ILO). ● To support the principles of freedom of association and collective bargaining of project workers. ● To ensure that accessible and effective means to raise and address workplace concerns are available to workers.
ESPS 3: Resource Efficiency and Pollution Prevention	Recognizes that increased economic activity and urbanization often generate increased levels of pollution to air, water, and land and consume finite resources in a manner that may threaten people and the environment at the local, regional, and global levels.	● 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 avoid or minimize project-related emissions of GHG. To avoid or minimize generation of waste. ● To minimize and manage the risks and impacts associated with pesticide use.
ESPS 4: Community Health, Safety, and Security	Recognizes that project activi- ties, equipment, and infrastructure can increase community exposure to risks and impacts, including those caused by natural hazards and climate change.	● To anticipate and avoid adverse impacts on the health and safety of the project-affected people during the project life cycle from both routine and non-routine circumstances. ● 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 project-affected people. ● To anticipate and avoid adverse impacts on the project itself from natural hazards and climate change during the project life cycle.
ESPS 5: Land Acquisition and Involuntary Resettlement	Addresses impacts of project-related land acquisition, including	● To avoid, and when avoidance is not possible, minimize

	restrictions on land use and access to assets and natural resources, which may cause physical displacement (relocation, loss of land or shelter), and/or economic displacement (loss of land, assets, or restrictions on land use, assets, and natural resources leading to loss of income sources or other means of livelihood).	displacement by exploring alternative project designs. ● To avoid forced eviction. ● To anticipate and avoid, or where avoidance is not possible, minimize adverse social and economic impacts from land acquisition or restrictions on land use by (i) providing compensation for loss of assets at replacement cost and transitional hardships; (ii) minimizing disruption to their social networks and other intangible assets; and (iii) ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected. ● To improve or restore the livelihoods and standards of living of displaced persons. ● To improve living conditions among physically displaced persons through the provision of adequate housing with security of tenure, and safety at resettlement sites.
ESPS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Recognizes that protecting and conserving biodiversity, maintaining ecosystem services, and sustainably managing living natural resources are fundamental to sustainable development.	● To protect and conserve terrestrial, freshwater, coastal and marine biodiversity. ● To maintain the ecosystem functions to ensure the benefits from ecosystem services. ● To promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.
ESPS 7: Indigenous Peoples	Recognizes that Indigenous Peoples, as distinct social and cultural peoples, are often among the most marginalized and vulnerable segments of the population. In many cases, their economic, social, and legal status limits their capacity to defend their rights to, and interests in, lands and natural and cultural resources, and may restrict their ability to	● To ensure that the development process fosters full respect for the human rights, collective rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples. ● To anticipate and avoid adverse impacts of projects on communities of Indigenous Peoples, or when avoidance is

	participate in and benefit from development that is in accordance with their worldview.	not possible, to minimize and/or compensate for such impacts. ● To promote sustainable development benefits and opportunities for Indige- nous Peoples in a culturally appropriate manner. ● To establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) in a culturally appropriate manner with the Indigenous Peoples affected by a project throughout the project's life cycle. ● To ensure the FPIC of the Project-Affected Communities of Indigenous Peoples when the circumstances described in this ESPS are present. ● To respect and preserve the culture, knowledge, traditional knowledge, and practices of Indigenous Peoples.
ESPS 8: Cultural Heritage	Recognizes the importance of cultural heritage for current and future generations.	● 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.
ESPS 9: Gender Equality	Recognizes that gender equality has intrinsic value. Gender equality is not only a matter of justice and human rights, but also a driver of sustainable development.	● To anticipate and prevent adverse risks and impacts based on gender, sexual orientation, and gender identity, and when avoidance is not possible, to mitigate and compensate for such impacts. ● To establish actions to prevent or mitigate risks and impacts due to gender throughout the project cycle. ● To achieve inclusion from project-derived benefits of people of all genders, sexual orientations, and gender identities. ● To prevent SGBV, including sexual harassment, exploitation and abuse, and when incidents of SGBV occur, to respond promptly. ● To promote safe and equitable

		participation in consultation and stakeholder engagement processes regardless of gender, sexual orientation, and/or gender identity. ● To meet the requirements of applicable national legislation and international commitments relating to gender equality, including actions to mitigate and prevent gender-related impacts.
ESPS 10: Stakeholder Engagement and Information Disclosure	Recognizes the importance of open and transparent engagement between the Borrower and stakeholders, especially project-affected people, as a key element that can improve the environmental and social sustainability of projects, enhance project acceptance, and contribute significantly to the project's successful development and implementation.	● To establish a systematic approach to stakeholder engagement that will help the Borrower identify stakeholders, especially project-affected people, and build and maintain a constructive relationship with them. ● To assess the level of stakeholder interest in and support for the project and to enable stakeholders' views to be considered in project design and environmental and social performance. ● To promote and provide the means for effective and inclusive engagement with project-affected people throughout the project's life cycle on issues that could potentially affect or benefit them from the project. ● To ensure that appropriate information on environmental and social risks and impacts of the project is disclosed to stakeholders in a timely, understandable, accessible, and appropriate manner and format. ● To provide stakeholders with accessible and inclusive means to raise questions, proposals, concerns, and grievances and allow Borrowers to respond and manage them appropriately.

Table 1: ESPS

3.3.2 Other Applicable International Best Practices

Although the Program 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.

3.3.2.1 World Bank's Environmental Health and Safety Guidelines

The Borrowers will use the World Bank Group's Environment Health and Safety Guidelines (EHSG), given that these are recognized good international industry practice (GIIP) for the implementation of ESPSs 2, 3, and 4. If less stringent levels or measures than those provided in the EHSG are necessary in view of the Borrower's limited technical or financial constraints or other specific project circumstances, the IDB will require the Borrower to provide full and detailed justification for any proposed alternatives through the appropriate instruments (for example, an Environmental and Social Assessment). This justification must demonstrate, to the IDB's satisfaction, that the choice of any alternative performance level is consistent with the objectives of the ESPF and the applicable EHSG and is unlikely to result in any significant environmental or social harm.

4. **THE BAHAMAS KEY FACTS**

The Bahamas, also known officially as the Commonwealth of The Bahamas is a country within the Lucayan Archipelago, in the West Indies. The state consists of 700 islands and 2,400 cays and islets in the Caribbean Sea, located north of Cuba and Haiti and the Dominican Republic, northwest of Turks and Caicos Islands and southeast of the US state of Florida, with an area of 13,900 km2.

The Commonwealth of the Bahamas gained its independence from Great Britain in 1973. Since then, the country has maintained a Westminster form of democracy. A Governor-General is appointed as the representative of His Majesty King Charles III. The country is governed by a bicameral Parliament consisting of a Senate of 16 appointed members and a House of Assembly of 39 members popularly elected every five years.

There are 32 local government districts, which are further subdivided into town areas. These are responsible for all local government functions, except in New Providence, where Nassau, the capital city of The Bahamas is located, and whose affairs are handled directly by the central Government.

The official language in The Bahamas is English, although other vernacular languages are spoken in the islands such as Bahamian Dialect, also described as Bahamian Creole, and Haitian Creole, as a result of Haitian migration into The Bahamas.

5. SOCIAL AREAS OF DIRECT INFLUENCE

The sections below provide information on the socio-economic profile of The Bahamas as a whole, which allows us to develop a good understanding of the Project's Area of Direct Influence (ADI). The ADI primarily includes the Project sites as well as the communities comprising Eastern Grand Bahama, where Project infrastructure will have an impact. The ADI is considered as the area that could be directly impacted; however, the Project would also have implications for employment, the economy, planning, and service provision in Grand Bahama Island as a whole. Therefore, the entire Grand Bahama Island will be considered the Area of Indirect Influence (AII).

Grand Bahama is generally considered to be divided into three sections: East End, West End, and Freeport/Lucaya. East End is inclusive of the Project sites, as well as other settlements such as Gambier Point, Pelican Point, Bevans Town, Thomas Town, Rocky Creek, and Deep Water Cay (which had a fishing lodge and has its own airstrip). Two of the Project sites - Sweeting's Cay and Water Cay - are off the mainland of Grand Bahama.

For the purposes of census activities, Grand Bahama has been divided into five districts. The respective populations of the districts of the island of Grand Bahama, according to the 2022 Census, are as follows:

West Grand Bahama - 5,960

Central Grand Bahama - 11,497

Pineridge - 8,081

Marco City - 10,526

East Grand Bahama - 11,411

The Project is located in the East End section of Grand Bahama, and for census purposes is a part of the East Grand Bahama district.

The Project sites are located in the following communities, and will collectively be referred to as the "target communities" in this report:

High Rock

Free Town

McLeans Town

Sweetings Cay

Water Cay

6. ISLAND PROFILE

6.1 Early Years

Grand Bahama is one of the northernmost islands in The Bahamas archipelago, and has a rich history shaped by diverse cultural influences. The island's indigenous Lucayan people were the first inhabitants, followed by Spanish explorers in the 15th century. Over the centuries, Grand Bahama experienced periods of British and Spanish rule, with the British establishing a significant presence in the 18th century.

Grand Bahama was generally considered an economically deprived community for much of its modern existence. In an 1888 text the island was described as follows: "[Grand Bahama] is about ninety miles long, and in some parts of considerable width; yet, with all its advantages, it has but a population of 700 people, who can barely exist" (*LD Powles, 1888*). In 1949, a Commissioner for Grand Bahama was reported as saying, with respect to the island, that "conditions prevailing in most of the settlements are primitive and rustic" (*Grand Bahama Museum*).

The 1950s witnessed a transformative era for Grand Bahama, which was largely pioneered by American investor Wallace Groves and later by British financier Sir Charles Hayward. Groves negotiated with the Bahamian government for the signing of the Hawksbill Creek Agreement (the "Agreement") in 1955, by which the Grand Bahama Port Authority (the GBPA) was founded. The Agreement created the "Port Area" of Grand Bahama, and led to the establishment of Freeport, a free-trade zone designed to stimulate economic activities and attract international investment.

The GBPA was mandated responsibility for, *inter alia,* the development, administration, management, and provision of services within the Freeport area, as well as for nurturing and regulating all commercial and residential development within Freeport. Under the Agreement, the GBPA is not required to pay any income, real estate, or capital gains taxes.

The GBPA played a pivotal role in developing Freeport as a center for trade, commerce, and tourism. From the 1950s onward, the island experienced rapid economic growth, driven by the development of industries, infrastructure, and a surge in tourism. Beginning in the 1960s, Freeport became known as "the Magic City", a really exciting place to be. "Freeport was a boomtown with nightclubs jammed to capacity nightly and some restaurants remaining open all night." *(Bahamas Chronicle)*

There was significant movement in the western section of Grand Bahama as well - the official capital of the island is in fact West End (not Freeport as many believe), and resort tourist development began there before it did in Freeport.

6.2 **"East End"**

The easternmost settlements of the island of Grand Bahama, known collectively as East End, did not experience the large-scale, fast-paced development and economic expansion that took place in the rest of the island during the mid-20th century. Instead, the communities seemed to continue at the sleepy pace that characterized development in much of the Family Islands of The Bahamas at that time.

That is not to say that no development has occurred - in the 1950s the United States Air Force established a tracking station for guided missiles on a 3,500 acre site near the High Rock settlement. The station was one of several situated in The Bahamas, and provided launch support up until the late 1980s. Up to 300 persons were employed at the station, including Bahamian women (mostly as housekeepers) (*Grand Bahama Museum*).

In 2005, several decades after the station was decommissioned, the Bahamas government entered into a Heads of Agreement with Gold Rock Creek Enterprises, to lease the site of the missile station and build a $76 million dollar, state-of-the-art recording and film production studio there, that was intended to include a theme park, hotel, and retail stores (*Bahamas Weekly*). Filming for two major Hollywood productions took place at the Bahamas Film Studios, which later became entangled in protracted legal battles, leading the Bahamas government to take steps to reclaim the property (*Jones Bahamas*).

Aside from these developments, East End has maintained its reputation as a collection of sparsely populated, scenic, and quaint fishing villages.

6.3 **Grand Bahama Today**

Despite its initial success, Grand Bahama has faced a lot of challenges and what was once the Magic City became just a memory - a memory that many still hold on to for hope. The expiration

of tax incentives and a shifting global economic landscape, coupled with limited diversification efforts, have contributed to the decline of some key industries, leading to business closures and a contraction in economic activity. Factors such as the global financial crisis of 2008 as well as natural disasters such as hurricanes, have further compounded the economic woes of the island, resulting in persistent stagnation.

7. DEMOGRAPHY

7.1 Population

The 2022 Census of Population and Housing Preliminary Results (the "2022 Census") shows the total population of The Bahamas to be 399,314, with a sex distribution of 192,544 males and 206,770 females. According to the World Health Organization, the life expectancy at birth in 2019 was 73.2 years (an improvement by 2.28 years from 70.9 years in 2000) (*WHO*).

In 2022 the population of Grand Bahama was 47,475. 22,892 of these were males and 24,583 of these were females. The population of Grand Bahama accounted for 11.89% of the total population of The Bahamas, registering a decline in its population share of 2.73 percentage points, from 14.62% in 2010.

The population of Grand Bahama decreased by almost 4,000 persons (3,893) or -7.58% in the period between the 2022 Census and the 2010 Census exercise. This decrease in absolute population was the highest among all the islands of The Bahamas. Said decrease is largely attributed to the island's economic struggles related to Hurricane Dorian and the COVID-19 pandemic.

7.2 Population Density

The 2022 Census provides that the overall population density of The Bahamas increased from 65.3 persons per square mile in 2010 to 74.2 persons in 2022. Grand Bahama, with a square mileage of 530 miles, recorded a population density of 90 persons per square mile. This represents a decrease of 7 persons per square mile from 2010, when the population density was 97 persons per square mile.

7.3 Household Size

In The Bahamas in general, there were 118,221 households recorded in The Bahamas in 2022. The average household size decreased from 3.42 in 2010 to 3.38 in 2022. There were 17,820 households on the island of Grand Bahama, and the average household size was 2.66 persons (an

increase of 2,680 in number of households from 2010, when households numbered 15,140, but a decrease in household size from 3.39 persons) (*2022 Census*).

7.4 **Age Range**

According to information provided by the UNPF from 2023, 72.7% of the total population of The Bahamas falls between the ages of 15 and 64 years old, with individuals under 15 representing 18.2% of the population, and those over 65 representing just 9.1% of the population (*UNPF*).

The 2010 Census reports (the latest available national information on the age of the population for The Bahama) provides the following with regard to Grand Bahama:

Age Range	**Population Size**
0 - 17	17,003
18-24	5,546
25-34	7,277
35-44	7,842
45-54	6,648
55-64	3,955
65+	3,019

Table 2: 2010 Census report of Age Range of Grand Bahamians

7.5 **Ethnicity**

In the 2010 Census, 91% of the population of The Bahamas identified themselves as being black, 5% as white and 2% of a mixed race (black and white). Additional races represented included East Indian and Asian, as well as mixed race (black and other race) and other undefined races (*2010 Census*).

In Grand Bahama, 91% of the population identified themselves as black, 4% as white, and around 3% as mixed race (black and white). The other races represented were the same as for the general population (*2010 Census*).

7.6 **Religion**

Christianity is the predominant religion in The Bahamas, with over 90% of the population professing the Christian faith. Other religions and religious groups include Islam, Hinduism, Rastafari, Judaism, and the Baha'i faith. Less than 2% of the population define themselves as having no religion at all (*2010 Census*).

In Grand Bahama, some 94% of the population identified as Christian in 2010.

There are reportedly over 4,000 churches in The Bahamas, and there is a widely held (but for these purposes unsubstantiated) belief that there are more churches per capita in The Bahamas than anywhere else in the world.

7.7 **Nationality and Migration**

7.7.1 Nationality

Out of 351,461 residents of The Bahamas, 290,725 or 83% were Bahamian nationals. Haitian nationals made up 11% of the population, at 39,144 residents, while Jamaican nationals amounted to 5,572 residents (1.60%) and North American nationals totaled 5,647 residents (1.60%) (*2010 Census*).

For Grand Bahama, out of its 51,368 residents, 44,886 or 87% were Bahamian nationals. Haitian nationals made up around 5% of the population, at 2,696 residents, while Jamaican residents amounted to 575 residents (1%). North American nations totaled 1,176 residents (2.3%).

7.7.2 Migration

According to the 2022 Census, some 24,261 international migrants came to The Bahamas between the 2010 and 2022 census exercises. The breakdown for the 2022 census report has not been released as yet. As the population of Grand Bahama has decreased significantly in the intercensal period, we cannot say whether the number of migrants would have decreased or increased for that island.

NSI has released data on the total immigrant population by island as of 2010. In The Bahamas overall, the total immigrant population was 64,793. In Grand Bahama, the total immigrant population was assessed as being 10,089. Of these, 2,646 lived in what was then the High Rock District, which included each of the target communities (*NSI*).

7.8 **Labour Force**

In 2023, the NSI released preliminary results of the first labour force survey conducted since 2019. As of the date of the survey, the total labour force in The Bahamas (the number of people who are able to work) was 219,465. 23% of this number comprises people between 25 and 34 years old, and women represent 54% of the labour force, compared to men (46%). Regarding educational attainment, 55% of the labour force completed secondary school, 26% completed university, and 4% had schooling only to the primary school level, or none at all.

61% of the employed labour force (recorded as 200,175 persons) were engaged in the private sector, and 21% were government employees. The "hotel and restaurant" industrial group accounted for 17% of employed persons, and the "community, social and personal service" industrial group (including the public service, police service and domestic service) accounted for 39% of the workforce. The percentage of self-employed workers (with and without employees) was 16% for Grand Bahama.

There were 19,290 unemployed persons in The Bahamas, resulting in a national unemployment rate of 8.8%. In Grand Bahama, the unemployment rate was 10.8%. More men were unemployed than women (9.1% vs 8.5% respectively).

The number of discouraged workers (defined by the ILO as "persons without work and are available for work, yet were not actively seeking work because they are not hopeful about their prospects of finding work") in the country was recorded as 2,035, and 200 for Grand Bahama (*NSI*).

7.9 **Income**

The Bahamas is typically assessed as a "high-income economy" - according to data released by the World Bank, the GDP (per capita), or income level for The Bahamas for the year 2022 was $31,458.30. In that same year, the country ranked 55 out of 191 countries on the UNDP's Human Development Index (HDI) with an HDI of 0.812, and is considered a "high-developed country" by this standard.

However, according to the International Monetary Fund, The Bahamas is considered a "developing country". A developing country is defined as one whose standard of living, income economic and industrial development remain more or less below average.

In 2013, the NSI conducted a Household Expenditure Survey, which sought to provide a comprehensive analysis of the socioeconomic conditions under which the people of The Bahamas live. The last time such a survey was conducted was in 2001.

This 2013 Survey found that at the time of the survey 12.5% of the population of The Bahamas lived in poverty conditions (up from 9.3% in 2001) and that the poverty rate was significantly higher in the Family Islands (17.2%). In Grand Bahama, the poverty rate was 9.4%.

8. ECONOMY

8.1 Economy Overview

The economy of The Bahamas is primarily an export services economy, fueled by the tourism and financial services industries.

In 2018, the Caribbean Development Bank released a Country Strategy Paper (2018-2022) for The Bahamas. Therein, the country's economy is described as follows:

> "The economy of The Bahamas is based to a large extent on tourism, with the United States of America (USA) as its main source market. The World Travel and Tourism Council estimates that travel and tourism activities by residents and non-residents within the archipelago directly contributed 20% of GDP, whereas the indirect contribution was estimated at 45% of GDP in 2017. The contribution to employment was also estimated to be 27% directly and 55% indirectly in 2017. The economy is also based to a lesser extent on financial services which directly constitute roughly 15% of GDP. The Bahamas also has a thriving shipping industry and is strategically located as an important transshipment point, with the USA being its main trading partner. The economy, therefore, is highly services based. The dominance of the tourism industry, however, makes the economic landscape inherently vulnerable to external shocks that have challenged The Bahamas in maintaining growth and development."

The Bahamian dollar (BSD) is the national currency of The Bahamas, and has been pegged to the United States Dollar (USD) at a rate of 1:1 since 1966. This fixed exchange rate regime has historically encouraged trade between the two nations, and is believed to have boosted foreign direct investment, thereby resulting in The Bahamas having one of the highest per capita incomes in the region.

Grand Bahama is known as the industrial and manufacturing centre of The Bahamas; Freeport, as a free-trade and tax-free zone, is the home to a number of offshore manufacturing businesses, including cement and pharmaceuticals. Tourism is still a mainstay on the island, however the industry has shifted significantly since its heyday several decades ago.

In a 2023 Budget communication made by Prime Minister of The Bahamas, Philip Davis, it was stated that Grand Bahama contributes 12 percent of the overall GDP of The Bahamas, yet its economy declined by 9 percent compared to the previous year. He did note that the tourism sector witnessed a slight increase in 2022, made evident in the growth of the accommodation and food service industries.

There are reportedly a number of major investments and projects now underway in Grand Bahama, including the new Carnival Cruise Port, a Royal Caribbean, ITM, and MSC cruise port, a Catamaran centre, planned expansions at the Western Atlantic University School of Medicine, the expansion of the Grand Bahama shipyard, Six Senses Grand Bahama, as well as the Lucaya Solar Power facility, the country's first full utility scale solar plant, which is presently under construction.

8.2 **Tourism**

As provided above, the economy of The Bahamas is heavily reliant upon tourism. Pre World War II, the tourist product was seasonal in nature, and affluent North Americans were the primary participants in the burgeoning industry. Post World War II, the government of The Bahamas began to emphasize tourism and as a result, the tourist economy grew substantially - in 1954, The Bahamas is said to have passed 100,000 tourists a year, in 1968, a million tourists a year, and in 2023, 9 million plus tourists were recorded as having arrived to The Bahamas - a record for the nation (*Bahamas Ministry of Tourism*).

The city of Freeport in Grand Bahama is often touted as one of the most noteworthy touristic developments in the country. As envisioned in the Hawksbill Creek Act, Freeport was to be a multipurpose urban development which would rely heavily on tourism and gambling as a tourist attraction. Tourism in East End was more modest in comparison - in a 1969 Annual Commissioners report for the district of High Rock (which comprised the communities in East End including each of the target communities), the following statement was made about the tourism sector in said district:

> The tourist industry in the High Rock District has improved tremendously over the period under review - this of course mostly on weekends when many outsiders chose to sail or fly in at Deep Water Cay and Sweetings Cay north for a rather quiet moment rather than remaining in Freeport where the environment differs. Tourist accommodation can be readily had at the two Centres above and presently discussions are now afoot to improve the situation tremendously over the next year.

In the 1980s and 1990s, the tourism industry of The Bahamas began to experience significant difficulties. The overall national tourist product began to rebound in the 2000s, largely due to

major foreign investments in the industry as well as political focus and intervention. For Grand Bahama, however, the turnaround was much slower, and the industry has never fully recovered since its heyday. Grand Bahama natives typically attribute the decline of the tourism industry in Grand Bahama to the impacts of the 2004 hurricanes and the subsequent death of the Princess Hotel, as well as ownership issues of the Grand Lucayan resort and low airlift capacity related to the condition of the Grand Bahama International Airport.

Hurricane Dorian resulted in a serious downturn in the tourism industry for The Bahamas and especially for Grand Bahama and Abaco, as the impacted islands. The IDB assessed damage, losses and additional costs resulting from the storm as amounting to around $870 million dollars (*IDB, 2019*).

Since then, the industry has recovered significantly. All islands in The Bahamas are reported to have experienced record-breaking foreign arrivals in 2023, with Grand Bahama leading overall year-over-year growth in air arrivals by exceeding 2022 numbers by 38%. Post-Dorian recovery shows Grand Bahama's overall visitor arrivals exceeding 2019 numbers by 3 percent and 2022 by 53 percent (*Bahamas Ministry of Tourism, 2024*).

Despite the improvements to the industry, tourism in Grand Bahama is still largely perceived, especially by Grand Bahama residents, as being sluggish.

According to information released by the Hotel Licensing Section of the Ministry of Tourism, Investments and Aviation, there are presently 17 total hotels in Grand Bahama, with a total room count of 1,095. 5 of these hotels are located in East Grand Bahama - of these 5, only 1 is currently open (the East End Lodge in McCleans Town). The other 4 hotels have reportedly suffered significant damage resulting from Hurricane Dorian (*Bahamas Ministry of Tourism*).

The general occupancy rate for Grand Bahama for the year 2022 was calculated at 31.2%, compared to 57.9% for The Bahamas in general and 64.1% for New Providence.

As of the date of this report, the online booking website tripadvisor.com shows that there are 51 available properties on Grand Bahama Island. Such properties include condos, inns and short-term rentals, and villas. 2 of these are located in the East End district. The home stay listing website airbnb.com provides that, as of the date of this report, there are 496 available homestay rentals on Grand Bahama Island with prices ranging from $52 to $400+ per night. 16 of these are located in the East End district.

8.3 **Tax Regime**

The Bahamas is known for maintaining "tax neutrality" - capital gains, corporate earnings, personal income, sales, inheritance, and dividends are tax exempt. Instead, revenue is derived from customs duties, property taxes, tourism-related duties (such as departure tax), gaming tax, stamp duties, and more recently, value added tax, or VAT. This taxation regime can primarily be characterized as regressive, as it is largely applied uniformly, regardless of income. (*NSI, 2018*)

In the fiscal year 2021/2022, government revenue collections amounted to some $2.6 billion. Total tax revenue for that period amounted to over $2 billion, which represented 17.4% of GDP (*Bahamas Ministry of Finance*).

In Grand Bahama, which is subject to the administration of the GBPA, additional taxes, in the form of annual property service charges, are levied in Freeport (the Port area).

8.4 **Industrial Sector**

The Bahamas has historically relied heavily on tourism and agriculture as primary drivers of the economy. Recognizing the need for economic diversification and job creation, the Government sought to develop Freeport as a center for large-scale industrial and commercial activities to complement the country's traditional sectors. It was in the 1950s that the government of The Bahamas pushed for the potential of Grand Bahama as a hub for trade, manufacturing, and logistics, due to its access to global markets. The Hawksbill Creek agreement allowed the GBPA to designate Freeport as a free trade zone and granted tax exemptions, customs duties waivers, and other incentives to investors in Freeport. Freeport's strategic location in The Bahamas, with its deep-water harbour and proximity to major shipping lanes in the Caribbean and North America, made it an attractive site for industrial development.

The Government of The Bahamas, with the collaboration of the GBPA, worked to develop essential infrastructure in Freeport, including port facilities, road networks, utilities, and industrial parks. It was these infrastructure investments that supported the expansion of manufacturing, shipping, and logistics industries in Freeport, as well as facilitated the movement of goods and services within and beyond The Bahamas.

Movement in the industrial sector was taking place outside of Grand Bahama - the Industries Encouragement Act of 1970 and the Agriculture Manufacturers Act of 1971 provided incentives for manufacturers of approved products for industry generally and agricultural products respectively, and The Bahamas Agricultural and Industrial Corporation was established in 1981, as a central agency for potential investors seeking advice and assistance in those industries. Small-scale industries, such as rum and other alcoholic beverages, food processing, and soft drinks, proliferated in New Providence, but large-scale industries were concentrated in Grand Bahama.

The industrial sector of Grand Bahama has experienced some setbacks over the years, including closures of companies in the 1980s relating to declining demand for steel, cement and oil on the world markets. Notwithstanding, from then to now, the industrialization of Freeport has played a significant role in the island with job creation, economic diversification, and revenue generation for The Bahamian government through taxes and fees. Thousands of Bahamian and foreign nationals found and continue to find employment opportunities in the industrial sector and related sectors. These employment opportunities span a wide range of skill levels, from entry-level positions in manufacturing and logistics to technical and managerial roles in engineering, operations, and administration.

Currently, Freeport, Grand Bahama, is home to several manufacturing companies across various industries, including the largest container yard in the country, ship repair facilities, limestone mining, and oil storage.

8.5 **Agriculture and Fisheries**

Before industrialization and tourism, agriculture and fisheries were primary economic activities in the Bahamas, including Grand Bahama. Grand Bahamians, like those on the majority of the islands of The Bahamas, engaged in subsistence farming and fishing, cultivating crops such as cassava, yams, corn, and peas, and fishing for aquatic species such as queen conchs, lobsters, groupers, snappers, jacks, and grunts. Many of the community elders throughout Grand Bahama recall subsistence farming and fishing being a major part of their lifestyle in their earlier years.

In the 1969 Commissioners Report for the High Rock district, the following was provided with respect to fisheries and agriculture in the East End area of Grand Bahama:

> Fishes are plentiful in the waters around the district and undoubtedly considered the most lucrative employment locally…. A small group of the inhabitants of the district till the soil and the little peas, corn or other farm produce grown, suffices only local consumption. The land in the entire district is of course arable, and it is saddening to report that though some of the residents seemed vigorous to do a little farming, there is no response from request for even financial assistance in getting started on farming commercially.

In 2015, agriculture accounted for only 0.7% of GDP, and together with fisheries, it accounted for 1.6% of GDP. (*IDB, 2018*) In 2022, the Gross Value Added (GVA, or the Production Approach to GDP) of Agriculture, forestry, and fishing in The Bahamas was $69.2 million, down from $86.9 million in 2018 (*NSI, 2023*). In 2018, pre-pandemic, 3,215 persons employed in The Bahamas were working in the agriculture, hunting, forestry and fishing sector (1.54% of all employed persons). In that year in Grand Bahama, 600 persons, or 2.25% of employed persons on that island, were working in said sector. (*NSI*)

The agricultural sector has faced challenges over the years due to the small size of The Bahamas, its archipelagic nature, nature of its soil, labour capacity, and its limited water resources. As of 2021, agricultural land in The Bahamas was 130km, or 1.3% of the country's total land area (*World Bank*).

The fisheries sector, by contrast, is largely recognized as playing an important role in the country's economy in terms of foreign currency earnings, food supply and employment. In 2016, the commercial fisheries sector was said to have generated some $80 million annually in export earnings and provided full-time employment to 9,300 commercial fishers (*FAO, 2016*). The fisheries sector in Grand Bahama and Abaco in particular, produces roughly 40 percent of the total Bahamian fishery production for export (*FAO, 2022*).

Hurricane Dorian especially was catastrophic to the agricultural sector for Grand Bahama and Abaco. A 2019 report from the IDB on damages resulting from Hurricane Dorian provided that for the fisheries and agriculture sector, damages from Hurricane Dorian amounted to $13,516,097 and losses amounted to $10,112,761 (*IDB, 2019*).

In a 2019 press release from IICA, then-Minister of Agriculture Michael Pintard was cited as providing that "preliminary estimates of damage to the agricultural sector for Abaco and Grand Bahama exceed $200 million, including loss of income, structure, equipment, vehicles, housing, crops, livestock and marine resources…. Farmers lost all their animals in eastern Grand Bahama" (*IICA, 2019*). Rehabilitation programmes and activities have commenced since, to bolster the agriculture and fisheries sectors.

9. **ENERGY**

Well into the 20th century, kerosene and other lamps were used to illuminate homes and streets throughout the archipelago. The formal advent of electricity in The Bahamas is said to date back to 1907 with the passing of the Electric Light Act, which sought to provide electricity to Nassau and its suburbs. Some 50 years later, in 1956, the Bahamas Electricity Corporation (BEC, the predecessor company to BPL), a government-owned corporation, was established, and began the process of providing electricity to New Providence at large. BEC expanded to the Family Islands (save for Grand Bahama) in the 1970s, and by the mid 1990s each island in The Bahamas was electrified *(BEC)*.

In Grand Bahama, electricity was first provided in Freeport in 1956, through a department of the GBPA. Due to Freeport's rapid expansion, a separate company (Freeport Power Company, the predecessor to GBPC) was formed in 1964 to handle power generation, transmission and

distribution in Freeport, and later expanded to supply electricity to the whole of Grand Bahama *(GBPC)*.

In the 1969 Commissioners Report, the following was stated with regard to the provision of electricity in East Grand Bahama: "Though for some time there had been some talk on this heading, no city current has been installed but, in all settlements there are a number of privately owned generators. Most of the Government cottages are supplied with electricity from generators."

Reportedly, all homes in Grand Bahama were electrified by the 1980s (though Water Cay residents we interviewed recall receiving electrical supply in the 2000s).

Today, The Bahamas has 100% electrification, meaning the entire population is considered to have access to electricity (but consider areas like Water Cay, one of the Project sites, where electricity has not been available since Hurricane Dorian's landfall in 2019 - see Community profile on Water Cay below at Section 14.1).

There are two electric utility companies - BEC, a wholly-owned government corporation, and GBPC, a private, partly foreign-owned utility company operating in Grand Bahama. In addition to these, there are 5 other electricity licensees in the country (*URCA, 2023*). The sector is almost wholly dependent on fossil fuels, which are supplied by international and local oil companies. The electricity and transport sectors are the main users of said fossil fuels.

In October 2022, BPL announced an incremental increase in the monthly fuel charge, by 2 cents per kWh (kilowatt-hours) for consumers of less than 800 kWh, and by 4.3 cents per kWh for consumers of more than 800 kWh, which makes up the vast majority of commercial enterprises. Said price increase was set to peak at 18.5 cents per kWh and 27.6 per kWh respectively. *(BIS, 2023)* In November 2022, GBPC announced an increase in fuel cost to its customers from 10 cents per kWh to 11.5 cents per kWh (*Eyewitness News, 2022*).

These increases have been wildly unpopular, especially when taken with the fact that electricity supply in The Bahamas has long been considered costly and inefficient, characterized by persistent power outages and "load shedding", and has been perceived as an impediment to economic and social development. For Grand Bahamians struggling for years with economic instability and then with recovery after Hurricane Dorian, the increases (though marketed by GBPC as being 40% lower than Nassau's and the rest of The Bahamas) caused outrage (*Tribune, 2022*).

Renewables

Longstanding issues with the provision of energy in The Bahamas led to the creation of the National Energy Policy 2013-2033. Goal 3 of the Policy focuses on the development of indigenous

RE sources (i.e. wind, solar, waste-to-energy and biomass) and set a target of about 30% renewables in the energy mix by 2030.

A Country Commercial Guide released by the ITA provides the following about the planned shift to RE in The Bahamas:

> The Bahamas is transitioning from diesel to liquified natural gas (LNG) on its most populated island of New Providence and recognizes LNG as a bridge to renewables adoption. The government announced plans for a 70-megawatt installation on New Providence as part of this transition. The government is also committed to transitioning its fleet to electric vehicles and retrofitting government buildings with renewable energy systems. These renewable energy efforts are supported by a $9 million EU grant and an $80 million IDB loan. In April 2022, the government announced plans to become the first country in the world to sell blue carbon credits to finance renewable energy and climate-resilient infrastructure *(ITA, 2022).*

At the end of 2022, there were 305 installed renewable energy systems in The Bahamas, representing a combined 6,242 kilowatts. The majority of these systems are solar (photovoltaic), and are located in New Providence. There was also a 22 percent increase in the number of systems online and a 26 percent increase in the installed capacity *(URCA, 2022).*

Notwithstanding said plans, a 2022 IDB report estimated that by 2030, electricity generation sources will be composed of 99.9% oil and only 0.01% solar. *(IDB, 2022)* Another 2022 report published by the Oxford Business Group provided that The Bahamas ranks lowest in the region for renewable energy, with only 2% RE penetration *(Oxford Business Group, 2022).* These findings have raised significant doubts about whether the nation will be able to meet its 2030 goals (*Tribune, 2023*).

10. CLIMATE CHANGE

The Bahamas is considered to be one of the most vulnerable countries in the world to climate change, due to a number of factors, including its geographic positioning and economic and population characteristics. The Government of The Bahamas recognizes that global climate change is an environmental phenomenon with serious implications for the country, as a Small Island Developing State. In keeping with this, The Bahamas signed the United Nations Framework Convention on Climate Change (UNFCCC) in June 1992, and ratified the same in March 1994. The Government has expressed a commitment to meeting the goals of the Convention, namely to reduce global greenhouse gas emissions and address the impacts of climate change (*DEPP, 2005*).

Since ratifying the UNFCCC, the impact of climate change in The Bahamas, and in particular in Grand Bahama and East Grand Bahama, has posed significant threats to the delicate ecosystems (social and otherwise) of these communities. With rising sea levels, increasing temperatures, and more frequent and intense extreme weather events, Grand Bahama has experienced profound negative impacts.

Hurricanes, such as Hurricane Sandy in 2012 (causing $702.8 million in damages to The Bahamas), Hurricane Joaquin in 2015 (resulting in $104.8 million in damages by scoring a direct hit on five Family Islands), and Hurricane Matthew in 2016 (which caused significant coastal erosion, property damage, and economic losses to East Grand Bahama), have inflicted significant damage to the region, causing millions of dollars in losses and displacing thousands of citizens.

Hurricane Dorian, in particular, emerged as the costliest event to date, with damages to the country totaling $3.4 billion. The storm left a trail of destruction, causing widespread flooding, infrastructure damage, and loss of life. Communities in East Grand Bahama suffered extensive damage to homes, businesses, and critical infrastructure, residents were displaced and essential services were disrupted.

Even years later, the communities are just beginning to economically and emotionally recover. In the case of Water Cay, one of the target communities, residents recall that Hurricane Matthew virtually destroyed the cay in 2016, and Hurricane Dorian left the cay uninhabitable.

A 2019 IDB report warns that more frequent and intense hurricanes, coupled with inadequate infrastructure, pose a serious threat to economic activities and public infrastructure concentrated along the coast. East Grand Bahama, along with other coastal areas, continues to face a heightened risk of flooding and erosion due to rising sea levels and increased precipitation resulting from climate change. According to the IDB, climate change impacts could cost the Bahamian economy nearly $500 million annually by 2025, with poorly designed infrastructure and coastal erosion exacerbating the risks (*IDB, 2019*).

The Bahamian government is addressing climate change through a combination of strategies. A comprehensive approach has been adopted, which includes the establishment of a Climate Change and Environmental Unit in the Office of the Prime Minister, and the creation of a IDB-supported Disaster Risk Management Authority, tasked with focusing on all potential disasters and risk, not just hurricanes. The legislation underpinning said authority (the Disaster Risk Management Act, passed in 2022), aims to reduce socio-economic and environmental impacts, particularly on vulnerable populations, by promoting stakeholder involvement and proactive risk reduction measures.

There are a number of programmes and initiatives in Grand Bahama designed to mitigate climate change - these include the Blue Action Accelerator, a sustainability investment platform which aims to align with the country's climate action goals while promoting global solutions, and Coral Vita, which seeks to mitigate climate change impacts in The Bahamas by addressing global coral reef degradation.

11. COMMUNITY HEALTH

According to the Pan American Health Organization (PAHO), in 2019, cardiovascular diseases, cancers, and diabetes were the top three causes of death and disability in The Bahamas, accounting for a collective 38.4% of healthy life lost in the country. Self-harm, violence, and unintentional injuries collectively accounted for 11.8% of all healthy life lost in 2019, a rise of one-third since 2000.

The population of The Bahamas is aging at an increasing rate - the percentage of the population aged 65 and older was 4.1% in 1980, increased to an estimated 7.7% in 2020, and is expected to rise to 19.9% by 2060 (*PAHO*). One reason for this increase is attributed to progress made in slowing the spread of infectious diseases. In 2000, HIV/AIDS was listed as the main cause of death and disability in The Bahamas, accounting for 14% of all healthy life lost. By 2019, HIV/AIDS accounted for just 4.8% of healthy life lost, a reduction of around two-thirds.

In 2016 a National Development Plan of The Bahamas was submitted and sets out a long-term road map for development with 15 Outcome Goals. Goal 5 focuses on "a vision for a modern, sustainable, and universally accessible healthcare system that is wellness-focused and delivers continuously improving outcomes. This universal accessibility represents an adoption of the global move toward universal health coverage".

Healthcare in The Bahamas is considered expensive and a number of vulnerable groups are unable to access primary care due to geographic difficulties (related to the archipelagic nature of The Bahamas) as well as cost. Many have had to resort to seeking primary health care from the hospitals and other secondary health care providers. This places a tremendous burden on these institutions as can be seen in the long waiting time and overcrowded facilities (*PAHO*).

The healthcare system in Grand Bahama, while essential in providing critical services to its residents, is facing challenges that necessitate a comprehensive revamping. As of 2024, the system exhibits both strengths and weaknesses, and there are concerted plans of action in place to address the pressing issues. In May 2023, the government broke ground on a $200 million dollar outpatient and urgent care facility in Grand Bahama. However, it is evident that a more robust change is imperative to meet the evolving healthcare needs of the community.

Currently, Grand Bahama boasts several healthcare facilities, including 1 public hospital, 3 private hospitals, and 9 public clinics. Notable amongst these is The Rand Memorial Hospital (public). While this institution has been pivotal in delivering essential healthcare services, there is a recognized need for infrastructure improvements and the introduction of modern medical technologies (*Ministry of Health*).

It is also important to note that the cost of healthcare services, coupled with potential financial barriers, might limit access for certain segments of the Grand Bahama population. In a 2013 Household Expenditure Survey, it was noted that as a nation "the access to private medical insurance is very unequally distributed. While 60.3% of the individuals of the richest quintile have private medical insurance, only 5.6% of the individuals of the poorest quintile have that kind of insurance. As with any plans for long term economic development, a healthy and productive population is a key driver. These individuals are more likely to participate in the labor market and contribute to economic growth."

According to the 2010 Census, in Grand Bahama, 28,702 persons, or 56% of the population had no health insurance. This was slightly higher than the national average of 53% (*2010 Census*).

Healthcare Facility	**Location**
The Rand Memorial Hospital	Freeport
Lucayan Medical Centre	Freeport
The New Sunrise Medical Centre & Hospital	Freeport
The Medical Pavilion	Freeport

Table 3: Healthcare Facilities in Grand Bahama

Government Clinics
West End Clinic
Eight Mile Rock
Hawksbill
High Rock
The Grand Bahama Health Services

Table 4: Government Clinics in Grand Bahama

12. **EDUCATION**

The literacy rate in The Bahamas is generally high, estimated to be around 95%, according to UNESCO data. This indicates that a large majority of the population aged 15 and above are literate. According to the Bahamas government, as much as 24 per cent of the National Budget is allocated to education.

According to the National Education Committee in a 2015 Report titled Vision 2030:

> "There are 168 public schools and 99 private schools [in The Bahamas]. Public schools account for approximately two-thirds of total enrolment (about 50,000 students), while private schools account for approximately one-third of total enrolment (about 30,000).The school enrolment rate for primary level is nearly 95% and the secondary enrolment rate is around 85%. Approximately 10% of the population in public schools is comprised of non-Bahamian students. The public school attendance rate of children ages 5 – 17 in 2014 was 96% while the attendance rate for private schools was slightly higher. According to the 2010 Census Report, there were 12,303 children ages 3-4 years living in The Bahamas, 4,200 (approximately 30%) of whom were attending school." (*Vision 2030 Report*)

In Grand Bahama, the education system plays a critical role in shaping the identity of the island. Knowing the educational system, its structure, challenges, and achievements is essential in understanding the labor force and work force on the island.

Grand Bahama is home to a network of public and private schools, including primary, secondary, and specialized institutions. The education system in Grand Bahama, like the rest of the Bahamas, follows a structure that includes early childhood education, primary education, secondary education, and tertiary education. Early childhood education caters to children between the ages of 3 and 5, preparing them for primary school. Primary education spans from grades 1 to 6, while secondary education covers grades 7 to 12. Tertiary education institutions offer post-secondary education and vocational training opportunities for students pursuing higher education or technical skills.

The Ministry of Education oversees the educational system in Grand Bahama, setting policies, curriculum standards, and educational goals for schools across the island. The curriculum in Grand Bahama's schools aligns with national educational standards and aims to provide students with a well-rounded education. All students are taught core subjects such as mathematics, science,

language arts, and social studies and are also supplemented with courses in art, music, physical education, and vocational training. The Department of Education provides support to the public schools to ensure quality education delivery.

Grand Bahama's education system faces various challenges, including resource constraints, teacher shortages, infrastructure deficiencies, and disparities in educational outcomes between some schools. School infrastructure varies across the island, with some schools equipped with modern facilities, technology resources, and sports amenities, while others may face challenges related to infrastructure maintenance and accessibility.

Primary School (Government)	**Primary School (Private)**	**Junior and High school (Government)**	**High School (Private)**	**Post Secondary Institutions**
West End Primary School	Freeport Gospel Chapel	Eight Mile Rock High School	Grand Bahama Academy of Seventh-Day Adventists	University of The Bahamas
Holmes Rock Primary School	Grace Christian Academy	Sister Mary Patricia Russell Junior High School	Hampton Academy	Bahamas Technical and Vocational Institutes
Martin Town Primary School	Grand Bahama Academy of Seventh-Day Adventists	St.Georges High School	JC Academy	Terreve University College
Bartlett Hill Primary School	Hampton Academy	Jack Hayward Junior High School	Lucaya International School	
Lewis Yard Primary School	JC Academy	Jack Hayward Senior High School	Mary Star of The Sea Catholic Academy	
Hugh Campbell Primary School	Lucaya International School	The Beacon School (All Age)	Study Hall Academy	
Freeport Primary School	Mary Star of The Sea Catholic Academy		St. Paul's Methodist College	

Walter Parker Primary School	Study Hall Academy		Sunland Baptist Academy	
Maurice Moore Primary School	St. Paul's Methodist College		Tabernacle Baptist Christian Academy	
Tabernacle Baptist Christian Academy	Sunland Baptist Academy		Bishop Michael Eldon School	
Wilbur S. Outten Christian Academy	Bishop Michael Eldon School			

Table 5: Educational Institutions in Grand Bahama

13. GENDER ISSUES

The promotion of gender equality is crucial to accelerating sustainable development. Gender bias is not just a human rights issue, but also hinders economic growth. Addressing gendered concerns - such as significant gaps between men and women in the labour force, sexual violence and exploitation, and the unequal division of unpaid care and domestic work - contributes to poverty reduction and has a multiplier effect across other development areas.

A May 2019 Labour Force and Household Income Survey found that in The Bahamas, women were more likely than men to be unemployed (the unemployment rate for women was 9.9% compared to 9.2% for men) and unemployment is higher for women than men, despite higher education attainment (a larger proportion of unemployed females (11.2%) than males (5.2%) had completed university).

In The Bahamas, women's and men's labour market choices tend to reflect traditional gender roles within households, with women occupying care and service-related jobs at higher rates than do men. This type of work is often described as under-paid and under-valued.

It is anticipated that the Project may further affect men and women differently. At least in the construction phase of the Project, more men are likely to be employed than women. The 2019 Labour Force Report provides that men dominated the construction sector (18,790 men to 510 women employed therein). It is therefore unlikely that, without interventions, women will benefit from the construction and operations-related employment opportunities that will be created by the Project, which risks creating gender-based exclusion. 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.

14. TARGET COMMUNITY PROFILES

The following target community profiles describe in brief the 5 settlements where the Project sites are located. Demographic and other pertinent information for each community is provided, along with the salient history and heritage of each community. These profiles were largely informed by the information provided to us by survey respondents, and were corroborated through a comprehensive primary and secondary source data analysis. Stakeholder voices play a central role in the engagement process; through the sharing of their experiences, concerns, and visions for the future, we are provided with valuable context and nuance that informs the profile.

14.1 Water Cay

Water Cay is a cay located off mainland Grand Bahama, to the east of the island. Because the waters around the cay are so shallow, it can only be safely accessed by boat during high tide - travelling to mainland Grand Bahama during low tide can take over 2 hours (as opposed to some 40 minutes during high tide), and may result in running aground and getting left "high and dry".

Once a vibrant, close-knit community, and considered by some (mostly its former residents) to be the "heart of East Grand Bahama", Water Cay now stands as a testament to the challenges faced by small island developing states in the wake of climate change.

History

Water Cay is thought to have earned its name due to the abundance of freshwater sources that can be found there. In 1949, Water Cay was a prominent settlement in Grand Bahama, with a population of 248 (the 4th most populous community in Grand Bahama at the time, and the most populous in East Grand Bahama) (*Grand Bahama Museum*). It is thought that Water Cay was first settled in the 1800s by a number of "shareholding families" from elsewhere in Grand Bahama and the archipelago, who purchased the landmass from the Bahamas government, and moved there to seek shelter from storms. By some accounts, however, evidence of human settlement on Water Cay dates back to the 1600s[1].

[1] We were informed by one of the two remaining Water Cay residents that at one time, there was a tombstone on the Cay that dated back to the 1600s (it has apparently been taken from the island). Said resident also spoke of a number of cemeteries on the Cay that were on the island before the arrival of the shareholding families, as well as cotton mills where cotton was raised and spun.

Demographic Overview

Currently, there are only two full-time residents remaining on Water Cay, a Bahamian couple in their 60s. Population decline is reported as being continuous in the preceding decades - residents and Water Cay descendants with whom we spoke report that in the 1960s the residents of Water Cay numbered in the hundreds, but by the 1980s the population was less than 50.

Prior to Hurricane Dorian, Water Cay was home to a small community of around ten residents, who were primarily older individuals who had spent all their lives in Water Cay. Extreme weather events (Hurricane Matthew in 2016 and then Hurricane Dorian in 2019) inflicted tremendous damage to homes, infrastructure, and community on the cay, which prompted an exodus of the remaining residents in search of safety and stability.

Residents and descendants of Water Cay are primarily of African descent. Prior to the stark population decline which resulted from Hurricane Dorian, the full-time residents of the island were primarily women and children - as one resident told us, “while the men left the Cay to go to Freeport for work, it was the mothers and grandmothers that sustained the Cay. They were the ones to take care of the children and made sure that they went to school and went into the field.” Through a lens of social analysis, it becomes evident that women played a pivotal role in sustaining daily life and maintaining community on the Cay.

Economic Landscape

Historically, Water Cay's economy revolved around agriculture, fishing, and trade. Crops such as corn, potatoes, watermelons, bananas, grapefruits, oranges and various fruits were grown on the Cay and exported to mainland Grand Bahama and to other islands, while the fishing industry flourished. Water Cay descendants with whom we spoke told us that in the past, the cay was referred to as "Little Egypt" by its residents, due to its fertile soil, abundant freshwater sources, and thriving fishing grounds.

Aside from fishing and farming, residents report that the only other source of employment on the island was with the Bahamas government (e.g. custodians at the school and government offices, operator at the telecommunications company).

A number of factors seem to have brought about economic challenges for Water Cay. In the mid 20th century, communities across The Bahamas experienced a decline in traditional livelihoods like farming and fishing, and Water Cay was no different. However, because there was no other

industry on the Cay, residents were forced to relocate to Freeport and other settlements in Grand Bahama or elsewhere, for employment opportunities.

Water Cay's accessibility issues due to its surrounding shallow waters make it difficult for people to easily travel to and from on a daily basis. Residents would therefore leave the Cay for work on Sunday or Monday morning and return on Friday to spend their weekends on the Cay. Eventually, they would end up settling permanently in the settlements where they worked. (Contrast this with Sweetings Cay, where a large number of residents work and study on mainland Grand Bahama, but travel by boat to and from the island every day with relative ease.)

Prior to Hurricane Dorian there were two main businesses on the island, the Water Cay Eco-Lodge and the Fishbone Restaurant. Both were completely destroyed by the storm.

Education and Healthcare

There was one school on Water Cay, the Water Cay All Age School (which in later years functioned as a primary school). Due to the significant decline of the number of school-aged children, the school closed in the 2000s.

Access to healthcare has generally been limited, as there were no medical clinics or facilities on the Cay. Residents report that medical practitioners would come to the Cay on a periodic basis to treat residents; otherwise, residents would leave the Cay and travel to mainland Grand Bahama to obtain medical services.

Infrastructure and Services

During our site visit to Water Cay, our team noted around 40 building structures on the island (a mixture of concrete and wooden), in varying states of repair. Less than 10 structures appear to be in livable condition; the majority are completely uninhabitable. Much of this damage is attributed to the impacts of Hurricane Dorian.

There is little to no vehicular traffic on Water Cay. During our site visit, our team noted one golf cart (but residents informed us that use of golf carts is uncommon).

We are informed that electricity was introduced to the cay around 2000 and was supplied by GBPC; prior to that, residents report that they relied on private diesel generators for power (and would also use kerosene lamps). Electrical supply has not been re-introduced by GBPC since Hurricane Dorian. Currently, the only source of power on the island is said to be a number of solar panels located at the only church on the island. Access to running water was reportedly established approximately 15 years ago, but challenges persist, particularly in the aftermath of Hurricane

Dorian - former residents tell us that there is presently an electric pump at a home by the church that they now use for water supply.

The dock to the island was destroyed during Hurricane Dorian and has not yet been repaired. The lack of a dock poses logistical challenges for transportation and the delivery of goods and services. There is no urgency in addressing these needs, seemingly because of the population size.

Present Day

As of the date of this report, residents are still working to rebuild Water Cay in the aftermath of Hurricanes Matthew and Dorian. Support from the government has reportedly been limited - one of the residents with whom we spoke informed us that only 6 months ago, the government, due to public pressure, made the decision to give homeowners $2,500.00 per house toward home repairs (such amount is considered by residents to be insufficient). For years, the male descendants of the community have been traversing back and forth from their current places of residence to Water Cay on the weekends to slowly rebuild their homes - we encountered a family of 4 such men (the oldest in his 60s and the youngest in his 20s) during our site visit.

Persons with whom we spoke expressed a desire to return to Water Cay, permanently. According to them, a large number of descendants share that desire. Residents and descendants envision Water Cay as a tourist destination, and have plans to establish fishing charters and bonefishing businesses there, and open restaurants and lodges.

Residents feel that the lack of electricity is a hindrance to their plans to repair their homes and return to Water Cay, in any capacity. They expressed support for the Project.

Our team noted, when speaking with residents, their collective action and self-reliance in ensuring that their community is restored. Their active engagement in the process of reconstruction reflects not only a commitment to preserving their heritage and way of life, but their strong belief in the power of collective action to overcome adversity.

14.2 **Freetown**

Freetown in Grand Bahama is one of three settlements named Freetown throughout The Bahamas. The name Freetown is symbolic because the name originates from the city of Freetown in Sierra Leone. Like many of the settlements throughout Grand Bahama, it was the liberated African apprentices who formed Freetown, now known as Old Freetown and New Freetown. There is a geographical distinction between Old Freetown and New Freetown. According to residents Old Freetown no longer has inhabitants due to restructuring efforts spearheaded by the Grand Bahama Port Authority which led to the emergence of New Freetown. This prompted the relocation of

many residents from Old Freetown to a new community. The Old Freetown, is said to be located approximately 13 miles east of the Grand Lucayan Waterway on Grand Bahama Island and holds a rich history dating back to the early 1800s.

Demographic Overview

Currently, less than 100 residents are said to be living in New Freetown. Prior to hurricane Dorian there were 200-300 residents living in New Freetown. The age distribution in New Freetown is wide range, with residents spanning various age groups. However, the majority of Freetown's current population is aged over 45, which reflects a mature demographic profile within the community. Like many of the settlements, Hurricane Dorian brought about a drastic decrease in the population.

Economic Landscape

Historically, Old Freetown residents were known for their skills. During its peak with residents, the skilled labor force from Freetown played a pivotal role in driving the success of the lumber industry in Freeport. In particular, it was a Freetown resident who made history by cutting the first pine tree, marking the dawn of Freeport's development. Later, with the establishment of the USAF missile tracking base near New Freetown, many inhabitants found employment opportunities there. Today, Freetown's residents and descendents are described as having an entrepreneurial spirit and being industrious.

Education and Healthcare

Prior to Hurricane Dorian, Freetown had one school which closed due hurricane damages and is not reopened because of the significant decline of the number of school-aged children.

Access to healthcare is a available at the High Rock Clinic

Cultural Heritage

The Hermitage, Freetown's oldest structure, was initially erected in 1901 as a Baptist Church before transforming into a hermitage for a Trappist monk.

Reports combined the population count of High Rock, McLeans Town, and Sweetings Cay and did not give a breakdown of settlement size in the overall count.

14.3 **High Rock**

High Rock is the capital of East End and got its name from its prominent geological feature which is a 30-foot high rocky bluff between the coastal road and the sea.

Demographic Overview

The 2010 census reported the population of High rock as being 10,127. The 2022 census reported the total population of East Grand Bahama as being estimated to 11,411. These census reports combined the population count of High Rock, McLeans Town, and Sweetings Cay and did not give a breakdown of settlement size in the overall count.

Economic Landscape: High Rock
As the capital of East Grand Bahamas, High Rock has the highest concentration of businesses in East End, which makes it a vital economic hub for that side of the island. It is also the settlement with key government offices for East End such as the Administrator's office. There are also restaurants and the clinic for East Grand Bahama.

14.4 **McLeans Town and Sweetings Cay**

McLeans Town and Sweetings Cay are two distinct settlements located in the East End district of Grand Bahama. Due to their small size and limited population, data for each settlement individually is scarce or non-existent. Therefore, for the purpose of census and statistical reporting, these settlements are often combined. Despite their unique identities, they share similar characteristics, which reflects the close-knit community and common heritage of the East End district.

In Sweeting's Cay, residents reflect on their community's origins, tracing back to Lightbourne Cay, situated nearby. Following the devastation caused by hurricanes *from way back in the day* the original residents sought refuge on Sweeting's Cay, where they established new homes and livelihoods. Even Though they migrated and established new homes, generations of Sweeting's Cay residents maintained ties to Lightbourne Cay, primarily for agricultural purposes, cultivating crops on their farms located there.

Similarly, in McLean's Town, residents recount the migration of the original residents from Crabbing Bay to Sweeting's Cay, although the exact reasons behind the move remain unclear. It is speculated that factors similar to those prompting the migration of Sweeting's Cay's original residents may have influenced this relocation. Some residents with whom we spoke informed us that the original name of the settlement was "Self Cay", and told us that the settlement's current name is derived from a teacher of Scottish origin who taught in the school at the settlement some years ago.

Economic Landscape: McLean's Town, and Sweeting's Cay

McLean's Town and Sweeting's Cay are coastal communities in East Grand Bahama with economies deeply rooted in the fishing industry. However, there is a common challenge faced by the fishermen in these settlements is the limited number of suppliers, resulting in a slowdown in economic activity. The fishing industry serves as the backbone of the economies in these three settlements. The fishermen rely on fishing as a primary source of income. Despite the abundance of fish caught by them, economic activity in these communities is hindered by the presence of only one buyer. The monopoly in the buyer market creates challenges for fishermen, who may face difficulties negotiating fair prices for their catches or finding alternative markets for their products.

The presence of a single buyer contributes to economic slowdowns in these three settlements The Fishermen may experience delays in selling their catches or encounter bottlenecks in the supply chain, leading to reduced incomes and financial instability for families reliant on fishing-related activities. Some residents are exploring opportunities for economic diversification beyond fishing that they hope could help mitigate the impacts of reliance on a single buyer. Some alternative revenue streams that are being pursued are ecotourism and aquaculture.

Education and Healthcare: High Rock, McLean's Town and Sweeting's Cay

Following the devastation caused by Hurricane Dorian, access to education and healthcare in High Rock, McLeans Town, and Sweetings Cay, has undergone significant changes. There are currently no schools in the East End district. Consequently, most students from these settlements must commute to Freeport to attend school. This poses logistical challenges, particularly for students residing in Sweetings Cay, who must first take a ferry to the mainland before traveling to Freeport. The lack of local schooling options has led many parents to relocate to Freeport to ensure their children have access to education. This migration trend has impacted the demographic makeup of these settlements, contributing to changes in population distribution and community dynamics.

While educational facilities may be limited, healthcare services are provided through a clinic located in High Rock. This clinic serves the entire East End district. To ensure the quality and standards of healthcare delivery, a team from the Public Hospitals Authority (PHA) conducts monthly assessments of the clinic. These assessments are essential for evaluating the clinic's infrastructure, staffing, and medical services, with the aim of maintaining compliance with PHA standards and meeting the healthcare needs of the local population.

Cultural Heritage

The combined cultural heritage of High Rock, McLeans Town, and Sweetings Cay reflects the shared history, traditions, and values of these interconnected settlements. Despite their individual

characteristics, they collectively contribute to a vibrant mosaic of Bahamian culture. One of the defining elements of the cultural heritage of these settlements is their deep-rooted connection to the sea. As coastal communities, High Rock, McLeans Town, and Sweetings Cay have historically relied on fishing and maritime trade for sustenance and livelihoods. This shared maritime legacy is evident when visiting the communities.

Food plays a central role in the combined cultural heritage of these settlements, with a focus on fresh seafood and local ingredients. Bahamian dishes such as conch fritters, grouper stew, and johnnycake are staples of the diet, showcasing the settlement's rich culinary heritage.

15. CULTURAL HERITAGE SECTOR

As part of this exercise, we have established a preliminary Heritage Profile of East Grand Bahama, in order to gain an understanding of the community's cultural identity. This falls in line with The Bahamas' ratification for the 2003 Convention for Safeguarding of the Intangible Cultural Heritage.

The method used to build this cultural heritage profile is community-based documentation. The respondents who shaped this profile are residents who spent their entire lives in East Grand Bahama or longtime residents, living in East Grand Bahama for 20 years or more. The respondents were asked if *they are aware of any cultural heritage landmarks in their settlement or in East Grand Bahama* to help inform us about the cultural heritage assets of the community.

This profile presents an analysis of the rich heritage and cultural diversity of these settlements, through the eyes of its residents.

Of note is that the types of celebrations that are held in East Grand Bahama involve the commitment from the churches, schools, local government community organizations. We notice that the way of life such as farming and fishing has been passed on from generation to generation. For some, it is a means of survival and for others it is a hobby that is thoroughly enjoyed.

We hold the view that this community's story is bound to be lost if not safeguarded. The knowledge from community elders is typically not transmitted to the next generation. It would be advantageous to expand this heritage profile, for the benefit of East Grand Bahamians and for Bahamians at large. As the Convention states, *intangible cultural heritage that is recognized by the communities as theirs and that provides them with a sense of identity and continuity is to be safeguarded.*

Below is a synopsis of what the target communities identify as their cultural heritage resources.

Tangible	Intangible	Community Activities
Ebenezer Baptist Church (Water Cay)	Agricultural Practices (Water Cay)	Crack Conching Festival (McClean's Town)
Small school building built by the community (Water Cay)		
Graveyards (Old Freetown)		High Rock Homecoming (High Rock)
Springs with Fresh Water (Freetown)		High Rock Seafest (High Rock)
Turtle Pond (Sweeting's Cay)		Old Freetown Fire Heart Food and Heritage Festival (Freetown)
Sagittarius Cave (Sweeting's Cay)		Sweeting's Cay Heritage Festival
Gill and Bow pond with the parrot fish (Sweeting's Cay)		
Underwater Caves (McLean's Town)		
Tamarind tree that has been in the community for over 100 years (Sweeting's Cay)		
Lighthouse (High Rock)		

Table 6: Cultural Heritage Resources of Water Cay, Freetown, High Rock, McClean's Town, Sweeting's Cay

16. STAKEHOLDER ENGAGEMENT AND DISCLOSURE

Stakeholder engagement and public disclosure are essential to the Project development process. These mechanisms assert and recognize "the importance of open and transparent engagement between [the Project] and stakeholders, especially project-affected people, as a key element that can improve the environmental and social sustainability of projects, enhance project acceptance, and contribute significantly to the Project's successful development and implementation" (ESPS Standard 10).

The objectives of stakeholder engagement are:

- To establish a systematic approach to stakeholder engagement that will help the Project identify stakeholders, especially project-affected people, and build and maintain a constructive relationship with them.
- To assess the level of stakeholder interest in and support for the project and to enable stakeholders' views to be considered in project design and environmental and social performance.
- To promote and provide the means for effective and inclusive engagement with project-affected people throughout the project's life cycle on issues that could potentially affect or benefit them from the project.
- To ensure that appropriate information on environmental and social risks and impacts of the project is disclosed to stakeholders in a timely, understandable, accessible, and appropriate manner and format.
- To provide stakeholders with accessible and inclusive means to raise questions, proposals, concerns, and grievances and allow the Project to respond and manage them appropriately.

The following presents a summary and documentation of the public consultation and stakeholder engagement activities conducted to date.

16.1 **Public Consultation Meeting**

[To be completed following public consultation meeting]

16.2 **Stakeholder Engagement/Public Consultation/Surveys**

Field studies were conducted in the target communities in February and March 2024, and follow-up telephone interviews were conducted in March 2024. In order to gain the requisite insight into the perceptions of the target communities regarding the Project, semi-structured oral interviews were conducted with 53 residents of East Grand Bahama.

These interviews focused on demographics of the target communities, as well as indicators and socioeconomic variables that could be affected by the activities of the Project, with an emphasis on the economy and energy supply. The Project also considered, as part of the interviews, questions related to the feelings of the population in relation to the Project.

The majority of the interviews were collected by going door-to-door to homes and businesses in the target communities. Answers were recorded by inputting notes into an online survey form. All interviews were anonymous. Interview length ranged from 5 minutes to 25 minutes.

The Project further engaged key stakeholders, namely, the local government representatives for the target communities, as well as stakeholders from the GBPC.

16.2.1 Stakeholder Field Surveys and Interviews

16.2.1.1 Survey Respondent Demographics

The Project received survey responses from 53 persons, 31 males or 58.49% of respondents, and 22 females or 41.51% of respondents.

All survey respondents provided information pertaining to their age. The breakdown by age group of the respondents is as follows:

Age Range	**Number and Percentage of Respondents**
18-24	2 (3.77%)
25-34	4 (7.55%)
35-44	10 (18.87%)
45-54	13 (24.53%)
55-64	13 (24.53%)
65+	11 (20.75%)

Table 7: Breakdown of Respondents by age

Each respondent but one provided information about their nationality. 1 respondent (1.92%) identified as a Jamaican national; the other 51 respondents (98.08%) identified as Bahamian nationals.

2 out of the 53 respondents (3.77%) are descended from the ADI but live in Freeport. The other 51 respondents (96.23%) reside in the ADI. Of these, 17 respondents (32.69%) life in Sweetings Cay, 14 (26.92%) live in McClean's Town, 10 (19.23%) live in High Rock, and 9 (17.31%) live in Freetown. 1 respondent works in McCleans Town and lives in Rocky Creek, a settlement bordering McClean's Town.

A majority of the respondents (36, or 67.92%) provided that they had lived in the ADI for their entire lives. 1 respondent (1.89) has spent less than 5 years in the ADI. The remaining respondents lived in the ADI for periods of time ranging from 5 years to over 20 years.

The majority of respondents (29, or 54.72%) provided that they were self-employed. 14 respondents (26.42%) said that they were employed full-time, 2 respondents (3.77%) said that they were employed part-time, 8 respondents (15.09%) provided that they were retired. No respondents told the Project that they were unemployed.

Respondents were most frequently employed in the maritime/fishing sector (19 respondents or 35.19% of persons who answered this question). 8 respondents (14.81%) were employed in the food-restaurant sector, 6 (11.11%) in the tourism/hospitality sector, and 4 (7.41%) in the construction/contractor sector. Other respondents were employed in the government/public services sector, in maintenance and housekeeping, and in law enforcement, among other professions.

We received responses from 44 of the survey respondents pertaining to monthly income range. 33 respondents (75%) reported a monthly income range of $2,000.00 or less. 10 respondents (22.73%) reported a monthly income of $2,001.00 - $5,000.00 and only 1 respondent (2.27%) reported a monthly income of $5,000.00 to $10,000.00. No respondents reported a monthly income range of over $10,000.00.

In addition to those who undertook the anonymous survey, the Project interviewed one of the two residents who presently lives full-time on Water Cay. The Water Cay resident is the male counterpart of a married couple. He is in the 65+ age range and is presently retired. He did not report his income and reports that he has lived on Water Cay for his entire life.

16.2.1.2 Community Concerns Regarding Electricity Supply

Respondents generally spoke of being greatly impacted by Hurricane Dorian, especially with regard to energy supply: according to them, they were without electricity for almost a full year (some Sweetings Cay residents told our team that they were without power for up to 2 years). A great number of respondents left the ADI due to storm damage, and relocated to other parts of Grand Bahama or off-island.

The majority of those who remained in East Grand Bahama used fuel-powered electric generators for energy supply; these were either purchased by the residents in question or were donated to residents by NGOs operating in Grand Bahama post-Dorian. The cost of fueling the generators was reported as ranging between $60.00 a week to $500.00 a week, depending on the energy needs of the household in question. Residents also resorted to the use of kerosene lamps, as well as solar

hand lights that were supplied to them by NGOs.

To date, electricity supply has been fully restored by GBPC throughout the ADI, with the exception of Water Cay. Each survey respondent but one (a Freetown resident who is in the process of rebuilding his home), is currently being provided with electrical power from GBPC. Electric power is the primary source of energy supply for all such respondents. We were informed by survey respondents that there are a number of residents in the ADI who are still using generators.

Several respondents plan to convert to solar energy in the future, and a good deal more expressed an interest in solar energy for personal household use. Use of renewable energies was reported as being uncommon in the ADI - respondents living in McCleans Town and Sweetings Cay referenced certain government buildings and churches on which solar panels are installed. In Water Cay, solar panels are fitted on the church building.

A number of respondents (10, or 18.86%) provided that they are on "temporary power" as opposed to "full power". GBCP defines temporary service as "service required for a short period such as for construction projects, fairs, bazaars, boathouses, etc." (*GBPC: 2023 Power Rates*) Representatives from GBPC (see section 16.2.2) informed our team that temporary power is supplied to customers who are applying for power for construction purposes; once they have completed their rebuilding process and have been granted approval from the Ministry of Works/GBPA and are in receipt of an occupancy permit, GBPC will convert their supply from temporary to permanent/full.

Although temporary power is typically intended for construction purposes, it appears to be a common practice for residents who are in the process of rebuilding while living in their homes, to use temporary power to supply their homes with electricity. Temporary service is more expensive than permanent service ($0.2585 per kWh for temporary compared to $0.1756 per kWH for 0-200 kWh up to $0.2731 for >800 kWH) (*GBPC: 2023 Power Rates*), and the supply is limited, so respondents on temporary power report that they must ration which appliances they can use at any one time, or else their circuit breaker will trip.

Said one respondent, a married mother of 2 from Rocky Creek: "On temporary power…you can't run all your stuff or the lights will dim and the breaker will trip. For me, it almost caused a fire when my stuff started to spark…. I don't have a heater, no AC, no microwave. I have one TV, two lightbulbs in my whole house. One fan and only a gas stove. I don't understand why my power bill is so high, because I don't be running nothing like that. I only turn my lights on at night, so why I paying $80 or $90 a month?"

Despite temporary service being more expensive than permanent service, a number of respondents informed us that they preferred temporary service, and feel that once electricity usage is monitored

effectively, it is the more economical choice for them. Respondents who were once on temporary power and have since switched to permanent service, seem to prefer permanent service.

We asked respondents about how satisfied they were with their electricity supply, and received responses from 49 persons. The majority of respondents who answered (37 or 75.51%) were either satisfied (33 persons, or 67.35%) or very satisfied (4 persons or 8.16%) with their current electricity supply. 3 respondents, or 6.12% were not very satisfied, 5 or 10.20% were not satisfied at all, and 1 or 2.04% was somewhat satisfied.

When questioned about any concerns about their current electricity supply, 46 respondents provided answers. Cost was the number one response, given by 39 respondents, or 72.22%, and reliability (load shedding/outages, etc.) was the response given by 6 or 11.11% respondents. 2 respondents (3.70%) named resilience after storms.

Respondents were asked to describe the cost of electricity for them personally. 22 of those who responded, or 47.83%, provided that electricity was very costly, 15 or 32.61% provided that it was somewhat costly, and 7 or 15.22% stated that it was not very costly.

43 respondents provided information about their average monthly electricity bill, as follows:

13 respondents (30.23%) - over $200.00
7 respondents (16.28%) - between $50.00 - $100.00
6 respondents (13.95%) - between $200.00 - $350.00
5 respondents (11.63%) less than $50.00
5 respondents (11.63%) between $100.00 - $150.00
4 respondents (9.30%) - over $350.00
3 respondents (6.98%) between $150.00 - $200.00

16.2.1.3 Support for Project

We asked survey respondents whether they were in support of or against the Project. We received responses from 50 respondents.

44 respondents (88%) provided that they are in support of the Project, and 3 respondents (6%) provided that they are against the Project. 3 respondents (6%) were unsure as to whether or not they are in support of the Project; their support seemed to be contingent on receipt of additional information on the Project.

16.2.1.4 Survey Respondents Project Concerns

When asked whether they had any concerns about the Project and renewable energy, 44 respondents provided answers. The vast majority of those who answered (31 persons, or 68.88%) provided that they had no concerns with the Project and renewable energy in general.

Of those 13 or (31.12%) respondents who did express some degree of concern, several questioned how storms would impact the microgrids and their reliability - said one person interviewed, "Nothing could survive a storm". Others had queries about how overcast weather conditions would impact the microgrids and their efficacy. Concerns were raised about whether the microgrids could impact community health, through emitting radiation or "5G" technology, and whether residents would have to pay to access the microgrids.

16.2.2 Key Stakeholder Interviews

The Table below summarizes interviews held with key stakeholders.

Date Contacted	Stakeholder Name(s) and Organization	Comments
17 February 2024	Marcus Cooper, Chief Councillor, East Grand Bahama Local Government District	In support of Project. Opinion - Project will impact community positively, but that this would be dependent on Project design - advocated for Project to provide energy independent of GBPC, so that in the event of another storm, the people of East Grand Bahama would not have to wait for an excessively long period for restoration. Advocated for the Project to create long-term jobs for residents, get local input and feedback, and ensure community engagement. Advised that there are a number of contractors and pre-phase electricians operating in East Grand Bahama who may be able to assist the Project (but who would likely need training in solar installation).
19 March 2024	Deon Feaster, Chief Councillor, Sweetings Cay	In support of Project.

	Local Government District	Opined that majority of his constituents would be in support of Project. Pressed for more information to be provided to his constituents concerning the Project. Advocated for a community town meeting where the residents of Sweetings Cay were addressed in particular.
19 March 2024	Nikita Mullings, Chief Operating Officer, Grand Bahama Power Company Cleopatra Russell, Director, Communications, Grand Bahama Power Company	In support of Project. Aware of Project prior to contact with Project team. Provided that GBPC would need assurance and coordination from the Project as an Independent Power Producer and how it would relate to GBPC's framework as the sole power company on the island.

Table 8: Key Stakeholder Interviews

17. SOCIOECONOMIC IMPACT ASSESSMENT

This section identifies and assesses the potential Project impacts on the existing socioeconomic environment and community health (including community safety and security). The social baseline and cultural heritage data was used to assist with the evaluation of the potential impacts and their significance. These sections are cross-referenced where appropriate.

17.1 Methodology

The primary purpose of this SIA is to predict the impacts resulting from the Project. Impacts can be direct (occurring as a direct consequence of and at the same time and place of the Project), indirect (occurring as a result of the Project, but taking place later in time or further in distance from the Project), induced (resulting from non-Project activities but occur as a consequence of the Project), or cumulative (resulting from the incremental effects of the Project when added to the effects of other past, present, and reasonably foreseeable actions).

To determine the significance of potential impacts, this Report considers two main factors: impact magnitude and receptor sensitivity/vulnerability. Magnitude is a measure of the changes to a receptor that will potentially result from the Project, while sensitivity/vulnerability is a measure of how sensitive or vulnerable/susceptible a receptor is to these changes.

Potential receptors with respect to socioeconomic impacts of a Project typically fall within two categories - these are (1) Project-affected communities, including residents, landowners, businesses, and settlements near the Project sites, and (2) Other affected stakeholders, including the workforce and existing potential workforce near the Project sites, vulnerable groups, and tourists.

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*. In the case of positive impacts, it is generally recommended that no magnitude be assigned unless there is ample data to support a more robust characterization. It is usually sufficient to indicate that the Project will result in a positive impact, without characterizing the exact degree of positive change likely to occur.

In addition to characterizing the magnitude of impact, the sensitivity/vulnerability/importance of the impacted receptor is characterized. As in the case of magnitude, the sensitivity/ vulnerability/importance designations are universally consistent (i.e. *Low*, *Medium*, and *High*), but the definitions for these designations will vary on a receptor basis.

It is important to note that stakeholder engagement is a critical component to socioeconomic impact assessments. The information obtained from stakeholders which is presented in the Project's Stakeholder Engagement Plan and in Section 16, as well as information received from stakeholders during the survey interviews, has informed the vulnerability and magnitude designations for this impact assessment.

17.2 **Social**

17.2.1 *Scoped Out Social/Community Health Safety & Security Impacts*

A range of potential impacts have been scoped out on the basis that the impacts will be *Negligible,* and therefore, further mitigations are not required. These are described below.

Impact	**Reason for Scoping Out**
Impacts to Indigenous Peoples	There are no Indigenous Peoples in the ADI
Physical or Economic Resettlement	The Project will not result in physical or economic displacement. The Project sites are each on vacant land, and are located along existing rights of way that are clear of occupation. There are no residences or businesses located near to the Project sites.
Influx of Workers	Peak employment will be 50 persons and the Project will attempt to hire locally. It is therefore unlikely that the workforce will stress local infrastructure, and hiring locally will be prioritized, leading to a reduced influx of workers.
Stress on local medical facilities	Peak employment during construction activities will be 50 people, and as such it is not expected that the workforce will add significant stress on existing medical facilities
Human rights	There are no significant adverse potential impacts identified from a human rights perspective. The Project is not considered high risk from a socioeconomic standpoint and there are no significant adverse potential impacts identified that would not be mitigated through community engagement and implementation of the GRM, as well as

	through adherence to existing policies, plans, and procedures.

Table 9: Scoped Out Social Impacts

17.2.2 *Economic Conditions*

The economy of Grand Bahama, like much of The Bahamas, is heavily reliant on the tourism industry, as well as on the manufacturing and industrial sector. The island's economy did suffer as a result of Hurricane Dorian, though some recovery has been made since that time, especially in the tourism sector.

In the ADI, economic conditions have improved since Hurricane Dorian, but it is difficult to assess the degree of such improvements. The few tourist accommodations that were present in the ADI were in the main, either significantly damaged or completely destroyed after Hurricane Dorian, and the majority have not been rebuilt to date. Respondents to our survey cite that many community members have emigrated to other parts of Grand Bahama or outside of the AII, due to housing insecurity resulting from the storm, cost of living concerns, and lack of employment opportunities.

The Project would presumably incentivize rebuilding efforts, alleviate cost of living concerns, and encourage community members to return to the ADI. As such, this is classified as a *Positive* impact.

17.2.3 *Employment and Livelihoods*

Job Creation

As of 2023, the unemployment rate in Grand Bahama was 10.8%. There is no available employment data for the ADI. More than half of the survey respondents (54.72%) reported that they are self-employed; of these, more than half (51.72%) are from Sweeting's Cay.

The Project is estimated to create up to 50 jobs in the ADI during the construction period, and will require the appointment of local workforce. These workers are expected to be sourced from the ADI where possible and either the AII or from other places in The Bahamas.

The construction period will range from 6 to 12 months (considered short-term). After the construction period, there is expected to be ongoing operations and maintenance at the Project sites. As the Project moves out of the construction phase and into the operations phase, there will likely be a subsequent decrease in the workforce requirements.

The Project will require various vendors, suppliers, and service providers to meet its daily operating needs, as well as the domestic needs of its workforce. This could include goods and services such as food vendors, laundry, supply of vehicles and transportation services, security patrols, as well as some construction equipment.

In addition, other economic activity will be generated by the Project, due to the presence of Project workers. There will be opportunities for utilizing local goods and services for the Project and related activities, and may induce growth in other industries such as retail, transportation, hospitality, etc. Where accommodations are able to be rented, this will also result in revenue generation for local residents.

The creation of beneficial direct and indirect employment is considered a *Positive* impact.

Transient Workforce

It is a possibility that some of the workforce needed for the Project will be sourced from other Bahamian islands and potentially other islands in the Caribbean. The level and range of skills and applicable working experience available in the ADI and the AII may be limited by education and relevant skills training. As a result, the ability to acquire a position, and successful performance once hired, will favour experienced (skilled) personnel for professional roles.

Below are copies of (a) a flyer and (b) a screenshot from a social media post, disseminated from the MOF and circulating on social media, advertising a "Solar Photovoltaic Systems Programme Installation and Maintenance" national training initiative which is set to begin in May 2024. The flyer provides that the initiative is seeking candidates from a number of communities in The Bahamas, including East Grand Bahama. We are advised that this initiative relates to this Project, and consider this to be strong evidence of the intention of the MOF to source workers from the ADI.

Figure 1 : Flyer and Social Media Post advertising training initiative for the Project

Notwithstanding this initiative, it is likely that at least a portion of the labour force may come from outside of the AII or even abroad. With any transient workforce, there are risks to the communities in the ADI, as a result of transient worker-community interactions. Specific risks include the spread of communicable diseases such as sexually transmitted infections (STIs) and petty crimes.

There is also the potential for negative sentiment coming from within the ADI, in relation to the employment of non-local labour. Such negative sentiment may specifically arise related to:
(a) resentment between local Project employees and local people who were not hired by the Project;
(b) resentment between local and non-local workers, if non-local workers are perceived to receive better pay or conditions for carrying out the same job;
(c) unfulfilled skill development and training expectations; and
(d) increased tensions over access to jobs and due to the presence of non-local workers in the ADI.

As the Project construction period is short-term and employment during the operations phase is minimal, and as the construction work is mainly restricted to the Project sites, the impact magnitude of the Project is considered to be *Small* (perceptible difference from baseline conditions, local, rare, affecting a small proportion of households and of a short duration). The sensitivity of the receptors - the Project-affected communities as well as the workers - is considered to be *Low to Medium*, (they have some, but few, areas of vulnerability due to their position post-Hurricane Dorian and have some coping strategies in place). The impact significance is therefore assessed as being *Low to Moderate.*

The Project has a GRM which is accessible to workers and community members. The Project should apply a labour management and code of conduct for its workforce, ensure that workers receive appropriate training, and provide workers with free medical care. The potential for negative sentiment from the community related to non-local labour must be monitored and managed closely.

Worker Accommodations and Indirect Employment

Hurricane Dorian resulted in the damage and destruction of many of the residences in East Grand Bahama, and the subsequent displacement of community members. To date, the rebuilding efforts have been steady (though hindered by economic concerns), and a sizable portion of the displaced population has since returned to the ADI. There is a concern as to whether sufficient housing exists to meet the needs of the Project workforce, especially in the case of non-local workers. Additional housing may therefore be needed.

The impact magnitude of the Project is considered to be *Small*, and the receptor sensitivity is considered to be *Low to Moderate.* As a result, the impact significance is assessed to be Moderate.

The Project should establish Worker Accommodation Requirements consistent with the International Finance Corporation's Worker Accommodations Processes and Standards.

Community Safety and Security

Crime and safety issues in East Grand Bahama generally appear to be minimal.

There are some community-related risks resulting from using a transient workforce (see above).

There are also some risks associated with operations, such as the threat of property theft, squatting, or trespassing at/on the Property sites.

The risks associated with operations would be permanent and would be restricted to the Project sites; as such the impact magnitude is considered to be *Medium*. The receptor sensitivity is considered to be *Low to Moderate*. As a result, the impact significance is assessed to be *Moderate*.

The Project has a GRM for community members and a SEP. The Project should also post signage with regard to the microgrids at the Project sites, and should train and employ security at the Project sites.

Social Infrastructure and Services

Some of the existing social infrastructure and services in the EDI were destroyed or abandoned because of Hurricane Dorian. Schools in each of the Project sites and throughout the ADI were closed after Hurricane Dorian and to date have not been re-opened. As a result, children residing in the ADI have to attend schools in Freeport, Grand Bahama. They are typically bussed into and out of the communities. Parents to whom we spoke as a part of our survey experience have expressed extreme displeasure with this state of affairs.

In East Grand Bahama, electricity supply was disrupted by Hurricane Dorian and for a number of residents, such supply has either not been re-connected as yet or residents are on "temporary supply" (see Section 16.2.1 above).

The Project will help facilitate the redevelopment of social infrastructure that was destroyed and the recommencement of social services, namely electricity, that were suspended due to Hurricane Dorian. This is classified as a *Positive* impact.

17.2.4 *Conclusions*

The Project is assessed as having either Positive impacts or impacts that are not major and for which mitigation measures are identifiable.

17.2.5 *Enhancement Measures*

The following measures will contribute to the enhancement of benefits associated with the Project:

(a) Ensure that a transparent hiring process is conducted to help the community understand the Project's staffing decisions;

(b) Develop and continue skill transfer and capacity building programmes and initiatives (in line with the initiative being described in the flyer at Figure 1) for the benefit of persons living in the ADI. These can include community skills workshops, or other interventions co-designed with community partners;

(c) Establish a local skills bank or utilize already-existing skills bank (such as the Bahamas Online Skills Bank maintained by the Bahamas Department of Labour, which seeks to match job vacancies to suitable job seekers) that will publicize job vacancies and put in place initiatives to ensure that community members, including those in vulnerable groups, are able to access employment opportunities;

(d) Encourage contractors to provide apprenticeship opportunities to local people and encourage supply chain partners to recruit local people;

(e) Ensure that local businesses will be contacted immediately prior to the construction stages; and

(f) Ensure that grievances raised by local businesses will be managed in an appropriate and timely manner.

17.3 **Cultural**

The results of the cultural heritage baseline study for this Project demonstrate that there are a number of heritage assets found within the ADI. The cultural heritage assessment conducted within this report have not found that there are any such assets at any of the Project sites.

Notwithstanding this, there is the potential for known or undiscovered cultural heritage resources to be directly impacted (i.e. physically damaged) and/or indirectly impacted (impacts to a resources setting or environment through the addition of intrusive elements) by the Project.

In addition to the cultural heritage baseline studies conducted for this Project (see Section 15), a Cultural Heritage Management Plan with Chance Finds Procedure has been developed for this Project (see Section 18).

18. CULTURAL HERITAGE MANAGEMENT PLAN AND CHANCE FINDS PROCEDURE

18.1 Purpose of CHMP

The purpose of the Cultural Heritage Management Plan (CHMP) is to provide concise and achievable management measures to preserve and protect cultural heritage during the Project.

For the purposes of this CHMP, cultural heritage refers to:

(a) Tangible forms of cultural heritage, such as tangible moveable or immovable objects, property, sites, structures, or groups of structures having archaeological (prehistoric), paleontological, historical, cultural, artistic and religious values;
(b) Unique natural features or tangible objects that embody cultural values, such as sacred groves, rocks, lakes, and waterfalls;
(c) Certain instances of intangible forms of culture that are proposed to be used for commercial purposes, such as cultural knowledge, innovations, and practices of communities embodying traditional lifestyles; and
(d) Monuments, antiquities, and artifacts as defined in the cultural heritage legislation of The Bahamas.

A cultural heritage assessment was conducted in connection with this Project (see Section 15) in order to assess the heritage assets found within the ADI. The results of this assessment demonstrate that there are a number of heritage assets found within the ADI, though there are none found to date on the Project sites themselves. Notwithstanding, the presence of said assets, as well as other such assets existing in the AII, suggest that there is the potential for known or undiscovered heritage assets that that could be directly impacted (i.e. physically damaged) and/or indirectly impacted (i.e. impacts to a resources setting or environment through the addition of intrusive elements) by the Project.

18.2 Scope of CHMP

This CHMP is applicable for the construction, operations, and closure phases of the Project.

18.3 Regulatory Background

18.3.1 National Regulations

The purpose of the Antiquities, Monuments and Museum Act, 1998 (CH.51) (the AMMA) is to "provide for the preservation, conservation, restoration, documentation, study and presentation of

sites and objects of historical, anthropological, archaeological and palaeontological interest, to establish a National Museum, and for matters ancillary thereto or connected therewith". The AMMA establishes the Antiquities, Monuments and Museum Corporation (AMMC).

Section 2 of the AMMA defines an "antiquity" as (a) an artifact (meaning (i) a movable object made, shaped, painted, carved, inscribed, or otherwise created, manufactured, produced, used, or modified by human agency which is at least fifty years old, whether or not it has been modified, added to or restored at any time, or (ii) fossil remains or impressions), or (b) a place, building, site or structure erected, formed or built by human agency which is at least fifty years old and the ruins or remains of any such place, building, site or structure, whether or not the same has been modified, added to or restored at any time. Section 3 of the AMMA allows the Minister (defined as the Minister responsible for Antiquities, Monuments and Museums) to declare any place, building, site, or structure, which the Minister considers to be of public interest by reason of its historical, anthropological, archaeological or palaeontological significance to be a "monument". Section 5 of the AMMA gives the Minister control of monuments generally. Section 10 of the AMMA provides that "the ownership of every artifact discovered in The Bahamas after the commencement of the AMMA shall vest in the Government from the moment of discovery". Section 11 of the AMMA provides that "any person who discovers, or knows of the discovery of an antiquity or supposed antiquity shall forthwith report the discovery to the Minister, or to a designated person".

18.3.2 International Standards

The principal international standard for this Project for the protection of cultural heritage is ESPS 8. ESPS 8 aims to "ensure that Borrowers protect cultural heritage in the course of their project activities". ESPS 8 differentiates between replicable[2], non-replicable[3], and critical cultural heritage[4], and posits that the preferred mitigation measure for all cultural heritage impacts is avoidance. When this is not possible, ESPS 8 provides the following mitigation hierarchy (from preferred to least preferred) for replicable cultural heritage:

[2] Replicable cultural heritage is defined as tangible forms of cultural heritage that can themselves be moved to another location or that can be replaced by a similar structure or natural features to which the cultural values can be transferred by appropriate measures. Archeologi- cal or historical sites may be considered replicable where the particular eras and cultural values they represent are well represented by other sites and/ or structures.

[3] Nonreplicable cultural heritage may relate to the social, economic, cultural, environmental, and climat- ic conditions of past peoples, their evolving ecologies, adaptive strategies, and early forms of environmental management, where the (i) cultural heritage is unique or relatively unique for the period it represents, or (ii) cultural heritage is unique or relatively unique in linking several periods in the same site.

[4] Critical cultural heritage consists of one or both of the following types of cultural heritage: (i) the internationally recognized heritage of communities who use, or have used within living memory the cultural heritage for long-standing cultural purposes; or (ii) legally protected cultural heritage areas, including those proposed by the government for such designation.

(a) Minimize adverse impacts and implement restoration measures, in situ, that ensure maintenance of the value and functionality of the cultural heritage, including maintaining or restoring any ecosystem processes needed to support it;
(b) Restore the functionality of the cultural heritage, in a different location, including the ecosystem processes needed to support it (where restoration in situ is not possible ;
(c) The permanent removal of historical and archaeological artifacts following national laws and internationally recognized practices by competent professionals;
(d) Compensation for loss of tangible cultural heritage.

ESPS 8 also requires the development and implementation of chance finds procedures. Chance finds are defined as "tangible cultural heritage encountered unexpectedly during project construction or operation" and a chance finds procedure is defined as "a project-specific procedure that outlines the actions to be taken if previously unknown cultural heritage is encountered".

18.4 **Chance Finds Procedure**

18.4.1 Introduction

This Chance Finds Procedure complies with the laws of The Bahamas and aligns with international standards for the protection of cultural heritage. It includes a Cultural Heritage Monitoring Programme, Chance Find Plan, Cultural Heritage Training Programme, and Site Protection Programme, as detailed in the sections below.

18.4.1.1 Objective

This Chance Finds Procedure has the following objectives:

(a) To protect known cultural heritage from Project-related impacts; and
(b) To properly identify and mitigate impacts to cultural heritage inadvertently discovered during project construction or operation.

18.4.1.2 Scope

This Chance Finds Procedure applies to all Project activities that involve ground-disturbing activities.

18.4.2 Roles and Responsibilities

The Table below presents the roles and responsibilities for the implementation of this Chance Find Procedure.

Role	Responsibilities
Project Developer	Retaining the services of qualified cultural heritage professionals to perform a Project specific cultural heritage impact assessment for their project. Developing and implementing an IDB and AMMA aligned, Project specific, cultural heritage management plan and chance finds procedure. Engaging the AMMC to review and approve the project specific cultural heritage management plan and chance finds procedure. Working with the Project team, Contractors, and AMMC in developing treatment plans for resources identified as chance finds. Reviewing reports, treatment plans, training programs, and other documents generated as a result of implementing the cultural heritage management plan and chance finds procedure. Ensuring CHMP activities are aligned with Project health and safety standards and procedures. Conducting regular audits/reviews of the cultural heritage management plan and chance finds procedure implementation and reporting.
Project Environmental and Social Manager (E&S Manager)	Implementation of the Cultural Heritage Monitoring Program, including contracting an on-call Cultural Heritage Specialist. Implementation of the Chance Find Procedure, including notification of chance finds to relevant governmental authorities and cultural heritage stakeholders. Implementation of the Cultural Heritage Training Program, including ensuring that workers involved in ground-disturbing activities are properly trained in the identification of chance finds and implementation of the Chance Find Procedure.
Cultural Heritage Specialist (on call)	Evaluation of potential chance finds. Development of chance find treatment plans in consultation with

	governmental authorities and cultural heritage stakeholders. Implementation of chance find treatment plans. Reporting on the results of chance find evaluations and on the implementation of chance find treatment plans.

Table 10: Chance Find Procedure Roles & Responsibilities

18.4.3 Cultural Heritage Monitoring Programme

The Project will implement a Cultural Heritage Monitoring Programme for all construction activities in consultation with the Minister and other cultural heritage stakeholders, as appropriate. The purpose of this monitoring is to:

(a) Identify, record, and protect cultural heritage that has not been previously identified (i.e. chance finds); and
(b) Protect cultural heritage identified during previous cultural heritage investigations (i.e. known resources).

The Programme will utilize "passive" cultural heritage monitoring. Passive monitoring means that there will be no Cultural Heritage Specialist on site during construction. Instead, all Project and contractor personnel are responsible for cultural heritage monitoring during their daily activities. Relevant Project and contractor staff will receive training in the identification of potential chance finds and the Chance Finds Procedure described below, and will be responsible for reporting any potential chance finds to the E&S Manager. The E&S Manager will then report the potential chance finds to a Cultural Heritage Specialist to be retained by the Project (i.e. on call).

18.4.4 Chance Finds Plan

The following is a step-by-step description of the Chance Finds Plan to be followed in the event a potential chance find is discovered during Project activities.

1. Stop Work. If a potential chance find is identified, the Project and/or Contractor will cease work temporarily in the vicinity of the find.

2. The most senior Project or Contractor team member will establish a 50 meter (m) buffer around the find. Ground disturbing activities will be prohibited within the 50 m buffer until after implementation of a cultural heritage resource treatment plan (see below) or until the AMMC have given permission for work to resume. Further measures will be taken to protect the potential chance find, including the installation of warning tape and stakes and/or avoidance signs, as necessary.

3. The most senior Project or Contractor team member will document the find using digital photographs and a Chance Find Documentation Form to be developed by the Project.

4. The most senior Project or Contractor team member will notify the Project team member tasked with managing the CFP (CFP Lead) as soon as possible after discovering the potential find and will send the digital photographs and documentation form to designated staff within these departments as soon as possible.

5. The designated CFP Lead will notify the AMMC of the find within 24 hours of discovery. The CFP Lead will provide the AMMC with a brief description of the find, its location, and, if available, the digital photographs and Chance Find Documentation Form completed in the field.

6. The AMMC will assess the find and will determine whether a site visit to the find is necessary or if work can resume without any additional actions by the Project within 48 hours of being notified of the find.
   6.1. If the AMMC allows work to resume without any further actions the AMMC will provide the Project with a written statement (email or letter) stating no further actions are required to address the find and permitting work to resume.
   6.2. If the AMMC determines a site visit is necessary they will provide a professional archaeologist to conduct the site visit within 72 hours of being notified of the find.

7. If the AMMC requires a site visit, the Project will transport an AMMC representative to the site to evaluate the find. The Project will provide all necessary transportation and accommodations for the AMMC representative during the site visit.

8. During the site visit, the AMMC representative will assess the find in order to determine whether the find is cultural and, if so, whether or not additional actions are required to avoid, minimize, or mitigate Project impacts to the find in line with AMMA. The evaluation will result in one of the following outcomes:
   8.1. If the find is not cultural, the AMMC representative will authorize the removal of site protection measures and permit ground disturbing activities to resume.
   8.2. The AMMC representative will document and collect the find and then authorize the removal of site protection measures and permit ground disturbing activities to resume.
   8.3. If the find cannot be documented and collected in the field, i.e. it is a significant cultural heritage resource, the AMMC representative will consult with the AMMC and the Project to develop a treatment plan to address the chance find.

9. Options to be considered during the development of a treatment plan include the following:

9.1. Avoidance: This option minimizes the impact to the site through partial or complete project redesign or relocation. This is the preferred option from a cultural heritage management perspective and aligns with international standards.
9.2. In-situ Protection or Management: This option includes the application of site protection measures, such as fencing or barricades, or capping the site area with fill during construction, operations, and/or closure.
9.3. Surface Collection: If a site is assessed as having limited salvage excavation potential but contains significant surface archaeological items, those surface finds may be mapped and collected by the archaeologist.
9.4. Archaeological Evaluation: For archaeological resources, if the appointed archaeologist cannot determine, based on available information, whether the site requires a salvage excavation, he/she may recommend conducting an archaeological evaluation of the site.
9.5. Archaeological Salvage Excavation: Scientific excavation of all or a portion of the find by a professional archaeologist(s) using the acceptable available techniques.
Once the Project and the AMMC have agreed on a treatment plan, the Project will be responsible for implementing and funding the agreed treatment plan. While treatment is ongoing, the AMMC representative and Project CFP Lead will coordinate with on-site personnel to keep them informed as to the status and schedule of investigations and when construction may resume.

10. After the treatment plan is complete the AMMC will provide the Project with written permission (email or letter) to resume ground disturbing works.

Prior to implementing the CFP the Project will develop the following documents/databases for recording chance finds:

- A Chance Finds Documentation Form to be used by Project and contractor personnel to collect information on potential chance finds at the time of discovery;

- A Chance Finds Database in Microsoft Excel, Access, or a comparable database software. The Chance Finds Database will record vital information about finds (date of discovery, location, size, objects found, etc.) as well as the regulatory and stakeholder consultation status of the find (Work stopped; Chance Finds Documentation Form complete; AMMC Notified; AMMC site visit required; Site Visit Completed; Treatment Plan Drafted; Treatment Plan Completed; Work Resumed; etc.); and

- Develop formal Site Clearance/Work Resume forms with the AMMC to document approvals to resume work at chance find locations.

18.5 Cultural Heritage Training Programme

Relevant Project personnel will receive training and demonstrate competency in the identification of chance finds and the Chance Find Procedure described above. This training will be incorporated into the overall induction process for Project and contractor personnel, and will include a quick reference handout. The E&S Manager will maintain records of all Cultural Heritage Training provided to Project personnel.

All employees must be aware that it is illegal and forbidden to disturb or remove cultural heritage objects offsite for personal gain. To support the training process, the Project will develop training materials for use in the overall induction process.

18.6 Cultural Heritage Management and Mitigation Options

Impacts to archaeological resources and/or sacred sites as chance finds during Project construction, operation, or closure will be avoided, minimized, and/or mitigated using the following techniques/approaches:

1. Avoidance: The preferred management approach for cultural heritage resources is avoidance. Cultural heritage resources can be avoided through a number of techniques, including:

    a. Redesigning or relocating Project components to avoid cultural heritage resources; and

    b. Engineering controls during construction to avoid impacts, such as the use of mats, temporarily burying sites, or directional drilling underneath resources;

2. Minimization: Reduction in horizontal or vertical extent of work areas to minimize impacts by avoiding portions of resources;

3. Archaeological Excavation: Treatment plans for mitigating impacts to archaeological sites may include a two phased approach to assessing and mitigating impacts:

    a. Archaeological Evaluation: a limited investigation of non-intrusive and/or intrusive fieldwork that determines the presence or absence of archaeological features, structures, deposits, artifacts, or eco facts within a specified area or site. If such archaeological remains are present, field evaluation defines their character, extent, quality, and preservation, and enables an assessment of their significance in a local, regional, national, or international context, as appropriate. Sufficient data will be collected during the archaeological evaluation to determine if salvage excavations are necessary to mitigate impacts; and

b. Archaeological Salvage Excavation: an investigation of controlled, intrusive fieldwork with defined research objectives that examines, records, and interprets archaeological deposits, features, and structures, and recovers artifacts, eco facts, and other remains within a specified area or site. The records made and objects recovered during fieldwork are studied and the results of that study are presented in a technical report and/or publication.

Any excavation and data recording methods used during archaeological evaluation or salvage excavations will be developed in consultation with the AMMC and will be performed by a qualified, professional archaeologist(s).

18.7 **Monitoring and Reporting**

Monitoring of this Plan will be based on adaptive management as a way to integrate lessons learned during its implementation and thus respond adequately to the developing situation. Like all other management plans, this Plan is a living document designed to be updated as the Project develops. This section provides a high-level description of the monitoring activities and programs which will be reviewed and updated on a yearly basis and / or when major changes in the Project take place.

The objectives of the monitoring programme are to:

1. Verify the implementation of the specific actions of the Plan by fulfillment of the specific goals on time; and

2. Continuously evaluate the effectiveness of the Plan's strategies and adjust them as necessary. Monitoring of this Plan will continue throughout the life of the Project, starting prior to the start of construction and continuing through the closure phase.

18.8 **Key Performance Indicators**

The Key Performance Indicators for the Plan are:

1. Completed pre-construction cultural heritage impact assessment;

2. Developing and implementing a project specific CHMP;

3. Developing and implementing a project specific CFP;

4. Number of chance finds reported / discovered;

5. Completed Chance Find Documentation forms for each Chance Find;

6. Complete Chance Finds Database with information for all chance finds;

7. Record of all approvals / correspondence with the AMMC regarding chance finds; and

8. Reports generated from implementation of chance find treatment plans.

Monitoring to confirm the implementation of mitigation measures will be conducted on a regular basis and reported quarterly. Trends and areas for improvement will be identified in quarterly reports and changes implemented following the Project's change management system as required.

SOURCES

Bahamas National Statistical Institute (formerly the Bahamas Department of Statistics)

- 2022 Census of Population and Housing Preliminary Results
- 2010 Census of Population and Housing
- May 2023 Preliminary Results Labour Force Survey
- The Bahamas 2013 Household Expenditure Survey
- Total Immigration Population by Sex, Island and Total Number of Households 2010
- The Bahamas Environmental Review 2018-2019
- 2010 Census: Grand Bahama Island Report
- Press Release: Advance Estimates for Gross Domestic Product: 2022. March 31, 2023
- Employed Persons By Industrial Group And Island 2015-2019

The Bahamas, Ministry of Finance

- 2022 Fiscal Strategy Report, December 2022
- Budget 2023: A Budget for Security and Progress Communication to Parliament

The Bahamas, Ministry of Tourism

- "The Bahamas Shatters Tourism Records With Over 9.65 Million Arrivals in 2023"
- Bahamas Hotel Performance
- Bahamas Islands Directory of Hotels 2022

The Bahamas, Ministry of the Environment and Housing/ Ministry of Works & Urban Development

- The Bahamas National Energy Policy 2013-2033

The Bahamas, Ministry of Education

- Districts & Schools

- "Vision 2030: A Shared Vision for Education The Commonwealth of The Bahamas" - November 2015

The Bahamas, Ministry of Health

- Facilities for Healthcare & Emergency Medical Services
- Listed Healthcare Facilities

The Bahamas Department of Environmental Planning and Protection

- National Climate Change Policy of The Bahamas, March 2005.

Interamerican Development Bank

- Damages and other impacts on Bahamas by Hurricane Dorian estimated at $3.4 billion: report. November 15, 2019
- Soto, David Lopez et. al. The energy path of Latin America and the Caribbean. August 2022

Caribbean Development Bank

- Bahamas Country Strategy Paper - 2018-2022

World Bank

- World Bank Development Indicators - Agriculture, forestry, and fishing, value added (% of GDP)
- Agricultural land (% of land area) - Bahamas, The

Food and Agriculture Organization of the United Nations

- Rebuilding Fisheries Livelihoods In Abaco And Grand Bahama Islands Following Hurricane Dorian. June 2022
- Fisheries and Aquaculture in The Bahamas: A Review. 2016

Inter-American Institute for Cooperation on Agriculture

- Minister Of Agriculture Of The Bahamas: "Our Efforts Are To Avoid Becoming Climate Refugees". October 31, 2019

International Trade Association of The United States of America

- Bahamas - Country Commercial Guide - Energy. Oct. 19. 2022.

Pan American Health Organization (PAHO)

- The Bahamas - Country Profile | Health in the Americas

Oxford Business Group

- Tourism Diversification in The Bahamas: The Path Ahead. 2022

Vision 2040. National Development Plan of The Bahamas. 2016

Internal Displacement Monitoring Centre

- Thematic Report: Displacement in Paradise. May 2020

Bahamas Electricity Corporation

- History of Electricity in The Bahamas

Grand Bahama Power Company

- Our History.

- 2023 Power Rates

Utilities Regulation & Competition Authority

- URCA 04/2023 Annual Report 2022 & 2023 Annual Plan

Bahamas Information Services

- Vedrine, Betty. Press Release: Rate increases on the way for BPL customers. Oct. 5, 2022
- The Government push towards greater climate change action. Jan 29. 2023

The Tribune

- Grand Bahama electricity costs 40% below rest of Bahamas. Oct. 17, 2022.

- Hartnell, Neil. Low energy: Bahamas worst in Caribbean for renewables. May 4, 2023.

- Hartnell, Neil. Bahamas facing $500m climate impact by 2025. Dec. 7, 2016.

Eyewitness News

- McKenzie, Natario. GB Power announces fuel charge hike. Oct. 16, 2022.

- McKenzie, Natario. $10 million boost for technologies to protect Bahamas against climate change. Mar. 17, 2023

Jones Bahamas

- Gov't Seeks to Resurrect Movie Industry. June 4 2012.

Bahamas Weekly

- Whachell, Robbin. Original Partner of The Bahamas Film Studios, Paul Quigley, Passes Away. Jan 28, 2008

Grand Bahama Museum

- Annual Report of the Commissioner for Grand Bahama, 1955

- Annual Report of the Commissioner for the District of High Rock, Grand Bahama 1969

- "A Wilderness Tamed"

- "The End of an Era"

Washington Post

- Chiu, Allyson. Meet the coral farm restoring reefs wrecked by climate change.

15 Waypoint Qualifications

Founded in 2012, Waypoint Consulting Ltd. is an environmental and project management consulting firm based in Nassau, The Bahamas. Waypoint provides an integrated approach that emphasizes scientific research with applied environmental management to complement the local ecologic and socio-economic environment of The Bahamas and the greater Caribbean.

Waypoint specializes in private island development, environmental impact assessments, environmental management, construction monitoring, and project administration. Melissa Alexiou, Waypoint's Director, operates as a sole-practitioner with a network of consultants to provide access to a range of subject matter experts.

Waypoint Consulting Ltd. provides the following services:

- **Environmental & Research Consulting.** Waypoint prepares environmental impact assessments, Phase I and II Environmental Site Assessments, land use plans, environmental management plans, mitigation techniques, and research specific reports. Waypoint has thorough knowledge of Bahamian regulations and the environmental guidelines stipulated by the Department of Environmental Planning and Protection (DEPP).

- **Environmental and Construction Monitoring:** Waypoint provides environmental monitoring services for construction projects. Environmental monitoring includes on-site visits, monitoring checklists, EMP compliance training, and reporting.

- **Project Management & Contract Administration.** Waypoint recognizes that communication between stakeholders is integral to moving projects forward. We act as a liaison between various stakeholders to become a focal point of communication.

- **Technical Writing Services.** Waypoint offers technical writing services to assist with grant proposals, collaborative reports, and other technical based writing formats.

15.1 Melissa Alexiou CV

waypoint CONSULTING LTD

Melissa Alexiou, MSc., PMP

Director

CONTACT

Melissa Alexiou
P.O. Box N4805
Nassau, The Bahamas

1 (242) 376-1448
malexiou@waypointltd.net
www.waypointconsultingbahamas.com

NATIONALITY & LANGUAGE

Citizenship: United States of America
Residency: Spousal Permit with Right to Work – Bahamas
Languages: English

EDUCATION

Master of Science, Environmental Science and Policy, The Johns Hopkins University
Bachelor of Arts, Environmental Studies, Rollins College
Certificate, Geographic Information Systems (GIS), The Johns Hopkins University

PROFESSIONAL CERTIFICATION & AFFILIATIONS

Project Management Professional (PMP), Project Management Institute
National Association of Environmental Professionals (NAEP)
ASTM E1527 Phase I & II Environmental Site Assessments for Commercial Real Estate
OSHA 10-Hour Certification

EXPERIENCE

2012 – Present
Waypoint Consulting Ltd., Environmental and Project Management Consulting, Director, Nassau, Bahamas

- Project liaison and administration services for permitting
- Environmental Impact Assessments, Environmental Management/Mitigation Plans
- Climate Change, Vulnerability, Risk & Adaptation
- Construction Monitoring for Environmental Management
- Research analyst, advisory consulting services, and technical writing

Selected Projects

Env. & Social Analysis – Climate-Resilient Coastal Mgmt. & Infrastructure Program – IDB BH-L1043

The purpose of the ESA was to identify environmental and social aspects including risks, evaluate site-specific aspects, and provide recommendations for measures to mitigate identified impacts for projects proposed on Long Island, Grand Bahama, Andros, and New Providence. Stakeholder consultation was a critical element for site specific project evaluation.

Environmental Site Assessment, Philautia, Eleuthera, The Bahamas

Waypoint prepared an Environmental Site Assessment to document existing site conditions at the former U.S. Naval Facility, Eleuthera. Decommissioned in 1980, quarters and general infrastructure including larger generators and catchment basin exist in deteriorated conditions.

Environmental Impact Assessment: Cruise Line, Private Island Development, The Bahamas
Waypoint provided local environmental consulting expertise to assist a major cruise line with identifying a suitable location for a new cruise ship destination facility. In association with ATM, Waypoint prepared an EIA and liaised with government officials.

A Comprehensive Strategy for the Optimization of Family Island Airports - IDB BH-L1027, Bahamas
Waypoint was subcontracted to provide support in the review and application of existing environmental regulations and guidelines for The Bahamas Civil Aviation Department (BCAD). Review of BCAD schedules combined with a review of national parks and important bird areas was part of a gap analysis to strengthen environmental understanding and commitment by the aviation authority.

Environmental Manager. North Abaco Port Project, Great Abaco, The Bahamas
Waypoint was the designated Environmental Manager for the completion of the North Abaco Port Project which included opening the port basin to the Sea of Abaco. Waypoint provided oversight of the Environmental Monitor and submitted weekly environmental reporting to the BEST Commission.

Environmental Legislative Review for Offshore Petroleum Industry
Waypoint reviewed existing and proposed legislation for relevance to the offshore petroleum industry. International Conventions and National Environmental Policies were also included in the assessment.

Environmental Management Plan: Commercial Forestry Project, The Bahamas
Waypoint was subcontracted to provide research, and technical writing and editing for an Environmental Management Plan (EMP) related to a potential commercial forestry project in The Bahamas. EMP best management practices highlighted fire management, wildlife management, and management protocols for sensitive environmental features, preservation of water quality and soil quality.

Environmental Impact Assessment: Children's Bay Cay, Exuma, The Bahamas
Waypoint in coordination with Applied Technology Management (ATM) provided technical writing services, environmental analysis, and consultation for local project permitting. Waypoint is the local environmental consultant of record and liaises directly with government.

Phase 1 Big Pond Landfill Remediation/Restoration IDB Mitigation for Roadworks, New Providence,
Melissa provided environmental monitoring services to the Contractor through Islands By Design Ltd. for remediation efforts at Big Pond, a former landfill and important urban mangrove ecosystem. Remediation of the former landfill served as the mitigation component for the New Providence Road Improvement Project. Mitigation included the demolition of two buildings, removal of contaminated soils, removal of surface waste, and the implementation of a boardwalk, trails, and basketball courts.

2010 – 2012
Islands By Design, Environmental Scientist, Nassau, Bahamas

Selected Projects

BEC Abaco 69kV Transmission Line, Abaco, EIA

As a high priority project, environmental and socio-economic analysis was performed under a tight-schedule with significant implications for residents of the Greater Abacos.

South Beach Township Project, Nassau

The South Beach Township Project was an initiative to rehabilitate a low income area through planning for an area of southeastern New Providence. A key component of the plan was to identify existing environmental issues, namely flooding and limited beach access, and to rectify these issues to create a mixed-use sustainable community.

Sports Centre Redevelopment Project, Nassau- Environmental Monitor

As the Environmental Monitor, I performed twice weekly site visits to document contractor compliance to the EMP and monthly reports to evaluate overall contractor compliance and provide recommendations for improvement.

2007 – 2008

Farkas Berkowitz & Company, Associate, Washington, DC

A Strategic Management Consulting Firm where Melissa performed market research and analysis for top Engineering News Record, Fortune 500 firms

2005 – 2007

Protection Strategies Incorporated, Environmental Scientist, Arlington, VA

Government Contractor to U.S. Environmental Protection Agency (EPA) for the Water Contaminant Information Tool (WCIT)

CONTINUING EDUCATION AND CONFERENCE PARTICIPATION

- Management for Environmental Results with Performance Based Measurement, Johns Hopkins, 2019
- Coastal and Marine Spatial Planning Advancement Training, Duke University and Battelle, Spring 2015
- Creation and Restoration of Wetlands, Everglades Wetland Research Park, October 2014
- Sponsor, Bahamas Natural History Conference, March 2014 & 2016 & 2018

SKILLS

- Geographic Information Systems (GIS)
- MS Word, MS Excel, MS PowerPoint, MS Publisher, MS Visio, MS Project

COMMUNITY INVOLVEMENT

- Bahamas Society of Engineers
- Bahamas Engineers, Architects, and Allied Professionals, Board Member, 2016-2019
- Bahamas Chamber of Commerce, Energy and Environment Committee, 2015-2016