



MINISTRY OF HEALTH



MOHBAHAMAS



Environmental and Social Assessment (ESA) and Environmental and Social Management Plan (ESMP)

Support for the Health System
Strengthening of The Bahamas for Health
Risks Programme BH-L1953

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Risks Programme BH-L1053



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Acronyms and Abbreviations

°C	Degrees Celsius
AMMA	Antiquities, Monuments, and Museum Act
AZE	Alliance for Zero Extinction
BEST	Bahamas Environmental, Scientific and Technological Commission
BIA	Bahamas Investment Authority
BMP	Best Management Practice
BNGIS	Bahamas National Geographic and Information Systems Department
BNT	Bahamas National Trust
BPAF	Protected Area Fund
CBD	United Nations Convention on Biological Diversity (CBD)
CIA	Central Intelligence Agency
cm	centimeters
CR	Critically Endangered
DEHS	Department of Environmental Health Services
DPH	Department of Public Health
DRA	Disaster Reconstruction Authority
DRA	Disaster Risk Assessment
EHS	Environmental, Health, and Safety
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EN	Endangered
EPA	United States Environmental Protection Agency
EPC	Engineering, procurement and construction
ERM	Environmental Resources Management
ERMA	Environment Monitoring and Risk Assessment
ESA	Environmental and Social Assessment
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESPF	Environmental and Social Policy Framework
FAO	Food and Agriculture Organization of the United Nations
GHGs	Greenhouse gases
GIS	Geographic and Information Systems
GoBH	Government of Bahamas
GSM	Global System for Mobile Communications
ha	Hectare
HDI	Human Development Index
IBA	Internationally recognized Important Bird Area
IBAT	Integrated Biodiversity Assessment Tool
IDB	Inter-American Development Bank
IFC	International Finance Corporation
ILO	International Labor Organization

IOM	International Organization for Migration
IUCN	International Union for Conservation of Nature
Km/h	Kilometer per hour
Km ²	Square kilometers
LRP	Livelihood and Resettlement Plan
m	Meters
m ²	Meter square
m ³ /year	Cubic meter per year
mm	Millimeters
MOH	Ministry of Health
mph	Mile per hour
NEMA	National Emergency Management Agency
NGOs	non-governmental organizations
NO ₂	Nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
OPM	Office of the Prime Minister
PM	Prime Minister
PM ₁₀	Particle concentrations less than 10 microns in aerodynamic diameter
PM _{2.5}	Particle smaller than 2.5 microns in aerodynamic diameter
PS	Performance standard
SO ₂	Sulfur dioxide
TOR	Terms of Reference
UNEP	United Nations Environment Program
UNODC	United Nations Office on Drugs and Crime
VU	Vulnerable
WHO	World Health Organization
WTO	World Trade Organization

1. INTRODUCTION

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

The Government of The Bahamas (GoBH) has identified the need to upgrade the aging infrastructure of its hospitals and clinics as well as medical equipment, to modernize its disease focused care model, information systems, and capacity to respond effectively to the COVID-19 emergency and preparedness for future public health disasters.

To support the strengthening of the health system of The Bahamas to respond to the health needs of the population, the IDB is undertaking the operation "Support for the Health System Strengthening of The Bahamas for Health Risks Programme" (the "Operation"), coded BH-L1053. The objective of the Operation is to strengthen the functioning of the health system of The Bahamas, specifically by connecting the various components of the health sector and improve the resilience of natural and public health disasters like hurricanes, improve and expand coverage and quality of care to be more person and community based, and increase efficiency of health services.

The Operation will support the following four components:

- **Component 1:** Improvement of the delivery of care model in The Bahamas.
- **Component 2:** Improvement of infrastructure and equipment.
- **Component 3:** Modernization of the health information system.
- **Component 4:** Programme administration and evaluation.

In support of Component 2, the Operation will finance 18 individual Projects that include the construction of five primary health care facilities and the renovation and/or upgrade of 13 existing facilities in the Bahamas family islands. The IDB has categorized the Operation as Category B because the activities to be financed are considered low to moderate risk and to have environmental and social impacts that are manageable with common mitigation measures.

Environmental Resources Management (ERM) prepared this Environmental and Social Assessment (ESA) to assess the potential environmental and social impacts associated with the development and renovation of the primary care clinics (the "Projects") within the Operation.

1.1 Project Proponent

The proponent of the Operation is the Ministry of Health (MOH) of The Bahamas.

1.2 Purpose and Need of the Project

The healthcare infrastructure in The Bahamas is aged and vulnerable to environmental hazards. The health facilities were built in the 1980s and have experienced natural disasters. In 2019, Hurricane Dorian hit the islands of Abaco and Grand Bahama. Besides the toll in human lives, the storm caused severe structural damages to healthcare facilities reducing its supply capacity during and after the crisis. The impact of the storm underscored the vulnerability of the health infrastructure to natural disasters and prompted to focus on climate resilience as a priority for healthcare infrastructure planning. The MOH plans to upgrade the aging infrastructure and medical equipment. The scheme comprises capital works in several primary health care clinics in The Bahamas family Islands.

1.3 Objective and Scope

The objective of ESA is to assess the Project specific environmental and social impacts in accordance with the IDB's Environmental and Social Operating Policies, in conjunction with the International Finance Corporation (IFC) Performance Standards on Environmental and Social Sustainability (2012) and applicable IFC Environmental, Health, and Safety (EHS) Guidelines.

Specific objectives of this ESA include:

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

2. LEGAL FRAMEWORK APPLICABLE TO THE OPERATION

2.1 National Legislation

Relevant legislation for this Operation has been summarized below. Recent legislative developments in The Bahamas has led to the approval of an environmental protection package including a new Ministry of The Environment Bill (2019). This Bill, approved November 2019, has not yet been published as a final document. ERM has reviewed its draft version as posted by the Ministry.

- **Health Services Act (Ch. 231)**

This Act makes provisions for securing the public health and outlines regulations for public health authorities and administrations that include burials and cemeteries, drains, water supply, infectious diseases, lepers, noxious insects, prohibition of certain trades, sanitation, vaccination, and miscellaneous matters.

- **Hospitals and Health Care Facilities Act 1998 (Ch. 235)**

This Act establishes the Hospitals and Health Care Facilities Licensing Board the licensing requirements for hospitals and health care facilities.

- **Quarantine Act (Ch. 237)**

This Act establishes the authorities, responsibilities, obligations, powers, detention, medical services, offences, and penalties related to quarantine.

- **Environmental Health Services Act 1987 (No. 4 of 1987; Ch. 217)**

This Act promotes conservation and maintenance of the environment and addresses the control of contaminants and pollutants that may adversely affect the environment and human health. The Act also outlines regulations with respect to water supplies, solid and liquid waste, and hygiene/sanitary procedures.

- **Environmental Health Services (Collection And Disposal Of Waste) Regulations (Ch.232; Section 17; 2004)**

Section 17 of Chapter 232 establishes the regulations for hazardous, hospital, and non-hazardous waste including their management, collection, responsibilities, location of receptacles, certificates of approval, and requirements for waste management facilities.

- **Ministry of Environmental Bill (2019)**

This Bill seeks 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.

- **The Bahamas National Trust Act 1959 (Ch. 355)**

The Bahamas National Trust Act and Amendment founded The Bahamas National Trust and granted it authority for the provision and oversight of National Parks in The Bahamas. It gives the Trust the power to create by-laws to be in effect in the protected areas it establishes. These areas are of environmental, historical and/or cultural importance.

- **The Conservation and Protection of the Physical Landscape of The Bahamas Act 1997 (No. 12 of 1997)**

This Act prohibits all significant excavation, landfill operation, quarry mining or mining of physical natural resources (such as sand) without permission of the Director of Physical Planning. The Act also gives the Director the authority to request an Environmental Impact Assessment (EIA) for any excavation or land reclamation activities. It provides for the protection of trees that are rare and of historical significance and imposes stiff penalties for violators of this law.

- **Town Planning Act 1961 (Ch. 236)**

This Act provides the Department of Physical Planning with the authority to grant permits for building construction, zone residential areas, determine building specifications and restore buildings.

- **Local Government Act 1996 (No. 5 of 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.

- **Wild Animals (Protection) Act 1968 (Ch. 229)**

This Act prevents the taking, capture or export of any wild animal without the permission of the Minister of Agriculture & Fisheries. These animals include wild horses, the hutia and iguanas.

- **Wild Birds Protection Act 1952 (Ch. 230)**

This Act provides for the protection of wild birds. The Act lists several species including the White-Crowned Pigeon, Whistling Duck and Yellow-Crowned Night Heron. The Wild Birds Protection Act (1987) protects birds and bird eggs during closed seasons. Protection of the bird habitats is not addressed by this Act.

- **Agriculture & Fisheries Act 1963 (Ch. 223)**

This Act provides for the protection of plants by Ministerial declaration of protected areas. Within these areas, persons are prohibited from uprooting or destroying any plant species.

- **Plant Protection Act 1916 (Ch. 231)**

The Plant Protection Act (1987) relates to plant disease and controls importation of plants to prevent outbreaks of exotic disease and establishment of unwanted species.

- **Coast Protection Act 1968 (Ch. 190)**

This Act serves to regulate construction or alteration of the coastline for the purpose of the protection of land. It also provides for protection against encroachment and erosion by the sea.

- **Antiquities, Monuments and Museum Act 1998 (No. 5 of 1998)**

This Act provides for the preservation, conservation and restoration of historical, paleontological and archaeological resources.

- **Water and Sewerage Corporation Act 1976 (Ch. 184)**

This Act establishes the Corporation. Functions of this organization include the application of appropriate standards and techniques for investigation, use, control, protection, management and administration of water. The Corporation is also mandated to oversee waste disposal, water treatment, water quality and disposal quality.

- **Private Roads and Subdivision Act 1961 (Ch. 237)**

This Act enables the Department of Physical Planning to regulate road construction and subdivision development.

- **CITES Act 2005**

This Act enables implementation of the Convention on International Trade in Endangered Species at the national level.

- **Public Works Act (Chap 21)**

The Public Works Act, while providing for construction, management and development of public works, buildings and roads, also provides that the Minister of Works can make rules to regulate the use, obstruction, alteration, encroachment upon or damage to any government property.

- **Bahamas Building Code (3rd Edition, 2003)**

A reference guide for all and sundry in the building construction industry; from obtaining a building permit, to receipt of an occupancy certificate. The Code also includes, for the first time, a comprehensive chapter on design guidelines to accommodate people with disabilities.

- **Acquisition of Land Act**

Land to be acquired for a specific building or construction by Government must meet the requirements of the Acquisition of Land Act (1913) and its regulations (1987). Whenever land in any locality is likely to be needed for any public purpose, a notification to that effect must be published in the Gazette, the official government publication. A public notice is also required to be displayed at a convenient place in the respective district to show what land is needed and where. After notification, a 30-day public response period is observed. The Government may acquire, by private purchase agreement or through compulsory purchase, the selected land. In the event that a structure is moved, compensation is paid to the owner to cover the expense of moving the house to another site plus payment for any damages incurred.

- **Wild Birds Protection RESERVES, 2008**

A listing of all reserves for the protection of wild birds.

- **Wildlife Conservation & Trade Chapter, 2004**

An act to implement the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), with a view to the protection of wild species from harm through unsustainable exploitation.

- **Disaster Preparedness and Response Act (No. 4 of 2006).**

This act provides for a more effective organization of the mitigation of, preparedness for, response to and recovery from emergencies and disasters in The Bahamas. This act provides for the creation of NEMA.

2.1.1 National COVID-19 Legislation

The following are the key orders issued by the Office of the Prime Minister of The Bahamas in response to COVID19:

- **Quarantine (Novel Coronavirus “2019-NCOV”) Order, 12th February, 2020**

This order declares COVID19 as an infectious and contagious disease under the Quarantine Act (Ch. 237) and the Health Services Act (Ch. 231).

- **Emergency Powers (COVID19) Regulations, March 17th, 2020 (S.I. No. 21 of 2020)**

This proclamation of emergency establishes the restrictions and requirements for the control of COVID19. This includes the requirements for social distancing, curfew, restriction of access to areas, detention and isolation of infected persons, screening, penalties, and requisition of buildings, ships, aircrafts, and essential services.

- **Emergency Powers (COVID19) (NO.1) Order, March 19th, 2020 (S.I. No. 23 of 2020)**

This order suspended operations of establishments, institutions, businesses, offices, stores, and organizations for the exception of those deemed essential, which received specific curfews and social distancing requirements. (Effective thru March 31st).

- **Emergency Powers (COVID19) (NO.2) Order, March 23th, 2020 (S.I. No. 27 of 2020)**

This order establishes requirements for curfew, work from home, public services, closure of businesses and exceptions, social distancing protocols, closure of education and religious institutions, restriction of social activities, travel, road traffic, transportation, and exempted businesses. (Effective thru March 31st).

- **Emergency Powers (COVID19) (Lockdown) Order, April 3rd, 2020**

This order establishes the requirements for the closure of all businesses, establishments, or undertakings, for the exception of the listed establishments and services. Exemptions include The Princess Margaret Hospital, The Rand Memorial Hospital, Police Force, and essential supports such as water, sewage, and electricity. (Effective thru April 6th).

2.2 National Institutions

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

Environmental protection and human health is supported by a number of policies that control activities in the physical and biological environment and human health. The main institutions, the legal, regulatory and

administrative frameworks governing environmental protection, natural resources management and other relevant topics related to the Operation are summarized below.

2.2.1 The Ministry of Health

The MOH is responsible for leading the protection and promotion of the health of all residents and provides all residents with access to healthcare services and care. Three main departments/agencies make up the Ministry of Health: Technical Directorate, The Department of Public Health (DPH), and the Public Hospitals Authority (PHA).

The Technical Directorate is comprised of the Chief Medical Officer, Director of Public Health, and Director of Nursing, who advise on technical health, public health, and nursing matters.

The DPH oversees the management of primary healthcare services and the development and implementation of public health programs. Areas of responsibilities include vaccination, quarantine, and regulation of manufacturing of drugs and pharmaceuticals.

The PHA is a quasi-government entity that is responsible for the management and development of public hospitals. This includes the Princess Margaret Hospital, the Sandilands Rehabilitation Centre, and the Rand Memorial Hospital. Furthermore, the PHA is responsible for the management and development of the Grand Bahama Health System (which includes the Rand Memorial Hospital), National Emergency Medical Services, Bahamas National Drug Agency, and Materials Management Directorate.

Furthermore, the MOH has four statutory bodies: The Bahamas Medical Council, Dental Council, and Health Professionals Council.

- The Bahamas Medical Council was established under the provisions of the Medical Act in 1974 and is responsible for the registration and licensing of physicians.
- The Nursing Council is responsible for the training, practice, registration, and enrolment of clinical nurses and midwives.
- The Dental Council is responsible for the regulation of the practice of dentistry and dental services.
- The Health Professionals Council was established by the Health Professions Act in 1998 and is responsible for the regulation of various health professionals.

2.2.2 The Ministry of Environment and Housing

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

Its areas of responsibility are:

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

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

2.2.3 The Bahamas Environment, Science and Technology Commission (BEST)

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

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

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

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

2.2.4 Department of Environmental Health Services (DEHS)

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

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

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

2.2.5 Forestry Unit

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

The Director of Forestry and the Forestry Unit carry out the provisions of the Forestry Act, which was enacted in 2010 for the long-term sustainable management of all types of forests in The Bahamas. The Unit's services include permits to use or transport a portable or power driven saw in a forest estate or private forest estate, burning permits for a charcoal kiln in a forest estate or permits for harvesting protected trees.

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

The BNGIS Centre's vision and remit is to serve as the National technical focal point for the collection and management of geospatial data on the Commonwealth of The Bahamas. It has also as mandate to advance a program that provides a strategic national framework for long-term systematic access and exchange of geospatial data between governmental agencies and other information providers. This data exchange is for improved planning, research and analysis, to improve GIS literacy in the school system and to equip managers, technicians and the wider GIS Community with GIS skills and technical support.

2.2.7 National Emergency Management Agency (NEMA)

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

2.2.8 Ministry of Disaster Preparedness, Management and Reconstruction

On September 22, 2019, The Bahamas Prime Minister announced the creation of a new Ministry of Disaster Preparedness, Management and Reconstruction. The responsibilities of the Ministry include:

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

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

2.2.9 The Ministry of Public Works

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

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

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

2.2.10 The Department of Labor

The Department of Labor promotes the development and improvement of industrial relations policies, procedures and practices through the provision of a range of services to employers, trade unions and employees. Its mission is to foster good industrial relations between employer and employee while promoting a high level of employment.

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

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

of persons over 20 years of age and professionals and the Youth Employment Exchange Services, which caters to persons under the age of 20.

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

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

2.2.11 The Ministry of Finance

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

2.2.12 Other Relevant Institutions

Other Government agencies with specific environmental responsibilities are:

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

2.2.13 Environmental Permit Procedure and Review

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

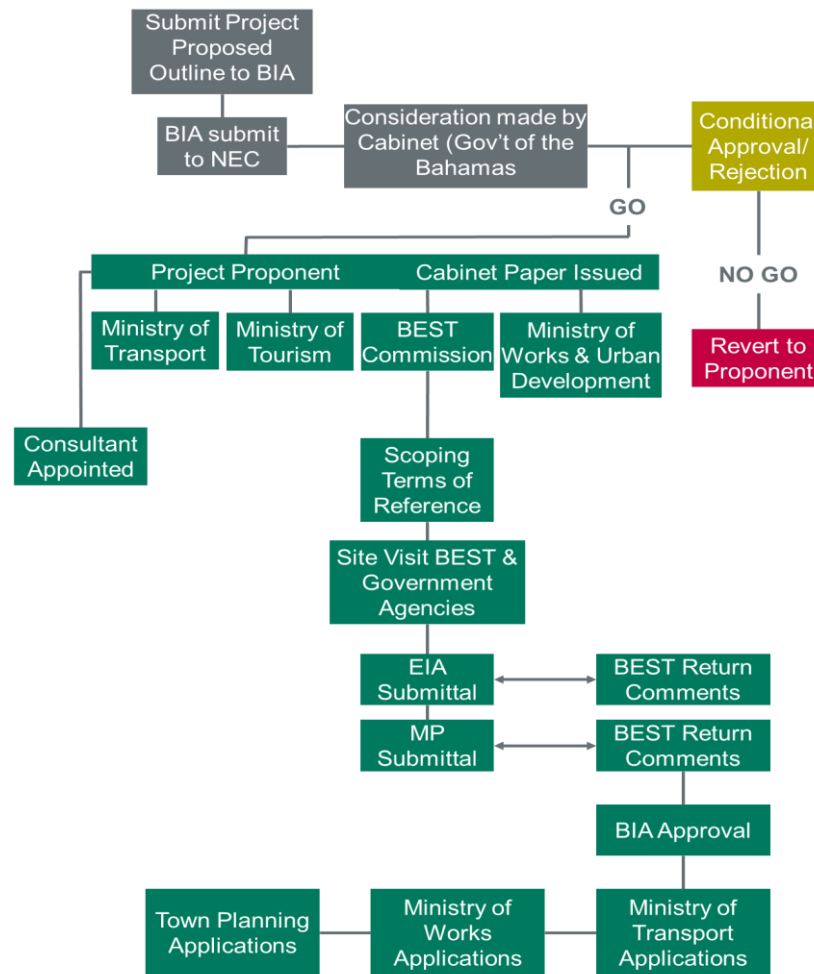


Figure 2-1: Common EIA Approval Process in The Bahamas

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

An EIA is prepared in accordance with the EIA guidelines established by The Bahamas Environment, Science, and Technology Commission (BEST Commission). Prior to submittal of an EIA, a meeting is held with BEST to determine the Terms of Reference (TOR). The TOR identifies the applicable components of the EIA guidelines with priority areas noted by BEST based on a proposed project type. For example, the TOR for a transmission line project would differ from that of a housing development. Overall, an EIA identifies potential environmental risks and impacts based on site investigations and recommends measures for minimizing or mitigating those potential impacts with reference to local legislation and international conventions.

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

2.3 Applicable International Conventions and Agreements

The GOBH has also ratified and complied with the terms of several international treaties and accords. These have been designed to formalize cooperation on regional and global environmental protection strategies. In this regard, the Bahamas has signed Agenda 21 and is party to the following conventions and agreements:

- United Nations Convention on Biological Diversity (CBD).
- The Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (Western Hemisphere Convention).
- The Ramsar Convention (The Convention on Wetlands of International Importance).
- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- United Nations Convention on the Law of the Sea.
- International Convention for the Prevention of Pollution from Ships (MARPOL 73/78).
- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.
- International Covenant on Civil and Political Rights.
- International Covenant on Economic, Social and Cultural Rights.
- American Convention on Human Rights.
- United Nations Framework Convention on Climate Change.
- World Heritage Convention, including the associated United Nations Educational, Scientific and Cultural Organization (UNESCO) guidelines.
- International Labour Organisation (ILO) Standards on Occupational Safety and Health:
 - Freedom of Association and Protection of the Right to Organize Convention.
 - Right to Organize and Collective Bargaining Convention.
 - Forced Labor Convention.
 - Abolition of Forced Labor Convention.
 - Worst Forms of Child Labor Convention.

2.4 IDB Environmental and Social Safeguards Policies and Guidelines

The IDB is a multilateral financial entity that has established environmental and social safeguards policies to ensure that the projects and operations it finances are sustainable. The policies and safeguards represent international best practices in the areas of environmental, social, health, and safety management. The IDB always requires that the activities it finances meet these established standards. The general standards are summarized below, along with a brief analysis of their relevance to the Operation.

2.4.1 Operational Policy on Environment and Safeguards Compliance – OP-703

The safeguards in this policy apply to the entire project cycle, in order to guarantee the environmental and social viability of the Bank's investments. In accordance with sustainable development practices, the Bank prioritizes prevention and when necessary, mitigation and full management of negative impacts. This policy is relevant to the Operation because it is financed by the Bank.

As described in OP-703 directive B.3. Screening and Classification, all Bank financed operations will be screened and classified according to their potential environmental impacts. This Operation has been classified as Category B – low to moderate impact projects that are manageable with common mitigation measures. Projects of this nature require an environmental or social impact analysis. While the Operation may include financing to adapt spaces within clinics in order to provide services to patients with COVID-19, it is not classified as an emergency prototype COVID-19 loan. The objective is to comply at all times with IDB safeguards policies. According to OP-703, this classification is described as follows:

- **Category B:** Operations that are likely to cause mostly local and short-term negative environmental and associated social impacts and for which effective mitigation measures are readily available will be classified as Category “B”. These operations will normally require an environmental and/or social analysis, according to and focusing on, the specific issues identified in the screening process, and an environmental and social management plan (ESMP).

Related to the Operation, directive B.17 frames the acquisition requirements for goods and services such that they are conducted in an environmentally and socially sustainable manner.

2.4.2 Operational Policy on Natural Disaster Risk Management – OP-704

OP-704 was developed to address the elevated vulnerabilities that are experienced by populations in the process of development when living through a natural or unexpected disaster. The policy assigns special importance to risk reduction, seeks to improve the institutional framework, and supports disaster risk management. The Guidelines for the Application of the Disaster Risk Policy were approved in 2008.

Directive A-2 of this policy is relevant to the Operation because projects within the Operation will likely be in areas vulnerable to natural disasters. Directive A-2 focuses on the identification and reduction of project risk where Bank-financed projects will include the necessary measures to reduce disaster risk to acceptable levels as determined by the Bank on the basis of generally accepted standards and practices. The Bank will not finance projects that, according to its analysis, would increase the threat of loss of human life, significant injuries, severe economic disruption, or significant property damage related to natural hazards. As described in the Guidelines, the potential of the project to exacerbate natural hazard risk to human life, property or the environment is treated through Policy OP-703, whereas the risk to the project itself from its exposure to natural hazards requires that the Bank's social and environmental project screening and classification process be used to classify projects according to their potential disaster risks. This Operation has been classified as High disaster risk given the combination of moderate to high hazard levels for the exposed assets, high criticality of the project (the project includes new builds for facilities offering complex hospital-type services) and moderate to high vulnerability (as shown by the

extensive damages suffered by some of these health facilities). According to OP-704, this classification is described as follows (it should be noted that the disaster risk assessment (DRA) may be done at any time before construction begins):

- **High-risk projects:** The project will typically be classified as high-risk if one or more of the significant natural hazards may occur several times during the execution (construction) period and/or the operational life of the project and/or the likely severity of social, economic and/or environmental impacts in the short to medium term is major or extreme. These impacts are of sufficient magnitude to affect project viability and may affect an area broader than the project site. As such hazards may affect project viability, a more detailed investigation of disaster risk, in the form of a DRA, is required.

2.4.3 Operational Policy on Involuntary Resettlement – OP-710

This policy addresses the risks and vulnerabilities associated with involuntary physical displacement that accompany the development of a project. It seeks to avoid, minimize, or manage the need for physical displacement and, if that is not possible, minimizing the changes that harm the way of life of the populations, both economically and socially. The guidelines relevant to this policy were approved in 1999.

There is no evidence that this Operation will generate involuntary resettlement; therefore, this policy is not activated for the Operation. There is no evidence of informal or formal vendors on the land where the clinics are, nor houses or families living in the immediate area. However, the exact boundaries of the land on which clinics will be upgraded and construction activities will take place, and the land of sites for the construction of new clinics, are not yet confirmed and therefore the applicability of this policy needs to be verified and analyzed.

2.4.4 Operational Policy on Gender Equality in Development – OP-761

Based on extensive research on development processes, this policy seeks to integrate issues on vulnerabilities associated with gender into the impact assessment process and management plans. It takes into account the Bank's experience in supporting the integration of women as leaders, participants, and beneficiaries of development.

This policy is relevant to the Operation because the project activities will affect both genders. There is no evidence that the health system excludes women or minorities; however, there may be health disparities based on socioeconomic background, gender, or other factors. Also, the Operation aims to support activities to respond to and address gender-based violence, which fall under this policy.

2.4.5 Operational Policy on Indigenous Peoples – OP-765

The Bank seeks to support socio-culturally appropriate development processes associated with the economy and governance of Indigenous Peoples, recognizing their rights, aspirations, and needs. This policy seeks to minimize the vulnerabilities that these groups could experience when facing development projects in their territories and to support the full development of indigenous communities in the area of influence of the projects.

There is no evidence that the Operation primary healthcare clinics are adjacent to any indigenous territories. This policy may be applicable if the projects financed by the Operation are located in territories belonging to indigenous peoples or if it is determined that the projects will affect, though not significantly, an indigenous population.

2.4.6 Operational Policy on Access to Information – OP-102

Through this policy, the Bank seeks to demonstrate its transparent use of public funds and by strengthening its relationships with stakeholders, improve the quality of its operations and knowledge and capacity-building activities. The Bank will disclose information about its operations and endeavors to provide maximum access to information, provided that the disclosure of information is no more harmful than beneficial to the interests, entities, or parties affected. The Bank is legally obliged to refrain from disclosing any confidential information that it has received with the understanding that it will not be disclosed, that fall under the list of exceptions to this policy.

This policy is applicable to the Operation due to being a recipient of the Bank's financial resources.

2.4.7 Policies for the Procurement of Works and Goods – GN-2349-9

The purpose of the policy is to inform the executors of a project financed completely or in part with a Bank loan or funds administered by the Bank and executed by the Beneficiary about the policies that govern the acquisition of the assets, the works, and related services necessary for the project.

This policy is applicable to the Operation because the projects include the acquisition of assets with financial resources from the Bank.

3. PROJECT DESCRIPTION

Although final Project design has not been completed, the Operation has already approved a list of 18 Projects that could be funded. These Projects fit under one of three levels:

- **Level I Facility:** Advanced Health Care Services which could include Mini-hospitals (Overnight quarters, Operating theatre, Laboratory service, Isolation, Emergency Room, Specialist services such as Family Medicine and Dentistry, Diagnostics centre, Morgue, Physiotherapy, Dental services), Maternal and child care, Immunization, Treatment of common illnesses, Provision of essential drugs, Reproductive health, Outpatient curative care, Inpatient curative care.
- **Level II Facility:** Intermediate Primary Health Care Services which could include Maternal and child care, Immunization, Specialist services (Family Medicine, Dentistry), Treatment of common illnesses, Provision of essential drugs and pharmacy services), Emergency Room (with resuscitation equipment), Reproductive health, Outpatient curative care, Laboratory Services (specimens shipped to New Providence), Limited Diagnostics.
- **Level III Facility:** Primary Care Services which could include Maternal and child care, Immunization, Treatment of common illnesses, Limited Pharmacy Services, and Outpatient curative care.

Table 3-1 provides a general description of the Projects as well as the scope of the work to be performed at each location.

Table 3-1. Approved Operation Projects

	Island	Clinic	Service Provided ^a	Status of Facility	Building Size (ft ²)	Building Extension proposed (ft ²)	Scope of Works
1	Exuma	Exuma Primary	Level I	Facility in good condition; has IT capacity &	33,000	N/A	Rustproofing of the new equipment prior to

	Island	Clinic	Service Provided ^a	Status of Facility	Building Size (ft ²)	Building Extension proposed (ft ²)	Scope of Works
		Health Care Centre		equipment for Telemedicine and Diagnostic services.			installation and a preventative maintenance programme to sustain function and reduce corrosive-rusting due to high air salinity.
2		Staniel Cay	Level III	New clinic to be constructed	Unknown	N/A	New Level III facility proposed
3		Black Point	Level III	New clinic to be constructed	Unknown	N/A	New Level III facility proposed
4	Abaco	Abaco Primary Health Centre	Level I	Advanced primary health care facility constructed between 2012 and 2017; damaged by Hurricane Dorian	33,000	N/A	general sundry – roof, electrical, painting
5		Coopers Town Community Clinic	Level III	20-year old facility received extensive damage following Hurricane Dorian.	8,000	N/A	comprehensive repairs to roof, ceiling and A/C.
6	Andros	Mariam Green Community Clinic	Level III	The facility is in fairly good condition.	8,000	N/A	Urgent general Sundry Repairs
7		Mangrove Cay Clinic		Currently housed in an inadequate rental unit	3,000	N/A	New Level II facility proposed
8		Nicholl's Town Community Clinic	Level III	Facility is state of disrepair	8,000	N/A	redesign and structural repairs are needed to improve the integrity of building and support the expansion of its services
9		Fresh Creek Clinic	Level II	Facility is state of disrepair	8,000	N/A	Work flow redesign to create diagnostic services and health education,

	Island	Clinic	Service Provided ^a	Status of Facility	Building Size (ft ²)	Building Extension proposed (ft ²)	Scope of Works
							and deep structural repairs
10	Eleuthera	Harbour Island Clinic	Level III	65% complete Phase I of biphased repairs	8,000	2,000	additional work required in the Emergency room, isolation, triage & dental rooms and two ward areas and add Trauma Room; add portable x-ray
11		Rock Sound Clinic	Level II	Clinic occupies rental property and in poor state of repair	8,000	N/A	New Level I facility proposed
12	Long Island	Deadman's Cay Community Health Centre	Level II	The facility was constructed in 1968; but is in a fairly good state. Plans are underway to facilitate redesign of the spaces and expansion for improved management of emergencies & diagnostic services	7,000	N/A	Must carry out sundry repairs to Triage, Emergency & Dental rooms, Asthma Bay and two in-patient wards
13	Inagua	Inagua Community Clinic	Level II	Construction completed in 2012 and in fairly good condition; however sustained hurricane damage. This facility is equipped with x-ray and infrastructure for Point of Care testing and Telemedicine	8,000	N/A	Facility requires General Sundry Repairs inclusive of roof repairs due to hurricane damages.
14	Mayaguana	Abraham's Bay Clinic	Level III	No information provided.	8,000	N/A	Redesign and renovation works required to repurpose the existing clinic and nurses residence

	Island	Clinic	Service Provided ^a	Status of Facility	Building Size (ft ²)	Building Extension proposed (ft ²)	Scope of Works
							increase space for service provision
15	Crooked Island	Landrail Point Clinic	Level III	Small facility inadequate to meet needs of population	5,000	N/A	Requires expansion and upgrading of air conditioning
16	Cat Island	Smith's Bay Clinic	Level I	Condemned	TBD	N/A	New Level I facility proposed
17	San Salvador	Cockburn Town Community Clinic	Level I	Fairly new facility in good condition	20,000	N/A	Requires repurposing of ward to include trauma room
18	Bimini	Bimini Community Clinic	Level II	Roof is leaky and in general need of repair	8,000	2,000	Requires roof repair, redesign and expansion to include an isolation room, and sundry repairs

^a See Project level descriptions above.

ft² = Square feet, NA = Not available, TBD = to be determined

With the exception of five locations, most of the approved Projects will involve activities only to improve and/or expand existing facilities and will take place in areas already developed (see Scope of Works in Table 3-1 above). Of the remaining five facilities, three are proposed to be constructed in undeveloped areas (Black Point, Mangrove Cay Clinic, and Rock Sound Clinic) and two will be constructed in an already developed area (Staniel Cay and Smith's Bay Clinic).

The proposed Projects are scattered throughout the islands of the Bahamas as can be seen in Figure 3-1.

Support for the Health System Strengthening of The Bahamas for Health Risks Programme BH-L1053



Source: ERM, 2021.

Figure 3-1: Proposed Project Locations

The Figures 3-2 to 3-4 provide a close up of the proposed locations for the Projects in the Table 3-1.



Figure 3-2: Facility Locations, Map 1



Figure 3-3: Facility Locations, Map 2



Figure 3-4: Facility Locations, Map 3

3.1 Construction Equipment

Typical construction equipment includes:

- Dump trucks;
- Bobcats;
- Tractors;
- Water trucks;
- Tractor-loader-backhoes;
- Pick-up trucks; and
- Excavators.

3.2 Construction Material Sources

The largest number of materials will be required for the construction of the five new facilities, although materials will also be needed for facility improvements. Construction material and equipment will have to be brought in or imported for most of the islands.

3.3 Wastes

3.3.1 Construction

The Projects proposed under this Operation are comprised of existing building modifications and new construction. Waste generated during construction will include general domestic waste, including sanitary and food waste, office waste, and organic material. Petrol and diesel by-products will be generated from the transportation of goods and personnel, generators, and heavy construction equipment.

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

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

The Operation's Projects will be dispersed throughout multiple Islands in the Bahamas. Although not all of the islands have appropriate waste disposal facilities, there are waste disposal and recycling facilities on several of the Islands as well as Nassau; however, some of these were recently impacted by Hurricane Dorian. Prior to initiating construction activities the Engineering Procurement Contractor (EPC) must verify the capacity of the local landfill and ensure that they are able to receive the waste generated during construction.

All hazardous waste generated during construction will be removed by the EPC Contractor and safely disposed of in a licensed facility. This may have to be done at a different Island, so proper transportation must also be ensured. The Project will investigate the possibility of recycling non-hazardous waste. Non-recyclable, non-hazardous solid waste will be sent to a licensed waste site in accordance with the Project's Management Plans.

3.3.2 Operation

During operation, wastes will be comprised of typical household wastes as well as hazardous and biomedical wastes. Wastes generated during operation will need to be managed by the management and/or administration staff for each Project. They will be responsible for supervising the implementation of the Management Plan for Hospital Waste.

3.4 Energy Requirements

During construction, energy at the construction sites will be provided via diesel generators. Once in operation, all of the facilities will connect to the existing electrical grid and the facilities will not require the installation of transmission lines. In addition, the facilities will be supplied with back-up diesel generators to provide electricity in case of power outages or emergencies. Quantities required are unknown at this stage of the Project. Fuel supplies are available on the islands.

3.5 Utilities

Specific details for utilities are currently not available as design details are not yet ready. For the Facilities that will need to be constructed, during construction activities, water will likely be trucked on site and sanitary wastewater will likely be handled by portable restrooms. For the facilities already in operation, water is already available via the municipal potable water systems. During Operation, all of the proposed Projects will have access to and be able to connection to the municipal potable water systems. In addition, some of the facilities will also be provided with rainwater catchment infrastructure.

All of the facilities already in existence are connected to the municipal wastewater system with the exception of two facilities, which have septic systems in place (The Exuma and Abaco Primary Health Care Centres). The facilities proposed for construction will be connected to the existing municipal wastewater system.

3.6 Alternatives Analysis

3.6.1 No Action Alternative

The no Project alternative will leave the Island with a need for appropriate healthcare infrastructure, especially in the times of COVID-19 and increased need of healthcare facilities and response.

3.6.2 Project Alternatives

Projects were selected based on need and the use of existing facilities in order to minimize environmental and social impacts. Projects are located in land already owned by the Government, and most are on land already developed. Alternative locations would mostly likely require new construction and/or land acquisitions that would most likely increase potential environmental and social impacts.

4. ENVIRONMENTAL AND SOCIAL BASELINE

4.1 Introduction

This chapter presents the environmental and social baseline for The Bahamas, in general, and where specific baseline information is available for the island where the healthcare facility is located, this also is presented.

4.2 Environmental Baseline

The Bahamas consists of about 700 islands and cays, with only a small percentage of the islands being inhabited. The total land area encompasses 13,939 square kilometers (km²). The Bahamas is divided into three geographical areas: New Providence Island, where the capital of Nassau is located; Grand Bahama; and the Family Islands, which is the name given to all of the other islands and cays.

The Chain of islands that comprises The Bahamas extends from 80 kilometers (km) east of Florida southeasterly to 80 km northeast of Cuba. The islands are located in the western section of the North Atlantic Ocean, scattered over about 207,200 km². They are bordered by the U.S. to the west, Cuba to the southwest and by Haiti and the Turks and Caicos Islands to the southeast (see Figure 3-1).

4.2.1 Physical Resources

4.2.1.1 Climate and Meteorology

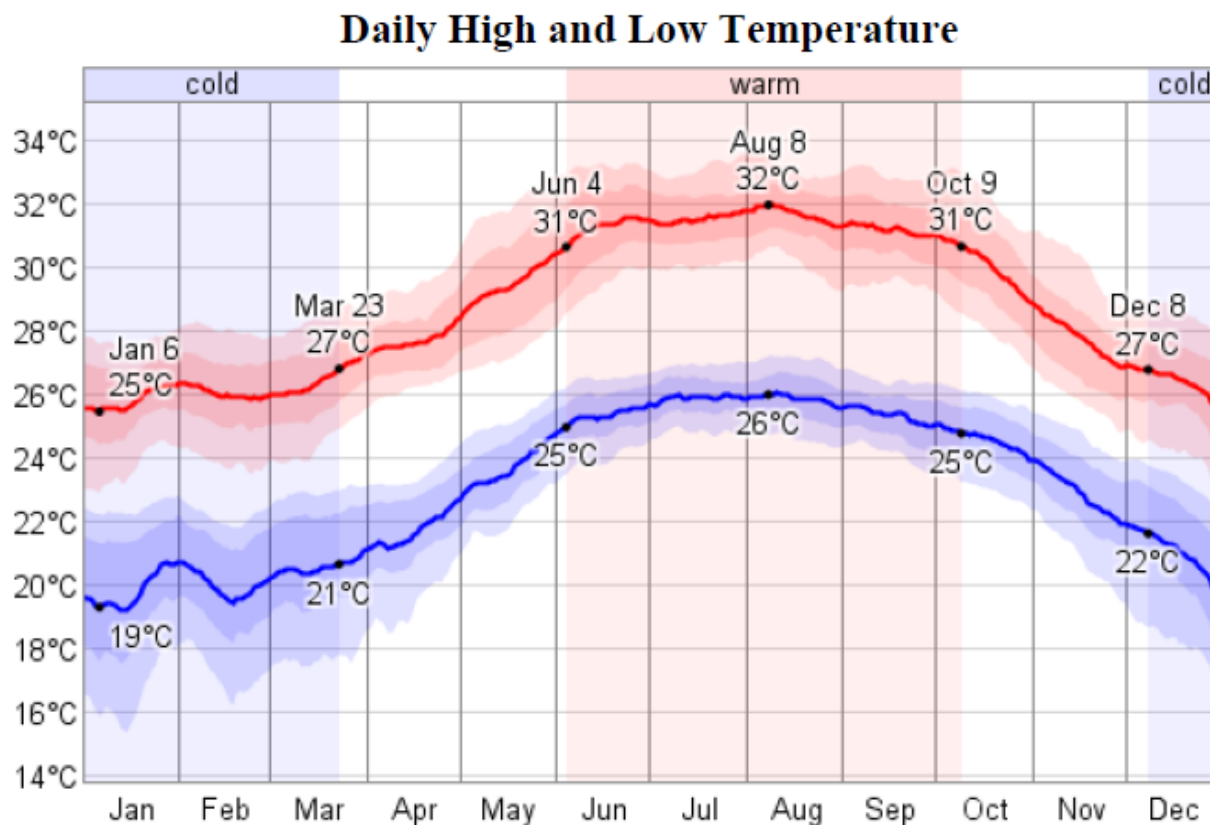
The Bahamas Archipelago spans 6° latitude and 9° longitude, across the Tropic of Cancer, so there are regional variations in weather patterns and a mix of climatic conditions throughout the island chain. The climate of The Bahamas is sub-tropical (UNFCCC, 2014). The Bahamas is dominated by Atlantic Southeast trade winds in the summer and cool dry North American high-pressure systems in winter. Approximately two-thirds of the country is north of the Tropic of Cancer. It's geographic position between two major warm ocean currents affect the region with seasonal variability. The Southeast Trade Winds dominate the weather for much of the year providing a cooling effect (US Army Corps of Engineers, 2004; Bahamas National Report, nd).

According to the Second National Communication Report of the Commonwealth of The Bahamas under the United Nations Convention on Climate Change (UNFCCC), recent analysis of the temperature record shows that the average annual temperatures have been steadily increasing over the last 30 years (1971-2000) and this trend is likely to continue in the near future. The mean annual temperature has increased by about 0.5 °C since 1960, at an average of 0.11 °C per decade (UNFCCC, 2014). As for rainfall, observational record shows that the mean rainfall has not changed significantly since 1960. This report includes a climate baseline over the period 1961-2006, with temperature and precipitation averages at a country level and by the main islands. This section of the environmental and social assessment will use this data to supplement the environmental context section.

Temperature

The climate of The Bahamas (George Town weather Station, Grand Bahamas) is subtropical with a mean temperature ranging between 21 degrees Celsius (°C) in January and 28°C in August. The temperature is generally characterized by warm moist summers and drier cooler winters. The warm season lasts from the first half of June to the second half of September/first half of October, whilst the cold season starts at the end of November / beginning of December and ends between mid-February and mid-March. Summer trade winds from the east bring warm humid air to the area. Winter high-pressure cells arriving from the North Atlantic and North America bring periods of cold, sometimes precipitating fronts. Summer rainfall peaks in June through September, with a year total averaging approximately 1524 millimeters (mm) (East Bay Group, 2008). The following image presents the annual trend of temperatures (high and low).

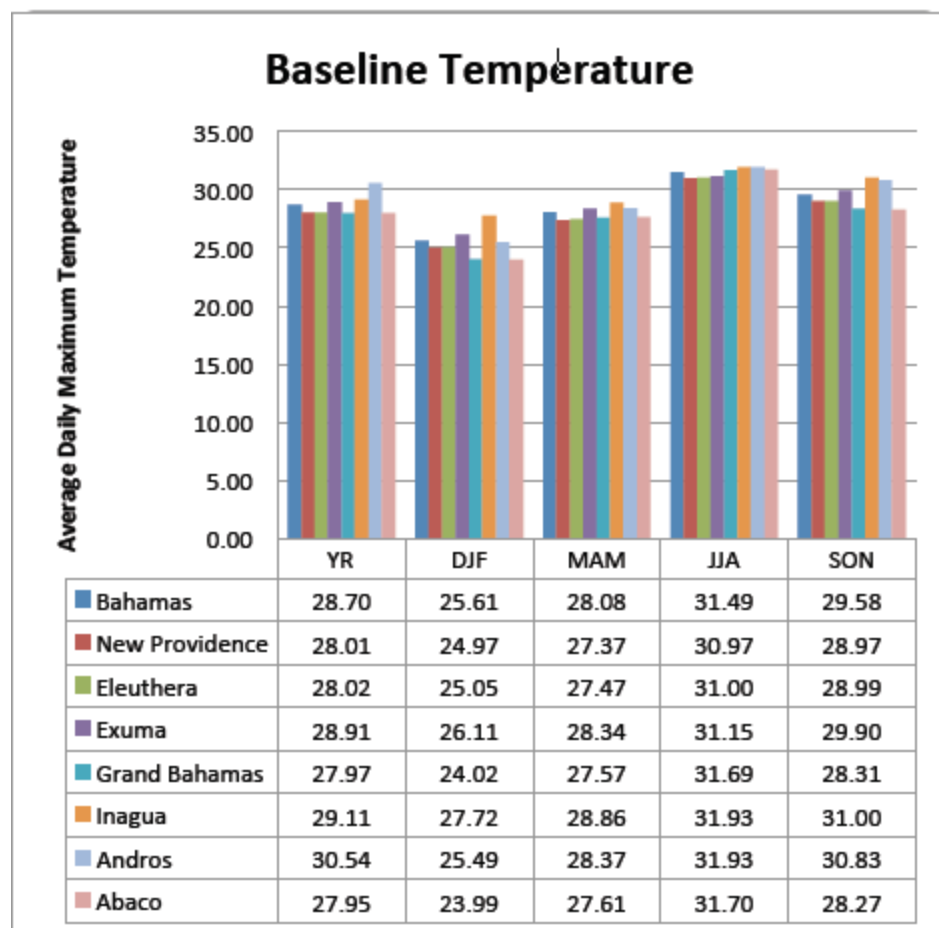
Maximum temperatures range from 25 to 30 °C and a range in minimum temperatures of 17 to 24°C from north to south. Figure 4-1 presents daily temperature data from the Perry Institute for Marine Science. The data reflect the temperature climate of The Bahamas, with a low degree of fluctuation in air temperature. Figure 4-2 presents the average daily maximum temperatures for The Bahamas and its main islands.



The daily average low (blue) and high (red) temperature with percentile bands (inner band from 25th to 75th percentile, outer band from 10th to 90th percentile).

Source: Cedar Lake Ventures, 2021.

Figure 4-1: Daily Temperature for George Town, The Bahamas, weather station



Source: UNFCCC, 2014.

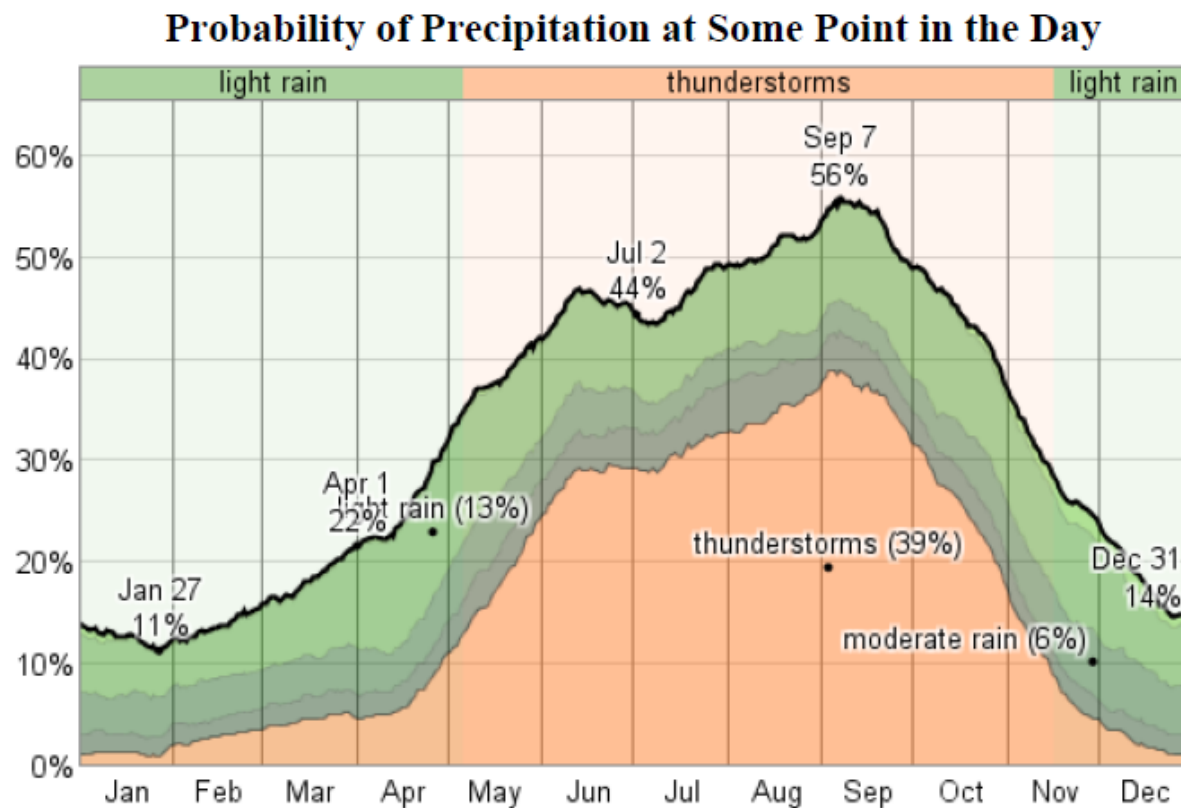
Figure 4-2: Average Daily Maximum Temperatures for The Bahamas, 1960-2006

Precipitation

Precipitation is characterized by an annual trend with two different periods: a rainy season from May to October during the warm season, followed by a dry season during the rest of the year. The annual precipitation range is between 1397 and 1520 millimeters (mm) (KES, 2008; see Figure 4-3).

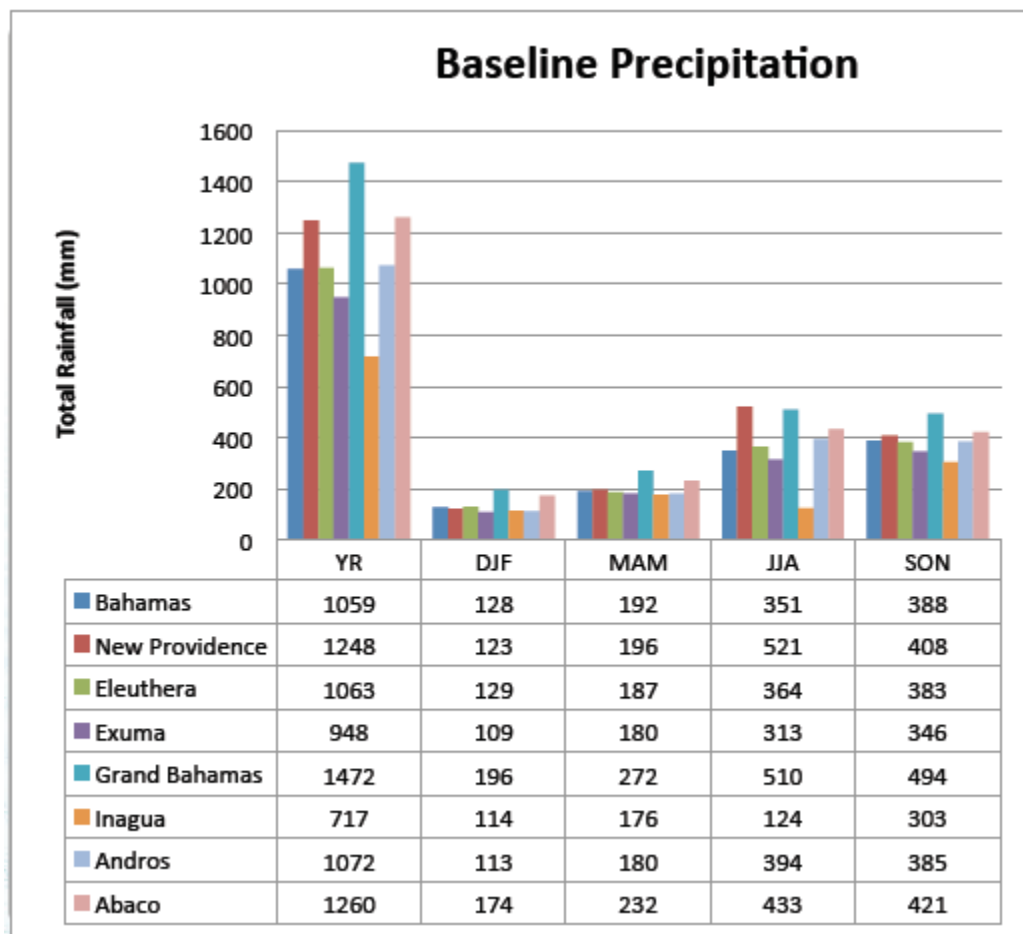
There are no summits higher than 63 m. Therefore, mountain-induced rainfall or rain shadow zones are non-existent. Rain clouds that develop over the islands due to transpiration from vegetation may be displaced by the dominant Northeast trade winds. The rain subsequently falls on the western side of the narrow islands or out to sea (UNFCCC, 2014; see Figure 4-4).

Average rainfall totals range from 600 mm in the dry southeastern islands to more than 1600 mm the northwestern part of the archipelago (see Figure 3-1). Most rainfall occurs during the warm summer months from May to October, with limited rainfall in the cooler months from November to April. The cool season is influenced by North American winter frontal systems (US Army Corps of Engineers, 2004). Annual rainfall totals vary significantly from the average due to the influence of tropical storms and hurricanes, which can have a strong influence on precipitation, even when their tracks of passage is several hundred kilometers away from The Bahamas.



Source: Cedar Lake Ventures, 2021.

Figure 4-3: Probability of precipitation at some point during the day

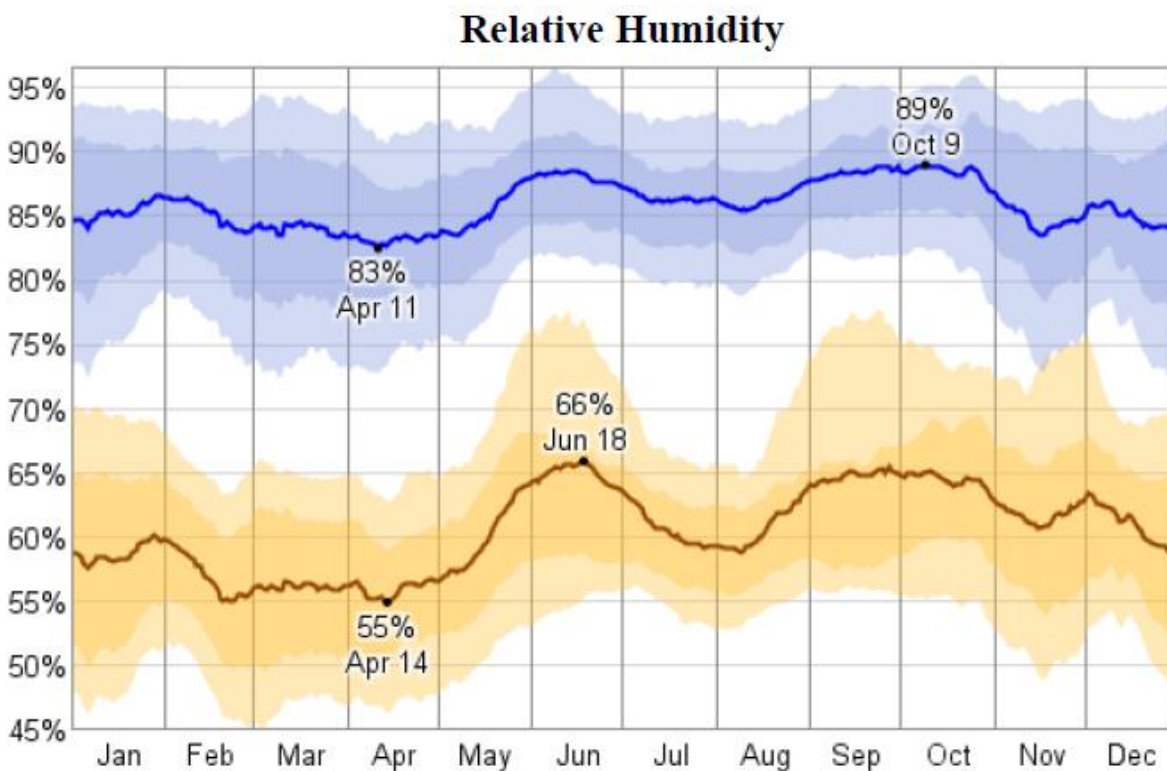


Source: UNFCCC, 2014.

Figure 4-4: Annual Seasonal Rainfall in The Bahamas, 1960-2006

Humidity

The relative humidity typically ranges from 53 -55% (mildly humid) to 89 - 94% (very humid). The average daily high and low relative humidity shows an oscillatory pattern throughout the year, with the driest days in April and the highest humidity values from June to October (see Figure 4-5).



Source: Cedar Lake Ventures, 2021.

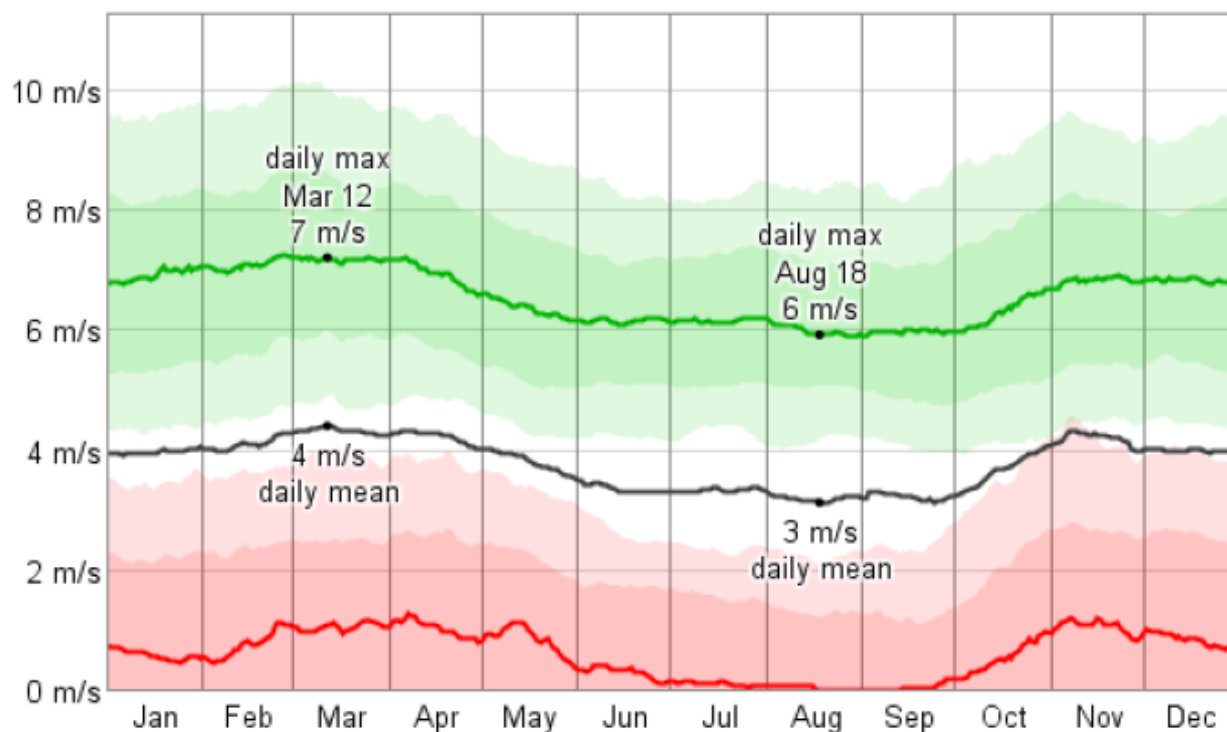
The average daily high (blue) and low (brown) relative humidity with percentile bands (inner bands from 25th to 75th percentile, outer bands from 10th to 90th percentile).

Figure 4-5: Relative Humidity for weather station George Town, The Bahamas

Wind

The local meteorology is dominated by strong easterly trade winds for the majority of the year, and multi-directional but still windy conditions in the remainder of the year (UNEP, 2015). The wind speed ranges from 0 meter per second (m/s) to 7 m/s on average, with the strongest winds detected in March/April, while the weakest occur in September/October (see Figure 4-6).

Wind Speed



Source: Cedar Lake Ventures, 2021.

Figure 4-6: Wind Speed for weather station George Town, The Bahamas

4.2.1.2 Air Quality

No detailed information could be retrieved for the Operation areas of interest in relation to air quality. According to an overview on air quality policies in The Bahamas published by the United Nations Environment Program (UNEP), based on research that UNEP conducted in 2015, ambient air quality in most of The Bahamas is relatively good due to: (i) strong winds, (ii) small industrial base, and (iii) low population density. The local meteorology is dominated by strong easterly trade winds for the majority of the year. The strong winds will tend to transport emissions from sources located on the Islands out over water, rather than allowing them to accumulate and concentrate in ambient air over areas of population. This same effect will also preclude the chance for sufficient accumulations of ozone precursors that could lead to elevated levels of ambient ozone. In addition, due to its small industrial base and low population density, The Bahamas is not a major contributor to greenhouse gases (GHGs) (UNEP, 2015).

The island of New Providence is responsible for the majority of local air emissions, being the most populated island of the archipelago (BEST Commission, The College of The Bahamas, 2005). The main sources of air emission are electricity generation (through combustion of liquid fossil fuels) and the transportation sector (BEST Commission, The College of The Bahamas, 2005), as detailed in the following paragraph. Other source for air pollutants are burning of solid waste and trade winds, transporting dust (that can be contaminated with DDT) from North Africa and the Sahara desert.

The Bahamas depends on imported fuels to generate over 99% of its electricity demand. Generation is currently fueled by all imported petroleum with a mix of diesel (56.5%) and heavy fuel oil (43.5%) (UNEP,

2015), Transportation is the second greatest user of energy, and thus the second biggest contributor to air pollution and GHG emissions, with a recorded three-fold increase in vehicular gasoline consumed locally from 63.291 million Bahamian dollars in 2002 to 201.147 million Bahamian dollars in 2008 (UNEP, 2015).

4.2.1.3 Geology and Geomorphology

The Bahama Islands have a foundation (i.e., the Bahamian Platform) of fossil coral, but much of the rock is oolitic limestone¹. The limestone is derived from the disintegration of coral reefs and seashells (US Army Corps of Engineers, 2004). Geological investigations of the Bahamian Platform suggests that the platform is a layer more than 5 km of carbonate sediment (limestone) that have accumulated on pre-Triassic. The upper units consist of Pleistocene and Holocene limestones, including aeolian calcarenites, beach rock, fossil coral reef rock, and sub-tidal facies. Lithified aeolian dune ridges provide topography, with shallow brackish to hypersaline lakes occupying the depressions between. The shorelines are characterized by sand beaches, commonly containing Holocene beach rock, located between headlands composed of older, eroded aeolianites crystalline rock (KES, 2008).

The limestone exposed at the surface of the Bahamas is the upper boundary of the Lucayan Formation², whose average thickness is 40 meters (m). The texture of this limestone ranges from mudstone to grainstone, but packstone predominates. The Lucayan Limestone is dated as late Pliocene-Pleistocene.

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

4.2.1.4 Landscape, Topography, and Soils

Landscape

There are several types of landscapes in The Bahamas. Some are the result of soil topography and climate, which forms a natural setting and others are artificially conditioned and altered from planning and management of resources. The most prominent type of landscape is rock covered by a thin layer of soil, where forests, palmetto, coconut palm trees and shrub pine are grown. Parts of The Bahamas, particularly New Providence, show decades of human alteration. Road passageways have been cut through the hills where limestone rock is directly exposed to the weather (UNFCCC, 2014).

The country established the Conservation and Protection of the Physical Landscape of The Bahamas Act in 1997. With only approximately 5% of the total surface area of The Bahamas on land, the government has prioritized the land for residential, agricultural and industrial development (UNFCCC, 2014).

Topography

The archipelago of The Bahamas contains the largest tropical shallow water area in the Western Atlantic. The islands of The Bahamas have generally low relief; around 80% of the land surface is within 1 masl. Central ridges rising up to 31 m may be found on most islands. Islands of the southeast and central

¹ Oolitic limestone is made up of small spheres called oololiths that are stuck together by lime mud. They form when calcium carbonate is deposited on the surface of sand grains rolled (by waves) around on a shallow sea floor.

² The Lucayan Formation is a geologic formation in the Bahamas. It preserves fossils dating back to the Early Pleistocene period.

Bahamas are generally of higher elevation than the northern Bahamas. The highest point in the country is 63 m at Mount Alvernia in Cat Island.

In addition, the highest point in Andros Island, the largest island in The Bahamas, is only 21.6 m, and most of that island lies less than 6 masl (UNFCCC, 2014).

The land of the islands have a foundation of fossil coral, but much of the rock is politic limestone. This limestone is derived from the disintegration of coral reefs and seashells (US Army Corps of Engineers, 2004).

Soils

In general, the soils of The Bahamas consist mostly of calcareous particles, with some aluminous lateritic soils formed under humid tropical conditions. The soil materials can be divided by their major soil forming constituents, which include carbonate sediments, airborne dust, and immature humic materials, the result of decaying vegetation. These soils, known as azonal³ soils, are immature and have not yet developed to a stage of equilibrium with the local weathering regime. Typically, these soils tend to be localized. Soil thickness can vary and is usually thin, discontinuous and is thickest when concentrated in shallow solution pits. The predominant pedogenic features in the altered limestone are voids produced by the carbonate solutioning process, around the roots of plants. The soil moisture is characterized by frequent wetting and drying due to the high effective porosity of the underlying carbonates and the intermittent nature of the rainfall (KES, 2008).

4.2.1.5 Water

Hydrology

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

Inland water bodies are, in most instances, places where the water table is at or near the same level as the land surface. These bodies are usually saline or brackish nature. In other cases, ponding of water can occur after a heavy rainfall where the surface rock is impervious enough to retard infiltration (US Army Corps of Engineers, 2004).

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

- Holocene sands aquifers (unconsolidated, loose sands) - Holocene sands comprise many of the coastal areas of the country. These well-sorted sands are fine-grained, oolitic in some areas, and highly porous, however, the pores are very small and surface tension is high. These characteristics allow the sands to retain small quantities of freshwater, even in close proximity to the seawater. Freshwater yields, when available, are small in these aquifers. Although these aquifers are not a significant source of freshwater on large islands such as Grand Bahama and Andros, thick deposits of Holocene sands accumulate along the coasts of windward islands, such as Eleuthera, Cat Island and Exuma, and provide important sources of freshwater.

³ Azonal soils lack distinct genetic horizons and resemble the parent material.

- Lucayan Limestone aquifers - The principal aquifer on most Bahamian islands is the Pleistocene-aged Lucayan Limestone. The aquifer is comprised of poorly stratified oolitic limestone. The freshwater bodies that in this unit are known as Ghyben-Hertzberg lenses (see Figure 4-7). Rainwater is the only source of freshwater for this aquifer. Figure 4-8 shows the general map of the hydrography in the Bahamas.

The groundwater resources of The Bahamas comprise the fresh, brackish, saline, and hypersaline waters found in the near and deep subsurface and in lakes and ponds that intercept the surface. The fresh water resources occur as concave lens-shaped bodies that overlie brackish or saline waters at depths. In excess of 90% of the fresh water lenses are within about 1.5 m of the surface. All fresh water in The Bahamas comes from rainfall that is in a dynamic transit back to the ocean from which it came. It has been estimated that fresh water underlies only five percent of the total landmass of The Bahamas and some one-percent of the total archipelagic extent.

The fresh water resources of The Bahamas occur in unconfined lens shaped structures described as Ghyben-Hertzberg lenses. In the Bahamian archipelago, the limestone bedrock controls the type and size of the freshwater lens (Park Boush et al., 2014). The lens shaped reserves of fresh water are found in the limestone matrix at the center of islands, and typically taper towards the edges of the islands. The existence of the fresh water bodies is described as dependent upon the differences in density between seawater and meteoric water, and the nature and permeability of the confining strata. The recharge source is meteoric water directly to the containment area, unlike other types of aquifers that are partially or entirely fed by groundwater flow or surface flow from other catchment sites. Due to the very high natural porosity of the limestone rock and relatively flat terrain, there are no rivers or other forms of surface flow, except where human activity has resulted in surface sealing due to concrete and asphalt. Therefore, the extent of the water bodies is a function of the precipitation of the site less evapotranspiration losses and losses due to surface flow to the ocean. The nature of the confining strata, the permeability due, to intergranular and interfissure spaces, as well as the size and number of submerged karst structures determines the rate of outflow, if they are present (US Army Corps of Engineers, 2004).

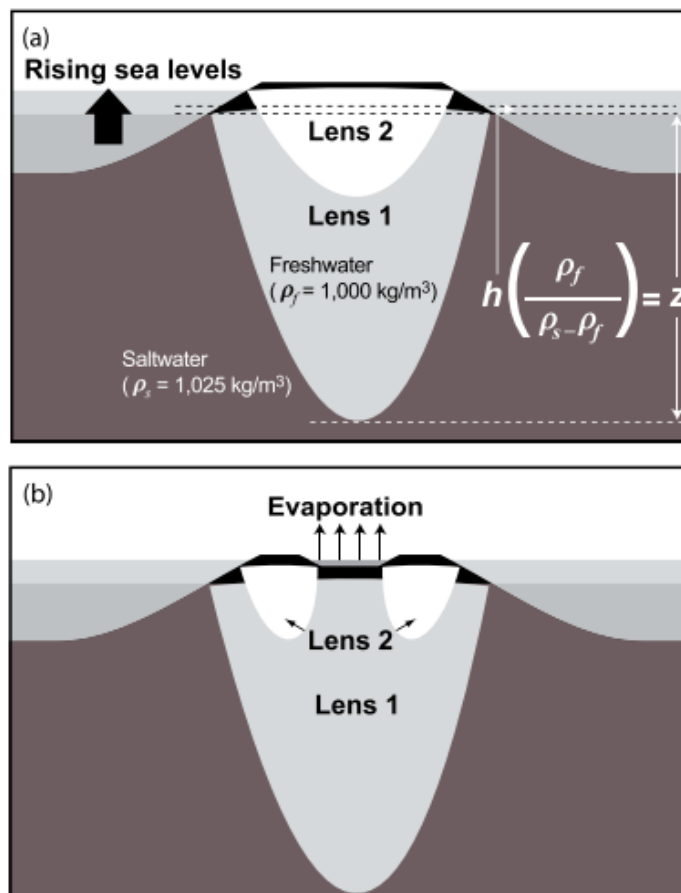


Figure 1. (a) Lens-shaped bodies of fresh water exist on ocean islands due to the difference in density between fresh and saline water (e.g., equations (1) and (2)). Sea level rise reduces island width and lowers water table elevation relative to sea level as the cumulative resistance to groundwater flow decreases. The freshwater lens thickness decreases by a factor of 40x that of the lowering of the water table. (b) Sea level rise elevates the water table relative to the island surface which can raise the water table and flood closed inland depressions to form lakes. These lakes evaporate fresh water from their surface, may allow upconing of salt water similar to withdrawal from wells, and can segment previously continuous freshwater lenses into separate lenses. These segmented lenses have groundwater flow paths that drain toward both the coast and the lake, further lowering water table elevations and enhancing the thinning of the lens (Figures 3a and 3c).

Source: Gulley et al., 2016.

Figure 4-7: Illustration of a freshwater lense (Ghyben-Hertzberg lense)



Source: ERM, 2021.

Figure 4-8: Hydrography in The Bahamas

Water Resources

Freshwater resources are finite and vulnerable in The Bahamas (FAO, 2015). Water is considered 'scarce' according to United Nations criteria. The criteria is based on annual internal renewable water resources per person. If the amount of water in country is less than 1,000 square cubic meters (m^3)/capita/year, water is 'scarce'. The United Nations Food and Agricultural Organization (FAO) produced a table in 2002, entitled 'AQUASTAT 2002' ranking 180 countries in the world. The Bahamas ranks 177 out of 180 for water availability per capita/year, at 66 m^3 /capita/year (US Corps of Engineers, 2004).

As discussed above, freshwater resources in the country are limited to very fragile freshwater lenses in the shallow karstic limestone aquifers. Inland water bodies are usually located where the water table is at or near the same level as the land surface. These bodies are usually saline or brackish nature. In some cases, ponding of water can occur after a heavy rainfall where the surface rock retards infiltration. However, the availability of groundwater is highly variable. Freshwater is often barged from islands with ample ground water supplies, such as Andros, to islands with inadequate fresh ground water resources. The Bahamas is susceptible to storm damage from tidal surges and flooding from hurricanes, which can

have dramatic effects on the ground water supply. The islands in the southeastern Bahamas are also prone to seasonal drought (US Corps of Engineers, 2004).

Since rainwater is the sole source of freshwater in The Bahamas, aquifer recharge is controlled primarily by the quantity and distribution of rainfall, as well as vegetation, topography, and the permeability of surface materials. As precipitation decreases from north to south through the archipelago, the southernmost islands have greatly reduced freshwater supplies (US Corps of Engineers, 2004).

Table 4-1 shows the long-term average internal renewable water resources (IRWR), which are estimated at about 700 million cubic meter per year m³/year) (FAO, 2015).

Table 4-1: Internal Renewable Water Resources in The Bahamas

Renewable freshwater resources	Million Cubic meter/year
Abaco	131.70
Acklins	7.26
Andros	349.51
Bimini and Berry Island	0.28
Cat Island	11.32
Crooked Island	2.90
Eleuthera, Harbour Islands & Spanish Wells	13.54
Exuma & Cays	4.83
Grand Bahama	155.13
Great Inagua	1.43
Long Island	4.80
Mayaguana	1.08
New Providence	16.03
Ragged Island	0.02
San Salvador & Rum Cay	0.17
Bahamas	700.00

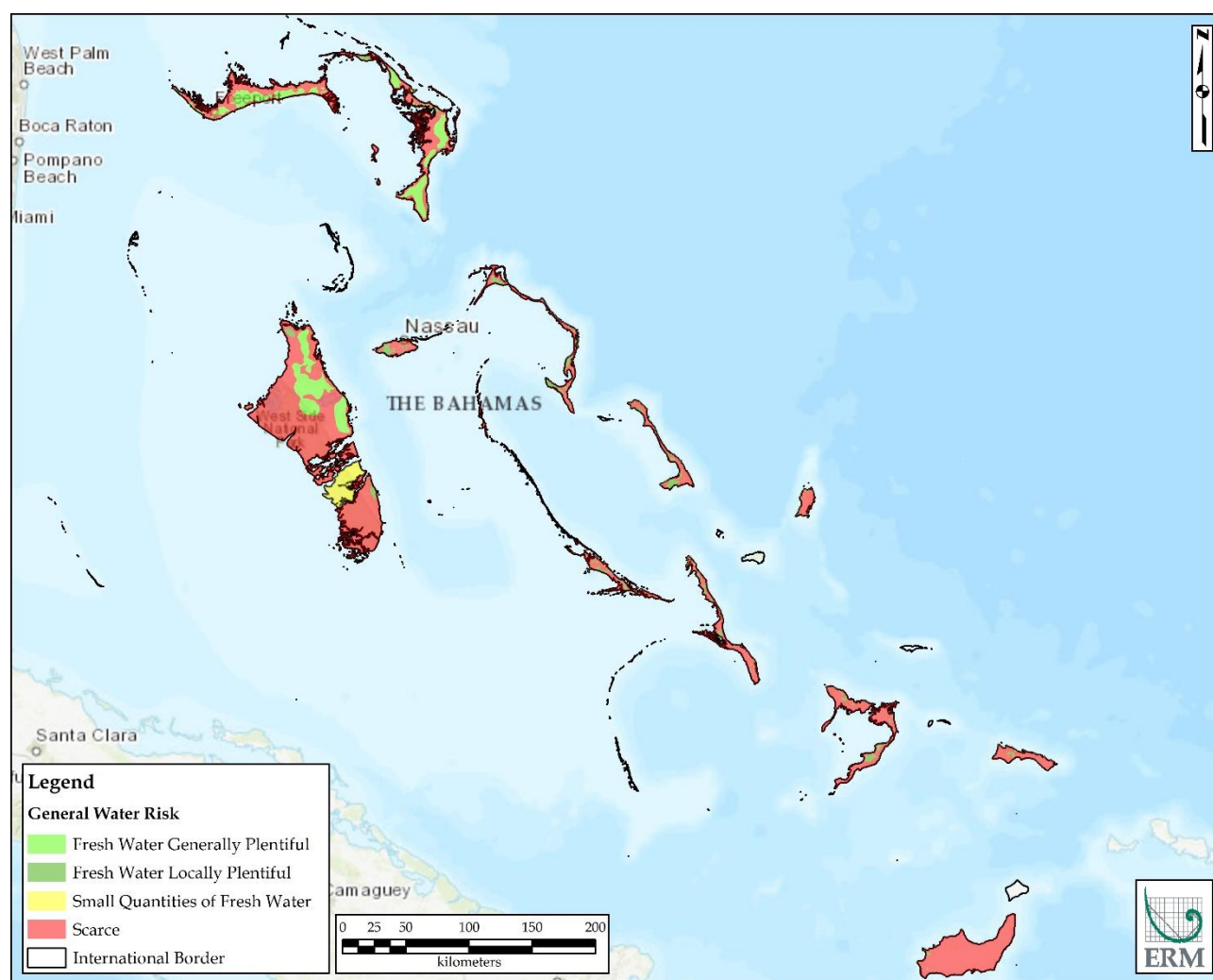
Source: FAO, 2015. Note: Islands highlighted in grey are the islands that may have activities supported by the Operation.

Water Quality

As discussed in the US Army Corps of Engineers (2004) water resources report, most of the surface water features in The Bahamas contain brackish to saline water. On Eleuthera Island and all the major islands south of Eleuthera, evaporation excess rainfall, ponds, and lakes are hypersaline (see Figure 4-9).

The northern islands ponds and lakes are usually brackish and often contain chloride concentrations less than 2,000 parts per million (ppm). Some lakes do contain chloride concentration below 400 ppm, especially on the larger islands where many ponds are underlain by freshwater lenses.

Groundwater quality is generally fresh, except on New Providence Island, where over sixty percent of the population reside. In New Providence Island, the water table is within a few meters from the surface, thus making the groundwater vulnerable to contamination from untreated sewage, industrial wastes, and leaking fuels. The water risk is presented in the Figure 4-9 below.



Source: ERM, 2021.

Figure 4-9: Water Risk in The Bahamas

Water Condition by Island

This section is based on information provided by the US Corps of Engineers in their 2004 Water Resource Assessment of The Bahamas report. A summary based on this information is provided for the islands with potential for improvements and modifications to primary care facilities to be supported by the Project.

Abaco Island

Nearly three quarters of the average annual rainfall occurs during the rainy season, which extends from May through October. Average annual precipitation is approximately 1010 mm. The terrain of Abaco Island is largely flat and rocky. Surface water bodies cover less than 2 percent of the island and include blue holes, man-made lakes, and ponds. Six blue holes were discovered on Abaco. A blue hole near Treasure Cay airport measured 57 m in depth and has a 15 m column of freshwater overlying saline water. The depth of this blue hole is comparable to a large freshwater lens and may provide meager yields of water. It should not be considered a primary source of freshwater. The depths of the remaining blue holes on Abaco range from 10.4 to greater than 46 m.

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

Abaco Island possesses good freshwater resources from the Lucayan Limestone aquifer lenses. Very large to large quantities of water are available from four relatively large freshwater lenses: (a) Normans Castle, (b) Marsh Harbour – Lake City, (c) Lake City – Crossing Rocks, and (d) Crossing Rocks – Hole in the Wall.

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

Andros Island

Surface water bodies most prevalent on Andros are (a) ponds or lakes occupying topographic lows, (b) marsh areas and creeks, (c) blue holes, (d) lagoons, and (e) man-made features. Conversely, to other Bahamian islands, many of the ponds and lakes of Andros may contain freshwater during the months of May through October, where precipitation is at its highest. The ponds and lakes occur in low-lying areas and in marshes where the topography locally or seasonally is intersected by the water table. The salinity of the ponds varies seasonally and is related to the amount of recharge by ground water, rainfall, and evaporation. Marshes and small creeks, or swashes, are found on North Andros and dry up during the winter. Larger creeks such as Stafford Creek, London Creek, and Fresh Creek are occupied throughout the year.

Very large to enormous quantities of freshwater are available from and the water table is within a meter or two of the surface.

Cat Island

Cat Island receives 860 mm of rain. Wetlands are prevalent along the southwestern coast of Cat Island. The areas are likely saline due to their proximity to the ocean and comprise about 9% of the total area of the island. Some ponds also occur on the northern and southern ends of the island. These features are expected to be brackish and may also be saline during the drier winter months if evaporation exceeds precipitation.

Moderate quantities of freshwater are available from the limestone lens between McQueens Settlement and Devils Point and north of Freetown Settlement. The maximum thickness of the McQueens Settlement/Devils Point and Freetown lenses are 15 m and 12 m, respectively.

Crooked Island

There are no streams on Crooked Island and water at the surface may be classified as either lagoons, flooded marsh areas, or blue holes. The lagoons contain hypersaline to saline water. Three blue holes have been identified on Crooked Island and the one near Church Grove was found to be 8.2 m deep. Surface water features and wetland areas cover 1% and 18% of the island's total area, respectively.

Fresh ground water sources are limited in Crooked Island. Limestone lenses are relatively small and occur (a) between Church Grove and Colonel Hill, (b) between Fairfield and Moss Town (c) near Major Cay, and (d) at Bullets Hills.

Eleuthera Island

Surface water bodies most prevalent in Eleuthera include (a) topographic lows, (b) blue holes, (c) man-made lakes and ponds, and (d) lagoons. Ponds between The Bluff and Current Settlements occupy topographic lows and the water table is locally above ground level. These ponds are saline during the dry winter months. Man-made lakes and ponds, resulting from the removal of limestone for building and road materials, may appear to contain fresh (surface) water, however, these are areas where the water table has been exposed to the surface (i.e., fresh ground water that has been exposed to the surface). Shallow lagoons, such as Hatchet Bay Pond and Sweetings Pond, are brackish to hypersaline and the water may appear red due to the presence of algae. None of the lagoons on Eleuthera contain freshwater. Large-scale chemical or biological contamination of the surface water has not been reported.

Very small-to-small quantities of freshwater are available from the Lucayan limestone aquifer lenses. Lenses vary in thickness, with the thickest lenses occurring on North Eleuthera (21 m or 69 ft.). The remaining lenses have thicknesses of 3 to 9 m. The water table is within a meter or two of the surface. This unit accounts for 22% of the total island area. In addition, very small to small quantities of freshwater are available from the Holocene sands aquifer. Unlike the other Bahamian islands, the sandy aquifer is an important source of freshwater in Eleuthera.

Areas that are not underlain by limestone or sand aquifers are unsuitable for ground water development and comprise 63% of the total island area. Chemical or biological contamination of the aquifers has not been reported for Eleuthera Island.

Exuma Island

Rainfall on Great Exuma averages close to 100 centimeters (cm) per year, according to data from a rainfall station on the island monitored from 1961 to 1990. Wetlands are prevalent along the western coast of the Exuma Islands. These areas are likely saline due to their proximity to the ocean. Ponds, such as Salt Pond on Little Exuma, also occur on this island. These features are expected to be brackish and may be saline during the drier winter months if evaporation exceeds precipitation. Large-scale chemical or biological water has not been reported.

The Exumas boasts extensive ground water resources, given their size and low annual rainfall. The maximum thickness of freshwater lenses in the Lucayan Limestone is 16 m. However, extraction rates must be kept low, as specific capacities are small compared to other Bahamian islands, such as Eleuthera. Only very small to meager quantities of freshwater are available from the limestone aquifers on Exuma. The Holocene sand aquifers provide additional ground water resources, specifically near Ocean Bright. The lenses can also yield very small to meager quantities. Although the water table is underlain by limestone or sand aquifers are also unsuitable for ground water development and comprise 57% of the

total island area. Chemical or biological contamination of the aquifers has not been reported for the Exumas.

Great Inagua Island

Similar to other Bahamian Islands, Great Inagua's surface water features can be classified as (a) hypersaline ponds and lagoons, (b) saline marsh or wetlands areas, (c) blue holes, (d) ephemeral ponds, and (e) man-made features. Hypersaline ponds and lagoons occupy a large portion of the island. In fact, Lake Rosa is the largest lake in The Bahamas and designated a Ramsar Wetland of International Importance.

The majority of central Great Inagua is dedicated parkland and is owned by the Bahamas National Trust; therefore, ground water investigations have been limited to the western portion of the island. Freshwater supplies in Great Inagua are poor due to an arid climate and low relief. The freshwater lenses have relatively small storage and salinity increases with depth. Very small quantities are available from a freshwater lens just north of Lake Rosa. This lens formed in the Lucayan limestone and is about 6 m thick.

Long Island

The island is relatively dry with an average rainfall of around 890 mm per year. Wetland areas are present on the northern tip and along the western-central coast of Long Island. These areas are likely saline due to their proximity to the ocean. There are two sizeable lakes on the southern tip of the island, which may also contain brackish to saline water.

Mayaguana Island

The island is relatively dry with an average rainfall of around 760 mm per year. Mayaguana boasts a variety of surface water bodies, which may be classified as flooded-topographic lows, lagoons, marsh or wetlands, and caverns. A small area of wetlands occurs along the southern, central coast, near Abrahams Bay. Ponds and lagoons can be found along the northern coast of the island. In most cases, these surface water features are saline to hypersaline.

A freshwater lens was discovered on western Mayaguana Island. The lens occurs in the Lucayan limestone aquifer and reaches a maximum thickness of 10.5 m. Moderate quantities of freshwater are available from this lens. Water levels are within one to two meters of the surface.

San Salvador Island

San Salvador receives more than 900 mm of rainfall annually. The island is composed of arc-shaped ridges with elevations over 30 m. These ridges led to the formation of a large number of lakes trapped between the curving ridges. Away from the ridges, there are extensive areas of less hilly rock land. The landlocked salt lakes and wetlands contain saline and brackish water and account for 40% of the total area of the island. Similar to the rest of the Bahamian islands, there are no streams on San Salvador Island.

Shallow wells extracting ground water from limestone lenses yield very small amounts of freshwater. These lenses are approximately 6 to 7.5 m thick and the water table is between 0 to 3 m of the surface.

4.2.1.6 Natural Hazards

Hurricanes and Tropical Storms

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

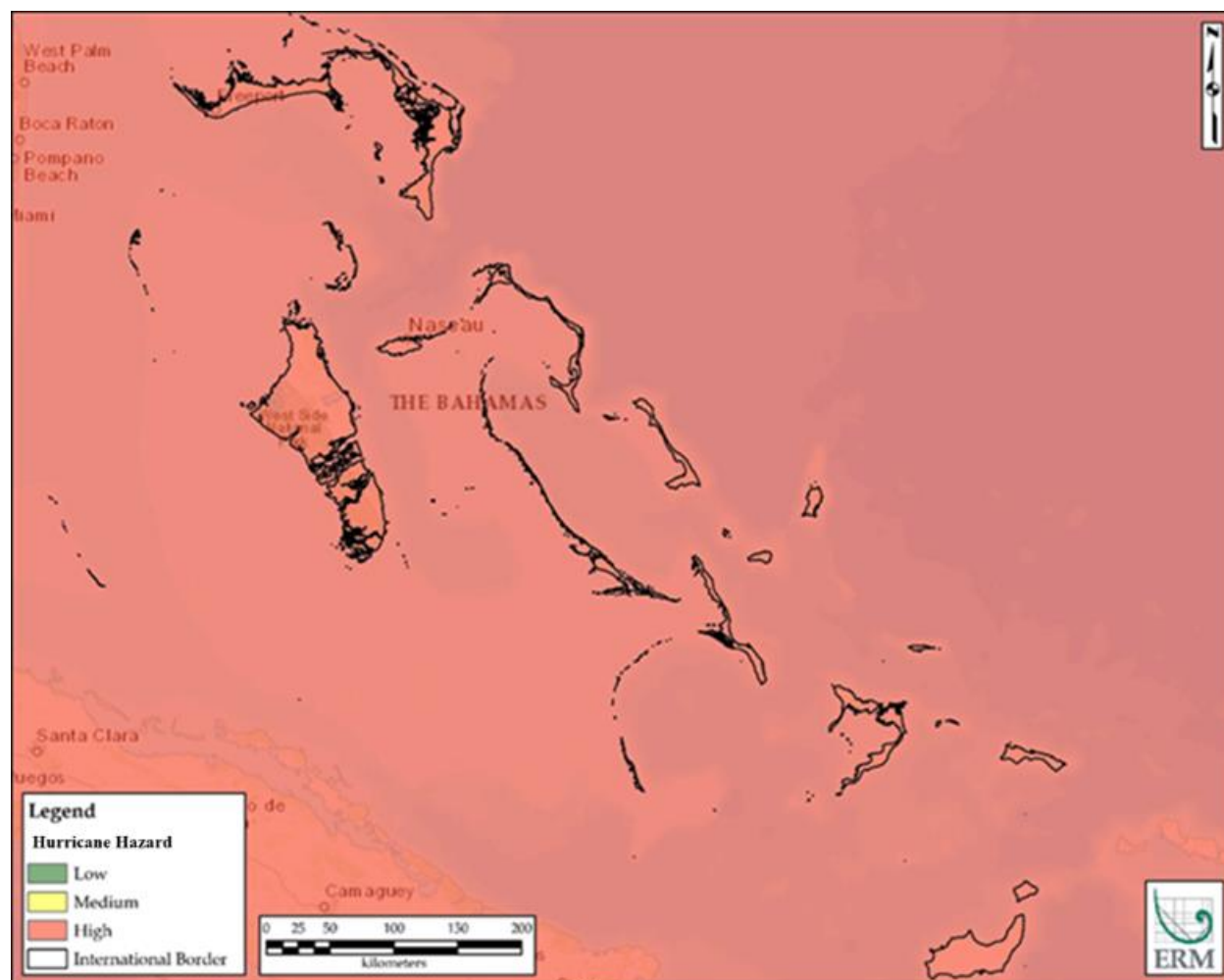
According to ThinkHazard.org, a web-based tool developed by the Global Facility for Disaster Relocation and Recovery (GFDRR) in partnership with the World Bank Group and other institutions, and with data contributed by numerous organizations around the world (ThinkHazard, 2021), The Bahamas hurricane hazard is classified as *High*. This means that there is more than a 20 percent chance of potentially damaging wind speeds for projects developed in this area in the next 10 years. Based on this information, the impact of hurricanes must be considered in all phases of a project, in particular during design and construction methods. Damages can also occur from hurricane-induced heavy rainfall and subsequent flooding as well as floods in coastal areas. Figure 4-10 depicts the hurricane hazard in The Bahamas.

Due to the destructive nature of these storms, landfall can result in significant damage to upland development and facilities and the environment from storm surges, waves, and wind. Thirty five tropical storms and hurricanes have passed within approximately 100 km of The Bahamas from 2000 through 2020 (see Figure 4-11), as reported by the National Oceanic and Atmospheric Administration (NOAA) Coastal Services Center.

The proposed Project is planning to construct five new care clinics facilities and to modify or improve an additional 13 facilities in The Bahamas (see Figure 3-1). For this reason, further detail regarding tropical storms and hurricanes in these islands is provided below. Table 4-2 presents a summary on the number of tropical storms and hurricanes recorded from 1871 to 2020 in the Abaco, Exuma, Andros, Eleuthera, Long Island, Inagua, Cat Island, San Salvador, and Bimini islands. No information was available for Mayaguana and Crooked islands.

According to these statistics, the Abaco Island is ranked as the island with the greatest probability of recurrence of being hit by a tropical storm or a hurricane (approximately every 1.75 years), and Inagua Island has the lowest probability of recurrence (approximately every 3.31 years). Note that even for Inagua Island; the probability of recurrence is relatively high. When comparing average time between direct hurricane hits, the statistics show that Abaco Island receives a direct hit approximately every 3.77 years, and Inagua Island experiences the most time between direct hurricane hits (approximately every 9.31 years). In fact, Abaco Island is considered the “Hurricane Capital of the Caribbean” based on the number of hurricanes between 1851 and 2010 (UNFCCC, 2014).

In the archipelago, the average wind speed of hurricanes when they hit the islands have historically ranged between 112 to 120 miles per hour (mph). These wind speeds, according to the Saffir-Simpson Hurricane Wind Scale, represent a Category 3 (major) hurricane. NOAA’s National Hurricane Center describes the type of damages that may be caused by a Category 3 hurricane winds, and it includes: well-built framed homes may incur major damage or removal of roof decking and gable ends; trees snapped or uprooted, blocking numerous roads; electricity and water unavailable for several days to weeks after the storm passes. Figure 4-10 shows hurricane hazard in The Bahamas.



Source: ERM, 2021. Adapted from UNDRR (United Nations Office for Disaster Risk Reduction). Accessed from: <https://risk.preventionweb.net/capviewer/>

Figure 4-10: Hurricane Hazard in The Bahamas

Table 4-2: Number of Tropical Storms and Hurricanes Recorded from 1871 to 2020 and Averaged Probability of Recurrence in Years

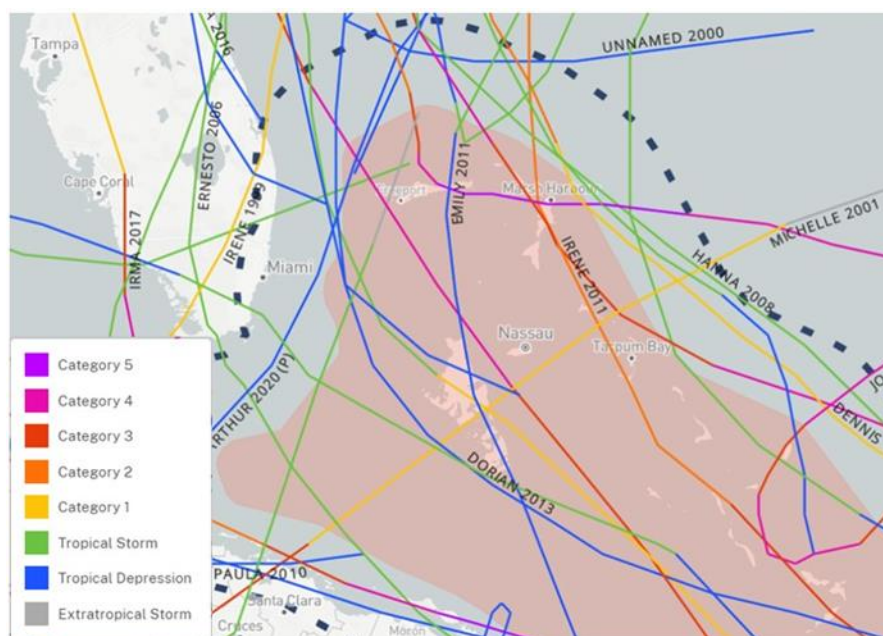
Islands	Total Number of Tropical Storms	Total Number of Hurricanes	Total	Average wind speeds of hurricane hits (mph)	Average time between direct hurricane hits (Years)	Average Probability of Recurrence* (Years)
Abaco	34	51	85	114	3.77	1.75
Exuma	23	38	61	116	8.28	2.44
Andros	36	45	81	122	4.66	1.84
Eleuthera	27	46	73	114	4.38	2.04
Long Island	30	38	68	109	5.73	2.19

Inagua	22	23	45	103	9.31	3.31
Cat Island	27	42	69	113	4.97	2.16
San Salvador	25	37	62	110	5.14	2.40
Bmini	27	44	71	113	4.52	2.10

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

Source: ERM, 2021, adapted from <http://www.hurricanecity.com/>

Both hurricanes and waves from the Atlantic Ocean, generally during high tide combined with storm surge, generate extreme wave conditions. Flooding and erosion typically occur during these wave conditions. The waves erode protective beaches and dunes and cause surge and flood damage to the adjacent lands, buildings, infrastructure, and groundwater resources. This is especially significant since eighty percent of The Bahamas land mass is only about 1.5 masl and more than 90% of the freshwater resources are within 1.5 m of the surface. Storm surges can cause coastal inundation of seawater, and heavy precipitation can cause localized flooding (US Army Corps of Engineers, 2004).



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

Key: TS = Tropical Storm; TD= Tropical Depression; ET= Severe Tropical Storm.

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

Figure 4-11: Hurricanes and Tropical Storms within 100 kilometers of The Bahamas (2000-2020)

Coastal Flooding

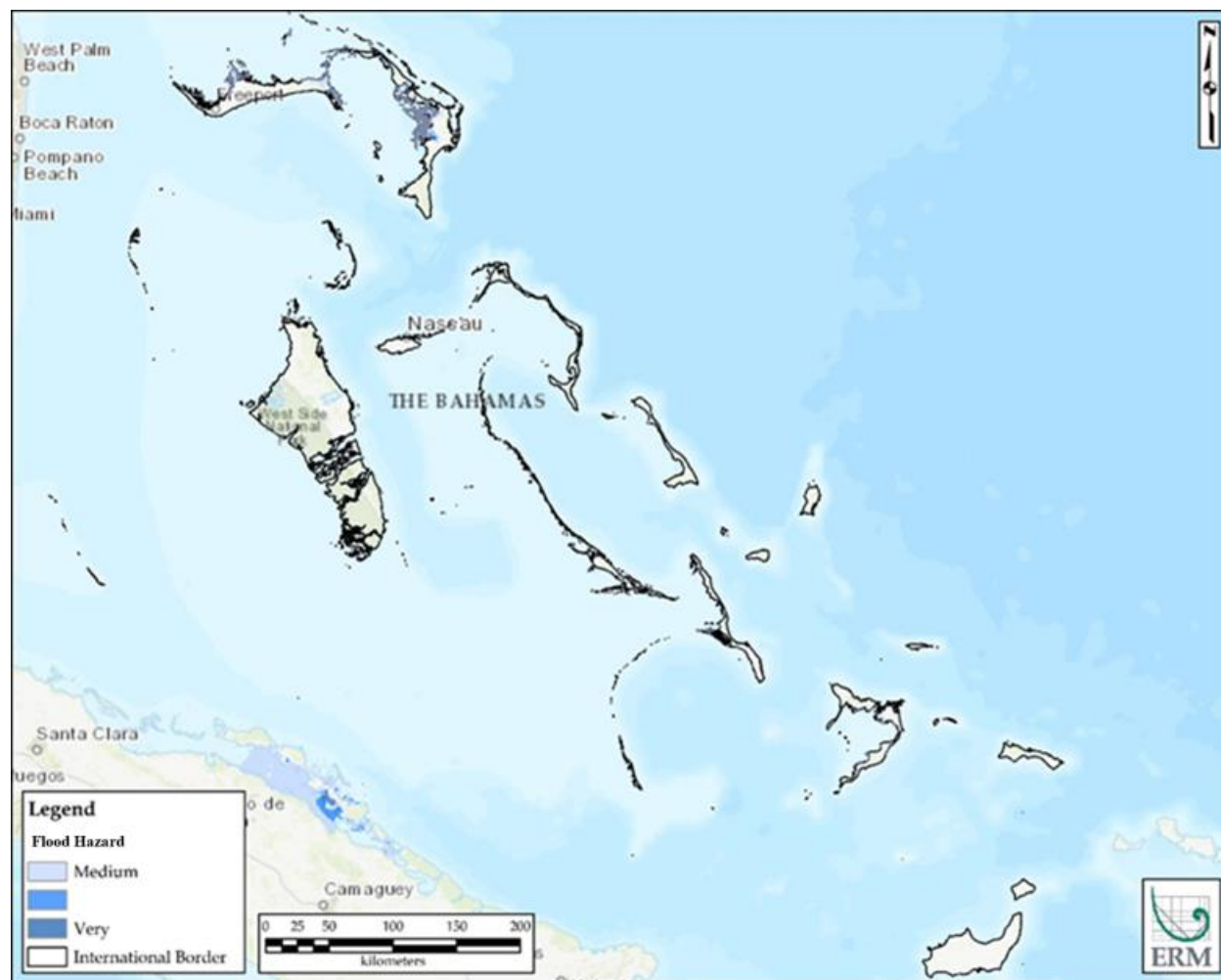
According to ThinkHazard.org, coastal flood hazard for The Bahamas is classified as *High*. Coastal flooding, together with tropical storms and hurricanes, are the most important natural hazards with disaster risk for the country. This level of hazard means that potentially damaging waves are expected to flood the coast at least once in the next 10 years. Based on this information, the impact of coastal flood

must be considered in different phases of a project for any activities located near the coast. Project planning decisions, project design, and construction methods must take into account the level of coastal flood hazard.

Floods become a national concern during summer, when heavy rain from thunderstorms are experienced. As described above, the natural disaster profile of the country consists of hurricanes and other tropical storms that cause extensive flood and wind damage. Waves from the Atlantic Ocean, combined with storm surge, generate extreme wave conditions. Flooding and erosion typically occur during these wave conditions. The waves erode protective beaches and dunes and cause surge and flood damage to the adjacent land, buildings, infrastructure, and groundwater resources. This is especially significant since eighty percent of The Bahamas land mass, and more than 90% of freshwater resources, are only about 1.5 m above mean sea level (US Army Corps of Engineers, 2004). Figure 4-12 shows that coastal flood hazard for The Bahamas.

Storm surges can cause coastal inundation of seawater, and heavy precipitation can cause localized flooding. Coastal flooding can cause contamination of the soil and groundwater with seawater, sewage, petroleum products, pesticides, among other potential pollutants. In addition, flooding may cause infiltration into the wastewater system. According to experts, flooding from heavy precipitation is a more common problem than storm surges (US Army Corps of Engineers, 2004).

To illustrate the problem, the US Corps of Engineers' Water Resource Assessment Report includes a storm in North Eleuthera as an example. This storm caused about 200 mm of rainfall in just over a few hours in the Harbor Island area, and reports of as much as 500 mm in the Spanish Wells area in St. George Cay Island (approximately 500 m off the northern tip of Eleuthera Island). This rainfall soon saturated the land and floodwater filled every topographic low. The main road in North Eleuthera had about 2.4 m of standing water. The floodwater took about 2 weeks to recede.



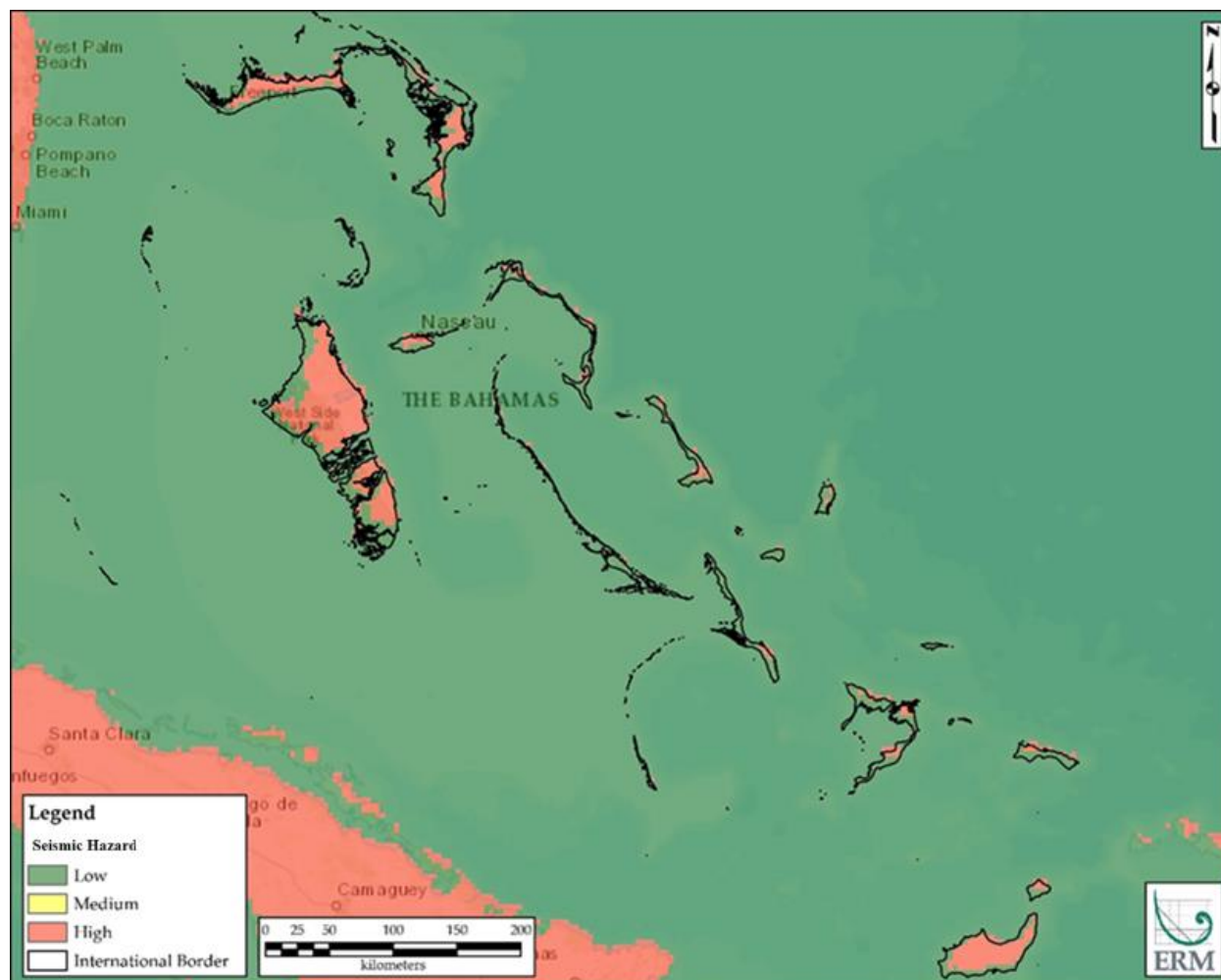
Source: ERM, 2021. Adapted from Muis, S., Verlaan, M., Winsemius, H.C., Aerts, J.C.J.H., Ward, P.J., 2016. A global reanalysis of storm surge and extreme sea levels. Nat. Commun. 7, 1–11. doi:10.1038/ncomms11969
Accessed from: https://www.geonode-gfdrrlab.org/layers/hazard:ss_muis_rp0050m/metadata_detail

Figure 4-12: Flood Hazard in The Bahamas

Earthquakes

According to ThinkHazard.org, earthquake's hazard for The Bahamas is classified as *Very Low*. This means that there is less than a 2% chance of potentially damaging earthquake shaking in the next 50 years.

According to the website earthquaketrack.com, there was one earthquake felt in The Bahamas in 2020, the largest one being 3.8 Moment Magnitude (Mw). None of these seismic events originated in The Bahamas, but in other areas of the Caribbean such as Cuba and Puerto. However, even though seismic activity may not often originate in The Bahamas itself, earthquake or seismic hazard is considered *very low* in several of the islands (Figure 4-13).



Source: ERM, 2021. Adapted from ERN and Ingeniar Ltda. Accessed from:
<https://ern.com.mx/web/pdf/english/projects/models/ERN%20Earthquake%20model%20apr2016.pdf>

Figure 4-13: Seismic Hazard in The Bahamas

4.2.2 Biological Resources

Vegetation In the Bahama Islands, over 50 varieties of trees have been recorded, including such exotic species as the African tulip, the casuarina, the cork tree, several varieties of palm trees, and about 40 varieties of fruit trees. In addition, large varieties of shrubs, climbers, vines, vegetables, and herbs are found. The vegetation in the Bahamas is chiefly mesic broadleaf woodlands, pine forests, and scrublands in the north, and primarily scrublands and xeric woodlands in the south. Generally, the smallest islands or cays are sparsely vegetated with grasses, low bushes, cacti, and vines, along rocky and sandy substrate; however, some are primarily covered with mangroves. Mangrove swamps are common throughout, generally occupy the edges of tidal creeks and lagoons on leeward shores (Buden, 1986). Table 4-3 provides a simplified summary of the major vegetation types found in the islands.

In addition, The Bahamas has considerable natural forest resources, comprising pine forests, coppice hardwoods and mangrove forests, with approximately 80% of forest resources on state lands and the remaining 20% on private lands. Pine forest is considered the most productive of the three vegetation types, and is a protected species (Caribbean Pine). Coppice forests are found in southern islands, with the mangrove ecosystems predominating on the leeward shores of most islands. Forest resources offer

opportunities for biodiversity conservation, ecotourism, soil and water conservation, microclimate regulation and climate change, agro-forestry development and environmental enhancement (Ministry of the Environment and Housing, 2020).

Although the flora of The Bahamas contains very few endemic species, upland and wetland plant diversity is a critical issue for all islands. The introduction of invasive alien plant species as well as the alterations of island hydrology has dramatically reduced plant diversity throughout The Bahamas.

Table 4-3 Major Vegetation Types and Description Found in The Bahamas

Vegetation Types	Description
Coppice	Coppice, (Broad-leaved Evergreen Communities) in The Bahamas, are areas that contain the highest plant diversity of any natural community. Coppices are usually found well back from the shoreline, behind coastal dune and/or coastal shrubland communities. These areas contain a mixed humic soil-leaf-litter layer. The substrate in these areas primarily consists of sandy substrate, but Broad-leaved Evergreen Communities often may have a rocky limestone substrate with scattered solution holes.
Pine Forest	The Caribbean Pine (<i>Pinus caribaea</i> var. <i>bahamensis</i>) also known as Yellow Pine, is protected in the Bahamas. Other flora which can be found in the Bahamian Pine forest are <i>Bletia purpurea</i> , Pineland Pink Orchid, <i>Andropogon glomeratus</i> , also known as Bushy Beard Grass, and <i>Pteridium aquilinum</i> , Southern Bracken Fern. Shrubs which populate the area are Wild guava (<i>Tetrazygia bicolor</i>), Five-finger or Chicken's foot (<i>Tabebuia bahamense</i>), and Snowberry (<i>Chiococca the alba</i>). The Scale leafed love vine (<i>Cassytha filiformis</i>) winds its way through understory and around Poisonwood (<i>Metopium toxiferum</i>). The Sabal palmetto (<i>Coccothrinax argentea</i>) may dominate ground flora in certain pine forest areas.
Coastal Mangroves	<p>Mangroves are characteristics of low- energy, soft-sediment coastal environments. Coastal mangroves vary in their specific structural and functional characteristics. All mangroves are generally found in areas sheltered from high- energy waves. Coastal mangrove areas can be divided into three subclasses based upon their hydrology and geomorphology:</p> <ul style="list-style-type: none"> ■ Overwash and Creek Systems: Water flow and nutrient input is high and interstitial salinities are variable with evaporation and rainfall, which mean that these areas have the highest degree of structural development. ■ Fringe: Fringe mangroves occur along the seaward edges of protected shorelines or around overwash islands Fringe areas are characterized by salinity levels similar to seawater and lower nutrient input shorelines or around overwash islands Fringe areas are characterized by salinity levels.
Interior mangroves/ Shrub thicket wetlands	Isolated and inland Basin mangrove wetlands develop over inland basins influenced by seawater and occupy the highest levels subject to tidal intrusion. Tidal flushing is less frequent than in fringes or overwash creek systems, and is sometimes limited to the highest tides of the year or during storms. Interior mangroves are a type of

Casuarina Forest/Human altered landscape	Dominated by invasive Australian pines trees forming a dense forest. These areas represent a loss of habitat for native plants and animals. Two of the four most invasive and problematic plants species in The Bahamas are Casuarina (<i>Casuarina equisetifolia</i>) and Hawaiian Seagrape or Half-flower (<i>Scaveola sericea</i>).
Coastal Strand	Coastal Strand Communities consist of vegetation on sandy or rocky substrate with direct exposure to coastal wind and wave energies. These communities include the pioneer zone, foredune, backdune, and associated coastal wetlands and interdunal communities.
Grassy ephemeral wetlands	Wetlands include areas of saline or saturated soils, and are dominated by salt-tolerant grasses and herbs.
Agriculture	Areas of agriculture have been developed for crops such as citrus, root vegetables, and bananas (FAO), minimal in extent.

Source: ERM, 2021. Adapted from Passerine at Abaco Resort Community Development Final EIA. n.d.

The Caribbean Pine occurs on five islands in The Bahamas: Grand Bahama, Abaco, Andros, and New Providence islands. Pine forests were logged commercially on all of these islands between 1905 and 1967. Development on the uplands of these five islands requires the removal of pine trees.

4.2.2.0 Natural and Modified Habitat

This ESA considers both the construction, operations, and abandonment/closure phases of the Projects, and focuses mainly on the relevant biological within the direct footprint of the projects, namely the primary health care clinics sites.

Of the 18 primary health clinic sites proposed for upgrades and enhancements or construction of new infrastructure, the majority of these occur within already urbanized or semi developed area (see Table 4-4). Vegetation surrounding the proposed health clinic sites include coastal shrub vegetation, dune vegetation, urban development, modified landscaped grasses, and low to high density forest. Of the five new green field sites for the health clinics, only two of these will be directly impacting natural habitat of coastal shrub land and forest. The other locations for renovations or new facilities occur within areas where infrastructure already exists or the area has previously been modified by development (see Table 4-4).

Table 4-4. Natural and Modified Vegetation Type at each Proposed Clinic Development

Island	Clinic	Building Size (ft ²)	Building Extension proposed (ft ²)	Scope of Works	Habitat Type with in Area of Direct Impacts	Vegetation Type
Exuma	Exuma Primary Health Care Centre	33,000	N/A	Existing Infrastructure renovations.	Modified	Existing infrastructure surrounded by modified urban vegetation of grasses and shrubs
	Staniel Cay	Nil	N/A	New clinic to be constructed	Modified	Developed areas

						surrounded by natural coastal shrub
	Black Point	Nil	N/A	New clinic to be constructed	Natural	Coastal Shrubland
Abaco	Abaco Primary Health Centre	33,000	N/A	Existing Infrastructure renovations	Modified	Existing infrastructure surrounded by modified urban vegetation
	Coopers Town Community Clinic	8,000	N/A	Existing Infrastructure renovations	Modified	Existing infrastructure surrounded by modified grasses and coastal shrub community
Andros	Mariam Green Community Clinic	8,000	N/A	Existing Infrastructure renovations	Modified	Existing infrastructure surrounded by low level urban development ,modified grasses, and natural forest and coastal shrub community
	Mangrove Cay Clinic	3,000	N/A	New clinic to be constructed	Natural	Natural forest
	Nicholl's Town Community Clinic	8,000	N/A	Existing Infrastructure renovations	Modified	Existing infrastructure surrounded by modified planted grasses and natural types of shrub and forest
	Fresh Creek Clinic	8,000	N/A	Existing Infrastructure renovations	Modified	Existing infrastructure surrounded by modified planted grasses and shrub and natural forest
Eleuthera	Harbour Island Clinic	8,000	2,000	Existing Infrastructure renovations and new additions	Modified	Existing infrastructure surrounded by modified urban vegetation of grasses and few trees
	Rock Sound Clinic	8,000	N/A	New clinic to be constructed	Modified	Modified urban development surrounded by low density natural forest

Long Island	Deadman's Cay Community Health Centre	7,000	N/A	Existing Infrastructure renovations	Modified	Existing infrastructure, surrounded by planted grasses, and natural dense forest
Inagua	Inagua Community Clinic	8,000	N/A	Existing Infrastructure renovations.	Modified	Existing infrastructure, surrounded by natural coastal dune and shrub with some degree of modification
Mayaguana	Abraham's Bay Clinic	8,000	N/A	Existing Infrastructure renovations	Modified	Existing infrastructure surrounded by natural shrub community vegetation
Crooked Island	Landrail Point Clinic	5,000	N/A	Existing Infrastructure renovations	Modified	Existing infrastructure, surrounded by modified grasses, shrub community and few trees
Cat Island	Smith's Bay Clinic		N/A	New clinic to be constructed	Modified	Existing infrastructure, surrounded by natural coastal dune and shrub communities
San Salvador	Cockburn Town Community Clinic	20,000	N/A	Existing Infrastructure renovations	Modified	Existing infrastructure, surrounding by natural coastal dune communities
Bimini	Bimini Community Clinic	8,000	2,000	Existing Infrastructure renovations and new additions	Modified	Existing infrastructure, surrounding by urban development

4.2.2.1 Fauna

The Bahamas islands have limited large open spaces; therefore, the islands are unable to support animals of great size on land. However, the fauna remains diverse and unique in land and sea.

Terrestrial Herpetofauna

The native herpetofauna of The Bahamas consist of 46 species comprised of three frogs (including one endemic, *Eleutherodactylus rogersi*), 25 lizards (13 endemic), 11 snakes (7 endemic), two freshwater turtles, and five sea turtles (Knapp et al., 2011). Non-native herpetofauna species of The Bahamas include 22 species (5 frogs, 7 lizards, 5 snakes, 4 turtles, and 1 crocodilian), of which 16 are established and breeding. Major threats to the herpetofauna include development, over-exploitation of wildlife, lack of law enforcement, hurricanes, introduced species, and disturbance by tourism. Currently, there are few legislative laws directly protecting the herpetofauna of The Bahamas although all three rock iguanas (*Cyclura*) are technically given full protection under the Wild Animals (Protection) Act of 1968.

Terrestrial Mammals

Excluding extinct species and domesticated species, 16 species of mammals occur in the Bahamas. Of these, four are introduced species (*Procyon lotor*, *Rattus rattus*, *R. norvegicus*, *Mus musculus*). Among the 12 indigenous species of mammals that likely breed in the Bahamas, one rodent species, the Bahamian hutia (*Geocapromys ingrahami*), and three subspecies of bats (*Natalus micropus tumidifrons*, *Eptesicus fuscus bahamensis*, *Tadarida brasiliensis bahamensis*) are endemic (Burden, 1986; see Table 4-5). The majority of mammalian species that occur on The Bahamas are bats, which account for 10 species. As these islands become increasingly developed, human disturbance of bat roosting and foraging habitat poses a threat to terrestrial mammal diversity (Speer et al., 2015).

Table 4-5. Endemic Mammals of The Bahamas

Scientific Name	Common Name	Endemic	IUCN Category
<i>Geocapromys ingrahami</i>	Bahaman Hutia	Yes	VU
<i>Natalus micropus</i>	Cuban Lesser Funnel-eared Bat	Yes	VU
<i>Eptesicus fuscus</i>	Big Brown Bat	Yes	LC
<i>Tadarida brasiliensis</i>	Mexican Free-tailed bat	Yes	LC

Note: Data sourced from Burden, 1986; International Union for Conservation of Nature (IUCN) 2021 categories include VU= vulnerable, LC = least concern.

Birds

According to Bird Life International (2021), about 263 birds occur on The Bahamas, which include 218 migratory birds, and 8 breeding endemics. Nine species are listed as globally threatened, as Critically Endangered, Endangered or Vulnerable (IUCN, 2021; see Table 4-6). Other interesting birds include the great blue heron, barn owl, peregrine falcon and Bahama duck. Within the Bahamas, avian species richness increases with island size and dominance of pines, as several species are specialists of pine forests, such as the Brown-headed Nuthatch (*Sitta pusilla*), the Bahama Swallow (*Tachycineta cyaneoviridis*) and the Pine and Olive-capped warblers (*Dendroica pityophila*; Murphy et al., 2004).

Table 4-6. Threatened and Endemic Birds of The Bahamas

Scientific Name	Common Name	Endemic	IUCN Category
<i>Sitta insularis</i>	Bahama Nuthatch	Yes	CR
<i>Icterus northropi</i>	Bahama Oriole	Yes	CR
<i>Pterodroma caribbaea</i>	Jamaican Petrel	No	CR
<i>Tyrannus cubensis</i>	Giant Kingbird	No	EN
<i>Tachycineta cyaneoviridis</i>	Bahama Swallow	Yes	EN
<i>Setophaga flavescens</i>	Bahama Warbler	Yes	EN
<i>Chaetura pelagica</i>	Chimney Swift	No	VU
<i>Hydrobates leucorhous</i>	Leach's Storm-Petrel	No	VU
<i>Rissa tridactyla</i>	Black-legged Kittiwake	No	VU
<i>Coccyzus bahamensis</i>	Bahama Lizard-cuckoo	Yes	NT
<i>Nesophlox lyrura</i>	Lyre-tailed Hummingbird	Yes	LC
<i>Turdus plumbeus</i>	Northern Red-legged Thrush	Yes	LC
<i>Geothlypis rostrata</i>	Bahama Yellowthroat	Yes	LC

Source: BirdLife International, 2021; Note: International Union for Conservation of Nature (IUCN) 2021 categories include CR= Critically Endangered, EN = Endangered, VU= vulnerable, NT = Near Threatened, and LC = least concern.

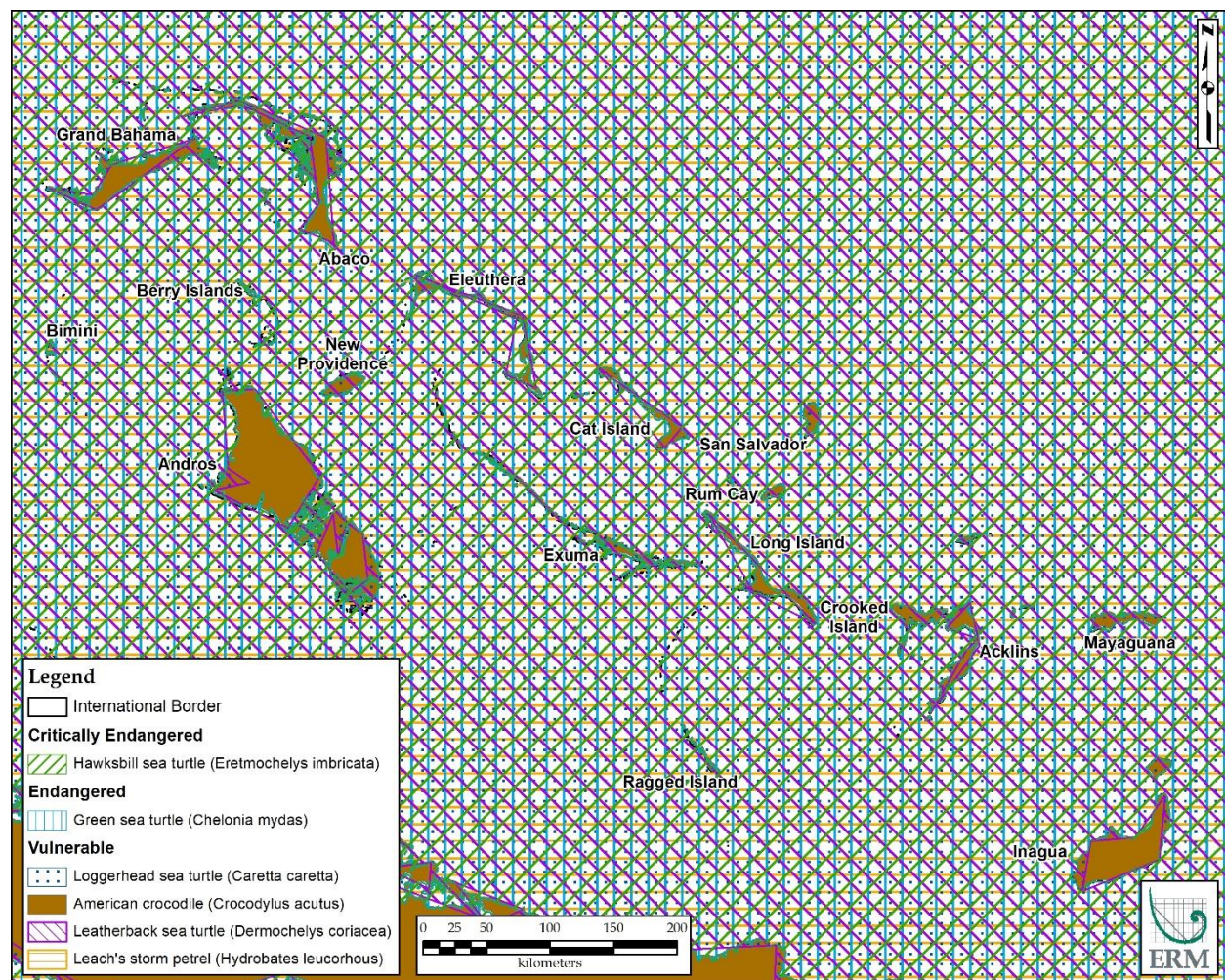
Marine fauna

The waters surrounding The Bahamas offer a rich and diversified marine life. There are some 2,330 km² of reefs, including the third-longest barrier reef in the world off the east coast of Andros. The reefs are populated with eels, clownfish, angelfish, barracudas, Nassau grouper, nurse sharks and porcupine fish. Other marine life in The Bahamas waters are sponges, conch, lobster, hogfish, snapper, bonefish and many other fish. Several marine mammals species observed along the coast line include humpback whales (*Megaptera novaeangliae*), blue whales (*Balaenoptera musculus*, IUCN Endangered; The Natura in The Bahamas: Animals in Land and Sea, 2019), Atlantic spotted dolphins (*Stenella frontalis*, Melillo et al 2009), bottlenose dolphins (*Tursiops truncatus*; Melillo et al., 2009), and Cuvier's beaked whale (*Ziphius cavirostris*, Caldwell and Caldwell, 1971; Weilgart, 2007). The Bahamas support at least two species of sea turtles of which include the Green Turtle (*Chelona mydas*, Bjorndal et al., 2003) and the Hawksbill (*Eretmochelys imbricata*, IUCN CR; Bjorndal and Bolten, 2010). Sea turtles were protected from exploitation with the legal boundaries of the Bahamas National Park System; however, in 2009, the

Bahamian Ministry of Agriculture and Marine Resources amended the Fisheries Regulations to give full protection to all sea turtles found within its waters (Knapp et al., 2011).

4.2.2.2 Special Status Species

Special status species are species that are either endemic to specific area, new to science or species that are recognized by the scientific community as being in need of conservation. In accordance with international best practice, this ESA considers species listed by the International Union for Conservation of Nature (IUCN) as Vulnerable, Endangered, or Critically Endangered (or VEC) as being in need of conservation. The Integrated Biodiversity Assessment Tool (iBat) assessed The Bahamas for three taxonomic groups including vertebrates, invertebrates, and plants. 1,583 vertebrate, 182 invertebrate, and 109 plant species were assessed (Birdlife International, 2019). Most of the assessed species were found as near threatened, least concern, and/or data deficient. The remaining species were ranked as threatened species (critically endangered, endangered, and vulnerable) including, 71 vertebrates (birds, fish, mammals, and reptiles); 12 invertebrates (arachnids, crustaceans, and mollusks); and seven plants (flowering plants and gymnosperms). Therefore, The Bahamas has 90 threatened species. Figure 4-14 shows IUCN species distribution in The Bahamas.



Source: ERM, 2021.

Figure 4-14: IUCN Listed Species for The Bahamas

4.2.2.3 Protected Areas

The territorial area of The Bahamas archipelago spans over 258,998 km² (BREEF, 2014) within the Atlantic Ocean that exhibits a variety of terrestrial and marine landscapes, including pine forests, mangroves, corals, and tidal environments that offers many natural resources for direct use, ecosystem services, and economic benefits. There are 122 Protected Areas within the territorial area of The Bahamas with an area of over 5.6 million hectares. A protected area, as defined by the IUCN, is “an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means” (Bahamas Protected Areas Fund, 2017).

These protected areas fall under the legislation of the 2014 Bahamas Protected Area Fund (BPAF) Act, which defines the system of projected areas in The Bahamas and requires the Board of the Fund to establish and maintain a register called the Register of Protected Areas (Bahamas Protected Areas Fund, 2017). The system includes forest reserves, protected forests, conservation forests pursuant to an Order made under the 2014 Forestry Act, and areas declared under the 2006 Fisheries Resources (Jurisdiction and Conservation). The protected areas are managed by The Bahamas Natural Trust, Clifton Park Authority, Department of Marine Resources, Forestry Unit and the Ministry of Environment and Housing. The Bahamas protected areas' types are summarized in Table 4-7. Figure 4-15 illustrates the locations of The Bahamas's protected areas.

Detailed maps of The Bahamas conservation forests, forest reserves, protected forests, and national parks and marine protected areas developed by the Ministry of the Environment and Housing Forestry Unit are provided in Figures 4-15 and 4-16, respectively.

Table 4-7 Types of Protected Areas in The Bahamas

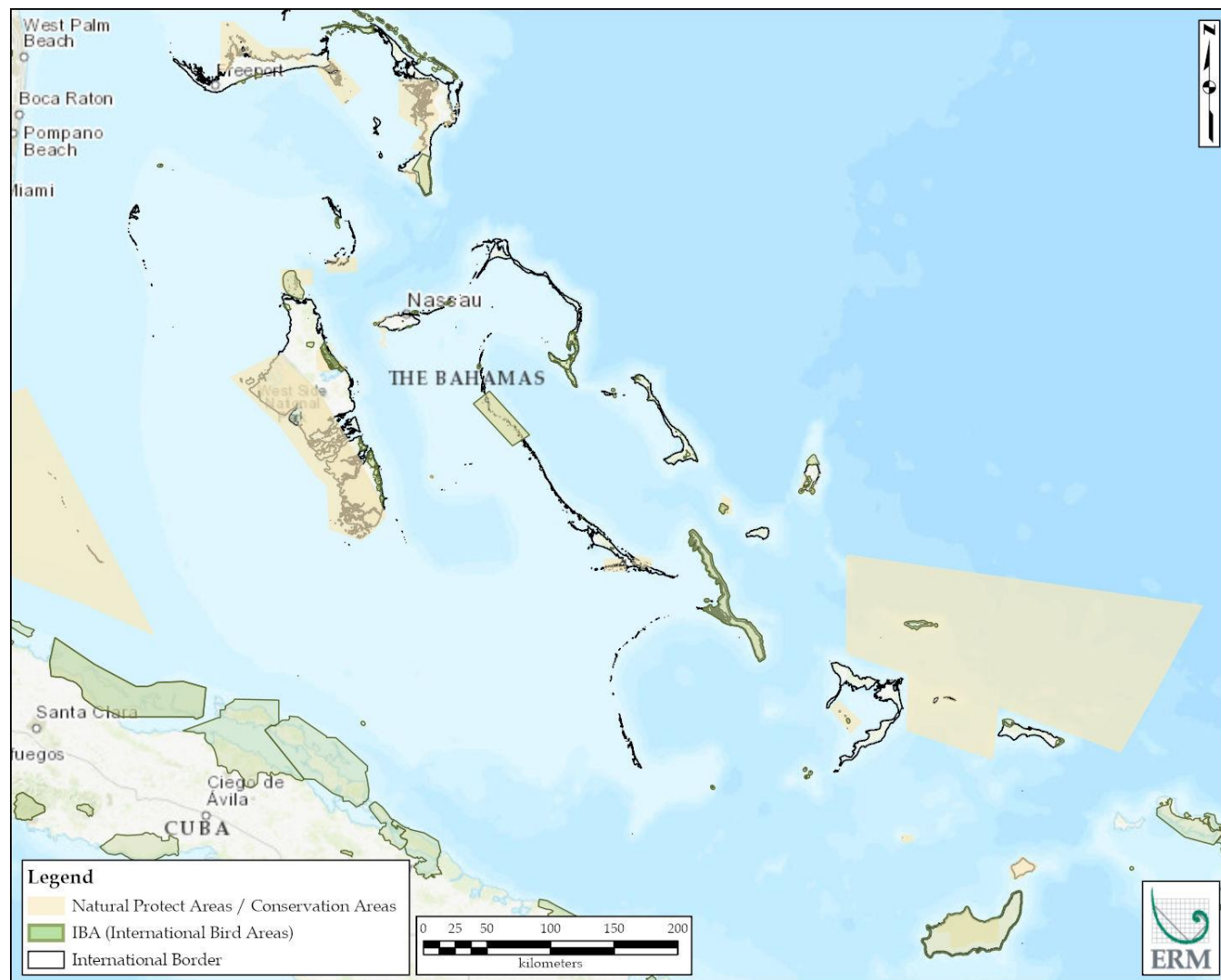
Protected Area	Approximate Size (hectare)
Conservation Forest (12)	142,973
Forest Reserve (9)	80,320
Heritage (1)	84
Marine (includes Reserve) (27)	4,518,575
Marine and Terrestrial (14)	734,145
Protected Forests (5)	31,782
Terrestrial (includes with Freshwater, RAMSAR, Plant Preserve) (12)	116,137
Wild Bird Reserve ^a (42)	1,771
Total	5,625,787

Source: ERM, 2021.

^a There are 42 Wild Bird Reserves, however not all their respective areas were available.

None of the 18 proposed primary health clinics occurs within a nationally designated protected area. The closest protected area to the proposed sites is the Andros Southern Marine National Park (IUCN category

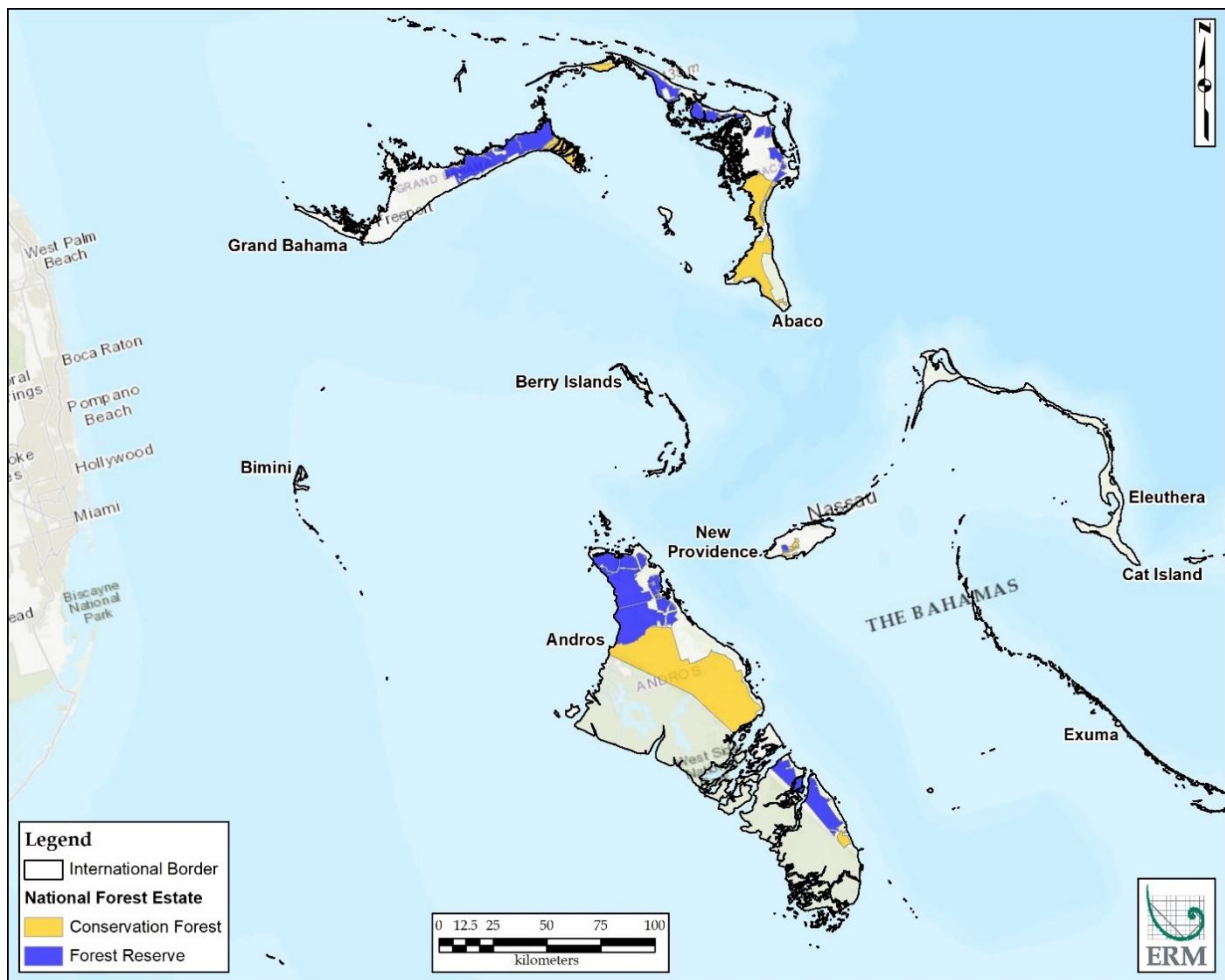
II⁴), sitting off the east coast of Andros Island and about 914 m east of the Fresh Creek Community Clinic (Figure 4-17).



Source: ERM, 2021.

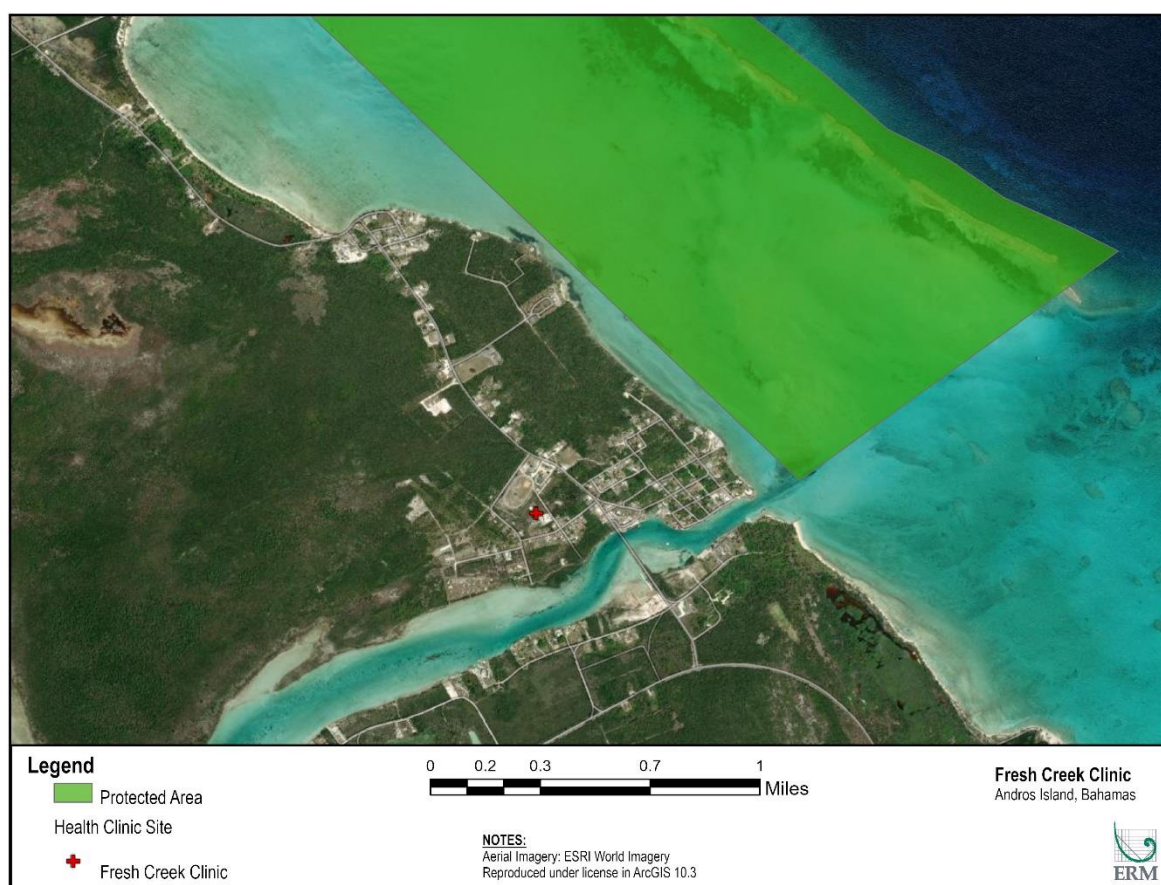
Figure 4-15: Protected Areas in The Bahamas

⁴ IUCN protected area management categories classify protected areas according to their management objectives and recognised internationally as the global standard for defining and recording protected areas. Category II: National Park: Large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities. <https://www.iucn.org/theme/protected-areas/about/protected-area-categories>



Source: ERM, 2021.

Figure 4-16: Forest Reserves in The Bahamas



Source: ERM, 2021.

Figure 4-17. Proximity of Fresh Creek Health Clinic to Andros Southern Marine National Park

4.2.2.4 Internationally Recognized Areas of High Conservation Value

Important Bird and Biodiversity Areas (IBAs)

Within the terrestrial and marine waters of The Bahamas, there are 42 Important Bird and Biodiversity Areas (IBAs) spanning 488,335 ha in total (Birdlife International, 2021). These IBAs support 23 globally threatened species, 14 restricted range species, and 23 congregatory species. Additionally, The Bahamas and Turks and Caicos Islands comprise an Endemic Bird Area (EBA) covering 14,000 km² and 13 islands and hundreds of smaller islets and cays.

Of the 18 proposed health clinic sites, three sites sit within a designated IBA, and three sit adjacent to an IBA.

Table 4-8. Proposed Sites within or Adjacent to IBAs

Clinic	Scope of Works	IBA	Area of IBA (ha)	Location	Species and Habitats of Concern
Mangrove Cay Clinic	New	Mangrove Cay	2,228	Within	Mangrove Cay supports mixed habitat of pine forest, broad-leaf coppice,

Clinic	Scope of Works	IBA	Area of IBA (ha)	Location	Species and Habitats of Concern
					inland wetland, coastal wetland and coastline, which provides a rich variety of birdlife. This includes all three endemics of The Bahamas e.g. Bahama Yellowthroat, Bahama Woodstar and Bahama Swallow.
Rock Sound Clinic	New	South Tarpum Bay	17,505	Adjacent	This IBA supports natural mixed coppice habitat for resident and migrant passerines including the near threatend Kirtland's Warbler (<i>Setophaga kirtlandii</i>), and two Bahamas endemics, Bahama Woodstar and Bahama Yellowthroat
Deadman;s Cay Community Helath Centre	Existing	Long Island and Hog Cay IBA	81,011 (entirety of the island)	Within	The IBA has largest flocks of the endangered West Indian Whistling Ducks in the world, estimated to be approximately 450 birds.
Mariam Green Community Clinic	Existing	Driggs Hills to Mars Bay	10,059 (eastern coastline of South Andros Island)	Adjacent	This IBA supports resident landbirds including the Bahama Yellowthroat, Bahama Oriole White-crowned Pidgeon, as well as shorebirds, waterbirds and migrant warblers.
Fresh Creek Community Clinic	Existing	Stanford Creek to Andros Town	8,196	Adjacent (200 m south)	This site is especially important for Bahama bird endemics, such as the Bahama Woodstar, Bahama Yellowthroat and Bahama Swallow, and serves and migrating warblers and shorebirds.
Inagua Community Clinic	Existing	Great Inagua	178,139 (entirety of the island)	Within	The IBA supports habitat of brackish marshes, dense mangrove swamps and open shrub. It has the largest known concentration of Greater Flamingo in The Bahamas estimated to be in excess of 50,000 birds. The IBA supports a wide variety of shorebirds, herons, egrets and waterfowl, and many species of land birds, resident and migratory birds, in addition to the endemic Inagua Freshwater Turtle (<i>Chrysemys malonei</i>).

Source: BirdLife International, 2021.
IBT = Important Bird and Biodiversity Areas.
ha = hectare.

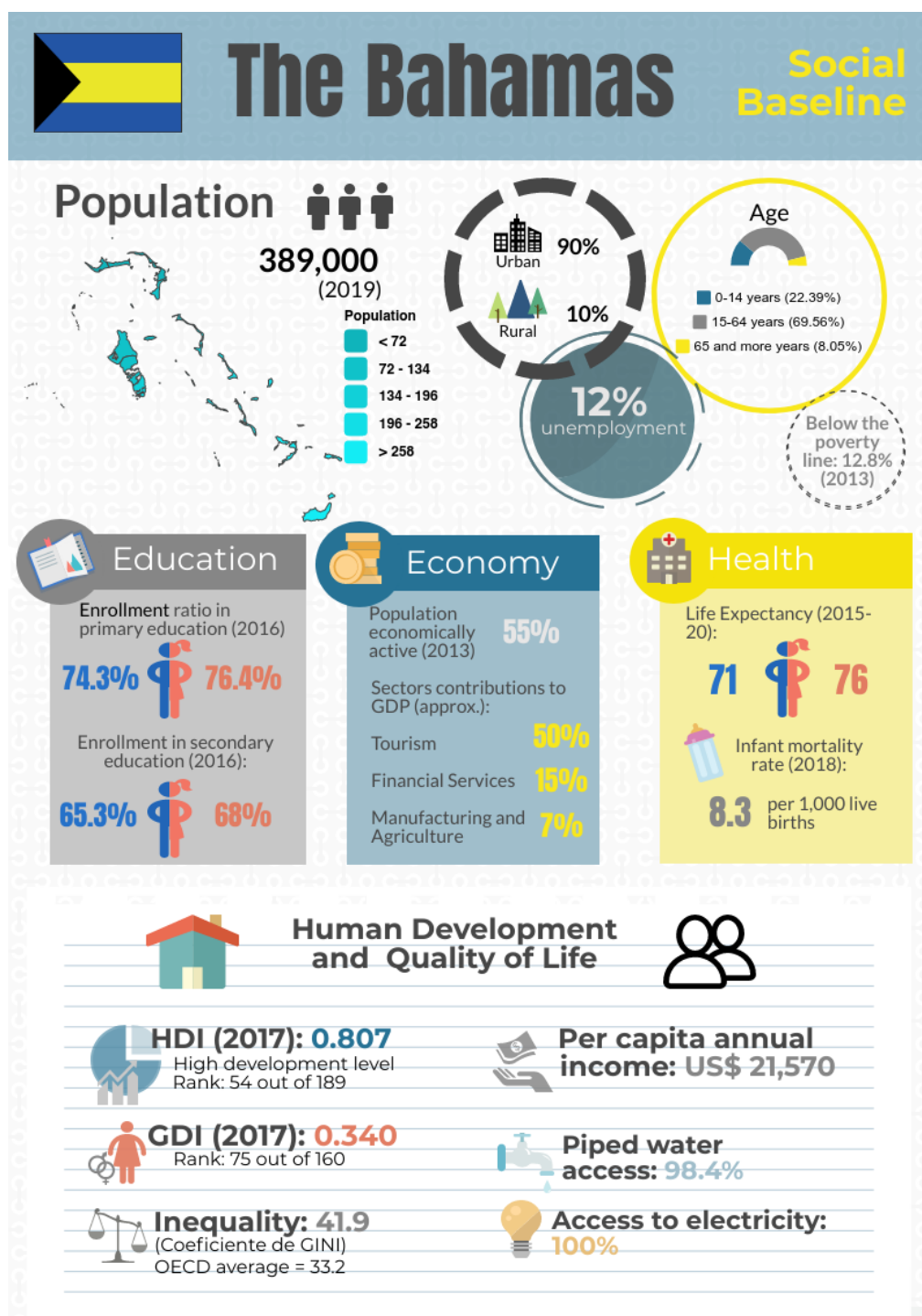
Alliance for Zero Extinction and Ramsar Sites

The only Alliance for Zero Extinction (AZE)⁵ site to occur within The Bahamas is the Conception Island National Park, located approximately 40 km west-southwest of San Salvador. None of the 18 proposed health clinics is within or near this AZE.

The Bahamas currently has one site, Inagua National Park, designated as Wetlands of International Importance (Ramsar Site) with a surface area of 32,600 ha. The Ramsar site occurs on Great Inagua Island, made up of a permanent lake with scatter islands, a saline lagoon, extensive saltmarshes, dense mangroves, and permanent, brackish marsh. The site serves as an important area for breeding, passage and wintering for numerous species of waterbirds and particularly important for its breeding colony of over 40,000 Caribbean flamingos (*Phoenicopterus ruber ruber*). None of the 18 proposed health clinics is within or adjacent to this Ramsar site.

⁵ Alliance for Zero Extinction (AZE) sites were established to identify, effectively conserve and safeguard the most important sites for preventing global species extinctions. The protection of AZE sites is a recognized indicator for the Convention on Biological Diversity's Aichi Targets, particularly for Aichi Targets 11 and 12. <https://zeroextinction.org/>

4.3 Social Baseline



Source: ERM with data from PAHO; the World Bank Data; CIA World Fact book; CEPALSTAT.

Figure 4-18: Social Baseline Infographic with 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 Her Majesty Queen Elizabeth II. The country is governed by a bicameral Parliament consisting of a Senate of 14 appointed members and a House of Assembly of 38 members popularly elected every five years.

The social baseline Infographic with key facts of The Bahamas is summarized in Figure 4-18. There are 32 local government districts, which are further sub-divided into town areas; these are responsible for all local government functions, except in New Providence, where Nassau capital is located, and whose affairs are handled directly by the central Government.

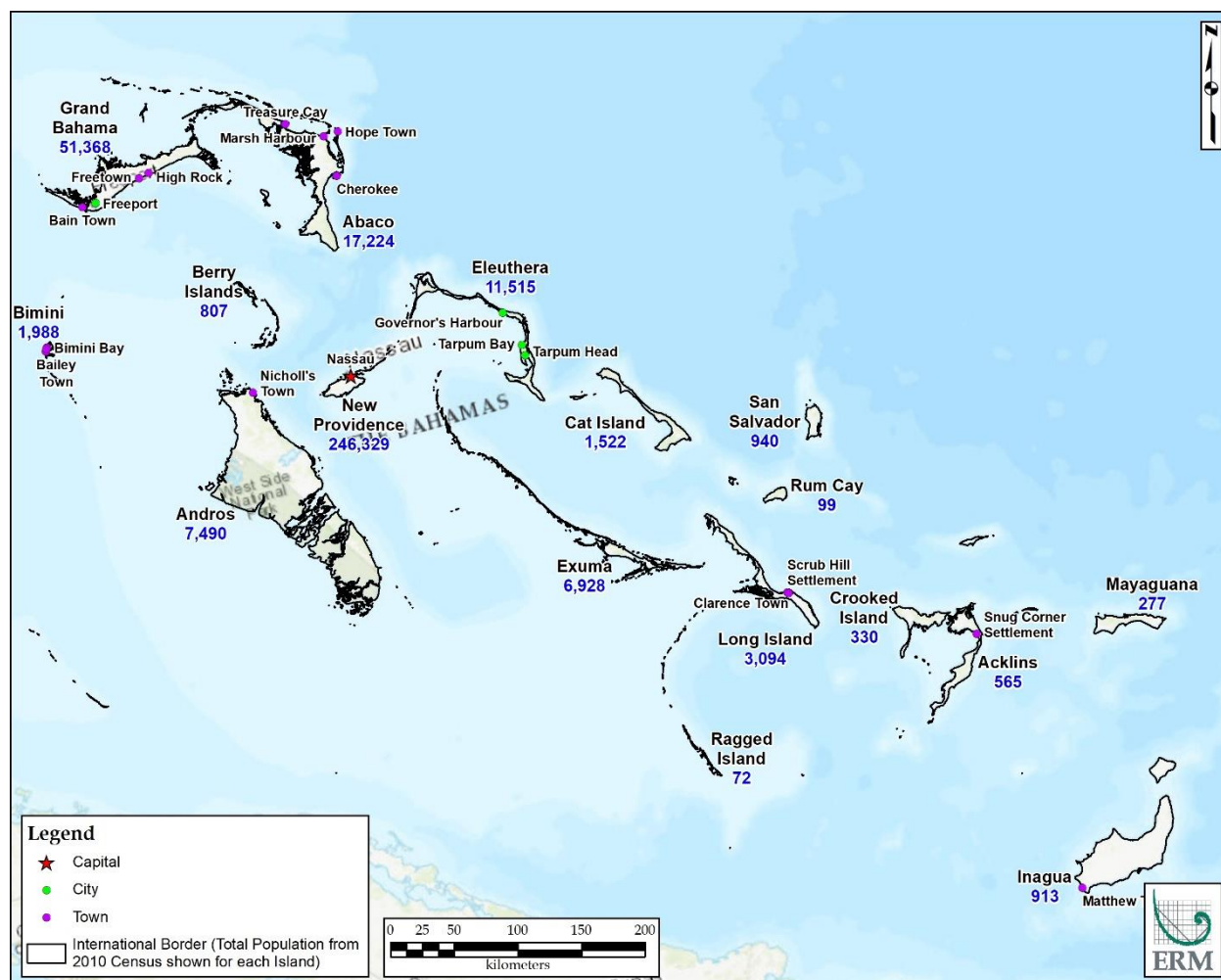
The official language in The Bahamas is English, although other popular vernacular languages are spoken in the islands such as Bahamian Creole, especially in urban areas, and Haitian Creole as a result of the Haitian immigrants who moved to the island during the 19th century.

About 30 of the islands are inhabited. The population is estimated at 389,482 persons (The World Bank, 2019), 90% of whom live in urban areas in New Providence, Grand Bahama, and Abaco. Nassau, the capital, has a population of 266,100 (The World Bank, 2016).

The islands included in this Operation are: Mayaguana, Crooked Island, Long Island, Andros, San Salvador Island, Inagua, Cat Island, Bimini, Abacos, Exuma, and Eleuthera. The Abacos is a 193-km long island chain. Great Abaco and Little Abaco serve as the main lands with a string of barrier islands separating them from the Atlantic (see Figure 3-1). The Exumas are also a 193-km long island chain with Cays scattered in a long line extending north. The anchor of the Exumas archipelago is Great Exuma. Eleuthera is 177 km long and is characterized for its fishing and colonial settlements. It is divided between North Eleuthera and South Eleuthera. Mayaguana is the easternmost island and district of the Bahamas. It is about 285 km² and had a population of 277 in the 2010 census. Crooked Island is part of the Bahamian islands that define a large, shallow lagoon called the Bight of Acklins. It is about 148 km². Long Island is known for fishing, diving and boating. The island is 596 km². Andros is an archipelago within the Bahamas, and is the largest of the Bahamas Islands. Its area is 5,957 km². San Salvador Island is an island and district of the Bahamas and it extends for approximately 166 km². Bimini is the westernmost district of the Bahamas and comprises a chain of islands located about 81 km east of Miami. They cover 23 km². Inagua is the southernmost district of the Bahamas, comprising the islands of Great Inagua and Little Inagua. They cover 1678 km². Lastly, Cat Island is in the central Bahamas and has the nation's highest point, Mount Alvernia. The island is approximately 389 km².

- **Population density: 38.5 inhabitants/ km² (2015)**
- **GDP per capita US \$ 28,278 (2019)**
- **Inflation was registered at 1.42 % (2019)**
- **Increase of volume of exports of goods and services (4.2%) and imports (4.6%) (2019)**
- **Unemployment rate: 14.3% (2019)**
- **Population economically active 55% (female 48% and male 52%) (2013)**
- **47.2% of the general population has health insurance**
- **Bahamas Human Development Index (HDI) for 2019 ranked at 58**
- **Bahamas Gender Inequality Index (GII) from 2019 ranked at 77**

Figure 4-19 presents the total population in each island as per The Bahamas Department of Statistics' 2010 Census of Population and Housing Survey, as well as the capital, the different cities and towns.



Source: ERM with data from Bahamas Department of Statistics, Census of Population and Housing, 2010.

Figure 4-19: Cities, Towns and Population in The Bahamas

The Table 4-9 presents key demographic and social indicators for each island relevant to this Operation. As observed, New Providence has the highest population (246,329) as it hosts the largest city and capital of Bahamas, Nassau and consequently, its population density is significantly higher than in the other islands with 3,079.1 people per square mile. The other islands, in order of population, are Abaco (17,224 inhabitants), followed by Eleuthera (11,515 inhabitants), Andros (7,490) Exuma (6,928 inhabitants), Long Island (3,094), Bimini (1,988) Cat Island (1,522), San Salvador (940), Inagua (913), Crooked Island (330) and Mayaguana (277). The female population is higher in Grand Bahama, Eleuthera, New Providence, Long Island, and San Salvador but remains slightly lower in Abaco, Exuma, Andros, Bimini, Cat Island, Crooked Island, Inagua, and Mayaguana. In terms of age groups, the largest population in all islands are those aged 15-64, and Eleuthera, Cat Island, Crooked Island, Long Island and Mayaguana have higher older population (aged 65+) percentages. This could reflect a population ageing transformation, as is happening worldwide, but younger populations, especially in Exuma, also remain high (33.7%). For islands with higher numbers of young and old people, their dependency ratios are also higher. This data, however, is from 2010; therefore, it is important to note that these figures have likely changed, especially in Abaco and Grand Bahama where the impacts of Hurricane Dorian were more severe.

Table 4-9: Key Demographic and Social Indicators, Census 2010

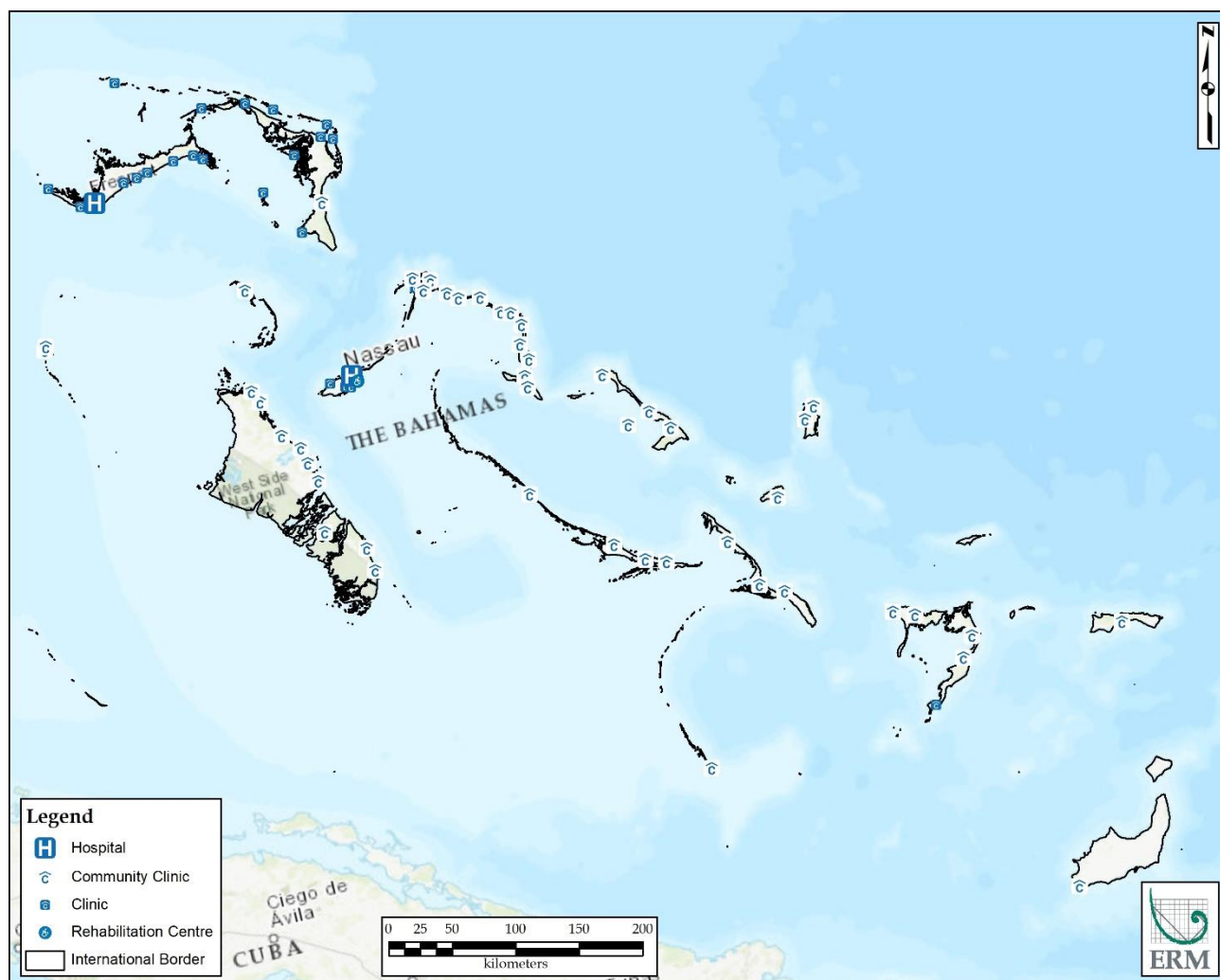
Indicators	Grand Bahama	New Providence	Abaco	Exuma & Cays	Eleuthera	Andros	Bimini	Cat Island	Crooked Island	Inagua	Long Island	Mayaguana	San Salvador
Population													
Total	51,368	246,329	17,224	6,928	8,202	7,490	1,988	1,522	330	913	3,094	277	940
Male	24,996	117,909	8,902	3,468	4,058	3,769	1,063	808	168	465	1,535	143	469
Female	26,372	128,420	8,322	3,460	4,144	3,721	925	714	162	448	1,559	134	471
Population Distribution													
Under 15 Years	13,910	65,614	4,678	2,336	2,039	2,296	465	388	70	226	727	56	224
%	27.1%	26.6%	27.2%	33.7%	24.9%	30.7%	23.4%	25.4%	21.2%	24.8%	23.5%	20.2%	23.8%
15-64 years	34,361	165,987	11,502	4,071	5,275	4,449	1,378	936	209	620	1,909	175	633
%	66.9%	67.4%	66.8%	58.8%	64.3%	59.4%	69.3%	61.4%	63.3%	67.9%	61.7%	63.2%	67.3%
65+ years	3,019	14,043	968	493	840	728	145	196	51	65	456	44	83
%	5.9%	5.7%	5.6%	7.1%	10.2%	9.7%	7.3%	12.9%	15.5%	7.1%	14.7%	15.9%	8.8%
Sex Ratio	94.78	91.82	106.97	100.23	97.92	101.3	114.9	113.2	103.7	103.8	98.5	106.7	99.6
Population Density													
Area (square miles)	530	80	649	112	187	2,300	11	150	84	599	230	110	90
Population Density per sq. mile	96.9	3,079.1	26.5	61.9	43.9	3	181	10	4	2	13	3	12
Households													

Total Number of Households	15,140	70,222	5,197	2,028	2,718	2,373	751	608	124	319	1,119	107	342
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Source: ERM 2021 with data from The Bahamas Department of Statistics, Census of Population and Housing 2010.

More recent data shows that the population has been increasing consistently, increasing by almost 10% between 2010 and 2019 (World Bank, 2019). Much of that growth was due to immigration.

Figure 4-20 shows the hospitals, community clinics, clinics and rehabilitation centers located in the different islands of The Bahamas. As observed, there are only two hospitals, one in Nassau and the other one in Freeport.



Source: ERM, 2021.

Figure 4-20: Hospitals and Clinics in The Bahamas

According to the 2010 census, 47.2% of the general population has health insurance. According to the Central Intelligence Agency (CIA) World Factbook data from 2017, Bahamas has a physician density of 2.01 physicians per 1,000 people (CIA World Factbook, 2017) and 3.99 nursing and midwife personnel density (WHO, 2008). The under-five mortality rate is 7.2 per 1,000 live births. In terms of water and sanitation, 95% of the population uses piped water and 92% has access to basic sanitation services (UNICEF, 2019). The whole population (100%) has access to electricity (CIA, 2020).

The non-Bahamian population in 2010 comprised one-sixth of the total population, a 25% increase from 2000; Haitians comprised 64.4% of the non-Bahamian population (National Development Plan Secretariat Bahamas, 2016). The Bahamas has seen an increasing life expectancy (from 73.8 years in 2010 to 75.87 in 2020) and decreasing birth rates have resulted in an aging population, where the age group 65 years old and older has increased by 25%, while the group 45 to 64 years old has

increased by 32%. Those changes, coupled with a decrease in the population under 15 years old (from 26.6% to 25.3%), have reduced the dependency ratio from 0.48 to 0.42 (Knoema, 2020). Regarding ethnic groups, 90.6% are black, 4.7% are white, 2.1% black and white, and other 1.9% (CIA, 2010).

The Bahamas has the second highest per capita GDP in the English-speaking Caribbean with an economy heavily dependent on tourism and financial services. Tourism accounts for approximately 50% of GDP and directly or indirectly employs half of the archipelago's labor force. Financial services constitute the second-most important sector of the Bahamian economy, accounting for about 15% of GDP. Manufacturing and agriculture combined contribute less than 7% of GDP and show little growth, despite government incentives aimed at those sectors. Public debt increased in 2017 in large part due to hurricane reconstruction and relief financing. The primary fiscal balance was a deficit of 0.4% of GDP in 2016. The Bahamas is the only country in the Western Hemisphere that is not a member of the World Trade Organization (WTO, 2019).

Unemployment rates remain quite high (12% - 16% nationally), especially among youth (as high as 30%) (PAHO). Approximately one in eight (12.8%) residents lived below the poverty line⁶ in 2013, up from 9.3% in 2001, with evidence of a widening income gap (Bahamas Department of Statistics, Household Expenditure Survey, 2013). More details about the labour force in The Bahamas and in specific islands relevant to this Operation are presented in Section 4.3.1, below.

Poverty levels in 2013 were higher among Family Islanders (one in six), among youth (20 to 29-year-olds accounted for nearly one-quarter of the poor), and among Haitian migrants, whose poverty levels were three times those of the national level (PAHO).⁷ Haitian nationals have been migrating to and settling in The Bahamas for hundreds of years. However, the presence of Haitians in The Bahamas has been an ever-increasing cause for concern for some of the Bahamian population (Fielding, W. et al., 2008). The relatively high numbers of Haitian migrants on some Bahamian islands have raised fears that The Bahamas is being overwhelmed by this group; in some districts Haitian nationals account for more than 20% of the population. A stigma has become attached to being a Haitian migrant in The Bahamas as they are associated with illegal status, poor education, and poverty (Fielding, W. et al., 2008). Language is also a barrier, which prevents Haitian migrants from fully participating in society and makes them distinct from the general population. Furthermore, children born to migrants in The Bahamas may face the prospect of being stateless (Fielding, W. et al., 2008).

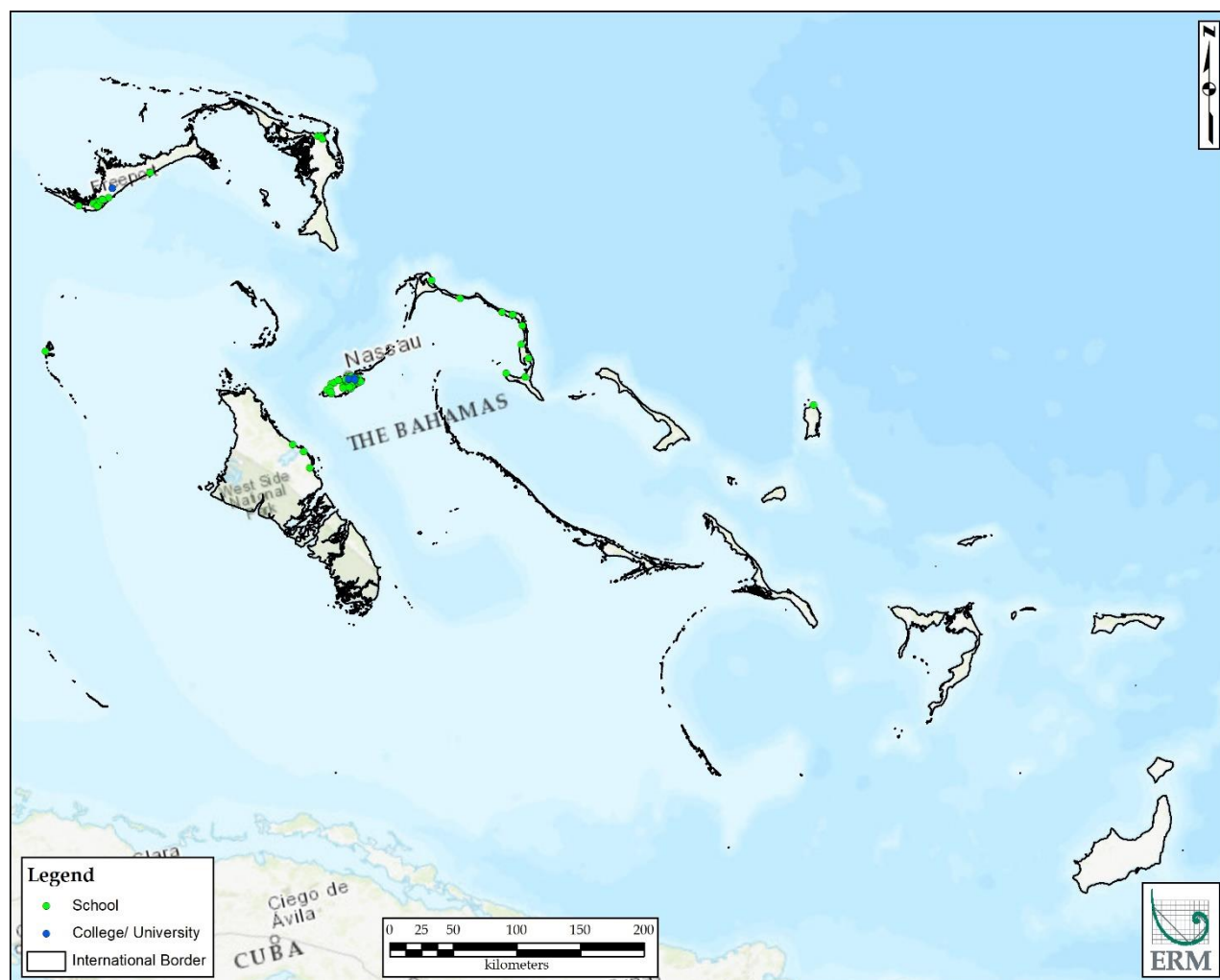
Two illegal settlements sites mostly comprised by Haitian immigrants were located in Marsh Harbour (Abaco Island) and are known as Pigeon Peas and the Mudd. Another important immigrant community is located in West Freeport (Grand Bahama). After Hurricane Dorian, thousands of Haitians were displaced, and, especially vulnerable population such as illegal immigrants, faced significant challenges when looking for shelters or keeping a job as they lack work permits or "satisfactory living conditions".

The archipelagic profile of the nation, with uneven population, social and economic distribution across vast areas, has contributed to inequalities in delivery of and access to educations and health care. According to the 2010 Census, among the population aged 15 years and older, 1.9% or 4,211 had no schooling, compared to 1.5% or 2,801 persons in 2000. The percentage of persons who had received only primary education decreased from 8.7% in 2000 to 7.8% in 2010 and those with only secondary education declined from 73.6% in 2000 to 61% in 2010 (Census of Population and Housing, Bahamas, 2010). While decreases were observed at these levels, the 2010 Census results show that more persons opted to further their education beyond the secondary school level. An estimated 43,467 persons in the country attended college. Females accounted for 61% of this number (Census of Population and Housing, Bahamas, 2010). Figure 4-21 shows the location of the schools, colleges

⁶ The poverty line has been set at US\$ 4,247 per person per year.

⁷ The Family Islands, also known as the Out Islands, include The Abacos, Acklins, Andros, The Berry Islands, Bimini, Cat Island, Crooked Island, Eleuthera, The Exumas, Harbour Island, Long Island, and San Salvador, among others.

and universities in The Bahamas. The highest number of education centers is found in Grand Bahama.



Source: ERM, 2021.

Figure 4-21: Schools, Colleges and Universities in The Bahamas

The Bahamas' Human Development Index (HDI) for 2019 was 0.814, which put the country in the high human development category, positioning it at 58 out of 189 countries and territories (UNDP, 2020). The rank is shared with Barbados. Between 2000 and 2019, Bahamas' HDI value increased 2.1%. The Bahamas' 2019 HDI of 0.814 is below the average of 0.898 for countries in the very high human development group and above the average of 0.766 for countries in Latin America and the Caribbean. The Gender Inequality Index (GII), which reflects the gender-based inequalities based on reproductive health, empowerment and economic activity, for The Bahamas is 0.341, ranking it 77 out of the 162 countries in the 2019 index (UNDP, 2020). In The Bahamas, 21.8% of parliamentary seats are held by women, and 88% of adult women have reached at least a secondary level of education compared to 91% of their male counterparts. For every 100,000 live births, 70 women die from pregnancy-related causes; and the adolescent birth rate is 30 births per 1,000 women of ages 15-19. Female participation in the labor market is 68.1% compared to 81.6% for men (UNDP, 2020).

4.3.1 *Labour Force*

4.3.1.1 *Pre-COVID-19 Labour Force*

According to The Bahamas Department of Statistics' Labour Force Survey from May 2019, employment rose by 4,330 in May 2019 when compared to November 2018 and reached about 215,000 persons. On a year-over-year basis, employment grew by 6,635 or 3.2%. Meanwhile, the national unemployment rate dropped to 9.5%, down from 10.7% in November 2018.

Two of the three most populated islands that were surveyed experienced decreases in their unemployment rates, and one experienced an increase. At the time of the survey, the rate in New Providence was 9.4%; and in Grand Bahama 10.9%. On the other hand, Abaco's unemployment rate increased from 7.7% to 9.3%. Employment gains were driven by private sector employees which increased by 1.8% to 137,605 persons when compared to November 2018. Additionally, the number of self-employed persons remained unchanged 32,475 since November 2018 (Bahamas Department of Statistics, 2019).

The "Hotel and restaurant" sector experienced the greatest increase since May 2018 (24%) while the "Community, Social and Personal Service" industry, which includes the civil service, police service and domestic service continued to be the country's largest employer in May 2019 and accounted for 35% of the workforce (Bahamas Department of Statistics, 2019). From 2016 to 2018, employment was boosted by the construction of the Baha Mar Hotel, which created approximately 5,000 jobs (IDB, 2018). The reconstruction activities after the hurricanes are also expected to create more job opportunities, especially in the construction sector.

Vulnerable employment remains unchanged since May 2018 with a rate of 6.9% of total employment (Bahamas Department of Statistics, 2019). Males (11,355) dominate this category. Vulnerable workers, as defined by ILO, are less likely to have formal work arrangements, are more likely to lack decent working conditions and are often characterized by inadequate earnings and benefits.

Overall, the unemployment rate for women dropped to 9.9% in May 2019, compared to 9.2% for men. Young women (aged 15-24) and core-aged women (aged 25 to 54) were more likely to be unemployed than their male counterparts (Bahamas Department of Statistics, 2019). By contrast, men aged 55 years and over were slightly more likely to be unemployed when compared with women in their same age cohort. The unemployment rate in 2018 for young women reached 20.7%, compared with 19.5% for young men, 20.0% for both sexes (Bahamas Department of Statistics, 2019).

From November 2018 until May 2019, the number of discouraged workers in the country declined by 2%; in New Providence it declined by 1% and 5.4% in Grand Bahama.⁸ However, the number of discouraged workers in Abaco increased by 7.3% which, could also be a reflection of the severe effects of Hurricane Dorian on the island.

4.3.1.2 *COVID-19 Impact on Labour Force*

As a result of the COVID-19 pandemic, labor, a key factor of production, has been quarantined in most sectors in the economy, borders have been closed and global value chains have been disrupted. Most estimates show a contraction of the level of output globally. For the Latin America and Caribbean region, the consensus forecasts are at -3 to - 4%, and it is not until 2022 that the region is expected to go back to its pre-crisis output levels (UNDP, 2020). The Bahamas is expected to record

The Bahamas has a market economy that is heavily dependent on tourism and international financial services.

The GDP per capita is one of the highest in the region.

⁸ According to the International Labour Organization (ILO) definition, discouraged workers "are persons without work and available for work, yet were not actively seeking work because they are not hopeful about their prospects of finding work." (ILO).

an economic contraction of 12.5 percent for 2020 (IDB, 2020c). By May 2020, approximately 13 percent of the labor force had filed for unemployment in the National Insurance Board (IDB, 2020c). The fraction of households reporting earnings below the minimum wage more than doubled between January and April 2020 (IDB, 2020c).

4.3.2 Economic Activities

The Bahamas has a predominantly market economy that is heavily dependent on tourism and international financial services. The GDP per capita, US \$ 28,278 in 2019, is one of the highest in the region. In spite of the concentration of the population in urban centers (especially Nassau and Freeport) that are devoted to tourism, the traditional pattern of small farming and fishing prevails in some villages, notably in the southeastern islands.

Tourism accounts for approximately 50% of GDP and directly or indirectly employs half of the archipelago's labor force. Financial services constitute the second-most important sector of the Bahamian economy, accounting for about 15% of GDP. Manufacturing and agriculture combined contribute less than 7% of GDP and show little growth, despite government incentives aimed at those sectors (WTO, 2019).

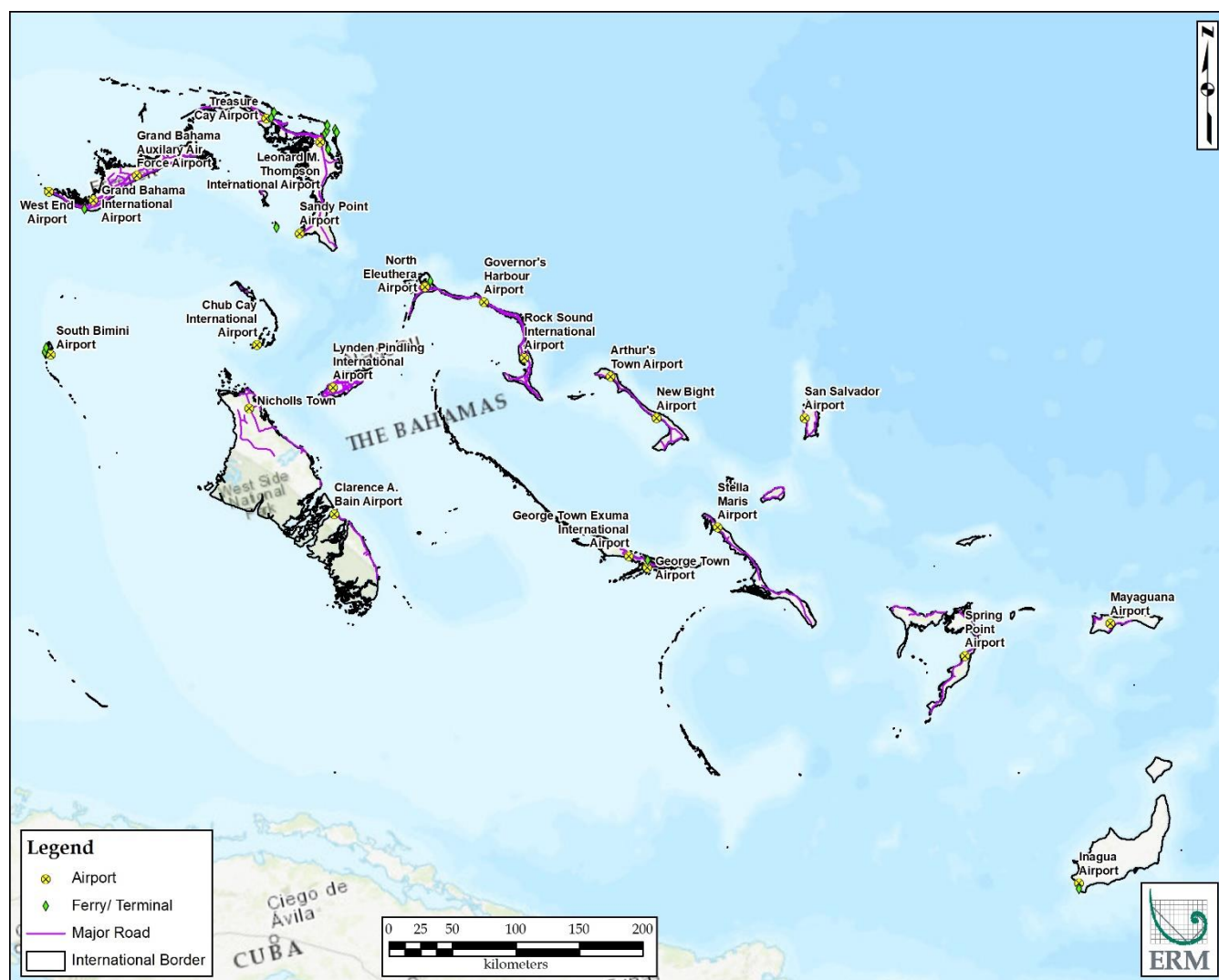
4.3.2.1 Services and Finance

Tourism accounts for more than one-third of the GNP and employs about two-fifths of the workforce. It focuses on New Providence and Grand Bahama islands; most tourists come from the United States. In January 2019 alone, there were 636,881 foreign arrivals (20.4% by air and 79.6% by sea) (The Bahamas Ministry of Tourism, 2019). As per 2012 data from The Bahamas Department of Statistics, there were 23 hotels in Grand Bahama (and 50 in Nassau), 37 in Abaco, 19 in Eleuthera and 23 in Exuma. However, the country has been losing market share by an estimated 0.5% in the Caribbean region in terms of international tourist arrivals since 2006, while stricter international regulatory standards have led to increases in operational costs within the financial sector (IDB, 2018) (see Figure 4-22).

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Figure 4-22: Tourist Attractions and Hotels in The Bahamas

Nassau and Freeport are the country's two main ports. Freeport also has a large container transshipment port. Numerous foreign passenger and freight ships dock in Bahamian ports each year. Throughout the islands, there are dozens of airports. Most of these serve only interisular aircraft, but international airports are located at Nassau, Freeport, and Exuma, and international flights also connect with several of the other Bahamian islands (see Figure 4-23).



Source: ERM, 2021.

Figure 4-23: Airports, Ferry Terminals and Major Roads in The Bahamas

In addition, over a hundred banks and trust companies have been attracted to The Bahamas because there are no income or corporate taxes and the secrecy of financial transactions is guaranteed. Public expenditures are constrained by the government's dependence on indirect taxes, which are levied primarily on tourism and external trade. The national bank is the Central Bank of The Bahamas, established in 1974. The national currency is the Bahamian dollar; US currency is also accepted throughout the islands.

COVID-19 has resulted in a sudden stop in tourism arrivals since March 2020, combined with close to a halt in domestic economic activity due to curfews and lockdowns (IDB, 2020c). In order to curb the spread of COVID-19, the government of The Bahamas has put several safety measures in place. Everyone travelling to The Bahamas must obtain a negative COVID-19 RT-PCR (swab) test taken no

more than 5 days prior to the date of arrival (The Islands of the Bahamas, 2020). Once in possession of a negative COVID-19 RT-PCR test, travellers can apply for their required Bahamas Travel Health Visa (The Islands of the Bahamas, 2020). There is currently a curfew in place for some islands, and on some islands restaurants are only operating for outdoor dining, curbside pickup, takeaway and delivery services (The Islands of the Bahamas, 2020). Testing for COVID-19 is in Andros, Crooked Island, Abacos, Bimini, Cat Island, Eleuthera, The Exumas, Grand Bahama, Long Island, Nassau and San Salvador (The Islands of the Bahamas, 2020).

Tourism services and receipts represented over 87 percent of total exports of services between 2011 and 2019. In 2020, exports will be hindered by the halt in tourism services (IDB, 2020c).

4.3.2.2 Agriculture and Fishing

The Bahamas has 14,000 ha of agricultural area (FAO, 2016). FAO reported in 2013, that 4,000 inhabitants were economically active in agriculture (equivalent to 2% of the total economically active population, with zero women and 100% men). In 2012, the GDP was US\$ 8,149 million and agriculture accounted for 2% of GDP. Although agriculture and fisheries account for a small percentage of the GDP of the Bahamas, they produce 3% of all jobs and are important for the diversification of the economy (IDB, 2018).

The fisheries sector plays an important role in the economy in terms of foreign currency earnings, food supply and employment. In 2017, exports of fish and fishery products amounted to USD 87.7 million (FAO, 2019). In the same year, imports were valued at USD 18.4 million. Per capita fish consumption (27.7 kg in 2013) is largely above world average (FAO, 2019). The Bahamas produced 11,400 tons from capture fisheries in 2017, with Caribbean spiny lobster and queen conch accounting about for 68 and 29% of total catches, respectively. Other important fishery resources include snappers, Nassau grouper and various mackerel species. Conch and finfishes are mostly consumed locally in restaurants, hotels and homes. However, significant exports of these also take place. Spiny lobster is the most important species in terms of weight and in value with over 90% being exported (FAO, 2019).

The Bahamian fishing sector in 2015 contributed 1.2% of GDP (USD 96 million). In 2017, four people were reported as employed in aquaculture and 9,000 in occasional fishing. There were a reported 934 vessels, most of which were small-undecked boats under six meters length overall (LOA) (FAO, 2019).

The Food and Agriculture Organization of the United Nations is currently conducting a study on the impact of the COVID-19 pandemic on the agriculture and fisheries sector of the region.

4.3.2.3 Trade

The International Trade Administration's Bahamas Country Commercial Guide states the following:

"The Bahamas opened an office in Geneva in June 2015 to assist its effort to accede to membership in the World Trade Organization (WTO). In 2018, The Bahamas formerly relaunched accession efforts, announcing a December 2019 target date for accession. Although some notable work was done to modernize its trade regime during the accession process, the government subsequently confirmed it was unlikely accession would take place before 2025.

The country is a beneficiary under the Caribbean Basin Initiative (CBI) and has applied for benefits under the Caribbean Basin Trade Partnership Act. It is designated as a "Qualified Jurisdiction" and maintains a Tax Information Exchange Agreement (TIEA) with the United States, which allows U.S. taxpayers to deduct legitimate business expenses incurred while doing business in The Bahamas.

The country receives preferential access under Canada's CARIBCAN Program and remains a signatory to the Economic Partnership Agreement between Europe and the member states of the Caribbean Forum (CARIFORUM). Following the United Kingdom's departure from the European

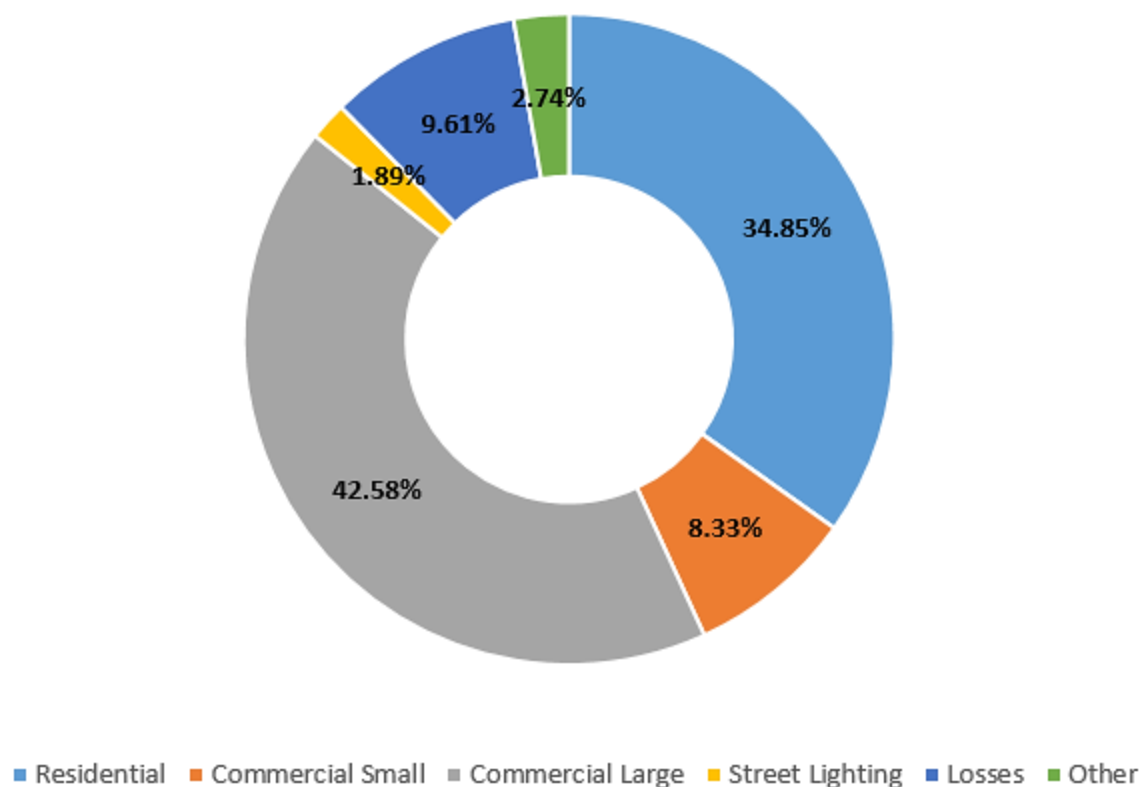
Union, The Bahamas is also party the Economic Partnership Agreement (EPA) between the United Kingdom and the countries of the Caribbean Forum (CARIFORUM).

The Bahamas joined the Caribbean Community (CARICOM) in 1983, but is not a member of the grouping's Single Market & Economy (its economic union)."

The country's most important trading partner is the United States (with 82.1% of the imports in 2016). Other trading partners include France, the United Kingdom, Turks and Caicos, Japan, Panama, and Argentina. Major imports include machinery and transport equipment, food products, and mineral fuels. The travel and tourism sector is one of the most prevalent sectors in exports (62.98%), followed by cargo ships and similar vessels (7.61%) and petroleum (4.86 refined, 3.17% crude) (CID Harvard, Atlas of Economic Complexity, 2017). Cargo ships and similar vessels (22.64%), petroleum (13.77 refined, 12.94% crude) and commodities (9.79%) are the most prevalent sectors in imports (CID Harvard, Atlas of Economic Complexity, 2017).

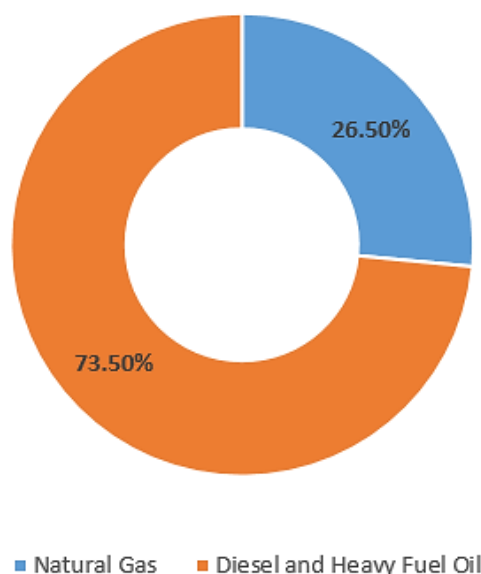
4.3.2.4 Mineral Industries, Power and Manufacturing

Mineral industries in The Bahamas include salt and cement production. Electricity generation is based on imported fossil fuels, such as petroleum and liquefied natural gas. Power-generating stations are located throughout the islands. The Bahamas has an average electricity cost of \$0.32 per kilowatt-hour (kWh), in line with the Caribbean regional average of \$0.32/kWh. Per capita consumption of energy per person in 2016 was 32,751 kWh (BP & Shift Data Portal). The Bahamas Electricity Corporation (BEC) (Government owned corporation) controls 438 megawatts (MW) of generation capacity, while Grand Bahama Power Corporation (GBPC) (public-private corporation including foreign-owned utilities) controls the remaining 98 MW. Generation is currently fueled by all imported petroleum with a mix of diesel (56.5%) and heavy fuel oil (43.5%), totaling 1,930 gigawatt-hours (GWh) for the entire country (NREL, Energy Transition Initiative, 2015). Figure 4-24 shows the energy consumption by sector and the energy generation mix. As observed, the commercial, especially large corporations, and residential consumption are the highest. Regarding the generation mix, the chart validates The Bahamas' heavy dependency on diesel and heavy fuel oil (Figure 4-25).



Source: ERM 2021 with information from NREL, Energy Transition Initiative, 2015. Available from:
<https://www.nrel.gov/docs/fy15osti/62691.pdf>

Figure 4-24: Energy Consumption by Sector (2015)



Source: ERM 2021 with information from NREL, Energy Transition Initiative, 2015. Available from: <https://www.nrel.gov/docs/fy15osti/62691.pdf>

Figure 4-25: Energy Generation Mix (2015)

In terms of manufacturing industries in Bahamas, they center on the production of rum and other liquors. Other manufactures include cement and pharmaceuticals, and canned fruits and frozen spiny lobster are processed. The Industries Encouragement Act (1970) offers manufacturers relief from tariffs and various taxes.

4.3.3 Security and Gender

4.3.3.1 General Security Context

The Bahamas experienced a 4% increase in the number of murders between 2018 and 2019. Rising poverty and jobless rates have contributed to this increase. The Royal Bahamas Police Force publishes statistics. Data from 2018 and 2019 are shown in the Table 4-10. Most of the crimes decreased in 2018, apart from manslaughter and armed robbery (Royal Bahamas Police Statistics, 2019). In addition, the Royal Bahamas Police confiscated 359 illegal firearms in 2019. The total traffic related fatal accidents decreased by 14% from 2018 (63) to 2019 (54) (Royal Bahamas Police Statistics, 2019). In 2019, New Providence had the highest percentage of fatal accidents with 33 fatal accidents, followed by Grand Bahama (six fatal accidents), and the Family Islands (15 fatal accidents) (Royal Bahamas Police Statistics, 2019).

Table 4-10: National Reported Crimes in The Bahamas, 2018 versus 2019

Crimes Against Person	2018	2019	% Change
Murder	91	95	4
Attempted Murder	19	19	0
Manslaughter	0	2	200
Rape	55	37	-33
Attempted Rape	11	7	-36
Unlawful Sexual Intercourse	113	97	-14
Armed Robbery	474	531	12
Robbery	108	95	-12
Attempted Robbery	13	13	0
Sub-Total	884	896	1
Crimes Against Property	2018	2019	% Change
Burglary	138	113	-18
Housebreaking	879	684	-22
Shopbreaking	539	495	-8
Stealing	831	933	12
Stolen vehicle	375	283	-25
Sub-Total	2762	2508	-9
Total (crimes against persons and property)	3646	3404	-7

Note: For offences where incidents were recorded for 2019 and none in 2018; the percentage is a reflection of the number of incidents recorded in 2019.

Source: ERM 2021 with information from the Royal Bahamas Police Force, Statistics Presented in 2019. Available from: https://www.royalbahamaspolice.org/statistics/crime_stats2019.pdf

As the country is made up of more than 700 islands, many of which are uninhabited, The Bahamas is a key transit point in the international drug trade, particularly for illicit narcotics being moved by sea into the United States. Smugglers ship South American cocaine, and marijuana typically coming from Jamaica, via The Bahamas using “go-fast” boats and small commercial freighters, using the cover of the heavy maritime traffic in the area to blend in, according to the US State Department (DCAF, ISSAT, 2015). 1,720 persons were arrested on charges related to illicit drugs in 2019 by the Royal Bahamas Police (Royal Bahamas Police Statistics, 2019). As a result of narcotics trafficking, The Bahamas has also seen a wave of gang-related murders, which forced the military onto the streets in 2017 (Yagoub, InSight Crime Org, 2017).

4.3.3.2 Violence against Women and Sex-based Discrimination

In a recent report (May 2018) the UN Human Rights Council stated that “The Bahamas has recently started to address violence against women, which is widespread, largely perceived as a private matter and accepted as normal” (HRC, 2018). Deep-rooted patriarchal stereotypes regarding the superiority of men are adversely affecting women and girls. In its periodic report to the Committee on the Elimination of Discrimination against Women in 2017, the Government of The Bahamas recognized that: “The perceptions of men regarding violence in marriage are varied. It is felt, however, that more men than women perceive violence between married people as acceptable. This perception may be rooted in the tradition of the man as the head of the household and the perception of male and female roles within the family.” A recent study conducted by the College of The Bahamas, revealed that young men still maintained the perception that the male sex was superior to the female and that they had the right, even a responsibility, to dominate the female. Violence against women and girls is often seen as a private matter in The Bahamas, in which the State should not interfere.

The Bahamas’ National Gender Equality Policy proposed to eliminate cultural and traditional practices that perpetuated discrimination against women, such as removing gender stereotypes from school curricula and reducing the stereotypes of the roles of husbands and wives through public education and the media (HRC, 2018). As of 2018, in the judiciary, women held 68 per cent of the positions of justices, registrars, and magistrates; in politics, five per cent of Cabinet Ministers, 12 per cent of parliamentarians, and 43 per cent of Senators were women; and in the public service, women held 78 per cent of the Director posts and also held 57 per cent representation in local governments (HRC, 2018).

The Bahamas also aimed to improve the state of disadvantaged women who experience unemployment, domestic violence and discrimination, which are exacerbated due to financial constraints and lack of essential resources (The Bahamas Beijing Report, 2019). Research has found that the forms of violence and discrimination experienced by women is linked to their financial and or survival dependency on others (The Bahamas Beijing Report, 2019). During 2014 – 2019, The Social Safety Net Programmes provided food and financial assistance to women facing multiple forms of discrimination as a means to mitigate the discrimination (The Bahamas Beijing Report, 2019). The Financial Assistance Programmes ranged from Water and Electricity (Utility Bills), Rent Assistance, School Uniforms and Footwear, Medical and Surgical, Travel, Temporary Accommodation, Foster Care and Disability Allowances, Small House Repair and Burial Assistance (The Bahamas Beijing Report, 2019).

Further, as part of The Bahamas’ 2019 National Report on the implementation of the Beijing Declaration, The Bahamas stated that it has taken multiple actions in the last five years to improve health outcomes and skills for women and girls, including:

- Promoting women’s access to health services through expansion of universal health coverage or public health services
- Expanded specific health services for women and girls, including sexual and reproductive health services, mental, maternal health and HIV services
- Undertaken gender-specific public awareness/health promotion campaigns

- Provided gender-responsiveness training for health service providers
- Strengthened comprehensive sexuality education in schools or through community programmes
- Provided refugee women and girls as well as women and girls in humanitarian settings with access to sexual and reproductive health services

4.3.3.3 Sexual Violence and Domestic Violence

Three of the top ten recorded rape rates in the world occur in the Caribbean, and Caribbean countries for which comparable data are available (Bahamas, St. Vincent and the Grenadines, Jamaica, St. Kitts and Nevis, Dominica, Barbados, and Trinidad and Tobago) experienced a rate of rape above the average of the 102 countries in the CTS (OHCHR-NYO, 2016). In spite of the deficiencies in the data collection, it is known that forty-eight per cent of adolescent girls report sexual initiation to be forced or somewhat forced in nine Caribbean countries; and country studies for Antigua and Barbuda, Guyana, and Suriname suggest that between twenty to sixty-nine per cent of women in intimate relationships have been victims of domestic violence (OHCHR-NYO, 2016).

In a 2007 survey, the United Nations Office on Drugs and Crime (UNODC) demonstrated that the prevalence of rape was a major issue in The Bahamas. While the worldwide average for rape was 15 per 100,000 persons, The Bahamas had an average of 133, a number much higher than many of its Caribbean neighbors (HRC, 2018). However, incidents of sexual violence are underreported. For example, reports from rape crisis centers throughout the Caribbean suggest that only one in eight victims who go to centers for help report the offence to the police.

According to the Royal Bahamas Police Force, there were 831 murders between 2010 and 2016, of which 91 were domestic murders. More recently, in 2019, the Royal Bahamas Police Force reported that 8% of 2019's 95 murders were domestically related (i.e. approximately eight domestic murders in 2019). In September 2017, the Minister of National Security announced that the Government had established a new multi-agency operation across law enforcement departments to deal with the challenges of guns, gangs, drugs and human trafficking.

Regarding domestic violence, in 2009, a survey of nearly 600 college students in Nassau found that about 21% of students lived in a household that had experienced domestic violence (Susan J. *et al*, 2009). In 2013, the director of The Bahamas Crisis Centre described domestic violence as an "epidemic" that had been occurring for a number of years (Bahama Journal, 2013). However, domestic violence within intimate partner relationships is still largely a private matter, with low levels of reporting.

4.3.4 Cultural Heritage

A high-level cultural heritage baseline study was conducted in order to characterize the types of cultural heritage resources found in The Bahamas. This study was conducted to identify and contextualize potential cultural heritage receptors that could be found throughout the country and did not focus on any particular areas that might be relevant to the Operations. This study defines cultural heritage using the IDB's definition of cultural heritage in the *Implementation Guidelines for the Environment and Social Safeguard Policy* and the resources defined and protected under the *Antiquities, Monuments, and Museum Act of 1998* (AMMA), the principal piece of legislation governing cultural heritage in The Bahamas (see Table 4-11).

Table 4-11: IDB and AMMA Definitions of Cultural Heritage

Terms	Source	Definition
Antiquities	AMMA	a) An artefact; or b) a place, building, site or structure erected, formed or built by human agency which is at least 50 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.
Artefact	AMMA	a) a movable object made, shaped, painted, carved, inscribed, or otherwise created, manufactured, produced, used or modified by human agency which is at least 50 years old, whether or not it has been modified, added to or restored at any time; or b) fossil remains or impressions.
Cultural heritage	IDB	Any natural or manmade areas, structures, natural features, and/or objects valued by a people or associated people to be of spiritual, historical, and/or archaeological significance.
Monument	AMMA	Any place, building, site, or structure which the Minister ^a considers to be of public interest by reason of its historical, anthropological, archaeological, or paleontological significance.

^a Subsequent to adoption of the AMMA, the role of "Minister" for the purposes of implementing the law was assigned to the Antiquities, Monuments, and Museums Corporation (AMMC).

The types of cultural heritage defined as monuments in the AMMA and cultural heritage resources by the IDB can be broadly divided into three categories: archaeological, built heritage, and living heritage resources. Table 4-12 provides definitions for each of these types of cultural heritage resources. The following discussion provides an overview of the types of archaeological, built heritage, and living heritage resources found in The Bahamas (see Table 4-12).

Table 4-12: Types of Cultural Heritage Resources

Resource Type	Definition
Archaeological	Concentrated and patterned physical remains of past human activity. A resource may include artefacts, plant and animal remains, structural remains, and soil features. This definition includes prehistoric and historic terrestrial and marine archaeological sites. Examples of this type of resource include: surface artifact scatters; subsurface, stratified village site; historic/ancient building or structure ruin; and prehistoric or historic cemeteries.
Built heritage	Above ground, standing structures (buildings, monuments, infrastructure, etc.) with historical, cultural, religious, and/or artistic value to stakeholders. Examples of this type of resource include: Traditional/folk houses; historic/colonial buildings; historic infrastructure; and historic churches.
Living heritage	A structure or natural landscape feature that is a part of a living cultural tradition and/or where cultural traditions are performed or practiced. Examples of this type of resource include: sacred caves, religious shrines, churches, and ritual sites.

Source: ERM, 2021.

The archaeological record in The Bahamas can be divided into two broad periods: the Pre-Columbian (AD 800-1492) and Historic Period (AD 1492-1969⁹). The earliest human occupation of The Bahamas dates to ca. AD 800 with the arrival of Taino populations, referred to as the Lucayan Amerindians, most likely from the Hispaniola or Cuba (Sears and Sullivan 1978). The Taino populations of The Bahamas practiced a mixture of hunting, gathering, fishing, and limited agriculture. Known Pre-Columbian village sites are restricted to the 19 largest islands in the Bahama archipelago with smaller, campsite sized sites found on smaller islands and cays (Keegan, 1992). Pre-Columbian Taino archaeological sites found across The Bahamas include open air, coastal shell middens, potsherd and stone artifact scatters, and stratified village sites.

⁹ The end date of 1969 for the Historic Period is based on the AMMA provision that artefacts, structures, sites, etc. over 50 years old can qualify as monuments under the AMMA.

The Historic Period in The Bahamas is marked by the arrival of Christopher Columbus in the Caribbean in AD1492. During the subsequent centuries the United Kingdom, privateers and pirates, and Spain controlled The Bahamas with the United Kingdom being the longest tenured colonial power in the archipelago. During the 15th through 19th centuries, The Bahamas islands were used as naval bases/ privateering bases. Cotton producing plantations were also established across the islands with most of the agricultural labor provided by slaves brought to the island from West Africa. Historic Period archaeological sites found in The Bahamas include the ruins of colonial houses, slave quarters/houses, agricultural structures and infrastructure, and shipwrecks (AMMC, 2019; see Figure 4-26).



Source: IoB, 2019.

Figure 4-26: Examples of Historic Period Archaeological Ruins in The Bahamas: Slave House Ruins in Bannerman Town (top), Watling's Castle ruins of a late 18th century Loyalist plantation house (bottom)

The Built heritage resources on The Bahamas date to the Historic Period. Examples of historic built heritage resources in The Bahamas include Colonial Period residential, governmental, and commercial buildings in major towns and cities as well as a number of coastal fortresses, such as Fort

Charlotte, Fort Fincastle, and Fort Montagu, as well as a number of smaller coastal cannon batteries and lighthouses (see Figures 4-27; examples of Built Heritage Resources in The Bahamas, Fort Montagu (top) and Villa Doyle House (bottom)).

Known living heritage resources found in The Bahamas include historic and modern Christian churches, houses/sites of worship for minority Jewish, Muslim, and Hindu groups as well as sites used by practitioners of traditional African religions such as Obeah (see Figure 4-28; examples of Living Heritage Resources, St. Catherine's Cemetery in Dunmore Town (top) and All Saints Anglican Church in Mangrove Cay)).



Source: AMMA, 2019; Bahamas, 2019.

Figure 4-27: Examples of Built Heritage Resources in The Bahamas, Fort Montagu (top) and Villa Doyle House (bottom)



Source: IoB, 2019.

Figure 4-28: Examples of Living Heritage Resources, St. Catherine's Cemetery in Dunmore Town (top) and All Saints Anglican Church in Mangrove Cay

The results of the high-level cultural heritage baseline study demonstrate there are a wide variety of cultural heritage resources found in The Bahamas. Archaeological resources associated with the Pre-Columbian occupation of the islands by Lucayan Tainos, historic terrestrial sites, and historic shipwrecks have been found across the archipelago. Built heritage resources such as historic buildings and fortress have been documented across the country as have living heritage resources such as cemeteries and churches. The presence of these resources suggests there is the potential for known or undiscovered cultural heritage resources that could 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 projects funded by the Operation.

5. ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

5.1 Introduction

The purpose of this Operation is to strengthen the health system of The Bahamas in terms of preparedness, response, coverage, quality of care, and efficiency by funding 18 individual Projects in the Health Care sector. These 18 individual Projects are scattered throughout the Bahamas family islands and are comprised of activities to enhance and/or renovate thirteen (13) existing facilities, and the construction of five new Level I, II and III primary care clinic facilities:



- Two Level III care facilities on Exuma Island – one in the Staniel Cay and one in Black Point;
- One Level II care facility on Andros Island – in Mangrove Cay;
- One Level I care facility on Eleuthera Island – in Rock Sound; and
- One Level I care facility on Cat Island – Smith's Bay Clinic.

See Section 2 – *Project Description* for Project details.

As a first step towards evaluating the environmental and social impacts and risks of the proposed Project in accordance with IDB OP-703, the 18 individual Projects were grouped by Project Type: Construction of New Primary Care Facilities or Enhancement of Existing Primary Care Facilities. Table 5-1 presents a general evaluation of potential environmental and social impacts and risks based on typical activities required for that type of Project, as well as each Project Type's categorization. As can be seen in the table, the two different Project Types are classified as Category B and none have been classified as Category A.

These Types of Projects present potential impacts and risks that require an environmental and social assessment, as well as proposed mitigation measures detailed in an ESMP.

Table 5-1: Environmental and Social Risks and Categorization of the Projects

Project Type	Evaluation of Environmental and Social Impacts and Risks	Estimated Category
 <p>Construction of New Primary Care Facilities</p>	<p>These Projects include the construction of two Level III facilities on the Island of Exuma, one Level II intermediate facility on the Island of Andros, and two level I facilities on Eleuthera and Cat Islands, and will include connection to services (water, electricity, sewerage).</p> <p>Potential environmental and social impacts will be localized and short to mid-term (mostly associated with the process of construction and transportation of materials) for which mitigation measures are readily applied.</p>	B
 <p>Enhancement of Primary Care Facilities</p>	<p>Projects include renovation works and activities (some of which are small improvements while others are major renovations or expansions). Potential environmental and social impacts will be located within the premises of the work/activity and will be of short duration (mostly associated with the construction process) for which mitigation measures are readily applied.</p> <p>The acquisition of land is not foreseen because this component will use existing facilities on Government owned land (national or provincial government). However, economic and physical displacement should be studied once the boundaries of the lands are known.</p>	B

5.2 General Impact Assessment Methodology

The primary purpose of an Environmental and Social Impact Assessment (ESIA) is to predict the impacts resulting from the proposed project. Impacts can be direct, indirect, or induced, as defined in the Table 5-2.

Table 5-2: Impact Designation Definitions

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

Source: ERM, 2021.

The assessment of impacts proceeds through an iterative process that considers four questions as illustrated in Figure 5-1.

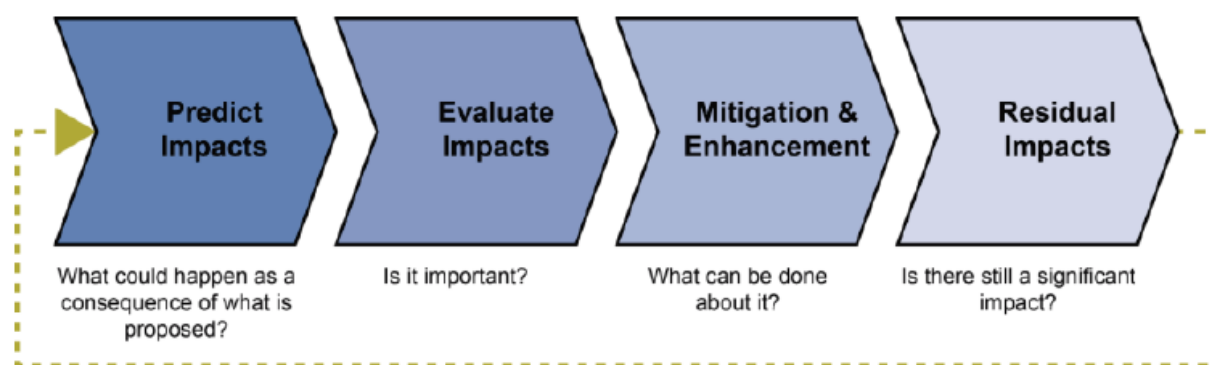


Figure 5-1: Impact Prediction and Evaluation Process

These questions are expanded in Steps 1 through 4 below.

5.2.1 Step 1: Predict Impacts

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

- Type of impact (i.e., direct, indirect, induced);
- Nature of the change (what is affected and how);
- Size, scale, or intensity;

- Geographical extent and distribution (e.g., local, regional, international); and
- Duration and/or frequency (e.g., temporary, short term, long term, permanent).

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

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

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

5.2.2 Step 2: Evaluate Impacts

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

Significance was assigned for each impact using the matrix shown in Table 5-3. This matrix applies universally to all resources/receptors.

Table 5-3: Evaluation of Significance of Impacts

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

Source: ERM, 2021.

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

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

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

5.2.3 Step 3: Mitigation and Enhancement

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

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

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

5.2.4 Step 4: Residual Impacts


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

5.3 Impact Assessment

Table 5-4 summarizes the potential impacts for the two different types of Projects, grouped into three criteria: physical environment, biotic environment, and social / cultural / health environment, by Project phase. The table includes the potential impact, potential impact significance (*Negligible*, *Minor*, *Moderate*, and *Major*) before any mitigation measure is applied, proposed mitigation measures, and the residual impact after mitigation.

In summary, the execution of the Projects will result in impacts on the physical, biotic, and the social / cultural / health environments. The potential negative environmental and social impacts and risks of the Project are expected to be short and medium term, with viable mitigation measures. Considering the type, extension, term, and magnitude of the Projects activities, the negative impacts will be of *Minor* to *Negligible* significance, after mitigation measures are implemented. No significant impacts are expected. The activities will result in both direct and indirect impacts; however, it is expected that the majority of impacts will be direct impacts.

Table 5-4: Potential Environmental and Social Impacts of the Projects

Project Type	Phase	Potential Identified Impacts	Pre-mitigation Potential Impact Significance	Mitigation measures	Residual Significance
 <p>Construction of New Primary Care facilities</p>	Construction	Environmental / Physical Resources			
		<p><i>Air Quality – Potential increase of fugitive dust, combustion equipment emissions, and greenhouse gases released to the atmosphere</i></p> <ul style="list-style-type: none"> ■ Dust, noise, and vibrations; ■ Wheel generated dust/surface disturbance during operation of diesel powered earth moving construction equipment (e.g., bulldozers, graders, dump trucks) at the sites (emissions of particulate matter (PM – PM₁₀ and PM_{2.5}) and combustion gases from vehicles and heavy machinery (GHGs)). ■ Fuel combustion emissions from exhausts of diesel powered earth-moving construction equipment operating at the site. ■ Fuel combustion emissions from the truck exhaust during material/equipment transportation. 	Minor	<ul style="list-style-type: none"> ■ Reschedule vegetation clearing activities or earthworks during periods of high wind if visible dust is blowing off-site; ■ Provide dust suppression as needed; ■ A speed limit of 25 km/h on unpaved surfaces will be enforced and national speed limits on public roads will not to be exceeded; ■ Transported materials will be covered with tarpaulins to prevent fugitive dust; ■ Stockpiles stored longer than six weeks will be vegetated or covered with sheeting, shade cloth, or tarpaulin to reduce soil loss from wind or storm water runoff; ■ Stockpiles will be located as far away from receptors as possible and will be covered with sheeting, shade cloth, or tarpaulin; ■ Implement an erosion and sediment control plan; ■ Stabilize disturbed areas as soon as possible; ■ Avoid open burning of wastes; ■ Where available, use ultra-low sulfur diesel (ULSD) in diesel powered 	Negligible

				<p>equipment, together with best management practices;</p> <ul style="list-style-type: none"> Vehicle / equipment air emissions should be controlled by adopting simple good practice procedures (such as turning off equipment when not in use); Vehicle / equipment exhausts observed to be emitting significant black smoke in their exhausts should be serviced; Regularly maintain all diesel-powered equipment and reduce idling time to avoid emissions of NO_x, PM₁₀ and SO₂; All non-road mobile machinery to use ultra-low sulfur diesel where available; Implement a Noise and Emissions Management Plan. 	
		<p>Effects on Geology and Topography</p> <ul style="list-style-type: none"> Landscape grading and contouring for the construction of the primary care facilities. Drilling and excavation for the construction of the building bases. 	Negligible	<ul style="list-style-type: none"> Replace topsoil and overburden to approximate the existing topographic contours and ensure proper drainage; Reduced to a minimum the affected area, so as to minimize the instability and collapse of soil; and In case unstable areas are identified, it is important to implement measures to reinforce the support capacity of those soils, at the time of excavation work. 	Negligible
		<p>Effects on Soils</p> <ul style="list-style-type: none"> Landscape grading and recontouring to ensure proper drainage. Construction of access roads. 	Minor	<ul style="list-style-type: none"> Implement a stormwater runoff, soil erosion, and sediment control measures included in the Environmental Management Plan. Segregate and replace topsoil, where feasible; 	Negligible

		<ul style="list-style-type: none"> Vegetation clearance and landscape grading. 		<ul style="list-style-type: none"> Implement progressive rehabilitation of disturbed areas; Roads used to access the facility must be well drained in order to limit soil erosion; and To avoid or minimize the loss of the growth media, the growth media layer (topsoil layer and organic material) will not be mixed with the subsoil layer, if feasible and practical during the construction phase. 	
		<p><i>Effects on Hydrology and Water Quality</i></p> <ul style="list-style-type: none"> Alteration of runoff patterns and drainage characteristics, and catchment yield. Increased sediment load. Clinic facility waste and electronic/equipment waste. 	Moderate	<ul style="list-style-type: none"> Minimize disturbance of the natural topography and catchment characteristics by limiting large scale earthworks, vegetation removal and soil compaction where possible; Construct adequate stormwater diversion structures to route runoff around affected areas; Ensure sediment traps are in place and maintained regularly; Implement an erosion and sedimentation control plan; Dust suppression operations are recommended; Large areas should not be exposed for long periods of time and should be rehabilitated as soon as possible by establishing adequate vegetation to reduce increased sedimentation; If possible then the construction should be scheduled to take place during the dry season; Pluvial water on the surface shall be discharged in more than one point, to reduce the concentration of runoff at the surface; 	Minor

				<ul style="list-style-type: none"> ■ Road traffic on exposed areas or off the designated roads shall be limited; ■ Implement a water management plan; ■ Implement a solid and hazardous management plan; and ■ Implement a hospital waste management plan. 	
		Occurrence of Natural Hazards	High^a	<ul style="list-style-type: none"> ■ Construct new structures in accordance with The Bahamas Building code and resilience to natural hazards; ■ Implement a disaster risk management plan; and ■ Emergency and Contingency Plan. 	Minor
		Biodiversity / Natural Habitat			
		Effects on Terrestrial Vegetation <ul style="list-style-type: none"> ■ Ground works would result in the direct loss and disturbance of vegetation. ■ Project-related vehicular traffic and site preparation activities may create dust, the accumulation of which can inhibit vegetative growth. ■ Vegetation clearance may introduce or spread of invasive and exotic plant species within Project area. ■ Cleared areas of vegetation may create increased storm water runoff, increasing erosion and carrying contaminants. 	Minor	<ul style="list-style-type: none"> ■ Demarcate construction areas. ■ Implement best practices when clearing vegetation and trees. ■ Revegetate areas post-construction with native grasses and shrubs. ■ Implement dust control procedures. ■ Implement best construction practices for sediment control. ■ Implement an erosion and sedimentation control plan. 	Negligible
		Effects on Terrestrial Wildlife	Minor	<ul style="list-style-type: none"> ■ Conduct pre construction field screening by trained field biologists to repel fauna and rescue and 	Negligible

	<ul style="list-style-type: none"> ■ Mortality and Injury to fauna due to vegetation clearing and habitat loss. ■ Mortality or injury of wildlife species, during construction with use of heavy machinery and increased vehicular traffic. ■ General security and safety artificial nighttime lighting could cause disturbance to natural cycles, feeding behaviors and migration patterns of birds and bats. ■ During construction, noise generated from heavy machinery will generate medium-high noise levels causing wildlife displacement and mask acoustic calling, thus affecting mating and feeding behaviors. ■ Workers may harass and cause disturbance or mortality to wildlife. ■ Construction debris and waste hazards may not be disposed of properly polluting land and seascape and/or causing injury or mortality to wildlife. 		<ul style="list-style-type: none"> ■ relocate immobile or threatened species. ■ Enforce a speed limit of 25 km/h. ■ Avoid clearing vegetation during bird breeding season, as possible. ■ If security and night lighting is utilized, minimize the amount of artificial lighting used with directional lighting (downward facing lighting) and direction accessories, and avoid the use of ultraviolet light. ■ Install silencers to vehicles and heavy equipment. ■ Design and provide Worker Wildlife Management education training or code of conduct that prohibits hunting and harassment of wildlife within Project vicinity. ■ Prohibit hunting within conservation or protected areas. ■ Implement a waste management plan; block off any contaminated water sources, and ensure that wildlife cannot access bins, boxes, pipes, materials or piles of rubble. 	
	<p>Effects on Protected Areas</p> <ul style="list-style-type: none"> ■ No sites occur within Protected Areas; however, Project-related construction activities may result in the temporary degradation of habitat quality within nearby protected land and seascapes. ■ Six of the proposed sites occur adjacent or within IBAs; Construction activities may result in the degradation of habitat quality 	Minor to moderate	<ul style="list-style-type: none"> ■ Ban hunting and harassment of wildlife. ■ Implement wildlife repel strategies prior to construction of new facilities. ■ Avoid vegetation clearance during bird breeding season. ■ Minimize the amount of artificial lighting used at the site, use directional lighting (downward facing lighting) and direction accessories, and avoid the use of ultraviolet light. 	Negligible to minor

		and impact endemic or migratory bird populations.		<ul style="list-style-type: none"> ■ Implement waste management plan. ■ Implement best construction practices for sediment control. <ul style="list-style-type: none"> • Implement an erosion and sedimentation control plan. 	
		Social/Labor/Cultural			
		Worker Influx <ul style="list-style-type: none"> ■ Increased population influx during construction activities 	Moderate	<ul style="list-style-type: none"> ■ Prioritize local hiring by developing a Local Employment and Supplier Development Plan. ■ Establish a local employment brokerage that will publicize job vacancies and put in place initiatives to ensure employment opportunities for hard to reach groups. ■ Implement Community Grievance Mechanism. ■ Evaluate need of security guards, fencing, and/or other security measures. ■ Code of Conduct for all Project employees and contracted staff including zero-tolerance policy for drug use, sale or purchase. ■ Project should issue a policy statement regarding sexually transmitted infections including HIV/AIDS, and this policy would be communicated internally to staff, and externally to Contractors. ■ Develop a Socioeconomic and Community Health and Management Plan to manage influx and recreation risks. ■ Workers Accommodation Plan and Checklist if necessary. ■ COVID-19 Contingency Plan. 	Minor

		Economic Benefits <ul style="list-style-type: none"> ■ Direct job creation ■ Indirect job creation ■ Community job expectations 	Positive	<ul style="list-style-type: none"> ■ Prioritize local hiring by developing a Local Employment and Supplier Development Plan. ■ Establish a local employment brokerage that will publicize job vacancies and put in place initiatives to ensure employment opportunities for hard to reach groups ■ Implement Community Grievance Mechanism. 	Positive
		Tourism <ul style="list-style-type: none"> ■ Potential access restrictions to tourist areas during construction. ■ Impacts to nearby tourism businesses expected to experience a minor increase in business due to presence of construction and operational employees. 	Minor	<ul style="list-style-type: none"> ■ Ensure Traffic Management Plan includes continued daytime access to any nearby tourism resources. ■ Create interpretative and educational signage related to Project activities. ■ Implement monitoring plans which track and evaluate data on tourist experience. ■ Ensure that tourism providers will be contacted immediately prior to the construction stages. ■ Activities adjacent to local businesses will be restricted to the extent feasible. ■ Ensure that any grievances raised by tourism providers or other local businesses will be managed in an appropriate and timely manner. 	Negligible
		Land Use <ul style="list-style-type: none"> ■ Construction of five new facilities will take place in undeveloped land owned by the government. 	Minor	<ul style="list-style-type: none"> ■ To the degree possible, minimize vegetative clearing within Project sites, and preserve trees at the edge of the Projects. 	Negligible
		Aesthetic Resources <ul style="list-style-type: none"> ■ Construction of new facilities will incur in visual disturbances. 	Minor	<ul style="list-style-type: none"> ■ To the degree possible, minimize vegetative clearing within Project sites, and preserve trees at the edge of Project boundaries to provide visual screening from surrounding properties. 	Negligible

				<ul style="list-style-type: none"> ■ To the degree possible, minimize or avoid night-time drilling and construction to reduce impacts from night-time construction lighting. ■ Where night-time activity is necessary, use the minimum intensity lighting necessary for safe activities, and use only "full cut-off" lighting, directed downward to avoid light spillage. 	
		<p>Transportation</p> <ul style="list-style-type: none"> ■ Increased road congestion and delays as a result of construction activities. ■ Increased demand on marine traffic and port capacity. ■ Potential deterioration of road infrastructure as a result of equipment and material transportation. ■ Increased risks related to road transportation safety. 	Moderate	<ul style="list-style-type: none"> ■ Traffic and Pedestrian Management Plan. ■ Emergency Preparedness and Response Plan ■ Minimize truck deliveries during peak hours. ■ Enforce a Journey Management Plan for truck deliveries. ■ Provide traffic controls (flaggers) where conduit installation temporarily reduces road width. ■ Provide buses for construction worker transport. ■ For oversized vehicles, coordinate with local authorities, use escort vehicles, and provide advance notification to community. ■ Minimize truck trips through efficient vehicle manifests. 	Minor
		<p>Community Health and Safety</p> <ul style="list-style-type: none"> ■ Increased noise ■ Increased risk of traffic hazards and incidents. ■ Worker health and safety. ■ Exposure to Project-related hazards associated with the construction activities. 	Moderate	<ul style="list-style-type: none"> ■ Community Health and Safety Plan. ■ Occupational Health and Safety Plan. ■ The Project will be developed in line with WBG General EHS Guidelines. ■ Provide a cultural education program for workers from outside the area to help reduce community conflict. ■ Provide opportunities for women and women's groups to participate in the 	Minor

		<ul style="list-style-type: none"> ■ Site security issues including public access to construction areas. ■ Community health impacts related to dust emission during construction that will exacerbate existing conditions or cause new conditions (e.g., respiratory, eye and skin diseases). ■ Community health impacts related to COVID-19. ■ Community health impacts related to worker influx (e.g., STDs). ■ Beneficial impacts to community health and safety from construction of new healthcare facilities. 		<p>work force to the extent safe and practical, and assist them in having good quality work standards so they can train others and are able to work with other companies in the future.</p> <ul style="list-style-type: none"> ■ The Project and any contractors shall involve external stakeholders (i.e., police or local authorities) in any on or off-site security incidents and ensure that appropriate incident response procedures are implemented. A Worker Policy and Code of Behavior shall be developed which includes guidance on visits, prescribed actions for conduct violations and a grievance mechanism for complaints. ■ An important aspect of minimizing the spread of communicable diseases within the community is worker health screening, particularly in the context of the COVID-19 pandemic. A worker health-screening program shall be developed and implemented, with measures to prevent the transmission of COVID-19 as part of a COVID-19 Contingency Plan. ■ The Project will provide adequate and sufficient sanitation facilities for both female and male workers. ■ Worker accommodation plans, if applicable, will be developed according to international requirements under IFC Performance Standard 2. ■ Develop and implement a Workforce Code of Conduct that addresses issues such as anti-social behavior, drug and alcohol consumption, banning weapons, and including respect for women. 	
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				<ul style="list-style-type: none"> ■ Onsite health care shall be provided to ensure prompt medical attention. ■ A Security Management Plan shall be developed in accordance with national law and the principles of good international industry practice. Access to the site will be controlled. ■ The Project will train security guards on Human Rights issues. The security guards will not be armed. They will coordinate with local government security forces in case of need and will ensure that security and human rights of local communities' members are respected. ■ Emergency Response Plans will be developed and tested including consideration of workers and nearby residents in the vicinity of Project-related traffic. These will include emergency response related to COVID-19, traffic accidents and potential releases of chemicals and other hazardous materials. ■ Workers shall receive proper Personal Protective Equipment (PPE) and associated health and safety training including procedures for emergency response. ■ See Noise and Dust controls above. ■ See Worker Influx controls above ■ See Transportation controls above. 	
		<p>Gender</p> <ul style="list-style-type: none"> ■ Men and women will be affected differently, as economic opportunities are more likely to be directed towards men. 	Moderate	<ul style="list-style-type: none"> ■ Prioritize the cultural factors of each area, to evaluate important issues: <ul style="list-style-type: none"> ○ Active female voice; ○ Women's loneliness in the case of male migration to work; ○ The types of help and assistance required these women to become 	Minor


				<p>an active voice in employee engagement.</p> <ul style="list-style-type: none"> ■ A safe environment for women in the communities will be created or them to express themselves without fear of reprisal; ■ All community meetings will be held at the best time for the female population of the region, always respecting their established schedules of domestic activities and attention to children and older focus groups, if necessary; ■ A welcoming environment will be created for motherhood needs (e.g., take her child to a meeting); ■ No woman, child, or elderly person will be put at risk or suffer any kind of reprisal; ■ All of the Project's partnerships on the construction site will have contractual clauses for: <ul style="list-style-type: none"> ○ Zero tolerance for moral and sexual harassment (Gender-based Violence Policy); ○ Minimum percentage of training and local female workforce in construction and project development; ○ Specific personal protection equipment for women's work; and ○ Flexible working hours if women are breastfeeding. ■ The Grievance Mechanisms will be able to immediately act and resolve instances and complaints of gender-related discrimination (including harassment, bullying, sexual abuse, etc.). The Project will monitor and 	
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				oversee the handling of complaints of gender-related discrimination; and	
		Cultural Heritage	Minor	<ul style="list-style-type: none"> Target of 15% female workforce Develop Cultural Heritage Management Plan including Chance Find Procedure. 	Negligible
	Operation				
		Environmental / Physical Resources			
		<ul style="list-style-type: none"> Generation of household wastes as well as hazardous and biomedical wastes 	Minor	<ul style="list-style-type: none"> Implement a solid and hazardous management plan; and Implement a hospital waste management plan. 	Minore
		<ul style="list-style-type: none"> Occurrence of Natural Hazards 	High^a	<ul style="list-style-type: none"> Implement a disaster risk management plan; and Emergency and Contingency Plan. 	Minor
		Biodiversity / Natural Habitat			
		Effects on Terrestrial Wildlife <ul style="list-style-type: none"> General security and safety artificial nighttime lighting could cause disturbance to natural cycles, feeding behaviors and migration patterns of birds and bats. Waste from clinics may be a hazard to wildlife and cause pollution. Workers and visitors may harass and cause disturbance or mortality to wildlife. 	Minor	<ul style="list-style-type: none"> If security and night lighting is utilized, minimize the amount of artificial lighting used with directional lighting (downward facing lighting) and direction accessories, and avoid the use of ultraviolet light. Design and provide Employee Wildlife Management education training or code of conduct that prohibits hunting and harassment of wildlife within Project vicinity. Prohibit hunting within conservation or protected areas. Implement a waste management plan; and ensure that wildlife cannot access waste bins. 	Negligible
		Effects on Protected Areas	Minor to moderate	<ul style="list-style-type: none"> Ban hunting and harassment of wildlife; 	Negligible to minor

	<ul style="list-style-type: none"> No sites occur within Protected Areas; however, Project-related construction activities may result in the temporary degradation of habitat quality within nearby Protected land and seascapes. Six of the proposed sites occur adjacent or within IBAs; Construction activities may result in the degradation of habitat quality and impact endemic or migratory bird populations. 		<ul style="list-style-type: none"> Minimize the amount of artificial lighting used at the site, use directional lighting (downward facing lighting) and direction accessories, and avoid the use of ultraviolet light; Implement waste management plan; and Revegetate areas around site with native flora species. 	
Social/Labor/Cultural				
	Worker Influx <ul style="list-style-type: none"> Potential for increased population due to increased jobs at healthcare facility center. 	Minor	<ul style="list-style-type: none"> See Worker Influx controls above 	Negligible
	Economic Benefits <ul style="list-style-type: none"> Direct job creation Indirect job creation Community job expectations 	Positive	<ul style="list-style-type: none"> See Economic Benefits controls above 	Positive
	Transportation <ul style="list-style-type: none"> Increased road congestion and delays as a result of operational activities. Increased risks related to road transportation safety. 	Minor	<ul style="list-style-type: none"> See Transportation controls above 	Negligible
	Community Health and Safety <ul style="list-style-type: none"> Increased noise. Increased risk of traffic hazards and incidents. Worker health and safety. Exposure to Project-related hazards associated with operational activities. Site security issues. 	Minor to Positive	<ul style="list-style-type: none"> See Community Health and Safety controls above 	Negligible to Positive

Closure and Abandonment		<ul style="list-style-type: none"> Community health impacts related to COVID-19. Beneficial impacts to community health and safety from construction of new healthcare facilities. 			
	Gender	<ul style="list-style-type: none"> Men and women will be affected differently, with women more likely to benefit from job opportunities during operations. 	Positive	<ul style="list-style-type: none"> See Gender controls above 	Positive
	Environmental / Physical Resources				
	Effects to Topography and Soils	<ul style="list-style-type: none"> Minor disturbance to topography and soils during demotion and contouring. Soil erosion and sedimentation. 	Minor	<ul style="list-style-type: none"> Rehabilitate the affected areas as close as possible to the natural condition during the closure and abandonment phase; and Implement erosion and sedimentation control measures. 	Negligible
	Effects on Water Quality	<ul style="list-style-type: none"> Generation of liquid and solid waste (hazardous and non-hazardous). Increased runoff from surface water that may be contaminated by with oils and fats. Clinic facility (hospital) waste and electronic/equipment waste. 	Minor	<ul style="list-style-type: none"> Implement a solid and hazardous management plan; and Implement a hospital waste management plan. 	Negligible
	Biodiversity / Natural Habitat				
	Effects on Terrestrial Wildlife	<ul style="list-style-type: none"> Generation of waste and hazards that may cause mortality or injury to wildlife. 	Negligible	<ul style="list-style-type: none"> Implement a solid and hazardous management plan; ensure all hazards to wildlife are removed/ 	Negligible
	Social/Labor/Cultural				

		Worker Influx <ul style="list-style-type: none"> Increased population influx during abandonment activities. 	Moderate	<ul style="list-style-type: none"> See Worker Influx controls above 	Minor
		Economic Benefits <ul style="list-style-type: none"> Direct job creation Indirect job creation Community job expectations 	Positive	<ul style="list-style-type: none"> See Economic Benefits controls above 	Positive
		Tourism <ul style="list-style-type: none"> Potential access restrictions to tourist areas during abandonment activities. 	Minor	<ul style="list-style-type: none"> See Tourism controls above 	Negligible
		Land Use <ul style="list-style-type: none"> Abandonment of facilities may result in change in land use. 	Minor	<ul style="list-style-type: none"> To the degree possible, minimize vegetative clearing within Operation sites, and preserve trees at the edge of the Operations. 	Negligible
		Aesthetic Resources <ul style="list-style-type: none"> Abandonment of facilities may incur in visual disturbances. 	Minor	<ul style="list-style-type: none"> See Aesthetic Resources controls above 	Negligible
		Transportation <ul style="list-style-type: none"> Increased road congestion and delays as a result of abandonment activities. Potential deterioration of road infrastructure as a result of equipment and material transportation. Increased risks related to road transportation safety. 	Moderate	<ul style="list-style-type: none"> See Transportation controls above 	Minor
		Community Health and Safety <ul style="list-style-type: none"> Increased noise Increased risk of traffic hazards and incidents. Worker health and safety. 	Moderate	<ul style="list-style-type: none"> See Community Health and Safety controls above 	Minor

		<ul style="list-style-type: none"> ■ Exposure to Project-related hazards associated with abandonment activities. ■ Site security issues including public access to abandoned areas. ■ Community health impacts related to dust emission during construction that will exacerbate existing conditions or cause new conditions (e.g., respiratory, eye and skin diseases). ■ Community health impacts related to COVID-19. ■ Community health impacts related to temporary worker influx (e.g., STDs). ■ Negative impacts to community health and safety from abandonment of healthcare facilities. 	Moderate		Minor
		Gender <ul style="list-style-type: none"> ■ Men and women will be affected differently, as economic opportunities during abandonment are more likely to be directed towards men. 		<ul style="list-style-type: none"> ■ See Gender controls above 	
		Cultural Heritage <ul style="list-style-type: none"> ■ If abandonment includes ground-disturbing activities it could have the potential to cause impacts to archaeological remains 	Minor	<ul style="list-style-type: none"> ■ See Cultural Heritage controls above 	Negligible
	Construction	Environmental / Physical Resources			
		Air Quality — Potential increase of fugitive dust, combustion equipment emissions, and greenhouse gases released to the atmosphere <ul style="list-style-type: none"> ■ Noise, dust, and vibrations. 	Minor	<ul style="list-style-type: none"> ■ Provide dust suppression as needed; ■ A speed limit of 25 km/h on unpaved surfaces will be enforced and 	Negligible

<p>Enhancement of Existing Primary Care facilities</p>		<ul style="list-style-type: none"> ■ Particle matter (PM), vehicle combustion emissions gas (including GHGs). ■ Fuel combustion emissions from exhausts of diesel powered earth-moving construction equipment operating at the site. ■ Fuel combustion emissions from the haul truck exhaust during material/equipment transportation. 		<p>national speed limits on public roads will not to be exceeded;</p> <ul style="list-style-type: none"> ■ Transported materials will be covered with tarpaulins to prevent fugitive dust; ■ Implement an erosion and sediment control plan; ■ Stabilize disturbed areas as soon as possible; ■ Avoid open burning of wastes; ■ Reschedule vegetation clearing activities or earthworks during periods of high wind if visible dust is blowing off-site; ■ Provide dust suppression as needed; ■ Transported materials will be covered with tarpaulins to prevent fugitive dust; ■ Stockpiles stored longer than six weeks will be vegetated or covered with sheeting, shade cloth, or tarpaulin to reduce soil loss from wind or storm water runoff; ■ Stockpiles will be located as far away from receptors as possible and will be covered with sheeting, shade cloth, or tarpaulin; ■ Implement an erosion and sediment control plan; ■ Stabilize disturbed areas as soon as possible; ■ Avoid open burning of wastes; ■ Where available, use ultra-low sulfur diesel (ULSD) in diesel powered 	
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				<p>equipment, together with best management practices;</p> <ul style="list-style-type: none"> Vehicle / equipment air emissions should be controlled by adopting simple good practice procedures (such as turning off equipment when not in use); Vehicle / equipment exhausts observed to be emitting significant black smoke in their exhausts should be serviced; Regularly maintain all diesel-powered equipment and reduce idling time to avoid emissions of NO_x, PM₁₀ and SO₂; and All non-road mobile machinery to use ultra-low sulfur diesel where available 	
		<p>Effects to Topography and Soils</p> <ul style="list-style-type: none"> Erosion and sedimentation. 	Negligible	<ul style="list-style-type: none"> Implement the storm water runoff, soil erosion, and sediment control measures included in the Environmental Management Plan. 	Negligible
		<p>Effects on Water Quality</p> <ul style="list-style-type: none"> Increased runoff from waters that may be contaminated with oils and fats, metals, and nutrients. Liquid and solid waste (hazardous and non-hazardous). Accidental spills. Clinic facility waste and electronic/equipment waste. Impacts associated with the storage and use of hazardous chemicals, materials, and gases. 	Minor	<ul style="list-style-type: none"> Construct adequate stormwater diversion structures to route runoff around affected areas; Ensure sediment traps are in place and maintained regularly; Implement an erosion and sedimentation control plan; Dust suppression operations are recommended; Implement a solid and hazardous management plan; and Implement a hospital waste management plan. 	Negligible
		Biodiversity / Natural Habitat			

		Effects on Terrestrial Vegetation <ul style="list-style-type: none"> Temporary laydown areas may inhibit or cause mortality to native flora around the existing clinics. Project-related vehicular traffic and site preparation activities may create dust, the accumulation of which can inhibit vegetative growth. Vegetation clearance may introduce or spread of invasive and exotic plant species within Project area. Accidental oil spills or fuel leaks may inhibit growth or cause mortality of surrounding vegetation. 	Minor	<ul style="list-style-type: none"> Demarcate construction areas. Revegetate areas post-construction with native grasses and shrubs. Implement dust control procedures. Regularly provide maintenance to construction vehicles. 	Negligible
		Effects on Terrestrial Wildlife <ul style="list-style-type: none"> Disturbance and mortality to wildlife and young nesting in existing facilities. Mortality or injury of wildlife species, during construction and operations with use of heavy machinery and increased vehicular traffic. General security and safety artificial nighttime lighting could cause disturbance to natural cycles, feeding behaviors and migration patterns of birds and bats. During construction, noise generated from heavy machinery will generate medium-high noise levels causing wildlife displacement and mask acoustic calling, thus affecting mating and feeding behaviors. Workers may harass and cause disturbance or mortality to wildlife. 		<ul style="list-style-type: none"> Avoid clearing vegetation during bird breeding season, as possible. Inspect all buildings for wildlife to be safely and humanely removed by trained biologists. If security and night lighting is utilized, minimize the amount of artificial lighting used with directional lighting (downward facing lighting) and direction accessories, and avoid the use of ultraviolet light. Install silencers to vehicles and heavy equipment. Design and provide Worker Wildlife Management education training or code of conduct that prohibits hunting and harassment of wildlife within Project vicinity. Prohibit hunting within conservation or protected areas. Implement a waste management plan; block off any contaminated water sources, and ensure that 	

	<ul style="list-style-type: none"> Construction debris or hazards may not be disposed of properly polluting land and seascape and/or causing injury or mortality to wildlife. 		wildlife cannot access bins, boxes, pipes, materials or piles of rubble.	
	<p>Effects on Protected Areas</p> <ul style="list-style-type: none"> Project-related construction activities may result in the temporary degradation of habitat quality within protected land and seascapes. Four of the proposed existing sites occur adjacent or within IBAs; Construction activities may result in the degradation of habitat quality and impact endemic or migratory bird populations. 	Minor to Moderate	<ul style="list-style-type: none"> Ban hunting and harassment of wildlife. Ensure a wildlife biologist inspects and repels all roosting birds and other wildlife from site prior to construction. Avoid construction during bird breeding season. Minimize the amount of artificial lighting used at the site, use directional lighting (downward facing lighting) and direction accessories, and avoid the use of ultraviolet light. Implement waste management plan. 	Negligible to minor
	Social/Labor/Cultural			
	<p>Worker Influx</p> <ul style="list-style-type: none"> Increased population influx during construction activities. 	Moderate	<ul style="list-style-type: none"> Prioritize local hiring by developing a Local Employment and Supplier Development Plan. Establish a local employment brokerage that will publicize job vacancies and put in place initiatives to ensure employment opportunities for hard to reach groups. Implement Community Grievance Mechanism. Evaluate need of security guards, fencing, and/or other security measures. Code of Conduct for all Project employees and contracted staff including zero-tolerance policy for drug use, sale or purchase. Project should issue a policy statement regarding sexually 	Minor

				<p>transmitted infections including HIV/AIDS, and this policy would be communicated internally to staff, and externally to Contractors.</p> <ul style="list-style-type: none"> ■ Develop a Socioeconomic and Community Health and Management Plan to manage influx and recreation risks. ■ Workers Accommodation Plan and Checklist if necessary. ■ COVID-19 Contingency Plan 	
		<p>Economic Benefits</p> <ul style="list-style-type: none"> ■ Direct job creation ■ Indirect job creation ■ Community job expectations 	Positive	<ul style="list-style-type: none"> ■ Prioritize local hiring by developing a Local Employment and Supplier Development Plan. ■ Establish a local employment brokerage that will publicize job vacancies and put in place initiatives to ensure employment opportunities for hard to reach groups. ■ Implement Community Grievance Mechanism. 	Positive
		<p>Tourism</p> <ul style="list-style-type: none"> ■ Potential access restrictions to tourist areas during construction. ■ Impacts to nearby tourism businesses expected to experience a minor increase in business due to presence of construction and operational employees. 	Minor	<ul style="list-style-type: none"> ■ Ensure Traffic Management Plan includes continued daytime access to any nearby tourism resources. ■ Create interpretative and educational signage related to Project activities. ■ Implement monitoring plans which track and evaluate data on tourist experience. ■ Ensure that tourism providers will be contacted immediately prior to the construction stages. ■ Activities adjacent to local businesses will be restricted to the extent feasible. ■ Ensure that any grievances raised by tourism providers or other local businesses will be managed in an appropriate and timely manner. 	Negligible

		Land Use <ul style="list-style-type: none"> Expansion of existing facilities may result in minor changes to land use. 	Negligible	<ul style="list-style-type: none"> To the degree possible, minimize vegetative clearing within Project sites, and preserve trees at the edge of the Projects. 	Negligible
		Aesthetic Resources <ul style="list-style-type: none"> Construction of new facilities will incur in visual disturbances. 	Minor	<ul style="list-style-type: none"> To the degree possible, if vegetative clearing is necessary, minimize vegetative clearing within Project sites, and preserve trees at the edge of Project boundaries to provide visual screening from surrounding properties. To the degree possible, minimize or avoid night-time drilling and construction to reduce impacts from night-time construction lighting. Where night-time activity is necessary, use the minimum intensity lighting necessary for safe activities, and use only "full cut-off" lighting, directed downward to avoid light spillage. 	Negligible
		Transportation <ul style="list-style-type: none"> Increased road congestion and delays as a result of construction activities. Increased demand on marine traffic and port capacity. Potential deterioration of road infrastructure as a result of equipment and material transportation. Increased risks related to road transportation safety. 	Moderate	<ul style="list-style-type: none"> Traffic and Transportation Management Plan. Emergency Preparedness and Response Plan. Minimize truck deliveries during peak hours. Enforce a Journey Management Plan for truck deliveries. Provide traffic controls (flaggers) where conduit installation temporarily reduces road width. Provide buses for construction worker transport. For oversized vehicles, coordinate with local authorities, use escort vehicles, and provide advance notification to community. 	Minor

				<ul style="list-style-type: none"> Minimize truck trips through efficient vehicle manifests. 	
		<p>Community Health and Safety</p> <ul style="list-style-type: none"> Increased noise Increased risk of traffic hazards and incidents. Exposure to Project-related hazards associated with the construction and operational activities. Worker health and safety. Site security issues including public access to construction areas. Community health impacts related to dust emission during construction that will exacerbate existing conditions or cause new conditions (e.g., respiratory, eye and skin diseases). Community health impacts related to COVID-19. Community health impacts related to worker influx (e.g., STDs). Beneficial impacts to community health and safety from expansion of healthcare facilities. Risk of temporary decrease of healthcare facility capacity. Risk of temporary decline in access to the healthcare facility. 	Moderate	<ul style="list-style-type: none"> Community Health and Safety Plan. Occupational Health and Safety Plan. The Project will be developed in line with WBG General EHS Guidelines. Provide a cultural education program for workers from outside the area to help reduce community conflict. Provide opportunities for women and women's groups to participate in the work force to the extent safe and practical, and assist them in having good quality work standards so they can train others and are able to work with other companies in the future. The Project and any contractors shall involve external stakeholders (i.e., police or local authorities) in any on or off-site security incidents and ensure that appropriate incident response procedures are implemented. A Worker Policy and Code of Behavior shall be developed which includes guidance on visits, prescribed actions for conduct violations and a grievance mechanism for complaints. An important aspect of minimizing the spread of communicable diseases within the community is worker health screening, particularly in the context of the COVID-19 pandemic. A worker health-screening program shall be developed and implemented, with measures to prevent the transmission of COVID-19 as part of a COVID-19 Contingency Plan. The Project will provide adequate and sufficient sanitation facilities for both female and male workers. 	Minor

				<ul style="list-style-type: none"> ■ Worker accommodation plans, if applicable, will be developed according to international requirements under IFC Performance Standard 2. ■ Develop and implement a Workforce Code of Conduct that addresses issues such as anti-social behavior, drug and alcohol consumption, banning weapons, and including respect for women. ■ Onsite health care shall be provided to ensure prompt medical attention. ■ A Security Management Plan shall be developed in accordance with national law and the principles of good international industry practice. Access to the site will be controlled. ■ The Project will train security guards on Human Rights issues. The security guards will not be armed. They will coordinate with local government security forces in case of need and will ensure that security and human rights of local communities' members are respected. ■ Emergency Response Plans will be developed and tested including consideration of workers and nearby residents in the vicinity of Project-related traffic. These will include emergency response related to COVID-19, traffic accidents and potential releases of chemicals and other hazardous materials. ■ Workers shall receive proper Personal Protective Equipment (PPE) and associated health and safety training including procedures for emergency response. 	
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				<ul style="list-style-type: none"> ■ Develop Management Plan to ensure adequate healthcare facility capacity to cover basic population needs during construction. ■ See Noise and Dust controls above ■ See Worker Influx controls above. ■ See Transportation controls above. 	
		<p>Gender</p> <ul style="list-style-type: none"> ■ Men and women will be affected differently, as economic opportunities are more likely to be directed towards men 	Moderate	<ul style="list-style-type: none"> ■ Prioritize the cultural factors of each area, to evaluate important issues: <ul style="list-style-type: none"> ○ Active female voice. ○ Women's loneliness in the case of male migration to work. ○ The types of help and assistance required these women to become an active voice in employee engagement. ■ A safe environment for women in the communities will be created or them to express themselves without fear of reprisal. ■ All community meetings will be held at the best time for the female population of the region, always respecting their established schedules of domestic activities and attention to children and older focus groups, if necessary. ■ A welcoming environment will be created for motherhood needs (e.g. take her child to a meeting). ■ No woman, child, or elderly person will be put at risk or suffer any kind of reprisal. ■ All of the Project's partnerships on the construction site will have contractual clauses to the detriment of: 	Minor

				<ul style="list-style-type: none"> ○ Zero tolerance for moral and sexual harassment (Gender-based Violence Policy). ○ Minimum percentage of training and local female workforce in construction and project development. ○ Specific personal protection equipment for women's work. ○ Flexible working hours if women are breastfeeding. <ul style="list-style-type: none"> ■ The Grievance Mechanisms will be able to immediately act and resolve instances and complaints of gender-related discrimination (including harassment, bullying, sexual abuse, etc.). The Project will monitor and oversee the handling of complaints of gender-related discrimination. ■ Target of 15% female workforce. 	
		Cultural Heritage	Minor	<ul style="list-style-type: none"> ■ Develop Cultural Heritage Management Plan including Chance Find Procedure. 	Negligible
	Closure and Abandonment	Environmental / Physical Resources			
		Effects on Water Quality	Minor	<ul style="list-style-type: none"> ■ Implement a solid and hazardous management plan; and ■ Implement a hospital waste management plan. 	Negligible
		Biodiversity / Natural Habitat			

		Effects on Terrestrial Wildlife <ul style="list-style-type: none"> Generation of waste and hazards that may cause mortality or injury to wildlife. 	Negligible	<ul style="list-style-type: none"> Implement a solid and hazardous management plan; ensure all hazards to wildlife are removed. 	Negligible
		Social/Labor/Cultural			
		Worker Influx <ul style="list-style-type: none"> Increased population influx during abandonment activities. 	Moderate	<ul style="list-style-type: none"> See Worker Influx controls above 	Minor
		Economic Benefits <ul style="list-style-type: none"> Direct job creation Indirect job creation Community job expectations 	Positive	<ul style="list-style-type: none"> See Economic Benefits controls above 	Positive
		Tourism <ul style="list-style-type: none"> Potential access restrictions to tourist areas during abandonment activities. 	Minor	<ul style="list-style-type: none"> See Tourism controls above 	Negligible
		Land Use <ul style="list-style-type: none"> Abandonment of facilities may result in change in land use. 	Negligible	<ul style="list-style-type: none"> To the degree possible, minimize vegetative clearing within Operation sites, and preserve trees at the edge of the Operations. 	Negligible
		Aesthetic Resources <ul style="list-style-type: none"> Abandonment of facilities may incur in visual disturbances. 	Minor	<ul style="list-style-type: none"> See Aesthetic Resources controls above 	Negligible
		Transportation <ul style="list-style-type: none"> Increased road congestion and delays as a result of abandonment activities. Potential deterioration of road infrastructure as a result of equipment and material transportation. Increased risks related to road transportation safety. 	Moderate	<ul style="list-style-type: none"> See Transportation controls above 	Minor
		Community Health and Safety <ul style="list-style-type: none"> Increased noise. 	Moderate	<ul style="list-style-type: none"> See Community Health and Safety controls above 	Minor

		<ul style="list-style-type: none"> ■ Increased risk of traffic hazards and incidents. ■ Worker health and safety. ■ Exposure to Project-related hazards associated with abandonment activities. ■ Site security issues including public access to abandoned areas. ■ Community health impacts related to dust emission during construction that will exacerbate existing conditions or cause new conditions (e.g., respiratory, eye and skin diseases). ■ Community health impacts related to COVID-19. ■ Community health impacts related to temporary worker influx (e.g., STDs) <ul style="list-style-type: none"> ■ Negative impacts to community health and safety from abandonment of healthcare facilities. 			
	Gender	<ul style="list-style-type: none"> ■ Men and women will be affected differently, as economic opportunities during abandonment are more likely to be directed towards men. 	Moderate	<ul style="list-style-type: none"> ■ See Gender controls above 	Minor
	Cultural Heritage	<ul style="list-style-type: none"> ■ If abandonment includes ground-disturbing activities it could have the potential to cause impacts to archaeological remains. 	Minor	<ul style="list-style-type: none"> ■ See Cultural Heritage controls above 	Negligible

^a The disaster risk classification of the Operation is High, especially for the Level I facilities that are going to be built, A disaster analysis may be needed to include a qualitative or quantitative disaster and climate change risk assessment to evaluate more specific measures.

6. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLANS

The Operation was categorized as Category B for having low to moderate environmental and social impacts that are manageable with common mitigation measures. To ensure that the environmental and social impacts and risks of the Operation are effectively addressed, the IDB has requested an Environmental and Social Management Plan (ESMP) that includes mitigation measures and responds to the specific issues identified in this ESA.

The ESMP includes the following plans:

- Consultation Plan
- Stakeholder Engagement Plan
- Grievance Mechanism Plan
- Hospital Waste Management Plan
- Solid and Hazardous Waste Management Plan
- Erosion and Sediment Control Plan
- Water Management Plan
- Noise and Emissions Management Plan
- Traffic and Pedestrian Management Plan
- Emergency and Contingency Plan
- Disaster Risk Management Plan
- Management of Patients Plan

6.1 Consultation Plan

This Plan is relevant for the Operation given that it is classified as category B according to OP-703 and details the IDB requirements for public consultation. This Plan discusses how to achieve the objectives and meet the IDB's requirements regarding public consultation in a virtual manner, in response to the current environment due to the global pandemic and the particular circumstances regarding social distancing and restrictions of meetings/face-to-face events that are being deploying in many places in order to protect public health.

International good practice suggests that community relations activities and exchange of information with communities be carried out throughout the life of a project (as is detailed in the Stakeholder Engagement Plan and Grievance Mechanism in Section 6.2). According to OP-703 specifically, a Category B operation requires at least one public consultation, preferably while management plans are being developed and before the Operation is submitted for consideration by the IDB Board of Directors. The Operation will have to meet this requirement adapting to the circumstances of COVID-19.

Due to COVID-19 restrictions and after consultation with local experts, at least one Zoom consultation will be held for the Operation. As soon as the date of the consultation(s) has been determined, this plan will be updated to include that information.

6.1.1 Objectives

By consulting with relevant stakeholders for a project, value is added in different ways. In particular, consultation:

- Captures the **views and perceptions** of people who may be affected or interested in a project, and provides a means for those views to be taken into account as contributions to improved project design and implementation, which avoids or reduces adverse impacts and increases benefits;
- Constitutes an important source of **validation and verification** of data obtained elsewhere, and improves the quality of environmental and social impact evaluations;
- Helps people understand **their rights and responsibilities** in relation to a project;
- Provides greater transparency and stakeholder participation and in turn **increases trust, project acceptance and local ownership**, key aspects for project sustainability and development results;
- Meets IDB requirements, in accordance with environmental and social safeguard policies; and
- Increases the **credibility and legitimacy** of executing agencies and international financial institutions such as the IDB (IDB, 2017a).

The Public Consultation has two main objectives:

1. Presenting and communicating the outcomes of the preliminary ESA undertaken for the Operation; and
2. Sharing and hearing the stakeholders and Bahamian's opinions on the Operation and its high-level impacts.

6.1.2 Development of the Public Consultation

6.1.2.1 Consultation Team

The entire consultation process and the meetings will be organized by Ministry of Health's communication team. The Consultation Team will carry out both the preparation phase and the processing of the information received from the consultation.

6.1.2.2 Types of consultation

Virtual consultation in non-real time (open without invitation):

During the **30 days** the public consultation will remain open, the community can check <https://www.miga.org/project/bahamas-covid-19-response-1> and other websites to be confirmed, to see the progress of the consultation, the time limit for receiving inputs, and an indication of the date for the consultation. A recording of the consultation will also be made available for the community to watch, which will include information on how to submit questions and input regarding the consultation in non-real time.

Virtual consultations in real time (by invitation):

A minimum of one consultation will be held via Zoom to discuss the Operation. The session will last at least 2 hours. Following a presentation by the MOH, which will follow the guidelines set out in Section 6.1.2.2, the consultation will serve to listen to attendees' opinions and to collect inputs. The idea is to promote broader participation and increase the opportunities for exchanging and collecting inputs regarding the topics suggested by the facilitator, in line with the main pillars and/or questions of the consultation. The Ministry of Health will designate a person responsible for taking notes of questions, answers and all inputs, which will be recorded in the minutes.

6.1.2.1 Logistical Considerations for Planning

Taking into account international good practice and IDB standards, some logistical considerations for consultation are presented below:

- **Previous Information:** The Operation must consider how to disclose information prior to the consultation. This will include sharing the link to the preliminary ESA. This can be done through a web page, infographics circulated by WhatsApp, or by other means that are easily accessible to the stakeholders. The provision of information will be publicized with the consultation date and time, so that the interested parties can review and attend the consultation preliminarily informed.
- **Scheduling:** With the goal of increasing the participation of the stakeholders, possible schedule restrictions should be taken into account and the event should be scheduled for a time that will not cause disruption to their work and/or family hours, and avoid holidays.
- **Invitation:** The invitation/announcement for the consultation will be made via website, in addition to other possibilities, that may include: Facebook, WhatsApp, radio, bulk text message, letter or formal email, and newspaper adverts. It is generally recommended to start publicizing the consultation at least two weeks in advance. The announcements for the consultation must indicate the date, where to access a link to the Zoom meeting, and time. The announcement will also include a brief explanation of the objective of the consultation, the topics that will be presented, the mechanics of the process and the rights of those attending it, with emphasis on their right to provide their inputs that the Operation could take into account. The invitation will be accompanied by this Consultation Plan whenever possible. In addition, a link to the working document for the ESA will be shared. Special attention will be given to equitable gender representation and diversity in the audience. Steps for conducting

stakeholder analysis, which will help guide invitations to the event, are outlined in Section 6.2.3, which also includes a sample stakeholder analysis.

- **Place:** The consultation will take place via Zoom, and a recording of the consultation will be made available inviting comments, inputs and questions for a defined time period (**30 days**) thereafter, which the Operation may summarize and reply to in another recording or via other means. This option has the benefit of being more open and limiting possible connectivity problems that may restrict the participation of large numbers of people on virtual platforms.
- **Duration:** The consultation will last at least two hours. The first 30 to 60 minutes of the consultation will consist of a presentation. The remaining 60 to 90 minutes will be devoted to questions and answers.
- **Language / communication:** The consultation will take place in English. Simple (non-technical and concise) terminology and effective communication tools (including verbal, image-based, or other written format alternatives) will be used.
- **Recording:** The consultation will be recorded, and all participants will be made aware of the recording. This will ensure the transparency of the process and will provide a record of its adequacy. In addition, the Ministry of Health will designate a person responsible for taking notes of questions, answers and all inputs, which will be recorded in the minutes. An annex will provide details of the institutions and individuals invited to participate, with a matrix indicating the inputs received and analysed. However, individual authors will remain anonymous.
- **Event registration:** The Ministry of Health's team will verify if there is an option to register participants or at least have a count of the participants to include in the documentation.

The IDB provides additional guidelines for virtual consultations in its document "Planning for the Virtual Public Consultation - COVID-19, Guideline for Government Agencies (GA) and Project Executing Units (PEU)".

Documentation of the stakeholder consultation process will include:

- A written record and minutes of consultation events with the list of participants, with contact information and representatives of the Operation authorities.
- Virtual photographs when possible, image or sound recordings, when appropriate, after having made a clear explanation of the purpose of the recording and having obtained the agreement of the participants.

Further outputs of the consultation process will include a summary of the topics discussed with the attendees, as well as the comments received outside of the consultation prepared by the Ministry of Health's consultation team. The summary will be included in the final version of the Consultation Plan. The document will include:

- A consolidated matrix with all relevant observations and recommendations contributed by participants.
- Aspects deserving special attention.

An Annex with the final list of all organizations invited to participate in the consultation (both in person or virtual), with details of the participants in each session will be included in the Final Consultation Plan.

6.1.2.2 Content of the Consultation

Whatever the format of the consultation (traditional or virtual), the key points to be covered during a consultation event include the following (IDB, 2017b):

- Explain the objectives of the discussion, the way in which the event will be structured and the expected follow-up. If it is being recorded, inform the participants.
- Review agenda for discussion.
- Summarize the previous information about the Operation that has been provided.
- Explain the Operation in more detail (with the use of visuals such as maps, photos, videos, etc. if possible), including elements such as:
 - Their location, design, and purpose;
 - The expected benefits and beneficiaries;
 - The studies that have been carried out and the studies to be carried out;
 - The anticipated environmental and social impacts and mitigation measures; and
 - The plans planned for construction and expected schedules.
- Manage expectations and clearly define the role that consultations play in decision-making.
- Take the opportunity to address and clarify any rumours, conjectures or misunderstandings about the Operation.
- Invite questions or comments from attendees (written or verbal) and respond to them. In case there is no answer at the moment, establish actions to ensure the answer reaches the interested party later. It is recommended to record all questions / comments and answers given.
- Summarize the points raised and how the follow-up actions will be carried out.
- Explain how people can communicate with the Operation in case they have a concern and the process for the grievance mechanism.
- Explain where the recording will be available, and the method and time limit for receiving inputs outside of the consultation.

6.1.3 Public Consultation Report

The consultation must be documented in a Consultation Report that includes the following elements:

- A written record and minutes of consultation events with the list of participants, contact information and representatives of the Operation.
- Virtual photographs when possible, image or sound recordings, when appropriate, after having made a clear explanation of the purpose of the recording and having obtained the agreement of the participants.
- Apply the "Chatham House Rules"¹⁰ where appropriate, and full confidentiality should be respected if requested.

¹⁰ Chatham House Rules state that meeting participants may discuss / use discussed information and results after the meeting, but may not discuss who attended or identify what a specific individual said.

6.2 Stakeholder Engagement Plan

This plan provides details on how communications and engagements can be carried out at the Operation level in order to share information about the Operation and offer opportunities for stakeholders to express their points of view and concerns about the Operation and receive consideration and response from the Operation personnel. It additionally describes the need for a grievance mechanism to formally address any concerns or complaints from stakeholders in a timely manner. It is important to note that individual projects classified as Category B or higher require formal public consultations according to OP-703; this aspect is covered in the Consultation Plan (Section 6.1). This Plan discusses how to achieve the objectives and meet the IDB's requirements regarding these issues in a virtual manner, in response to the current environment due to the global pandemic and the particular circumstances regarding social distancing and restrictions of meetings/face-to-face events that are being deployed in many places in order to protect public health.

6.2.1 Principles

The main objectives of this Stakeholder Engagement Plan and Grievance Mechanism are to:

- Identify interest groups;
- Understand the concerns and views of stakeholders related to the risks, impacts, and mitigation measures of each project;
- To the extent possible, involve the affected communities in the decision-making process of each project;
- Respond to the concerns of the affected community in an inclusive and culturally appropriate manner;
- Disseminate and report relevant information regarding possible adverse impacts, in a timely, accessible, and understandable manner, and in the appropriate languages; and
- Establish a grievance mechanism that allows for timely feedback from interested parties about Operation plans and activities throughout the life of each project.

All the information provided by the Operation should be in a format and language that is easily understandable, adapted to the needs of the public, and disseminated in places that make it easy for stakeholders to access. All information provided to stakeholders should respect local traditions, languages, deadlines, and decision-making processes.

6.2.2 Methodology

One of the first steps in stakeholder engagement planning is the identification of stakeholders. Stakeholders typically include government officials, regulators, members of the community and public at large, Non-Governmental Organizations (NGOs) and civic leaders, media, employees and contractors, and industry associations. Stakeholders can be individuals working on a project, groups of people or organizations, or even segments or sectors of a population. A stakeholder may be actively involved in a project's work, affected by the project's outcome, or in a position to affect the project's success.

After identifying the stakeholders, it is key to understand their needs and expectations for engagement, and their priorities and objectives in relation to the Operation.

As part of this process, it is particularly important to identify individuals and groups who may find it more difficult to participate and those who may be differentially or disproportionately affected by the Operation because of their marginalized or vulnerable status. It is also important to understand how stakeholders may be affected – or perceive they may be affected – so that ongoing engagement can be tailored to inform them in an appropriate manner and address their views and concerns.

While an interest in an effort or organization could be just that – intellectually, academically, philosophically, or politically motivated attention – stakeholders are generally said to have an interest in an effort or organization based on whether they can affect or be affected by it. The more they stand to benefit or lose by it, the stronger their interest is likely to be; and the more heavily involved they are in the effort or organization, the stronger their interest is as well.

Stakeholders' interests can be many and varied. A few of the more common interests include:

- Labor
- Social Change
- Economics
- Indigenous Peoples Rights
- Environment
- Natural Resources
- Safety and Security

The sample identification of stakeholder groups for MOH was made through publicly available information and local knowledge from the Operation team. The stakeholder groups have been "mapped" according to their influence, interest and probable position in relation to the Operation. This assignment is based on knowledge of the social, cultural, political, environmental, and factors associated with the development of the Operation.

Vulnerable groups who may be differentially or disproportionately affected by the Operation because of their disadvantaged or vulnerable status have also been identified as part of the stakeholder mapping. This group of affected stakeholders was determined based on factors, data and status of gender, ethnicity, culture, physical or mental disability, poverty or economic disadvantage and dependence on unique natural resources.

Once the stakeholder groups are identified, their position, interest and influence regarding the Operation are evaluated. The position has been defined as the degree of acceptance by the interest group towards MOH. The criteria are presented in the table below.

Table 6-1: Assessment of Position Criteria

Assessment	Position
For	The interest group's position in relation to the Operation is favorable; given that it perceives that, it has or will have a positive performance in relation to its topics of interest.
Neutral	The stakeholder's position in relation to the Operation is neutral, indefinite. You may have the expectation that he/she will have a position to minimize the existing impacts. However, he/she needs more information, since it is not clear to him/her how the Operation will be developed in the future.
Against	The position of the group of interest in relation to the Operation is unfavorable, since it identifies more negative aspects than positive ones in the current or future development of the Operation.

Source: ERM, 2021.

The interest has been defined as the stakeholder's interest degree that he/she has on the issues associated with MOH. The evaluation criteria are presented below.

Table 6-2: Interest Evaluation Criteria

Assessment	Interest Position
Low	The interested party does not know or recognizes few links between the Operation and their own interests, and shows little interest in knowing more about it.
Medium	The interested party recognizes some relations between the Operation and its interests.
High	The interested party recognizes a set of common interests with the Operation and shows a strong interest to know more information about it.

Source: ERM, 2021

Finally, the influence has been defined as the degree of articulation with other actors and the capacity to generate mobilization as seen on the table below.

Table 6-3: Influence Evaluation Criteria

Assessment	Influence Position
Low	The interested party has little capacity for mobilization and/or few networks and relationships with local actors.
Medium	The interested party has the ability to articulate and mobilize media, exerts influence in social networks with important connections with local actors such as inhabitants, workers, tourists, politicians, among others.
High	The interested party has a high capacity for articulation and mobilization with significant local networks and actors such as inhabitants, workers, tourists, politicians, among others.

Source: ERM, 2021

The identification and mapping of stakeholder groups is presented in the sections below.

Stakeholder Groups

Stakeholder groups are individuals, groups or institutions that have a stake or a particular interest in the Operation. They may be affected by it (either positively or negatively) or they may have an interest in it and be in a position to influence its outcomes. Therefore, the stakeholder groups have been classified as:

- Interested groups, which can be Operation beneficiaries and commonly favor the Operation; and
- Affected groups, which are individuals or groups adversely affected by the Operation and consequently some might oppose the Operation.

The Operation will follow a different consultation rationale per stakeholder group. The Operation will closely monitor, engage and consult the affected groups in the area of influence of the Projects. Meetings with these groups, described below, are prioritized by the Operation. On the other hand, the Operation engages with interested groups to keep them informed about the Operation, to collaborate in topics related to common issues, such as health and safety measures, and provide specific information when they request it. While the consultation rationale towards interested groups is not as intense and frequent as with the affected groups, MOH is committed to maintain a close relationship and frequent communication with government entities and financial institutions, among others.

Table 6-4: Affected and Interested Stakeholder Groups in the Operation's Area of Influence

Affected Stakeholder Groups	Interested Stakeholder Groups
Communities in the Area of Influence and landowners near the Projects: Residential communities in the Operation's wider socio-economic study area.	Government entities relevant to the Operation: Government agencies, elected officials and public service providers that may be at the local or national levels.
Tourism sector: This sector includes different groups within the sector such as, hotels, restaurants and regulatory entities.	Neighboring Projects: Includes neighboring healthcare facilities.
Vulnerable groups in the Area of Influence: This stakeholder group could include women, children and elderly, indigenous people, families and individuals in extreme poverty, people with physical and psychological disabilities, and individuals that depend on natural resources. These groups are commonly more vulnerable to social inequality. In addition, vulnerable groups have a higher sensitivity to potential Operation impacts, in many cases do not have the means to defend their interests and concerns and it is more challenging for them to benefit from the Operation's benefits.	Financial Institutions: Financial Institutions that will finance the Operation.
NGOs, Associations and civil organizations: Local and regional NGOs and associations that could generate opinions about the development of the Operation or that could participate in conflict resolution that could take place within the communities.	Mass media: It refers to media present in the Area of Influence.
	Contractors: It includes MoH's contractors and sub-contractors.
	Workers and Staff: It includes all of MoH's workers and staff.

Source: ERM, 2021.

6.2.3 Stakeholder Identification

The Operation should undertake an exercise of stakeholder identification early in the planning phase. The process of stakeholder identification includes identifying individuals, groups, local communities and other stakeholders who may be affected by the Operation; (positively or negatively) identifying broader stakeholders who may be able to influence the outcome of the Operation; identifying legitimate stakeholder representatives (such as elected officials, non-elected community leaders, etc.); and, mapping the impact zones by placing the Affected Communities within a geographic area.

When identification is carried out, MOH should focus especially on identifying groups of stakeholders that could be negatively or differently affected by the Operation's impacts or excluded from its benefits, with special emphasis on identifying any stakeholder that is vulnerable for reasons such as socioeconomic status, ethnic identity, gender, etc. Vulnerable individuals and groups, for reasons of exclusion or additional hardships, may find it more difficult to participate in engagement. By identifying any vulnerable stakeholders early on in the process, engagements can be tailored to ensure they are adequately informed and to understand their views and concerns in an appropriate manner. Examples of this may be performing engagement activities specifically for women, single-caregiver households, minority groups, separate from those for the general public to ensure their voices are adequately heard and considered. The appropriate type of engagement is determined by a number of factors, including the likely impact of the Operation on the stakeholder (often related to location), their

influence over the Operation, and their preferences and abilities to access information and participate in consultation.

Stakeholder identification should be updated frequently. This could mean on a scheduled, quarterly basis, or as needed when a significant change occurs (for example, the project design or change in construction method that may involve or significantly affect new or existing stakeholders).

Stakeholders are identified using the following steps:

- Delineate the geographical area of influence of the Operation. This should take into account the project site and any associated facilities, transportation routes, areas potentially affected by the activity, and environmental and social issues of each project, as appropriate.
- Determine interest groups and impacts. Based on the area of influence, identify affected stakeholders from larger groups, institutions and individuals that could potentially affect or be affected by the Operation, as well as related impacts.

The following questions can be used to provide the inputs for stakeholder identification:

- With whom does each project have legal obligations?
- Who could be positively or negatively affected by the decisions or activities of each project?
- Who can express concerns about the decision and activities of each project?
- Who can help each project to address specific impacts?
- Who can affect the ability of each project to fulfil its responsibilities?
- Who would be at a disadvantage if excluded from the engagement?
- Who are the possible beneficiaries?
- Who are members of vulnerable groups?
- What are the relationships between stakeholders?

Some typical categories of stakeholders are presented below for reference. However, these categories are not exclusive and should be adapted to the context and reality of each project.

- **Communities within the Operation's Area of Influence:** Refers to those localities that are within the perimeter of each project and may be directly affected by each project, or people in other areas relevant to each project (for example, on a transportation route).
- **Expected beneficiaries of the Operation:** They could include the target population to receive reinforced health services or people interested in obtaining employment with the Operation.
- **Indigenous and Ethnic Groups or Migrant Populations:** Indigenous, ethnic or migrant groups in the Operation area or close to the Operation that may be impacted by it.
- **Government entities relevant to the Operation:** Including representatives of local government districts or town areas and other units that may be potentially involved in the various stages of the Operation (e.g. issuing permits, implementation partner, community liaison, etc.).
- **Civil Society Organizations:** Includes NGOs that are local, national and international in scope that could generate an opinion on the development of the Operation or participate in outreach activities with the community (for example, neighbourhood associations, religious groups, etc.).
- **International or Development Cooperation Agencies:** International agencies or development agencies that promote development projects in the area and that may have interrelation or opinions on the Operation, especially with regard to the protection of vulnerable populations.

- **Private Sector:** Representatives of the private sector that could be affected or benefited by the Operation.
- **Organized interest groups:** business associations, unions, etc.

In general, the identification of stakeholders can be done on the basis of impact analysis documents, which generally have baseline information on the Operation area. Then, key informants can be procured to validate the list or expand it if necessary. Due to constraints posed by COVID-19, these methods should be supplemented or replaced by virtual methods. In many places, especially urban areas with good connectivity, it is likely that sufficient information may be obtained through online sources such as data from the local government or webpages, or civil society groups in social networks. On the other hand, free mapping programs such as Google Earth/Google Maps can be used to validate the existence or not of housing and/or economic activities close to a project site. As another option if the project area is very rural without updated/reliable information in one of these programs, high-resolution satellite imagery can be procured to meet the same objective.

To overcome any difficulties, each project must reinforce their efforts to seek remote contact with key local informants who can provide input based on their local knowledge and relationships. When relying on key stakeholders, projects should always consider that key informants have their own interests, and thus should seek a balance and diversity of key informants to ensure a broad perspective.

6.2.3.1 Sample Stakeholder Identification

A sample of stakeholder identification is included for illustrative purposes of stakeholders in the government, healthcare facility and NGO categories. Additional stakeholder categories for the Operation will likely include civil organizations, labor unions, nearby communities and businesses, tourism sector, other healthcare facilities, media, neighboring projects and vulnerable groups (e.g. associations representing immigrants, women, people with disabilities, etc.)

Table 6-5: Sample Stakeholder Identification

Stakeholder	Category
Ministry of Health (Lead)	Government
Department of Public Health	
Public Hospitals Authority	
Department of Gender and Family Affairs	
Ministry of the Environment and Housing	
Department of Environmental Health	
Department of Social Services	
Bahamas Power and Light	
Bahamas Electricity Corporation - Exuma	
Grand Bahama Power Company (Subsidiary of Emera)	
The Bahamas Environment, Science and Technology Commission (BEST)	
Ministry of the Environment and Housing - Forestry Unit	
Department of Environmental Health Services (DEHS)	
National Emergency Management Agency (NEMA)	
Ministry of Disaster Preparedness Management and Reconstruction	
Ministry of Public Works	

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Department of Labor	
Ministry of Finance	
Ministry of Transport	
Ministry of Tourism and Aviation	
Townhall Representatives from Mayaguana, Crooked Island, Long Island, Andros, San Salvador Island, Inagua, Cat Island, Bimini, Abacos, Exuma, and Eleuthera	
Community Representatives	
Community Health Committees	
Rocky Mountain Institute	NGOs
Bahamas Hotel and Tourism Association	
One Eleuthera Foundation	
Rotary Abaco	
Rotary Eleuthera	
Patient and Advocacy Committee	
Princess Margaret Foundation	
Equality Bahamas	
Princess Margaret Hospital	Healthcare Facilities
Exuma Primary Health Care Centre	
Abaco Primary Health Centre	
Coopers Town Community Clinic	
Miriam Green Community Clinic	
Mangrove Cay Clinic	
Nicholl's Town Community Clinic	
Fresh Creek Clinic	
Harbour Island Clinic	
Rock Sound Clinic	
Deadman's Cay Community Health Centre	
Inagua Community Clinic	
Landrail Point Clinic	
Smith's Bay Clinic	
Cockburn Town Community Clinic	
Bimini Community Clinic	

Source: ERM, 2021

After identification, it will be determined whether stakeholders are interested in the Operation, as well as their level of influence and position (negative, neutral, against). Please note that the table below represents a **preliminary** analysis for illustrative purposes, which was based on desktop research, and will be updated once additional information is available.

Table 6-6: Sample Stakeholder Analysis

Stakeholder	Category	Interest (Low, Medium, High)	Influence (Low, Medium, Against)	Position (Against, Neutral, For)
Ministry of Health (Lead)	Government	High	High	For
Department of Public Health				

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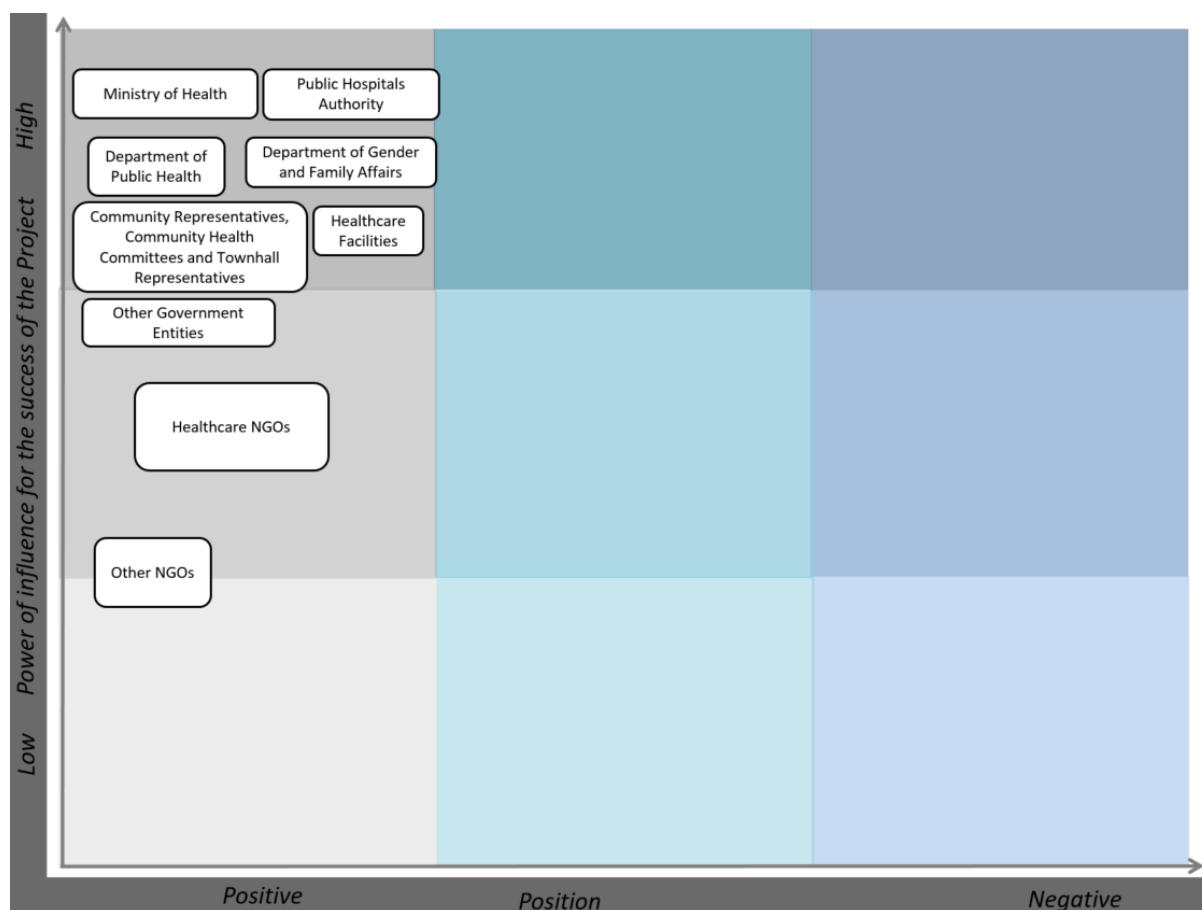
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Public Hospitals Authority				
Department of Gender and Family Affairs				
Ministry of the Environment and Housing		High	Medium	For
Department of Environmental Health				
Department of Social Services				
Bahamas Power and Light				
Bahamas Electricity Corporation - Exuma				
Grand Bahama Power Company (Subsidiary of Emera)				
The Bahamas Environment, Science and Technology Commission (BEST)				
Ministry of the Environment and Housing - Forestry Unit				
Department of Environmental Health Services (DEHS)				
National Emergency Management Agency (NEMA)				
Ministry of Disaster Preparedness Management and Reconstruction				
Ministry of Public Works				
Department of Labor				
Ministry of Finance				
Ministry of Transport				
Ministry of Tourism and Aviation				
Townhall Representatives from Mayaguana, Crooked Island, Long Island, Andros, San Salvador Island, Inagua, Cat Island, Bimini, Abacos, Exuma, and Eleuthera		High	High	For
Community Representatives				
Community Health Committees				
Rocky Mountain Institute	NGOs	Medium	Low	For
Bahamas Hotel and Tourism Association		Medium	Low	For
One Eleuthera Foundation				
Rotary Abaco		High	Medium	For
Rotary Eleuthera				
Patient and Advocacy Committee				
Princess Margaret Foundation				
Equality Bahamas				
Princess Margaret Hospital	Healthcare Facilities	High	High	For
Exuma Primary Health Care Centre				
Abaco Primary Health Centre				
Coopers Town Community Clinic				
Miriam Green Community Clinic				
Mangrove Cay Clinic				
Nicholl's Town Community Clinic				
Fresh Creek Clinic				
Harbour Island Clinic				
Rock Sound Clinic				

Deadman's Cay Community Health Centre				
Inagua Community Clinic				
Landrail Point Clinic				
Smith's Bay Clinic				
Cockburn Town Community Clinic				
Bimini Community Clinic				

Source: ERM, 2021.

Below is a sample stakeholder map. The categories of stakeholder groups were assigned in an X-Y axis according to their position (X-axis) and the influence (Y-axis) with respect to the Operation. A qualitative mapping criteria scale was applied in order to position the stakeholders on the X-Y axis. The level of influence of each interest group was determined as High, Average or Low. Just as the probable position was determined as *Positive* (grey), *Negative* (blue) or *Neutral* (light blue). This is based on a **preliminary** analysis for illustrative purposes and will need to be adjusted once further stakeholder identification and analysis activities are completed.



Source: ERM, 2021.

Figure 6-1: Sample Mapping of Stakeholder Groups

6.2.4 Communication and Engagement with the Community

The MOH's communication team should carry out ongoing communications in the communities where stakeholders reside. Typically, community engagement involves establishing two-way communication that can take many forms, including formal and informal meetings, workshops, round tables, consultation processes, and one-on-one meetings. It goes beyond a single public consultation event

(described in the Consultation Plan, Section 6.1) and is a continuous and meaningful process, culturally appropriate, and intended to provide stakeholders in each project with opportunities to express their views so that they can be taken into consideration in the decision-making process. It also involves continuous reports to the affected communities of each project, informing problems or action plans, or impacts that involve risks or that affect those communities. In the context of COVID-19, information should also alleviate community concerns about the spread of the disease.

Given COVID-19 public health concerns and restrictions, communications should be conducted using appropriate virtual or remote methods, such as television, radio, web pages, social networks, or messaging applications. As much as possible, at least one mechanism should be provided that allows an exchange of information and discussion with the communities about specific projects and their management plans at a local level in accordance with IDB requirements.

6.2.4.1 Community Participation

Effective participation requires sharing information related to the Operation with affected communities and other key stakeholders, facilitating a well-informed consultation process and the contribution of interested citizens to the design and planning of the Operation.

In order to promote a better understanding of the Operation and instil confidence among its stakeholders, MOH will ensure transparency in the communication of relevant information by:

- Disclosing information on a timely manner;
- Disclosing relevant information by managing expectations adequately (e.g. employment opportunities) and avoiding downplaying the potential negative aspects (e.g. inconvenience during the construction phase);
- Disclosing relevant information in a culturally appropriated manner to facilitate the participation of local population;
- Disclosing information in a way that supports the consultation process, allowing enough time to pass between the communication of information and the start of the consultations.
- Disclosing the existence of the External Grievance Mechanism and its communication channels.

6.2.5 Information Disclosure

In general, all the information provided by the projects should be in a format and language that is easily understandable and adapted to the needs of the public. All information provided to stakeholders should respect local traditions, languages, deadlines and decision-making processes. Disclosure is not only about providing information about the Operation itself during the preparation stage, but also about keeping the public informed about the progress of the Operation throughout its life. This is even more important during construction and operation processes for communities that are physically close to each project so that they have current information on news such as detours from pedestrian crossings due to construction activity, or to inform potential beneficiaries about improved medical infrastructure/new COVID units.

Under normal circumstances, it is recommended to disclose information in places that make it easy for stakeholders to access, such as community centres, schools, etc. Due to COVID-19, information should be provided through channels compatible with government recommendations regarding social distance/quarantines. The use of existing communication channels that are already in common use in the communities should be evaluated, for example, radio programs, brief announcements on television, announcements in social networks C (such as Facebook or Twitter), or sending massive text messages by WhatsApp. The latter can be a good way to share specific information, for example, about construction notices, as well as general and visual material such as infographics and include

links to web pages where people can go to find more information. File sizes should be kept small in case of possible bandwidth challenges.

6.2.5.0 Engagement in Extraordinary Situations

MOH will endeavor to maintain engagement with stakeholders throughout the Operation's continuity. In the case of health-related crises, pandemics and or epidemics, MOH will develop, when necessary, an action plan for engagement with stakeholders in this scenario.

The action plan must be developed in order to guide MOH's performance during this period, and must contain at least the following items: (i) target audience; (ii) organizational structure; (iii) communication channels; (iv) risk prevention and mitigation measures for the teams involved in the engagement actions; and (v) list of actions.

Table 6-7: Consultation and Participation Action Plan

Stakeholder Groups	Consultation and Participation Methods	Consultation Topics, Shared Information and Objectives	Operation Phase and Frequency	Priority	Person in Charge
Interested Stakeholder Groups					
Government entities	Meetings with representatives, either in groups or individually	1) Identify any concerns regarding Operation impacts and progress 2) Answer their questions regarding the Operation 3) Receive feedback about the Operation's social management plans, health and safety measures, community communications and community grievance mechanism	Construction: At least once a month Operations: at least once per six months	High	Community Relations Officer
Neighboring Projects and other Healthcare Facilities	Meetings with Neighboring Projects and other Healthcare Facilities		Construction: At least bi-monthly Operations: at least once per six months	Medium	H&S Manager
Financial Institutions	Meetings with representatives, either in groups or individually		Construction: At least once a month Operations: at least once per six months	High	H&S Manager
Mass media	Meetings with representatives, either in groups or individually		Construction: At least bi-monthly Operations: at least once per six months	Medium	Community Relations Officer
Workers	Meetings with representatives, either in groups or individually		Construction: At least once a month Operations: at least once per six months	High	HR Manager
Contractors	Meetings with representatives, either in groups or individually		Construction: At least once a month Operations: at least once per six months	High	HR Manager
Affected Stakeholder Groups					
Communities and landowners near the	Group meetings (virtually) with people from nearby	4) Identify any concerns regarding Operation impacts and progress	Construction: At least once a month	High	Community Relations Officer

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Operation sites	residences, including women, young people and other vulnerable groups	5) Answer their questions regarding the Operation 6) Receive feedback about the Operation's social management plans, health and safety measures, community communications and community grievance mechanism	Operations: at least once per six months		
Tourism sector	Meetings with tourism representatives, either in groups or individually		Construction: At least bi-monthly Operations: at least once per six months	Medium	Community Relations Officer
Vulnerable populations in the Area of Influence	Vulnerable groups will be invited and encouraged to attend the community meetings If a group identifies a need to meet with the Operation, MOH will organize an individual meeting with the person or particular group.		Construction: At least once a month Operations: at least once per six months	High	Community Relations Officer
NGOs	Meetings or communication exchange by email or phone call	7) Identify their concerns regarding the Operation's impacts and progress 8) Answer their questions regarding the Operation 9) Receive feedback about the Operation's social management plans, health and safety measures, community communications and community grievance mechanism 10) Discuss collaboration opportunities (e.g. environmental and social programs)	Construction: At least bi-monthly Operations: at least once per six months	Medium	Community Relations Officer

6.2.6 Documentation

It is extremely important that all stakeholder engagement activities are systematically documented by the projects. Every time a communication or activity is carried out with any stakeholder, the Community Relations Officer will register the details in a Stakeholder Engagement Database (see Appendix A), in order to reflect the development of the relationship with each stakeholder and the evolution of the respective negotiations.

The stakeholders' database will include a summary of each contact, participants, issues or agreements with stakeholders, including, but not limited to:

- Stage and activity of the Operation;
- Stakeholder being represented;

- Type of interaction;
- Date of interaction;
- Place of the interaction;
- Background of the interaction with the stakeholder (if applicable);
- Reason for the interaction (e.g. information disclosure, follow-up meeting);
- Type of information provided (if applicable); and
- Reference to evidence supporting the interaction (e.g., minutes, photographs).

In the event that complaints or feedback are received, these will be dealt through the External Grievance Mechanism (see the External Grievance Mechanism Plan) as appropriate.

6.3 Grievance Mechanism

A grievance mechanism is necessary to offer opportunities for stakeholders to express their points of view and concerns about the Operation and receive consideration and response from the Operation personnel. This Plan discusses how to achieve the objectives and meet the IDB's requirements regarding these issues in a virtual manner, in response to the current environment due to the global pandemic and the particular circumstances regarding social distancing and restrictions of meetings/face-to-face events that are being deployed in many places in order to protect public health.

The Operation should have or prepare a Grievance Mechanism to manage complaints about each project. A designated person or team at each project should manage the mechanism and should be able to receive complaints through points of contact such as a web page, email, and telephone. Each project will have to define how to disseminate information about the Grievance Mechanism, so that interested parties are aware of it and know how to access it.

The purpose of the Grievance Mechanism is to create a process that provides opportunities for stakeholders, such as the local community, employees, and contractors, to express their views and concerns and to allow Operation personnel or other relevant parties (such as construction contractors) to consider and respond to the stakeholders' concerns. The objectives of this mechanism are:

- Guarantee transparency and commitment between the projects and the identified stakeholders, especially people from the affected communities;
- Provide stakeholders with an accessible and efficient process to present concerns, suggestions and complaints that may arise in relation to Operation activities;
- Allow community stakeholders to raise concerns, suggestions and complaints anonymously; and
- Define a methodology for receiving, documenting, evaluating, tracking and resolving concerns, suggestions and complaints in a timely manner.

The Grievance Mechanism must cover all Operation activities and include activities carried out by contractors and subcontractors, as relevant. Likewise, it should be noted that this mechanism does not replace any other legal means.

Accessibility is a key aspect of the complaints and claims mechanism of an Operation. The mechanism has to be known to affected people and easy to access. In the current circumstances of COVID-19, appropriate virtual methods should be used to guarantee accessibility to stakeholders, this could include the option of filing complaints by phone, text message, or even through social media. For future times when the situation returns to normal conditions, the option may be offered for people to go to a local office to present their complaints in person.

6.3.1 Principles

A successful Grievance Mechanism must be responsive and fair. The grievance process should guarantee the same level of integrity and respect for any member of the community and the type of complaint or claim received. The objective is to guarantee transparency and commitment between the projects and the local population.

This mechanism is based on the following principles:

- Respect for national legislation and international standards; however, this mechanism does not replace any other legal means.
- Accessible and understandable for all people.
- Respect for local customs and culture in the project areas.
- Respect for the confidentiality of claims. The information and details of a confidential claim are only shared internally, and only when necessary to report issues or coordinate with authorities.
- Respect for anonymity. Anonymity is distinguished from confidentiality since it is an anonymous claim, the personal data (that is, name, address) of the claimant are not recorded.
- Non-discrimination and without sanctions against those who express claims.
- Fair treatment for every complaint that is raised.
- Effective communication between the communities and the administration.

6.3.2 Process

To comply with international best practices, the Grievance Mechanism should include a process for receiving and recording complaints and claims, for examining and evaluating them, for reaching a resolution, for challenging the final decision, and for monitoring and documenting the process. The steps are:

1. Receive and register the complaint or claim

Any member of the community can submit complaints or claim, both verbally and through written form, through appropriate channels that must be made available by the Operation. During the COVID-19 emergency, these channels should include virtual ones, such as phone numbers, social networks, or emails. The system must provide an opportunity to file anonymous complaints or claims.

Complaints and claims received will be recorded and documented. The record includes a summary of the complaint or claim, the date it was received, and a reference to any supporting documentation (for example, images).

Complaints and claims are addressed within a specific period agreed upon by each project after receipt of the complaint.

2. Examine and evaluate

Complaints and claims are initially evaluated to determine their seriousness and assigned a responsible person.

3. Management of admissible complaint or claim

Eligible complaints or claims (low, medium, or high importance) must be addressed in a timely manner, typically within 30 calendar days. The responsible Operation personnel must identify who would be best placed to lead the response and seek participation of other departments or outside parties (such as contractors or subcontractors) if necessary, and preparation of reports with

recommendations and agreements. Likewise, the handling of complaints or claims will be specified by type of claimant, for example, in the case of an anonymous or identified claimant.

4. Management of inadmissible complaint or claim

This process should specify which complaints or claims may be rejected, who and how the complainant would be informed of the decision and the reasons for it. There will also be a process for handling incomplete complaints or claims.

5. Disagreements with the resolution

In the event that a complainant wishes to challenge/appeal the decision, the mechanism must provide alternative remedies to appeal the decision.

6. Monitoring and documentation

Once the complaint is resolved, the person responsible for managing the complaint will communicate with the complainant to confirm that the appropriate resolution measures were applied and will continuously coordinate with the areas involved in the claim.

The Operation must maintain an updated database with all the documentation and information related to the complaints that have been received. The complaint register documents the follow-up of the actions carried out and should include:

- Date the complaint was registered;
- Person responsible for the claim (i.e. claimant, if known);
- Information on the proposed corrective action (if applicable);
- Date the complaint was closed; and
- Date the response was sent to the complainant.

6.3.3 Responsibilities

Primary responsibility for managing the Grievance Mechanism must be assigned to Operation personnel or a team (such as community relations manager, or human resources). Given that community members may approach anyone affiliated with the Operation to complain, the party responsible for managing the Grievance Mechanism for each project will communicate to the workers and contractors this procedure and its different steps before initiating the Operation and regularly during the duration of the different projects so that these parties can help direct potential complaints and claims to the established channels.

6.3.4 Reports

It is extremely important that all community complaints and claims are systematically documented by the Operation. The Operation will monitor all complaints through an internal Grievance Registry.

6.3.5 Monitoring

The Stakeholder Engagement Plan and Grievance Mechanism should be continuously monitored and designed to facilitate the integration of the lessons learned during its execution. In this way, the Operation will be able to adequately respond to situations as soon as they develop. The Plan is considered a "dynamic document" and is designed to be continuously updated and improved, in addition to adapting to the geographic and social context of each project.

6.4 Hospital Waste Management Plan

During the operation and closure phases of the Projects executed under this Operation, there is the possibility of generating hospital/medical waste. Proper hospital waste management ensures adequate hygiene and safety of workers and communities. The plan should describe the measures and best management practices proposed for each of the phases of the projects that will be used to protect workers, users of the facilities, and neighbouring communities against adverse impacts. The plan must follow the guidelines and guides, including guidelines for COVID-19, established by recognized entities such as the WHO (WHO, 2020c), the World Bank (IFC, 2007), non-governmental organizations (Health Care Without Harm), and national legislation.

This plan, based on international guidelines, is a guide that defines the various potential sources of hospital waste and proposes ways to control and monitor them for the duration of the projects. Although this plan describes methods for managing hospital wastes, this document is an environmental and social management plan whose scope does not include medical recommendations. The resulting plan should be prepared and reviewed by experts in the health field complying with the appropriate requirements of that specialty.

6.4.1 Objectives

The objectives and goals of the Hospital Waste Management Plan are:

- Avoid and control the generation of hospital waste related to projects during the operation and closure phases;
- Define the procedures, integrated controls and mitigation measures to be used during construction (if applicable) and operation activities that have the potential to affect the environment and communities; and
- Comply with the national legislation and regional requirements of The Bahamas as well as international guidelines regarding the management and disposal of hospital waste.

Additionally, the local government in the constituencies may have their own requirements on hospital waste management that must be included in the management plans of each project.

6.4.2 Regulatory Framework

The national legislation and regional requirements (and international guidelines described further below) that need to be taken into account regarding hospital waste includes the following:

- Health Services Act, Chapter 231, 2001.
- Hospitals and Health Care Facilities Act 1998, Chapter 235, Revised Edition 2001.
- Environmental Health Services Act (No. 4 of 1987), Chapter 217, Revised Edition 2001.
- Environmental Health Services (Collection And Disposal Of Waste) Regulations, Chapter 232 (Section 17), 2004.
- Environmental Planning and Protection Bill (DRAFT), 2019

6.4.3 References and Guidelines for Management

The management of hospital waste must comply with the requirements established by national legislation, regional requirements, and the local government in the constituencies, together with the relevant IDB policies, international guidelines, and best practices at the international level. In addition to the requirements established in this ESMP, the management plans developed by contractors and implementers must follow the guidelines prepared by the The Bahamas Ministry of Health and should also reference the international entity guidelines for management of hospital waste. The national legislation and international guidance includes the following:

- Health Services Act, Chapter 231, 2001:

<http://extwprlegs1.fao.org/docs/pdf/bha93739.pdf>

This Act makes provisions for securing the public health and outlines regulations for public health authorities and administrations that include burials and cemeteries, drains, water supply, infectious diseases, lepers, noxious insects, prohibition of certain trades, sanitation, vaccination, and miscellaneous matters.

- Hospitals and Health Care Facilities Act 1998, Chapter 235, Revised Edition 2001:

http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/1998/1998-0034/HospitalsandHealthCareFacilitiesAct_1.pdf

This Act establishes the Hospitals and Health Care Facilities Licensing Board the licensing requirements for hospitals and health care facilities.

- Environmental Health Services Act (No. 4 of 1987), Chapter 217, Revised Edition 2001:

http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/1987/1987-0004/EnvironmentalHealthServicesAct_1.pdf

This Act promotes conservation and maintenance of the environment and addresses the control of contaminants and pollutants that may adversely affect the environment and human health. The Act also outlines regulations with respect to water supplies, solid and liquid waste, and hygiene/sanitary procedures.

- Environmental Health Services (Collection And Disposal Of Waste) Regulations, Chapter 232 (Section 17), 2004:

<http://extwprlegs1.fao.org/docs/pdf/bha78758.pdf>

Section 17 of Chapter 232 establishes the regulations for hazardous, hospital, and non-hazardous waste including their management, collection, responsibilities, location of receptacles, certificates of approval, and requirements for waste management facilities.

- Environmental Planning and Protection Bill (DRAFT), 2019:

<http://www.bahamas.gov.bs/wps/wcm/connect/85f0b67d-c793-44d6-8f8b-4f9c2816adc7/Environmental+Planning+and+Protection+Bill%2C2019.pdf?MOD=AJPERES>

The bill establishes the responsibilities of the authorities, environmental management plan requirements for ministries or government bodies, and provides the requirements for environmental protection, including pollution control, management, and monitoring, management of hazardous waste, spill and environmental restoration, research, education, training, compliance and enforcement, such as inspections and violations, and offences and penalties. This includes requirements for the management hazardous substances and wastes.

- The Environmental Health and Safety (EHS) guidelines of the World Bank, including the General Guidelines (2007), the EHS Guideline for Health Care Facilities (2007), and the EHS Guideline for Waste Management Facilities (2007):

https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines

The EHS Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice (GIIP). The EHS Guidelines contain performance levels and measures that are normally acceptable to the World Bank Group and serve as international standards. The General EHS Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors.

The Industry Sector Guidelines provide information and guidelines specific to the industry area.

- Health care waste management: Coronavirus Update (2020) Prepared by Health Care Without Harm:

https://noharm-uscanada.org/sites/default/files/documents-files/6339/HCWH%20Covid-19%20Waste%20Facts_0.pdf

This is a brief update on managing infectious waste providing information regarding training for staff handling waste, use of personal protective equipment, and maintaining good hygiene.

- Waste Minimization, Segregation, and Recycling in Hospitals, published by Health Care Without Harm (2001):

https://noharm-uscanada.org/sites/default/files/documents-files/2386/Waste_Min_Seg_Recyc_in_Hosp.pdf

This provides recommendations on steps to consider for reducing solid waste volume and reducing costs.

- Healthcare or Medical Waste, published by the UNEP (2020) :

<http://www.brsmeas.org/Implementation/MediaResources/NewsFeatures/COVID19Factsheet/tabid/8409/language/en-US/Default.aspx>

This brief factsheet provides the Basel Convention's guidance on how to manage medical waste in the most environmentally sustainable manner and on control of transboundary movement of hazardous wastes and their disposal, including the use of steam treatment technologies, autoclaves.

- Safe Management of Wastes from Health-care Activities, published by WHO (2014):

https://www.who.int/water_sanitation_health/publications/wastemanag/en/

This 200+ page handbook provides guidance on basic waste management processes and technologies in health-care settings that are safe and affordable, sustainable, and culturally appropriate. The topics associated with health-care waste include characterization, risks, legislative, regulatory and policy issues, management and planning, minimization, reuse and recycling, segregation, storage, and transport, treatment and disposal methods, collection and disposal of wastewater, costs and financing, health and safety practice for workers, hospital hygiene and infection control, training, education and public awareness, management in emergencies, and future issues.

- Technical Documents - Coronavirus (COVID-19), published by the Pan-American Health Organization (PAHO):

<https://www.paho.org/en/technical-documents-coronavirus-disease-covid-19>

This is a series of technical documents with information and guidelines related to COVID-19 including: biosafety, clinical management, detection and diagnosis, disability related information, ethics, emergency medical teams, essential medicines, health services, health workers, healthy aging, hospital readiness, infection prevention and control, infodemic and misinformation, medical devices, natural disasters, requirements and technical specifications for personal protective equipment, prehospital emergency medical services readiness, risk communication, social distancing and travel related measures, surveillance, and water sanitation.

- Guidelines for Environmental Infection Control in Health Care Facilities (2003), published by the CDC:

<https://www.cdc.gov/infectioncontrol/guidelines/environmental/background/medical-waste.html>

This document provides information and guidelines on infection control related to regulated medical waste.

6.4.4 Procedures

Each project must present an outline of the plan and establish its objectives and goals following the steps below:

- Identify hospital waste sources and their potential impacts for each phase of the Project;
- Define the procedures for the management of hospital waste;
- Describe the disposal and treatment facilities (including autoclave) for hospital waste;
- Define roles and responsibilities;
- Define the entities in charge of implementing the plan;
- Define the procedures for monitoring, measuring progress and generating reports; and
- Establish training and communication commitments.

6.4.5 General Approach

The Projects executed under the Operation will need to comply with national laws and requirements, as well as with the best international practices and standards for the management of hospital waste. As with other types of waste, it is important to reduce hospital waste generation to a minimum, resulting in reduced hospital waste quantity for treatment (including autoclave) and transport to disposal facilities. Segregation of different categories of waste is important to enable proper disposal since approximately 80% of all hospital waste can be disposed of through common municipal approved methods for that type of waste, while the remaining 20% must be disposed in the ways described below.

The general approach to waste management is described below:

- **Management:** The management of hospital waste requires proper training, appropriate personal equipment, and availability of emergency equipment. The hospital staff such as doctors, nurses, cleaning staff, mechanics, etc. who handle hospital waste must be trained on the proper labelling, storage, and handling techniques for the different types of waste. The types of waste in the medical waste stream could include sharps from syringes, infectious waste from medical supplies, pathology waste from medical procedures, chemical waste from medical laboratory evaluation, heavy metal from equipment such as thermometers, radioactive from medical equipment and treatment, recyclable after disinfection treatment, among others (see Classification section below for additional information). The staff that handles hospital waste must be administered the appropriate personal protective equipment (PPE) (footwear, masks, gloves, clothing and eye protection) for protection from hospital waste. In addition, emergency equipment for accidental spills, emissions, exposure to hospital waste should be available for use including emergency showers, eye-wash stations, ventilation systems and sanitary facilities, with particular attention to requirements for COVID-19.
- **Reduction:** Whenever possible, waste generation will be minimized, not only to save money but also to reduce the need for storage, treatment (including autoclave) and transportation resources, as well as to promote sustainable work environments. During the project operation phase, project management or administration should be required to supply specific waste reduction plans and procedures. Hospital employees, including medical and maintenance staff, should avoid excessive use of materials and work in a sustainable manner.

- **Reuse and Recycling:** Where possible, as part of waste reduction, materials that can be recycled and or reused (after being treated/decontaminated) should be identified. After treatment, decontamination, and sorting, items will be transported to pre-approved recycling centres.
- **Classification:** Personnel must be trained to work within an accounting system, which includes the correct and safe separation of waste, the labelling of all bags and containers, the proper storage at each point in the cycle of the waste, the appropriate treatment (including autoclave), and transportation for safe disposal of hospital waste. The categories of hospital waste (according to the WHO) are as follows:
 - Infectious: Wastes that could contain pathogens, such as laboratory cultures, wastes from isolation wards, gauzes (swabs), materials or equipment that have been in contact with infected patients including excrement;
 - Pathological: Human tissues or fluids such as body parts, blood and other bodily fluids as well as fetuses;
 - Sharp: Sharp waste such as needles, infusion sets, scalpels, knives, sharp blades, broken glass;
 - Pharmaceutical: Pharmaceutical products containing waste, for example: pharmaceutical products that have expired and are no longer needed, contaminated items that contain or have been contaminated by pharmaceutical substances (bottles, boxes);
 - Genotoxic: Substances containing waste that can cause DNA damage, for example: waste that contains cytostatic drugs (often used in cancer therapies), genotoxic chemicals;
 - Chemical Substances: Substances containing waste chemicals, for example: laboratory reagents, film rolls, disinfectants already expired and not needed, solvents;
 - High content of heavy metals: Batteries, broken thermometers, blood pressure measuring, etc.;
 - Pressurized containers: Gas cylinders, gas cartons, aerosol cans; and
 - Radioactive: Substances containing radioactive waste, for example: liquids removed from radiotherapy or laboratory investigations, contaminated crystals, absorbent paper packages, urine and excrement from treated patients and with whom it has been experimented with radionuclides, sealed sources.
- **Accumulation:** The health care facilities should try to dispose of hospital waste often in order to avoid its accumulation. Still, accumulation is typically required before disposal. Hospital waste requiring storage should be kept in labelled, leak-proof, puncture/break resistant containers, and in conditions that minimize or prevent odors. The storage area must be well ventilated and inaccessible to unauthorized persons and to animals and pests.
- **On-site treatment and/or Transportation and Disposal:** Treatment and disposal methods vary according to the type of waste, the local environment, the available technology, the costs and financing, and the social acceptance (for reasons of religion, customs, etc.). Each health institution or authority should assess local conditions and decide the most appropriate waste management solutions. There is no optimal method or a combination of unique methods. Below is a description of different ways to treat and dispose of hospital waste with some advantages and disadvantages:
 - Burial or encapsulation at a disposal site (simple and cheap). This disposal method is a simple and inexpensive option; however, it involves a larger volume of waste, requires a large landfill space, requires a specialized landfill with liners for containing contaminated

waste to prevent leaching into soil and water, and requires security to ensure that people do not enter the landfill area.

- Steam autoclave on-site or at a disposal site (disinfects, small volume reduction, produces secondary waste source). This method disinfects the waste and produces a small volume reduction. This is an environmentally improved method that minimizes generation of contamination during autoclaving process and disinfects waste during the high temperature, high pressure, steam autoclaving process. This technique requires proper equipment, which involves an additional cost, as well as training on use and maintenance of equipment. This waste treatment method produces secondary waste that must be disposed at a managed landfill. The disinfected secondary waste can be disposed in a less specialized landfill, though with proper design, liners, and management procedures.
- Incineration (disinfects and reduces volume significantly, produces source of secondary waste). This disposal technique disinfects waste and significantly reduces the volume of waste. However, it produces contamination in the form of ash, particulate matter, and air emissions. This technique requires proper equipment including scrubbers to minimize air emissions, which presents an additional cost. In addition, training on use and maintenance of equipment is required. The incinerator can be located in-situ or at a disposal site, and in either location it must follow all local legal requirements and establish strict management measures. It is recommended that this technique be avoided for projects in the Operation.
- Microwave on-site or a disposal site (disinfects, little volume reduction, produces secondary waste source). This method disinfects the waste and produces a small volume reduction. This technique requires proper equipment, which involves an additional cost, as well as training on use and maintenance of equipment. It also generates secondary waste that must be disposed at a managed landfill. The disinfected secondary waste can be disposed in a less specialized landfill, though with proper design, liners, and management procedures.
- Chemical/mechanical treatment on-site or at a disposal site (disinfects, can increase volume, and produces secondary waste source). This technique disinfects the waste, but can increase the volume of the waste. In addition, it requires use of chemicals or other specialized mechanical treatment that involves additional cost as well as training. This method produces secondary waste that must be appropriately disposed at a landfill. The disinfected secondary waste can be disposed in a less specialized landfill, though with proper design, liners, and management procedures.

When hospital waste materials have to be transferred to an external facility either for treatment or for disposal, these facilities must be previously designated and approved as facilities specifically for hospital waste. Such facilities must meet and comply with all relevant regulations, as established by local laws. Contractors must document and record all waste transportation, which will include information such as: type of waste, quantity, source of waste, location of disposal site, and receiving facilities.

6.4.6 Source of Impacts

The hospital waste related to the projects will be produced during the operation phase (use of facilities), and the closure phase (mostly related to cleaning). If not managed properly, the potential types of negative impacts associated with inappropriate or unsafe disposal of these wastes include:

- Human health impacts, including health hazards such as cuts and punctures from sharps, accidents such as slip and fall while handling waste, the transmission of diseases to health workers and patients, and potentially death;
- Animal impacts, including contamination of habitat, cuts and punctures, possibly death from contact with waste;

- Pollution of soils and water resources;
- Visual impacts in the areas of the projects; and
- Residual odors in surrounding areas.

6.4.7 Management Measures

The management staff and/or administration of each project will be responsible for the implementation of the hospital waste management plan. These management plans must include specific information for each activity, demonstrating compliance with the following (as a minimum):

- Review of the legal framework for integrated management of hospital waste, defining processes for such management within the hospital network of the country;
- Identify and define the most appropriate technologies for the adequate management of hospital waste and hospital wastewater appropriate to the context of the region;
- Have a maintenance plan for the equipment and infrastructure which includes the management of hazardous and non-hazardous hospital waste and hospital wastewater;
- Measures to avoid the generation of waste and/or to minimize it at the point of generation (hospital wards, laboratories, or doctor's offices);
- Mechanisms for separation, collection, transportation, identification and temporary storage of the waste before its transfer outside the Project areas;
- Staff awareness training;
- Expected types and volumes of waste;
- Options for recycling, treatment and disposal of waste, including proposed final destinations of those that cannot be recycled; and
- Procedures for registering and documentation of waste transfers.

Government-approved contractor companies must be used to ensure that the transportation, treatment and/or disposal of Project waste is performed correctly.

6.4.8 Training and Communication

Before starting construction and operations for each project, all project personnel must have received specific training for their work, as well as have participated in various induction trainings (including all personnel who have contact with hospital waste, cleaning personnel, and machine operators). Detailed information about the importance of proper hospital waste management should be provided to employees and contractors including:

- techniques related to recently purchased medical or hospital items and equipment;
- techniques and protocols for cleaning;
- protection mechanisms including personal protective equipment such as gloves, gowns, eyewear, masks, etc.;
- corresponding vaccines (if necessary); and
- roles and responsibilities.

This information should be available to all personnel in a prominent place.

6.4.9 Responsibilities

The management and/or administration staff for each Project will be responsible for supervising the implementation of the Hospital Waste Management Plan. Before beginning the operation stage, they must prepare and deliver a list of all the hospital waste management procedures, specific to each

function and their own inspection procedures. These management plans will be reviewed and approved by the executing agency before the start of operations. The typical responsibilities for healthcare facilities are described below:

- Hospital management or administration is in charge of supervising the budget, purchasing, legal and training aspects. They must also manage and appropriately dispose the waste generated at the facilities;
- The doctors, nurses, cleaning staff, machine operators, and inspectors are responsible for the day to day waste management. The doctors, nurses, and cleaning staff responsible for managing the separation of hospital waste in appropriate receptacles such as sharps, contaminated solid waste, and recyclables. The machine operators are responsible for basic maintenance of equipment that may generate hospital waste and must be disposed in appropriate receptacles. The inspectors are responsible for observing and confirming that hospital waste is appropriately separated, handled, and disposed;
- Workplace supervisors will supervise employee health and safety aspects of hospital waste management and enforce established practices for the prevention of environmental and safety incidents. For example, they will supervise the classification, control, mitigation, transportation and disposal activities for all of the hospital waste generated by the projects; and
- The administrators (i.e. CEO, president, vice-president) and leading authorities (i.e. head doctors, department leaders) of each hospital or medical facility must be included in the management plan, have specific roles and responsibilities during implementation of the management plan, and place high priority on effective implementation of the management plan.

6.4.10 Management Control and Monitoring Measures

Monitoring and documenting the generation, transportation, and disposal of hospital waste is essential to projects. Measures and standards must be implemented to ensure compliance and to detect non-conformities with said standards. When a nonconformity is detected, such as mis-labelled waste, improper storage of waste, undocumented transport of waste, inappropriate disposal method, etc., a formal investigation will be conducted to determine its origin and establish the necessary corrective actions to comply with the standards.

The monitoring activities including inspections, audits, and sampling (if needed) shall be conducted in all areas associated with the generation and reception of hospital waste. Inspections are periodic reviews, monthly, weekly, or daily, on the status of conformity with the hospital waste management plan for example proper labelling of hospital waste, proper storage of waste, documented transportation of waste, and appropriate disposal methods and to document and correct any nonconformities through a corrective action plan. An audit is generally conducted annually to review overall hospital waste management procedures and processes, to evaluate their effectiveness, to identify recurring nonconformities, and to develop corrective action plans if needed. A part of the audit may involve sampling, if necessary, for example to evaluate protocol compliance, identify contamination points, and assess issues associated with nonconformities. Checklists will be prepared for use during the inspections and audits, which will be documented for reporting and monitoring purposes.

Inspection lists will include:

- Treatment and disposal list for hospital waste including dates, quantity, source, type, and final disposal site, location, and facility name;
- Any spill, leak, absence of identification markings, containment problems and any other factor that may require corrective actions; and
- Records and documentation of any corrective and follow-up action on issues identified.

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

6.5 Solid and Hazardous Waste Management Plan

Under this Operation, there is a possibility of generating solid wastes such as wood, plastic, glass, paper, and hazardous waste such as paints, batteries, oil contaminated rags, among others during the construction, operation, and closure phases of the projects to be implemented (this plan does not include hospital waste, which is covered by the Hospital Waste Management Plan). It is necessary to design and implement solid and hazardous waste management plans in order to mitigate the impacts of potential sources of waste throughout the duration of the projects. The plan describes the measures and best management practices proposed for each of the Project phases, which will be used to protect the environmental and social communities from potential adverse impacts. The implementation and application of the guidelines of this plan will allow the adequate management, mitigation and recycling of the different types of waste generated. The plan must follow the guidelines and guides, including guidelines for COVID-19, established by recognized entities such as the WHO (WHO, 2020c), the World Bank (IFC, 2007), non-governmental organizations (Health Care Without Harm), and national legislation.

This plan defines the various potential sources of waste and sets out how they will be controlled and monitored for the duration of the projects.

6.5.1 Objectives

The objectives and goals of the Solid and Hazardous Waste Management Plan are:

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

6.5.2 Regulatory Framework

The national legislation and regional requirements that need to be taken into account regarding contaminated solid waste includes the following:

- Health Services Act, Chapter 231, 2001.
- Environmental Health Services Act (No. 4 of 1987), Chapter 217, Revised Edition 2001.
- Environmental Health Services (Collection And Disposal Of Waste) Regulations, Chapter 232 (Section 17), 2004.
- Environmental Planning and Protection Bill (DRAFT), 2019

Additionally, the local government in the constituencies may have their own requirements on contaminated waste management that must be included in the management plans of each Project.

6.5.3 References and Guidelines for Management

The management of contaminated solid waste must comply with the requirements established by national legislation and the local government in the constituencies, together with the relevant IDB policies and best practices at the international level. In addition to the requirements established in this ESMP, the management plans developed by contractors and implementers must follow the guidelines

prepared by The Bahamas Ministry of Health and should also reference the guides available for management of hospital waste that were prepared by international entities. The national and international guidance includes the following:

- Health Services Act, Chapter 231, 2001:

<http://extwprlegs1.fao.org/docs/pdf/bha93739.pdf>

This Act makes provisions for securing the public health and outlines regulations for public health authorities and administrations that include burials and cemeteries, drains, water supply, infectious diseases, lepers, noxious insects, prohibition of certain trades, sanitation, vaccination, and miscellaneous matters.

- Environmental Health Services Act (No. 4 of 1987), Chapter 217, Revised Edition 2001:

http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/1987/1987-0004/EnvironmentalHealthServicesAct_1.pdf

This Act promotes conservation and maintenance of the environment and addresses the control of contaminants and pollutants that may adversely affect the environment and human health. The Act also outlines regulations with respect to water supplies, solid and liquid waste, and hygiene/sanitary procedures.

- Environmental Health Services (Collection And Disposal Of Waste) Regulations, Chapter 232 (Section 17), 2004:

<http://extwprlegs1.fao.org/docs/pdf/bha78758.pdf>

Section 17 of Chapter 232 establishes the regulations for hazardous, hospital, and non-hazardous waste including their management, collection, responsibilities, location of receptacles, certificates of approval, and requirements for waste management facilities.

- Environmental Planning and Protection Bill (DRAFT), 2019

<http://www.bahamas.gov.bs/wps/wcm/connect/85f0b67d-c793-44d6-8f8b-4f9c2816adc7/Environmental+Planning+and+Protection+Bill%2C2019.pdf?MOD=AJPERES>

The bill establishes the responsibilities of the authorities, environmental management plan requirements for ministries or government bodies, and provides the requirements for environmental protection, including pollution control, management, and monitoring, management of hazardous waste, spill and environmental restoration, research, education, training, compliance and enforcement, such as inspections and violations, and offences and penalties. This includes requirements for the management hazardous substances and wastes.

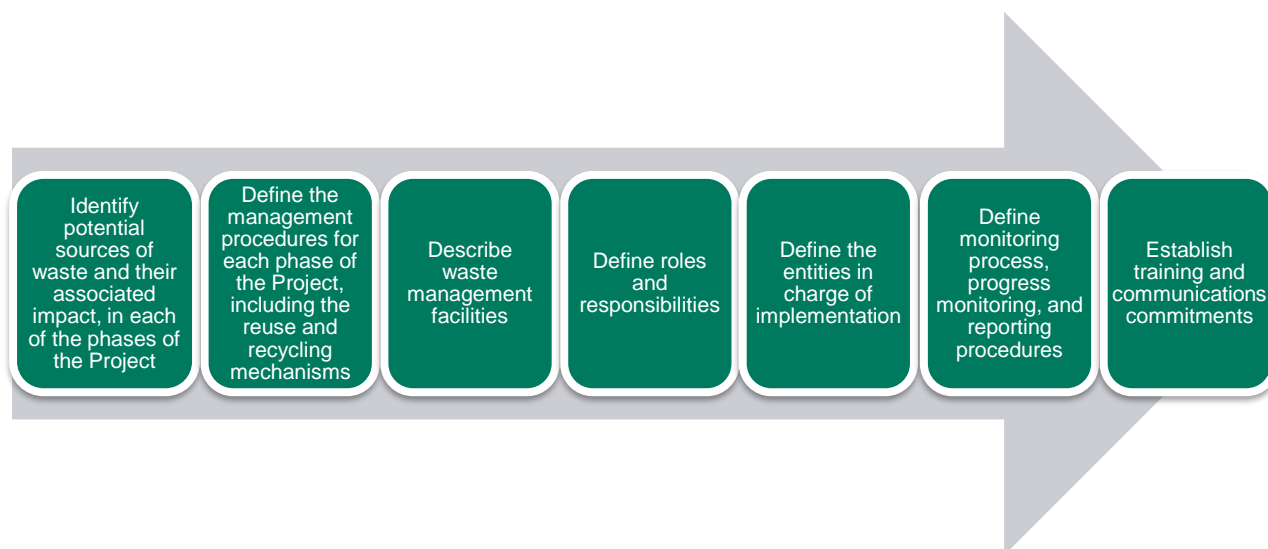
- The Environmental Health and Safety (EHS) guidelines of the World Bank, including the General Guidelines (2007) and the EHS Guideline for Waste Management Facilities (2007):
https://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/sustainability-at-ifc/policies-standards/ehs-guidelines

The EHS Guidelines are technical reference documents with general and industry specific examples of Good International Industry Practice (GIIP). The EHS Guidelines contain performance levels and measures that are normally acceptable to the World Bank Group and serve as international standards. The General EHS Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors. The Industry Sector Guidelines provide information and guidelines specific to the industry area.

6.5.4 Procedures

Each project must present an outline of the plan and establish its objectives and goals by following the steps in Figure 6-2.

Figure 6-2: Procedures for the Solid and Hazardous Waste Management Plan



6.5.5 General Approach

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

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

- **Disposal Transportation:** Waste materials that cannot be reused, recycled, or salvaged will be taken to a previously designated landfill and waste management facilities. Such facilities must meet and comply with all relevant regulations; as established by local laws. Contractors will document and record all transportation of waste, which will include information such as: type of waste, quantity, source of the waste, location of disposal site, and receiving facilities.

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

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

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

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

6.5.6 Sources of Impacts

Solid waste generated during the construction phase of the Projects will include domestic and industrial waste. Most of the waste (hazardous and non-hazardous) will be generated at the construction zones, while smaller portions of waste will be generated in the offices and camps of the project staff (if applicable). If not properly managed, the potential impacts associated with the waste include:

- Impacts on human health including cuts and accidents from inappropriate personal protective equipment, mishandling waste, or mis-labelled waste, mid-term health impacts from contact with hazardous materials, possibly death from long-term contact with hazardous or contaminated waste;
- Impacts on animals including contamination of habitat and water resources, health impacts from contact with hazardous waste, possibly death from consumption of hazardous or contaminated waste;
- Contamination of soils and water resources;
- Visual impacts in the areas of the construction works;
- Odors from residues in surrounding areas; and

- Waste due to poor management of recyclable waste.

6.5.7 Management Measures

Contractors for each individual Project will be responsible for directing and implementing the solid, liquid, and hazardous waste management plan. It will be required for all of the main contractors of the construction and operation phases of the Projects to develop their own waste management plans, specific to each activity, that demonstrate compliance with the following (as a minimum):

- Measures to prevent waste generation or to reduce them to the minimum;
- Mechanisms for the collection, identification, temporary storage, and transportation of the waste before its transfer outside the Project areas;
- Responsible parties;
- Measures for the reuse of waste;
- Options for recycling, treatment and disposal of waste, including the proposed final destinations of those that cannot be reused;
- Procedures for registering and documentation of waste transfers;
- Specific management measures for hazardous waste;
- Regulatory requirements and classification;
- Expected types and estimation of waste volumes; and
- Trainings for staff awareness.

Project contractors must use waste disposal and transportation companies approved by the Government to ensure that the transportation, treatment and/or disposal of waste are done correctly.

Sewage and other effluents generated must be discharged to the municipal system or septic tanks (if available), or they must be treated on-site before discharging off-site. Depending on the flows and characteristics of the wastewater to be generated, it may be necessary to include treatment systems approved by the corresponding environmental authority. If this is the case, then a management plan must be prepared for the wastewater treatment systems as well as a water quality monitoring plan to be implemented during the operation phase.

6.5.8 Training and Communication

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

6.5.9 Responsibilities

As Project phases unfold, contractors will be responsible for overseeing the implementation of the waste management plan. Contractors must develop and deliver a list of all waste management procedures, specific to each function.

Prior to the start of work involving the generation of waste, each contractor must prepare its own management plans and inspection procedures. They should create separate waste management plans for each phase, or a single, more far-reaching plan as long as each phase is clearly detailed. Said management plans will be reviewed and approved by the executing agency before the works begin, in order to ensure consistency between the waste management plans. In addition, contractors will need to comply with all local rules and regulations including the correct classification, disposal and reuse of waste.

Workplace supervisors will oversee health and safety factors for contractors in relation to waste management and enforce established environmental incident prevention and safety practices. They will supervise waste activities comprised of classification, control, mitigation, transportation and disposal of all the waste generated by the projects.

6.5.10 Management Control and Monitoring Measures

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

Contractors must carry out inspections, audits, monitoring and sampling activities (if necessary) in all areas associated with the generation and reception of waste. Checklists will be prepared for use during the inspections, which will be documented for reporting and monitoring purposes.

Inspection lists will include:

- Treatment and disposal list for contaminated solid waste including dates, quantity, source, type, and final disposal site, location, and facility name;
- Any spill, leak, absence of identification markings, containment problems and any other factor that may require corrective actions; and
- Records and documentation of any corrective and follow-up action on issues identified.

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

6.6 Erosion and Sediment Control Plan

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

6.6.1 Objectives

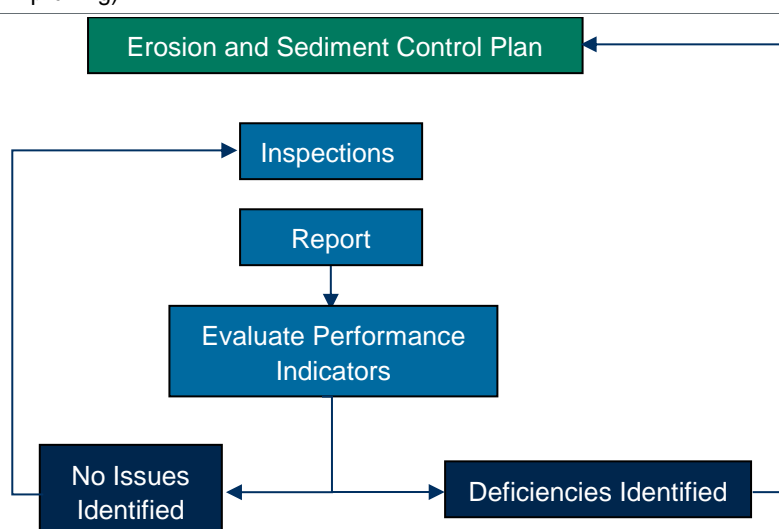
The objectives of this Plan include:

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

6.6.2 Methodology

Table 6-1 presents the steps to prepare an Erosion and Sediment Control Plan.

Table 6-8: Preparation of the Erosion Prevention and Control Plan

Steps	
Step 1: Identify key impacts	<ul style="list-style-type: none"> ■ Identify potential impacts for the construction and operation stages of the project(s).
Step 2: Identify applicable national and international standards	<ul style="list-style-type: none"> ■ Identify the country's legal requirements and applicable IDB policies.
Step 3: Establish mitigation and control measures for soil erosion, stormwater runoff and sedimentation	<ul style="list-style-type: none"> ■ Establish the appropriate mitigation measures for the type of Project and each stage. Examples of mitigation measures to be included in the plan: <ul style="list-style-type: none"> ○ use of sediment fences; ○ installation of temporary and permanent drainage systems to control runoff from construction areas; ○ use of sediment ditches and regulating dams to control runoff; ○ develop banks and excavation slopes in accordance with the guidelines for geotechnical stability; ○ avoid building roads or access roads on slopes greater than 15% as a soil conservation measure; ○ minimize deforestation; ○ stabilization and progressive reforestation of affected areas; ○ deposit surplus material in previously approved areas or reuse it as fill material; and ○ once the construction stage is complete, restore access and service roads that are not necessary for the project's operation to their original or better conditions
Step 4: Establish and define the roles and responsibilities for the implementation of the plan	<ul style="list-style-type: none"> ■ Establish which entities have the responsibility to implement the mitigation measures and which ones to audit / monitor the correct implementation and their effectiveness ■ Contractors are required to incorporate proposed mitigation measures and management controls in their own procedures and work plans, and in the Management Plans for each project.
Step 5: Implement monitoring to evaluate the efficiency of mitigation and control measures	<ul style="list-style-type: none"> ■ The entity responsible for each project will establish an inspection and audit program that will include: <ul style="list-style-type: none"> ○ Identification of performance indicators to be monitored ○ Periodic audits and inspections of the contractors' work front to verify the correct implementation of the erosion and sediment control measures and plans, as well as the installation of erosion control systems. ○ Inspections (periodic and unannounced) of clearing activities (felling and pruning).
Step 6: Reporting and evaluation of results based on indicators	 <pre> graph TD ESPC[Erosion and Sediment Control Plan] --> Inspections Inspections --> Report Report --> EPI[Evaluate Performance Indicators] EPI --> NI[No Issues Identified] EPI --> DI[Deficiencies Identified] NI --> ESPC DI --> ESPC </pre> <p>The flowchart illustrates the monitoring and evaluation process for the Erosion and Sediment Control Plan. It begins with the 'Erosion and Sediment Control Plan' box, which leads to 'Inspections'. From 'Inspections', the process flows to 'Report', then to 'Evaluate Performance Indicators'. From 'Evaluate Performance Indicators', there are two possible outcomes: 'No Issues Identified' or 'Deficiencies Identified'. Both outcomes lead back to the 'Erosion and Sediment Control Plan' box, indicating a feedback loop for continuous improvement.</p>

6.7 Water Management Plan

The Water Management Plan is designed to control and minimize as much as possible the potential impacts from water use and water disposal during the activities of the Projects executed under this Operation.

This Water Management Plan details the steps to follow for the identification and the appropriate management of potential impacts to the water resources in the Projects' AOI, including the necessary requirement for the water supply and wastewater discharged during activities associated with the Project.

6.7.1 Objective

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

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

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

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

6.7.2 Scope of Application

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

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

6.7.3 Responsibilities

As project phases unfold, contractors will be responsible for overseeing the implementation of the Water Management Plan. Contractors must develop and deliver a list of all water management procedures, specific to each Project and each Project's phase.

Contractors are required to incorporate in their own procedures and work plans the mitigation measures and management controls proposed in this Plan. Proposed mitigation and control measures must comply with the standards described in the environmental and social impact studies.

This will be achieved through planned periodic inspections, documented audit results, as well as the implementation of monitoring programs. The implementation of adaptation measures are required when the described guidelines/standards are not met.

6.7.4 Activities

The construction of the Project would require water for construction activities (for example cleaning and mixing concrete), and for the portable worker restrooms and worker consumption. During operation, potable water will be needed for the facilities themselves.

The wastewater generated on-site will be sanitary sewage resulting from the portable restroom facilities during construction and from and from the clinic's themselves during operation.

6.7.5 Water

6.7.5.1 Construction

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

- Properly store and use of fuel and hazard materials so that they do not come into contact with water;
- Control soil erosion in construction areas (by use of hay bales and silt fences);
- Monitor and periodically remove accumulated silt from any sediment control ponds for proper disposal;
- Construct diversion drains and bunds to divert clean runoff away from construction areas and prevent contaminated water entering local water sources.

6.7.5.2 Operation

Water is available from the Municipality for all of the proposed Projects. The water needed will depend on the type of Project. Facilities which are being improved but not expanded will likely not require any additional water. New construction as well as the expanding of existing facilities will present an increase in water need during operation.

6.7.5.3 Measurement of Water Intake

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

6.7.5.4 Water Use Monitoring

The water usage as a whole will be calculated at least monthly.

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

6.7.5.5 Recording of Leaks/Opportunities to Reduce Consumptive Use

By implementing a regular water monitoring program as well as performing facility inspections as part of relevant operational and maintenance procedures, significant leaks and be identified and recorded, including their location, duration and approximate volumes of water lost. Corrective actions/nature of

repairs undertaken should also be recorded. Opportunities for reduction in consumptive water will be identified where possible and as part of annual environmental improvement initiatives.

6.7.6 Wastewater

6.7.6.1 Construction

Sanitary Sewage

For locations where restrooms are not currently available, portable toilets will be installed and used by workers to prevent contamination and releases of untreated wastewater during construction of the Projects. If the EPC contractor decides to use a packaged sewer treatment system and discharge onsite, wastewater discharge must meet local discharge requirements or the values provided in the International Finance Corporations (IFC) Environmental, Health and Safety (EHS) Guidelines, whichever are stricter.

Table 6-9: EHS Guidelines for Sanitary Sewage Discharges

Pollutant	Unit	Guideline Value
pH	pH	6-9
BOD	mg/l	30
COD	mg/l	125
Total Nitrogen	mg/l	10
Total Phosphorus	mg/l	2
Oil and Grease	mg/l	10
Total Suspended Solids	mg/l	50
Total Coliform Bacteria	MPN/100 ml	400

MPN – Most Probable Number

Source: EHS Guidelines

Industrial Discharges

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

Prohibitions

Any illicit discharges of industrial wastewater or chemicals/hazardous materials into the portable sanitary facilities is strictly prohibited. Equipment and vehicle washing is not allowed to be performed on-site.

6.7.6.2 Operation

Sanitary Sewage System

All of the facilities already in existence are connected to the municipal wastewater system with the exception of two facilities which have septic systems in place (The Exuma and Abaco Primary Health Care Centres). The facilities proposed for construction will be connected to the existing municipal wastewater system. Applications will need to be filled out for these new facilities in order to connect them to the Municipal wastewater system.

Prohibitions

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

Maintenance

Activities for the two Projects with septic systems in place are comprised of improvements/modifications only and do not involve expanding the facilities so no modifications to the sewer system are anticipated. They will continue to be operated, cleaned and maintained by a licensed contractor based on the schedule recommended by the manufacturer.

6.7.7 Stormwater

6.7.7.1 Construction

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

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

6.7.7.2 Operation

Stormwater will sheet flow or discharge through stormwater management systems to the surrounding surface to allow for infiltration into the ground.

Design details have not been finalized for the individual Projects and some could require the use of back up emergency generators and or fuel tanks. Some sort of secondary containment will be provided if there is a need for fuel containing equipment. Stormwater that collects in any secondary containment will be visually inspected prior to discharge. If there are signs of contamination, the stormwater will be pumped out of the secondary containment areas and collected, transported, treated or sent to disposal in compliance with the federal, state or municipal regulations.

6.7.8 Documentation and Monitoring

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

6.7.8.1 Construction

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

The EPC Contractor monitoring activities during construction will include:

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

6.7.8.2 Operation

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

6.7.9 Training

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

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

6.8 Noise and Emissions Management Plan

The Noise and Emissions Management Plan is designed to control and minimize as much as possible the sources of noise and emissions during the activities of the Projects executed under the Operation.

This Plan defines the potential sources of noise and emissions and establishes how these sources will be managed and monitored. The Plan includes methods that will guide contractors to manage, mitigate and / or avoid (to the extent possible) the negative impacts produced by noise and emission sources on sensitive receivers (people, fauna, and infrastructure).

6.8.1 Objectives

The following objectives are part of this Plan:

- Comply with the relevant regulatory requirements;
- Identify the potential sources of noise and emissions for the different phases of the Project;
- Define construction and operation procedures for managing noise and emission levels;
- Follow best international practice guidelines;
- Define mitigation procedures and measures to be implemented for construction and operation activities that have the potential to generate noise and emissions;
- Define the roles and responsibilities for the implementation of this Plan; and
- Define the procedures for monitoring the efficiency of the mitigation measures, the generation of reports and the intervention and adaptation of the Plan.

6.8.2 Source of Impacts

Project activities could result in the following negative impacts to social and environmental receptors located within the project's area of influence:

- Potential increase in noise levels during construction due to vehicle traffic and equipment operation. The noise will come from the use of mobile machinery such as excavators, cranes, and motors;
- Increased environmental noise in the short term and of a temporary nature due to the construction activities of the Projects, such as the movement of materials, machinery and equipment; cleaning and dismantling; and the dynamics among workers who access the proposed facilities;

- Increase in the generation of gas and particle emissions from equipment, machinery and vehicles (mobile sources) that use hydrocarbons as a fuel source;
- Increase in the emission of vapors and gases from painting activities on site;
- Dust emission from areas devoid of vegetation and gaseous emissions from construction equipment and machinery and vehicles that transport materials and/or waste; and
- Generation of vehicular emissions and suspension of particles during the operation phase, due to the circulation of mobile equipment involved in maintenance work.

6.8.3 Management Measures

Below are noise and emission control measures that can be implemented

6.8.4 Noise Management during Construction

- Noise levels must be maintained within the maximum permitted values indicated by the country's authorities;
- Indicate via signs/posts all places where there are noise levels higher than 85 dBA, to avoid exposing people without certified hearing protective equipment;
- Train all workers in techniques for the use and maintenance of hearing protection equipment (occupational safety) that must be required at all times during exposure periods;
- Establish speed limits for vehicles circulating in populated areas (for example, maximum speed of 20 km/h);
- Design and implement a contingency plan and corrective measures to deal with eventualities; and
- Eliminate or reduce, to the extent possible, noise harmful to the health of workers.

6.8.5 Noise Management during Operation

Other than vehicle traffic, additional noise is not expected during Operation. If back-up generators are maintained on site, any maintenance or testing programs will be done during day time working hours in order to prevent any discomfort or nuisance to neighbouring communities.

6.8.6 Emissions Management during Construction and Operation

- Prohibit the use of any machinery, equipment or vehicles that show fuel leaks, faulty combustion and exhaust systems or catalyst systems;
- Establish speed limits for vehicles traveling in areas where dust can be suspended;
- Cover all equipment that transports material that can be suspended by wind with suitable tarps;
- Wet or cover loose soil storage areas exposed to the wind;
- Diesel and gasoline operating equipment must have preventive maintenance in compliance with applicable environmental regulations;
- Gasoline operating equipment should have catalytic converters in good condition. Movement equipment (forklifts, cranes, etc.) will adjust their operation to the guidelines of these measures. Catalytic converters or filters for diesel equipment shall be incorporated, as required; and
- Perform material strength tests, galvanizing and other processes/tests at the factory and not on site.

6.8.7 Responsibilities

As project phases unfold, contractors will be responsible for overseeing the implementation of the Noise and Emission Management Plan. Contractors must develop and deliver a list of all noise and emission management procedures, specific to each function.

Contractors are required to incorporate in their own procedures and work plans the mitigation measures and management controls proposed in this Plan. Proposed mitigation and control measures must comply with the project standards described in the environmental and social impact studies. This will be achieved through planned periodic inspections, documented audit results, as well as the implementation of monitoring programs. The implementation of adaptation measures are required when the described guidelines/standards are not met.

6.8.8 Training

Before the start of project construction works, personnel must have received specific training for their work, as well as have participated in various induction training sessions. Detailed information about the importance of noise and emission mitigation measures and the requirements of each project must be provided to employees and contractors.

6.8.9 Monitoring

Monitoring activities will be carried out to inspect and evaluate the efficiency of the proposed mitigation measures, as well as the efficiency of the integrated controls. These monitoring measures, as well as monitoring parameters and frequency are summarized below. In the event that the monitoring results detect non-conformities with the standards approved in the environmental and social impact studies, investigations and corrections will be made as necessary. Typical parameters for construction projects are described below:

- Air quality contaminants (SO₂, CO, NO₂, PM₁₀, PM_{2.5}, hydrocarbons, SF₆) – Monitoring will include concentrations of suspended particles less than 10 microns in aerodynamic diameter (PM₁₀), particles less than 2.5 microns in aerodynamic diameter (PM_{2.5}), volatile organic compounds, sulfur dioxide (SO₂), nitrogen dioxide (NO₂), and carbon monoxide (CO). The parameters will be compared with ambient air quality criteria in local regulations or based on WHO Ambient Air Quality Guidelines¹¹.
- Noise and vibration levels produced by heavy machinery, vehicles, and material hauling activities; as well as noise generated on the site during the construction stage should not exceed 55/45 A-weighted decibels (dBA) (day/night) in residential areas or 70 dBA (both day and night) in industrial/commercial areas.

6.9 Traffic and Pedestrian Management Plan

This Traffic and Pedestrian Management Plan sets out the expectations of the executing agency and defines how the Contractor will implement and manage matters related to traffic during the construction and closure phases of the Projects.

6.9.1 Objectives

The purpose of this Plan is to minimize the interface wherever possible between the public (pedestrians, visitors, tourists, residents, etc.) and site and Project-related traffic, as well as minimize economic losses of local businesses throughout construction. This document provides practical guidance on the planning and control measures that will be implemented. The objectives of this plan are:

¹¹ IFC General Environmental, Health, and Safety Guidelines, Air Emissions and Ambient Air Quality
<https://www.ifc.org/wps/wcm/connect/4e01e089-ad1a-4986-b955-e19e1f305ff0/1-1%2BAir%2BEmissions%2BAnd%2BAmbient%2BAir%2BQuality.pdf?MOD=AJPERES&CVID=Is0KF2J>

- Minimize the impact on the public road network approaching and adjacent to the project by road based construction traffic. This will be achieved by identifying clear controls on routes, vehicle types, vehicle frequency, vehicle quality and hours of site operation.
- To establish main principles for vehicle and pedestrian movement within the site boundary maintaining positive segregation between personnel and vehicles.

The main construction Contractor is responsible for the execution of the plan, and the plan as a document is 'dynamic', and will be revised and added to as the project evolves.

6.9.2 Source of Impacts

Project activities could result in the following negative impacts to social and environmental receptors located within areas of influence:

- Changes in traffic patterns due to road / route closures for the construction of infrastructures or to move equipment and machinery - can cause impacts to the safety of road users (vehicular and pedestrian); and
- Potential increase in traffic of vehicles and construction equipment (heavy vehicles and wide / long loads) - can cause discomfort to vehicular traffic in the area as well as to pedestrians due to high levels of traffic of equipment and machinery, increased noise, and increased emissions.

6.9.3 Management Measures

The following are control measures that can be implemented with respect to pedestrians, roads and routes, vehicular movement, and construction machinery.

6.9.3.1 Pedestrians

- Pedestrian routes shall:
 - Be clearly separated from vehicle routes by fencing and/or a kerb, or other suitable means.
 - Be wide enough to safely accommodate the number of people likely to use them at peak times.
 - Allow easy access to relevant local work, tourist and residential areas.
 - Be kept free of obstructions.
 - Be clearly and suitably signed.
- Ensure Pedestrians:
 - Can safely cross the main vehicle routes.
 - Have a clear view of traffic movements at crossings and at gates which lead onto traffic routes.
 - Routes provide safe access to welfare facilities.

6.9.3.2 Vehicle Routes

Ensure that:

- Routes suitably consider pedestrian issues (as above).
- Routes are wide enough to safely accommodate the number of vehicles likely to use them at peak times.
- Routes allow easy access to delivery areas.

- Routes are free of obstructions, and are clearly and suitably signed.
- Routes eliminate or reduce the need for reversing.
- That at the final point of exit can the driver see pedestrians on the pavement.
- Temporary structures are protected from vehicle impact.
- Provision of suitable parking areas.
- Routes are planned to reduce the need for excessive vehicle movement.
- There are measures to prevent vehicles depositing mud on the roadways.

6.9.3.3 Vehicle Movement

Implementation of the following safe work practices for drivers:

- Only operate vehicles if you are competent and authorized to drive them
- Do not drive with impaired abilities (ill health, poor vision, prescribed/illegal drugs or alcohol)
- Make sure you fully understand the operating procedures of the vehicles you control
- Know the site routes and follow them. Take care at pedestrian crossovers.
- Understand the system of signals used on site
- Visiting drivers: seek appropriate authority to enter the site and operate vehicles
- Know the safe operating limitations of your vehicles ,particularly relating to safe maximum loads and gradients
- Carry out daily checks on your vehicles and report all defects immediately to supervisors
- Follow site procedures and comply with all Site rules
- Do not drive at excessive speeds
- Wear appropriate PPE when out of the cab
- Ensure that windows and mirrors are kept clean and clear
- Keep the vehicle tidy and free from items which may hinder the operation of vehicle controls
- Do not allow passengers to ride on vehicles unless safe seating is provided
- Park vehicles on flat ground wherever possible, with the engine switched off, the handbrake and trailer brake applied and where necessary use wheel chocks
- Do not reverse without reversing aid or banksman assistance
- Where visibility from the driving position is restricted, use visibility aids or a signaler. Stop if you lose sight of the signaler or the visibility aids become defective.
- Do not remain on vehicles during loading operations, unless the drivers position is adequately protected
- Ensure loads are safe to transport
- Do not attempt to get off moving vehicles
- Do not make adjustments with the engine running and guards removed
- Do not smoke during refueling operations
- Do not use a mobile phone whilst driving on site.

With regards to driving in reverse:

- Implement one-way systems around the site and in loading and unloading areas Provide designated turning areas.
- Reduce the number of vehicle movements as far as possible. Instruct drivers not to reverse, unless absolutely necessary.
- If possible, consider use of CCTV, convex mirrors, Fresnel lens, etc. to overcome restrictions to visibility from the driver's seat, particularly at the sides and rear of vehicle. Design vehicle reversing areas which:
 - Allow adequate space for vehicles to maneuver safely
 - Exclude pedestrians; and
 - Are clearly signed and have physical stops or buffers to warn drivers that they have reached the limit of safe reversing areas.
- Ensure everyone on site understands site rules on vehicle safety. Drivers and signalers need to be in constant communication during reversing operations. Signalers should not be put at risk from vehicle movement, e.g. by standing directly behind reversing vehicles. Ensure all vehicles on site are fitted with appropriate warning devices.
- Ensure reversing warning lights and alarms are in good working order and instruct workers to keep clear of moving vehicles.

6.9.3.4 *Signalers/Banksman Practices*

Implementation of the following practices:

- Use relevant safety procedures and correct signaling systems
- Ensure drivers understand the correct signaling systems
- Signal instructions clearly
- Ensure you are visible to the driver and the driver is visible to you; if not, stop the vehicle moving
- Stand in a safe location at all times
- Warn pedestrians and make sure they are kept away from vehicle operations
- Wear appropriate protective clothing, including high-visibility clothing
- Report work hazards to supervisors
- Make sure you can get to and from your work location safely
- Do not ride on the vehicle you are directly unless you are in a designated safe position
- Do not direct vehicles if your ability is affected by alcohol or drugs
- Do not use a mobile phone whilst directing vehicles

6.9.3.5 *Construction Equipment*

Implementation of the following practices:

- Allow only competent people to drive construction equipment
- Provide stop blocks at the edges of excavations, pits, spoil heaps, etc. to prevent equipment falling. The blocks need to be positioned a sufficient distance away from any unsupported edges and slopes to prevent the weight of the vehicle causing collapse
- Do not operate the site equipment controls unless seated on the driving seat
- Do not carry passengers unless purpose built seats are provided

- Do not drive on gradients in excess of those safe for the plant/equipment (see manufactures instructions)
- Avoid maneuvering on sloping ground
- Drive at appropriate speeds for site conditions
- Load on a flat ground with brakes applied
- Get off equipment when it's being loaded
- Ensure loads are distributed evenly and do not let them obscure your vision
- Securely fix loads which may cause danger if they move
- Stop the vehicle, take out of gear and apply parking brake, before tipping loads
- Do not drive around with the skip in the vertical discharge position
- Use the appropriate towing pins (not bent pieces of reinforcement bars)
- Do not leave the engine running when you leave the vehicle
- Be aware of the difference in performance of the site equipment when loaded and unloaded, particularly speed, braking and stability on slopes
- Be aware of the different handling and braking characteristics of the vehicle in the wet or icy conditions
- Do not alter tire pressures outside the manufacturers specifications
- Do not use a mobile phone while operating equipment

6.9.4 Responsibilities

As the phases of each Project develop, contractors will be responsible for overseeing the implementation of the Traffic and Pedestrian Management Plan. Contractors must develop and deliver a list of all procedures, specific to each role.

Contractors are required to incorporate in their own procedures and work plans the mitigation measures and management controls proposed in this Plan. The proposed mitigation and control measures must meet the project standards. This will be accomplished through planned periodic inspections and documenting the results of site audits. Adaptation measures will be implementation when the described guidelines/standards are not met.

6.9.5 Training

Before starting construction works for each project, all project personnel must have received specific training for their work, as well as have participated in various induction training sessions. Detailed information about the importance of mitigation measures and the requirements of each project must be provided to employees and contractors.

6.9.6 Monitoring

Inspection activities of work areas, driving practices, signs and signaling, and protection activities will be carried out to evaluate the efficiency of the proposed mitigation measures, as well as the efficiency of the integrated controls

Incident reports should be prepared when sites are found to be non-compliant with the requirements of this plan or in cases of incidents or accidents. These reports should include a review of the controls and requirements to ensure they are adequate.

6.10 Emergency and Contingency Plan

The outline of the Contingency Plan considers the global actions to be taken into consideration in the event of eventualities related to projects. For some events, measures can be exercised for their prevention, such as spills, fires or explosions. However, there are other events that cannot be prevented, as is the case of events due to natural phenomena: hurricanes, and earthquakes, and therefore these events must also be considered in a contingency plan.

The Contingency Plan will always remain active, including training activities and periodic drills for personnel, as well as continuously carrying out actions to review and update physical and operational data, as well as equipment and products.

This Contingency Plan includes preventable emergencies or accidents and natural disaster emergencies as well as management of patients.

6.10.1 Objectives

The main objectives of this Contingency Plan are:

- Prevent or control operational emergencies or possible industrial accidents that may arise during the construction or operation phase of the Projects.
- Establish procedures and plans to respond in a timely and efficient manner, and with the necessary resources, to fires, accidents, attacks and any other emergency situation that may arise.
- Prevent the consequences of a major event (fire, spills of dangerous products) from damaging human lives and property.
- Manage equipment and installations through periodic inspections.
- Manage patients for safety with respect to COVID-19 and safety of patient during an emergency.

The contingency plan presents the most important guidelines for subsequent adoption and implementation by contractors. One of the fundamental purposes is to protect and safeguard the human life of all those involved and reduce the losses of public and private property.

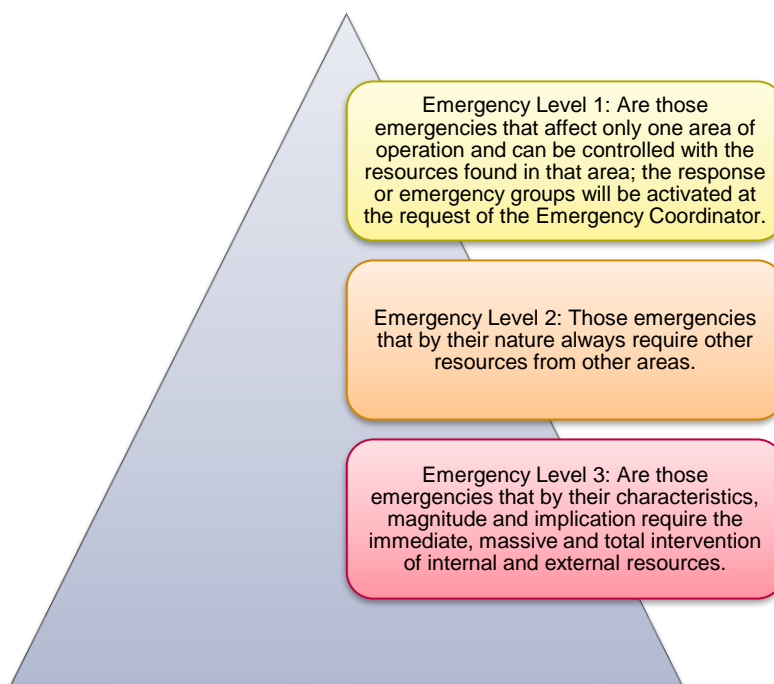
There are three elements that significantly influence the success of any contingency plan, which are:

- Resources: appropriate personnel and equipment;
- Strategies, techniques and action plan; and
- Response management: leadership, cooperation and communication.

6.10.2 Emergency Levels

For the operation of the Contingency Plan, it is important to first characterize the emergency by seriousness of the situation in order to apply the appropriate level of response, see figure below.

Figure 6-3: Emergency Levels



Source: ERM, 2021.

6.10.3 Procedures

During the application of the Contingency Plan below are the procedures to follow. Considerations for the designation of the appropriate response measures include:

- **Identification of Available Resources.** The most important resource to respond to possible contingencies is the people present at the Project site. The actions to be developed will depend to a large extent on the knowledge, confidence and capacity of the staff to carry out the actions previously assigned in the respective plan. It is imperative that the people at the Project site meet training requirements and are provided with the appropriate personal protective equipment (PPE) and information to fulfill their mission.
- **Access to information.** Provide all the necessary information in a concise manner to minimize confusion, and to avoid rumors and exaggeration. Obtaining timely and updated information is a dynamic process, and is the best way to provide feedback to the plan.
- **Communication.** The problems associated with communication are mainly related to the content of the messages, the means of transmission, and the interpretation by the person who receives it. Communication systems used internally should be prepared to handle a specific amount of information during an incident.
- **Priority setting.** At the scene of an incident, the personnel in charge of responding to the emergency must be able to alter priorities quickly, in order to face possible changing and/or unexpected situations.
- **Coordination between the Authorities.** An emergency coordinator must be determined for the Project by the contractor during the construction phase. This emergency coordinator will be in charge of coordinating with the appropriate authorities during an emergency.
- **Communication with the communities.** Throughout the construction and operation phases, contractors must take communication initiatives with communities for their safety. These initiatives may include an emergency alert system, a method to provide information on

Project activities and how to respond, collaborate with communities to establish action plans, organize demonstrations or training in how to respond to emergencies for communities, and/or identify the emergency response team to communities to establish a relationship before an emergency occurs.

6.10.4 Construction Phase – Risk Management

It is the contractor's responsibility to be in charge of risk management, this responsibility is shared with subcontractors if applicable. The executing agency, as supervisor and owner of the project will have to ensure that the contractors manage risks and prepare an appropriate contingency plan as required. Therefore, the contractors and/or subcontractors will be required to comply with all safety, occupational health and environmental procedures to complete and deliver the work without incidents. As previously stated, Contingency Plans are live documents that may be revised and adapted if necessary according to the appropriate requirements for the construction activities.

The Contractors will ensure compliance with the standards as required based on the type of work, by jobs or disciplines. Such obligations include but are not limited to:

- Guarantee workers with safe conditions in the workplace.
- Instruct and train workers regarding the prevention of accidents, occupational diseases, the risks to which they are exposed in the performance of their work; as well as the use of personal protection equipment according to the work done, through training sessions, posters, etc.
- Design a program of occupational health and safety according to the activities to be performed that contains safety measures to be implemented, in order to avoid injury to personnel or property damage.
- Provide workers with personal protection equipment, according to the work done to prevent injuries.
- Regarding vehicles, machinery and equipment, comply with preventive and / or corrective maintenance programs and safety requirements.
- Organize and maintain health and safety services such as first aid kits in accessible places and ensure staff is knowledgeable.
- Record in writing any statements made by the workers in relation to unsafe conditions and the worker's environment, and carry out corrective measures immediately.
- Report any occupational diseases, work accidents and any other unsafe condition that is present in the workplace.

Employees will have to fulfil the following obligations:

- Exercising their specific functions in accordance with the work contract in order to avoid risks and protect their personal safety and health, and that of their work colleagues.
- Immediately report to supervisors any unsafe condition that could threaten their physical integrity or their own health and / or that of other workers.
- Use and maintain personal protection equipment as required, and immediately report to the person responsible for its supply, of the loss, deterioration or expiration of the same.
- Bring to the attention of your superior if you feel that the requested safety or security measures do not appropriately manage the risk.
- Immediately comply with any request that is made for the benefit of your safety and that of others.

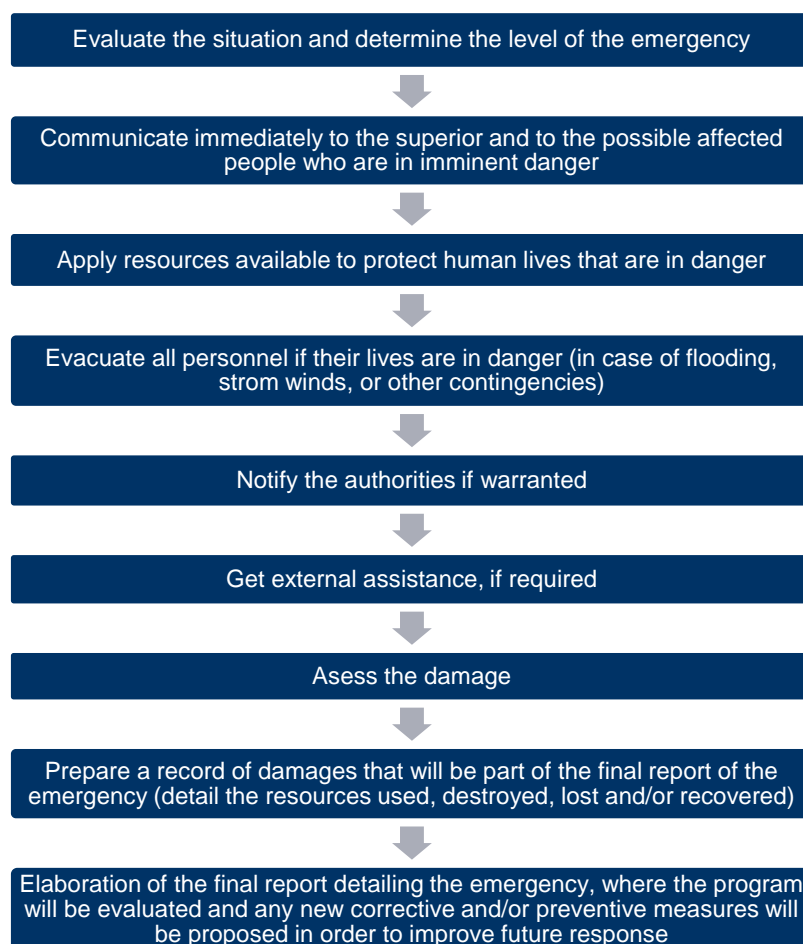
- Care for and maintain sanitation and security facilities facilitated to the workers during the construction phase.
- Adhere to all safety and security requests made in the training materials, posters and posted notices.
- Accept the provisions of the medical service and the competent bodies in matters of occupational safety for the prevention, treatment of occupational or non-occupational diseases, and occupational accidents.

6.10.5 Emergency Procedures

The following Section describes the actions and procedures to be considered by the Contractors and Operators in case of emergencies and events that may arise.

The general procedure in an emergency is presented in the following Figure.

Figure 6-4: General Procedures during an Emergency



Source: ERM, 2021.

The Contractor or Operator must lay out a sequence of actions to be followed in the event of an unplanned event or accident, which may be as follows:

- Notification: Inform all personnel of the accident.
- Verification and evaluation: Confirm that the notification provides an accurate representation of the status of the works and associated risk at the moment that the notification of the event is received.

A notification scheme must be included in the Contingency Plan to include the main local authorities, (may include: the municipalities where the projects are developed, the local environmental or natural resources departments, the local police, and/or the local firefighters).

6.10.6 Calling Plan

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

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

6.10.7 Emergency Committee

An Emergency Committee must be organized by the Contractor. It is recommended that the Committee be composed of:

- Environmental supervisor
- Security Supervisor
- Maintenance supervisor

6.10.8 Types of Contingencies

The types of contingencies that may arise in the project areas are classified according to their origin:

- Operational emergencies or incidents normally caused by operations, fires, falling machinery, etc.
- Industrial accidents of personnel or contractors, normally caused by unsafe acts, unsafe conditions or as a consequence of the natural phenomena or operational emergencies previously stated.
- Social phenomena such as sabotage, terrorism, robberies, etc.
- Natural phenomena, such as flooding, strong winds, etc.

6.10.8.1 Construction and Operation Phase Accident Prevention Process

The best way to control an event and the impact that these may have on the environment is to prevent them from happening by implementing preventive measures. Preventive measures are described below.

Work Permits

All projects must comply with the requirements and procedures established by local law, including those related to work permits in order to prevent unnecessary risks and/or accidents, and must comply with the following:

- It is necessary to obtain work permits in all areas with risk where work is carried, and they must be issued by authorized personnel.
- No work will be started before the respective work permit has been issued and it has been verified that the recommendations and demands required have been complied with.

- Supervisors authorized to issue and receive work permits will be responsible for the correct issuance of the same. They will also be responsible for ensuring that the security conditions are maintained during the time required to carry out the work.
- A work permit will not be issued, covering several areas with different risks. As a general rule, each specific job will require a separate permit.

Personal Protective Equipment (PPE)

- Personal protective equipment will be mandatory. They will not prevent accidents, but will eliminate or reduce the severity of an injury.
- It is the responsibility of the contractors to provide their workers with the personal protection equipment required in the execution of any work that generates risks.
- The equipment will be new and of good quality.
- It is the responsibility of the immediate supervisor of each worker to determine the need for personal protective equipment and to ensure that the worker makes use of them.
- The worker will be responsible for the care, conservation and proper use of any equipment entrusted to him.

Organization and Order

Prior to the start of the work, the Contractor will develop a safety, organization and order program for direction, providing guidance everything from inspections to identify faults, to the types of collection waste/trash receptacles provided for the different types of wastes (organic, inorganic waste, solid waste, liquid, and hazardous waste). Transportation and final disposal method, in accordance with the national regulations, must also be included. In addition, the following requirements will be fulfilled:

- Each employee will keep their work site clean and in good condition.
- The employee will notify his supervisor about spills of oil, grease, etc., and will be cleaned as soon as they occur.
- All tools, screws and any other material equipment used in the performance of a job will be kept in order, and these objects should not be placed in places where they can be dangerous.
- The flammable substances and wastes will be handled and stored accordingly in order to avoid the risk of spontaneous fire.
- There should be a staging area or adequate space for orderly storage of bulky objects, equipment, or materials.
- Every workplace should be provided with fresh and potable water in sufficient quantity for workers to use.
- The toilets and bathrooms (one toilet for every 20 workers) will be kept in optimal conditions and with sufficient supply of toilet paper, water and soap.
- If employees eat at the workplace, the workplace should have a dedicate area for eating, protected from weather elements. No waste and debris will be left in place and the use of Styrofoam food containers is prohibit.

Training

Every worker, new or old, will receive operational training from their immediate supervisor (supervisor), in order to develop knowledge and skills for the safe execution of the assigned work, especially on:

- Industrial safety corresponding to construction.

- Occupational health.
- Fire Prevention.
- First aid.
- Personal protective equipment.
- Organization and order.
- Accident prevention.
- Accident analysis.
- Fire protection.
- Works that require written permission for their execution.
- Emergency control.
- Factors of physical risks (electrical, mechanical, noise and vibrations, lighting, heat, ventilation, etc.)
- Factors of chemical risks (smoke, gases in the environment (vapors, fumes), toxic, alkaline and corrosive substances, etc.)
- Other risk factors (health, third-party actions, environmental, etc.).

6.10.8.2 *Emergency Response Actions*

General emergency response actions include:

- Upon receiving notice of an emergency, immediately evaluate the level of emergency and determine which response measures are necessary, notifying the corresponding response groups.
- If necessary and in accordance with the magnitude of the event, order the evacuation of the area or facilities and initiate the respective response procedures.
- Notify the relevant authorities.
- Consult the emergency response procedures in order to verify the appropriate response for each emergency, ensure all the response procedures have been applied and record descriptive information of the event.
- Restrict access to the event area.

Communications must be made by portable radio transmitters, either between response vehicles or with the base station.

Spills

For a spill incident, specific equipment and materials are needed for an appropriate response. The contractors will have the following materials to deal with spill incidents:

- Absorbent material, such as sand, sawdust, absorbent cloths (depending on spilled material).
- Safety equipment such as gloves, plastic aprons, goggles, and boots.
- Appropriate containers for the collected material.
- Photographic camera to document the incident.

Equipment or Infrastructure Failure

- The person who detects a fault or failure will immediately notify the Supervisor or Chief of Operations identifying themselves and indicating the place and type of emergency.

- Try as much as possible to isolate the area or prevent vehicles or people from approaching.
- After overcoming the problem, analyze the root cause of the emergency/fault or failure.
- Prepare preliminary and final reports and submit to the appropriate authorities in a correct and timely manner.

Fires and/or Explosions

A fire can lead to serious damage to equipment or personnel, and should be taken care of as quickly as possible. The following recommendations should be included in the Contractor's Contingency Plan in case of a fire.

Before a Fire

- Provide training to all personnel through courses on fire practices and simulations of accidents, use of fire extinguishers, etc.
- Have infrastructure and equipment for fire protection, and extinguishers that work in different environments depending on the type of project (for example, Class A extinguishers for ordinary combustibles such as wood and paper, Class B extinguishers for use on flammable liquids like grease, gasoline and oil, etc.).
- Develop rigorous preventive maintenance programs for all types of equipment, inspect and recharge fire extinguishers, etc.
- Identification and signage of safe areas and establish evacuation routes in all facilities or work fronts.
- Keep extinguishers in good condition.
- Provide first aid kit, battery-operated flashlights, extra batteries, etc. on site.

During a Fire

- Evacuate and or stop work in the area and / or facilities.
- Communicate with the local Fire Brigade, National Police and other entities depending on the severity of the emergency.
- Protect mouth and nose with damp cloths.
- Keep calm and avoid running.
- Assist affected people immediately, if any.
- If appropriate, try to put out the fire with the use of extinguishers and other existing means. Ensure extinguishers are periodically inspected to ensure they are in working condition.
- If any equipment is involved in the fire or explosion, the operator must manually disconnect the electrical power that feeds the equipment, as long as it can be done safely or without risk to human life.

In the event that the fire cannot be fought directly with the extinguishers, or there is danger to the personnel, the actions to be taken are:

- Notify firefighters immediately for help.
- Evacuate the place to the meeting point previously agreed in the training plan and risk drills.
- Once the firefighters have determined that the emergency has ended, the emergency coordinator of the project owner should be informed.
- Proceed along with the maintenance crew to an inventory of damages and then make a detailed report on the matter.

After a Fire

- Clean the affected area.
- Remove all debris.
- Repair and / or demolish affected facilities in case of major damages.
- When the fire has been extinguished, proceed with the maintenance crew to prepare an inventory of damages and then make a detailed report on the matter.

Adequate Staff Training

Practices or simulations should be carried out every six months (can include coordination with the local Fire Department), and should include response procedures for personnel all personnel.

Use and Disposal of Fire Extinguishers

- Fire extinguishers must be located in appropriate places and easily accessible.
- Every extinguisher must have a plaque with the information about the kind of fire for which it is suitable and expiration date. Also, they must have operation and maintenance instructions.
- Each extinguisher must be inspected every two months, tested and maintained in accordance with the manufacturer's recommendations; similarly, they must carry a label with test dates and expiration date.
- If an extinguisher is used, it will be refilled immediately; or if necessary, it will be replaced immediately.

6.10.8.3 Falls from Heights, Cut Wounds, Electrocution and Burns

Before

- Training for personnel should include industrial safety so that they do not commit unsafe acts and use the appropriate protective implements, such as a helmet, boots, safety glasses, restraint harness, etc.
- Also, training of personnel in the implementation of first aid, so that they may help injured coworkers or themselves, until the arrival of medical or paramedical personnel to the place of the accident or their transfer to a hospital for professional attention.
- Provision of personal protection equipment to all workers, as necessary.

During

In case of an accident in the facilities, the staff will act as follows:

- If it is a minor accident, apply first aid to the injured person and transfer them immediately to the nearest clinic or hospital so that they can be seen by a doctor, in order to rule out possible after-effects.
- If it is a serious fall from heights, shelter the injured person and request an ambulance for immediate transfer to a hospital.
- If a person is not breathing, provide rescue breathing (mouth-to-mouth breathing or mouth-to-nose) and request an ambulance for urgent medical attention.
- In case of burn, do not apply home remedies to the injured only water at the time and request an ambulance for its transfer to the clinic or hospital soon.

- For hemorrhage from a puncture wound, hold a gauze in place to avoid blood loss. If located in the extremities, make a tourniquet to cut blood loss, loosening the tourniquet every 10 minutes to avoid gangrene and to move the injured person to a nearby assistance center.
- If trapped with weight on the chest, lever the heavy element and remove it so that the victim does not suffocate, until the arrival of the ambulance.
- If the victim has suffered an electric shock, ensure they are breathing, provide rescue breathing (mouth-to-mouth breathing or mouth-to-nose), and simultaneously request medical assistance or transfer to a clinic or hospital.

Immediate attention to an injured person through knowledge of First Aid can save a life. Always seek the appropriate medical attention by a professional.

After

- Analyze the causes of the accident and the actions taken to assist.
- Prepare the preliminary and final report of the industrial accident.

6.10.8.4 *Attacks and Sabotage*

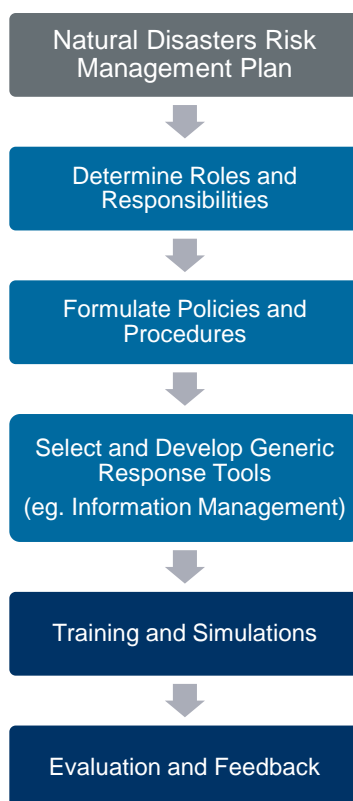
- Provide strict control of the entry of personnel into the facilities by a contracted Security Company, as well as provide surveillance in strategic areas, as necessary.
- In the event of an attack or sabotage, the person who detects it will immediately notify the emergency supervisor of the emergency, indicating the place and equipment affected.
- The shift leader will immediately inform the Police and personnel in charge of the surveillance of the facilities, to neutralize the aggressors.
- If an attack leads to an emergency event (such as a spill or fire), the response strategy to the specific type of emergency will be determined and instructions will be given to the external support units: police, fire brigades, etc.
- Prepare preliminary and final reports and submit to the appropriate authorities in a correct and timely manner.

6.11 Disaster Risk Management Plan

The Disasters Risk Management Plan should be aligned with national regulations (such as Bahamas Disaster Preparedness and Response Act, Chapter 34A, Revised Edition 2008) and take into account the characteristics of the type of operation and specific Project location. Likewise, the risks due to natural hazards specific to The Bahamas must be taken into account. This plan presents guidelines and procedures to follow in the event of a natural event.

Disaster response planning involves determining, increasing, and organizing resources and capacities to achieve a degree of preparedness that enables a timely and effective response to a potential disaster. When a disaster strikes, plans must be monitored, evaluated, and adapted to a given situation. Figure 6-5 presents the steps to follow to prepare the Disaster Risk Management Plan.

Figure 6-5: Preparation of the Natural Disaster Risk Management Plan



Source: ERM, 2021.

6.11.1 Objectives

The main objectives of this contingency plan are:

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

6.11.2 Responsibilities

Planning and Design Phase

During development or planning stages of the Projects, the executing agency considered the level of risk or vulnerability to natural hazards, and included this in deciding the location of the Projects (places to upgrade and reinforce). The design stage and the specifications of the Projects should include integrated controls necessary to mitigate impacts from the types of natural hazards to which they are exposed (such as earthquakes, hurricane winds, flooding).

During the planning and design stages, the design contractors will have to ensure that all Facilities remodelled or constructed, as well as any equipment installed, meet the latest Bahamas Building

Code requirements (currently being revised)¹² or the Minimum Design Loads and Associated Criteria for Buildings and Other Structures set forth by the American Society of Civil Engineers (ASCE/SEI 7-16), especially with regards to load standards and maximum design wind speeds in order to sustain Hurricane damage. In addition, designs should consider improvements to make facilities less susceptible to damage, such as:

- Building shape and elevations;
- Roof shapes, overhangs, and slopes;
- Construction materials and methods;
- Foundation systems; and
- Installation of hurricane shutters and impact windows.

It is the responsibility of the executing agency to ensure all designs are in compliance with the above and to ensure their implementation during the construction phase.

Construction Phase

In cases where the Project is carried out through contractors, the responsibility for risk management is the responsibility of the Contractor, or it can be shared with the different contractors and subcontractors involved. However, the executing agency is responsible for guaranteeing that the actions of responsibility in the management of risks and contingencies are carried out. Therefore, it is required that contractors and/or subcontractors follow the procedures of this plan. The executing agency is also responsible for communication and coordination with local authorities in response to a natural event. The plans may be revised so that, if necessary, they adapt according to the appropriate requirements for the activities.

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

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

Before the end of construction, a disaster management plan must be in place for the operation phase, which establishes: the training requirements of personnel and communication to the public, assigning those responsible for implementing the plan, evacuation routes, and signaling and services to be provided in case of emergencies.

Operation Phase

During the operation stage, the executing agency is responsible for leading disaster risk management. New plans and specific procedures must be prepared, which are in accordance with the processes and vulnerabilities specific to each operation.

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

¹² "Updated Building Code On The Way," <http://www.tribune242.com/news/2020/jan/14/updated-building-code-way/>

6.11.3 Procedures during a Natural Hazard Related Disaster Emergency

6.11.3.1 General Actions in the Event of an Earthquake

Preparation before an earthquake:

- At hospitals or health centers, physically secure (for example, by anchoring to a wall) essential equipment or equipment that can cause fires or spills if affected by an earthquake.
- Train operational personnel to act in emergencies due to earthquakes or earthquakes, through evacuation drills, so that personnel are prepared for these events;
- If in the case of an earthquake of great intensity, organize an orderly and safe evacuation as required; and
- Provide vertical and horizontal signaling of evacuation routes in case of earthquake, as well as extinguishers to control fire outbreaks which could result.

During an earthquake:

- Stop an work that is being executed in order to avoid accidents;
- All personnel shall immediately leave the work area the moment the earthquake is perceived;
- If inside the premises, look for strong structures: under the lintel of a door, next to a pillar or a sturdy wall or site;
- If off-site, stay away from what could collapse or hurt you;
- Put out any signs of a fire;
- If possible, find an open place where there is no possibility of falling structures;
- If the earthquake occurs at night, flashlights should be used; never matches, candles or lighters; and
- Stay away from electric wires and glass

After an earthquake:

- Technical staff must report to the main office/go to areas where urgent technical support is required;
- Immediately disconnect relevant power supplies and water;
- Look for traces of short circuits before reconnecting;
- DO NOT light matches (or smoke) before making sure there are no leaks or spills of flammable material;
- Avoid approaching broken electrical cables;
- Act in accordance with the established procedures in case of fire and/or spill, depending on the situation;
- Resume operations as soon as it is certain that the operational conditions are safe;
- Proceed to clean any debris that obstruct operation;
- After the earthquake is over, damage to equipment and facilities must be evaluated, as well as preparing the reports required by government authorities, as recommended and within the established deadlines in the Plans;

- In the event of an earthquake that exceeds the design capacities of the project facilities and significant structural damage occurs, the operator must suspend operations, and follow the procedure defined by each Project for those cases; and
- Carry out an inspection and evaluation of the components of the facilities that have been affected. Maintenance personnel will be required to report to the Emergency Coordinator any damage and the level of risk involved in entering damaged facilities. Once engineering and maintenance has given approval that entrance to a facility is secure, work activities may resume.

6.11.3.2 General Actions in the Event of Hurricanes

In the event of threats due to extreme weather conditions, the following actions should be considered.

Preparation before a hurricane:

- At hospitals or health centers, physically secure (for example by anchoring to a wall) essential equipment or equipment that may cause fires or spills if affected by the hurricane.
- Train operational personnel to act in case of hurricane emergencies, so they are prepared for these events;
- Inspect emergency equipment and keep ready for use. Keep safe drinking water and preserved food on site;
- Secure with ropes or chains all equipment that cannot be secured inside the building;
- Place vehicles in areas protected against hurricane winds;
- Call the relevant authorities for the project, the Police and the security company, if any, and notify if the site will be left only with the minimum emergency personnel on site;
- Close the main gate;
- For projects in operation, in case of extreme weather conditions once a notification is received from the emergency coordinator, site operators should go to pre-established protected areas inside the facilities; and
- The Coordinator will determine, based on the prevailing or progressive conditions, if the emergency procedures should be ended.

After a hurricane:

- Equipment will not be energized until they have been checked by expert electricians;
- In case of spills, drips or fire, proceed according to the response actions related to those cases in the contingency plan;
- Perform a site assessment and determine the damage caused;
- Proceed to repair minor damages and those necessary to provide immediate service;
- Proceed to clean debris and artifacts that obstruct operations;
- Prepare a written report at the end of the emergency. The report shall contain estimates of damage to the company property, affected persons, damage to private property, and the environment; and
- Before and after a hurricane, management plans will be kept current in order to be effective.

6.11.4 Evaluation

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

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

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

6.12 Management of Patients

During the COVID-19 health crisis there is a need to manage patients carefully in order to minimize further impacts of the coronavirus (COVID-19) during the construction (if applicable), operation, and abandonment phases of the projects supporting the health facilities under this Operation. The proper management of patients ensures adequate hygiene and safety of family members, workers, and local communities. The management procedures should describe the measures and best management practices, which will be used to protect against adverse impacts on family members, workers, the medical team and community members. The management procedures must follow the guidelines and guides, including guidelines for COVID-19, established by national legislation including The Bahamas Ministry of Health, in addition to the procedures recommended by recognized entities such as the World Health Organization (WHO, 2020e and 2004), Pan American Health Organization (PAHO), international organizations (Health Care Without Harm), and non-governmental organizations.

This management procedure is a guide that defines the environmental and social risks and impacts related to the management of patients with COVID-19 and proposes ways to control and monitor them during the duration of the projects based on international guidelines. Although methods for the management of patients are described here, this document is an environmental and social management protocol whose scope does not include medical experience.

6.12.1 Objective

The objectives and goals of the Management of Patients are:

- Control and prevent the transmission of COVID-19;
- Define the procedures, integrated controls and mitigation measures to be used in activities that have the potential to affect people around the patients with COVID-19, the environment, and communities; and
- Comply with the requirements of national legislation and recommendations of international institutions regarding the management of patients.

6.12.2 Regulatory Framework

The national legislation and regional requirements (and international guidelines described further below) that need to be taken into account regarding management of patients includes the following:

- Health Services Act, Chapter 231, 2001.
- Hospitals and Health Care Facilities Act 1998, Chapter 235, Revised Edition 2001.
- Environmental Health Services Act (No. 4 of 1987), Chapter 217, Revised Edition 2001.

Additionally, the local government in the constituencies may have their own requirements on management of patients that must be included in the management plans of each project.

6.12.3 References and Guidelines for Management

The management of patients must comply with the requirements established by national legislation and the local government in the constituencies, together with the relevant IDB policies and best practices at the international level. In addition to the recommendations established in this ESMP, the management plans developed by contractors and implementers must follow the guidelines prepared by The Bahamas Ministry of Health and should also reference the guides available for management of patients that were prepared by international entities. The national and international guidance includes the following:

- Health Services Act, Chapter 231, 2001:

<http://extwprlegs1.fao.org/docs/pdf/bha93739.pdf>

This Act makes provisions for securing the public health and outlines regulations for public health authorities and administrations that include burials and cemeteries, drains, water supply, infectious diseases, lepers, noxious insects, prohibition of certain trades, sanitation, vaccination, and miscellaneous matters.

- Hospitals and Health Care Facilities Act 1998, Chapter 235, Revised Edition 2001:

http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/1998/1998-0034/HospitalsandHealthCareFacilitiesAct_1.pdf

This Act establishes the Hospitals and Health Care Facilities Licensing Board the licensing requirements for hospitals and health care facilities.

- Environmental Health Services Act (No. 4 of 1987), Chapter 217, Revised Edition 2001:

http://laws.bahamas.gov.bs/cms/images/LEGISLATION/PRINCIPAL/1987/1987-0004/EnvironmentalHealthServicesAct_1.pdf

This Act promotes conservation and maintenance of the environment and addresses the control of contaminants and pollutants that may adversely affect the environment and human health. The Act also outlines regulations with respect to water supplies, solid and liquid waste, and hygiene/sanitary procedures.

- International minimum requirements for health protection at the workplace (2017) published by the WHO:

https://www.who.int/occupational_health/publications/minimum-requirements-for-health-protection/en/

This report provides an analysis of the current spectrum of global, regional and national norms including conventions, standards, directives, regulations, guides and codes directly relating to protecting health in the workplace. Consideration is given to exposure to hazardous substances, noise and vibration, radiation, musculoskeletal and psychosocial risks, as well as general workplace and welfare issues such as lighting, thermal comfort, drinking water and sanitation, first aid and health surveillance.

- Department of Health and Ageing, Infection Control Guidelines for the Prevention of Transmission of Infectious Disease in the Health Care Setting (2004), published by the ILO:

https://www.ilo.org/aids/legislation/WCMS_115837/lang-en/index.htm

This publication provides guidelines on infection control strategies including basic infection control measures, identifying hazards and minimizing the risks of infection, identifying who is at risk and from what, responsibilities, other key issues for infection control, and disinfectants and sterilants.

- Occupational safety and health in public health emergencies: a manual for protecting health workers and responders (2018), prepared by the WHO and ILO:

https://www.who.int/occupational_health/publications/safety-health-public-health-emergencies/en/

This manual provides an overview of the main occupational safety and health (OSH) risks faced by emergency responders during disease outbreaks and other emergencies, such as natural disasters, chemical incidents, radiological emergencies and emergencies involving conflict. The document provides information and guidance to assist organizations and workplaces to better prepare and respond to these events.

- Prevent Worker Exposure to Coronavirus (COVID-19) (2020), OSHA:
<https://www.osha.gov/Publications/OSHA3989.pdf>

This brief flyer provides basic key information on how to prevent exposure to coronavirus (COVID-19).

- Guidelines for Control and Prevention of COVID-19 (2020) OSHA:
<https://www.osha.gov/SLTC/covid-19/controlprevention.html#interim>

This web page provides guidelines and information on measures for protecting workers from exposure to and infection with the virus that causes COVID-19 including guidance for all workers and employers, identification and isolation of suspected cases, environmental cleaning and decontamination, worker training, and personal protective equipment considerations.

- Interim Clinical Guidance for Management of Patients with Confirmed Coronavirus Disease (COVID-19) (2020), CDC:
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-guidance-management-patients.html>

This web page provides clinical information on coronavirus disease 2019 (COVID-19) and is for clinicians caring for patients with confirmed infection. It also provides references to additional resources.

- Information for Healthcare Professionals about Coronavirus (COVID-19) (2020), CDC:
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/index.html>

This web page provides information and references about coronavirus (COVID-19) for healthcare professionals.

- Clinical Care Guidance for Healthcare Professionals about Coronavirus (COVID-19) (2020), CDC:
<https://www.cdc.gov/coronavirus/2019-ncov/hcp/clinical-care.html>

This web page provides information and guidance for health care professionals on the coronavirus (COVID-19).

- Infectious Diseases Society of America Guidelines on the Treatment and Management of Patients with COVID-19 (April 2020) IDSA:
<https://www.idsociety.org/practice-guideline/covid-19-guideline-treatment-and-management/>

This document provides guidelines to support patients, clinicians, and other health care professionals in their decisions about treatment and management of patients with COVID-19.

- Coronavirus disease (COVID-19) technical guidance: Patient management (2020) WHO:
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/patient-management>

This web page provides access to various documents, publications, and toolkits with technical guidance and recommendations on management of patients with coronavirus disease (COVID-19).

- Rational use of personal protective equipment for coronavirus disease (COVID-19) and considerations during severe shortages (2020) WHO:

[https://www.who.int/publications-detail/rational-use-of-personal-protective-equipment-for-coronavirus-disease-\(covid-19\)-and-considerations-during-severe-shortages](https://www.who.int/publications-detail/rational-use-of-personal-protective-equipment-for-coronavirus-disease-(covid-19)-and-considerations-during-severe-shortages)

This document summarizes WHO's recommendations for the rational use of PPE in health care and home care settings as well as during the handling of cargo. It also assesses the current disruption of the global supply chain and considerations for decision making during severe shortages of PPE.

- Advice on use of masks in the context of COVID-19 (2020) WHO:
[https://www.who.int/publications-detail/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-\(2019-ncov\)-outbreak](https://www.who.int/publications-detail/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-(2019-ncov)-outbreak)

This document provides advice on the use of masks in communities, during home care, and in health care settings in areas that have reported cases of COVID-19. It is intended for individuals in the community, public health and infection prevention and control professionals, health care managers, health care workers, and community workers. It also provides advice to decision makers on use of masks for health people in community settings.

- Coronavirus disease (COVID-19) Pandemic (2020) WHO:
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019>

This web page provides access to WHO information on the COVID-19 pandemic including public advice, country and technical guidance, travel advice, situation reports, strategies and plans, and mythbusters, among other topics.

- Assessment of infection prevention and control practices in isolation areas in acute healthcare settings in the context of the novel coronavirus (COVID-19) (2020 interim recommendations), PAHO:

<https://www.paho.org/en/documents/assessment-infection-prevention-and-control-practices-isolation-areas-acute-healthcare>

This report provides information on infection prevention and control practices and recommended precautions for the care of patients with suspected or confirmed cases of COVID-19.

- Guidelines for Critical Care of Seriously Ill Adult Patients with Coronavirus (COVID-19) in the Americas (Short Version) (April 2020), PAHO:

<https://www.paho.org/en/documents/guidelines-critical-care-seriously-ill-adult-patients-coronavirus-covid-19-americas-short>

This clinical practice guideline provides recommendations for management of critically ill adult patients with COVID-19 in intensive care units. It offers recommendations for infection control, specimen collection, supportive care, pharmacological treatment, and prevention of complications.

- Key Recommendations on Water Sanitation and Hygiene: COVID-19 (2020), PAHO:
<https://www.paho.org/en/documents/key-recommendations-water-sanitation-and-hygiene-covid-19>

This web page provides links to factsheets with recommendations on water, sanitation, and hygiene practices in the community, in healthcare facilities, and in institutions responsible for water and sanitation services.

- Technical Documents – Coronavirus Disease (COVID-19) (2020), published by the PanAmerican Health Organization (PAHO):

<https://www.paho.org/en/technical-documents-coronavirus-disease-covid-19>

This is a series of technical documents with information and guidelines related to COVID-19 including: biosafety, clinical management, detection and diagnosis, disability related information, ethics, emergency medical teams, essential medicines, health services, health workers, healthy aging, hospital readiness, infection prevention and control, infodemic and misinformation, medical devices, natural disasters, requirements and technical specifications for personal protective equipment, prehospital emergency medical services readiness, risk communication, social distancing and travel related measures, surveillance, and water sanitation.

6.12.4 Procedures

Each project must present an outline of the plan and establish its procedures following the steps below:

1. Establish a team for coordination of patient management at the local and regional level;
2. Define the procedures for the management of patients;
3. Describe the treatment of patients;
4. Define the roles and responsibilities;
5. Define the entities in charge of implementing the plan;
6. Define the procedures for monitoring, measuring progress and generating reports; and
7. Establish training and communications commitments.

6.12.5 Sources of Impacts

The patients with COVID-19 could produce negative impacts to the surrounding people including family members, medical workers and employees, other patients and the community. If not properly managed, the potential impacts associated with patients include:

1. Impact on human health, including transmission of disease to health workers and patients;
2. Impacts on the customs and beliefs of the community.

6.12.6 Mitigation Measures

The managerial and administrative staff of each Project will be responsible for directing the implementation of the patient management procedures. These management plans must include specific information, demonstrating compliance with the following (as a minimum):

- Review the legal framework and international guidelines for the management of patients and define the processes for patient management within the framework of the hospital network;
- Measures to prevent the transmission of COVID-19 from patients (for family members, medical workers and employees, consultants, and people in the community);
- The expected number of patients; and
- Trainings for staff awareness.

Government-approved medical facilities must be used to ensure that the appropriate and quality management and treatment of patients.

6.12.7 Training and Communication

Prior to the start of construction or operation for each project and during the operation for each project, all project personnel must have or receive specific training for their work and participate in various trainings (including all personnel who have contact with COVID-19 patients). Employees and

contractors must be provided with detailed information about the importance of proper patient management including:

- protective measures such as gloves, masks, face shields, gowns, etc;
- procedures for interacting with patients;
- cleaning techniques and protocols; and
- roles and responsibilities.

This information should be available to all personnel in a prominent place.

6.12.8 Responsibilities

The managerial and administrative staff of each project will be responsible for supervising the implementation of the patient management procedures. Before beginning operation, these staff must prepare and deliver a list of all the patient management procedures, specific to each function and their own inspection procedures. The executing agency will review and approve these management plans prior to the start of operations.

6.12.9 Management and Monitoring Measures

Monitoring and evaluation of the effective implementation of the patient management procedure is essential for the proper management of patients with COVID-19. Inspections and monitoring activities must be carried out on the patient management procedure to ensure that it is well managed. Measures and standards must be implemented to ensure compliance and to detect non-conformities with the standards. When a nonconformity is detected, a formal investigation will be conducted and the necessary corrective actions will be established to comply with the standards.

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