FICHTNER



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Environmental and Social Impact Assessment Report

ESIA and CRVA for the Integrated Solid Waste Management Project in the Turks and Caicos Islands

Government of the Turks and Caicos Islands

ENGINEERING CONSULTING

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Terminology

For the purposes of this document, the following terminology applies:

Assignment	ESIA and CRVA for the ISWM Project in the Turks and Caicos Islands
Client	Government of the Turks and Caicos Islands (GOTCI)
Developer	Government of the Turks and Caicos Islands (GOTCI)
Consultant	FICHTNER GmbH and Co. KG
Contractor	Rehabilitation Contractor, Construction Contractor, Decommissioning Contractor or Operation Contractor (context-specific)
Operator	Operator of the sites
Financer	Caribbean Development Bank (CDB)
ISWM Project Consultant	Joint Venture HYDEA S.p.A. – RWA Group Ltd – CDE Ltd.
Main Consultant	Joint Venture HYDEA S.p.A. – RWA Group Ltd – CDE Ltd.
Project	ISWM Project

List of Abbreviations and Acronyms

AoI	Area of Influence
CAS	Civic Amenity Sites
CBD	Caribbean Development Bank
CDW	Construction and Demolition Waste
CC	Climate Change
CRVA	Climate Risk and Vulnerability Assessment
CW	Constructed Wetland
EEEW	Electric and Electronic Equipment Waste
E&S	Environmental and Social
ECLAC	Economic Commission for Latin America and the Caribbean
EHD	Environmental Health Department
ELV	End-of-Life Vehicles
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
FGDs	Focus Group Discussions
FWS	Free Water Surface
GOTCI	Government of the Turks and Caicos Islands
GRM	Grievance Redress Mechanism
GW	Green Waste
IAPs	Interested and Affected Parties
IESCs	Important Environmental and Social Components
IFC PS	International Finance Corporation Performance Standards on Environmental and Social Sustainability
IPCC	Intergovernmental Panel on Climate Change
ISWM	Integrated Solid Waste Management
ISWMP	Integrated Solid Waste Management Project
IUCN	International Union for Conservation of Nature
KIIs	Key Informant Interviews
MHHS	Ministry of Health and Human Services
MP	Member of Parliament
MSW	Municipal Solid Waste
NGO	Non-Governmental Organization
NTES	Non-Technical Executive Summary
O&M	Operation and Maintenance
PET	Polyethylene Terephthalate
POS	Plan of Study
PWD	Person with Disabilities
Q&A	Questions and Answers
SDG	Sustainable Development Goal
SEP	Stakeholder Engagement Plan

SGBV	Sexual and Gender-Based violence
SLR	Sea Level Rise
SWM	Solid Waste Management
SWWG	Solid Waste Working Group
TCI	Turks and Caicos Islands
TCs	Tropical Cyclones
TOR	Terms of Reference
TSS	Temporary Storage Sites (TSS)

Executive Summary

Introduction and Project Justification

The Government of the Turks and Caicos Islands (GOTCI), with financial support from the Caribbean Development Bank (CDB), has launched the Integrated Solid Waste Management Project (ISWMP or Project) to address the pressing challenges of waste management across the islands.

FICHTNER GmbH & Co. KG was assigned with the performance of the Environmental and Social Impact Assessment (ESIA) and Climate Risks and Vulnerability Assessment (CRVA) for the ISWM Project.

The need for the ISWMP is driven by rapid population growth and a booming tourism industry, which have significantly increased waste generation. In 2023, over 60,000 tons of waste were deposited across the islands, with projections indicating a rise to 98,000 tons annually by 2042. Current waste management practices are inadequate, relying on unregulated dumpsites that lack basic environmental safeguards. These include the absence of leachate containment, waste separation, and proper record-keeping, all of which pose serious risks to public health and the environment.

The vulnerability of the islands to climate change—such as sea-level rise, tropical cyclones, and flooding—further exacerbates the risks associated with unmanaged waste. In response, the ISWMP aims to transition the country toward a sustainable, resilient, and inclusive waste management system.

Policy, Legal and Institutional Framework

The ESIA provides a comprehensive overview of the national and international legal and policy frameworks relevant to the ISWMP. These include the Turks and Caicos Islands Constitution, environmental health ordinances, land use regulations, and international conventions such as the Ramsar Convention and the Convention on Biological Diversity.

The institutional landscape involves multiple governmental stakeholders, including:

- Ministry of Health and Human Services:
- Environmental Health Department: the Project Coordinator
- Department of Environment and Coastal Resources:
- Solid Waste Working Group.

These entities are responsible for regulatory oversight, operational management, and community engagement.

Non-governmental stakeholders such as:

- Turks and Caicos National Museum Foundation,
- and the Turks and Caicos Society for the Prevention of Cruelty to Animals

play important roles in the fields of history conservation and animal welfare protection.

The ESIA aligns the ISWMP with national requirements and international environmental and social standards, particularly those of the International Financing Corporation (IFC) and Caribbean Development Bank (CDB), ensuring that the project meets regulations and best practices in sustainability, human rights, and environmental protection.

Project Description and Technical Characteristics

The ISWMP covers seven waste disposal sites across six islands: Providenciales, North Caicos (Kew and Bottle Creek), Middle Caicos, South Caicos, Grand Turk, and Salt Cay (Figure 0-1). The Project includes a range of interventions such as the rehabilitation of existing dumpsites, construction of one engineered landfill, and establishment of new facilities like composting plants, material recovery facilities, and civic amenity sites. In the following, current site conditions and project descriptions are summarized:

Providenciales

The existing waste disposal site, located near the Wheeland community, is the largest and most problematic in the Turks and Caicos Islands. It has developed without proper planning or environmental safeguards, leading to uncontrolled waste disposal, frequent underground fires, and significant health and environmental risks. Waste is dumped without separation or adequate supervision, including hazardous and medical waste, and the site lacks functioning weighbridges, drainage systems, and adequate record-keeping. These conditions have severely impacted nearby residential areas and the surrounding environment.

The ISWMP proposes a comprehensive rehabilitation of the site, including extinguishing fires, reshaping the waste mass, and improving drainage. Presently, fire suppression protocols and separate handling for hazardous waste are already being undertaken. Also a system of surface drains shall be constructed, and, at the toe of the slopes, percolations pits shall be excavated to facilitate the drainage of the stormwater into the ground.

A new Integrated Waste Recycling Centre (IWRC) will be constructed adjacent to the site, featuring composting, material recovery, and hazardous waste storage facilities. Operational improvements will include structured tipping plans, better compaction and covering practices, and enhanced supervision.

While full transformation into a sanitary landfill is not economically nor technically feasible, and construction of a new landfill on the island is not possible due to a lack of land, these measures aim to significantly reduce environmental impacts and extend the site's operational life.

North Caicos

Two waste disposal sites—Kew and Bottle Creek—are currently in operation, both lacking basic infrastructure such as access control, weighbridges, or any form of waste tracking. Waste is disposed of without separation or adequate supervision, with the Kew site using a trench method and Bottle Creek operating as an open dump. Both sites show evidence of uncontrolled burning, particularly at Bottle Creek, and are only sporadically attended by personnel. Open burning is a common practice at both locations, particularly at Bottle Creek, contributing to environmental degradation and health risks. It is worth noting that the Bottle Creek Pineyard, a fire-dependent ecosystem that is threatened by dry-season fires, is located downhill of the Bottle Creek site.

The Kew dumpsite, located within the community of Kew and adjacent to a cemetery, is nearing capacity. The Project proposes its decommissioning, which will involve reshaping the waste mass and removing bulky items to be transferred to Providenciales for further processing. The Bottle Creek site, in contrast, will be transformed into the country's first engineered landfill, which will include a lined landfill cell with leachate collection and treatment via a constructed wetland, as well as a Civic Amenity Site, Temporary Storage Site, Construction and Demolition Waste center, and a Composting Plant. The site will serve as a

regional hub for North, Middle, and South Caicos, with buffer zones and drainage systems designed to minimize environmental and social impacts on nearby communities.

Middle Caicos

The waste disposal site is located between the settlements of Bambarra and Lorimers. The site, a former quarry, has evolved into an uncontrolled dumpsite where waste is deposited without any form of regulation or oversight. Fires are a common occurrence, and there is no infrastructure in place—no machinery, no weighbridge, no staff, and no records of waste quantities.

The Project proposes the decommissioning of this site. The plan includes reshaping the waste mass, clearing the area, and transferring the waste to the new landfill at Bottle Creek in North Caicos. Bulky waste will be temporarily stored on site before being shipped to Providenciales for processing. A gate and fence will be installed to prevent future illegal dumping. The remediation is expected to be completed within one week.

South Caicos

The dumpsite is situated on privately owned land, close to the island's airport and residential areas. The site lacks proper fencing and is only monitored during working hours. Waste handling is minimal, and open burning is practiced, typically when winds blow away from populated areas. The site has no weighbridge.

The project envisions closing this dumpsite and replacing it with a new Integrated Transfer Station, Civic Amenity Site, and Temporary Storage Site. These facilities will be used to collect, sort, and temporarily store waste before transferring it to the new landfill in North Caicos.

The decommissioning will involve reshaping and covering the site, with bulky waste sent to Providenciales. The site will be repurposed for green or recreational use.

Grand Turk

Located near the center of Cockburn Town, the Grand Turk disposal site is surrounded by residential areas and historical salt ponds (Salinas). The site is partially fenced and better managed than others, with designated disposal areas and some operational oversight. However, it still lacks a weighbridge. Feral animals (donkeys and horses) have access to the site.

The Project proposes a rehabilitation and vertical expansion of the existing site to extend its operational life by 20 years. The plan includes reshaping the waste mass and using construction and demolition waste to reclaim flood-prone areas. A peripheral drain on the west side will be necessary to convey the stormwater to the Salina.

The site will also host new facilities, including a Civic Amenity Site, Temporary Storage Site, Composting Plant, and Construction and Demolition Waste center. These additions will support waste diversion and improve overall site management. The expansion will be carefully designed to minimize environmental and community impacts.

Salt Cay

Serving a small community of around 70 residents, the Salt Cay dumpsite is poorly managed, with no access control and occasional open burning. Donkeys are often seen feeding at the site, and waste is handled by a single contractor who also manages transport between islands.

The Project plans to decommission the dumpsite by excavating a trench for existing waste, reshaping the area, and removing bulky materials for transfer to Grand Turk or Providenciales. New facilities will be established approximately 1,4 km to the north of the dumpsite, within the existing Environmental Health Department compound, including a Civic Amenity Site, a Temporary Storage Site (both within a 25x5 m covered area), a Composting Facility, and a Construction and Demolition Waste area. Given the island's small scale, these facilities will be modest but sufficient to manage local waste sustainably.

From the moment that the sites of Kew, Middle Caicos, South Caicos and Salt Cay are decommissioned and rehabilitated/greened, they are no longer under the jurisdiction of the EHD and shall be managed by the District Commissioners.

Area of Influence of the Project

The Area of Influence (AoI) of the ISWMP was defined to encompass all zones and environmental and social (E&S) receptors likely to be affected by the Project's activities, both directly and indirectly. This includes not only the immediate footprint of the waste management facilities but also the surrounding environments that may experience E&S impacts from construction, rehabilitation, operation, or decommissioning.

The AoI was determined using guidance from international standards, such as the IFC Performance Standards and specialized literature, and incorporates buffer zones based on the nature of the Project and the sensitivity of the surrounding environment. These references suggest that impacts such as air emissions, noise, leachate migration, and visual intrusion can extend well beyond the site boundaries. Consequently, a conservative buffer radius of 1,500 meters was adopted around each of the seven project sites. This radius ensures that sensitive environmental and social receptors—such as nearby communities, protected ecosystems, water bodies, and cultural heritage sites—are considered in the impact assessment.

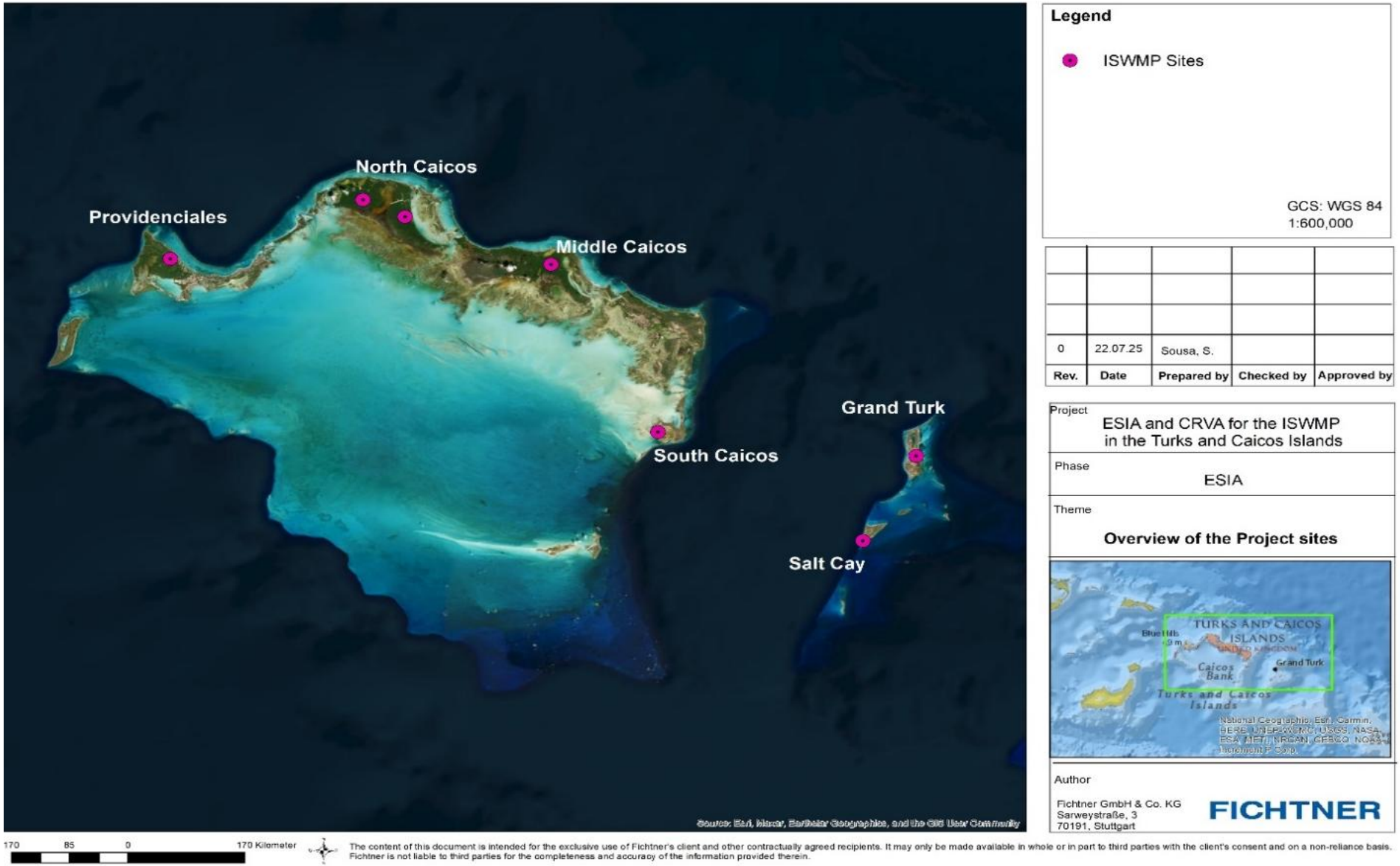


Figure 0-1: Location of the ISWMP sites

ESIA Methodology

The ESIA for the ISWMP identifies, assesses and proposes actions to manage the potential E&S impacts associated with the Project's implementation. It focuses on the seven Project sites across six islands - Providenciales, North Caicos (Kew and Bottle Creek), Middle Caicos, South Caicos, Grand Turk, and Salt Cay.

The methodology follows a structured, multi-stage approach. It began with comprehensive data collection, including desktop research, literature reviews, analysis of technical documents, and field surveys. Baseline data were gathered on the physical, biological, and socio-economic environments of each Project site. This was accompanied by stakeholder engagement activities, including public hearings, focus group discussions, and key informant interviews. A site visit and interviews were undertaken during the E&S Scoping Stage in December 2023, and site surveys were undertaken during the ESIA stage between July and September 2024.

The impact assessment was conducted using a tailored version of the ARVI methodology, which evaluates the significance of impacts based on their magnitude and the sensitivity of the affected environment. Impacts were categorized as positive or negative, and further assessed through a multi-criteria analysis to determine their significance before and after mitigation. The results informed the development of an Environmental and Social Management Plan (ESMP), which outlines the measures to be implemented during project execution to ensure compliance and sustainability.

Analysis of Alternatives

The analysis of alternatives for the ISWMP was a critical step in identifying the most appropriate, sustainable, and feasible waste management strategy. The analysis was divided into two main components: system configurations and implementation scenarios, each assessed for technical feasibility, environmental and social impact, and economic viability.

For the alternative system configurations, three broad waste management systems were evaluated: Thermal Treatment-Based Systems, Mechanical-Biological Treatment Systems, and Landfill-Based Systems. The selected configuration is the landfill-based system, as it offers a technically feasible, cost-effective, and scalable solution for the current institutional and logistical realities of the Turks and Caicos Islands. It also provides a stable foundation for future upgrades to more advanced systems.

Also, three implementation scenarios were considered:

- Scenario 0 – No Project ("Business-as-Usual"): This scenario assumes continuation of current practices without intervention. It would lead to rapid exhaustion of landfill capacity, worsening environmental degradation, and increasing public health risks. It was unanimously rejected as unsustainable.
- Scenario 1 – Rehabilitation and diversion: This scenario focuses on maximizing the use of existing disposal sites through rehabilitation and improved operations. It includes the creation of a new engineered landfill cell at Bottle Creek (North Caicos) to serve North, Middle, and South Caicos. Waste diversion facilities (e.g., composting, recycling) would be implemented across the islands. Providenciales and Grand Turk sites would be rehabilitated and operated under improved standards.
- Scenario 2 – Early closure of Providenciales site: This scenario proposes closing the Providenciales site by 2026 and transferring all waste to a large new landfill in North Caicos. While environmentally preferable for Providenciales, it would require a significantly larger landfill footprint in Bottle Creek and more complex logistics, as well an inter-islands biosecurity risk.

After comparative analysis, the GOTCI selected Scenario 1 as the most balanced and feasible option. It extends the life of existing sites through rehabilitation, reduces environmental and social impacts incrementally, allows time to build institutional capacity and market readiness, and demonstrates higher economic net present value and benefit-cost ratio. Scenario 1 is considered a transitional solution, with the possibility of evolving toward more advanced systems in the future as capacity and infrastructure improve.

The Feasibility Study highlights the availability of land as one of the most important limiting factors constraining the selection of future ISWM systems. Alternatives of constructed wetlands (CW) vegetation were assessed to optimize treatment performance and ecological integration. The preferred CW vegetation includes native and salt-tolerant species that are well-adapted to local hydrological conditions.

Baseline Assessment

Physical Environment

Climate across the Turks and Caicos Islands is tropical, with relatively stable temperatures year-round and distinct wet and dry seasons. Rainfall is generally low compared to other Caribbean nations, with most precipitation occurring during the hurricane season (June to November). The islands are exposed to climate risks such as sea-level rise, tropical cyclones, and droughts, which can exacerbate the environmental impacts of unmanaged waste.

Geologically, the islands are composed predominantly of highly permeable coral limestone, which is favorable for the formation of aquifers but also increases vulnerability to groundwater contamination. The flat topography and limited land area restrict the development of large freshwater bodies, making groundwater a critical and sensitive resource. Hydrology assessments revealed that surface water bodies near some sites, such as ponds and salinas, may be impacted by runoff and leachate from waste disposal areas.

Air quality is a major concern, especially at the Providenciales site, where underground fires, open burning, and illegal charcoal production contribute to odors and respiratory health risks. Similar practices were observed in North Caicos, Middle Caicos, and Grand Turk. No formal air quality monitoring network currently exists in the islands, though plans are underway to install monitoring equipment in Wheeland. Noise impacts are generally localized, with regular truck movements and machinery operations at larger sites like Providenciales. Other sites experience occasional noise from waste delivery and scavenging birds.

For groundwater quality, contamination has been confirmed in Providenciales and Grand Turk, with pollutants such as heavy metals and nutrients detected. While data is lacking for other islands, the geological conditions (highly permeable limestone) suggest a risk of groundwater contamination at all sites.

Biological Environment

The biological environment of the Turks and Caicos Islands is rich in biodiversity, including several nationally and internationally protected areas. The assessment identifies four nationally accepted and four proposed Protected Areas (PAs) intersecting with the AoIs, including habitats such as the Wheeland Pond Nature Reserve in Providenciales and the Columbus Landfall Marine National Park in Grand Turk. These areas are ecologically sensitive and provide essential ecosystem services such as flood regulation, habitat for migratory birds, and nursery grounds for marine species.

Additionally, the AoIs overlap with five Key Biodiversity Areas (KBAs) and five Important Bird Areas (IBAs), which are home to species of global conservation concern. Notably, the North, Middle and East Caicos Ramsar Site is a wetland of international importance, supporting breeding grounds for flamingos, sea turtles, and numerous fish species.

The flora and fauna of the TCI include over 210 bird species, with three globally threatened, and a significant number of endemic species—including 13 invertebrates, 5 reptiles, 2 birds, and 9 plants. The IUCN Red List (2023) identifies 106 threatened species in the TCI, including 24 Critically Endangered, 32 Endangered, and 50 Vulnerable species.

Specific biodiversity surveys conducted in 2024 in Providenciales and Grand Turk sites documented the presence of native and invasive plant species, feral and domestic animals, and bird populations. At both sites, the vegetation was sparse and often interspersed with waste, yet still supported a variety of species. Notably, nearby wetlands such as Wheeland Pond near the Providenciales site and the Town and Red Salinas in Grand Turk were found to host significant bird populations, including flamingos and other wading birds. While no trigger species were identified that would require a Biodiversity Action Plan, the proximity of sites to ecologically sensitive areas requires strict environmental management.

Finally, the biological baseline assessment reported on the importance of ecosystem services provided by the islands' natural areas, including flood control, carbon sequestration, habitat for migratory birds, and support for livelihoods through tourism and fisheries.

Socio-economic environment

The TCI population is concentrated primarily in Providenciales and Grand Turk, with smaller communities in North, Middle, and South Caicos, and Salt Cay. The demographic profile reflects a mix of Turks and Caicos Islanders and migrant communities, particularly from Haiti and the Dominican Republic. While the overall quality of life is considered good, disparities exist in access to services, employment, and housing, particularly among vulnerable groups such as informal waste pickers and undocumented migrants.

Material and economic assets in the AoI include residential areas, tourism infrastructure, and small businesses. However, many of the waste disposal sites are located near homes, schools, and culturally significant areas, raising concerns about health, safety, and land use conflicts. Tourism, a key economic driver, is sensitive to environmental degradation, particularly in Grand Turk and Providenciales, where landfill visibility and odour have been noted as deterrents.

Land ownership is complex, with a mix of Crown and private lands, and informal settlements are present near some project sites. Social infrastructure, including schools, clinics, and community centres, varies in quality and accessibility across the islands.

Several sites are located near residential areas, with Wheeland (Providenciales) and Cockburn Town (Grand Turk) being particularly close. Residents have expressed concerns about air pollution, odour, and health impacts. In Providenciales informal waste pickers—many of Haitian origin—depend on the dumpsites for their livelihoods. Some of these individuals are vulnerable due to their legal status, lack of formal employment, and exposure to hazardous conditions. A Livelihood Restoration Plan is required.

Some sites are near areas of historical interest, such as the Grand Turk Salinas. These locations require careful planning to avoid damage during project implementation.

A total of 62 household surveys were completed - 30 in Providenciales and 32 in Grand Turk. In Providenciales, community satisfaction with solid waste management services was notably low. A striking 77% of respondents expressed dissatisfaction—citing frequent landfill fires, smoke intrusion into residential areas, lack of recycling options, and inconsistent garbage collection. Residents also voiced frustration over the landfill's proximity to homes, which they felt posed health and safety risks, particularly among residents of Wheeland and Blue Hills. Grand Turk residents reported slightly higher satisfaction levels, with 38% expressing contentment with waste services. However, 56% still reported dissatisfaction, pointing to issues such as poor landfill containment, visual blight, and the absence of recycling infrastructure. While some appreciated the regularity of waste collection, they also called for more frequent pickups and better site management.

Across both islands, common concerns included rodent and insect infestations, accumulation of scrap metal, and the environmental and health impacts of open burning. Residents consistently recommended improvements such as enhanced recycling programs, better containment of waste, and relocation of landfills away from residential zones.

Stakeholder engagement revealed widespread concern about the impacts of current waste management practices. In Providenciales, residents cited persistent fires, smoke, and health risks, while in Grand Turk, concerns focused on landfill capacity, proximity to homes, and environmental contamination. Across both islands, there was strong support for improved waste separation, recycling, and infrastructure upgrades.

It is pointed out the importance of addressing the needs of disadvantaged groups, including women, youth, and informal workers. Many respondents expressed interest in participating in recycling initiatives and small-scale waste enterprises, provided that training and support are available.

In Providenciales, interviews with community members and landfill operators highlighted operational challenges, including limited resources and unclear long-term planning. Stakeholders expressed concern about the proposed 20-year waste management strategy, citing concerns over financing, implementation, and the lack of community involvement in decision-making. Calls for greater transparency and responsiveness were strong. In Grand Turk, the landfill manager and local residents emphasized the need for a dedicated facility for waste separation and the removal of bulky waste and scrap metal from the island. Fires—both accidental and intentional—were a recurring issue, with wire burning for copper extraction posing health risks. Informants also raised concerns about potential leachate contamination of nearby salinas and groundwater, referencing the site's historical use during the U.S. Naval Base era. Suggestions included beautifying the landfill, launching recycling and waste-to-energy initiatives, and increasing public education and corporate responsibility.

Most of the existing waste management facilities are located on Crown land - this includes the sites in Providenciales, Grand Turk, and Salt Cay. These locations are generally well-established and do not require additional land for expansion. However, the need for buffer zones—particularly in Providenciales and Grand Turk—is emphasized in the Feasibility Study to mitigate environmental and social impacts on nearby communities. However, in South Caicos, the proposed location for a new transfer station lies on privately owned land (Sailrock hotel). As such, a Land Acquisition Plan will be required to formalize the process, ensure compliance with national and international standards, and safeguard the rights of all parties involved.

Important Environmental and Social Components

The important environmental and social components (IESCs) that are most likely to be affected by the implementation of ISWMP were identified, selected based on their sensitivity, ecological or social value, and the potential magnitude of project-related impacts.

In terms of the physical environment, air quality and odour emerged as critical concerns, particularly in Providenciales, where persistent fires, smouldering waste, and illegal charcoal production have led to community complaints. Noise pollution, largely from truck movements and scavenging birds, is also a concern, especially near the Providenciales site. Groundwater quality is another priority, with confirmed contamination by heavy metals, pesticides, and nutrients in Providenciales and Grand Turk, and potential risks at other sites due to the porous limestone geology and lack of engineered containment. Surface water quality is also at risk, particularly in areas near wetlands and salinas, such as Grand Turk and Salt Cay, where leachate runoff could cause pollution.

From a biological perspective, the proximity of several project sites to national parks, Ramsar sites, and Important Bird Areas raises concerns about potential impacts on protected areas and sensitive habitats. These ecosystems support endemic and migratory species and provide essential ecosystem services.

The human environment is also significantly affected. Health and safety risks are prominent for communities living near waste sites, who report issues related to air pollution, pests, and unsafe waste handling practices. Livelihoods are at stake, particularly for informal waste pickers in Providenciales who rely on landfill access for income. Their displacement necessitates the development of a Livelihood Restoration Plan.

Land use and ownership issues are generally manageable, as most sites are located on Crown land; however, in South Caicos, the establishment of new facilities may require the acquisition of private land, triggering the need for a Land Acquisition Plan. Vulnerable groups, including migrant communities, women, and youth, are disproportionately affected by poor waste management and must be considered in project planning and benefit-sharing strategies.

Environmental and Social Impact Assessment

The ESIA presents a detailed evaluation of the potential environmental and social impacts associated with the ISWMP across its six project islands. The methodology follows international best practices, combining baseline data, stakeholder input, and impact significance criteria to assess each potential effect. Impacts are categorized as positive or negative, direct or indirect, and temporary or permanent, with a focus on their magnitude, extent, duration, and reversibility.

Positive impacts

The ISWMP is expected to generate significant positive impacts across the physical, biological, and human environments in the areas of intervention.

The closure and rehabilitation of poorly managed waste sites will improve air quality by eliminating underground fires, open burning, and uncontrolled waste decomposition. These actions will also reduce noise pollution and enhance land stability, erosion control, and soil quality. In Providenciales and Grand Turk, improved landfill operations are anticipated to reduce to some degree leachate formation, benefiting groundwater and surface water quality.

Wildlife and natural habitats will benefit from reduced pollution and habitat degradation. In Providenciales, the reduction of liquid waste leaching into the sea has potential to reduce impact on the coral reefs in Grace Bay. Although landfills in Providenciales and Grand Turk will not be fully lined, improved practices will still lessen environmental harm.

The Project has potential to create some job and business opportunities. The ESIA recommends a focus on inclusive hiring and local sourcing. While interest in waste management jobs was rather low in Providenciales, Grand Turk showed more engagement, especially in roles related to recycling and waste collection. Training and capacity-building were highlighted as key enablers for participation.

Communities near the Providenciales site, including female-headed households, will benefit from reduced exposure to harmful smoke and odors, improving health and quality of life. The site's remaining capacity, if properly managed, will support waste disposal needs for the next 20 years without further horizontal expansion.

Modernized facilities and the enforcement of personal protection equipment use will improve occupational health and safety. Decommissioned sites in Kew and South Caicos will be repurposed as green and recreational areas, enhancing ecosystem services and community spaces.

Cleaner, quieter, and more visually appealing surroundings will support tourism and reinforce the country's commitment to sustainable waste management and public wellbeing.

Negative impacts

The rehabilitation activities will consist of fire extinguishing in Providenciales, and reshaping and rearrangement of the waste pile, together with removal of the bulky waste on Providenciales and Grand Turk. These activities will temporarily increase the levels of air pollution (especially dust) and noise in and around the dumpsites, which may temporarily affect ecosystems services around the site (tourist and recreational services), and well-being, health and safety of the communities (especially of Wheeland) and rehabilitation workers. The effect, although of high intensity, is reversible, with conditions returning to baseline after the works are completed.

The Providenciales dumpsite has served as a livelihood source for both Haitian migrants and local TCI islanders, particularly for vulnerable waste pickers from the Haitian community. Many of these individuals rely on collecting and selling waste materials, though their legal status varies. Waste pickers are estimated as 20-30 individuals in Providenciales, but the dimension / value of the secondary economy created around the picked waste is unknown. Since May 2024, new site management practices, including fencing, have restricted access, effectively cutting off this income source. The full extent of the impact is unclear due to limited data on where affected individuals live and how dependent they are on this activity. While the rehabilitation period is short-term, the loss of livelihood is considered irreversible without mitigation and likely to have a high impact.

Construction works will be performed in five (5) of the ISWMP sites including construction of new waste management facilities in Providenciales, Bottle Creek, South Caicos, Grand Turk and Salt Cay; and of the new landfill in Bottle Creek. The construction works will be limited, in the smaller sites, to installation of containers, preparation of composting areas and CDW reception and storage areas. These works are not expected to require significant earthing, levelling and other heavy works. However, the construction of the new landfill in Bottle Creek, along with potential site clearing and levelling at other locations, highlights the importance of addressing environmental and social impacts.

Earthworks, run-off, improper waste disposal, spillages, among others, will cause temporary increases in air pollution and noise levels within and around the sites, together with possibility of surface water pollution (particularly in Grand Turk and South Caicos), and soil pollution.

Construction activities in Grand Turk may affect the nearby Town Salina, a historically significant area, due to its close proximity to the site. In Salt Cay, new facilities will be built near the Salt Cay Nature Reserve, also a designated historical area, raising concerns about potential environmental impacts. While the North Caicos site does not overlap with protected zones, its surrounding green areas require careful consideration of impacts on local flora and fauna. Construction may disturb wildlife through noise, dust, habitat contamination, and direct harm such as nest destruction or collisions.

Construction activities at all Project sites may reduce the appeal of nearby cultural ecosystem services, such as tourism and recreation, due to visual disruption, noise, air emissions, and heavy machinery traffic. These works may also negatively impact local biodiversity and ecosystems, affecting essential regulating and provisioning services through habitat disturbance and pollution.

About 1 hectare / 2.5 acres of privately owned land is needed in South Caicos for the new integrated waste management facility, but its exact location is yet to be determined.

Work at the construction sites poses various safety risks, including accidents involving machinery, exposure to hazardous substances, extreme weather conditions, and contact with waste or wildlife. Additionally, inadequate sanitary conditions could lead to health hazards for workers.

Temporary disruptions to nearby communities, particularly in Providenciales where the site is close to residential areas may also occur. Impacts include dust, noise, vibrations, increased traffic, and potential exposure to hazardous materials. There are also safety concerns related to construction vehicles and the risk of accidents if people enter the sites. The presence of non-local workers may lead to social tensions, especially in quieter areas like Bottle Creek and Salt Cay. However, the distance of about one km from homes in Bottle Creek may help reduce the level of disturbance there.

Operation activities of the new waste management facilities, the existing dumpsites and the new landfill have also been considered in the impact assessment.

The waste management facilities are likely to generate varying levels of noise and air emissions from machinery, vehicle traffic, and material handling, depending on the type of operations, machinery used, and proximity to residential or sensitive areas. Groundwater, surface water and soil resources may also be impacted by leachate and run-off from the sites. These impacts in turn affect natural and cultural protected areas, fauna and flora, ecosystem services, occupational and community health and safety.

The new landfill in Bottle Creek will be the first engineered landfill in TCI and will assure adequate standards of environmental protection. Notwithstanding this, emissions of volatile organic compounds, dust, odour, and noise cannot be avoided (but can be reduced) that may affect fauna, flora and ecosystem services.

The development and operation of the Bottle Creek landfill can also lead to a range of community health and safety impacts, which in this case are partially attenuated by the distance of the next residences to the site. These impacts are often indirect, arising from environmental emissions, operational activities, and increased public interaction with waste infrastructure. Also, and despite the engineered nature of the new landfill, its operation will involve a range of occupational health and safety risks that can affect workers' physical health, safety, and long-term well-being if not properly managed.

Regarding the existing dumpsites in Providenciales and Grand Turk, the proposed design focuses on improving operational practices rather than initiating new construction. While these changes—such as better waste handling and banning open burning—will help reduce pollution and leachate generation, they are not expected to significantly enhance environmental performance on their own. Major improvements will come from rehabilitation efforts and diverting waste to other facilities. Leachate collection is not feasible in current landfill cells, but mitigation measures will help reduce its volume and pollution potential. The contaminated soil at both sites will not be remediated, but improved operations aim to prevent further degradation.

Enhancement measures for positive impacts

To ensure the ISWMP delivers its intended environmental and social benefits, several foundational measures must be in place beyond funding and political support. Key recommendations are the launch of a campaign of environmental education and awareness to assure understanding of the Project's benefits and of the new alternatives to illegal waste dumping; promote institutional strengthening, capacity building and awareness for GOTCI agencies and other key national and local stakeholders; support the development of local markets for compost, recyclables, and construction material reuse; introduce incentives to the waste generators; strengthen transparency in recycling services; replant the Middle Caicos site with local indigenous species; and develop inclusive livelihood transition plans for vulnerable groups.

Mitigation and monitoring measures for negative impacts

The potential negative impacts of the Project can be mitigated following application of a set of technical, operational, design and monitoring measures described in detail in this ESIA. The measures are translated into an Environmental and Social Management Plan (ESMP) that can be used as a stand-alone document during the different phases of the Project by the GOTCI, Construction Contractor and Operator, other governmental authorities, the financers, auditors, and other responsible parties.

Climate Risks and Vulnerability Assessment

A Climate Risks and Vulnerability Assessment (CRVA) was performed for identifying the potential impact of climate change in the three main Project facilities: the dumpsites in Providenciales and Grand Turk, and the new landfill in Bottle Creek.

The results show that the TCI, and specifically the main Project sites, face already presently medium temperature-related risks and high wind and water-related risks. At a short and mid-term horizon, all risks will increase to/remain high, except the risk for wildfires that will remain "medium". Resilience measures are suggested for the design and O&M.

Stakeholder Engagement

Stakeholder engagement, which in technical terms goes beyond "consultation" and includes "disclosure of information" as well, is a requirement of the CDB for every sponsored project that may create significant environmental and social impacts. Therefore, as part of the ISWMP, a Stakeholder Engagement Plan was developed and applied.

The next engagement activities foreseen are a set of public hearings in Providenciales, Grand Turk and North Caicos planned for September 2024, preceded by an information campaign promoted by the GOTCI to alert interested and affected parties to the Project and the planned engagement activities.

Recommendations

The ESIA study was preceded by detailed inception and scoping phases that involved extensive data collection through desktop research, official reports, site visits, interviews, and consultations with stakeholders. The data collection continued throughout the ESIA stage in the form of site surveys, key informant interviews and further desktop research. Despite these efforts, some important environmental and social data could not be obtained due to logistical, timing, or contractual constraints. Data such as surface water quality in Grand Turk and Bottle Creek, soil quality data in Kew and Middle Caicos, demographic characteristics of waste pickers, among others, are presently not available. Recognizing the importance of this missing information for future monitoring and sustainable implementation of the ISWMP, the ESIA recommends that further studies and data collection campaigns be conducted to fill these gaps.

Conclusion

The ESIA concludes that the Project can be implemented without having significant adverse impacts on the ecological and social environment under consideration of a **detailed and unconditional** implementation of the mitigation and avoidance measures stipulated in the ESMP throughout all Project phases, while aligning with the suggested enhancement measures.

1 Introduction

1.1 Authorization

The Government of the Turks and Caicos Islands (GOTCI)

as Client, appointed the cooperation of

FICHTNER GmbH and Co. KG, Germany

as Consultant to perform the consulting services

Environmental and Social Impact Assessment (ESIA) and Climate Risk and Vulnerability Assessment (CRVA) for the Integrated Solid Waste Management (ISWM) Project in the Turks and Caicos Islands (the "Assignment")

The Lump Sum Contract, funded by a credit from the Caribbean Development Bank (CDB, the "Financer"), entered into force on the 26th of July 2023 after signing by both parties.

1.2 Background of the Project

The Turks and Caicos Islands (TCI) is located in the Lucayan Archipelago of the Atlantic Ocean, northern West Indies and comprises of 40 islands, of which eight are inhabited. Most of the residents (75.6%) live in Providenciales Island, while 15.4% reside in the Grand Turk Island and the remaining 9% are dispersed across the other six inhabited islands.

1.2.1 Growth in tourism and population numbers

The TCI is primarily engaged in the tourism sector. According to the TCI official Tourism Statistics Report 2019[1], the islands were visited by 1,598,557 visitors in 2019, i.e. before the Covid-19 pandemic. The pre-pandemic statistics reveal that the number of visitors grew every year by approximately 9-10%. According to the Statistics Authority of the TCI the total population increased to 42,953 in 2019 from 33,500 in 2011[2]. The Authority forecasted for 2022 a population of 47,720 people, while the World Bank reports 45,703 for the same year[3].

1.2.2 Estimated waste generation in the TCI

Recent estimations indicate that more than 60,000 tons of waste were deposited throughout the islands in 2023, with a foreseen increase of 63% until 2042 to 98,000 tons/year [4] (Feasibility Study Report, Rev. 01, April 2024

Figure 1-1). More detailed local data are expected to be collected in the future, once the necessary tools (e.g. weighbridges) are in place.

[1] Tourism Statistics Report TCI, 2019: https://turksandcaicostourism.com/wp-content/uploads/2020/06/2019-Stats-Report-.pdf
[2] Statistics Authority from TCI: https://www.gov.tc/stats/statistics/social/5-population
[3] The World Bank IBRD-DATA, Population- TCI: https://data.worldbank.org/indicator/SP.POP.TOTL?locations=TC
[4] JV HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., Consultancy Services for ISWM, Draft Feasibility Study Report, April 2024

Year 2023	t/year									
Island	Population	ICI + HH	Tourists	Cruisers	GW	Tyres	ELVs	CDW	HCW	total
Providenciales	37,135	18,850	8,866	-	7,048	186	526	12,255	23	47,753
North Caicos	2,050	585	169	-	389	10	29	676		1,858
Middle Caicos	262	78	18	-	50	1	4	87		237
South Caicos	1,779	522	187	-	338	9	25	587		1,668
Grand Turk	7,548	2,665	211	1,278	1,433	38	107	2,491	12	8,234
Salt Cay	169	74	-	-	32	1	2	56		165
Parrot Cay	205	63	145	-	39	1	3	68		318
TOTAL	**49,148**	**22,836**	**9,596**	**1,278**	**9,328**	**246**	**696**	**16,219**	**35**	**60,233**

Year 2042	t/year									
Island	population	ICI + HH	Tourists	Cruisers	GW	Tyres	ELVs	CDW	HCW	total
Providenciales	55,476	29,734	18,860	-	10,529	277	785	18,307	23	78,517
North Caicos	3,062	891	360	-	581	15	43	1,011	-	2,901
Middle Caicos	392	120	38	-	74	2	6	129	-	369
South Caicos	2,658	793	399	-	505	13	38	877	-	2,625
Grand Turk	11,275	4,159	450	2,058	2,140	56	160	3,721	12	12,755
Salt Cay	252	117	-	-	48	1	4	83	-	253
Parrot Cay	306	85	307	-	58	2	4	101	-	557
TOTAL	**73,117**	**35,814**	**20,106**	**2,058**	**13,878**	**366**	**1,035**	**24,128**	**35**	**97,976**

Source: Feasibility Study Report, Rev. 01, April 2024

Figure 1-1: Estimated quantities of waste generated in each considered island of the TCI

1.2.3 Current waste management practices in the TCI

1.2.3.1 Role of private contractors and recycling activities

Additional to the public collection of waste, about 45 private contractors are registered to carry out waste collection services in the islands. Only one company, in Providenciales, is carrying out organised waste recycling activities. Such activities are oriented to the private sector (mainly of the tourism industry) and cover cardboard, PET and aluminium. Some other minor informal recycling activities have been noticed and/or reported.

1.2.3.2 Current waste disposal sites and their limitations

Waste disposal is indeed and by large the predominant waste management practice in TCI. According to the official web site of the TCI's Environmental Health Department (EHD)[5], landfill operations exist in the following locations:

- Wheeland in Providenciales
- Kew and Bottle Creek in North Caicos
- Lorimers in Middle Caicos
- Grand Turk
- Salt Cay
- South Caicos

The sites have grown organically from unofficial disposal sites to designated disposal sites. However, none of them has been designed in accordance with international best standards for landfill operations. Therefore, none of them is equipped with a membrane to prevent leachate migrating into the soil and groundwater. In addition to disposal sites, unauthorised sites have been identified in Providenciales, North Caicos, and Middle Caicos, which merit attention in terms of waste management measures

[5] TCI's EHD: https://gov.tc/environmentalhealth/waste-disposal-sites

The disposal sites are open to the public and no gate fee is applied. The management level of the official disposal sites is different, but they can all be classified as dumpsites with different levels of control and disposal practices. All sites receive all the waste streams without separation. Also, liquid wastes (sewage sludges, oils), dead animals and healthcare waste are disposed of at the sites. None of the sites keeps record of the waste delivered.

1.2.4 Challenges in solid waste management across the TCI

The effectiveness of solid waste management (SWM) across TCI is challenged by numerous legal and regulatory, institutional, operational, environmental, and social issues (for example, the inclusion of informal waste pickers[6] and recyclers into the waste management system). There are limited provisions for minimising waste, including through treatment such as recycling and composting, and there is a need for comprehensive solid waste management regulations, including regulations to address medical waste and electric and electronic equipment waste (EEEW), and illegal dumping. The absence of impermeable liners at the waste disposal sites has potential negative consequences through the migration of contaminants into the groundwater and the marine environment. Appropriate institutional structures are required for SWM, including to provide for the effective separation of policy, regulatory, operational and enforcement responsibilities.

1.2.5 Need for re-examining waste management practices in the TCI

As detailed previously, the rapid growth in both the number of inhabitants and the tourists render it necessary to re-examine the current waste management practices and change them into truly sustainable and resilient services.

1.2.5.1 Primary and special waste streams requiring management

The following primary waste streams constitute the bulk of the quantities produced and requiring management[7]:

- Municipal solid waste (MSW), both household and non-household, including glass, aluminium and polyethylene terephthalate (PET) plastic
- Green waste (including bush cuttings from public spaces and grounds maintenance)
- Timber (pallets and construction and demolition waste (CDW))
- Waste tyres
- Construction and demolition waste
- End-of-life vehicles.

[6] Informal waste pickers can be also named "informal waste workers", "waste pickers" or "waste recyclers" along this report. All these designations refer to persons picking waste at the sites without a work contract or a license for that type of activity. The designation is independent of the legal status of the person in the TCI.

[7] JV HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., Consultancy Services for ISWM, Inception Report, Rev 2.0, July 2023

Furthermore, the following special waste streams (although generated in smaller quantities) are highlighted due to their physical nature and potentially harmful content, thus representing a potential threat to public health and the quality of the environment:

- Health care waste
- Sewage sludge
- Confiscated goods
- Electric and electronic equipment waste
- Hazardous waste, including waste oils.

1.2.6 Potential impacts related to waste management

1.2.6.1 Human exposure and health impacts

An inadequate waste management might have significant implications on the living conditions of the communities and the environment surrounding and downstream the disposal sites. It has been demonstrated that exposure to technical deficiencies in waste management can have serious effects on environmental and human health. For instance, migration of leachate and gas from the landfill sites, and their release into the environment, can provoke pollution of ground water, vegetation damage, disagreeable odors, and air pollution[8], among others.

Recent media coverage has highlighted these problems in the TCI. Residents near dumpsites in Grand Turk and Providenciales have often raised concerns about the effects of toxic fumes from landfill fires. On March 9th, 2024, a fire at the Providenciales landfill emitted smoke that affected the surrounding communities of Wheeland and Blue Hills, prompting warnings from the Environmental Health Department[9]. Another incident occurred on April 14th, 2021, when a fire at the Providenciales dumpsite was reported by the Environmental Health Department. The fire was addressed by the Department, which assured the public of their commitment to maintaining a healthy environment.[10] Similarly, a fire at the Grand Turk dumpsite on March 9th, 2020, required eight hours of firefighting by the newly established Domestic Fire Services Department[11]. Additionally, on February 18th, 2019, there was a significant incident where fires at the dumpsite released harmful fumes into nearby housing areas, posing health risks for residents of Providenciales.[12]

It is important to note that humans exposed to bioaerosols released by decomposition of materials from landfills may develop several respiratory diseases. Some studies have informed that communities residing near landfill sites have reported instances of cancer and other respiratory allergies. Other studies indicate that individuals residing near landfill sites experience medical issues such as asthma, cuts, diarrhoea, stomach pain, frequent flu, cholera, malaria, cough, skin irritation, and tuberculosis more frequently than those living farther away. These health issues are attributed to ongoing exposure to chemicals and the inhalation of toxic fumes and dust from the landfill sites[13].

[8] Environmental Impacts of Solid Waste Landfilling: https://www.sciencedirect.com/science/article/pii/S0301479785701314
[9] Turks and Caicos Weekly News: https://tcweeklynews.com/fire-extinguishing-service-quickly-responds-to-dumpsite-flareup-p13918-155.htm
[10] Turks and Caicos Weekly News: https://tcweeklynews.com/fire-at-dumpsite-addressed-says-environmental-health-department-p11531-127.htm
[11] Turks and Caicos Weekly News: Fire extinguishing service quickly responds to dumpsite flare-up (tcweeklynews.com)
[12] Turks and Caicos Weekly News: https://tcweeklynews.com/toxic-dumpsite-smoke-p9415-144.htm
[13] Health and Environmental Risks of Residents Living Close to a Landfill: A Case Study of Thohoyandou Landfill, Limpopo Province, South Africa: https://www.mdpi.com/1660-4601/16/12/2125

Furthermore, a review titled "Residential Proximity to Environmental Hazards and Adverse Health Outcomes"[14] found a significant link between living close to environmental hazards and negative health outcomes, particularly in pregnant women and children. The research identified risks for central nervous system defects, congenital heart defects, oral defects, low birth weight, cancer and childhood cancer, leukaemia, asthma, and chronic respiratory symptoms.

1.2.6.2 Climate Change

Concerning Climate Change (CC), a 2022 report[15] from the Intergovernmental Panel on Climate Change (IPCC) indicates that the small islands show a CC trend associated with temperature increases, the increased effects of tropical cyclones (TCs), storm surges, droughts, shifting precipitation patterns, sea level rise (SLR), as well as coral bleaching. Moreover, CC also impacts on settlements infrastructure, health and wellbeing, water, food security, as well as economies and culture.

According to the International Union for Conservation of Nature (IUCN), the effects of climate change in TCI will have a major impact on the economic sector, particularly in relation to coastal tourism and fisheries, which are important sources of income for the islands. These sectors will be affected by the degradation of coastal areas, the deterioration of reefs and the resulting impact on the availability of fish. In addition, more than 70% of residential areas are located in low-lying coastal areas, making them more vulnerable to sea-level rise and consequently more prone to flooding.

In TCI, low-lying areas are highly exposed to flooding, therefore, mangrove zones are particularly on risk affecting their biological functions as breeding grounds for conch and lobster. Changes in wind directions caused by climate change might affect the dynamics of migratory birds[16].

1.2.7 Conclusions

Based on the evidence presented in the earlier sections, multiple factors have an impact on the current solid waste management on the island. Population growth, coupled with migratory dynamics, as well as the impact of climate change, require interdisciplinary actions to address the technological, environmental, and social challenges that a sustainable solid waste management for TCI poses.

To this end, the changes in the waste volume generation and inadequacy of the waste management in relation to the modern standards and Sustainable Development Goals (SDGs), a global framework adopted by the United Nations, have caused the Government of the TCI (GOTCI) to establish a strategy and implement the Integrated Solid Waste Management Project (ISWMP).

[14] Residential Proximity to Environmental Hazards and Adverse Health Outcomes: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3222489/
[15] https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter15.pdf
[16] https://www.cbd.int/islands/doc/idr/Climate%20Change%20and%20Biodiversity%20in%20EU%20overseas%20entities/Reunion%20publication-es.pdf

1.2.7.1 The integrated solid waste management project

The ISWMP consists of two phases:

- Phase 1 concentrates on obtaining information on baseline conditions and regulatory standards, provide recommendations for waste management solutions and elaborate a feasibility study and preliminary designs for the waste management.
- Phase 2 should include a strategy for closure and restoration for existing cells or disposal sites as well as preparation of the detailed engineering and architectural designs of the new landfills.

The ISWMP is being developed by a group of consultants (JV HYDEA S.p.A., RWA Group Ltd, and CDE Ltd.), denominated in this report as "Main Consultant". The Main Consultant's Inception Report (Rev. 02, July 2023), Feasibility Study Report (Rev. 01. April 2024) and Preliminary Design Report (Rev. 02, May 2025) for the ISWMP have been shared with FICHTNER to support this ESIA study.

1.3 Background of the Assignment

FICHTNER was assigned with the performance of the Environmental and Social Impact Assessment (ESIA) and Climate Risk and Vulnerability Assessment (CRVA) for the ISWM Project. The ESIA and CRVA services began with an Inception Stage followed by an Environmental and Social (E&S) Scoping Stage.

1.3.1 Inception Stage summary

During the initial Inception Stage, FICHTNER laid out the own understanding of the Project and its context, and proposed a scope of work based on data and information available, as well as the respective data gaps encountered back then.

The Inception Stage served as well the important purpose of setting up a direct contact with the Main Consultant, allowing both teams to closely exchange data and information about the Project.

FICHTNER prepared a high-level Inception Report which presented the Assignment, context, and proposed scope of work based on data and information available at the time of writing. Additionally, the Inception Report:

- Presented the roles and responsibilities of the FICHTNER team members, preliminary milestones, and scheduling
- Presented a summary of reviewed E&S information provided by the Client or publicly available data, as well as information obtained from the Main Consultant
- Presented the temporal and spatial boundaries of the ESIA study
- Made a preliminary assessment of the key project stakeholders and relevant local authorities to the Project
- Presented a summary of the initial site visit, including relevant stakeholders met, areas visited, and activities undertook, including visual baseline investigations.

As main findings of the Inception Stage, we list the outlining and agreement of the spatial and temporal boundaries of the ESIA study, the resolution of initial difficulties posed by lack of access to public data and the exchange of suggestions on how to efficiently plan public hearings in the fragmented project area. More details can be consulted in the Inception Report (final version dated March 18th, 2024).

1.3.2 E&S Scoping Stage summary

The E&S Scoping Stage was the important following step in the process of ESIA and is reflected in the respective E&S Scoping Study report (FICHTNER, August 2024). The Scoping Stage had the overarching objective of clearly setting out the ESIA requirements, defining the framework for the ESIA to meet these requirements and detailing the overall Project objectives and proposed activities.

The E&S Scoping Study focused on the collection and analysis of a relevant amount of baseline data related to the physical, biological, and human characteristics of the Project sites. This analysis revealed some data gaps that require fulfilment to adequately inform the ESIA process. The first recommendation of the Study was that monitoring campaigns for surface water and soil at selected sites shall be undertaken. Other data gaps have been closed during the E&S Scoping process (and later during the ESIA process as well) with support from the Client and the Main Consultant.

Another important recommendation of the Scoping Stage was for the GOTCI to prepare a Livelihood Restoration Plan (LRP) to manage the impacts caused on the informal waste workers / waste pickers' livelihoods reportedly working at some of the disposal sites. Additionally, a Land Acquisition Plan (LAP) regarding the acquisition of about 1 ha of privately owned land in South Caicos was recommended.

The E&S Scoping Study identified that a Biodiversity Action Plan (BAP)/ Biodiversity Management Plan (BMP) could be necessary for the Project. However, the baseline studies performed during the ESIA stage did not identify any trigger species or habitats that could be affected by the Project activities. A BAP/BMP was therefore scoped-out.

The E&S Scoping Study provided a preliminary definition of the Project's Area of Influence (AoI), i.e. the total area likely to be affected by the Project's activities. The AoI was determined based on recommended buffer zones provided in specialized literature, as well as the environmental and social characteristics of the Project sites.

One important outcome of the E&S Scoping Study was the identification of the important environmental and social components (IESCs) for the ISWMP, i.e., those elements of the biological, physical and human environment expected to be negatively or positively affected by the Project's implementation, and that require defining enhancement, avoidance, mitigation, and/or compensation measures. The ESIA study places focus on the IESCs identified.

The process of stakeholder engagement has been initiated during the Scoping Stage, including consultation with national authorities, agencies, key informants and interested and affected parties on site. A Stakeholder Engagement Plan (SEP) for the Scoping stage was discussed with the Client and applied at the sites (the SEP is shown in Annex F to this report). For this, the GOTCI involved the identified responsible parties actively and supported the Consultant in conduction of the public hearings and other engagement activities (report available as Annex G of this report).

Ultimately, the E&S Scoping Study defined the scope, structure and methodology to be employed in completing the ESIA, i.e., the Terms of Reference (TOR) / Plan of Study (POS) for the ESIA.

1.4 Spatial Boundaries of the ESIA

The spatial boundaries of the ESIA cover the Project areas as defined in the Main Consultant's Preliminary Design Report (May 2025, Rev. 02), specifically those located in the following 6 islands:

- Providenciales - existing disposal site and new facilities' site
- North Caicos - existing Kew dumpsite, existing Bottle Creek dumpsite, new Bottle Creek landfill and Bottle Creek new facilities' site
- Middle Caicos - existing dumpsite and new facilities' site
- South Caicos - existing dumpsite and new facilities' site
- Grand Turk - existing disposal site and new facilities' site
- Salt Cay - existing dumpsite and new facilities site

In the context of the ESIA, the Project areas include not only the main facilities, but also associated facilities such as composting facilities, transfer stations, civic amenities, etc. Figure 1-2 shows an overview of the location of the ISWMP sites.

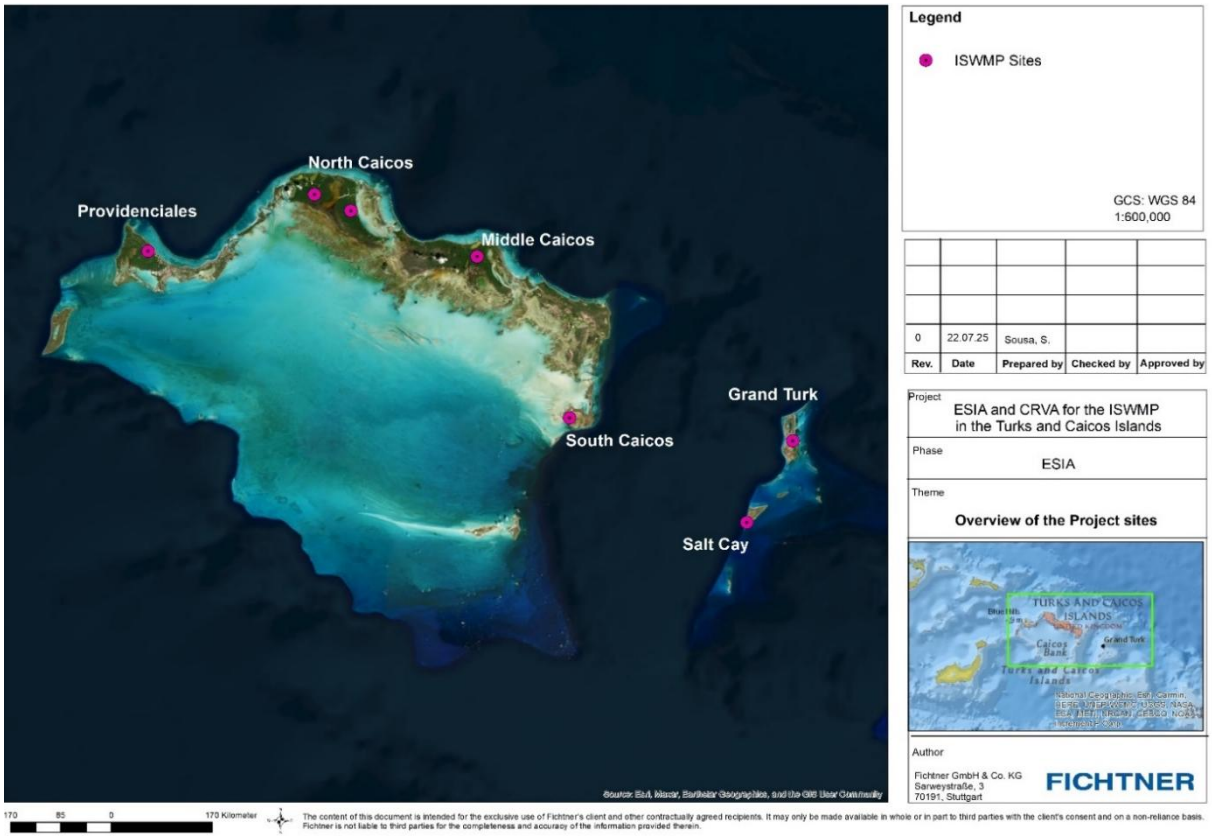


Figure 1-2: Location of all existing and proposed waste disposal, storage and treatment facilities in the scope of the ISWMP

1.5 The ESIA Study Team

The ESIA Study Team consists of the following key and non-key international and regional experts.

Table 1-1: ESIA and CRVA for the ISWM Project in the Turks and Caicos Islands - FICHTNER's ESIA Study team

Name	Company, Location	Title/Role in the Team
Sofia Gomes de Sousa	Fichtner GmbH & Co. KG, Stuttgart, Germany	Key Expert No. 1 - Environmental and Climate Risk Specialist & Project Manager / ESIA Reporting, Project Management
Dr. Asha Kambon	Freelancer, Trinidad and Tobago	Key Expert No. 2 - Social and Gender Impact Specialist / Stakeholder Engagement, Social Impact Assessment
		Regional E&S Specialist / Legal requirements, Site Visits
Melanie Siems	Fichtner GmbH & Co. KG, Stuttgart, Germany	Project Director, E&S Backstopping / ESIA Report approval
Banu Özcan	Fichtner GmbH & Co. KG, Stuttgart, Germany	E&S Backstopping / Quality Review
Ellen C. Prestes Ferronato	Fichtner GmbH & Co. KG, Berlin, Germany	E&S Backstopping / Quality Review
Carolina Arboleda Diaz	Fichtner GmbH & Co. KG, Freiburg, Germany	E&S Backstopping / Baseline assessment and GIS
Ana González Cubillo	Fichtner GmbH & Co. KG, Madrid, Germany	Climate Risk Specialist / CRVA
Dr. Samuel Schröders	Fichtner GmbH & Co. KG, Stuttgart, Germany	Climate Risk Specialist - flooding risks / CRVA
Andrea Fuchs	Fichtner GmbH & Co. KG, Stuttgart, Germany	Senior Solid Waste Expert / Technical support
Anke Goller	Fichtner GmbH & Co. KG, Stuttgart, Germany	Financial Administration
Katharine Hart	Freelancer, Turks and Caicos	Biodiversity and Social Expert / Socio-economic and biodiversity surveys

2 Policy, Legal and Institutional Framework

This Chapter presents a brief overview of the national and international policy, legal and institutional framework of relevance for the ISWMP and the ESIA.

2.1 National Legal Framework

2.1.1 Turks and Caicos Islands Constitution Order 2011

The Turks and Caicos Islands Constitution Order 2011[17] ("the Constitution") covers some issues which are directly relevant for the ISWMP and the E&S Scoping Study, namely:

Protection of the Environment

Article 18 of the Constitution addresses protection of the environment as follows:

1. The Legislature and the Government shall, in all their decisions, have due regard to the need to foster and protect an environment that is not harmful to the health or well-being of present and future generations, while promoting justifiable economic and social development.
2. To this end the Legislature and the Government should adopt reasonable legislative and other measures to protect the built heritage, the wildlife and the land and sea biodiversity of the Islands that:
   a) limit pollution and ecological degradation;
   b) promote conservation and biodiversity; and
   c) secure ecologically sustainable development and use of natural resources.

Discrimination

The Constitution prohibits any discrimination on grounds of "race, national or social origin, political or other opinion, colour, religion, language, creed, association with a national minority, property, sex, sexual orientation, birth or other status whereby persons of one such description are subjected to disabilities or restrictions" (Art. 16.3).

Islander Status

Turks and Caicos Islander status is the highest immigration status accorded to persons who acquired the status and/or were bestowed the status upon application in accordance with the laws of the country. The authority to grant Islander status is provided for in section 103 of the Constitution and detailed in the Turks and Caicos Islander Status Ordinance 2015 [18]. Turks and Caicos Islanders can do the following:

- vote in an election;
- apply for and be considered for the acquisition of residential crown land;
- apply for and be considered for the grant of a GOTCI scholarship;
- apply for and be considered for the grant of a business license to operate in the restricted business license category.

[17] https://www.legislation.gov.uk/uksi/2011/1681/made

[18] All persons who acquired 'Belonger' status under previous Immigration Ordinances retained their status.

2.1.2 Public and Environmental Health Ordinance

Chapter 8.04 of the Public and Environmental Health Ordinance (31 August 2009)[19] entails a section dedicated to waste disposal and hazardous substances and articles (Part VIII) including the following sub-sections: waste collection service (8.48), provision of receptacles for waste (8.49), and waste disposal sites and penalties for improper disposal of waste (8.50).

Sub-section 8.50 prescribes that Crown Lands may be designated for use as waste disposal sites and as collection areas for recyclable materials. Also, the sub-section establishes fines for offences of depositing waste on any other land or on sea, as well as for sorting or disturbing waste deposited on a waste disposal site.

2.1.3 National Parks Ordinance and Amendments

The National Parks Ordinance (31 August 2009)[20] and the 2016 Amendment [21] designate five categories of Protected Areas, namely National Parks (natural areas open to the public for recreational use), Nature Reserves (natural areas open to the public for multiple uses without disbalancing their natural ecology), Sanctuaries (created primarily for the purpose of the protection of the natural ecology, or of any particular form of living organism in the area), Areas of Historical Interest (created primarily for the purpose of protecting an object of historical interest therein), and Critical Habitat Reserves (created primarily for the protection of any endangered species and habitats in any wetlands, pine woodlands, caves and other karts features and tropical dry forest). The Ordinance and Amendment restrict construction in these areas, with some safeguards such as:

- in National Parks, "the Governor may make a grant of development permission for the erection in the area of buildings, the construction of roads, marinas and such other developments", but the "paramount consideration is to limit development to the minimum".
- in Nature Reserves, "no building or other development shall be permitted" except those required for the uses which are permissible in a Nature Reserve, namely "agricultural, arboricultural piscicultural, catch-and-release bonefishing, sporting and recreational".
- in Sanctuaries, no developments are allowed and the entrance of persons is regulated.
- in Areas of Historical Sites, the public shall have access to the area but "no person shall carry out any development except under a grant of development permission".
- in Critical Habitat Reserves a development is only allowed if a recommendation under the context of an environmental impact assessment is made and under provision of a grant of development permission that incorporates "terms, conditions and limitations that address the environmental impact assessment, subject to a "no net loss" of habitat value".

2.1.4 Wild Birds Protection Ordinance

The Wild Birds Protection Ordinance (31 August 2009)[22] defines as an offence the acts of killing, wounding, or taking of protected wild birds or attempting to do those acts; taking, removing, injuring, or destroying nests or eggs of protected wild birds; selling and exporting protected wild birds, parts, eggs or nests.

[19] https://online.fliphtml5.com/fizd/qbzt/#p=31
[20] National Parks Ordinance: https://faolex.fao.org/docs/pdf/tci107731.pdf
[21] 2016 Amendment to the National Parks Ordinance: https://fliphtml5.com/fizd/oyrr
[22] https://faolex.fao.org/docs/pdf/tci107361.pdf

2.1.5 Crown Land Ordinance and Amendments

Crown Land Ordinance (2014) and Subsidiary Legislation

Chapter 9.08 of the Crown Land Ordinance and Subsidiary Legislation (31 December 2014)[23] treats with the management principles, the administrative framework, measures to protect crown land, priorities for use of crown land, allocations, discounts, and miscellaneous provisions.

Crown Land (Amendment) Ordinance 2023

The Amendment (2023) to the Crown Land Ordinance[24], designed to assist Turks and Caicos Islanders to better access and utilise Crown Land, seeks to:

- permit the exchange of land in cases whether the Government has used private land, or a private landowner has used Crown land under a mistaken belief that there was an entitlement to that land and had relied on that mistaken belief to its detriment, subject to certain conditions set out in the Crown Land Ordinance;
- extend the period during which a successful applicant is given to accept an offer letter for the purchase of the freehold title Crown land from 3 months to 6 months; and
- permit, where the holder of an expired Registered Residential Conditional Purchase Lease has passed away, the executor or administrator of the deceased's estate to apply to regularize the land, provided that the property was being used as the primary residence of the deceased [25].

Crown Land (Residential Conditional Purchase Lease) (Arrears and Mesne Profit) (Amnesty) Ordinance 2023

The Crown Land (Residential Conditional Purchase Lease) (Arrears and Mesne Profit) (Amnesty) Ordinance 2023[26] is a new piece of legislation creating a new amnesty for persons who owe arrears in respect of Crown land. This new amnesty seeks to provide for an amnesty period of two years to allow persons to choose one of the new terminal options recommended by the Crown Land Review Report to regularize residential conditional purchase leases and to write-off the arrears and mesne profit in respect of residential conditional purchase leases [25].

Should land have to be acquired or persons relocated as part of the Project, action will have to be guided by the Crown Land (Residential Conditional Purchase Lease) (Arrears and Mesne Profit) (Amnesty) Ordinance 2023.

Provisions for illegal settlers

According to the TCI's Informal Settlements Unit's (ISU) website[27], a person who has built illegally on Crown Land has no rights to that land. The Crown Land Ordinance does not have any provisions for the regularization of persons who have built on Crown Land without the proper authorization. Under section 135, Acquisition of Land of the Registered Land Ordinance, it is not possible to acquire Crown Land by right of long use and under section 21 of the Crown Land Ordinance it is a criminal offence of trespass to occupy or construct a dwelling on the land without permission.

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[23] https://online.fliphtml5.com/fizd/fswz/#p=1
[24] Attorney General's Chambers of the GOTCI: https://www.gov.tc/agc/component/edocman/4-of-2023-crown-land-amendment-ordinance-2023/viewdocument/2222?Itemid=
[25] Newsline TCI, Jun 13, 2023: https://www.newslinetci.com/post/crown-land-amendment-ordinance-brought-into-force#:~:text=The%20Crown%20Land%20(Residential%20Conditional,in%20respect%20of%20Crown%20land
[26] Attorney General's Chambers of the GOTCI: https://www.gov.tc/agc/component/edocman/5-of-2023-crown-land-residential-conditional-purchase-lease-arrears-and-mesne-profit-amnesty-ordinance-2023/viewdocument/2223?Itemid=
[27] https://www.isutci.com/faqs

The ISU adds that human rights do not trump the rights of a property owner which include the owner's right to recover possession of their property.

It is pertinent to add at this point that international best practice suggests that eviction and demolition do not address the cultural and material realities that drive the creation and expansion of informal settlements. Taking the 'realities' into account has prompted increasing interest in improving informal settlements and attempting to formalize land tenure for residents of these communities [28].

Eminent domain

A revision of the Crown Land Ordinance showed no mention to the concept of eminent domain. However, the Attorney General's Office of the TCI includes a Legal Division and a Lands Division. One of the responsibilities of the Lands Division is "valuation", which includes "negotiating the purchase of property in private treaty/compulsory acquisition on behalf of the government."

This suggests that land may be acquired by eminent domain, be it held in the private sector by individual or corporate entities, with some regard to market price. Good practice suggests that the owner be compensated at fair market value [29].

2.1.6 Prohibition of illegal charcoal production in the TCI

Illegal charcoal production in the TCI breaches three major ordinances: the Physical Planning Ordinance, the Crown Land Ordinance, and the National Parks Ordinance, including their associated regulations.

Physical Planning Ordinance (revised edition, 31 March 2018)[30]

According to Article 104 (a) of the Physical Planning Ordinance, a person shall not clear a site unless prior authorisation is given by the Director of Planning. "Clearing a site" is defined as removing trees, stumps, brush, stone, or topsoil by heavy equipment or by hand. Illegal charcoal production often involves unauthorized tree cutting, which breaches this Ordinance. By requiring prior authorization, the Physical Planning Ordinance helps prevent illegal deforestation, a common precursor to illegal charcoal production.

Crown Land Ordinance (revised edition, 31 December 2014)[31]

The Crown Land Ordinance includes provisions that forbid activities that degrade or clear Crown land. Article 18 of the Ordinance states:

(1) The Crown Land Unit must take action, in accordance with the Ordinance and any other relevant powers, to: (a) prevent squatting on Crown land or any unauthorised action that denudes or degrades Crown land; and (b) prevent harmful activity on or against Crown land.

It is our opinion that illegal charcoal production, which can cause significant land degradation, can be included in the above.

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[28] https://www.buffalo.edu/globalhealthequity/Resources/policy-briefs/issue-2--strategies-for-improving-informal-settlements.html

[29] https://www.stimmel-law.com/en/articles/eminent-domain-basic-law

[30] TCI Physical Planning Parks Ordinance and Subsidiary Legislation: https://www.gov.tc/agc/component/edocman/09-02-physical-planning-ordinance-2/viewdocument/1145?Itemid=

[31] TCI Crown Land Ordinance and Subsidiary Legislation: https https://www.gov.tc/agc/component/edocman/09-08-crown-land-ordinance-2/viewdocument/1151?Itemid=

(2) The Crown Land Unit has overall responsibility for monitoring the disposal and subsequent use of Crown land and protecting it from harmful activity.

(3) All persons must treat Crown land with respect and refer any potentially harmful activity on Crown land to the Crown Land Unit for action.

(4) For the purpose of this section, "harmful activity" includes, but is not limited to (a) illegal dumping of waste, breaches of planning regulations and unlawful encroachment on land.

Illegal charcoal production, which often involves unauthorized tree cutting and breaches planning regulations, can be an example of harmful activity.

As detailed above, the Crown Land Ordinance can be crucial in prohibiting illegal charcoal production by preventing unauthorized actions that degrade Crown land. It empowers the Crown Land Unit to monitor and protect the land from harmful activities and encourages public responsibility in reporting such activities.

National Parks Ordinance and subsidiary legislation (revised edition, 31 March 2018)[32]

The National Parks Ordinance outlines specific prohibitions and allowable activities within designated National Parks, Nature Reserves, Sanctuaries, Areas of Historical Interest and Critical Habitat Reserves. The stipulated regulations pertaining to these prohibitions and allowances aim to preserve the environmental integrity, wildlife, and cultural heritage of the TCI. Based on an analysis of these regulatory provisions, the prohibitions that relates to illegal charcoal production within these designated areas are summarised as below.

- Prohibited activities within all national parks:
  - *(a) the taking of any animal or plant by any method on land or at sea, except to the extent permitted in any fishing zone*: This restriction prevents the harvesting of plants, which includes trees for charcoal production.
  - *(c) destruction of, or damage or injury to, any animal or plant:* Charcoal production often involves cutting down trees, which would be prohibited.
  - *(l) making of fires, other than in a portable stove or grill:* This would prohibit traditional charcoal kilns or open fires used in charcoal production.
- Prohibited activities within all nature reserves include similar prohibitions to those in national parks, such as restrictions on plant harvesting and fire making.
- Prohibited activities within all Sanctuaries:
  - *(a) public access unless with the prior written approval of the Director in form NP1:* Limits access to Sanctuaries and to collecting of materials to produce charcoal illegally.
  - *(b) the introduction either temporary or permanent of any domestic animal or any other animal or plant not indigenous to the site:* Prevents altering the natural ecosystem, indirectly impacting any agriculture or forestry activity.
  - *(c) the taking of any animal or plant by any method on land or at sea:* Prohibits harvesting of trees, including for charcoal production.
  - *(e) the destruction of, or damage or injury to, any animal or plant:* Protects all flora and fauna, preventing illegal charcoal production.

[32] TCI National Parks Ordinance and Subsidiary Legislation: https://www.gov.tc/agc/component/edocman/10-01-national-parks-ordinance-2/viewdocument/1155?Itemid=

- *(j) the dumping of refuse, abandoned vehicles, toxic or other wastes, bilges, oil and other petroleum products, pesticides and other items harmful to animals or plants, or unsightly item:* Ensures the protection of the environment, which could be impacted by the by-products of charcoal production.

- Prohibited activities within all areas of national interest include similar prohibitions to those in sanctuaries emphasizing protection of natural features and preventing environmental pollution.

Illegal charcoal production activities, which typically involve harvesting trees and potentially making fires, are highly restricted or outright prohibited within National Parks, Nature Reserves, Sanctuaries, Areas of Historical Interest and Critical Habitat Reserves in THE TCI as per the provisions of the National Parks Ordinance and subsidiary legislation as summarized above.

Despite the legal framework aimed at preventing illegal charcoal production in TCI, including the Physical Planning Ordinance, the Crown Land Ordinance, and the National Parks Ordinance, based on the desktop research of local news reports[33] and articles, academic research and studies[34], it is evident that illegal charcoal production persists in the TCI and poses a significant threat to the environment, biodiversity and cultural heritage. Unregulated tree felling, use of traditional kilns, and covert operations contribute to illegal charcoal production.

2.1.7 The employment ordinance of the TCI and the employment order (appended to the ordinance)

The Employment Ordinance of the TCI and the Employment Order (appended to the Ordinance) provide the regulatory framework for employment law within the Islands.

The Employment Ordinance provides the essential framework for: Written Particulars of Terms of Employment (Part II); Remuneration of Employees (Part III); Protection Against Unlawful Discrimination (Part IV); Termination of Employment (Part V); and Unfair Dismissal (Part VI).

The Employment Order provides the main framework for Wages and Hours of Work (Part II); and Vacation Pay, Sick leave and Compassionate Leave. The Employment Order specifies that the normal hours of work must not exceed 44 hours a week. Hours of work over this amount of time amount to overtime.

2.1.8 Gender equality

The Department of Gender Affairs has emerging policy frameworks to continue its mandate to mainstream gender in the Turks and Caicos Islands fabric. The following are the policies to be gazetted in 2024[35];

- Domestic Violence Protocol: This piece of legislation is a coordinated response that guides stakeholders from the social, health, judicial, and police sectors to respond effectively to signs of domestic violence. It shows each sector's special protocol to follow and how they assist each other in efficiency to safeguard women and men.

[33] Magnetic Media: https://magneticmediatv.com/2018/02/tci-deforestation-for-charcoal-production/
Sun TCI: https://suntci.com/zero-tolerance-towards-coal-burning-in-tci-p4932-129.htm
Sun TCI: Charcoal burning is illegal and it must end now (suntci.com)
BBC: BBC Radio 4 - Living World, Turks and Caicos Islands: The Pygmy Boa Constrictor, The wildlife of the Turks and Caicos Islands - Illegal charcoal production in Turks and Caicos

[34] Sealey, K. S., Wood, K., & Logan, A. (2019). The Turks and Caicos Islands. In C. Sheppard (Ed.), World Seas: An Environmental Evaluation (2nd ed., Vol. I, pp. 617-635). Academic Press.

[35] National Report Turks and Caicos Islands July 2024. Thirtieth anniversary of the Fourth World Conference on Women and the approval of the Beijing Declaration and Platform for Action (Beijing, 1995) in Latin American and the Caribbean. https://www.cepal.org/sites/default/files/static/files/turks_and_caicos_islands_national_report.pdf

- National Gender Equality Policy: a roadmap that sets out the vision and actions to tackle the persistent gendered inequalities women, girls, and men face across their lives, supporting them to contribute to the country's economy and balance caring responsibilities in a life free of gender-based violence.

Policies and laws already gazetted are as follows:

- Sexual Offences Ordinance 2020: an ordinance to make provisions concerning sexual offences, their prevention, and the protection of women and children from harm from sexual acts, and for connected purposes.
- Children (care and protection) (amendment) ordinance 2020: The Ordinance of 2017 was amended in Section 11 by repealing subsection (2) and giving formation of the Board to govern the Safety of Children in the Territory. This seeks to provide an overarching approach to child safeguarding and guardianship.

2.1.9 Environmental licensing process

Processes connected to the Planning Department

The Planning Department informed the ESIA Team that the environmental licensing process is mandatory for landfills and other solid waste management facilities.

Am formal Development Permission Application shall be submitted for the consideration of the Physical Planning Board, consisting of the following:

1. Drawings must be submitted in triplicate by an agent/ architect holding a relevant TCI business license (for government applications, these are usually submitted by the Public Works Department). Consultation with the department is encouraged prior design and submission of the application.
2. The drawings must be accompanied by the Dop 1 and Dop 2 application forms.
3. Detail drawings are required for the development in accordance with the requirements of the development manual.

The outline / master plan process entails:

- Outline Development Permission Application (approval in principle)
- Advertisement of the Application in accordance with Schedule II of the Regulation 8 of the Physical Planning Ordinance 2021
- Circulation of the Application to the relevant Government agencies for comments,
- Collection of feedback from the advertisement (if any) and of comments from relevant agencies
- Forward of feedback and comments, along with the Planning Department's recommendation to the Physical Planning Board.

Following approval of the Outline Development Permission, the Application requires an Environmental Impact Study (EIA) in accordance with the criteria outlined in Section 7 of the TCI Development Manual.

A Terms of Reference (ToR) is then provided following the Outline's approval. The applicant will be responsible for assembling a team based on the ToR provided and submit to the Planning Department for approval of the EIA team. Once the EIA team is approved, they can carry out the study and submit the Draft EIA for review.

Public consultation for 28 days may be required based on the ToR. The Planning Department, in conjunction with the DECR will review the document and, based on the findings, may provide additional comments. Once all comments are addressed, the Planning Department forwards the Final EIA with the department's recommendation to the Physical Planning Board for consideration and approval.

Following the approval of the EIA; the applicant can submit the Detail Development Permission which follows a similar process to the one outlined above with more detail drawings and a higher application fee (if applicable).

The Planning Department recommends further consultation prior to design and tender.

Processes connected to the Department of Environment and Coastal Resources (DECR)

The DECR informed the ESIA Team that, under the current national legislation and policy, a Scientific Research Permit is required for any preliminary environmental/ field studies and for any studies toward Environmental Impact Assessment.

Further, based on the TCI Development Manual 2014, Section 7, Table 7.3, the following categories that mention activities related to waste disposal/landfilling require Environmental Impact Assessment:

- 2: Marine works (marinas; boatyards and slipways; piers; wharves; jetties; sea defence structures; dredging; and mining; reclamation; landfill; wetlands development)
- 3: Disposal/treatment facilities (sanitary landfill; incinerators; sewage treatment plants; anaerobic digesters; desalination plants; water treatment plants)
- 4: Infrastructure (road construction; electricity, telephone and cable TV transmission; water and sewage of hazardous materials; other industrial plants such as rice and flour millings)
- 5: Industrial and/or hazardous uses (rum distilleries; breweries; power plants; gas plants; service stations; storage of hazardous materials; other industrial plants such as rice and flour milling)
- and 7: Earthworks (Quarries; vegetation clearing; contouring and land forming).

Typically, this is done at the Outline Development Permission stage of the Physical Planning process, but it may prove advantageous to begin it before that stage. The usual process includes the Physical Planning Department referring the Application including location, plans, proposed works, and timelines to DECR, after which the DECR reviews it and drafts recommended Terms of Reference for the EIA. Subsequently the Planning Department formally issues the ToR. Once the EIA Report is available, the DECR reviews and comments on it and recommends it for acceptance, once any comments and recommendations are satisfied.

Draft legislation is underway to significantly enhance this process by aligning it with environmental standards and introducing annual licensing through an Environmental Clearance Certificate. However, it has not yet been enacted.

2.2 National Policy Framework

2.2.1 National physical development plan (2020)

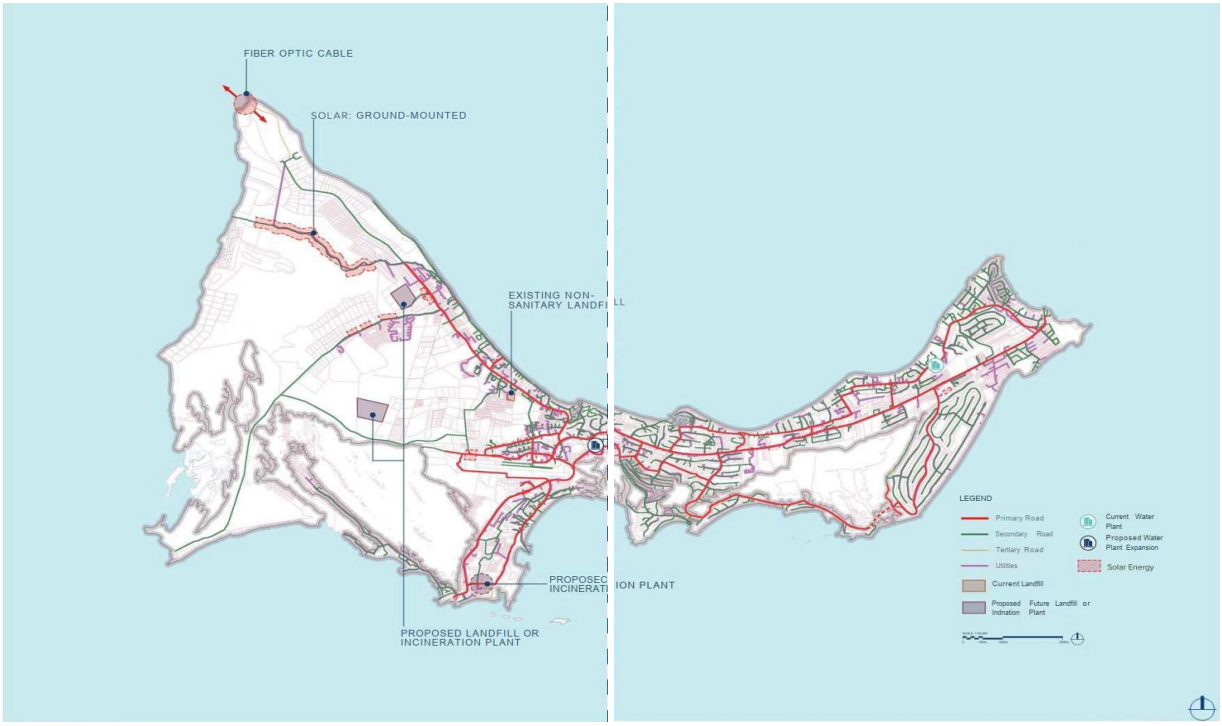
The 2020 National Physical Development Plan (NPDP) was written as a guide for current and future preservation and development of the TCI. The NPDP is a 10-year plan pairing vision, themes, objectives, and plans with physical space within the islands. Its intent is to "strike a balance of economic, social, physical, and environmental objectives that maintain the natural beauty and serenity of the islands while utilizing its natural resources in a sustainable manner, thereby providing for responsible development and growth".

The NPDP covers, among others, waste management issues (reference is made to the NPDP's Chapter 3, "Island Linkage", section "Recycling", page 106). It indicates that, although recycling is not the only solution for tackling waste management in the islands, it should be strategically implemented, requiring the separation of waste into the purest possible streams right at the source or designated transfer locations. This should be accompanied by systematic collection in clearly labelled containers that are specific to each substance and appropriately sized.

The NPDP states that the severe lack of land in an island nation such as the TCI should prompt a shift in focus from landfills to alternative waste disposal methods, particularly incineration or waste-to-energy facilities.

From an environmental perspective, such a shift would bring advantages due to a consequent reduction of the volume of waste to be landfilled, with evident advantages in terms of reduction of infiltration of leachate, reduction of smells, ceasing of fires, landscape value improvement, etc. However, such a solution could only work to the advantage of the islanders if there is recourse to best available technologies and trained personnel to avoid other problems like emission of harmful air pollutants related for example, with incineration of hazardous waste, or occupational and community health and safety hazards.

The NPDP has identified a site on Providenciales for a future centralized waste disposal facility, which would be sufficiently spacious to accommodate either an incineration or a waste-to-energy plant (Figure 2-1).



Source: NPDP, 2020, Chapter 5.1, "Providenciales", pages 228 and 229

Figure 2-1: Proposals of the NPDP, including a proposed landfill or incineration plant site, and a proposed incineration plant site

The NPDP further suggests that existing dump sites on the smaller islands could be repurposed as waste transfer stations. At these stations, solid waste generated locally would be temporarily stored until there is enough volume to make the transfer or transport to the central disposal facility on Providenciales economically feasible.

Additionally, the NPDP includes a proposal of remediation of Grand Turk Landfill, and highlights the relevance of several critical conservation areas, including North Creek, North and South Wells, inland salinas and wetlands, shorebird beaches, and the Turks Bank humpback whale overwintering site, that currently lack legal safeguards and are at high risk of being damaged by unsuitable development. It is recommended that these sites be granted legal protection under the National Parks Ordinance to ensure they are managed with conservation in mind (reference is made to the NPDP's Chapter 5.5, "Grand Turk").

The ISWM Project is planned in line with some of the recommendations of the NPDP and, advised by the ESIA process, in accordance with the environmental and labour regulations, as well as the social development and gender equality policies of the Government of the Turks and Caicos Islands.

2.3 National Institutional and Non-Governmental Framework

2.3.1 Ministry of Tourism, Environment, Fisheries and Marine Affairs, Culture and Heritage, Agriculture, Religious Affairs and Gaming

The goals of the Ministry of Tourism, Environment, Fisheries and Marine Affairs, Culture and Heritage, Agriculture, Religious Affairs and Gaming ("Ministry of Tourism") are stated on the official webpage as:

- To drive policies and legislation for the betterment of the Turks and Caicos Tourism Industry;
- To provide support to the various departments in fulfilling its mission;
- To continue to promote and market the Turks and Caicos as a premier destination;
- To develop and promote domestic tourism;
- To preserve the historical and recreational resources of the TCI;
- To protect our natural and marine resources;
- To develop plans and programmes towards a more disaster resilient territory[36].

Of particular interest to the ESIA study are the three later goals related to historical and recreational resources, natural resources and disaster resilience.

Several agencies are under jurisdiction of the Ministry of Tourism. The most relevant ones for the ESIA study are described below.

Department of Environment and Coastal Resources (DECR)

The DECR's mission is to ensure sustainable utilization of the natural resources of the TCI, and to protect and promote biodiversity and economic prosperity through a sustainable fishing industry and environmentally sustainable development, a Protected Areas system, and improved Maritime Affairs.

Its major tasks include to:

- Develop a systematized strategy to conduct sea patrol and land/foot patrols at fishery limits, protected areas, and coastal areas
- Formalize strategies to collect sand and quarry royalties and train more officers to assist in monitoring mining operations
- Prepare survey plans for coastal infrastructures to improve the monitoring of swim zones and buoys, etc.
- Review environmental impact assessments (EIAs)
- Monitor development projects
- Intensify environmental awareness activities with focus on young (students) and adults as well, including the tourists, hoteliers and the general public
- To expand the Community Conservation Partnership Programme to incorporate more partners[37].

Of relevance to the ESIA is the responsibility of the DECR for the Protected Areas system and for the review of environmental impact assessments (EIAs).

[36] https://www.gov.tc/tourism/about
[37] https://www.gov.tc/tourism/agencies

Turks and Caicos National Trust

The Turks and Caicos National Trust (TCNT) was established in 1992 by the National Trust Ordinance as a statutory but independent non-governmental membership body. The TCNT is tasked with protecting the environmental, cultural, and historical heritage of the islands for current and future generations[38]. Currently eight (8) heritage sites are under the supervision and day to day management regime of the TCNT. These include:

- Bird Rock point (in Providenciales, but outside the site's Area of Influence (AoI))
- Cheshire Hall (in Providenciales, but outside the site's AoI)
- Heaving Down Rock (in Providenciales, but outside the site's AoI)
- Little Water Cay (in Providenciales, but outside the site's AoI)
- Middle Caicos Caves (in Middle Caicos, but outside the dumpsite's AoI)
- Wades Green Plantation [37] (within the Kew dumpsite's AoI)
- Conch Bar Caves National Park [39] (in Middle Caicos, but outside the dumpsite's AoI)
- Flamingo Pond Overlook [39] (in North Caicos, but outside both dumpsites' AoI)

Department of Disaster Management and Emergencies

The Department of Disaster Management and Emergencies was created in 2001 with a budget dedicated to preparation for response to hurricanes. The activities of this agency cover all phases of Disaster Management including Disaster Risk Reduction, the preparation of Flood Hazard and Vulnerability Studies, Planning and Training and Exercising and providing technical assistance. During an actual emergency the department is responsible for providing warning and coordinating the response and support to government departments and private sector recovery efforts [37].

2.3.2 Ministry of Health and Human Services

The Ministry of Health and Human Services (MHHS) is responsible for the oversight and development of a robust and efficient health system that meets the priority health needs of its population. The Ministry undertakes *inter alia*, the following:

- Formulation of policies, legislation, and strategies to govern the health and agriculture sectors
- Regulation and licensing of respective facilities and professionals
- Monitoring and evaluation of strategic objectives
- Delivery of health, agriculture and human services
- Execution of essential public and environmental health functions
- Mitigation of and response to natural and manmade disasters and emergencies that impact the health of the population[40].

Several departments, agencies and services are under jurisdiction of the Ministry. Of specific relevance for this study is the Environmental Health Department, which coordinates the development of the technical and E&S studies related to the ISWMP.

[38] Turks and Caicos Data portal, The TCI Islands Important Bird Areas Report: https://dataportal.gov.tc/dataset/important-bird-areas-tci/resource/b117b122-80ac-478e-bdc4-96b03209a237
[39] This information was shared by the DECR directly with the Consultant
[40] https://www.gov.tc/moh/about

Environmental Health Department

The TCI Environmental Health Department (TCIEHD) is an arm of the MHHS that is concerned with all aspects of the natural and built environment that may affect human health.

The Environmental Health Department regulates the following: Food Hygiene, Liquor Licensing, Institutional Hygiene, Environmental Sanitation, Occupational Health & Safety, Businesses Licensing, Beauty Parlors, Water Quality, Air Quality, Port Health, Vector Control, Solid and Liquid Waste Management, Cemetery Management.

Solid Waste Task Force (SWTF) / Solid Waste Working Group (SWWG)

A Solid Waste Task Force (SWTF), also known as Solid Waste Working Group (SWWG) was established in June 2022. The SWTF consists of staff from the Ministry of Health and Human Services, the Environmental Health Department and the Public Works Department[41].

The SWTF is committed to improving country wide Solid Waste Management. For example, in Providenciales, the multi-disciplinary task force is working to gather information that will effectively resolve pressing issues affecting the Wheeland Community such as onsite burning, odour control, some operational procedures including security and best practices for trash disposal.

2.3.3 Informal Settlements Unit

The TCI Informal Settlements Unit (ISU) is a newly established government agency responsible for mitigating the proliferation of informal settlement activities in the islands. The official launch of the ISU was held in July 2023.

The ISU operates entirely within the legislation and ordinances put forth by the GOTCI and in accordance with international humanitarian best practices[42].

2.3.4 Turks and Caicos Reef Fund

The Turks and Caicos Reef Fund, established in 2010, is the leading non-profit and non-government conservation organization tasked with the preservation of the marine environment in the Turks and Caicos. They strive to protect and facilitate low-impact tourism use of the reefs in the Turks and Caicos. Their projects have included the installation of moorings at popular dive and snorkel sites, education outreach, and the eradication of invasive species[43].

2.3.5 Turks and Caicos Islands National Museum Foundation

The Turks and Caicos National Museum Foundation is a nonprofit organization founded in 1991. The museum is situated on Grand Turk in the "Guinep House" (at the border with the Grand Turk dumpsite's AoI - see Figure 7-50 in Chapter 7 of this report). It houses the Molasses Reef Wreck, the oldest shipwreck found in the Western Hemisphere, dating to 1513, including the complete assemblage of conserved artifacts from this wreck. In addition, the museum has done extensive research on the slave ship *Trouvadore* and has published slavery related literature [44].

[41] SWTF: https://www.gov.tc/moh/news/latest/solid-waste-management-improvement-throughout-the-turks-and-caicos-islands
[42] ISU: https://www.isutci.com/about
[43] Visit TCI: https://www.visittci.com/nature-and-history/geology-ecology-climate/barrier-reef
[44] https://slaveryandremembrance.org/partners/partner/?id=P0015

2.3.6 Turks and Caicos Society for the Prevention of Cruelty to Animals (TCSPCA)

The TCSPCA, established in 1998, is the oldest and most recognized animal welfare organization in the Turks and Caicos Islands run by volunteers. The society performs animal rescue operations, promotes animal education, foster and adoption programs, and manages 'Spay & Neuter Clinics', in tandem with 'Wellness Clinics', as well as regular animal clinics in Providenciales, Grand Turk, South, North, and Middle Caicos and Salt Cay [45].

2.3.7 Analysis of Institutional Framework

Table 2-1 below provides an analysis of the institutional framework involved in the ISWM Project. Each institution's specific contributions and roles are detailed, offering a comprehensive understanding of their involvement.

Table 2-1: Analysis of institutional roles and contributions in the ISWM Project

Institution	Institution's role in relation to the ISWMP
Ministry of Tourism	▪ Promoting sustainable tourism practices that align with waste management efforts. ▪ Collaborating with stakeholders to ensure that tourism development does not negatively impact waste management initiatives. ▪ Raising awareness among tourists and businesses about sustainable waste practices.
Department of Environment and Coastal Resources	▪ Overseeing and ensuring regulatory compliance to maintain the environmental sustainability of the project. ▪ Providing essential environmental data on sensitive and protected areas, as well as flora and fauna, to inform the E&S Scoping Study and ESIA. ▪ Conducting a thorough review of the ESIA and monitoring of potential environmental impacts associated with the project. ▪ Ensuring mitigation measures are in place to protect biodiversity and coastal ecosystems during project execution.
Turks and Caicos National Trust	▪ Engaging the community in awareness programs about waste reduction and environmental protection. ▪ Collaborating with other institutions to promote biodiversity and protect natural resources. ▪ Overseeing the management and protection of heritage sites under their supervision, ensuring waste management activities do not negatively impact these areas.
Department of Disaster Management and Emergencies	▪ Developing contingency plans for waste management during emergencies. ▪ Coordinating with other agencies to ensure effective waste management in disaster response scenarios. ▪ Providing training and resources for disaster preparedness related to waste management. ▪ Establishing emergency waste management protocols to minimize environmental impact during natural disasters.
Ministry of Health and Human Services	▪ Embarking on the Project to provide strategic planning and design of an improved Solid Waste Management System that will benefit TCI.
Environmental Health Department	▪ Coordinating waste collection, disposal, and managing health-related concerns throughout the project timeline. ▪ Ensuring all activities comply with environmental health standards and regulations to prevent risks to public health and the environment. ▪ Overseeing adherence to best practices in waste management, promoting sustainability, and hygiene within the community during project implementation. ▪ ISWM Project coordination

[45] https://www.tcspca.tc/

Institution	Institution's role in relation to the ISWMP
Solid Waste Task Force	▪ Facilitating community engagement sessions to gather feedback and suggestions for improving landfill management and resolving community concerns. ▪ Conducting evaluations of the sites to identify areas for improvement and ensure compliance with environmental standards. ▪ Leveraging technology to improve waste tracking and data management systems for better decision-making and operational efficiency.
Informal Settlements Unit	▪ Regularizing the long-established informal settlements to bring them into line with planning and other applicable laws. ▪ Facilitating community engagement and education on proper waste disposal practices in informal settlement areas. ▪ Collaborating with other agencies to improve waste management infrastructure in informal settlement areas. ▪ Developing targeted initiatives to reduce waste generation and improve living conditions in informal settlements.
Turks and Caicos Reef Fund	▪ Putting environmental conservation efforts to help preserve, protect, and restore the marine environment of the TCI. ▪ Conducting marine clean-up activities and promoting ocean-friendly waste disposal practices. ▪ Educating the public and stakeholders on the importance of marine conservation and the impact of waste on marine ecosystems. ▪ Collaborating with the tourism sector to minimize marine pollution and promote eco-tourism initiatives.
TCI Human Rights Commission	▪ Ensure that human rights obligations are adhered to in government operations, potentially including the ISWMP. ▪ Provide the GOTCI with tailored advice and support to ensure a broad perspective on human rights issues.

2.3.7.1 Analysis of EHD's capacity

The EHD functions as the coordinator of the ISWMP. The Main Consultant performed a capacity assessment of EHD and the main conclusions are published in the Feasibility Study. Below is a summary.

Solid Waste Management (SWM) within the Turks and Caicos Islands is currently centralized under the Environmental Health Department (EHD), which lacks the organizational authority and capacity to design and implement strategic measures for environmental pollution control. To address these limitations, the country's draft Waste Management Strategy recommends establishing a statutory Waste Management Department (WMD) as a prerequisite for achieving sustainable improvements in SWM services and infrastructure. The WMD would assume responsibility for planning, regulation, and oversight of the solid waste sector, functions currently managed by EHD.

Transitioning to an Integrated Solid Waste Management ISWM system will require significant enhancements in professional expertise, a robust regulatory framework, and a multi-year process to develop institutional structures and human resource capabilities. Private sector participation, while present, remains constrained by inadequate regulation, limiting its growth in skills and experience. The envisioned ISWM system must allow sufficient time for institutional strengthening and modernization, supported by adequate human and financial resources for planning, contracting, and monitoring across the islands.

A critical priority will be creating a regulatory environment that encourages private investment while ensuring government-contracted activities avoid monopolistic practices and promote competition. However, current contract management capacity is insufficient to meet the complexity of a modernized ISWM system, with weak performance control and contract quality posing significant challenges.

Addressing these gaps will be essential to ensure effective governance and operational efficiency in the future waste management framework.

2.4 International and Regional Conventions, Treaties and Agreements

Turks and Caicos Islands is one of the fourteen British Overseas Territories. Therefore, international conventions or treaties can be extended by the United Kingdom if the existing legislative framework complies with the commitments. Among numerous treaties and Conventions which have been extended to the Turks and Caicos Islands, the following are of relevance to the ESIA Study.

2.4.1 Turks and Caicos Islands Environmental Charter

By signing the TCI Environmental Charter in September 2001 with the UK Government, the GOTCI committed to undertake environmental impact assessment and stakeholder consultation for projects, developments and plans. These commitments are reflected in the TCI Environmental Charter as follows:

- "3. Ensure that environmental considerations are integrated within social and economic planning processes; promote sustainable patterns of production and consumption within the territory;
- 4. Ensure that environmental and environmental health impact assessments are undertaken before approving major projects and while developing our growth management strategy;
- 5. Commit to open and consultative decision-making on developments and plans which may affect the environment; ensure that environmental impact assessments include consultation with stakeholders."[46]

2.4.2 Turks and Caicos Islands Climate Change Charter

On the 22 April 2022, the GOTCI held a Climate Change Summit during which the TCI Climate Change Charter was signed by key representatives from government, tourism, energy, and environmental organizations[47].

The Climate Change Charter (see Annex A) sets out specific commitments for both the government and the private sector. The government pledges to develop legislation, promote renewable energy, implement waste management strategies, and establish funding mechanisms like the Conservation Fund. It also aims to engage communities and schools in climate education. The private sector is encouraged to invest in sustainable practices, conduct environmental impact assessments, and promote corporate social responsibility. Both sectors are urged to collaborate, share knowledge, and take proactive steps to reduce carbon footprints and protect critical ecosystems such as mangroves, coral reefs, and wetlands.

2.4.3 Ramsar Convention

Signed in 1971, the Ramsar Convention is an international treaty for wetland protection. Over 2,000 sites found across more than a hundred countries are recognized under the agreement. It entered into force in the UK in May 1976.

[46] TCI Environmental Charter : https://www.ukotcf.org.uk/wp-content/uploads/2020/05/TCIcharter.pdf
[47] https://www.tcreef.org/news/2022/4/26/tcrf-becomes-a-signatory-to-tci-climate-change-charter

The Turks and Caicos Ramsar Nature Reserve was formed in the early 1990s, and it was the first such protected area in a British Overseas Territory. The TCI Ramsar Nature Reserve is by far the largest protected area in the Turks and Caicos, with an area of 144,846 acres (58,617 hectares) that covers a large proportion of the southern wetlands of North and Middle Caicos, and an area on the western side of East Caicos[48]. Details on this site can be read in Chapter 7.2.2.1.

2.4.4 Convention on Biological Diversity

The Convention on Biological Diversity (CBD) entered into force on 29 December 1993. It has 3 main objectives: i) the conservation of biological diversity; ii) the sustainable use of the components of biological diversity; iii) the fair and equitable sharing of the benefits arising out of the utilization of genetic resources[49].

The UK ratified the CBD in 1994 and extended it to its Overseas Territories, including the TCI.

2.4.5 Convention on the Conservation of Migratory Species of Wild Animals

The Convention on Migratory Species of Wild Animals (CMS), also known as the Bonn Convention, was adopted on June 23, 1979. As of December 1, 2017, the CMS serves as a framework convention and includes various agreements, memoranda of understanding, and special species initiatives.

As an environmental treaty under the United Nations Environment Programme, the CMS offers a global platform for the conservation and sustainable use of migratory animals and their habitats. It facilitates cooperation among the States through which migratory animals travel - referred to as Range States - and establishes a legal foundation for coordinated international conservation efforts across the migratory range of species.

The UK has been a party to the Convention on the Conservation of Migratory Species of Wild Animals since 1985. As a British Overseas Territory, the obligations under the CMS extend to the TCI.

2.4.6 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention)

The Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter 1972, commonly referred to as the "London Convention", is one of the earliest global conventions aimed at protecting the marine environment from human-caused pollution. The convention entered into force in 1975. It primarily seeks to promote the effective control of all sources of marine pollution and emphasizes taking all feasible measures to prevent the pollution of the sea through the dumping of wastes and other matter.

As a British Overseas Territory, the TCI is included under the international commitments of the United Kingdom, which is a party to the Convention.

[48] TCI Ramsar Nature Reserve : https://www.visittci.com/north-caicos-middle-caicos/about/about-middle-caicos
[49] CDB: https://www.cbd.int/intro

2.4.7 Montreal Protocol on Substances that Deplete the Ozone Layer

The Montreal Protocol on Substances that Deplete the Ozone Layer is the landmark multilateral environmental agreement that regulates the production and consumption of nearly 100 man-made chemicals referred to as ozone-depleting substances (ODS)[50]. When released into the atmosphere, these chemicals damage the stratospheric ozone layer, the Earth's protective shield that protects human health and the environment from harmful levels of ultraviolet radiation from the sun.

Adopted on September 16th, 1987, the Protocol is to date one of the rare treaties to achieve universal ratification and has been highly successful, with a significant phaseout of several major ODS groups and a corresponding recovery of the ozone layer being observed.

The Protocol was ratified by the UK on December 16th, 1988 and its obligations under the Protocol extend to its Overseas Territories including the TCI.

2.4.8 Vienna Convention for the Protection of the Ozone Layer

The Vienna Convention for the Protection of the Ozone Layer, established on March 22nd, 1985, is an international framework convention that aims to facilitate cooperation and coordination among countries. It promotes this through systematic observations, targeted research, and the robust exchange of information concerning the impact of human activities on the ozone layer[51]. The convention emphasizes the importance of adopting proactive measures to mitigate activities identified as having potentially harmful effects on the ozone layer, thereby safeguarding this critical Earth shield for future generations.

The Convention was ratified by the UK on May 15th, 1987, and its obligations under the Convention extends to its Overseas Territories, including the TCI.

2.4.9 Basel Convention

The Basel Convention is an international treaty designed to regulate the movement and disposal of hazardous waste across borders. It was adopted in 1989 and came into force in 1992, with the goal of protecting human health and the environment from the dangers posed by hazardous and other wastes.

Turks and Caicos Islands are a British Overseas Territory and not a direct signatory to the Basel Convention. However, the United Kingdom is a party to the Convention, and its international treaties can be extended to its overseas territories if explicitly declared. At present, this extension has not been performed.

2.4.10 Kyoto Protocol and United Nations Framework Convention on Climate Change

The Kyoto Protocol was adopted on December 11th, 1997, and, following a complex ratification process, it came into force on February 16th, 2005[52].

In essence, the Kyoto Protocol implements the United Nations Framework Convention on Climate Change (UNFCCC) by obligating industrialized nations and economies in transition to limit and reduce their greenhouse gas (GHG) emissions according to specific targets. The UNFCCC itself merely requires the parties to implement mitigation policies and report on their progress periodically.

[50] United Nations Environment Programme: https://www.unep.org/ozonaction/who-we-are/about-montreal-protocol
[51] United Nations Environment Programme: https://ozone.unep.org/treaties/vienna-convention
[52] United Nations Climate Change: https://unfccc.int/kyoto_protocol

The Kyoto Protocol builds upon the principles and provisions of the UNFCCC, maintaining its annex-based framework. It specifically targets developed countries, placing a greater responsibility on them under the principle of "common but differentiated responsibilities and respective capabilities," acknowledging their significant contribution to current high GHG emission levels.

The UK ratified the Kyoto Protocol on May 31st , 2002, which means its obligations under the protocol extend to its overseas territories, such as the Turks and Caicos Islands. The United Kingdom is also a party to the UNFCCC, and the treaty applies to the islands as well.

2.4.11 International Covenant on Economic, Social and Cultural Rights

The International Covenant on Economic, Social and Cultural Rights (ICESCR) is a multilateral treaty adopted by the United Nations General Assembly (GA) on 16 December 1966 through GA Resolution 2200A (XXI), and came into force on 3 January 1976 [53]. It commits its parties to work toward the granting of economic, social, and cultural rights (ESCR) to all individuals including those living in Non-Self-Governing and Trust Territories. The rights include labour rights, the right to health, the right to education, and the right to an adequate standard of living.

The Covenant rights apply to everyone including non-nationals, such as refugees, asylum-seekers, stateless persons, migrant workers and victims of international trafficking, regardless of legal status and documentation[54].

As of February 2024, the Covenant has 172 parties, including the UK.

The Committee on Economic, Social and Cultural Rights is a body of human rights experts tasked with monitoring the implementation of the Covenant. It consists of 18 independent human rights experts, elected for four-year terms, with half the members elected every two years [55].

All states parties are required to submit regular reports to the Committee outlining the legislative, judicial, policy and other measures they have taken to implement the rights affirmed in the Covenant.

2.4.12 United Nations Convention on the Elimination of all Forms of Discrimination against Women

In 1986, the United Kingdom extended the United Nations Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) to the TCI. This is an international legal instrument that requires countries to eliminate discrimination against women and girls in all areas and promotes women's and girls' equal rights[56].

At the national level, the 2014 Sex Disqualification Removal Ordinance prohibits any disqualifications on grounds of sex and marriage (Art. 2).

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[53] ICESCR: https://www.refworld.org/legal/agreements/unga/1966/en/33423
[54] https://sherloc.unodc.org/cld/en/education/tertiary/tip-and-som/module-2/key-issues/looking-beyond-the-protocol.html.
[55] Economic and Social Council resolution 1985/17: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fap.ohchr.org%2Fdocuments%2FE%2FECOSOC%2Fresolutions%2FE-RES-1985-17.doc&wdOrigin=BROWSELINK
[56] CEDAW (UN-Women): https://www.unwomen.org/en/digital-library/publications/2016/12/cedaw-for-youth#:~:text=The%20Convention%20on%20the%20Elimination,women%27s%20and%20girls%27%20equal%20rights.

2.4.13 United Nations Convention on the Rights of the Child (UNCRC)

The United Nations Convention on the Rights of the Child (UNCRC) is an international human rights treaty which sets out the civil, political, economic, social, health and cultural rights of children. The convention defines a child as any human being under the age of eighteen, unless the age of majority is attained earlier under national legislation[57]. The UNCRC was ratified by the UK in 1991.

2.4.14 The Convention for the Protection of Human Rights and Fundamental Freedoms

The Convention for the Protection of Human Rights and Fundamental Freedoms, commonly known as the European Convention on Human Rights (ECHR), was signed in Rome on November 4, 1950 and entered into force on September 3, 1953. It was established by the Council of Europe to safeguard fundamental rights and freedoms across its member states[58].

The Convention was groundbreaking in international law, being the first treaty to give binding legal force to certain rights outlined in the Universal Declaration of Human Rights and to establish a supranational court—the European Court of Human Rights—to ensure compliance.

The ECHR applies to the Turks and Caicos Islands as a British Overseas Territory.

2.4.15 The International Convention on the Elimination of All Forms of Racial Discrimination

The International Convention on the Elimination of All Forms of Racial Discrimination (ICERD), adopted by the United Nations in 1965 and entering into force in 1969, is a cornerstone treaty in international human rights law. It commits its signatories to eliminate racial discrimination in all its forms and to promote understanding among all races.

The ICERD obliges states to condemn and combat racial discrimination through legislation, education, and policy. It also establishes the Committee on the Elimination of Racial Discrimination (CERD), which monitors implementation and can hear complaints from individuals or groups under certain conditions[59].

The United Kingdom, as a signatory to ICERD, extended the application of the Convention to its overseas territories, including TCI. While there is no explicit public record confirming the formal extension of ICERD to TCI, the TCI Human Rights Commission (TCIHRC) operates under the expectation that local laws comply with international human rights treaties extended to the Islands, including those like ICERD[60]. This means that, in practice, TCI is expected to uphold the principles of ICERD through its legal and institutional frameworks.

2.4.16 ILO Conventions

The ILO Declaration on Fundamental Principles and Rights at Work, adopted in 1998 and amended in 2022, is an expression of commitment by governments, employers' and workers' organizations to uphold basic human values - values that are vital to our social and economic lives. It affirms the obligations and commitments that are inherent in membership of the ILO, namely:

[57] UNCRC: https://www.ohchr.org/en/instruments-mechanisms/instruments/convention-rights-child
[58] ECHR: https://www.britannica.com/event/European-Convention-on-Human-Rights-Europe-1950 & https://www.coe.int/en/web/human-rights-convention/the-convention-in-1950
[59] ICERD : https://www.ohchr.org/en/instruments-mechanisms/instruments/international-convention-elimination-all-forms-racial
[60] TCIHRC: https://www.humanrightscommission.tc/advice-to-government/

- Freedom of association and collective bargaining;
- Elimination of forced or compulsory labor;
- Abolition of child labor;
- Elimination of discrimination in respect of employment and occupation.
- A safe and healthy working environment.

These five subjects are laid down in eleven "Fundamental Instruments":

- 1. Freedom of Association and Protection of the Right to Organize Convention, 1948 (No. 87)
- 2. Right to Organize and Collective Bargaining Convention, 1949 (No. 98)
- 3 and 4. Forced Labour Convention, 1930 (No. 29), and its 2014 Protocol
- 5. Abolition of Forced Labour Convention, 1957 (No. 105)
- 6. Minimum Age Convention, 1973 (No. 138)
- 7. Worst Forms of Child Labour Convention, 1999 (No. 182)
- 8. Equal Remuneration Convention, 1951 (No. 100)
- 9. Discrimination (Employment and Occupation) Convention, 1958 (No. 111)
- 10. Occupational Safety and Health Convention, 1981 (No. 155)
- 11. Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)

Another one hundred and eighty (180) ILO Conventions address a broad spectrum of labour issues, such as occupational safety and health, working hours, wages, and social security.

The TCI relies on both the United Kingdom's ratification and extension of international labour conventions and its domestic legislation to establish a framework for labour rights and protections. The following ILO conventions have been extended to the TCI[61]:

- ILO Convention No. 50 – Regulation of Certain Special Systems of Recruiting Workers
  Extension Date: 22 May 1939

- ILO Convention No. 87 – Freedom of Association and Protection of the Right to Organise
  Extension Date: 29 December 1958

- ILO Convention No. 98 – Right to Organise and Collective Bargaining
  Extension Date: 29 December 1958

While these conventions have been extended, certain Fundamental ILO Instruments / Conventions have not been explicitly extended to the TCI, namely the numbers 29, 105, 138, 182, 100 and 111. It is worth noting that, despite not being formally extended, the principles of ILO Conventions No. 100 and No. 111 and other key labour protections are incorporated into TCI's domestic legal framework, demonstrating TCI's commitment to upholding international labour standards. Notably:

- Employment Ordinance:
  - Provides the regulatory framework for employment relationships in TCI, covering terms such as employment particulars, remuneration, protection against unlawful discrimination, termination, and unfair dismissal

[61] Based on information kindly shared by Angy Been, Crown Counsel of the Attorney General's Chambers of the GOTCI via an e-mail dated April 9th, 2025

- Part II specifically addresses discrimination in employment
- Section 34, which has the objectives of giving effect to the provisions of the TCI Constitution; ILO Convention No. 111 on Discrimination (Employment and Occupation); ILO Convention No. 100 on Equal Remuneration; and certain provisions in the UN Convention on the Elimination of All Forms of Discrimination Against Women (1979).

- Constitution of the Turks and Caicos Islands:
  - Section 4: Protection from slavery and forced labour - (2) No person shall be required to perform forced or compulsory labour.

2.5 International E&S Standards relevant for the Project

The ESIA study was carried out taking into account consideration for best international E&S practice and standards, specifically the IFC Performance Standards (2012) and the CDB's E&S Review Procedures (2014).

2.5.1 IFC Performance Standards

IFC's eight Performance Standards (PS) on Environmental and Social Sustainability (2012) define the clients[62]' responsibilities for managing environmental and social risks of a planned project. They establish standards that the client must meet throughout the life of an investment by IFC.

Performance Standard PS 1 establishes the importance of (i) integrated assessment to identify the environmental and social impacts, risks, and opportunities of projects; (ii) effective community engagement through disclosure of project-related information and consultation with local communities on matters that directly affect them; and (iii) the client's management of environmental and social performance throughout the life of the project.

Performance Standards PS 2 to PS 8 establish objectives and requirements to avoid, minimize, and where residual impacts remain, to compensate or offset risks and impacts to workers, affected communities, and the environment. While all relevant environmental and social risks and potential impacts should be considered as part of the assessment (PS 1), Performance Standards 2 to 8 describe potential environmental and social risks and impacts that require specific attention. Where environmental or social risks and impacts are identified, the client is required to manage them through its Environmental and Social Management System (ESMS) consistent with PS 1.

A number of cross-cutting topics such as climate change, gender, human rights and water are addressed across multiple Performance Standards.

Table 2-2 summarises the objectives of each of the IFC PS and describes their applicability to the ISWM Project.

[62] Client refers in this context in a general fashion to the recipient of the loan.

Table 2-2: Objectives and applicability of the IFC PS to the Project

IFC Performance Standard	Objectives of the PS	Applicable to the ISWMP?
PS 1: Assessment and Management of Environmental and Social Risks and Impacts	Integrated identification and assessment of E&S impacts, risks, and opportunities of projects; effective community engagement through disclosure and consultation; promotion of the E&S performance management throughout the life of the project.	Yes. The Project entails E&S risks and impacts that shall be managed and presents opportunities to improve living conditions of the affected communities. Early and consistent community engagement is an essential part of the Project's successful impact management.
PS 2: Labor and Working Conditions	Promote the fair treatment, non-discrimination, and equal opportunity of workers; establish, maintain, and improve the worker-management relationship; promote compliance with national employment and labor laws; protect workers, including vulnerable categories of workers such as women workers, children and young workers, migrant workers, workers with disabilities, workers engaged by third parties, and workers in the client's supply chain; promote safe and healthy working conditions, and the health of workers; avoid the use of forced labor.	Yes. Workers are engaged especially during the construction phase of the Project. Those workers may include vulnerable categories of workers.
PS 3: Resource Efficiency and Pollution Prevention	Avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities; promote more sustainable use of resources, including energy and water; reduce project related GHG emissions.	Yes. The Project's construction and operation entail risks of pollution to air, soil and water that shall be managed.
PS 4: Community Health, Safety, and Security	Anticipate and avoid adverse impacts on the health and safety of the affected community; to ensure that the safeguarding of personnel and property is carried out in accordance with relevant human rights principles and in a manner that avoids or minimizes risks to the affected communities.	Yes. One of the Project's objectives is to reduce impacts on the health & safety of the community. The construction/rehabilitation of the Project structures may entail risks to the surrounding communities.
PS 5: Land Acquisition and Involuntary Resettlement	Avoid, and when avoidance is not possible, minimize displacement; to avoid forced eviction; anticipate and avoid, or minimize adverse social and economic impacts from land acquisition or restrictions on land use; providing compensation; ensuring that resettlement activities are implemented with appropriate disclosure of information, consultation, and the informed participation of those affected; improve, or restore, the livelihoods and standards of living of displaced persons; to improve living conditions among physically displaced persons.	Yes. A private house is located at the entrance of the Bottle Creek site in North Caicos. Given the planned improvements in the management of the site in both scenarios, a reduction in the present noise and air emissions from vehicles entering and leaving the site is expected. Therefore, a relocation of the house is not deemed necessary at this stage. There may be the need to install the new South Caicos facilities on land privately owned by the Sailrock Hotel. A Land Acquisition Plan is required.

IFC Performance Standard	Objectives of the PS	Applicable to the ISWMP?
		Economical displacement of waste pickers may happen in Providenciales. A Livelihood Restoration Plan is required.
PS 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources	Protect and conserve biodiversity; maintain the benefits from ecosystem services[63]; promote the sustainable management of living natural resources through the adoption of practices that integrate conservation needs and development priorities.	Yes. The Project's AoI is located within and nearby protected areas, where impacts on biodiversity may occur. The Project may affect ecosystem services, for example regulating services provided by the Salinas in Grand Turk and Salt Cay (flood control).
PS 7: Indigenous Peoples	Ensure that the development process fosters full respect for the human rights, dignity, aspirations, culture, and natural resource-based livelihoods of Indigenous Peoples; anticipate and avoid, minimize and/or compensate for adverse impacts of projects on communities of IPs, promote sustainable development benefits and opportunities for IPs in a culturally appropriate manner; establish and maintain an ongoing relationship based on Informed Consultation and Participation (ICP) with the IPs; ensure the Free, Prior, and Informed Consent (FPIC) of the affected communities of IPs; respect and preserve the culture, knowledge, and practices of IPs.	No. PS7 is not applicable to the ISWMP.
PS 8: Cultural Heritage	Protect cultural heritage from the adverse impacts of project activities and support its preservation; promote the equitable sharing of benefits from the use of cultural heritage.	Yes The Project's Area of Influence intersects with some cultural heritage areas. There is a possibility for chance finds during the Project's implementation.

2.5.2 CDB's E&S review procedures

To achieve the goals set out in the Environmental and Social Review Procedures (ESRP), the Caribbean Development Bank (CDB) has adopted eight Performance Requirements (PR) that set out the principles and goals for the proper management and treatment of environmental and social issues. The ESRP together with the PR are applicable to all operations, both financing and non-financing, carried out by the CDB, covering both the public and private sectors. In this context, the table below details the eight PRs and its objectives and how they relate to the ISWMP.

[63] Ecosystem services are the benefits that people, including businesses, derive from ecosystems. Ecosystem services are organized into four types: (i) provisioning services, which are the products people obtain from ecosystems; (ii) regulating services, which are the benefits people obtain from the regulation of ecosystem processes; (iii) cultural services, which are the nonmaterial benefits people obtain from ecosystems; and (iv) supporting services, which are the natural processes that maintain the other services. Examples are as follows: (i) provisioning services may include food, freshwater, timber, fibers, medicinal plants; (ii) regulating services may include surface water purification, carbon storage and sequestration, climate regulation, protection from natural hazards; (iii) cultural services may include natural areas that are sacred sites and areas of importance for recreation and aesthetic enjoyment; and (iv) supporting services may include soil formation, nutrient cycling, primary production (IFC PS 6, 2012).

Table 2-3: CDB's E&S Performance Requirements and their applicability to the Project

CDB's Performance Requirements	Objective	Applicability
1. Pollution Prevention, Control and Management	Avoid, prevent, eliminate, or minimize pollution of air, land, and water, reduce greenhouse gas emissions, and promote resource efficiency; enhance the environmental and social sustainability of projects financed by the CDB and aligning with international best practices; assure that the Borrower is responsible for identifying and managing the project's environmental and social requirements by employing financially feasible and cost-effective control methods throughout the project's lifecycle, either through a distinct environmental and social management system (ESMS) or a project-specific Environmental and Social Management Plan (ESMP).	Yes. The construction and operation of the Project entails risks of air, soil and water pollution that must be adequately managed.
2. Toxic and Hazardous Substances Control and Management	Assure that CDB financed projects avoid and/or minimise risks and impacts to human health and safety, and to the environment from the procurement, production, use, and disposal of toxic and hazardous materials and substances, including pesticides and Persistent Organic Pollutants (POPs).	Yes Toxic and hazardous substances may be required during the construction/rehabilitation of the sites.
3. Critical Natural Habitats, Biodiversity and Ecosystem Services	Identify and capitalize on opportunities to conserve and use biodiversity and natural habitats sustainably, with a priority on maintaining the benefits of essential ecosystem services, in alignment with the goals of the Convention on Biological Diversity; state that the CDB will not fund or support projects that significantly convert or degrade critical natural habitats or protected areas; encourage the conservation, protection, and management of natural resources; assuring ongoing engagement with affected parties on management of natural resources.	Yes. Protected areas are identified within the Area of Influence of several of the sites, including a Ramsar site, which support habitats for IUCN listed species, and endemic species of flora and fauna. Key Biodiversity Areas (KBAs) and Important Bird Areas (IBAs) are also within some of the sites' AoI. These areas could be considered Critical Habitats[64]. The Project may affect ecosystem services, for example regulating services provided by the Salinas in Grand Turk and Salt Cay (flood control).

[64] According with the CDB Environmental and Social Review Procedures, a Critical Habitat is defined as a natural or modified habitat with high biodiversity value that may include regionally significant and or highly threatened or unique eco-systems, as well as habitats important to globally significant concentrations of migratory species.

CDB's Performance Requirements	Objective	Applicability
4. Cultural Property and Heritage	Ensure that operations financed by the CDB adhere to relevant international conventions ratified by the Borrower, as well as national laws and regulations to prevent negative impacts on cultural resources; foster awareness and appreciation of cultural heritage; promote its protection, conservation, and responsible management, regardless of whether the cultural heritage is legally protected, internationally recognized, or has been previously disturbed.	Yes The Project's Area of Influence intersects with some cultural heritage areas.
5. Directly Affected Communities	Avoid or minimise adverse impacts on communities directly affected by development projects and ensure that they benefit from projects that affect them.	Yes. The Project's AoI includes communities that are exposed to the potential impacts of activities associated with the landfills and dumpsites.
6. Vulnerable Groups	Avoid negative impacts on groups that may be disadvantaged in the development process due to their age (children and the elderly), ethnicity, religion, culture, gender, physical and mental capacity, or lifestyle; ensure that, in Bank-financed development projects that are likely to have significant impacts on vulnerable groups, especially those below the poverty line, landless, elderly, women and children, disabled, and Indigenous Peoples (IPs), special attention is paid to ensure that they are not disadvantaged.	Yes The Project has potential to negatively affect vulnerable groups (migrant workers without status in Providenciales - waste pickers). A Livelihood Restoration Plan is required.
7. Land Acquisition and Resettlement	Ensure that, in cases where involuntary displacement or poorly planned resettlement initiatives are unavoidable, people affected by land acquisition or involuntary resettlement, including squatters, are consulted, and fairly compensated for the loss of land and other assets taken for development purposes; ensure that persons affected by both physical displacement (relocation, loss of residential or shelter land) and economic displacement (loss of land, assets, access to assets, sources of income or livelihoods) resulting from involuntary land acquisition or involuntary restrictions on land use or access to legally designated parks and protected areas have the opportunity to restore or improve their incomes and living standards.	Yes A private house is located at the entrance of the of the Bottle Creek site in North Caicos. Given the planned improvements in the management of the site in both scenarios, a reduction in the present noise and air emissions from vehicles entering and leaving the site is expected. Therefore, a relocation of the house is not deemed necessary at this stage. There may be the need to install the new South Caicos facilities on land privately owned by the Sailrock Hotel. A Land Acquisition Plan is required. Economical displacement of waste pickers may happen in Providenciales. A Livelihood Restoration Plan is required.

CDB's Performance Requirements	Objective	Applicability
8. Community and Workers Health and Safety	Assure provision of workers with a safe and healthy work environment by identifying and managing the risks (biological, physical, chemical, or radiological) associated with or inherent to the specific sector; prevention of occupational accidents, injuries, and illnesses through the use of personal protective equipment, controls to avoid or minimize risks, and the implementation of appropriate emergency response plans and procedures; assure the assessment and identification of potential risks to the safety of affected communities during all phases of the project life cycle for both natural and accidental hazards.	Yes. One of the Project's objectives is to reduce impacts on the health & safety of the community. The construction/rehabilitation of the Project structures may entail risks to the workers and the surrounding communities.

2.6 Policy and Legal Framework's Relevance to the ISWMP

This chapter presents an analysis of how the legal and policy frameworks interact with the ISWMP, in particular, their practical implications for the Project's stakeholders.

Table 2-4: The TCI's policy and legal framework's relevance to the ISWMP

Legal document	Objectives	Applicability to ISWMP	Relevance to stakeholders/ groups
Turks and Caicos Islands Constitution Order 2011	Article 18 of the Constitution addresses protection of the environment.	Yes	The directly affected population such as those who live in Wheeland 1 and 2, and the indirectly affected
	Article 16.3 prohibits discrimination on the grounds of race, national or social origin, political or other opinion, colour, religion, language, creed, association with a national minority, property, sex, sexual orientation, birth or other status subjected to disabilities or restrictions	Yes - as it protects potential service providers and workforce from discrimination	All who may seek to work within the waste management system, such as collectors, sorters, recyclers
	The authority to grant Islander status is provided for in section 103 of the Constitution and detailed in the Turks and Caicos Islander Status Ordinance 2015	Yes- important for migrants who wish to take advantage of opportunities offered through the ISWMP	Migrant workers both documented and undocumented. Members of the Haitian community.
Public and Environmental Health Ordinance	Chapter 8.04 of the Public and Environmental Health Ordinance (31 August 2009) entails a section dedicated to waste disposal and hazardous substances and articles (Part VIII) including the following sub-sections: waste collection service (8.48), provision of receptacles for waste (8.49), and waste disposal sites and penalties for improper disposal of waste (8.50).	Yes - provides guidance on waste management	Directly relevant to the GOTCI, specifically the EHD that manages the ISWMP and the dump sites/future landfills. Indirectly relevant to those directly and indirectly affected by the Project (neighbours to the sites but also the general population whose life quality depends on

Legal document	Objectives	Applicability to ISWMP	Relevance to stakeholders/ groups
	Sub-section 8.50 prescribes that Crown Lands may be designated for use as waste disposal sites and as collection areas for recyclable materials.	Yes - important for issues of location landfill sites	an adequate waste management throughout the islands).
The Employment Ordinance of the TCI and the Employment Order (appended to the Ordinance)	The Employment Ordinance of the TCI and the Employment Order (appended to the Ordinance) provides the regulatory framework for employment law within the Islands.	Yes- the Employment Ordinance 2009 protects a woman's right to equal pay and provides women who are being exploited as cheap labour recourse to the Courts.	Women who are seeking employment or engaged in livelihood activities within the integrated waste management system.
International Covenant on Economic, Social and Cultural Rights	Commits its parties to work toward the granting of economic, social, and cultural rights (ESCR) to all individuals including those living in Non-Self-Governing and Trust Territories. The rights include labour rights, the right to health, the right to education, and the right to an adequate standard of living. The Covenant rights apply to everyone including non-nationals, such as refugees, asylum-seekers, stateless persons, migrant workers and victims of international trafficking, regardless of legal status and documentation.	Yes - the UK is a party to the Covenant and therefore its dispositions apply in the TCI	Turks and Caicos Islanders, both males and females, youth, persons living with disabilities and undocumented migrant workers in the Turks and Caicos Islands.
Domestic Violence Protocol	Guides stakeholders from the social, health, judicial, and police sectors to respond effectively to signs of domestic violence.	These two pieces of legislation are to be gazetted in 2024. Together they will strengthen the mandate to mainstream gender equality in the TCI fabric	Women and female youth who wish to participate in the ISWMP will benefit through the safeguarding of their rights.
National Gender Equality Policy	Sets out the vision and actions to tackle the persistent gendered inequalities women, girls, and men face across their lives		Will be of relevance to women and female and male youth who wish to seek a livelihood as part of the ISWMP.
Sexual Offences Ordinance 2020	An ordinance to make provisions concerning sexual offences, their prevention, and the protection of women and children from harm from other sexual acts, and for connected purposes.	Yes - relevant for protection of women employees in the ISWMP	The reduction of SGBV empowers women to be full actors in their society
Children (care and protection) (amendment) ordinance 2020	Gives formation of the Board to govern the Safety of Children in the Territory. Provides an overarching approach to child safeguarding and guardianship.	Yes - relevant should there be any breaches of employment of children	Safeguarding children from abuse as workers in the ISWMP who may be attracted to or enticed to work in some aspect of the ISWMP.

3 Location and technical description of the Project

The ISWM Project extends to the islands of Providenciales, North Caicos, Middle Caicos, South Caicos, Grand Turk and Salt Cay. The Project covers rehabilitation, construction, improved or new operation, and/or decommissioning measures on the following seven waste disposal sites (ISWMP sites):

- Providenciales site (Providenciales Island)
- Kew site (North Caicos Island)
- Bottle Creek site (North Caicos Island)
- Middle Caicos site (Middle Caicos Island)
- South Caicos site (South Caicos Island)
- Grand Turk site (Grand Turk Island)
- Salt Cay site (Salt Cay Island)

The spatial boundaries of the ESIA cover these six islands and the respective seven ISWMP sites.

The limiting factors of the TCI overall system have been found such as to exclude the possibility, at this stage, of implementing the ISWMP based on technologically sophisticated systems (e.g. incineration, mechanical-biological treatment). At the same time limited and relatively easy solutions can be implemented to overcome the imminent emergency and gain the necessary time to develop a sufficiently strong system.

The ISWMP sites have grown organically from unofficial disposal sites to designated disposal sites. However, none of them has been designed in accordance with international best standards for landfill operations. Therefore, none of them is equipped with a membrane to prevent leachate migrating into the soil and groundwater.

In addition to the seven disposal sites listed, three unauthorised sites have been identified in the Providenciales, North Caicos, and Middle Caicos islands. These are mainly deposits of scrap vehicles (ELVs) and rubble. The complete and permanent closure of these three sites is recommended by the Main Consultant, and therefore no rehabilitation or construction measures will be applied. Environmental impacts of the present system are mainly generated by the official disposal sites, while illegal dumping practices appears to be a secondary non relevant factor. For this reason, an impact assessment on these sites is not justifiable and the three illegal disposal sites were excluded from the scope of work during the Inception stage.

Figure 3-1 shows the location of the seven waste disposal sites (ISWMP sites).

The next Chapters describe relevant technical characteristics of each of the seven Project sites based on reports by the Main Consultant and site visits by FICHTNER. Further details on the sites' physical, biological and human environment are provided in Chapter 5.

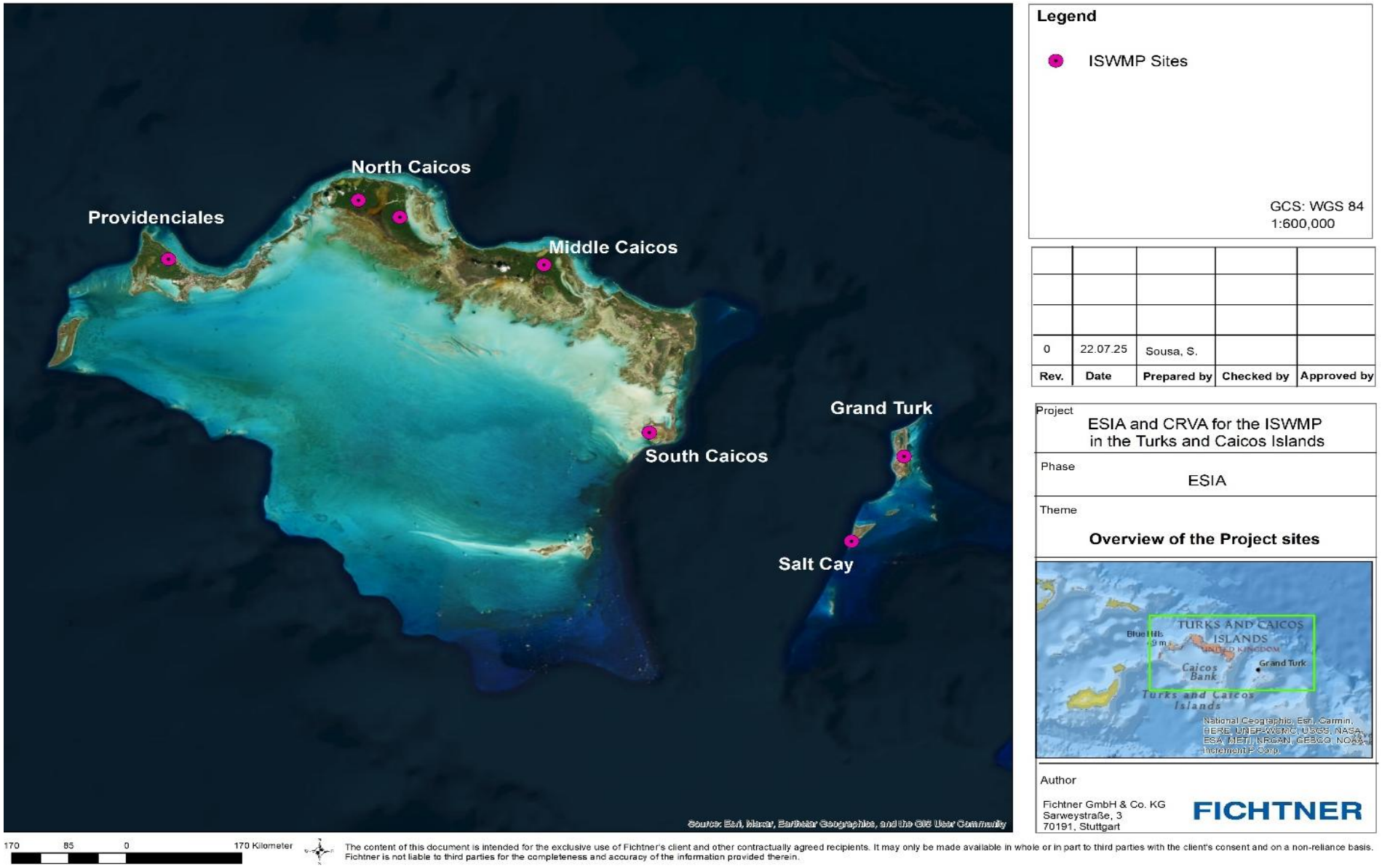


Figure 3-1: Location of the ISWMP sites

3.1 Overview of the ISWMP sites

The following standardized site review tables describe the main characteristics of each of the seven ISWMP sites for a quick reference. Further details are provided in Chapters 0 to 3.7.

Table 3-1: Standardized review table of the IWMP sites - Providenciales dumpsite

Category	Key Criteria	Assessment (Providenciales)
Site Characteristics	Location, land use, sensitive receptors nearby	Located near Wheeland community; adjacent to residential areas, potential impact on groundwater and surrounding environment
Current Status	Waste type/volume, infrastructure, operations	Largest and most problematic site in TCI; uncontrolled dumping of mixed waste (including hazardous & medical); no separation; no weighbridge; no drainage; limited/no record-keeping
Environmental Risks	Air, water, soil, biodiversity	Severe: uncontrolled underground fires; risk of groundwater and surface water contamination; uncontrolled leachate; vector breeding grounds; significant air pollution
Social Risks	Public and workers health, nuisance, community concerns	High risk: direct exposure of nearby residents to smoke, odors, pests; reduced quality of life; potential land-use conflicts; OHS risks
Proposed Interventions	Closure, rehabilitation, new facilities	Comprehensive rehabilitation (fire extinguishing, reshaping waste, improved drainage) and further exploitation with improved operational practices.; new Integrated Waste Recycling Centre (IWRC) adjacent, including composting, material recovery, hazardous waste storage.
Climate/Disaster Risks	Flooding, storms, hurricane debris	Current site vulnerable to storm and flooding; resilience measures proposed; risk of disaster waste accumulation
Compliance & Monitoring	Alignment with standards, E&S safeguards	Current site far below IFC/World Bank standards; interventions propose gradual alignment (structured tipping, compaction, covering, supervision); monitoring systems need to be established
Residual Risk & Sustainability	Long-term viability, O&M, financing	Even with rehabilitation, site cannot be fully transformed into a sanitary landfill; improvements will extend lifespan and reduce risks but continued O&M and supervision essential; requires strong enforcement and financing mechanisms

Table 3-2: Standardized review table of the IWMP sites - North Caicos Kew dumpsite

Category	Key Criteria	Assessment (North Caicos Kew)
Site Characteristics	Location, land use, sensitive receptors nearby	Located within the Kew community in crown land classified as Park and Open Space; adjacent to a cemetery, 300 m from residential areas and 800 m from a government farm; potential impact on groundwater and surrounding environment
Current Status	Waste type/volume, infrastructure, operations	6,300 m3 (uncompacted) of waste deposited per month; trenches up to 3 meters deep; no access control, weighbridge or waste recording system
Environmental Risks	Air, water, soil, biodiversity	Waste is regularly burned (air pollution, soil contamination)
Social Risks	Public and workers health, nuisance, community concerns	OHS risk (no PPE is used), public health risk,

Category	Key Criteria	Assessment (North Caicos Kew)
Proposed Interventions	Closure, rehabilitation, new facilities	Decommissioning (closure) consisting of: general reshaping; removal of bulky waste; transfer of bulky waste to Providenciales when facilities become available; replanting the site with native vegetation. Underlying waste cannot be removed. No further construction possible on the site.
Climate/Disaster Risks	Flooding, storms, hurricane debris	Not evaluated
Compliance & Monitoring	Alignment with standards, E&S safeguards	After closure, monitoring is required to avoid further illegal dumping.
Residual Risk & Sustainability	Long-term viability, O&M, financing	Site will be decommissioned (otherwise exhaustion to be reached by 2029) and shall be managed by the District Commissioner.

Table 3-3: Standardized review table of the IWMP sites - North Caicos Bottle Creek dumpsite

Category	Key Criteria	Assessment (North Caicos Bottle Creek)
Site Characteristics	Location, land use, sensitive receptors nearby	Located close to the community of Bottle Creek (ca. 1 km), uphill from the Bottle Creek Pineyard.
Current Status	Waste type/volume, infrastructure, operations	Size of 1.5 ha mostly occupied by ELVs and other bulky materials. No access control, weighbridge or waste recording system. MSW is regularly burned.
Environmental Risks	Air, water, soil, biodiversity	Risk of fires at the Pineyard, air pollution and soil contamination caused by regular burning of municipal solid waste
Social Risks	Public and workers health, nuisance, community concerns	OHS risk (no PPE is used), public health risk
Proposed Interventions	Closure, rehabilitation, new facilities	Decommissioning (closure) and construction of a new engineered landfill including bottom lining, drainage, leachate drainage and leachate treatment with a constructed wetland; and waste management facilities: integrated Civic Amenity Site and Temporary Storage Site; Construction and Demolition Waste Center; small windrow Composting Plan.
Climate/Disaster Risks	Flooding, storms, hurricane debris	Current site vulnerable to storm and flooding; resilience measures proposed; risk of disaster waste accumulation
Compliance & Monitoring	Alignment with standards, E&S safeguards	After closure, monitoring is required to avoid further illegal dumping.
Residual Risk & Sustainability	Long-term viability, O&M, financing	State-of-the-art O&M is required to keep the standards of the landfill as planned. A landfill extension shall be planned in adjacent land already reserved for the purpose.

Table 3-4: Standardized review table of the IWMP sites - Middle Caicos dumpsite

Category	Key Criteria	Assessment (Middle Caicos)
Site Characteristics	Location, land use, sensitive receptors nearby	Located between Bambarra (2,500 m away) and Lorimers (1,700 m away), adjacent to a small wetland; site consists of a depression that appears to be a former quarry.
Current Status	Waste type/volume, infrastructure, operations	Waste is randomly deposited with no control and is regularly set on fire; absence of mechanical equipment, weighbridge, levelling, compaction, staff and recordings.
Environmental Risks	Air, water, soil, biodiversity	Waste is regularly burned (air pollution, soil contamination). Ramsar site located 1,5 km away - no direct impacts detected; adjacent wetland has been an habitat for a near-threatened species of duck - risk of localized habitat disruption.
Social Risks	Public and workers health, nuisance, community concerns	Public health risk
Proposed Interventions	Closure, rehabilitation, new facilities	Decommissioning (closure): dumpsite will be reshaped and cleared, and the waste will be moved to Bottle Creek. Bulky materials will be temporarily piled on site and then transferred to the recovery facilities in Providenciales when completed. A gate and fence will be installed.
Climate/Disaster Risks	Flooding, storms, hurricane debris	Not evaluated
Compliance & Monitoring	Alignment with standards, E&S safeguards	After closure, monitoring is required to avoid further illegal dumping.
Residual Risk & Sustainability	Long-term viability, O&M, financing	Site will be decommissioned and shall be managed by the District Commissioner.

Table 3-5: Standardized review table of the IWMP sites - South Caicos dumpsite

Category	Key Criteria	Assessment (South Caicos)
Site Characteristics	Location, land use, sensitive receptors nearby	Located in ca. 100 acres of privately owned land; airstrip appr. 700 m away; closest buildings appr. 200 m away. Wooden gate, no fence; entrance control during working hours.
Current Status	Waste type/volume, infrastructure, operations	Limited mechanical handling of the waste. Some evidence of burning. Absence of weighbridge and records.
Environmental Risks	Air, water, soil, biodiversity	Air and soil pollution; groundwater contamination
Social Risks	Public and workers health, nuisance, community concerns	OHS risks: PPE usage is not enforced. Waste pickers have been seen at the site recovering metals - risk of livelihood loss.
Proposed Interventions	Closure, rehabilitation, new facilities	Dumpsite will be closed and replaced with an integrated Transfer Station (TS), Civic Amenity Site (CAS), Temporary Storage Site (TSS), a Construction and Demolition Waste (CDW) Centre, and a Composting Facility (CF). Decommissioning works will include general reshaping, clearing of the area of the active site and covering with soil. Bulky materials will be temporarily piled on the site and then transferred to the recovery facilities in Providenciales when completed. Underlying waste will not be removed.

Category	Key Criteria	Assessment (South Caicos)
Climate/Disaster Risks	Flooding, storms, hurricane debris	Not evaluated
Compliance & Monitoring	Alignment with standards, E&S safeguards	After closure, monitoring is required to avoid further illegal dumping. The new facilities will be installed according to the best-practice available in the islands. Monitoring of the operation is required.
Residual Risk & Sustainability	Long-term viability, O&M, financing	In the future, the South Caicos previous dumpsite can only be used for green and recreational areas, and shall be managed by the District Commissioner. The transfer station will, on the other hand, be managed by the EHD.

Table 3-6: Standardized review table of the IWMP sites - Grand Turk dumpsite

Category	Key Criteria	Assessment (Grand Turk)
Site Characteristics	Location, land use, sensitive receptors nearby	8 hectares / 20 acres wide within the fenced area, and the waste deposit expands over about 4.6 hectares / 11.4 acres. Site is partially fenced, but fence is damaged, and has a gate.
Current Status	Waste type/volume, infrastructure, operations	2016 (the most recently available) data: over 15 tonnes waste per day. No weighbridge. Site has supervised access and designated areas for the disposal of specific types of waste. It is privately operated. Operational machines are available. Waste is disposed in an organized way and is regularly compacted. Soil is regularly used for waste cover. There are no signs of major instability on the peripheral slopes of the waste mass
Environmental Risks	Air, water, soil, biodiversity	Horses and donkeys enter the site and spread garbage in the exterior. Salinas located nearby: risk of water pollution.
Social Risks	Public and workers health, nuisance, community concerns	OHS risks: PPE usage is not enforced. No waste pickers registered. Nearness to Cockburn Town exposes population to air emissions, noise, and traffic hazards.
Proposed Interventions	Closure, rehabilitation, new facilities	Comprehensive rehabilitation (fire extinguishing, reshaping waste for vertical expansion, improved drainage) and further exploitation. Land reclamation using CDW. Buffer zone. Improved operational practices. A Civic Amenity Site (CAS), a Temporary Storage Site (TSS), a Composting Plant and a CDW centre are planned.
Climate/Disaster Risks	Flooding, storms, hurricane debris	Current site vulnerable to storm, flooding and sea-level rise; resilience measures proposed; risk of disaster waste accumulation
Compliance & Monitoring	Alignment with standards, E&S safeguards	A professional operation service of the site under the competent supervision of the relevant authority shall be achieved, implying only a partial revision of the present landfill operation contract.
Residual Risk & Sustainability	Long-term viability, O&M, financing	The dumpsite can be used for another 20 years if suggested improvements are implemented.

Table 3-7: Standardized review table of the IWMP sites - Salt Cay dumpsite

Category	Key Criteria	Assessment (Salt Cay)
Site Characteristics	Location, land use, sensitive receptors nearby	Balfour Town is located ca. 700 m to the north of the dumpsite; deposition of waste began in 2000.
Current Status	Waste type/volume, infrastructure, operations	No access control (poorly fenced) and no waste records. A backhoe is occasionally used to pile up the waste. A contractor is hired by EHD for collecting and delivering the waste to the site and keep the area in order
Environmental Risks	Air, water, soil, biodiversity	Occasional burning of waste: air pollution; soil pollution; groundwater pollution risks; donkeys scavenge the site
Social Risks	Public and workers health, nuisance, community concerns	OHS risks for contractor hired to deliver the waste; no pickers testified.
Proposed Interventions	Closure, rehabilitation, new facilities	Decommissioning (closure): excavation of a trench for the disposal of the existing waste and general reshaping and clearing of the area, Bulky materials will be loaded into a container and then barged to Grand Turk for disposal or further shipping to Providenciales. A Civic Amenity Site (CAS), a Temporary Storage Site (TSS), a Composting Facility (CF) and a Construction and Demolition Waste (CDW) area are planned.
Climate/Disaster Risks	Flooding, storms, hurricane debris	Not evaluated
Compliance & Monitoring	Alignment with standards, E&S safeguards	After closure, monitoring is required to avoid further illegal dumping.
Residual Risk & Sustainability	Long-term viability, O&M, financing	The rehabilitated site shall in the future be managed by the District Commissioner.

3.2 Providenciales

3.2.1 Present situation in Providenciales

The Providenciales dumpsite is located in the Wheeland settlement in close vicinity of the Wheeland Phase 1 and Phase 2 communities (the closest houses are merely 160 m away) (Figure 3-2). The site is 22 ha wide within the fenced area and has been randomly exploited during the last 20 years.



Source: Main Consultant, May 2024

Figure 3-2: The Providenciales dumpsite and the nearby Wheeland community

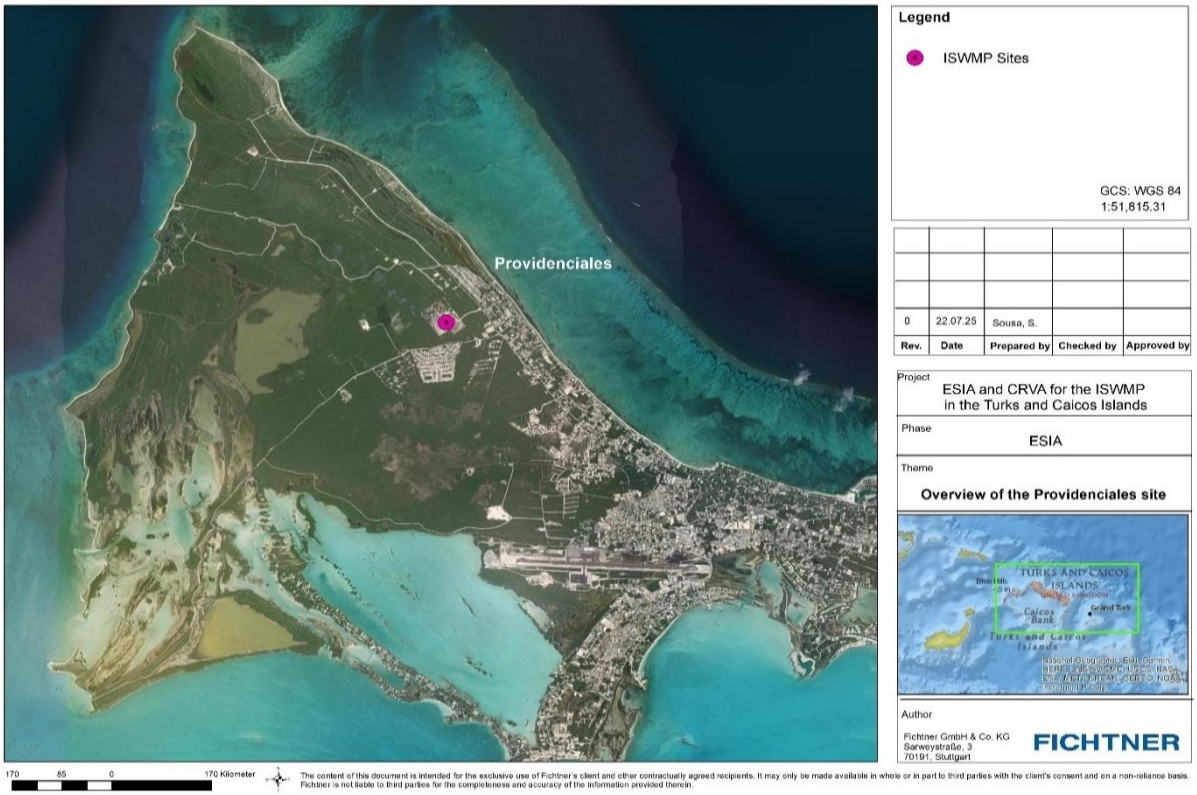


Figure 3-3: Overview of the location of the dumpsite within Providenciales

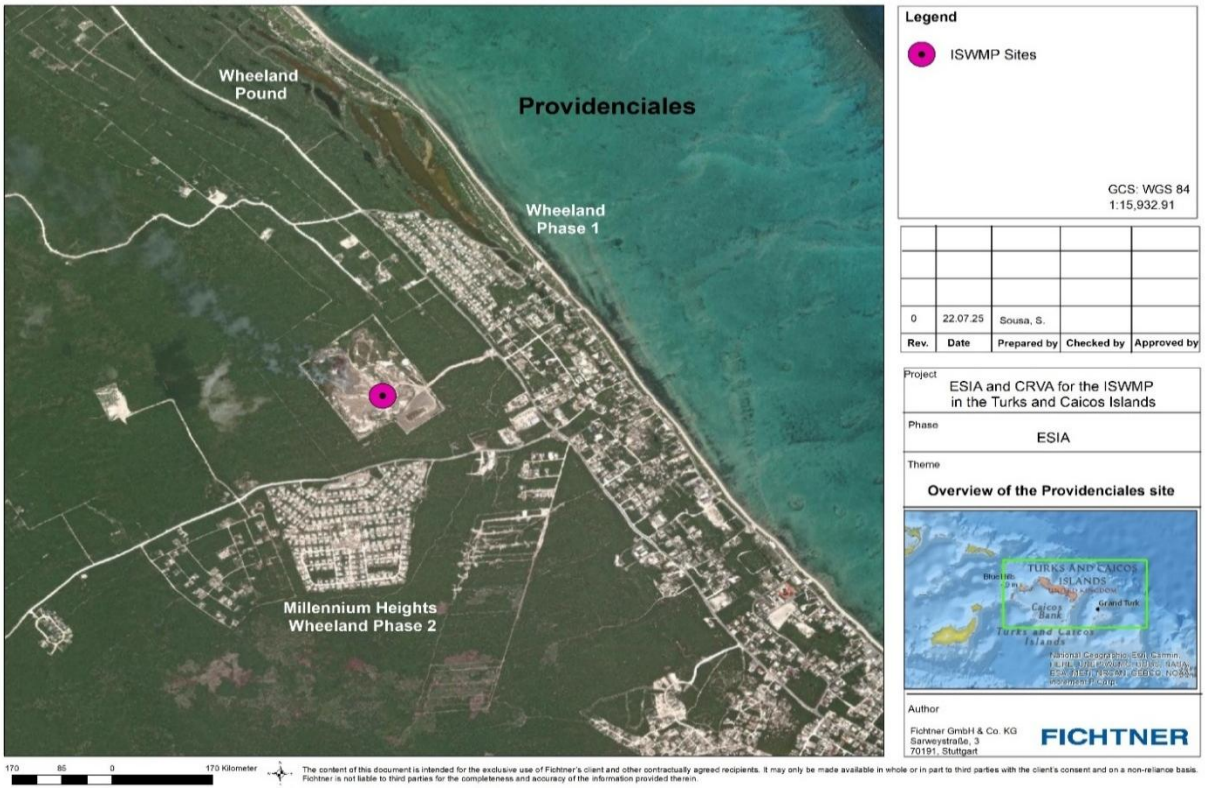


Figure 3-4: Overview of the location of the dumpsite within Providenciales: close-up

Data collected by the EHD in 2016 indicate that the average daily amounts of waste disposed at the site exceeded 130 tonnes, representing a substantial increase from 12 tonnes per day in 2005. There is presently no updated data of the amount of waste deposited due, for example, to poor functioning of the two existing weighbridges.

The fence has been damaged partially by non-authorized people entering the site or by fires. Piles of ELVs, tyres and bulky materials of different origin apparently located and operated without a recognisable rationale subtracting areas and volumes for the disposal of MSW.

Disposal of waste at the site started in the year 2000 and until today the waste access is not checked, disposal is not supervised and is not prevented outside of the opening hours. A co-disposal of every different fraction of waste (MSW, CDW, GW, etc.) without specific disposal practices is done. As a result of this unplanned disposal of the waste, the waste deposit has a very irregular surface and many areas have been left behind incomplete. Waste cells are created without guiding planned criteria but rather where apparently more convenient in the short term.

No records on the number or type of trucks and waste entering are presently kept, neither by the EHD nor by the Contractor or the Security.

The drainage of rainwater is neither addressed nor managed at the site, including both the perimeter and waste disposal operations areas. The unplanned exploitation of the site has determined a random drainage pattern with low ponding areas within the waste mass and reduced runoff. This lack of surface drainage results in an increase in infiltration of water through the waste and the consequent generation of leachate and infiltration of contaminants into the groundwater.

The slopes are kept at a safe angle, and the waste deposit is shallow (from 6 m to 8 m) all over the site.

Mechanical equipment is present and available. The size of the dozer, nevertheless, appears to be inadequate to provide adequate compaction and the water bowser's characteristics and mechanical conditions are insufficient to cater for fire extinguishing. The site is equipped with two weighbridges, but both are not functioning. The weighbridge office is reportedly unfit for use due to widespread mould.

The disposal of the waste follows a basic scheme, and no compaction is applied. No specific tipping plan or programmes are in place. Cover material is supplied and applied regularly, but with an insufficient final cover in the abandoned areas (generally about 30 cm on top areas and upper portions of slopes). Also, soil cover consists mostly of crushed limestone of all size from sand to boulders (from harbours dredging), very permeable to air and water. At the opposite, large volumes of soils have been found at the bottom and surrounding areas.

Fire is the most relevant and negative aspect of the Providenciales disposal site. Smouldering internal fires are present across the site, with visible cracks and sink holes in the waste cover, smoke and evidence of burning - mostly in the peripheral slopes but also in internal areas. Surface fires are also evident. Medical waste is burnt in an open pit but also evidences of burning outside the pit were seen. Two Fire Extinguishing Programs were carried out in 2023 and 2024 by the Main Consultant which extinguished part of the fires.

Some staff is using basic Personal Protective Equipment (PPE) but the aspect does not seem to be regulated. Toilets and handwashing stations do not exist except inside the unusable weighbridge office.

TCI Green Ecological Corporation Limited has been managing the Providenciales landfill since March 2024.

3.2.2 Planned rehabilitation measures in Providenciales

The Providenciales site shall be rehabilitated through fire extinguishing, reshaping of the waste pile and removal of the undesired bulky waste on site. The Main Consultant highlights that extinguishing all the active deep fires still present on the Providenciales site is a priority and a preliminary task to be carried out to pursue the requested reshaping of the site and allow the correct rehabilitation of the site. In this sense, extinguish all the active deep fires on site will bring up the following foreseen benefits:

- Allows a needed reshaping of the site
- Spreading and laying the excavated waste for fire extinguishing purposes with adequate techniques allows more than 30% of additional volume at the dumpsite
- Old excavated waste that is largely biologically stabilised, can be used as a bottom barrier to limit infiltration of contaminants leached from more recent waste into the groundwater, and can provide a much needed material for the intermediate and final cover of the site, being a good support for establishing a vegetative cover, crucial for preventing erosion of the cover and to minimise water infiltration.

Stormwater drainage and leachate management

A system of surface drains shall be constructed to cater for more intense rainy events. Furthermore, at the toe of the slopes, percolations pits shall be excavated to facilitate the drainage of the stormwater into the ground.

While the Main Consultant is of the opinion that leachate collection cannot be reasonably implemented at the Providenciales dumpsite, operational attenuation measures can nevertheless be implemented to reduce leachate generation due to the infiltration of rain water and also to reduce the polluting content of the leachate generated (procedures and guidelines to be included within the Operational and Maintenance Manual to be prepared by the Main Consultant).

3.2.3 Planned operational improvements in Providenciales

According to the Preliminary Design Report, the design of the Providenciales site focuses on the rehabilitation and further exploitation of the present site. While the Main Consultant opines that a full transformation into a sanitary landfill is not reasonably and economically feasible, significant improvements can be achieved through a more carefully planned operation service and filling plan. The main improvements suggested are:

- A more rational and planned disposal of the waste enabling the exploitation of additional volumes
- A more accurate disposal of the waste focused on maximising the runoff and limiting the infiltration to substantially reduce the transfer of contaminants to the underlying groundwater body (solutions to be included within the Operational and Maintenance Manual to be prepared by the Main Consultant).

The final shape of the landfill shall be designed, where possible, to harmonise with the surrounding landscape. This is particularly true when, such as the case of Providenciales, the landfill is located in or near sensitive areas such as residential, naturalistic or touristic areas. The chosen shape as per the Preliminary Design tries to replicate the local hilly landscape with relatively gentle slopes and avoiding the usual geometrical shape ("ziggurat") commonly adopted for the maximisation of the volume. The gentle slopes of the proposed final shape of the site are also designed to allow a sufficient runoff avoiding excessive erosion.

3.2.4 Planned new facilities in Providenciales

An Integrated Waste Recycling Centre (IWRC) will be located directly near the Providenciales landfill (Figure 3-5). Initially, only half of the proposed allocated area will be required, with the remaining reserved for future development. The facilities to be included in the IWRC are described in Table 3-1.



Source: Preliminary Design Report, Revision 2 (Joint Venture HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., May 2025)

Figure 3-5: Location of the IWRC in Providenciales between the dumpsite and Wheeland Phase 1

Table 3-8: Waste management facilities to be included in Providenciales IWRC

Facility	Waste treated	Destiny	Notes
Composting Plant 3.6 ha (330 × 110 m)	▪ Green waste ▪ Non-pressure treated timber ▪ Cardboard	▪ Production of mulch and compost for commercial use	Initial predictions suggest around 30 tonnes/day of green waste and similar organic material is immediately available for diversion to composting in Providenciales increasing to 60 tonnes/day over the next 20 years. Includes receiving and storage area, shredding, mixing, windrow composting, screening, curing and storage and loading. This will involve the use of agricultural type machinery to mechanically lift, shred, turn and screen the compost in long windrows over a 3-month period before sale across the island. Active composting will be covered during rainy season with windrow fabric covers and run off waters will be captured and aerated to prevent biological loading of receiving waters.
CWD (Construction and Demolition Waste) Plant 3.6 ha (330 × 110 m)	▪ Soil ▪ Concrete ▪ Timber ▪ Mix ▪ Glass	▪ Crushing and selection of CDW ▪ Grinding and sifting of glass	Shall include separation of reusable materials for second hand market. Ground glass for aggregate local market.
Material Recovery Facility (MRF) 3.3 ha (330 × 100 m)	▪ Scrap metals ▪ ELVs (End-of-life vehicles) ▪ Tyres ▪ EEE (electric and electronic equipment) waste ▪ Batteries ▪ Aluminium cans ▪ Steel cans ▪ Mechanical oils ▪ Food oils	▪ Dismantling and repair of EEE waste ▪ Bailing of scrap metals and ELV ▪ Bailing of tyres ▪ Storage of oils ▪ Storage of batteries	All the conditioned materials are for export toward appropriate recycling plants with the exception of repaired EEE and spare parts for local second hand and repair market.
Hazardous Waste Interim Storage Facility (included into the MRF)	▪ Pesticide and other hazardous chemicals and containers ▪ Motor oils ▪ Batteries ▪ Hazardous EEE waste components	Packaging and labelling of hazardous wastes for Basel Convention compliant shipment to compliant disposal	Shall require a ventilated secure storage building with fire walls and liquid bunding. To be operated incompliance with Basel convention requirements.

Facility	Waste treated	Destiny	Notes
Civic Amenity Site (CAS) 56x55m	▪ Green waste (2 containers) ▪ Electric and Electronic Equipment waste ▪ PET ▪ Aluminium ▪ Glass ▪ Household hazardous waste ▪ bulky waste ▪ white/brown goods ▪ Oil from citizens	Aimed to allow private citizens and small businesses to deliver their waste in separate fractions.	To be located at the entrance of the IWRC site along the Millenium Highway. Will be developed by upgrading the existing simple facility. The CAS will be fenced and attended full time.

Source: Adapted from the Preliminary Design Report, Revision 2 (Joint Venture HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., May 2025)

The IWRC will receive, process, and dispatch all segregated materials received from all Civic Amenity Sites (CAS) and Temporary Storage Sites (TSS) throughout TCI. The main activities will include:

- Receiving waste from TSS and CAS in storage yard
- Depollution and quality sorting (removing contaminants) (all materials)
- Pressing and bailing for export (ELVs, aluminium, PET, tyres)
- Inspection and refurbishment for sale (WEEE, White and Brown goods, bulky items)
- Glass grinding and sifting to produce construction aggregate for local sale
- Repackaging, labelling, safe interim storage and processing for Basel-compliant shipping (oil, WEEE, hazardous wastes)
- Packaging and shipment.

The whole IWRC area will be properly organised to include the required access roads. A vegetated perimeter buffer area will be included around the site to adequately protect the neighbouring residential areas. A perimeter surface water drainage channel will collect water from internal roads and runoff.

3.3 North Caicos - Kew and Bottle Creek

In North Caicos, two dumpsites have been identified as part of the ISWMP: Kew and Bottle Creek (Figure 3-6). The Flamingo Pond and the North Caicos international airport are located between both sites.

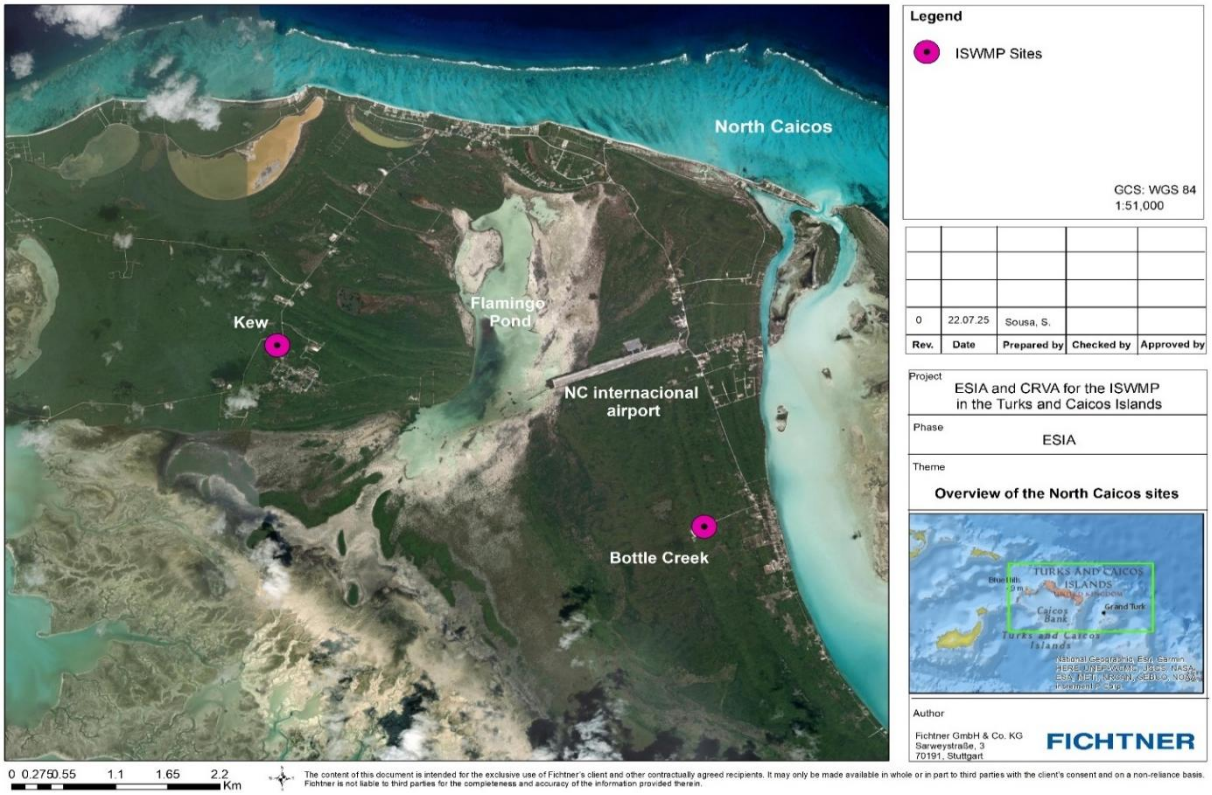


Figure 3-6: Overview of the location of the dumpsites Kew and Bottle Creek within North Caicos

3.3.1 Present situation in North Caicos - Kew and Bottle Creek

Neither site has access control, weighbridge or waste recording system.

Reportedly, Kew and Bottle Creek sites are operated from time to time by a machine pushing the waste to free space for further tipping. The Kew site is operated with the trench method while Bottle Creek waste is tipped directly on the ground.

Evidence of burning waste is present at both sites, and the practice seems to be more common in Bottle Creek site than at Kew.

Both sites are periodically attended by personnel but with low frequency. Also, in this respect the Bottle Creek site appears to have a lower level of control than the Kew one.

During the Main Consultant's visit in March 2023, the officer in charge of the Kew site was not wearing adequate PPE, and no personnel were present at the Bottle Creek site.

Kew

The relatively small Kew disposal site is located within the community of Kew in North Caicos, ca. 300 m from the nearest houses. Disposal began around 10 years ago in trenches excavated in the limestone up to 3 meters deep. The amount of waste disposed of in one month time is estimated to be of about 6,300 m^3 (uncompacted).

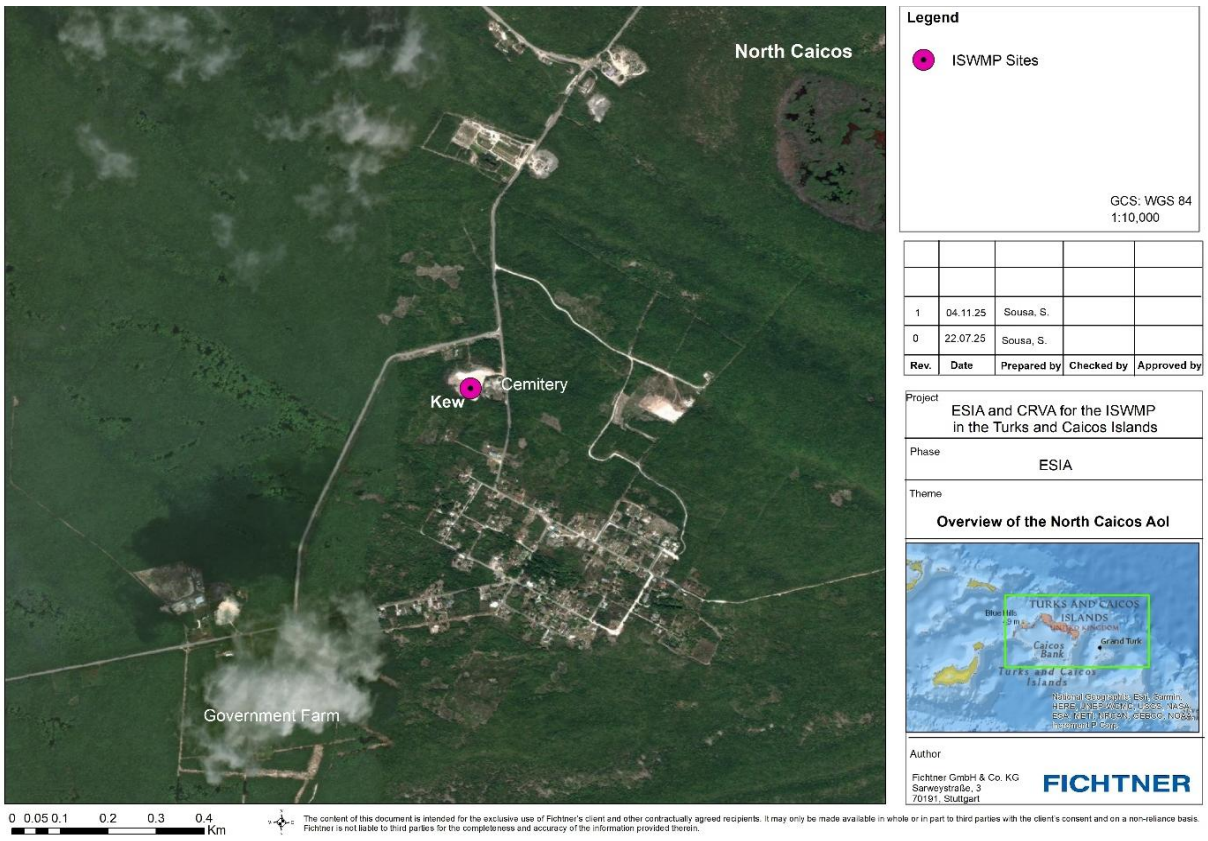


Figure 3-7: Overview of the location of the dumpsite Kew in North Caicos

The site is immediately adjacent to a cemetery and almost saturated. It is operated by a private contractor through periodical amassing of the waste and digging of trenches. It lays on the wider of the otherwise scarce Crown Land parcels, presently classified as Park and Open Space by the National Physical Development Plan (Figure 3-8).

Approximately 800 m to the southwest of the Kew dumpsite a governmentally managed farm is located. The farm withdraws uncontrolled and untested groundwater for irrigation purposes. According to the DECR, the withdrawn groundwater has become brackish.

The DECR informed that, on a private land parcel within Dick Hill Creek and Bellefield Landing Pond Nature Reserve (50303/25), waste from Pine Cay and Parrot Cay has been dumped in the past when the Kew site could not accommodate. This forced the DECR's intervention and demanding for the waste to be removed. This points to the need to assure a close monitoring of the site and its surroundings to avoid similar situations in the future.



Source: Main Consultant, March 2023

Figure 3-8: Aerial view of the dumpsite Kew and the adjacent cemetery in North Caicos

Bottle Creek

The Bottle Creek disposal site is located close to the community of Bottle Creek (ca. 1 km) (Figure 3-9), uphill from the Bottle Creek Pineyard, a fire-dependent ecosystem that is threatened by dry-season fires.

The Bottle Creek site presently in use has a limited extension (about 1.5 ha) mostly occupied by ELVs and other bulky materials piled on the area, while the area dedicated to the municipal solid waste (MSW) is very small since the waste is regularly burned.

The trail head for the permanent monitoring plots of DECR's Caicos Pine Recovery Project is located at the west extreme of the rock quarry.

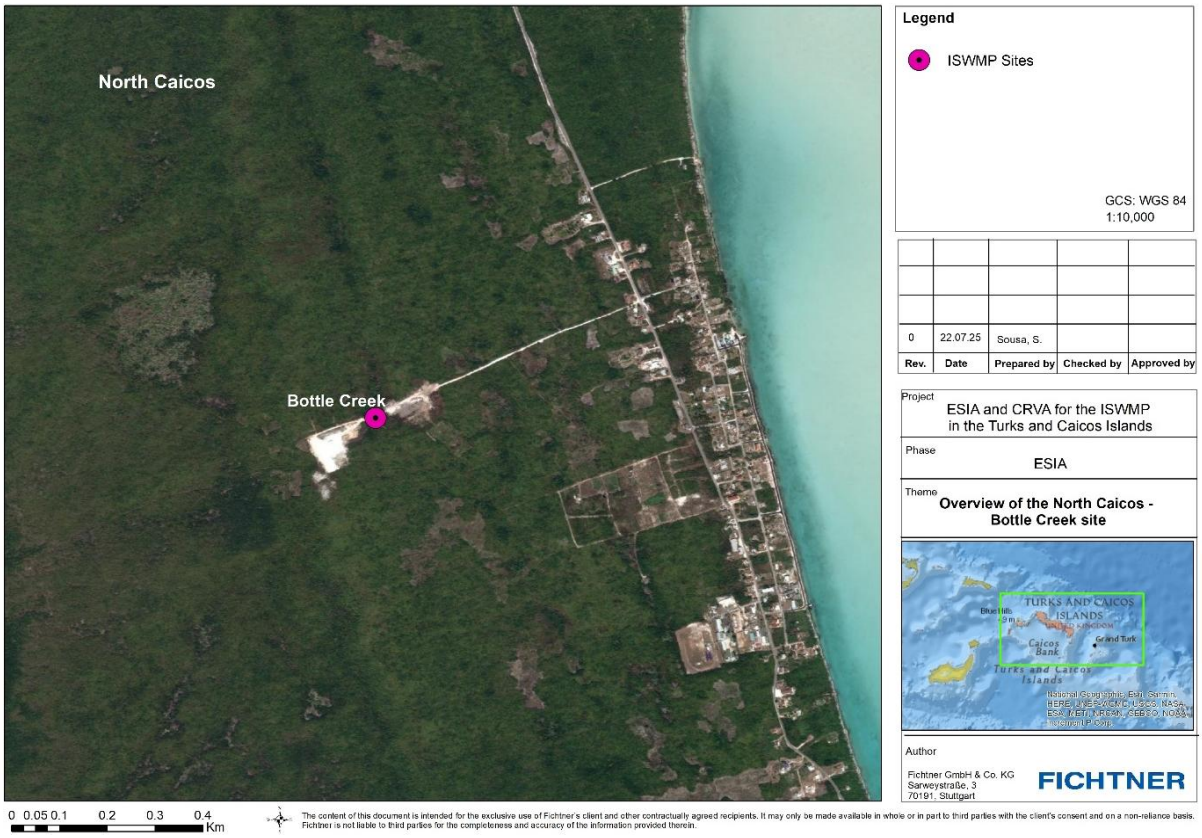


Figure 3-9: Overview of the location of the dumpsite Bottle Creek in North Caicos



Source: Main Consultant, March 2023

Figure 3-10: Burnt waste at the dumpsite Bottle Creek in North Caicos

3.3.2 Planned decommissioning of the Kew dumpsite

The Main Consultant foresees that current waste disposal operations at the Kew site could continue as it is for a very limited time, reaching the exhaustion volume by 2029. A continuation of the present waste deposition practices at the site would further compromise the area which is already unsuitable for other productive or residential purposes.

It is instead recommended to decommission the Kew dumpsite accompanied by remediation measures consisting of the general reshaping of the disposal site and the removal of the undesired bulky waste (end-of-life vehicles, boats, tyres, and others). These bulky materials shall be temporarily piled on site and then transferred to the recovery facilities in Providenciales when completed. The final cover and revegetation shall be done together with the remedial works.

The foreseen remediation will not remove the waste in place because it is buried too deep, but only provide a suitable cover and reshaping of the surface. The underlying waste will not allow for the construction of rigid and permanent structures on top. In the future, the Kew site can only be used for green and recreational areas, and shall be managed by the District Commissioners.

The reshaping and remediation of the dumpsite is expected to be completed within a 1.5 month period.

3.3.3 Planned new facilities at Bottle Creek

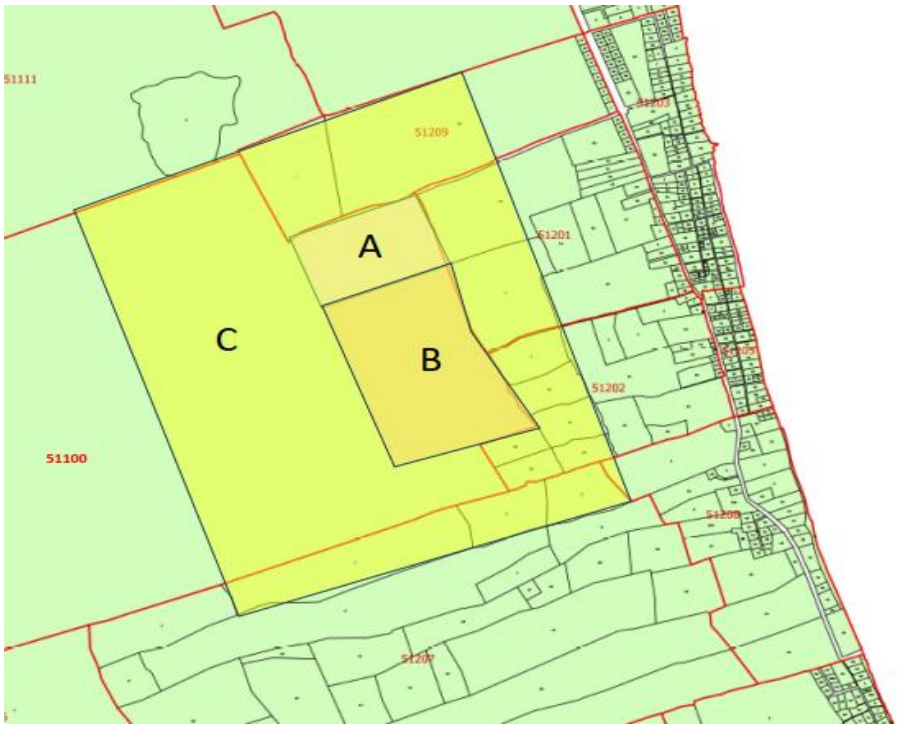
3.3.3.1 New landfill at Bottle Creek

A new engineered landfill (the first of this kind in TCI) assuring adequate standards of environmental protection and social acceptability is planned for the location of the Bottle Creek dumpsite (Figure 3-12 and Figure 3-12). This site has been identified within the Feasibility Study stage as the future centralised disposal site once the Providenciales disposal site is exhausted. In the medium term, the site will host the waste generated in North, Middle and South Caicos, as well as Parrot Cay. The landfill is designed with sufficient capacity to also accommodate waste from Pine Cay, Dellis Cay, and Water Cay in the future. Initially, a 100,000 m^3 landfill cell shall be built (zone A in Figure 3-12), with intention to expand with 250,000 m^3 cells (zone B in Figure 3-12).

The landfill and associated waste management facilities shall not generate nuisance to the surrounding residential areas. A properly equipped and well-managed buffer zone shall be established to prevent rejection of the project from the residents and landowners of the neighbouring areas. The proposed buffer zone (zone C in Figure 3-12) is deemed to be the minimum acceptable requirement to ensure the full exploitation of the already compromised area also considering the absence of viable alternatives within the TCI. No residential use should be allowed within the listed parcels. If not possible to acquire the area as landfill buffer zone, at least the planned use of the land should be changed to industrial / commercial.

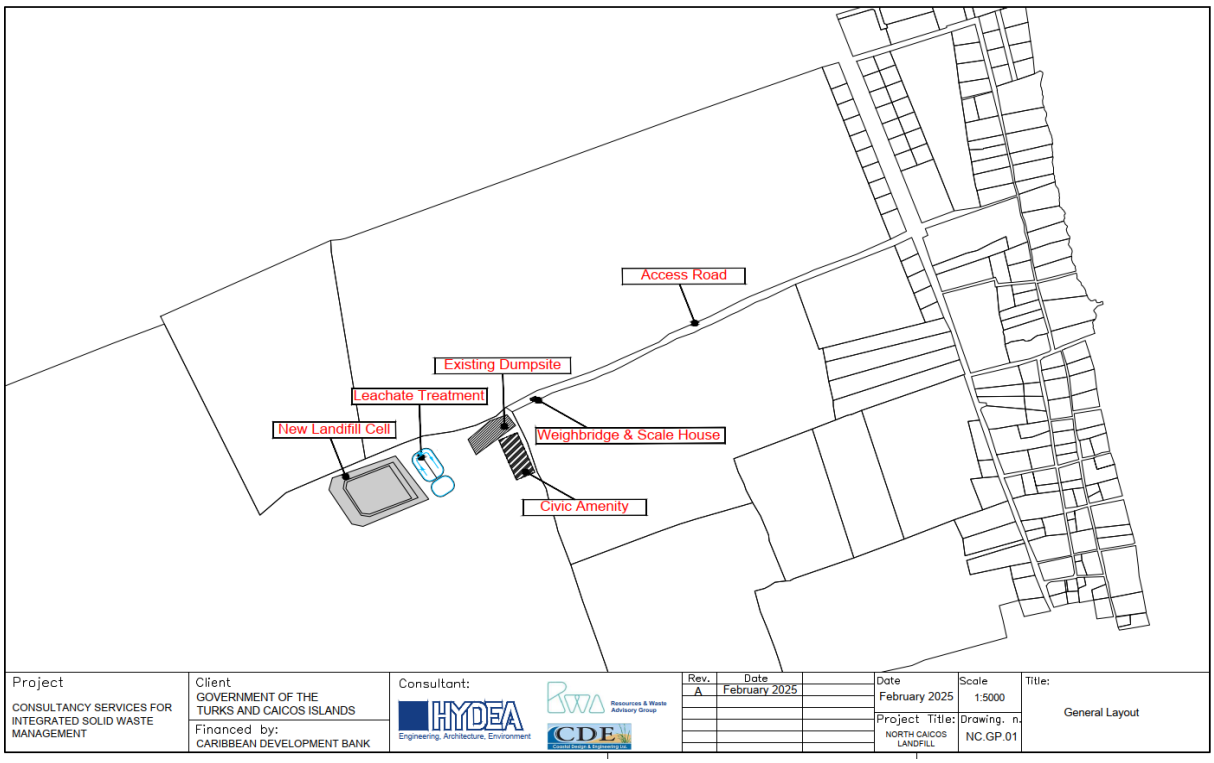
The area is elevated and not subject to flooding, except for some sections of the access road that need to be raised to ensure constant accessibility to the site under any weather conditions. The site lays on the East side of a natural watershed, approximately with a North-South orientation, and develops from 12 m a.s.l. to about 21 m a.s.l. along a gentle slope that offers an optimal support for the construction of the landfill.

The slope provides a partial screen hiding of the site from the Flamingo Pond (located ca. 3 km to the northwest of the site), but a specifically designed filling plan shall be implemented to limit the sight of the facility from the east side of the island.



Source: Feasibility Study, Revision 1 (Joint Venture HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., April 2024)

Figure 3-11: Bottle Creek landfill land usage (A: initial landfill area; B: area for future expansion; C: buffer zone)



Source: Preliminary Design Report, Revision 2 (Joint Venture HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., May 2025)

Figure 3-12: Drawing of the future North Caicos landfill

Drainage

A system of peripheral surface drains is foreseen to avoid ingression of stormwater in the designed landfill cell from the surrounding areas. The detailed design (not available at the time of writing this ESIA report) will also include internal hydraulic partitions of the cell to limit the leachate generation.

Bottom lining

Due to natural and logistical constraints detailed in the Preliminary Design Report, the bottom lining system at Bottle Creek is planned as follows (from bottom to top):

1. Compact and level excavated subgrade
2. 20 cm class G45 base course
3. Bitumen prime coat
4. 6 cm AC10 asphalt layer

Landfill slopes will be cut at very steep slope, as such the lining system can only be built through the use of geosynthetics. In such case the lining will be as follows:

1. Levelled excavated subgrade
2. Geocomposite Clay Liner (GCL) 6 mm
3. Geocomposite drainage mat (GCD) - Whilst the use of GCD at the bottom of landfills is not commonly recommended due to the expected rapid clogging of geotextiles while immerse in leachate, a GCD is nevertheless foreseen at the bottom of the Bottle Creek landfill to reinforce the drainage system considering that the leachate will be almost constantly removed by gravity and not left ponding on top of the landfill base.

The GCL will be overlapped and sealed to the asphalt through bitumen coating.

Leachate drainage

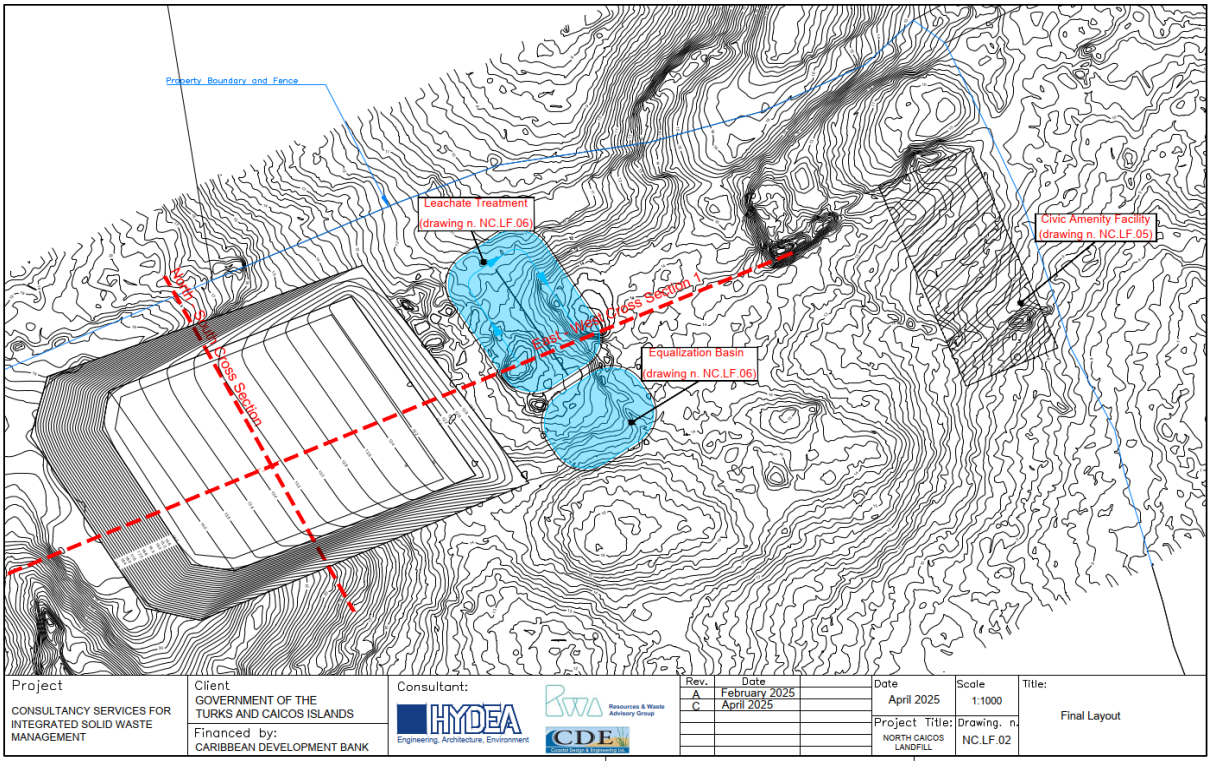
The landfill bottom will host a leachate drainage system conveying the leachate by gravity to an equalisation basin. From the equalisation basin the leachate will then be pumped into a constructed wetland for treatment. The overall surfaces and volumes will be designed based on a detailed hydraulic balance with the aim to minimise the final discharge of treated leachate into the environment, maximising instead evapotranspiration from the wetland. Additional evapotranspiration surfaces to be irrigated with treated leachate will also be considered.

The function of the leachate drainage system is to keep the level of the leachate inside the landfill as low as possible to limit the diffusion of leachate from possible leaking spots. The low level of leachate is reached through the combination of different elements:

- Gradient of the base: 2% as per the design (recommended >1%)
- Efficiency of the leachate drainage layer: use of shredded tyres in lieu of the gravel layer due to the absence of other feasible materials (non-carbonate rounded stones are common practice, but not available in TCI). The tyres, roughly shredded (10 – 20 cm size) and laid in a thicker layer (50 cm as per the design) can provide equivalent drainage capacity of natural gravel layers
- Efficiency of the leachate extraction system: ensured through the discharge of the leachate by gravity rather than through internal extraction well and pumps. A system of chambers and valves will nevertheless be installed to keep the leachate inside the landfill cell in case of extreme rainfalls, if the equalisation basin is not sufficient to host all the leachate generated.

Leachate treatment - Constructed Wetland

The focus of the design is primarily on the minimisation of the leachate generation. The residual leachate production will be first collected in an equalisation basin and then pumped at an approximately constant rate to the adjacent Constructed Wetland (CW) for evapotranspiration and treatment (Figure 3-14).



Source: Preliminary Design Report, Revision 2 (Joint Venture HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., May 2025)

Figure 3-13: Drawing of the future North Caicos leachate treatment (in blue)

Depending on the season, the respective volume of leachate produced and the effluent quality, the outflow from the wetland can be either:

- Redirected to the equalisation basin (dry season, low leachate generation) with the effect of diluting the raw leachate coming from the landfill and provide sufficient water to keep the aquatic plants alive during the dry season
- Used for the irrigation of the vegetation cover of the already closed portion of the landfill
- Used for the irrigation of evapotranspiration plots built on purpose
- Used for dust suppression on internal roads
- Directed to a percolation pit for discharge when sufficiently treated.

The Constructed Wetland (CW) adopted in the proposed scheme is a free water surface (FWS) system. FWSs consist of basins or channels where the water surface, which is exposed to the atmosphere and the soil, and is constantly submerged, constitutes the support for the roots of the emerged plants; in these systems the water flow is horizontal and the height of the basins is generally limited to a few tens of centimetres. The removal mechanisms reproduce exactly all characteristics of processes occurring in natural wetlands.

In a FWS, water flows above ground and plants are rooted in the sediment layer at the base of the basin or floating in the water. As the water slowly flows through the wetland, simultaneous physical, chemical and biological processes filter solids, degrade organics and remove nutrients from the wastewater. The channel or basin is lined with an impermeable barrier (plastic liners are commonly used) covered with gravel or soil and planted with native vegetation (e.g. cattails, reeds and/or rushes). The wetland is flooded with wastewater to a variable water depth from 30 to 60 cm.

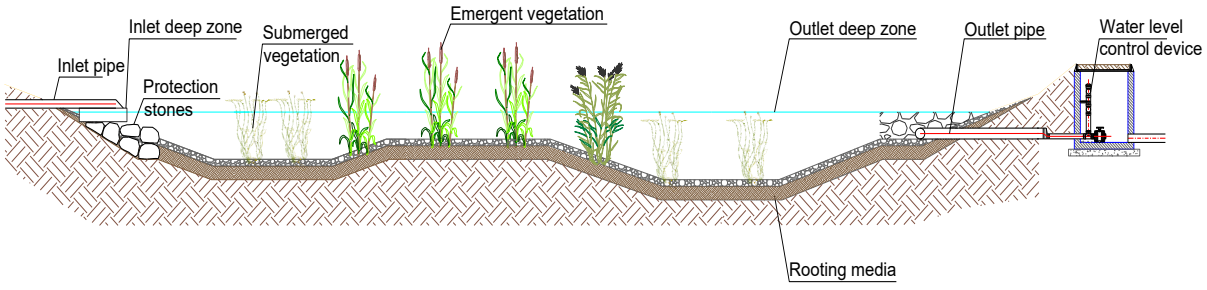
The main advantages of a FWS is that it can achieve a removal of pathogens, nutrients and other pollutants, depending on the hydraulic retention time. Because this type of leachate treatment does not remove inorganic contaminants such as heavy metals (only biodegradable organic contaminants to a certain degree), the well-functioning of separate collection of hazardous waste (from household, CDW and commercial sources) is of particular importance.

This technology can tolerate variable water levels and nutrient loads. Plants limit the dissolved oxygen in the water from their shade and their buffering of the wind; therefore, this type of wetland is appropriate for low-strength wastewater. Moreover, this technology is best suited for warm climates and it can give multiple benefits in terms of ecosystem services, biodiversity increase (by providing animal and plant habitat), flood mitigation and social benefits. Other advantages of FWSs and CWs in general are:

- These are natural systems and do not require electrical energy, nor chemicals, although the wetland will require some maintenance for the duration of its life
- They are aesthetically pleasing
- High reduction of BOD and solids; moderate pathogen removal
- Can be built and repaired with locally available materials
- No real problems with odours if designed and maintained correctly
- Low operating costs
- Operators can be trained people from the community (low-skilled people)
- No need for sophisticated equipment, or expensive spare parts.

The main components of a FWS wetland are typically:

- An inlet distribution system, followed by an inlet deep zone to allow the removal of heavier sediments
- Shallow marsh areas with varying depths (0,4 - 0,6 m) with wetlands vegetation
- An outlet deep zone to clarify the final effluent
- An outlet device to control the water level.



Source: Preliminary Design Report, Revision 2 (Joint Venture HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., May 2025)

Figure 3-14: Main components of a FWS constructed wetland

3.3.3.2 Integrated Civic Amenity Site (CAS) and Temporary Storage Site (TSS) at Bottle Creek

Located at the entrance of the new landfill site, the CAS will collect the waste fractions separately that will be periodically sent to the Providenciales IWRC. The facility will be located inside of the fenced area of the landfill and staffed during operating hours.

In the same area of the CAS, within the fenced landfill area, a TSS will provide space for the temporary storage of bulky waste that will be transferred to the Providenciales IWRC.

The CAS and TSS will be developed in an 78x35m fenced area including:

- Entrance and exit gates
- 30x7m ELV area
- 38 m^3 containers for the recycling/storage of:
  - Aluminium
  - PET
  - Pallets
  - Construction lumber
  - Tyres
  - Bulky waste
  - White/brown goods

These containers will be front-loaded to maximise filling as materials must be stored properly avoiding the formation of void areas. Aluminium and PET will be loaded in big bags before storing into the containers.

- 18 m^3 containers for the recycling/storage of:
  - Glass
  - Electronic waste

These containers will be 1.5 m high allowing direct loading from above.

- 38 m^3 and 18 m^3 back-up containers
- Covered disassembling area
- Covered hazardous waste area
- Office/Storage/WC pre-fabricated building
- Septic tank to serve WC
- Water point for dust suppression
- Water surface network
- Parking for cars and hook lift truck

3.3.3.3 Construction and Demolition Waste (CDW) Centre at Bottle Creek

Initially, due to relatively small, estimated waste quantities, the CDW centre will be located at the landfill site to take advantage of the operational synergies. The Main Consultant recommends assessing the transfer of non-recoverable materials to the Middle Caicos dumpsite as a possible final disposal site to save volume at the Bottle Creek landfill.

3.3.3.4 Composting Plant (CP) at Bottle Creek

Only about 2 tonnes per day of municipal green waste from parks and gardens is generated in North and Middle Caicos. However, with additional agricultural activities on island there is potential additional feedstocks and markets. In this sense, a composting plant (CP) is planned within the 3,000 m^2 of land located at the new Bottle Creek landfill site (alternatively, the plant can also be located at the experimental farm site of the Ministry of Agriculture).

It is anticipated that a small windrow composting site will be established using an agricultural tractor to power a small shredder, windrow turner and load materials through a screen. It is anticipated that the landfill operator or agricultural partner can operate this site. Waste types to be processed are:

- Green waste
- Cardboard

3.4 Middle Caicos

The Middle Caicos site is located between Bambarra (2,500 m away) and Lorimers (1,700 m away) settlements (Figure 3-15). The site is located adjacent to a small wetland. A nationally and internationally natural protected area is located 1,500 m away (described further in Chapter 7.2.3.3).

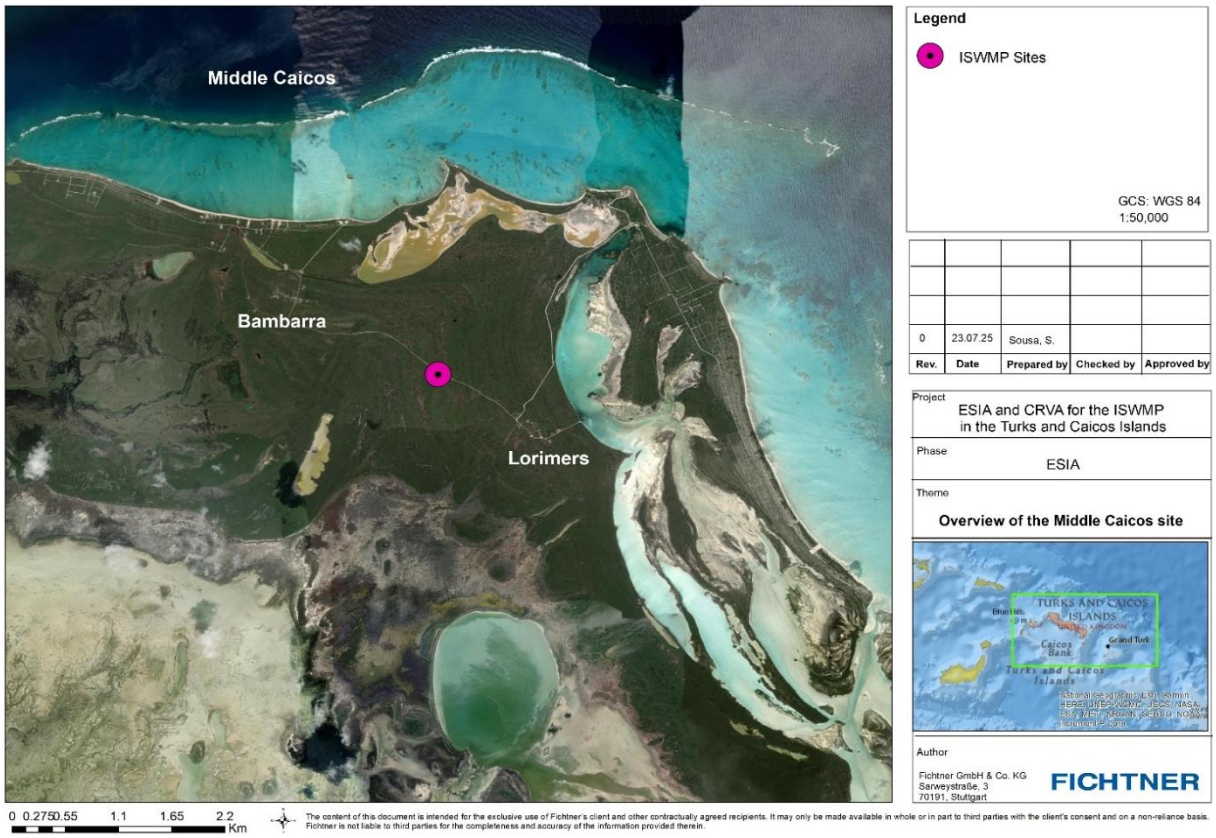


Figure 3-15: Overview of the location of the dumpsite within Middle Caicos

3.4.1 Present situation in Middle Caicos

The site consists of a depression that appears to be a former quarry now used as a dumpsite. The waste is randomly deposited with no control of any kind and is regularly set on fire (Figure 3-16). There is no mechanical equipment, no weighbridge, no levelling and compaction, no staff and no recordings.



Source: Main Consultant, March 2023

Figure 3-16: Aerial view of the Middle Caicos dumpsite

3.4.2 Planned decommissioning of the Middle Caicos dumpsite

The Middle Caicos dumpsite will be reshaped and cleared, and the waste will be moved to Bottle Creek. For the completion of the reshaping and remediation, a 1-week period is foreseen. Bulky materials will be temporarily piled on site and then transferred to the recovery facilities in Providenciales when completed.

A gate and fence will be installed at the entrance of the site to prevent illegal dumping.

3.5 South Caicos

The disposal site in South Caicos is located in ca. 100 acres of privately owned land. The island's air strip and airport infrastructures are located ca. 700 m to the north and are undergoing substantial revamping works also aimed at allowing international flights to land in South Caicos. The closest buildings are located 200 m away.

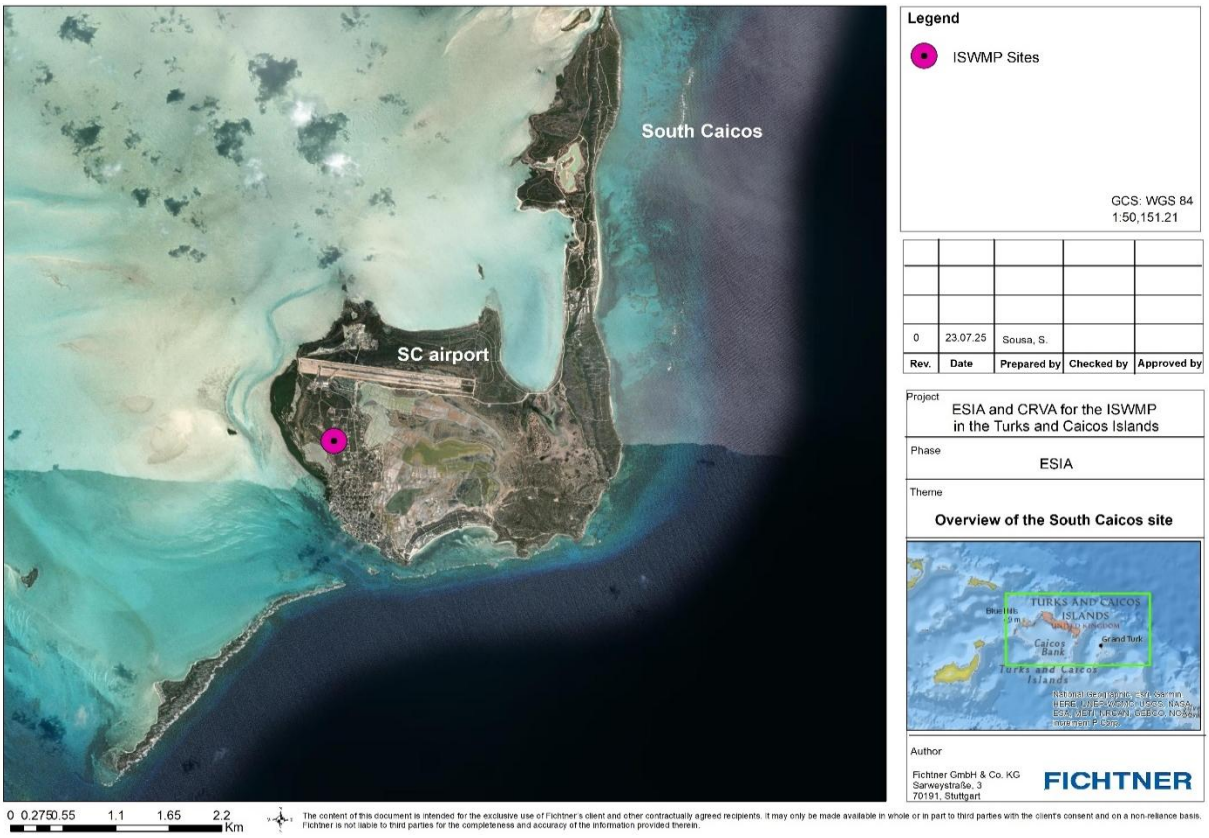


Figure 3-17: Overview of the location of the dumpsite within South Caicos

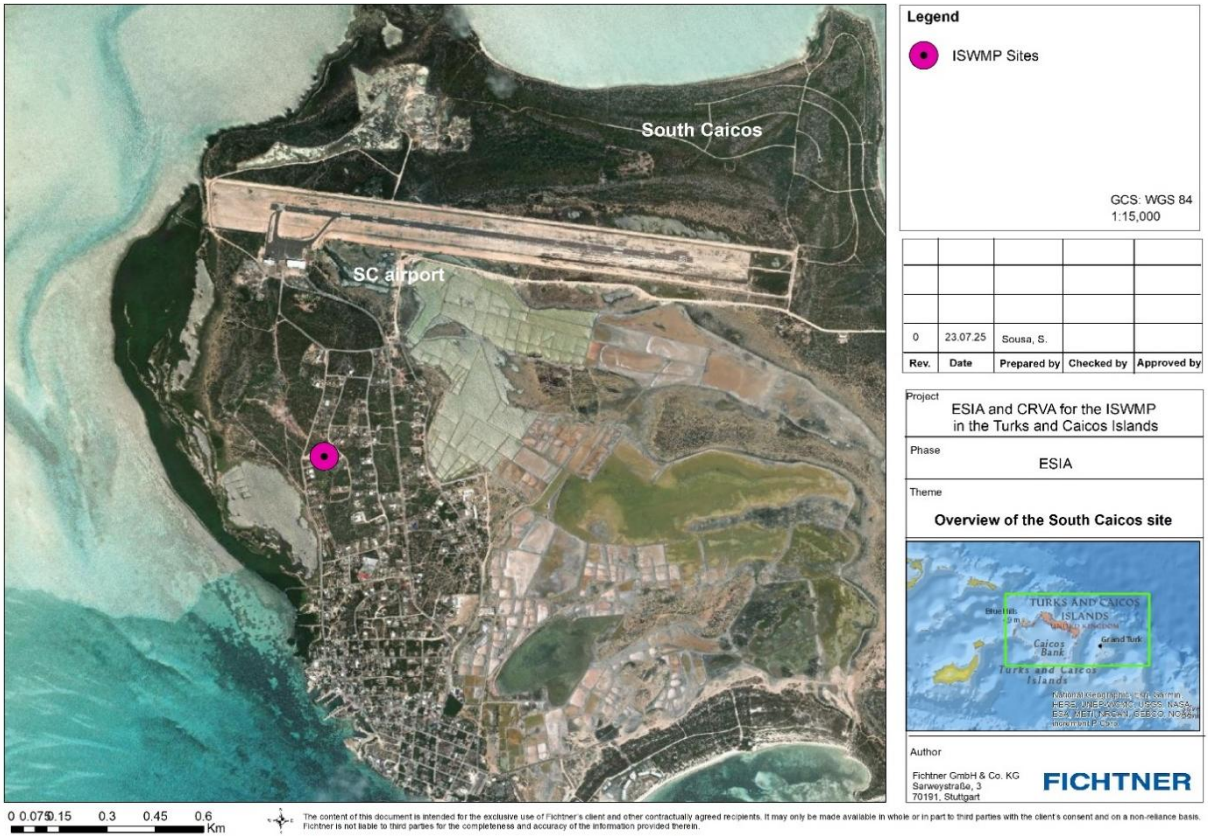


Figure 3-18: Overview of the location of the dumpsite within South Caicos: close-up

3.5.1 Present situation in South Caicos

A wooden gate is present at the site (Figure 3-20), without fence. Entrance in the site is controlled only during working hours.



Source: Main Consultant, March 2023

Figure 3-19: View of the gate of access to the South Caicos dumpsite

Based on the evidence of the Main Consultant's visit in March 2023, the mechanical handling of the waste by the machines appears to be limited and insufficient.

Some evidence of burning is visible. The practice is usually carried out when the wind is blowing toward the sea, avoiding a direct impact on human receptors.

The site has no weighbridge, and no records are available of the waste deposited quantities.

PPE usage is not enforced. Pickers were registered by the Main Consultant at site (men and women). They are most assumed to be Haitian residents of TCI and are said to recover metals.

3.5.2 Planned decommissioning of the South Caicos dumpsite

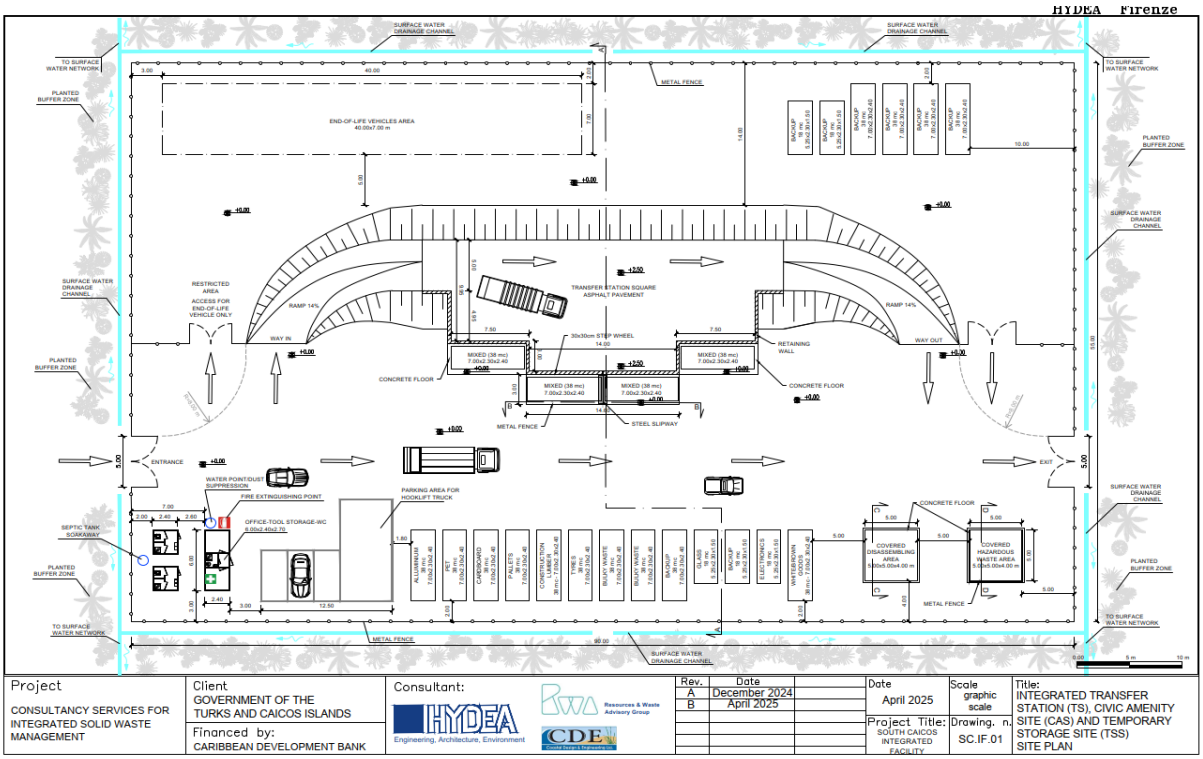
The South Caicos dumpsite will be closed and replaced with an Integrated Transfer Station (ITS, described in the next Chapter). The dumpsite will be subject of general reshaping, clearing of the area of the active site and covering with soil. For the completion of the reshaping and remediation works a 2-weeks period is foreseen. Bulky materials will be temporarily piled on the site and then transferred to the recovery facilities in Providenciales when completed.

The foreseen remediation will not remove the waste in place but only provide a suitable cover and reshaping of the surface. The underlying waste will not allow for the construction of rigid and permanent structures on top. In the future, the South Caicos site can only be used for green and recreational areas, and shall be managed by the District Commissioner.

3.5.3 Planned new facilities in South Caicos

3.5.3.1 Transfer Station (TS), Civic Amenity Site (CAS) and Temporary Storage Site (TSS)

In South Caicos it is proposed the construction of an integrated Transfer Station (TS), Civic Amenity Site (CAS) and Temporary Storage Site (TSS) (Figure 3-20). The TS will transfer the waste to North Caicos' new landfill.



Source: Preliminary Design Report, Revision 2 (Joint Venture HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., May 2025)

Figure 3-20: Drawing of the future Integrated Transfer Station (TS), Civic Amenity Site (CAS) and Temporary Storage Site (TSS) at South Caicos

A suitable location for this integrated facility has been proposed by the GOTCI immediately adjacent to the dumpsite. Land availability shall be guaranteed in cooperation between the GOTCI, the District Commissioner, the Planning Department and the tourist operators owning large portions of the island.

The integrated facility in South Caicos is planned to consist of an area of 80x52 m adjacent to the dumpsite with the following characteristics:

- Transfer Station for residual waste consisting in an elevated platform of 2 m to be used by waste trucks and compactors to off load the waste into four (4) 38 m^3 containers
- Entrance and exit gates.
- 40x7 m ELV area

- 38 m^3 containers for the recycling/storage of:
  - Aluminium
  - PET
  - Pallets
  - Construction lumber
  - Tyres
  - Bulky waste
  - White/brown goods
- 18 m^3 containers for the recycling/storage of:
  - Glass
  - Electronic waste
- 38 m^3 and 18 m^3 back-up containers
- Covered disassembling area
- Covered hazardous waste area
- Office/Storage/WC pre-fabricated building
- Septic tank to serve WC
- Water point for dust suppression
- Water surface network
- Parking for cars and hook lift truck

3.5.3.2 Construction and Demolition Waste Centre

Most of the foreseeable CDW to be generated in the island is coming from the tourism industry. Location and operational regulations shall be necessarily agreed with the tourist operators since no proper public lands are available for the purpose.

3.5.3.3 Composting Facility (CF) in South Caicos

With less than 1 tonne of materials anticipated to be generated per day, it is envisaged that a medium-small, contained vessel aerobic composting unit is established at or near the CAS with fresh green waste entering and going through a controlled composting process to produce compost after ca. 4 weeks of retention. Waste types to be processed are:

Green waste

The composting process in an enclosed vessel will produce the heat required for pathogen kill-off, allowing the future composting of sludges from water and wastewater processing, food waste and agricultural waste.

Additional storage to cure the material will be required within a covered storage bay. This can be operated by the CAS site personnel. A roofed storage unit of ca. 200 m^2 is sufficient with a small green waste shredder and composting vessel.

3.6 Grand Turk

The Grand Turk disposal site is located to the east of the island close to the centre of Cockburn Town (Figure 3-21). There are several inhabited areas around the site (the closest house is merely 130 m away), and the historical Grand Turk Salinas border the site (Figure 3-22; further details in Chapter 7.3.4.1). The area is prone to flooding.

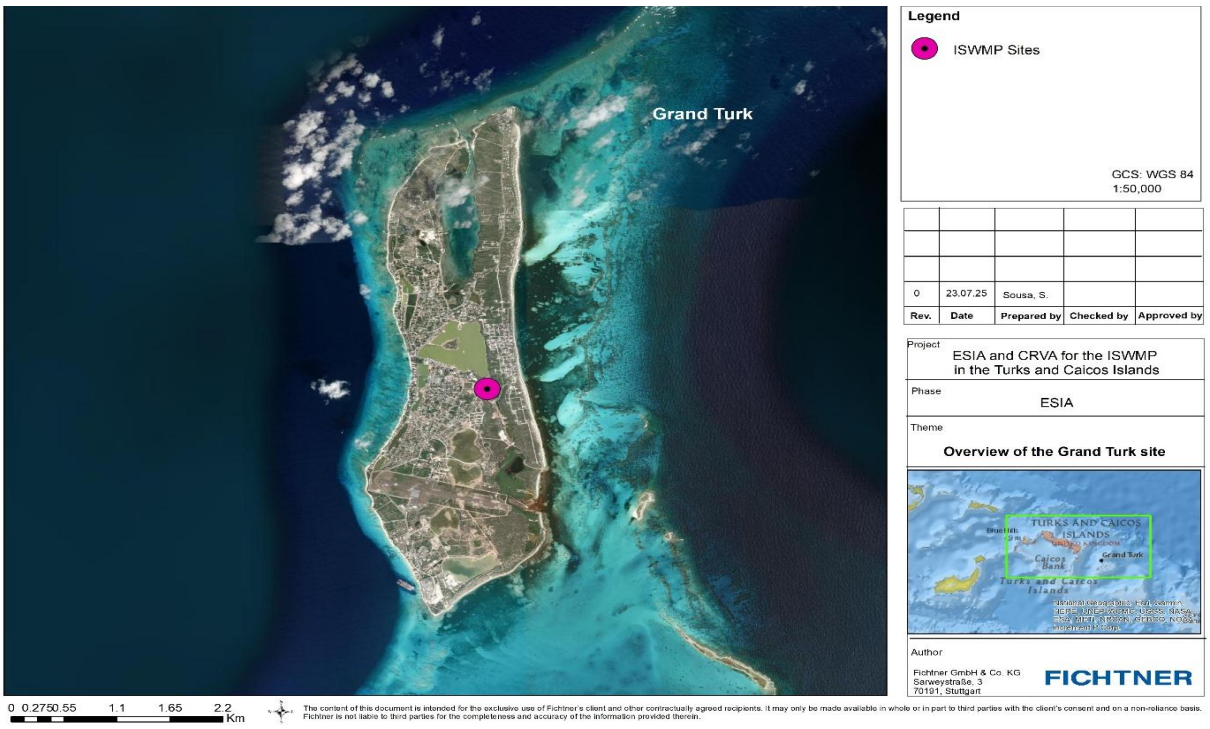


Figure 3-21: Overview of the location of the dumpsite within Grand Turk

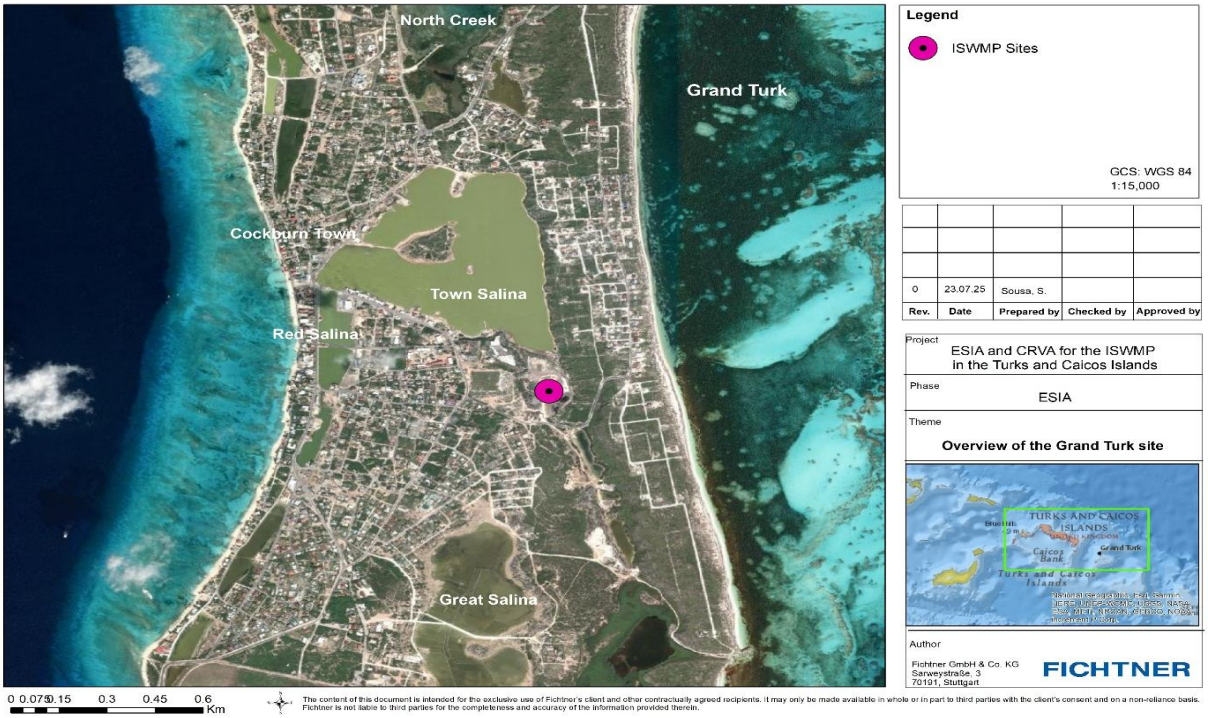


Figure 3-22: Overview of the location of the dumpsite within Grand Turk: close-up

3.6.1 Present situation in Grand Turk

Disposal activity in the Grand Turk site began in 2004. The site is about 8 hectares / 20 acres wide within the fenced area, and the waste deposit expands over about 4.6 Hectares / 11.4 acres. At the entry of the site there is a gate, and the site is partially fenced (Figure 3-23); the fence is heavily damaged on the north side.



Source: Main Consultant, March 2023

Figure 3-23: The gated entrance to the Grand Turk disposal site

Information shared by the DECR notes that groups of horses and donkeys have been observed wandering through the staffed front gate entering and leaving the site, sometimes with waste materials stuck at their bodies.

Data collected by the EHD in 2016 indicate that the average daily amounts of waste disposed at the site exceeded 15 tonnes, representing a substantial increase from 2 tonnes per day in 2005. There is presently no updated data of the amount of waste deposited due, for example, to lack of weighbridges.

The Grand Turk disposal site is notably better managed than any of the other Project sites. It has supervised access and designated areas for the disposal of specific types of waste are signalled.

The site is operated by a private contractor and machines are made available and in sufficient operational conditions. There are no signs of major instability on the peripheral slopes of the waste mass. The waste disposal is carried out in an organised way, the waste is spread in designated areas and compacted by the dozer. Soil is regularly used for waste cover.

No weighbridge is in use, and insufficient records of waste quantities are kept. 17 to 34 trucks enter the site daily, based on recording at the gate.

Toilets with no clear designation are available at the entrance office. There is no regulated usage of PPE. Animals (donkeys) feed at the site.

3.6.2 Planned rehabilitation measures in Grand Turk

Similarly to Providenciales, the design of the Grand Turk site focuses on the rehabilitation and further exploitation of the present site. Rehabilitation will be made through reshaping and rearrangement of the site, allowing for its further vertical expansion. An additional layer with an average heigh of 4 m in this area is sufficient to provide the volume foreseen for the next 20 years period.

Large part of the remaining area, not occupied by the waste deposit, is a low area prone to flooding during intense rain events. This area can therefore be conveniently used for temporary storage of non-hazardous waste and progressively reclaimed through the deposit of inert materials from CDW.

Stormwater drainage and leachate management

The gentle slopes of the proposed final shape of the site are designed to allow a sufficient runoff avoiding excessive erosion. A peripheral drain on the west side will be necessary to convey the stormwater to the Salina while such drain is already present on the east side.

As in the case of Providenciales, leachate collection cannot be reasonably implemented in the present cell. Attenuation measures can nevertheless be implemented by the operation of the site to reduce leachate generation due to the infiltration of rainwater and also to reduce the polluting content of the leachate generated.

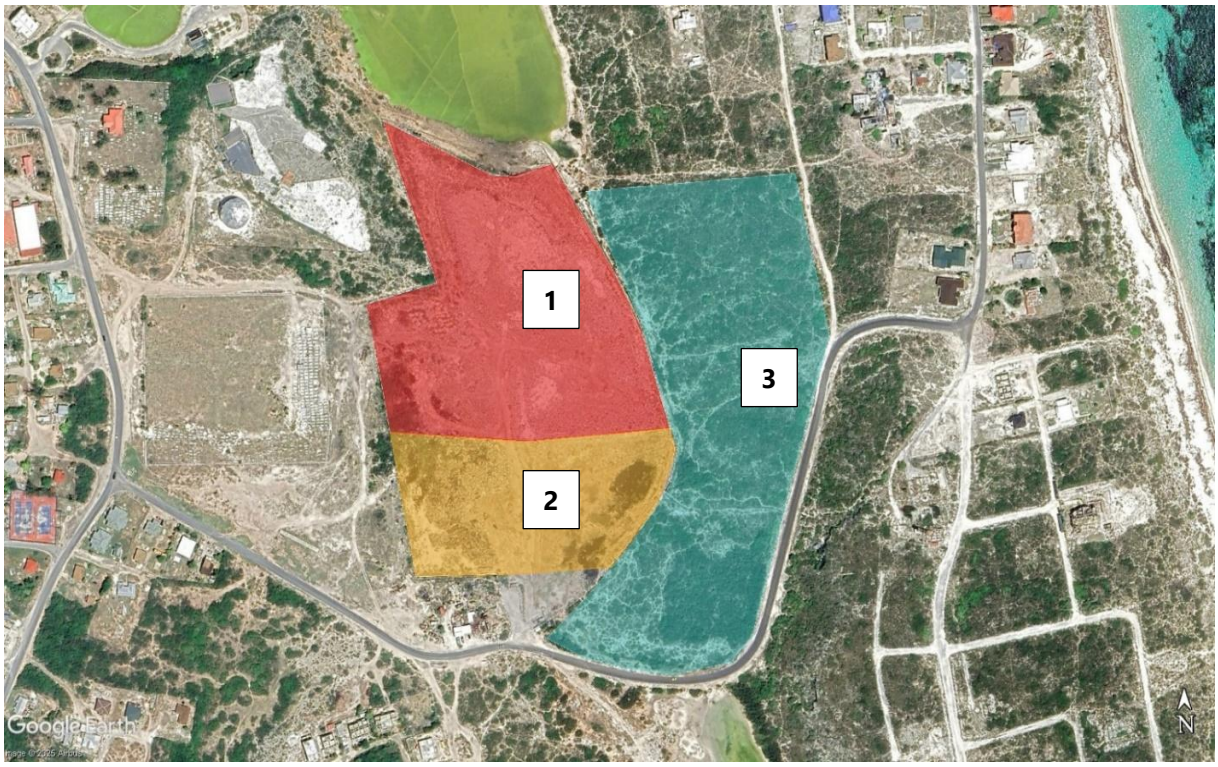
3.6.3 Planned extension of the Grand Turk site

Grand Turk's site is currently only partially and marginally occupied by the waste embankment (Area 1 in Figure 3-24) and offers the possibility of future lateral expansion both inside the fenced perimeter (Area 2) and in the adjacent areas (Area 3).

Expansion in Area 1 can be reached by vertical expansion of the present waste embankment, which is the most convenient option for the medium term because it requires no additional investment costs and entails only reasonable additional costs for improvement of the presently already relatively good operational practices.

While Area 2 offers the apparent possibility of an easy lateral expansion of the site within the present boundaries of the site, it is for the most part prone to flooding, requiring a consistent filling of the area to raise its average elevation of no less than 1 m and allow a safe waste deposition. Such reclamation can be conveniently carried out in the medium term at almost no costs by progressively disposing of the construction and demolition waste in a planned manner, where a short-term filling would imply the excavation of a consistent quantity of soil from borrow pits at a comparably high cost. Currently, Area 2 is better suited for urgent waste management needs like waste diversion, temporary storage, and composting. Furthermore, Area 2 can today be more conveniently used for other urgent and not delayable needs of the waste management such as diversion of waste. The preliminary design foresees the partial use of Area 2 for the location of the Civic Amenity, temporary storage of diverted waste and composting of green fraction. In the medium-long term, under the condition that the waste management in TCI has developed into a fully professional activity, the relocation of the secondary facilities can be assessed, and Area 2 be converted in a new engineered landfill cell.

Area 3 is today recommended as a buffer zone for the disposal site. In future the area can be considered for lateral expansion, granting the site additional operational time (this option has *not* been included in the Preliminary Design).



Source: Preliminary Design Report, Revision 2 (Joint Venture HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., May 2025)

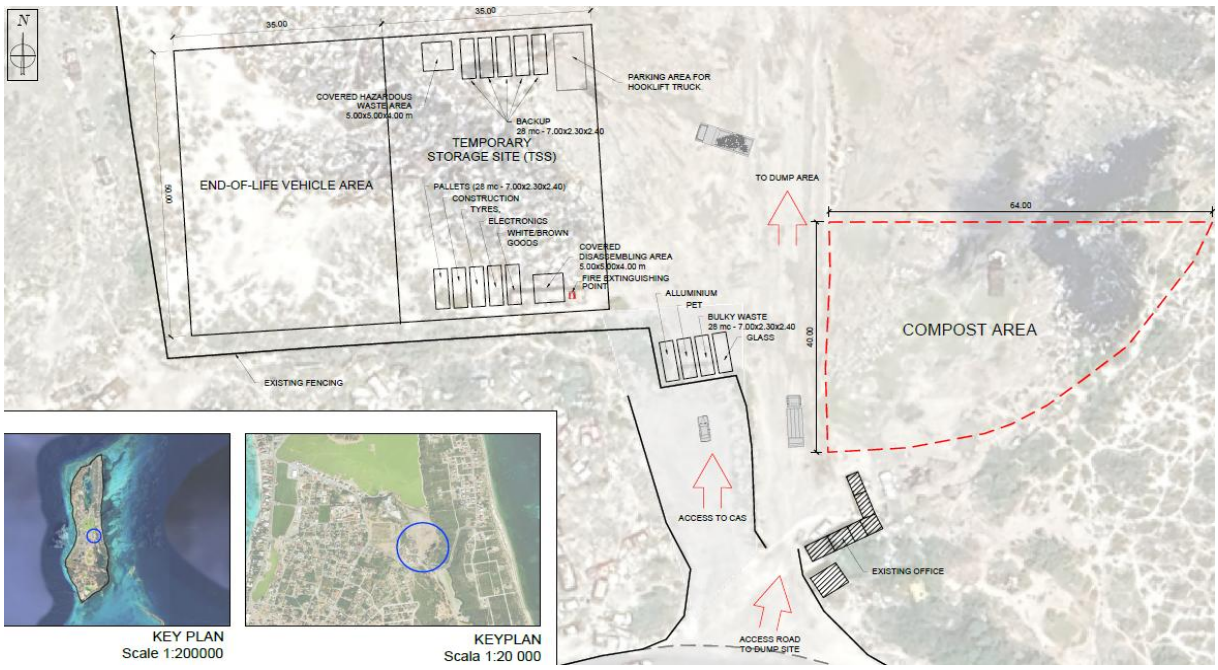
Figure 3-24: Representation of the expansion alternatives of the Grand Turk disposal site

3.6.4 Planned operational improvements in Grand Turk

The proposed design does not imply actual construction works but rather provides a guideline for the implementation of the operation service of the disposal site. A professional operation service of the site under the competent supervision of the relevant authority shall be achieved, implying only a partial revision of the present landfill operation contract.

3.6.5 Planned new facilities in Grand Turk

A Civic Amenity Site (CAS), a Temporary Storage Site (TSS), a Composting Plant and a CDW centre are planned for Grand Turk (Figure 3-25).



Source: Preliminary Design Report, Revision 2 (Joint Venture HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., May 2025)

Figure 3-25: Representation of the CAS, TSS and CP planned at the Grand Turk disposal site (the CDW centre is not represented)

3.6.5.1 Civic Amenity Site (CAS) and Temporary Storage Site (TSS) in Grand Turk

The CAS and the TSS can be located within the disposal site fenced area and operated by the same operator of the disposal site. Office, storage, toilet facilities (WC and septic tank), water point for dust suppression, water surface network and car park will not be necessary, as these already exist.

The CAS will be developed by exploiting the existing ramp already used to off load the waste. It will consist of 38 m^3 containers for the recycling/storage of:

- Aluminium
- PET
- Glass
- bulky waste

The TSS will be developed in an 50x70m fenced area including:

- 50x35m ELV storage area
- 38 m^3 containers for the storage of:
  - Pallets
  - construction lumber
  - tyres
  - electronic waste
  - white/brown goods
- Covered disassembling area
- Covered hazardous waste area
- 38 m^3 back-up containers
- Parking for hook lift truck
- Sedimentation basin and oil separators for stormwater.

3.6.5.2 Construction and Demolition Waste (CDW) Centre in Grand Turk

The CDW centre of Grand Turk will be located at the dumpsite for taking advantage of operational synergies. Considering that the dumpsite lays on a flood prone area, the CDW can conveniently be used to raise the level of the ground for future uses including landfill expansion.

3.6.5.3 Composting Plant (CP) in Grand Turk

An open windrow composting plant of about 5,000 m^2 will be located at the dumpsite for aerobic composting of:

- Green waste
- Untreated CDW lumber
- Pallet wood
- Cardboard.

The composting process in windrows will produce the heat required for pathogen kill-off, allowing the future composting of sludges from water and wastewater processing, food waste and agricultural waste.

Leveraging landfill operational equipment will be used where required. The composting plant will have a capacity of 5 t/day increasing to an anticipated 11 t/day over 20 years. The plant should be operated by the landfill operator so that they benefit from diversified revenue sources and equipment sharing.

3.7 Salt Cay

Salt Cay's site serves a small community of about 70 residents; the tourist accommodation availability is reportedly limited to 55 accommodations. Balfour Town is located ca. 700 m to the north (Figure 3-26).

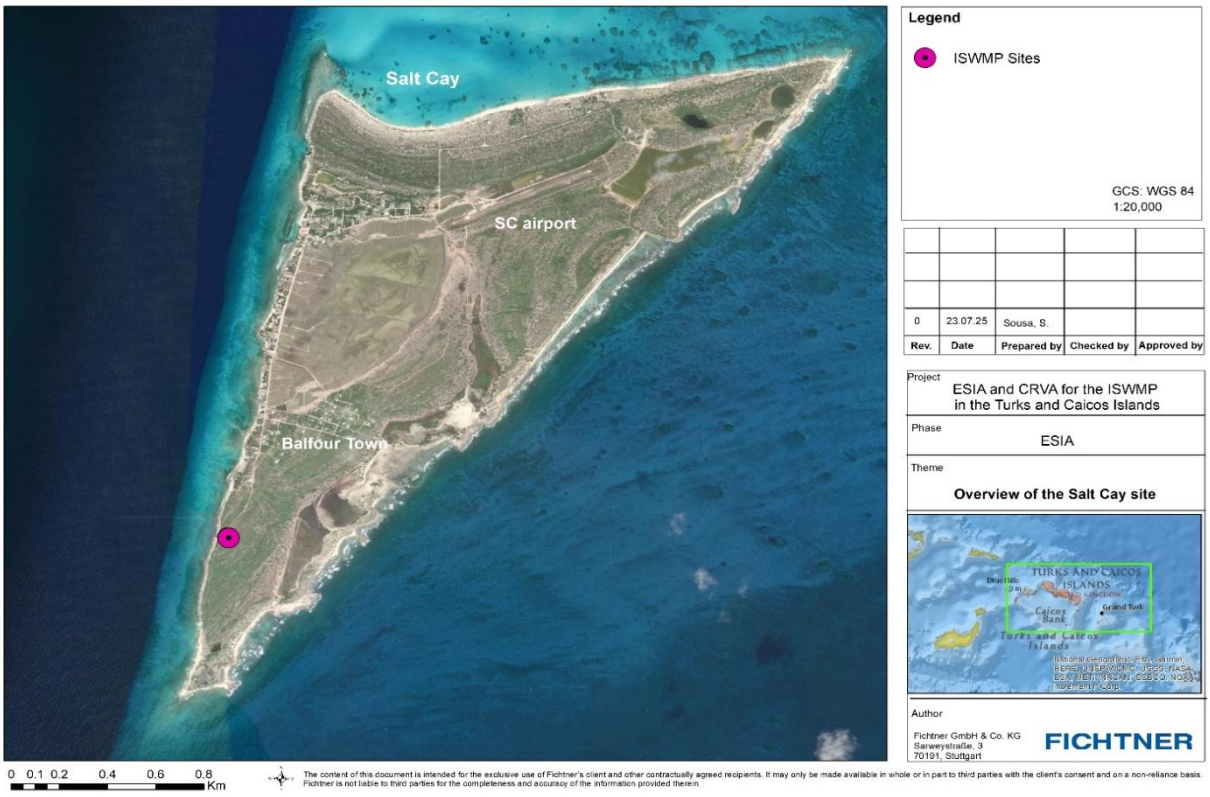


Figure 3-26: Overview of the dumpsite location within Salt Cay

3.7.1 Present situation in Salt Cay

Disposal at the Salt Cay site began in the year 2000. The site has no access control (poorly fenced) and no waste records are kept. It accepts all types of waste and is open to all the generators.

A backhoe is occasionally used to pile up the waste. A contractor is hired by EHD for collecting and delivering the waste to the site and keep the area in order. The same person is in charge of transportation of people and goods from Grand Turk to Salt Cay.

Burning does not seem to be the ordinary practice at the site but evidence of occasional burning of waste is visible. Donkeys feed at the site.



Source: Main Consultant, March 2023

Figure 3-27: View of the Salt Cay dumpsite and a feeding donkey

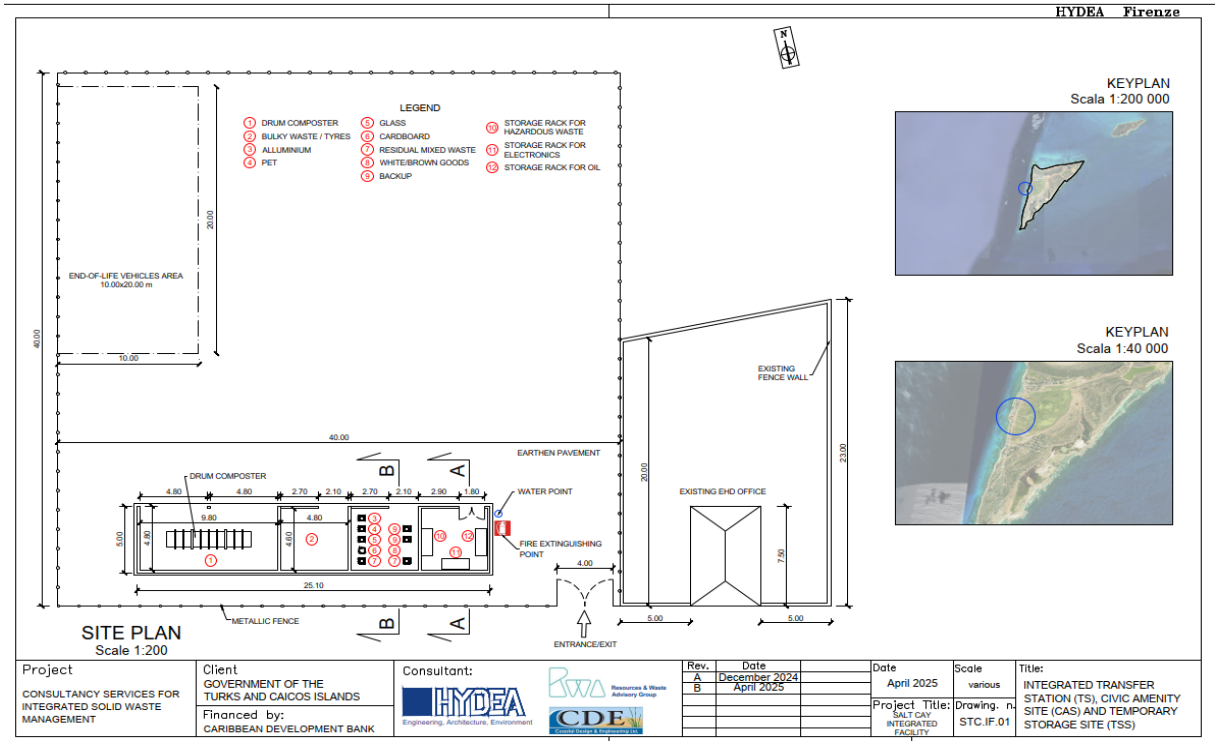
3.7.2 Planned decommissioning of the Salt Cay dumpsite

The decommissioning work in Salt Cay will consist of the excavation of a trench for the disposal of the existing waste and general reshaping and clearing of the area, for which a 2-weeks period is foreseen. The existing fence will be demolished. The rehabilitated site shall in the future be managed by the District Commissioner.

Bulky materials will be loaded into a container and then barged to Grand Turk for disposal or further shipping to Providenciales.

3.7.3 Planned new facilities in Salt Cay

A Civic Amenity Site (CAS), a Temporary Storage Site (TSS), a Composting Facility (CF) and a Construction and Demolition Waste (CDW) area are planned for Salt Cay (Figure 3-28).



Source: Preliminary Design Report, Revision 2 (Joint Venture HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., May 2025)

Figure 3-28: Representation of the CAS, TSS and CF planned in Salt Cay within the EHD compound (the CDW area is not represented)

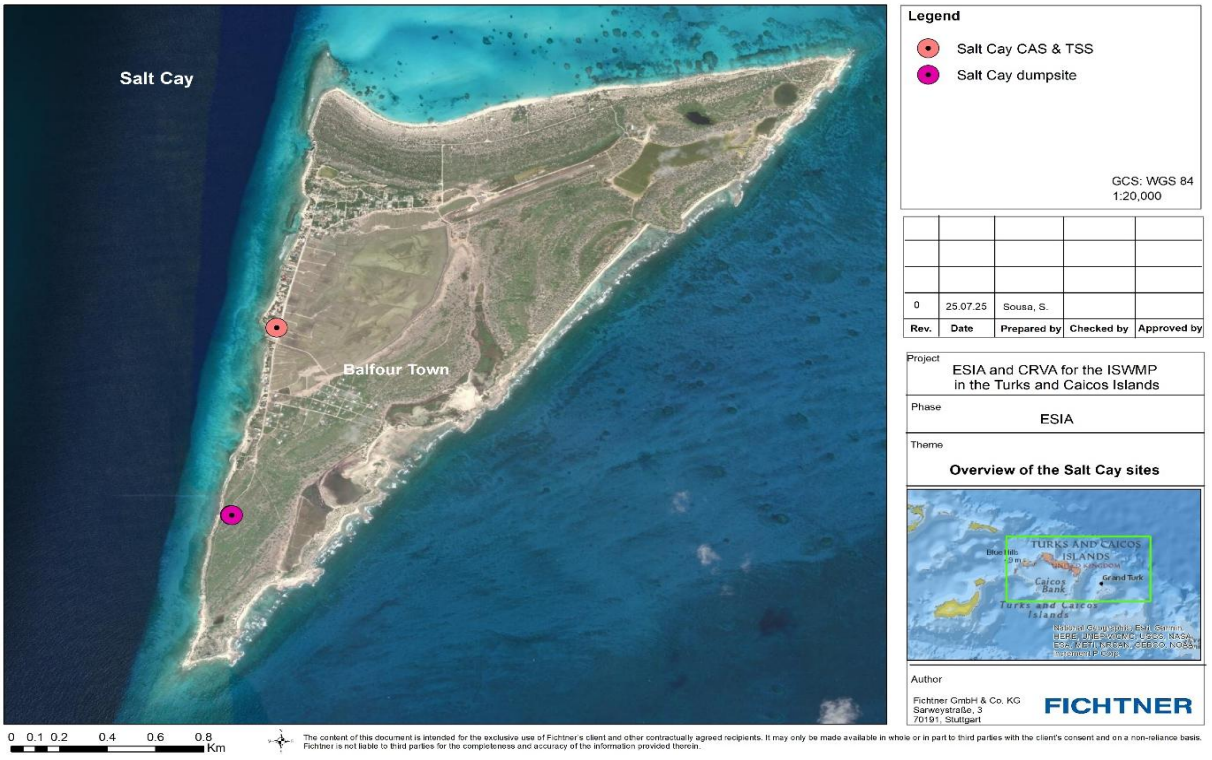


Figure 3-29: Overview of the planned location for the CAS & TSS (including CF) within Salt Cay

3.7.3.1 Civic Amenity Site (CAS) and Temporary Storage Site (TSS) in Salt Cay

Due to the very small scale of the local needs, the CAS and the TSS can conveniently be located within the EHD compound in the island within a covered area with 25x5 m.

The CAS will consist of containers for the recycling/storage of:

- Aluminium
- PET (in a subsequent phase)
- Glass
- Electric and Electronic Waste
- Domestic waste oils
- Hazardous waste.

The TSS will include containers for the storage of:

- End of Life Vehicles
- Tyres
- Oils (from mechanics)
- White goods
- Brown goods
- Hazardous Wastes.

3.7.3.2 Composting Facility (CF) in Salt Cay

Approximately 100 kg per day of green waste is anticipated in Salt Cay requiring only basic composting drum equipment. The use of a drum (small in-vessel) container allows composting of food waste without risk of vermin or pathogens. As a result, only minimal dry waste quantities need to be transferred to the Grand Turk dumpsite, reducing transfer cost and odor levels.

The small compost vessel at the CAS would require a simple operation by the public waste service operator. Waste types to be processed are:

- Green waste

The composting process in an enclosed vessel will produce the heat required for pathogen kill-off, allowing the future composting of sludges from water and wastewater processing, food waste and agricultural waste.

3.7.3.3 Construction and Demolition Waste (CDW) in Salt Cay

The location for deposit of CDW in Salt Cay is yet to be determined. Selected materials for recovery and reuse can be delivered to the CAS/TSS. A reclamation / disposal area shall be identified in agreement with the local community.

3.8 Facilities excluded from the Preliminary Design

3.8.1 Health care waste incinerators

According to the Preliminary Design Report, two health care waste incinerating facilities would be required: one in Providenciales (at the harbour), and one in Grand Turk (location to be determined). This type of waste is considered hazardous and shall not be disposed of at the landfills before being subject to heat treatment.

Health care waste incinerating facilities are not included in the preliminary design, and therefore also not part of this ESIA, since the EHD is reportedly already undertaking initiatives related to the matter.

3.8.2 Charcoal pyrolysis plant

A charcoal pyrolisis plant is not presently included in the preliminary design, but instead it is briefly mentioned as a possible option to be assessed in the future as a partial alternative to composting. For this reason, the pyrolisis plant is not assessed in this ESIA.

The facility could treat timber from tree felling, untreated (chemically) construction lumber, and other types of wood by cutting them to size and pyrolyzing them to produce charcoal for commercializing as fuel.

A possible foreseen location would be at the Providenciales harbour and optionally in Grand Turk (undefined location).

4 Area of Influence of the Project

The Area of Influence of a given project is defined as "the total area likely to be affected by both on-site and off-site impacts from project activities, assets and facilities, including associated facilities. The size of a project's area of influence, as well as the environmental and social risks and impacts within the area, can vary considerably depending on the nature of the project" (Guidance Notes on the IFC PS, January 2012).

The AoI ultimately facilitates the identification of the biological, physical and socio-economic elements to be considered in the Environmental and Social Impact Assessment (ESIA).

To determine the AoI for the ISWMP, consideration is given to recommended buffer zones in specialized literature.

Buffer zones are areas designated to protect human and natural receptors of negative effects of the landfill and can provide a supportive basis to determine the AoI. According with the Main Consultant, buffers shall be determined case by case based on the possible estimated extent of the impacts. The impacts vary depending on the size, location, terrain profile, geology, hydrology, wind direction, type of ancillary facilities, type of waste deposited, operational practices, etc. E.g. while the impact of noise can be limited to a few hundred metres, the possible impact of landfill gas diffusion (should the landfill be anaerobic) can reach kilometres.

From the analysis of specialized literature, the following considerations and recommendations were collected to support the determination of the ISWMP's AoI.

Environmental Guidelines - Solid Waste Landfills; Environment Protection Authority (EPA) from Australia[65]

The EPA states that the risk of leachate contamination increases where a landfill or waste deposit site is located near to sensitive water bodies such as wetlands, water sources used for drinking, irrigation, industrial use, or livestock watering or in poor hydrogeological conditions.

In line with the above, the EPA acknowledges that there are environmentally sensitive areas that are inappropriate for landfill sites and recommends maintaining a minimum distance from these areas when locating landfills and dumpsites, such as within 250 meters of an area of significant environmental or conservation value (or another designated protection zone). These areas are identified under relevant laws or environmental planning tools and include national parks, historic and heritage sites, conservation zones, wilderness regions, wetlands, coastal rainforests, critical habitats, scenic landscapes, scientific research areas, and cultural sites.

For large-scale landfills that handle putrescible waste (over 50,000 tonnes per year), it is recommended, where feasible, to maintain a buffer zone of at least 1,000 meters from residential areas, schools, and hospitals. This is to safeguard the quality of these areas from the impacts of odor, noise, and other potential disturbances.

[65] Environmental Guidelines Solid Waste Landfills: https://www.epa.nsw.gov.au/-/media/epa/corporate-site/resources/waste/solid-waste-landfill-guidelines-160259.pdf

IFC Environmental, Health, and Safety Guidelines Waste Management Facilities, 2007[66]

In accordance with the IFC, the location of a landfill shall be farther than 250 meters of residential developments and protected areas, and 500 meters away from groundwater and surface water resources.

Scientific literature

Research suggests that a buffering distance of 400 m could be sufficient if the landfill dispose organic pollutants, but this distance may not be sufficient to prevent the spread of pollutants with heavy metals[67].

Conclusion: Area of Influence of the ISWMP

Considering the above, as well as the environmental and social characteristics of the Project sites (described in the following Chapter 75), a conservative Area of Influence is defined as of a **circle with a radius of 1,500 meters** around each site (Figure 4-1). The AoI encompasses E&S components that may be directly affected by the Project's implementation. It encompasses not only important natural features that may be affected during construction works and emissions from operation such as Protected Areas, but also the neighbouring communities, which are directly affected by air emissions and noise, for example.



[66] IFC Environmental, Health, and Safety Guidelines Waste Management Facilities: https://www.ifc.org/content/dam/ifc/doc/2000/2007-waste-management-facilities-ehs-guidelines-en.pdf
[67] Buffering distance between hazardous waste landfill and water supply wells in a shallow aquifer: https://www.sciencedirect.com/science/article/abs/pii/S0959652618335686

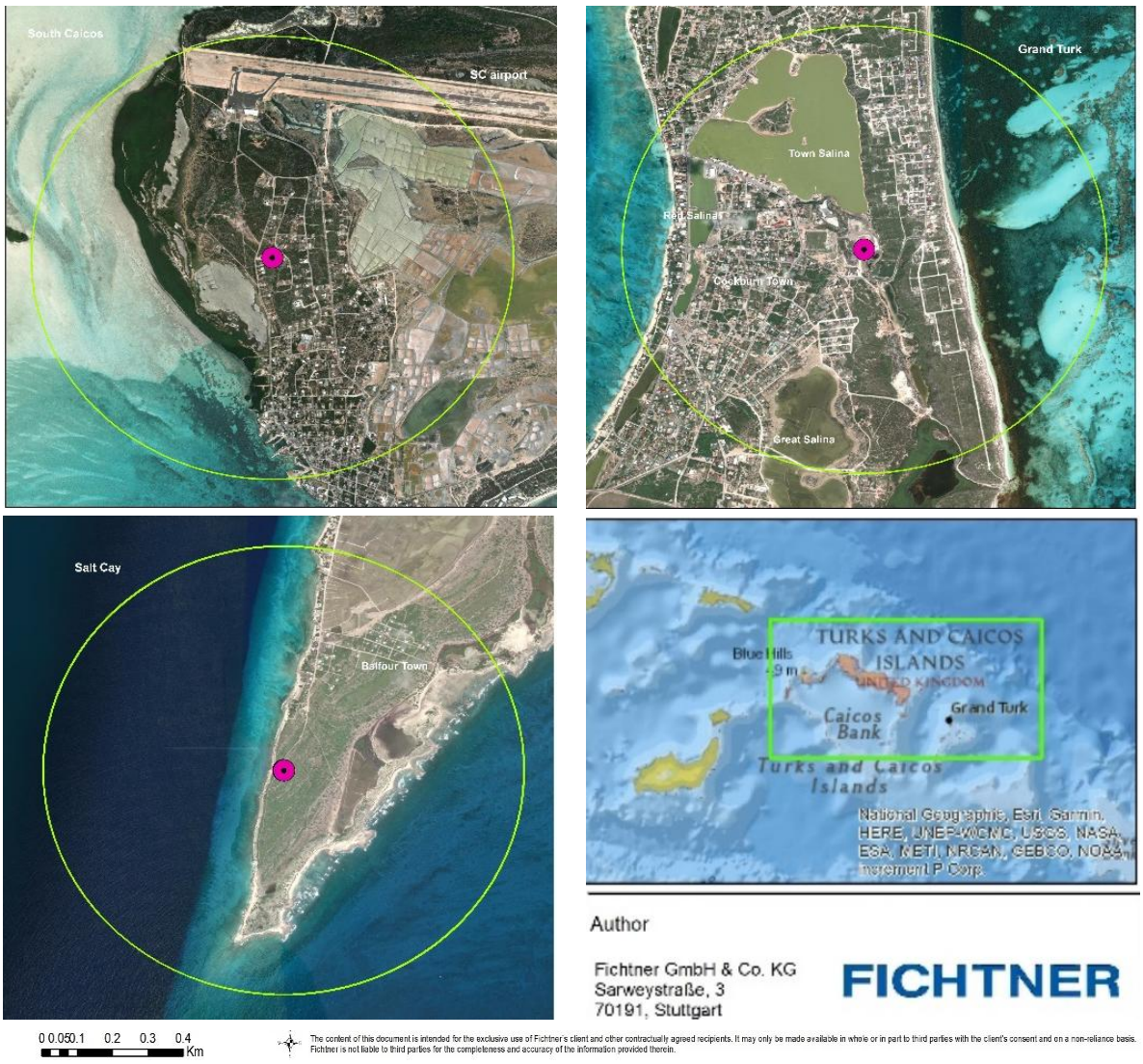


Figure 4-1: Overview of the Area of Influence of the ISWMP sites

5 ESIA Scope, Objectives and Methodology

The main objective of the ESIA is to anticipate and assess any negative and positive impacts and risks the Project might pose in the physical, biological and human environment during construction/rehabilitation and operation, as well as decommissioning of the sites which are planned to be closed in the short term. The ESIA additionally defines mitigation measures to avoid, reduce or compensate significant E&S impacts and risks.

A robust and consistent qualitative or semi-quantitative methodology to assess the impacts in line with the CDB E&S Review Procedures and the IFC PS, as well as the national laws allows identifying impacts and classifying their significance as low, medium, high or very high. The ESIA includes a Climate Risk and Vulnerability Assessment (CRVA), a Livelihood Restoration Plan (LRP) and a Land Acquisition Plan (LAP) ("associated studies").

The ESIA and associated studies focus on the preferred alternative Scenario discussed in the Feasibility Study and in the E&S Scoping Study, and finally selected by the Client and subject to Preliminary Design.

The spatial boundaries of the ESIA study cover the following ISWMP sites located in six (6) of the TCI's islands:

- Providenciales site (Providenciales Island)
- Kew site (North Caicos Island)
- Bottle Creek site (North Caicos Island)
- Middle Caicos site (Middle Caicos Island)
- South Caicos site (South Caicos Island)
- Grand Turk site (Grand Turk Island)
- Salt Cay site (Salt Cay Island)

The estimated direct Area of Influence (AoI) of the Project for physical, biological and socio-economic impacts is a circle with a radius of 1,500 m around each of the ISWMP sites.

The steps undertaken for the ESIA study include:

- analysis of the current environmental and social situation in the area of Project implementation and influence (baseline)
- analysis of the requirements for impact assessment in compliance with the relevant international standards and national legislation and guidelines
- comprehensive identification of environmental and social impacts and risks based on the technical design studies, available data and studies, and the results of the field surveys and baseline appraisal
- assessing the potential significance of the impacts and risks, and
- development of mitigation and monitoring measures for the impacts and risks identified compiling them into the E&S Management Plan.

5.1 Methodology for E&S data collection

The E&S baseline data gathering commenced at the inception stage and continued through the scoping stage and the ESIA. The methodology used for the compilation of the data comprised the following:

5.1.1 Desktop baseline assessment

Initially, the E&S data collection consisted of an intensive desktop study/literature review for the country and specifically for the Project areas. Whenever data gaps were encountered, support was requested from the GOTCI, who successfully provided the Consultant with important data which would otherwise be inaccessible.

The other important source of information were the various reports and prepared by the Main Consultant as result of their investigations and site work. Specifically, the following reports played a crucial role in our understanding of the Project and the sites:

- JV HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., Consultancy Services for ISWM:
  - Inception Report, Rev 2.0, July 2023
  - Climate and Vulnerability Assessment Report, July 2023
  - Waste Management Strategy Report, Rev 1.1, July 2023
  - Feasibility Study Report, Rev. 1.0, April 2024
  - Preliminary Design, Rev. 2.0, May 2025

5.1.2 Site visits and site baseline assessment

For some of the parameters a site visit, interviews with local inhabitants and dedicated surveys were undertaken to supplement the data collected during the desktop baseline assessment. A site visit and interviews with local inhabitants (and key informants) were undertaken during the E&S Scoping Stage in December 2023, and site surveys were undertaken during the ESIA stage between July and September 2024. The primary data collected on site was coupled with the secondary data generated during the desktop baseline assessment. The site surveys were performed as described below.

5.1.2.1 Physical environment - methodology for site surveys

The baseline assessment of the physical environment was performed by means of visual and other sensorial observations.

5.1.2.2 Biological environment - methodology for site surveys

Biodiversity and habitat surveys were conducted to assess the ecological characteristics of the Project-affected areas (AoI) on the two primary project sites - Providenciales and Grand Turk. The objective was to identify potentially impacted terrestrial flora and fauna, including species of conservation concern listed on the IUCN Red List, and to verify the presence and condition of habitat types and complexes within the AoI. The surveys were conducted during one (1) season and employed a combination of the following methods:

- Walk-through of the main dumpsites and surrounding areas guided by site management staff.
- Visual, auditory, and olfactory observations recorded along accessible pathways within the dumpsites' boundaries.

- Observations of flora and fauna, including habitat features.
- Key Informant Interviews (KIIs) with local stakeholders and site managers to gather contextual ecological knowledge and identify priority ecosystem services, including community use and dependency on local biodiversity.

Due to safety concerns related to debris and other potential hazards, the survey was restricted to designated access routes within the dumpsites. Observations were therefore limited to these areas, although efforts were made to visually assess adjacent habitats of ecological significance within the AoI.

The site visit at the Providenciales landfill was performed on 15 July 2024 accompanied by Mr. Delroy Gibbs and Mr. Richard Gibbs of TCI Green Ecological Corporation Limited. The site visit at Grand Turk landfill was performed on 10 September 2024. In addition, targeted bird surveys were conducted within both sites' AoI to document avifaunal presence in nearby wetland habitats.

At both dumpsites, the surveys documented the presence of flora and fauna, habitat conditions, and site-specific ecological features. Observations included the identification of plant species and the presence of feral and domestic animals. The findings from these assessments are presented in the relevant subsections under Section 7.2 (Biological Environment) of this report.

5.1.2.3 Socio-economic environment - methodology of site surveys

A socio-economic survey of the Project-affected people was undertaken on the two primary project sites - Providenciales and Grand Turk - where direct field engagement was feasible. For the remaining islands - North Caicos, Middle Caicos, South Caicos, and Salt Cay - socio-economic data collection was conducted remotely through Key Informant Interviews (KIIs) due to logistical and time schedule constraints.

The AoI for each site defined as a 1,500-meter radius around the dumpsites guided the selection of survey participants and communities. In some cases, KIIs were also conducted with individuals outside the AoIs when they were identified as having knowledge or insights relevant to the ESIA study.

In Providenciales and Grand Turk, field teams employed a combination of face-to-face community surveys, one-on-one interviews with residents, and KIIs with selected stakeholders. These interviews were carried out over several days, including during evening hours, to help ensure broad community participation:

- In Providenciales (9–15 July 2024), four KIIs were conducted with key stakeholders from the community and businesses related to the dumpsite. Two interviews (50%) were conducted with female KIs (TCI and Jamaican nationals), and two (50%) with male KIs (TCI nationals). Recommended members of the Haitian community in Blue Hills were approached but declined to participate.
- In Grand Turk (3 August–10 September 2024), three KIIs were conducted with the dumpsite manager and two male community members (two TCI Islanders and one Jamaican national). Two female community members were contacted—one declined to participate, and the other was unavailable due to vacation and personal commitments.

For the household surveys, a structured sampling strategy was used. Residences within the AoI were identified using open-source aerial imagery, assigned unique numbers, and selected using a random number generator. If a selected household was unavailable or declined to participate, the next selected residence would be interviewed.

To supplement this, snowball sampling was employed in key areas. In Blue Hills (Providenciales), this became the primary method due to safety concerns that made it unsafe for researchers—particularly female team members—to enter certain streets unaccompanied. Participants were asked to refer others in their network, allowing the team to reach residents in a safer and more culturally sensitive manner. Snowball sampling was also used in other parts of Providenciales and Grand Turk to identify individuals with specific knowledge or experience.

For North Caicos, Middle Caicos, South Caicos, and Salt Cay, remote engagement was employed. In North Caicos, an in-person KII was conducted with the District Commissioner, who provided valuable insights into local waste management challenges and opportunities. In Middle Caicos, a direct engagement was pursued but not achieved. For South Caicos and Salt Cay, outreach was conducted via email invitations to potential KIs, but no responses were received. To tackle these gaps, a detailed desktop baseline assessment of socio-economic conditions has been undertaken.

Table 5-1 below provides a summary of the sampling methods, communities covered, and data collection efforts across all six islands.

Table 5-1: Socio-economic survey: summary of sampling methods and survey details

Island	Communities Covered in the AoI	Data Collection Method	Sampling Approach	Residences Identified	Surveys Conducted[68]
Providenciales	Wheeland Phase 1, Wheeland Phase 2 (residential), and Blue Hills (mixed-use)	Face-to-face household surveys, One-on-one interviews, KIIs	Random sampling and snowball sampling	566	30
Grand Turk	Four communities including Front Street (tourism-heavy) and Town Salina (mixed-use)	Face-to-face household surveys, One-on-one interviews, KIIs	Random sampling and snowball sampling	731	32
North Caicos	Island-wide (as relevant)	In-person KII	Purposive sampling (District Commissioner)	N/A	1 KII
Middle Caicos	Island-wide (as relevant)	No direct engagement	N/A	N/A	None
South Caicos	Island-wide (as relevant)	Email outreach with survey invitation	Purposive sampling	N/A	No response received
Salt Cay	Island-wide (as relevant)	Email outreach with survey invitation	Purposive sampling	N/A	No response received

Inclusion of Vulnerable Groups

One of the key focal points of the survey was the inclusion of vulnerable groups, particularly informal waste pickers who had previously worked at the Providenciales landfill site. Access to the site has recently been restricted due to ongoing rehabilitation efforts. Many of the waste pickers are migrant population, and their legal status is often uncertain, possibly contributing to their hesitancy and fear around participating in the study. To address these challenges, the research team engaged with Haitian community leaders and representatives who held legal status.

[68] In both Providenciales and Grand Turk, the number of household surveys conducted aimed to meet the minimum 5% engagement threshold based on the estimated number of residences within the AoI.

Survey Instruments and Subjects

The surveys consisted of a mix of closed-ended questions (such as yes/no and Likert scale items[69]) and open-ended prompts that allowed participants to share their thoughts in more detail. All responses were collected anonymously, and basic demographic information was recorded to support further analysis. To ensure accessibility, surveys were conducted in English and Spanish, with Haitian Creole translation available when needed.

Qualitative responses from both surveys and KIIs were thematically analysed to identify key concerns, issues, and perceptions specific to each island and demographic group. The survey aimed to capture a wide range of information, including:

- baseline demographic and socio-economic characteristics,
- identification and analysis of vulnerable groups,
- public health status,
- community attitudes toward the Project,
- development priorities,
- cultural heritage—both tangible and intangible.
- sexual and gender-based violence (SGBV),
- crime, poverty, and gendered perspectives on livelihoods.

All primary data collected through fieldwork were supplemented with secondary data obtained through baseline literature reviews.

5.2 Methodology for assessment of the significance of impacts

Due to the fact that there is no official international consensus on an agreed approach for assessing the significance of impacts on the environment and the communities within a project's area of influence, the Consultant developed their own evaluation procedure. This procedure is based upon the Consultant's extensive experience in performing Environmental and Social Impact Assessments.

The methodology used in this ESIA study for classifying the E&S impacts of the Project is based primarily on the ARVI approach (IMPERIA, 2015). ARVI is an approach for assessing the significance of the expected impacts of a proposed development project and was the key deliverable of the EU sponsored IMPERIA Project[70].

The ARVI approach was adapted by the Consultant based on the European Commissions' Guidance on Scoping (EU, 2017) and their long-term experience with ESIA studies. This resulted in a transparent, reliable and objective methodology that is depicted into the following 3 steps:

- Step 1: Distinguish positive and negative impacts
- Step 2: Dismiss non-significant impacts
- Step 3: Multi-criteria analysis for significant impacts pre- and post-mitigation

[69] A Likert scale item is a statement that the respondent is asked to evaluate by giving it a quantitative value on any kind of subjective or objective dimension, with level of agreement/disagreement being the dimension most commonly used. The format of a typical five-level Likert item, for example, could be: Strongly disagree, Disagree, Neither agree nor disagree, Agree, Strongly agree.
[70] More on this project here: https://www.jyu.fi/science/en/bioenv/research/natural-resources-and-environment/imperia-project

A scheme of the three steps and the interactions among them is shown in Figure 5-1. An explanation is provided in the following paragraphs.

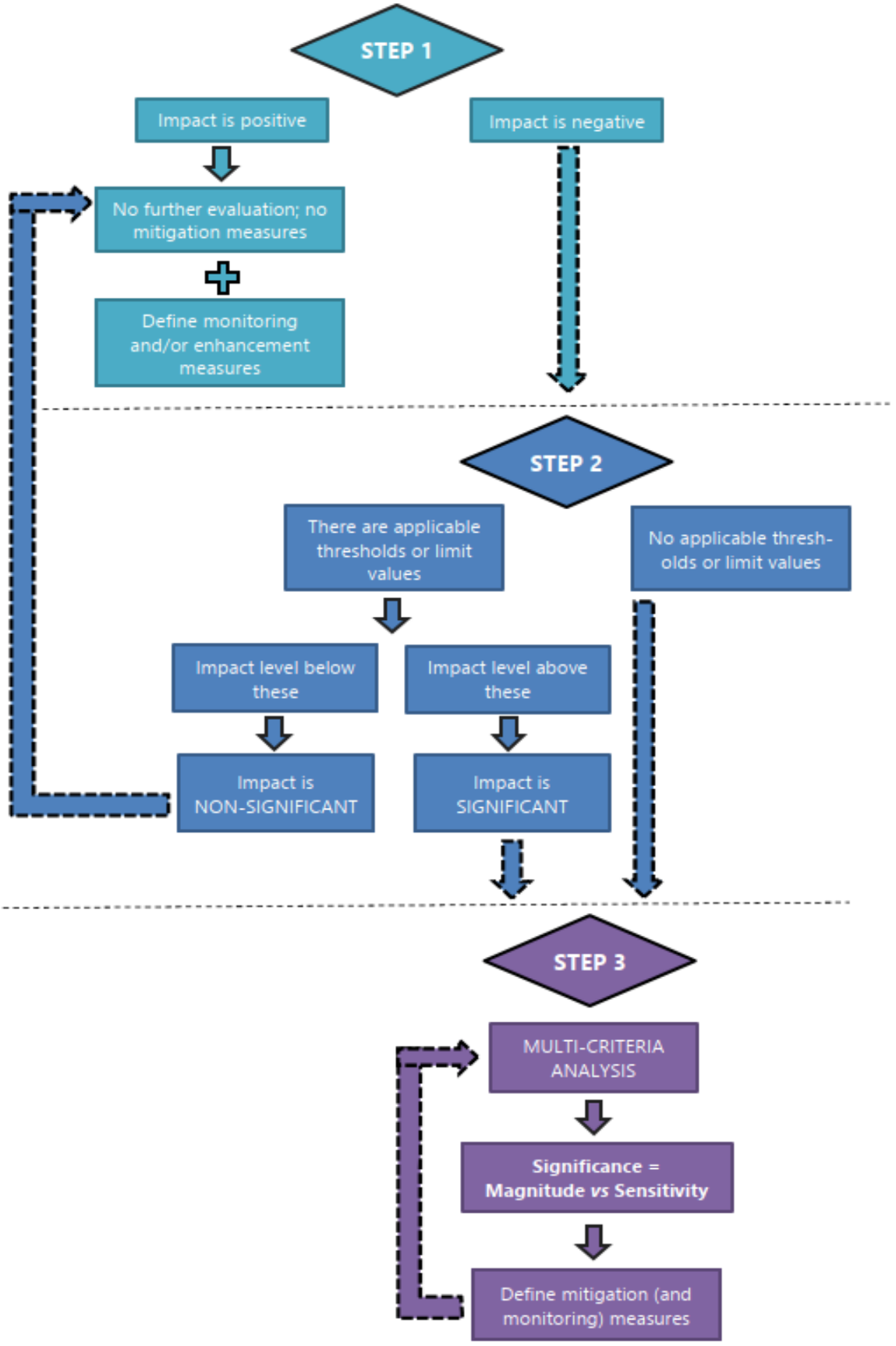


Figure 5-1: Fichtner's methodology for assessment of the significance of impacts

Step 1: Distinguish positive and negative impacts

The methodology begins by distinguishing positive from negative impacts. **Positive** impacts do not require further evaluation but require the development of enhancement and respective monitoring measures where pertinent and feasible.

Ex. (not necessarily applicable to the ISWMP): The socio-economic survey shows that there are many unemployed non-educated young persons in the project area. The project may bring up a positive impact by creating jobs during construction. To enhance this, the Contractor must preferably employ local work force during construction, to whom they will provide adequate training.

Negative impacts shall be further evaluated in Step 2.

Step 2: Dismiss non-significant impacts

For those impacted components for which a threshold or a limit value is defined (in the national legislation or international guidelines), these shall be used to initially understand the degree of change in the receiving environment. If the impact of the project is foreseen as being below the threshold or limit value, then the impact can be classified as **non-significant** and can be dismissed from further assessment. For non-significant impacts mitigation measures are not necessary, but monitoring may be applicable.

Ex. (not necessarily applicable to the ISWMP): A power plant's impacts on dust levels in the ambient air is below the air quality standard. The impacts is deemed as non-significant and therefore no mitigation measures are necessary; but monitoring of dust at the stack and/or the ambient air shall nevertheless be subject of the ESIA.

If the impact of the project is foreseen as being above the threshold or limit value, then the impact can be classified as **significant** and shall be subject of further assessment by using the multi-criteria analysis method (Step 3). This method is also to be used when no thresholds or limit values are available.

Step 3: Multi-criteria analysis for significant impacts pre- and post-mitigation

At present, there is no international consensus among practitioners on a single or common approach for analysing and classifying the significant impacts. Fichtner developed an approach based on the one commonly followed in the EU that consists of evaluating significance based on the magnitude of the predicted effect and the sensitivity of the receiving environment:

Sensitivity vs Magnitude = Significance

The formula above is applied exclusively to negative significant impacts, i.e., to those impacts that need further assessment beyond steps 1 and 2.

For all significant impacts, mitigation measures are defined to lower, eliminate or compensate for negative effects. The residual significance, i.e., the significance after specified measures are applied is then assessed by applying once more the multi-criteria analysis.

5.2.1 Sensitivity

The sensitivity of the receiving environment can be measured based on 3 criteria, each of them being evaluated based on 4 levels.

- Existing regulations and guidance - there are specific receptors[71] in the impact area which have some level of protection, either by law or other regulations:
  - very high protection level - the impact area includes an object that is protected by national law, EU Directives, or international agreements which may prevent the proposed development
  - high protection level - the impact area includes an object that is protected by national law, EU Directives, or international agreements which may impact the feasibility of the proposed development
  - medium protection level - national regulation sets recommendations or reference values for an object in the impact area, or the project may impact an area conserved by a national or international program
  - low protection level - few or no recommendations which add to the conservation value of the impact area, and no regulation restricting use of the area (e.g., zoning plans)
- Value of the receptor to the society - economic values, e.g. water supply; social values, e.g. landscape or recreation; or environmental values, e.g. natural habitat:
  - very high - the receptor is very unique, very valuable to society and possibly irreplaceable; it may be deemed internationally significant and valuable; the number of people living within, depending on or using the area in any other way is very large
  - high - the receptor is unique and valuable to society; it may be deemed nationally significant and valuable; the number of people living within, depending on or using the area in any other way is large
  - medium - the receptor is valuable and locally significant but not very unique; the number of people living within, depending on or using the area in any other way is moderate;
  - low - the receptor is of small value or uniqueness; the number of people living within, depending on or using the area in any other way is small.
- Vulnerability to the changes brought up by the project under evaluation (ability to tolerate changes; number of sensitive targets):
  - very high - Even a very small external change could substantially change the status of the receptor. There are many sensitive targets in the area.
  - high - Even a small external change could substantially change the status of the receptor. There are many sensitive targets in the area.
  - medium - At least moderate changes are needed to substantially change the status of the receptor. There are some sensitive targets in the area.
  - low - Even a large external change would not have substantial impact on the status of the receptor. There are only few or no sensitive targets in the area.

After each sensitivity criteria is classified according to one of the 4 levels, these are evaluated by means of a scoring system, improving thereof the level of transparency and objectivity of the analysis. The result is a classification of the sensitivity of each impact as low, medium, high, and very high.

[71] Receptors are: population and human health, biodiversity, land, soil, water, air and climate, material assets, cultural heritage, and the landscape

SENSITIVITY					Example
Scoring / Criteria	**1:**	**2:**	**3:**	**4:**	***Receptor X***
Existing regulations and guidance	Low protection level	Medium protection level	High protection level	Very high protection level	*Very high: 4*
Value of the receptor	Low	Medium	High	Very high	*High: 3*
Vulnerability to the changes	Low	Medium	High	Very high	*Low: 1*
Sum					***8***
Sensitivity of the receptor					***Medium***

Key:

Sensitivity	Sum
Low	3 to 5
Medium	6 to 8
High	9 to 10
Very high	11 to 12

5.2.2 Magnitude

The magnitude of the negative significant impacts is evaluated based on 6 criteria, each of them being evaluated based on 2 to 4 levels:

- Spatial extent of the impact
  - local: up to 5 km (typically including site + neighbouring properties/settlements)
  - municipal: 5 -10 km (typically including one municipality)
  - regional: 10 - 100 km (typically including one region)
  - wide range/transboundary: > 100 km (typically including several regions and/or crossing national borders)[72]
- Duration of the impact (length of time during which the activity that delivers an impact is observable)
  - short term: construction activity[73] <1 year
  - medium term: construction activity >1 year
  - long term: project life (operation)
  - permanent: lasting (even after decommissioning)
- Frequency of the impact
  - once / occasionally or never (for example, after mitigation)
  - irregular but less than or equal to once per year
  - seasonal (2 to 4 times per year)
  - repeatedly (more frequently than 4 times per year)
- Reversibility of the impact:
  - reversible impact
  - irreversible impact

[72] A transboundary impact is always classified as a wide range impact, even when it is expected within a range shorter than 100 km
[73] Construction activity in this context refers to specific time-limited activities leading to impacts such as excavations, levelling, blasting, etc., and not to the whole construction period.

- Probability of the impact occurring (expert assessment)
  - unlikely: unlikely to occur
  - possible: may occur
  - probable: likely to occur
  - definite: will certainly occur
- Intensity of the impact (can often be measured with various physical units; if not, expert assessment is used)
  - low - the change to environmental conditions or on people is small (or between 0% and 15% above thresholds/standards)
  - medium - the project has a clearly observable negative effect on nature or environmental load (or between 15% and 25% above thresholds/standards). A social change has an observable effect on people's daily lives and may impact daily routines.
  - high - the project has a large detrimental effect on nature or environmental load (or between 50% and 75% above thresholds/standards). A social change clearly hinders people's daily lives.
  - very high - the project has an extremely harmful effect on nature or environmental load (or equal to or more than 75% above thresholds/standards). A social change substantially hinders people's daily lives.

After each magnitude criteria is classified according to one of the 4 levels (or 2 levels, in case of "reversibility"), these are evaluated by means of a scoring system, improving thereof the level of transparency and objectivity of the analysis. The result is a classification of the magnitude of each impact as low, medium, high, and very high.

	MAGNITUDE				EXAMPLE
Scoring / Criteria	**-1:**	**-2:**	**-3:**	**-4:**	***Impact X***
Spatial extent	Local	Municipal	Regional	Wide range/ Transboundary	*Municipal: -2*
Duration	Short term	Medium term	Long term	Permanent	*Permanent: -4*
Frequency	Once	Irregular	Seasonal	Repeatedly	*Once: -1*
Ability to recover	Reversible	-	-	Irreversible	*Reversible: -1*
Probability	Unlikely	Possible	Probable	Definite	*Possible: -2*
Intensity	Low	Medium	High	Very high	*Medium: -2*
Sum					***-14***
Magnitude of the impact					***Medium***

Key:

Magnitude	Sum
Low	-6 to -9
Medium	-10 to -14
High	-15 to -19
Very high	-20 to -24

5.2.3 Significance

The level of significance of each impact is finally assessed as low, medium, high, or very high. This is done by means of a **significance matrix** evaluating the magnitude of the impact against the sensitivity of the receiving environment.

SIGNIFICANCE		Magnitude of the impact			
		Very high	*High*	*Medium*	*Low*
Sensitivity of the receptor	*Low*	High	Medium	Low	Low
	Medium	High	High	Medium	Low
	High	Very high	High	High	Medium
	Very high	Very high	Very high	High	High

5.2.4 Assessment of cumulative impacts

The cumulative impact of the project is the incremental impact of the project when added to impacts from other relevant past, present and reasonably foreseeable developments as well as unplanned but predictable activities enabled by the project that may occur later or at a different location (WB, 2016).

The possibility for cumulative impacts is determined within the present ESIA to the extent that information on past, present and reasonably foreseeable developments is available. However, the assessment of the significance of cumulative impacts using the methodology as described previously in this report may not be possible. This is justified with experience with assessment of the significance of cumulative impacts that shows that application of significance determination methods normally used in ESIA is very difficult (IFC, 2013).

For any potential cumulative impact identified, and independently on whether its significance may be assessed or not, additional mitigation and/or monitoring beyond that identified for non-cumulative impacts will be considered.

5.3 Methodology for specialist studies

5.3.1 Climate Risk and Vulnerability Assessment

A CRVA was performed for identifying the potential impact of climate change in the Project facilities and to identify resilience (adaptation and mitigation) measures to be included in the Project and in the related institutions. The CRVA was based on the facilities and documents provided by the Main Consultant, specifically the Draft Preliminary Design Report (Rev. 02, May 2025).

An internationally recognised CRVA methodology based on the EU-Taxonomy [74] classification of climate related hazards was used. The methodology was adapted to assure proper consideration of the Project's waste management facilities. Afterwards, the following steps were performed:

- Step 1: understanding the climate projections for the Project region;
- Step 2: identification of physical climate risks that may affect the performance of the assets during their expected lifetime;

[74] https://ec.europa.eu/sustainable-finance-taxonomy/home

- Step 3: high level assessment of the climate vulnerability to assess the materiality of the physical climate risk on the assets;
- Step 4: assessment of adaptation or mitigation solutions to reduce the identified physical climate risks.

Step 1: For the assessment of the future climate changes at the site, climate projection data was obtained from Climate Scale using the CMIP6 (Coupled Model Intercomparison Project Phase 6) ensemble of more than 20 Global Climate Models (GCMs), which typically have a resolution of 100-200 km. Climate Scale increases the resolution to 25 km and a statistical analysis of the obtained results from the models is performed. The assessment considered the worst-case scenario.

Step 2: Based on climate projections, future physical climate risks were identified that have not necessarily been evident when planning the facilities. Highlighting potential risks due to changing climate conditions helps to become aware in time to take proportionate actions for reducing these risks. This can prevent or limit future harms.

Step 3: The impact of the identified risks for the specific technology, considering the Draft Preliminary Design of the Project, as well as the proposed and general operation and maintenance standards based on assumptions was assessed. As a result, and based on the information available, a risk table was provided showing the level of the identified impact (low, medium or high). For the assessment, the status of the Project (in this case under design and partially under implementation (Providenciales rehabilitation has begun)) is considered. In general, it shall be assumed that the Project is being designed according to the applicable codes and standards.

The risks were evaluated based on the following matrix:

Table 5-2: Matrix for evaluation of climate risks

CLIMATE RISKS		Probability		
		unlikely	likely	very likely
		0-10%	10-50%	50-100%
Potential Impact	small	**low**		
	significant		**medium**	
	material			**high**

The risk matrix was prepared based on the facility investment calculations of the Main Consultant as well the additional cost of the risk mitigation measures. This was based on the final risk evaluation.

Step 4: For those hazards where any risk was detected, recommendations for possible adaptation or mitigation measures for the technology were provided. Some risks may be considered material and adaptation measures will need to be implemented as defined in the Climate Adaptation Plan, which is part of the CRVA. The economic analysis of proposed measures was prepared on a high level.

Gender and community vulnerability: Gender and community vulnerability are not items to be included in the risk matrix but were in any case be analysed based on the ESIA. Specifically, gender relevant topics and the vulnerability of the communities (and as far as possible of the infrastructure they depend upon) was analysed in connection with the conclusions of the socio-economic baseline assessment and respective impact identification in the ESIA. The baseline assessment was important in this case to establish the gender and social vulnerability status quo and identify who will benefit from the Project.

6 Analysis of Alternatives

This Chapter makes an analysis of alternative configurations, alternative scenarios, alternative locations and alternative vegetation for the constructed wetland in Bottle Creek. Where relevant, the alternatives are compared based on five criteria:

1. Environmental Sustainability
2. Climate Change & Disaster Resilience
3. Technical Feasibility
4. Economic & Financial Viability
5. and Social Acceptance & Institutional Governance Capacity

Each of the five criteria is analysed in relation to a 1-3 scale, where:

- 1: Low (ex.: low sustainability; low acceptance)
- 2: Medium (ex.: medium resilience; medium viability)
- 3: High (ex.: high feasibility; high governance capacity).

The criteria are weighed differently. Considering the context of the ISWMP and of the TCI, where an urgent and deniable need for implementing the Project exists, a larger weight is placed on the criteria "Technical Feasibility" and "Economic & Financial Viability". This implies that each scale point provided to these two criteria is multiplied by two. The alternative that scores higher is selected as the preferred one.

6.1 Alternative ISWMP configurations

During the Feasibility Study stage, the Main Consultant evaluated the potential for implementing different configurations for waste management in the TCI, namely i) thermal treatment-based options, ii) mechanical-biological treatment-based systems; and iii) landfill-based systems.

6.1.1 Thermal treatment-based options

Thermal treatment-based ISWM systems offer efficient waste volume reduction and energy recovery, making them ideal for densely populated or land-constrained areas. Mass burn incineration is the most proven and widely used method, requiring minimal land per tonne of waste treated.

However, these systems come with high capital and operating costs, and their financial viability depends on long-term contracts and favourable energy tariffs. Environmental concerns include emissions of dioxins, furans, heavy metals and dust, as well as generation of hazardous residues (bottom ash and fly ash) that need specialized landfill disposal. Incineration can destroy potentially recyclable materials, reducing opportunities for material recovery and circular economy practices.

Advanced methods like pyrolysis and gasification are still limited to specific waste types and not viable for mixed municipal waste.

6.1.2 Mechanical-biological treatment-based systems

Mechanical-biological treatment (MBT) systems offer a flexible approach to waste management by combining mechanical separation and biological processing. Their scalability and adaptability to different waste streams are key advantages, and they can produce various recoverable outputs such as plastics, metals, glass, paper, and biodegradable materials.

However, MBT costs vary widely depending on market demand for recovered materials. Efficiency improves when waste is separated closer to its source, reducing treatment costs. Biodegradable waste, often the largest fraction, can be processed through composting, biogas production, anaerobic digestion, or innovative methods like vermicomposting and briquetting. Still, the need for source separation and market dependency can limit consistency and economic viability.

From an environmental perspective, MBT requires tight monitoring and strict operational procedures to guarantee sanitation and hygiene and avoid emissions of leachate, odours, volatile organic compounds, or greenhouse gases above regulated/best practice standards. On the other hand, produced compost or biogas can be used as renewable energy sources or, depending on the quality of the compost, this can be used on agriculture.

MBT facilities can be energy intensive when operating complex mechanical sorting systems, and do not eliminate the need for landfilling. A significant portion of the treated waste—especially non-recyclable or contaminated fractions—still ends up in landfills. However, it needs to be noted that the volume of waste is significantly reduced when MBT is applied prior to landfilling.

6.1.3 Landfill-based systems

Landfill systems, though not typically seen as a "technology," have evolved into structured approaches for managing the biological degradation of waste. Their main advantage lies in their ability to provide controlled, space-efficient waste disposal, especially when well-managed to minimize environmental impact. In advanced ISWM systems, landfill space is treated as a valuable asset, with regulations and economic tools like landfill taxes encouraging the diversion of recoverable materials.

On the downside, landfills often carry a negative public image, especially in regions with a history of poor practices. While moving away from landfill-based systems is a common goal, the technical, organizational, and financial challenges involved are often underestimated. Despite efforts to reduce reliance on them, landfills remain a necessary component of all ISWM systems to some extent.

6.1.4 Comparison of the alternative configurations

Incineration-based (thermal treatment) ISWM is on balance technically superior to MBT and landfill-based configurations, given in particular the low land take requirements associated. However, implementing incineration-based ISWM is risky without strong institutional support. Lacking dedicated structures and resources can lead to delays, cost overruns, or failure. The E&S consequences of a poorly run incineration-based system range from hazardous emissions to air, water and soil to risks to health & safety of workers and the community. Additionally, a fully international standard hazardous waste landfill would be required to guarantee environmental and public health protection. Success depends on having the right framework, funding, and sufficient waste volume to justify the investment.

MBT-based ISWM is generally more environmentally friendly than incineration or landfill. However, its success depends on developing reliable markets for recovered materials, which takes time and support. Its modular design offers flexibility but must be tested in local contexts. If not adequately managed, an MBT system may release leachate, odours, volatile organic compounds, or greenhouse gases above regulated/best practice standards

Landfill-based ISWM is on balance unfavourable regarding several technical and economic aspects evaluated by the Main Consultant (e.g. land requirements (high) vs. land availability in the TCI (low)). However, it is a technically robust system configuration. All ISWM systems rely to a certain extent on landfill, and it is a tried and tested approach to ensure that before moving on to more complex and demanding ISWM systems it is important for a country to demonstrate that it can ensure at least basic controlled management of landfills.

Table 6-1 presents a structured comparison table using the 1–3 scale (where 1 = low, 2 = medium, 3 = high) for the three alternatives based on the five comparison criteria and the weighing factors. It shows that the landfill-based systems are the preferred ISWMP configuration.

Table 6-1: Structured comparison of the different ISWMP configurations

Configuration alternatives	Environmental Sustainability	Climate Change & Disaster Resilience	Technical Feasibility	Economic & Financial Viability	Social Acceptance & Institutional Governance Capacity	Weighed sum
Weighing points	1	1	2	2	1	
Thermal treatment-based systems	1 (emissions, ash disposal, loss of recyclables, constrains circular economy)	2 (GHG emissions, but CC resilient structures)	2 (proven incineration tech, but complex and costly)	1 (high capital & O&M costs, tariff dependency)	1 (public opposition, complex governance)	**10**
Mechanical-biological treatment-based systems	2 (requires monitoring, reduces landfill volume, renewable outputs possible)	2 (biogas potential, but still landfill reliance)	2 (flexible, scalable, adaptable to waste streams, requires strict management)	2 (variable costs, market-dependent)	2 (requires source separation, moderate acceptance)	**14**
Landfill-based systems	1 (land use, long-term impacts, methane emissions)	1 (high GHG emissions, vulnerable to CC disasters)	3 (simple, widely used, well known in the TCI)	3 (lowest cost, but limited revenue potential)	2 (negative image, but socially familiar and easier to implement)	**16**

The chosen system is justified by the need to establish a resilient and flexible core for waste and resource management in the TCI as a priority. This involves a landfill-based ISWM system as the foundation, complemented by selective mechanical and biological treatment for waste streams with market potential (composting, separation, exporting).

Ensuring sufficient landfill capacity is critical for long-term resilience, while efforts should focus on gradually building infrastructure and markets for material recovery. At the same time, strengthening the institutional framework and organizational capacity is essential to enable more advanced and environmentally favorable systems in the future. Broader policy areas—such as biodiversity, agriculture, and energy—must also be considered to support this transition.

6.2 Alternative ISWMP scenarios

The Feasibility Study for the ISWMP proposes consideration of three alternative scenarios:

- Scenario 0 is the "no-project" alternative, meaning keeping the waste management in the TCI functioning as it has been up to now ("business-as-usual"). Rehabilitation, retrofitting, improved operational procedures, new structures, and waste diversion are not implemented.
- Scenario 1 foresees the maximisation of the use of the main present disposal sites through their remediation and adjustment for the foreseen duration of the ISWMP (20 years). It implies rehabilitation of the existing landfills in Providenciales and Grand Turk, and diversion of waste streams other than mixed waste and compostable fractions from all islands into Providenciales. This scenario also foresees the creation of a new landfill cell in North Caicos at the Bottle Creek site to receive disposable waste from North, Middle and South Caicos.
- Scenario 2 is based on the early closure of the Providenciales disposal site (2026) and the transfer of the waste to the Bottle Creek site in North Caicos. It implies the rehabilitation of the Grand Turk landfill as well and building a new large landfill in North Caicos, at the Bottle Creek site to receive waste from all islands, except Grand Turk and Salt Cay.

6.2.1 Scenario 0: "no-project" scenario

In case the ISWMP is not implemented - Scenario 0, the volume at the dumpsites will be quickly exhausted. Under this scenario, the Main Consultant foresees an "extremely critical" waste management situation in a short-term (8 years). Specifically, the following is foreseen to occur:

- Providenciales: volume exhaustion by 2032; no alternatives are foreseeable within the island; exhaustion of the residual volume at the dumpsite will have major impacts and repercussions at multiple levels
- North Caicos - Kew: volume exhaustion by 2029; continued compromising of the area presently already unsuitable for other productive or residential purposes
- North Caicos - Bottle Creek, Middle Caicos, and Salt Cay: volume exhaustion in 20 years; the areas will be environmentally compromised and this will difficult future remediation attempts
- South Caicos: no volume available presently, therefore the waste is regularly burned with the unavoidable environmental and social consequences; this is foreseen to continue under a "no-project" scenario; continuous hindering of the planned residential expansion in the area; continuous a risk for the near airport; no other sites are available within the island in public lands
- Grand Turk: volume exhaustion in 20 years; OHS, CHS and environmental risks would continue without implementation of the ISMWP and the associated best practices.

6.2.2 Scenarios 1 and 2

Scenario 1 and Scenario 2 are both based on the condition that enhanced environmental and safety controls are introduced and therefore require consolidation of landfill activities to fewer, manageable sites whilst waste diversion is pursued as a necessary requirement to improve SWM in TCI. Both scenarios propose the closure of the minor dumpsites in Kew (North Caicos), Middle Caicos and Salt Cay and the transfer of waste from South Caicos to Bottle Creek (North Caicos).

Table 6-2 shows a summarized overview of Scenario 1 and Scenario 2. Simply put, the main differences between both scenarios are the closure (Scenario 2) or not (Scenario 1) of the Providenciales site in 2026, and the size of the new landfill site in Bottle Creek (larger in Scenario 2).

Table 6-2: Overview of Scenarios 1 and 2 of the ISWMP

Site	Scenario 1	Scenario 2
Providenciales	The site undergoes a thorough and well-designed rehabilitation to allow operation for the next 20 years without needing to further expand the landfill	The site is closed and remediated in the year 2026, corresponding to the end of the construction of the new landfill cell in Bottle Creek.
	Rehabilitation includes extinguishing the deep/underground fires, reshaping the waste pile and operating the site in accordance with a designed filling plan that will allow an increase in storage capacity.	Remediation is achieved by completing the fire extinguishing program on the whole site; partially reshaping the site; and laying of the final soil cover and landscaping.
	The new waste is disposed of on top of the present waste deposit, once rehabilitated and reshaped.	The investment for this option will be completed by the construction and operation of a Transfer Station at the disposal site for the transfer of the waste to North Caicos.
	The final closure of the site (soil cover and landscaping) is carried out during landfill operations rather than left behind at the end of the 20-year period.	The land use after the closure shall be limited to green and recreational area not being viable for the construction of rigid and permanent structures.
	It is technically and financially not feasible to line the landfill and create drainage and a final solution for the leachate. This implies that, under Scenario 1, the groundwater, surface water and soil would continue to be contaminated from the landfill activities.	Lining of the landfill is not feasible and even after closure in 2026 the groundwater, surface water and soil would continue to be contaminated for an undetermined period of time.
	Installing an IWRC	Installing a TS
North Caicos - Kew	Immediate decommissioning of the dumpsite (sorting of waste and land reclamation)	
North Caicos - Bottle Creek	Creation of a new engineered and lined landfill cell (100,000 m^3) to receive disposable waste from North, Middle and South Caicos, extending over a 2.5 ha from the top of the hill to the present MSW dumpsite.	Because Providenciales is shut down in 2026 in Scenario 2, a new large engineered and lined landfill in Bottle Creek is needed with four (4) 250,000 m^3 cells (in progressive expansion modus) to receive waste from all islands, except Grand Turk and Salt Cay.
	Future expansion can be achieved by the construction of 250,000 m3 cells toward South adjacent to the first cell.	To host the quantities of waste to be shipped, the site will have an increased operation service.
	Installing a leachate basin and a membrane lining of GCL (Geocomposite Clay Liner) and HDPE (high-density polyethylene).	
	Installing CAS, TSS, CDW Centre and CP	
Middle Caicos	Immediate decommissioning of the dumpsite (sorting of waste and land reclamation)	
South Caicos	Immediate decommissioning of the dumpsite (sorting of waste and land reclamation)	
	Installing TS, CAS, TSS, CDW Centre and CF	
Grand Turk	Slight rehabilitation through reshaping and rearrangement of the site, allowing for its further vertical expansion.	
	Operational time of at least 20 years	
	Temporary storage of non-hazardous waste in low areas prone to flooding; progressively reclaiming low areas through the deposit of inert materials from CDW.	
	Improvement of the professional operation service of the site	
	Installing CAS, TSS, CDW Centre and CP	
Salt Cay	Immediate decommissioning of the dumpsite (sorting of waste and land reclamation)	
	Installing CAS, TSS, CDW Centre and CF	

Source: Adapted from the Feasibility Study, Revision 1 (Main Consultant, April 2024) and Preliminary Design Report, Revision 2 (Main Consultant, May 2025)

6.2.3 Comparison of alternative scenarios

The analysis of alternatives must consider a holistic perspective including environmental, social, technical and economical perspectives. The E&S Scoping Report (FICHTNER, August 2024) presented a comparison and ranking of the three scenarios taking exclusively into account environmental and social factors; the Feasibility Study Report (Main Consultant, April 2024) performed the analysis based on technical feasibility and economical factors.

Considering that the ISWMP is a project that seeks to improve a technically, environmentally, and socially unfavourable situation, Scenario 0 is the least preferable one. From an E&S perspective, keeping the status-quo of waste disposal in the TCI will exacerbate already existing environmental and social impacts, and eventually create new ones. Therefore, this scenario is not recommended for any of the sites, even for those who still offer disposal volume for the next 20 years.

The comparison of scenarios 1 and 2 assumes that the respective improvement and rehabilitation measures will be properly applied at all sites and in both scenarios, including better operational, environmental and H&S practices.

From an E&S perspective, and considering each site separately, the comparison in the E&S Scoping Report showed that Scenario 2 is more favourable for Providenciales as it implies the immediate closure of the dumpsite with cessation of GHG and smoke emissions, odours, noise, and provides a possibility for short-term recreational land usage; and improvements in the quality of life; however, this Scenario comes with risks for inter-islands biosecurity due to the need for immediate transfer of all new waste generated in Providenciales to North Caicos. The comparison also showed that Scenario 1 is more favourable for Bottle Creek as it implies a smaller new landfill with less implications on land requirements, landscape, emissions, traffic increase, etc. [75] From an economical perspective, the comparison in the Feasibility Study Report shows that Scenario 1 entails a higher economic net present value (ENPV) and benefit-cost ratio. [76] From a technical perspective, there are no clear advantages or disadvantages for any of the scenarios, as the design considers, for both cases, the technical limitations of the overall WMS in the islands and offer relatively easy technical solutions.

Table 6-3 shows a structured comparison of the different ISWMP scenarios using the 1–3 scale (where 1 = low, 2 = medium, 3 = high) for the three scenarios based on the five comparison criteria and the weighing factors. It shows that Scenario 1 is the preferred alternative.

Scenario 1 is seen by the GOTCI as an immediate imperative, which foresees the maximisation of the use of the main present disposal sites through their remediation and adjustment for the foreseen duration of the plan and the implementation of a network of waste diversion facilities. The Main Consultant recommends that institutional strengthening and developing the enabling environment for private sector participation are key for the successful implementation of this scenario and adds that, the longer the Scenario 1 situation can be preserved, the more economical the waste management service can be. Moving to Scenario 2 is likely and inevitable in the long-term as the volume at the Providenciales site becomes exhausted.

[75] Details can be consulted in the Final E&S Scoping Report (Fichtner, August 2024)
[76] Details can be consulted in the Feasibility Study Report, Revision 01 (Main Consultant, April 2024)

Table 6-3: Structured comparison of the different ISWMP scenarios

ISWMP Scenarios	Environmental Sustainability	Climate Change & Disaster Resilience	Technical Feasibility	Economic & Financial Viability	Social Acceptance & Institutional Governance Capacity	Weighed sum
Weighing points	1	1	2	2	1	
Scenario 0	1 (uncontrolled environmental emissions)	1 (GHG emissions; low resilience to CC risks)	1 (extremely critical waste management situation)	3 (low to no costs)	1 (unpopular solution)	**11**
Scenario 1	1 (emissions in Providenciales continue, albeit more controlled)	1 (GHG emissions in Providenciales continue and disaster resilience remains low)	2 (feasible with limitations)	3 (high ENPV; high benefit-cost ratio)	2 (may cause some unacceptance in Bottle Creek; governance require strengthening)	**14**
Scenario 2	2 (some emissions in Providenciales stop, leachate there continues until stabilization)	3 (GHG emissions in Providenciales stop and disaster resilience improves with closure)	2 (feasible with limitations)	1 (lower ENPV; lower benefit-cost ratio)	2 (favourable in Providenciales; may cause high unacceptance in Bottle Creek; governance require strengthening)	**13**

6.3 Alternative locations

The Feasibility Study highlights the availability of land as one of the most important limiting factors constraining the selection of future ISWM systems. Sites for waste management facilities need to be selected excluding low lying land, land prone to flooding during intense rain events, densely populated areas, sensitive targets (e.g. hospitals, schools, airports), natural protected areas and areas of touristic value. Only very limited portions of the TCI territory remain available for ISWM infrastructure.

In the specific case of Providenciales the high value of land for residential and tourism use, and the intense urbanization do not leave other options available except for the present disposal site and its immediate surroundings. The situation in Grand Turk is similar, however the present disposal site lays on a flood prone area; while in the case of South Caicos, no public land appears to be immediately available.

North Caicos and Middle Caicos offer possibility for the location of ISWM infrastructure. Nevertheless, the distance from the major centre of waste generation (Providenciales) and the lack of adequate port reception in Middle Caicos limits the possibilities.

As a result, existing land allocated for waste infrastructure is of premium importance to be taken into consideration for future facilities.

6.4 Alternative CW vegetation

The new landfill in North Caicos Bottle Creek will require the residual leachate production to be initially collected in an equalisation basin and then pumped at an approximately constant rate to an adjacent Constructed Wetland (CW) for evapotranspiration and treatment. The CW is based on the physical, chemical and biological processes supported by wetland vegetation that filter solids, degrade organics and remove nutrients from the wastewater.

In an initial stage, the usage of common reed (*Phragmites australis*) as CW vegetation in Bottle Creek was considered. However, after consultation with Fichtner and the DECR, the idea of using this plant has been abandoned.

In fact, despite being typical of freshwater wetlands, the common reed is an alien species to the TCI and has been registered to show invasive behaviour of other wetlands, including saline environments. This invasion may be made directly to surrounding areas or indirectly by usage of machinery on different locations of the islands contaminated with seeds and rhizomes, transportation of seeds in workers clothes, among others. Therefore, the risk that the plant spreads to other wet areas (for example, the nearby Ramsar Site), inclusive those with high saline content, is not to be ignored.

Plant imports are governed by the TCI Department of Agriculture, who tend to seek consultation with DECR on potentially invasive plant imports. It was expected that the DECR would disagree to the introduction of this species, as well as other non-native species like *Typha latifolia* (common bulrush or broadleaf cattail).

According to the DECR, the native *Typha domingensis (*southern cattail or cumbungi*)* would be acceptable, as well as *Cladium mariscus (*swamp sawgrass, great fen-sedge, saw-sedge or sawtooth sedge), if feasible for the purpose of the CW. Others species have been recommended by DECR as shown in Table 6-4.

Table 6-4: Species recommended by the DECR to be used in the Constructed Wetland at Bottle Creek

Botanical name	Common name	Local name	Ecology
Typha domingensis	Cattail/Bullrush	Down	Marginal
Cladium mariscus	Sawgrass	Sawgrass/Pondgrass	Marginal
Eleocharis cellulose	Round spikerush	-	Marginal
Eleocharis geniculate	Hatpin sedge	Hatpin sedge	Marginal
Phyla nodiflora	Fogfruit	-	Marginal
Bacopa monnieri	Brahmi herb	-	Marginal
Najas guadalupensis	Water-nymph	-	Aquatic
Potamogeton illinoensis	Pondweed	-	Aquatic
Echinodorus berterei	Bur-head Sagittaria	-	Aquatic/ Marginal

Source: DECR

The DECR advised as well to verify the potential of species of Sporobolus (dropseeds or sacaton grasses), and of any of the native mangroves for the same purpose: Rhizophora mangle (red mangrove), Avicenniaa germinans (black mangrove), Laguncularia racemosa (white mangrove), Conocarpus erectus (button mangrove), and the much larger Terminalia buceras (bullet tree, or black olive tree).

Concurrently, the DECR provided the ESIA Team with a list of species that they strongly recommend against due to their invasive potential. These are shown in Table 6-5.

Table 6-5: Species recommended against by the DECR to be used in the Constructed Wetland at Bottle Creek

Botanical name	Common name	Ecology
Typha sp.	Cattails (other than *T. dominguensis*)	Marginal
Cyperus alternifolius	Umbrella sedge	Marginal
Cyperus papyrus	Papyrus	Marginal
Pistia stratiotes	Water lettuce	Floating
Pontederia crassipes & sp.	Water hyacinths	Floating
Elodea sp.	Waterweed	Aquatic
Phragmites sp.	Southern reeds	Marginal
Arundo donax	Giant reed	Marginal
Myriophyllum aquaticum	Parrot's feather	Marginal
Lemna sp.	Duckweed	Floating
Wolfia sp.	Wolfia	Floating
Azolla sp.	Millfoil	Floating
Salvia sp.	Water spangles	Floating

Source: DECR

In the sequence of the discussions, the Main Consultant plans presently to use the native *Typha dominguensis* inside the constructed wetland coupled with *Claudium mariscus* and *Sporobolus* along the edges. All plants are native so and approval from the TCI Department of Agriculture is not required (if the plants are harvested directly in the TCI and not imported), and no environmental concerns regarding ecosystem invasion and disturbance are expected. The harvesting shall be done under a Scientific Research Permit, which DECR has the mandate to issue.

7 Background Research and Baseline Assessment

This Chapter provides a description of the Project-relevant environmental and social baseline conditions in the Project area, i.e., the existing physical, biological and socio-economic/human conditions before the Project's implementation. The determination of the baseline status of the Project area is essential to assess the significance of the negative and positive impacts to be eventually caused by the Project´s construction and operation.

The following baseline description results from desktop research, the site visits undertaken by the Main Consultant in March 2023, the initial site visit undertaken by FICHTNER in December 2023, the baseline site surveys undertaken by FICHTNER in July-September 2024, data provided by the Client and other national institutions, and interactions with the Main Consultant. The stakeholder engagement activities provided valuable insights to further support the development of this Chapter.

7.1 Physical Environment

7.1.1 Weather

The official data portal of the TCI contains information on climate and meteorology on the islands[77] , but this information is so far inaccessible to FICHTNER. This chapter presents data on climate and meteorology collected during a thorough baseline desktop review and will be updated once access to the data portal of TCI is granted. A request has been made to the Client.

The following is a general description of the meteorological characteristics of the TCI in general based on the presently available information.

Temperature

In the country temperature varies from June to October, typical between 80- and 90-degrees Fahrenheit (29-32 degrees Celsius), occasionally rising into the mid-90s (35 degrees Celsius), especially in the later summer months. Between November and May, the average temperature remains between 80- and 84-degrees Fahrenheit (27-29 degrees Celsius). The water temperature in summer is around 82 to 84 degrees Fahrenheit (28 to 29 degrees Celsius) and in winter it's around 74 to 78 degrees Fahrenheit (23 to 26 degrees Celsius). The climate is kept pleasantly cool by a constant trade wind[78].

Rainfall

TCI typically receive about 33 inches (84 cm) of rainfall annually, which is among the lowest in the Caribbean region. Visitors can usually expect dry weather, with rain being a rare occurrence. The period from April to July usually sees the most rainfall, but the bulk of the precipitation tends to occur during a few specific times in the hurricane season from June to November.[79]

[77] https://dataportal.gov.tc/dataset/worldclim-current
[78] https://turksandcaicostourism.com/weather/
[79] https://www.visittci.com/about/weather

Humidity

Humidity tends to be relatively high all year round, particularly during the summer months, although breezes can mitigate its impact. During the summer, winds are usually light, often less than 10 knots, and predominantly from the southeast, with calm periods, especially at night. In contrast, winter winds are typically stronger and come from the east-southeast. It's not uncommon to experience a week of strong winds, exceeding 20 knots, during the winter months as weather fronts pass through. These fronts are regular in winter but become less frequent as spring approaches.

During the summer, the weather pattern usually consists of sporadic showers and the occasional squall. While hurricanes are a concern from June to November, the Turks and Caicos are more frequently affected by tropical waves, which bring strong winds and heavy rains. These tropical waves, also known as easterly waves, are low-pressure systems that have the potential to intensify into a tropical depression or hurricane[80].

7.1.1.1 Providenciales

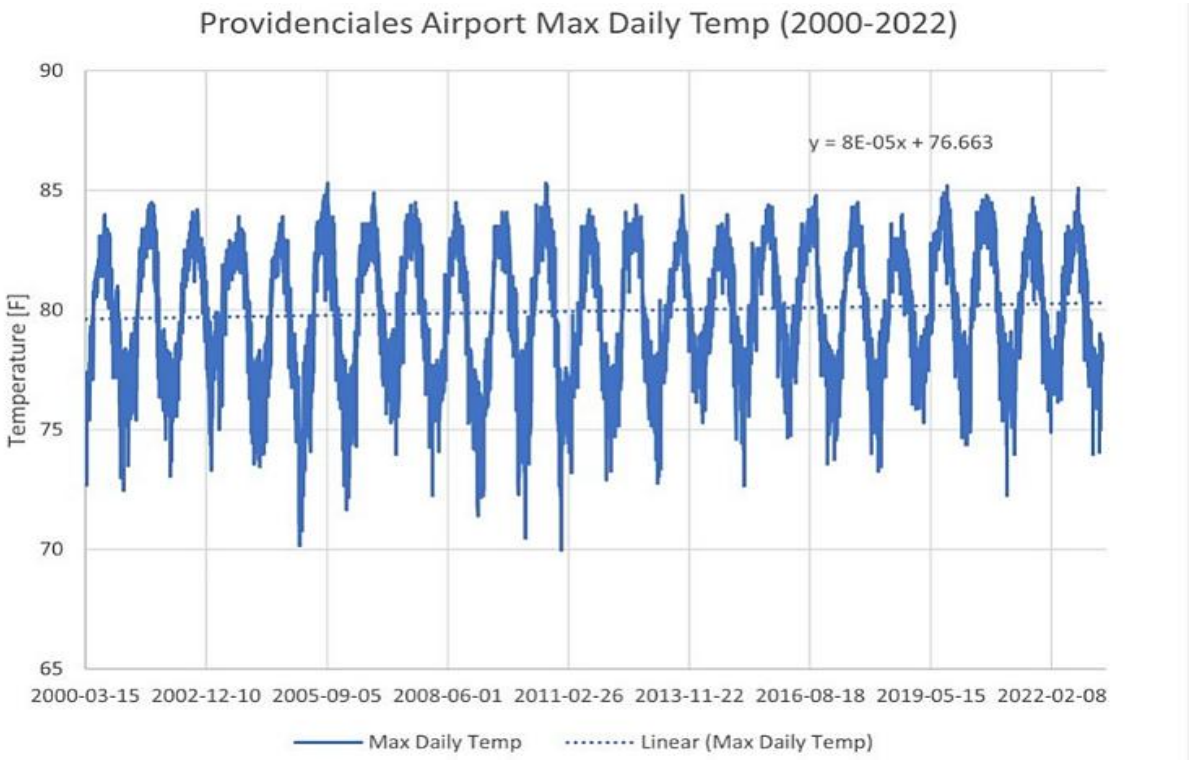
Temperature

The average yearly temperature at TCI is recorded at 27.8 degrees Celsius, exhibiting minimal daily fluctuation (around plus or minus 2 degrees Celsius), as per data collected at Providenciales Airport between 2009 and 2021. There has been a historical trend of rising average temperatures annually, which is expected to persist. However, the rate of temperature rise in the Caribbean is generally lower than the worldwide average.[81]

The Main Consultant's Climate and Vulnerability Assessment Report (2023), points out that historical data obtained from the Providenciales Airport Station indicates that in Providenciales temperatures have been increasing over the last decade (Figure 7-1).

https://datazone.birdlife.org/userfiles/file/IBAs/pubs/TC-IBA-2006.pdf

[81] Climate Resilient Coastal Protection and Management Turks and Caicos Islands by CBCL, 2020



Source: Main Consultant's Inception Report

Figure 7-1: Providenciales Airport Maximum Daily Temperatures (2000-2022)

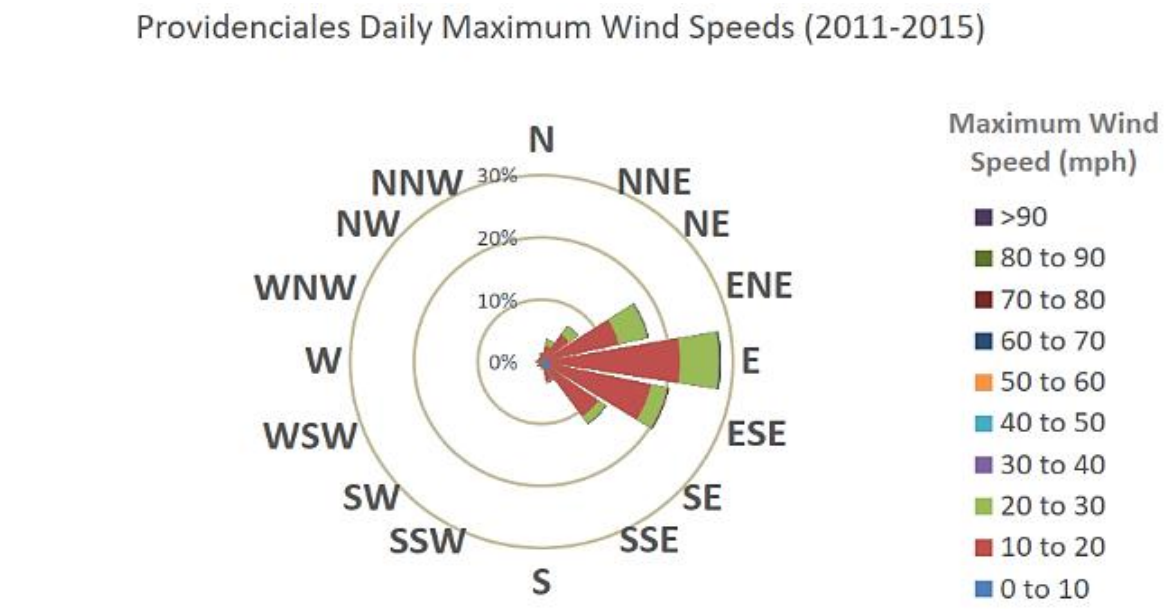
Precipitation

The annual precipitation in Providenciales varies widely, with amounts starting below 20 inches (50.8 cm) and exceeding 50 inches (127 cm), with an annual mean of approximately 30 inches. The average monthly rainfall in Providenciales reaches a low of roughly one inch (2.5 centimeters) in March and peaks at about 4.5 inches (11.4 centimeters) in November[82].

Local Wind Data

The availability of validated and calibrated wind speed measurements for Providenciales (see following Figure) has been somewhat scarce. Nonetheless, the available data on wind direction and speed align with the historical patterns recorded by the US Air Force at their Grand Turk Station during the period of roughly 1960 to 1980.

[82] Climate and Vulnerability Assessment Report, HYDEA, 2023



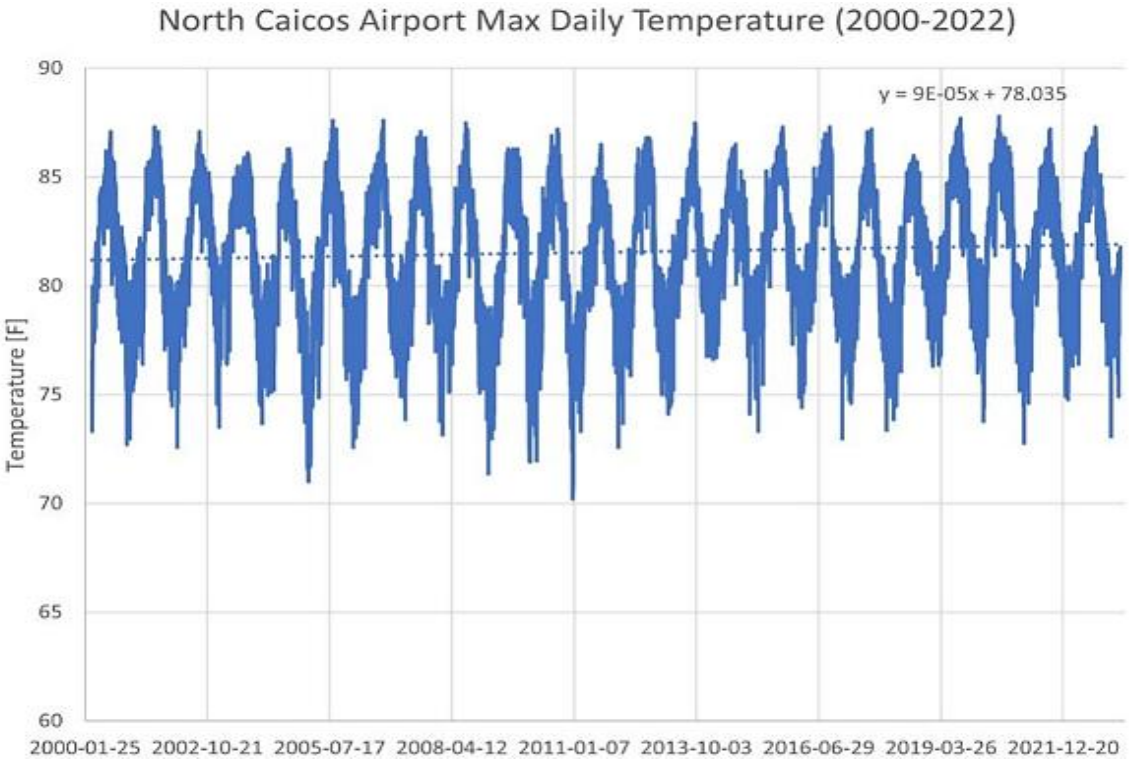
Source: Main Consultant's Inception Report

Figure 7-2: Minimum and Maximum Wind Speeds for Providenciales (2011-2015)

7.1.1.2 North and Middle Caicos

Temperature

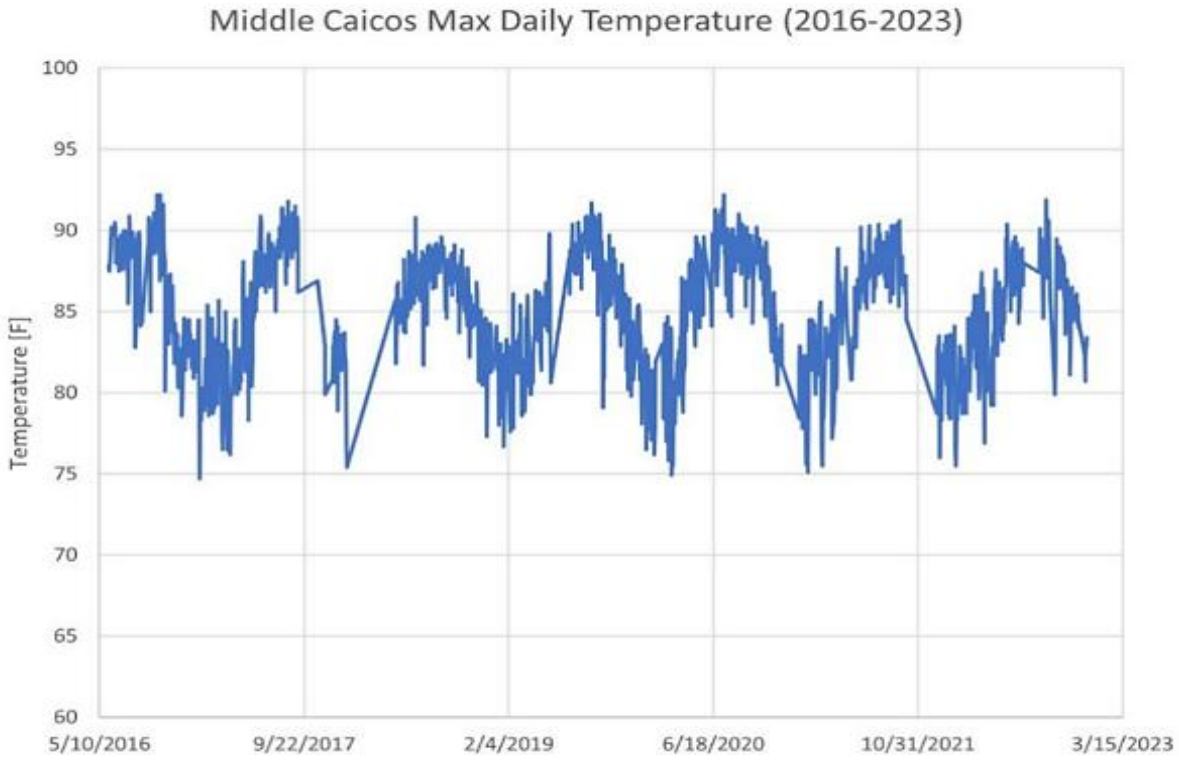
As in Providenciales, North Caicos also shows a slight increase in the maximum daily temperatures recorded, as illustrated in the graph below based on North Caicos Weather station records.



Source: Main Consultant's Inception Report

Figure 7-3: North Caicos Airport Maximum Daily Temperature (2000-2022)

In Middle Caicos, the data reported from the Bambarra Beach (nearest weather station to the Middle Caicos Airport), reports the following information for the period 2016-2023.



Source: Main Consultant's Inception Report

Figure 7-4: Middle Caicos Maximum Daily Temperature (2016-2023)

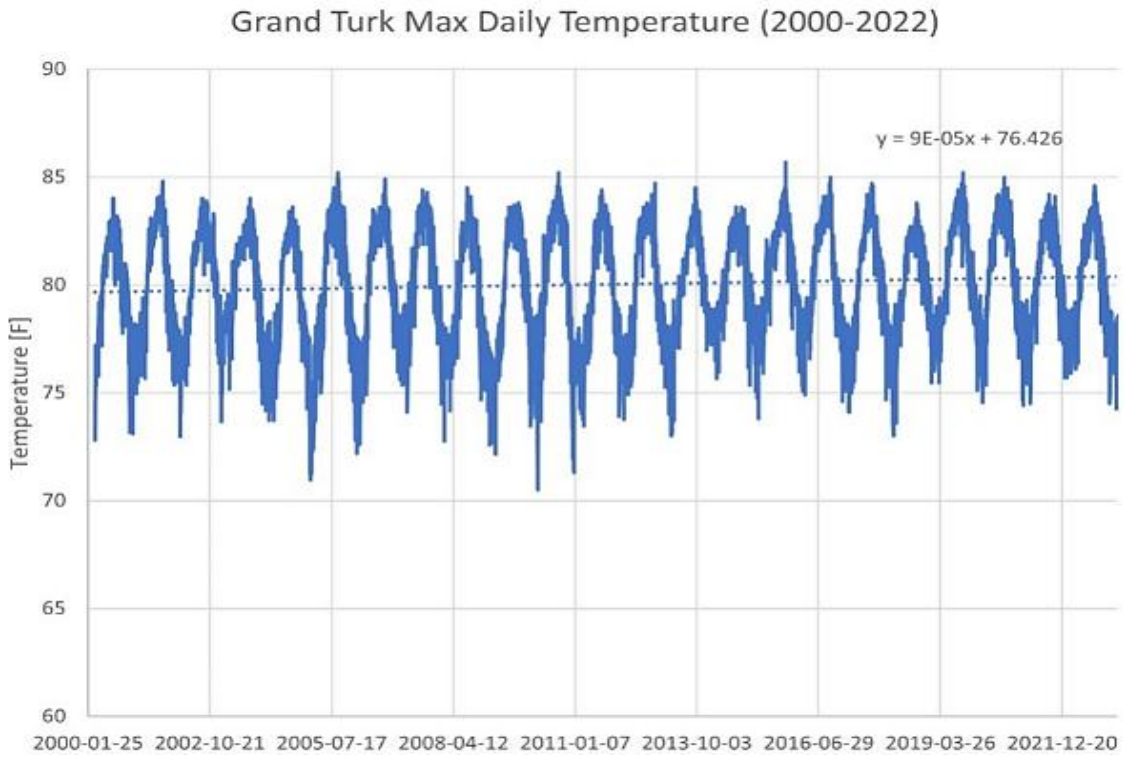
Precipitation

Precipitation in North and Middle Caicos is generally higher than other islands because of their location on the downwind side near the northwest boundary of the Caicos Banks. This localized precipitation is influenced by the trade winds and the evaporation from the warm, shallow waters that are prevalent in the southern area of the Caicos Bank. Generally, the islands experience most of their precipitation during the hurricane season, with their stormwater occurrences being closely linked to these meteorological systems. As these weather events become more frequent and severe, they reduce the replenishment of groundwater because the majority of the rainwater is lost as runoff rather than being absorbed into the ground.

7.1.1.3 Grand Turk, South Caicos and Salt Cay

Temperatures

According with the Main Consultant's Inception Report, in the Grand Turk the temperature is having a slight increase in comparison with the last decade (Figure 7-5).



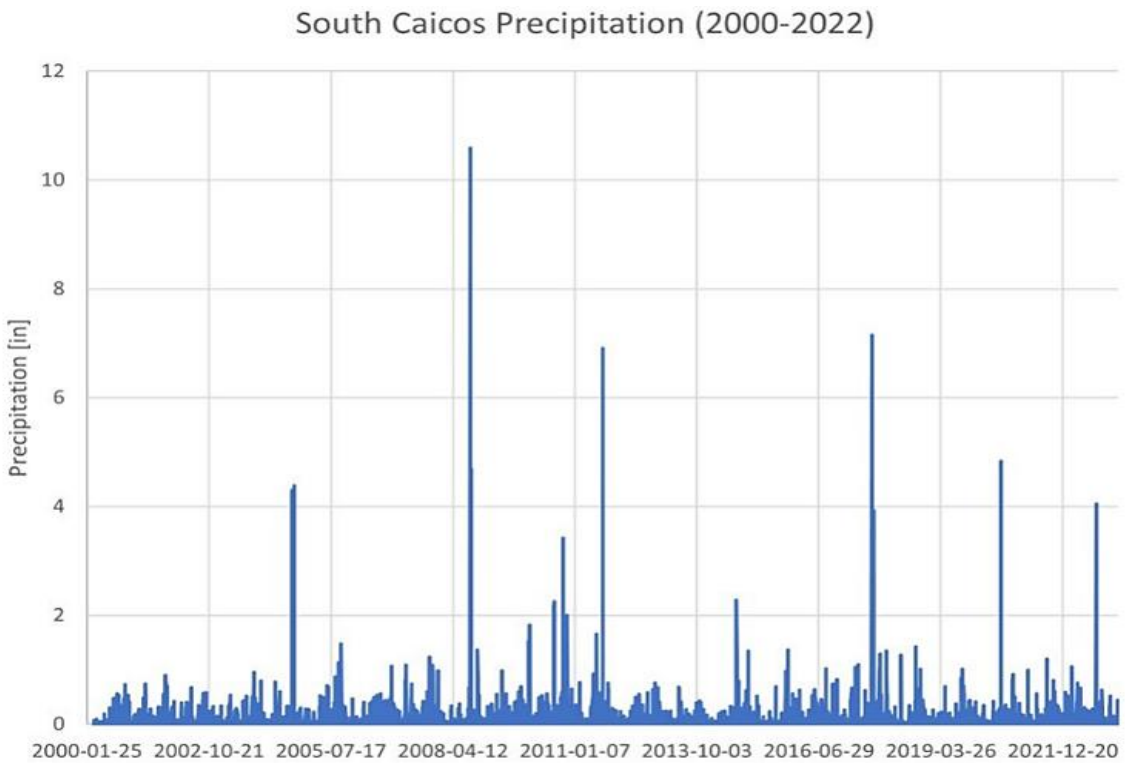
Source: Main Consultant's Inception Report

Figure 7-5: Grand Turk Maximum Daily Temperature

Precipitation

The precipitation average is less than 12 inches annually in comparison with Providenciales (30 inches), The figure below presents the historical record of precipitation registered from year 2000 until 2021 in South Caicos. As can be seen, high precipitation events have been recorded, with high peak rainfall events in the years 2008 and 2016. The 2008 event may be associated with the impact of Hurricanes Hanna and Ike which significantly affected the island causing approximately 33% of the island's housing stock to be adversely impacted[83]. In general, from June to November, the overall rainfall peaks during tropical events, and represents the wet season, with severe rainfall rates reach 12+ inches per 24-hour period.

[83] Hurricane Hanna and Hurricane Ike 2008 | EKACDM (uwi.edu)

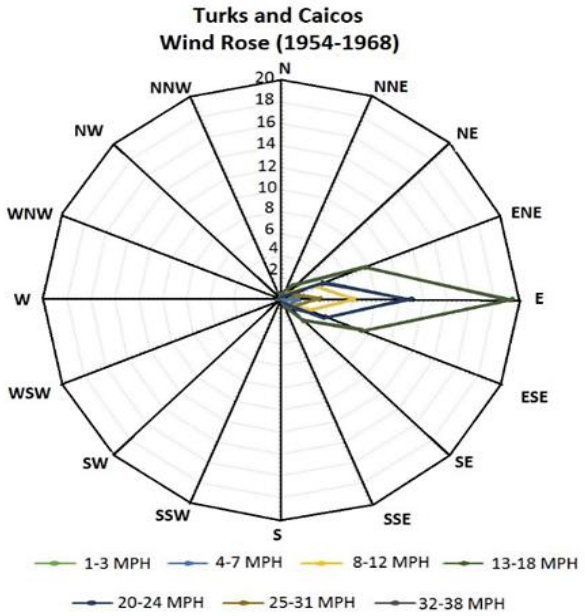


Source: Main Consultant's Inception Report

Figure 7-6: South Caicos Airport Precipitation

Wind Data

The analysis from the Main Consultant about the local winds over a four-year period, indicates that in Grand Turk, wind direction varied from northeast to east-southeast with the mean wind speed ranging from 19.3 to 20.1 mph. The maximum wind speed for the two-year record was 24 mph.



Source: Main Consultant's Inception Report

Figure 7-7: TCI Wind Rose (Percent Occurrence by Direction) at Grand Turk (1954-1968)

7.1.2 Air quality and odour

Upon consulting with a representative of the DECR, FICHTNER was informed that there is no governmentally managed air quality monitoring network in the TCI. Another information shared is that, in the past, some monitoring exercises were undertaken under the scope of some ESIA studies, but the reports were only issued as hard copies and are presently unavailable. The online portal "Open-Meteo" shows some statistical data relating to air pollutants concentrations in the islands, but these data are not available for commercial usage and cannot therefore be used for this report. There is also no indication of where and how the measurements are done by the portal.

The lack of air quality monitoring data hinders a qualitative assessment of the baseline situation at the sites. Consequently, only sensorial and reported information are used for describing the baseline air quality at the sites.

During FICHTNER's site visit in December 2023, the Solid Waste Working Group informed about the plans for the installation of air quality monitoring systems in the Wheeland community (one in each Phase). By the time of writing this report (October 2025), the Client informed that a new air quality monitor has been purchased, installed and connected to power. The monitor is currently being calibrated to facilitate its full operation.

The EHD is currently working on the required logistics such as location, housing, and monitoring for full operation of the machine. Official dates for installing the systems are unknown.

7.1.2.1 Providenciales

Numerous smoking hot spots are found all around the disposal site, especially along the slopes. These hot spots show internal combustion processes (deep fires) that are widespread and active causing nuisance (smoke and smouldering smells) to the nearby community located south of the disposal site (Figure 7-8).



Source: FICHTNER, December 2023

Figure 7-8: Traces of smoke visible at the Providenciales site

In addition to those, large open fires have occurred in the recent past. In March 2022 a fire spread in the central part of the disposal site, and a further one occurred in the north side causing an extended portion of the perimeter fence (about 100 m) to be destroyed; the fence is presently still unserviceable.

The Main Consultant has guided fire-extinguishing actions at the Providenciales disposal site in 2023 and 2024. Together with other rehabilitation measures, putting out the fires may take up to 3 years. The fire-extinguishing activities temporarily increase the levels of dust in the air due to the necessary earth movements and smoke release but are finally expected to completely erase the underground fires and eliminate combustion-resulting air pollutants from the site's Area of Influence. Figure 7-9 shows some images of the fire-extinguishing activities.



Source: Main Consultant

Figure 7-9: Fire-extinguishing exercises at the Providenciales disposal site (top: May 2023; bottom: May 2024)

Medical waste is burnt at the Providenciales site on open pits. There is a small incinerator at the local hospital, but its operation causes gaseous emissions of which the neighbouring inhabitants to the hospital have complained in the past. Therefore, and according to information shared by the Main Consultant, this incinerator is only used occasionally.

Close to, but outside the dump site, burning of green waste by the waste pickers for production of charcoal is undertaken. This process, which burns untreated green waste (discarded pallets accumulated through the process of the importation of goods; and foliage deposited from landscaping activity), releases dusts and gases which are harmful for the human health.

During FICHTNER's site visit in December 2023, some persons complained of respiratory and other health issues that they assume are caused by the air pollution coming from the Providenciales site. Also, restrictions to the life quality were reported (impossibility to open windows or to go outside in some periods).

7.1.2.2 Middle Caicos

In Middle Caicos, all the waste is regularly burnt on site, causing air emissions whose nature and level of toxicity is unknow because there are no air quality measurements (Figure 7-10).



Source: Main Consultant, March 2023

Figure 7-10: Waste burnt at the Middle Caicos site

There is no one living within the dumpsite's AoI. Lorimer's settlement is located relatively close (1,700 m), so possibly in some days of the year the inhabitants may experience bad air quality caused by the site fires. There are no reports of complaints available to FICHTNER at this stage.

7.1.2.3 North Caicos

At the Kew site in North Caicos, there is evidence of waste being burnt and release of odours due to the decomposition of waste deposited at open-air. The community of Kew is located within the site's AoI, ca. 300 meters away.

At the Bottle Creek site, waste is regularly burnt (Figure 7-11). The community of Bottle Creek is located ca. 1 km to the east of the site and is therefore within the site's AoI.

Although at this stage no complaints are known to FICHTNER regarding any of the sites in North Caicos, it is possible that the inhabitants may experience bad air quality caused by the site fires and/or waste decomposition.



Source: Main Consultant, March 2023

Figure 7-11: Waste burnt at the North Caicos Bottle Creek site

7.1.2.4 South Caicos

There is some evidence of waste having been burnt at the site. No reports of air pollutants' emissions or air quality nuisance have been testified up to the date of writing this report.

7.1.2.5 Grand Turk

Medical waste is burnt in a specific open-air pit in the Grand Turk site twice a month (Figure 7-12), releasing potentially toxic emissions to the air. There is a pit for dead animals, as well as sewage sludge being disposed at the site, which indicates a possibility of release of decomposing smells to the surrounding areas (Figure 7-13).

While the problem seems to be less critical than in the Providenciales site, a few spots with underground fires have been detected in the east side of the waste deposit.

There are several inhabited areas within the site's AoI. Although at this stage no complaints are known to FICHTNER, it is possible that the inhabitants may experience bad air quality caused by the burning and decomposition of waste.



Source: Main Consultant, March 2023

Figure 7-12: Medical waste pit and dead animals pit (right) in the Grand Turk site



Source: Main Consultant, March 2023

Figure 7-13: Dead animals pit (left) and sewage sludge deposition (right) in the Grand Turk site

7.1.2.6 Salt Cay

Also, in Salt Cay waste is burnt on site (Source: Main Consultant, March 2023

Figure 7-14).

Balfour Town is located within the site's AoI. Although at this stage no complaints are known to FICHTNER, it is possible that the inhabitants and tourists may experience bad air quality caused by the burning and decomposition of waste.



Source: Main Consultant, March 2023

Figure 7-14: Waste burnt at the Salt Cay site

7.1.3 Noise

Upon consulting with a representative of the DECR, FICHTNER was informed that there is no governmentally managed noise monitoring network in the TCI. The lack of noise monitoring data is an important gap that hinders a qualitative assessment of the baseline situation at the sites. Consequently, only sensorial and reported information are used for describing the baseline noise levels at the sites.

The site visits indicated that occasional noise is felt at the sites when trucks come in to deliver waste or cover materials. This is especially important for the Providenciales site, where 215 trucks enter the site daily. Considering the proximity of the settlements to the site, this noise can represent a significant nuisance to the local population.

Also, in Providenciales, there is report of a recent (April 2024) increase in the number of birds scavenging the non-covered waste (Figure 7-15). These birds, presumably seagulls, come in large flocks and cause high levels of noise.

Airports are located nearby the Providenciales, the North Caicos, the South Caicos and the Grand Turk sites. Depending on the frequency of departing and arriving flights, levels of existing noise may be presently high and constitute a source of nuisance.



Source: Main Consultant, April 2024

Figure 7-15: Scavenging birds at the Providenciales dumpsite

7.1.4 Geology

The TCI are located on two shallow underwater plateaus, the Turks Bank and the larger Caicos Bank, separated by a deep ocean. The highest point is approximately 50 meters above sea level. Additional shallow banks (namely Mouchoir, Silver, and Navidad) are located southeast, but without islands. Some of these banks fall within the jurisdiction of the TCI, while others are claimed by the Dominican Republic[84].

The islands are primarily composed of limestone, featuring numerous caves and sinkholes formed by rainwater seeping through and dissolving the limestone. Historically, these caves, holding freshwater lenses, were the sole source of fresh water on the islands. While not as common now, rainwater collection systems were traditionally used by households. Currently, a significant portion of water for residents on Providenciales and Grand Turk is supplied by reverse osmosis facilities, which are powered by diesel fuel imported via ships and trucks[84].

The Society for Sedimentary Geology (SEPM) indicates that the Turks and Caicos Banks, similar to the Bahamas, are situated above continental crust that was separated from the North American mainland when it detached from Northwest Africa during the division of Pangea in the Triassic period.

[84] Conservation U.K, Overseas Territories, TCI:
https://www.ukotcf.org.uk/wider-caribbean/turks-and-caicos-islands/

The Triassic sedimentary and volcanic layers, along with the earlier continental crust, are believed to be hidden under layers of Jurassic, Cretaceous, and Tertiary carbonate sediments. During the Pleistocene epoch, glaciation caused sea levels to drop, transforming the banks into flat land plateaus where wind-blown dune systems formed and karstification led to the creation of caves and blue holes. Some of the most notable caves, which are thought to be part of the largest cave network in the Bahamian island chain, are located on Middle Caicos.

The northern edge of the Caicos Platform is exposed to the oceanic swells from the open Atlantic. These swells are produced by the easterly trade winds that propel the westward-moving Antilles Current.

The climate on the Caicos Platform is relatively dry. Rainfall mostly occurs through convection over the larger islands, while the smaller ones, such as West Caicos, get even less precipitation. Evaporation significantly surpasses rainfall, leading to the formation of brines and evaporites in coastal salinas and tidal flats. These brines may affect both the surface and subsurface environments, and there is a lack of significant groundwater or surface freshwater sources on the Caicos Platform[85].

The natural geological features, specifically shallow limestone depressions, lead to the formation of lagoons on the Caicos Platform. The evaporation of water in these lagoons results in the creation of concentrated salt solutions that deposit various minerals seasonally. This process gave rise to salt flats, known as salinas, which were similar to those on West Caicos. The abundance of these minerals, particularly salt, attracted workers from Bermuda in the 17th century to harvest them. Over time, these seasonal workers settled permanently and established a thriving salt industry that continued until the mid-20th century[85].

Based on the evidence of the site visits carried out by the Main Consultant and the available data, it was observed that limestone, either in the form of coral sands (relatively soft limestone deposit) or coral rocks (harder limestone deposit), is the constant lithology of the bedrock underlying all the sites. No or very limited and fragile topsoil layers are observed. Cavities of different size can be noticed both in outcrops and excavation pits and can be assumed as a common and widespread feature of the limestone bedrock. This assumption is reinforced by the evidence of karst phenomena on the ground surface such as sinkholes[86].

Only the Bottle Creek site in North Caicos will be subject to substantial excavations during implementation of the ISWMP. There, the surface of an existing quarry reveals a coral sand deposit. According to the Main Consultant, the bearing capacity of this deposit is more than sufficient for construction purposes.

7.1.5 Hydrogeology and groundwater quality

The risk of pollution of the groundwater by the leachate from landfill sites is considered to be the most significant risk for the natural environment and human health related to the tipping of waste. This threat is harmful to both surface and groundwater sources and results from the toxicity of the leachate and its subsequent migration [87]. Accordong to information shared by the DECR, many households on North and Middle Caicos are directly dependent on pit wells or bore wells for their civic (household) water sources, despite recommendations of the EHD not to do so.

[85] SEMP STRATA, Turks and Caicos Basic Geology. More information on: http://sepmstrata.org/page.aspx?pageid=238
[86] JV HYDEA S.p.A. – RWA Group Ltd – CDE Ltd., Consultancy Services for ISWM, Inception Report, Rev 2.0, July 2023
[87] Przydatek, G., Kanownik, W. Impact of small municipal solid waste landfill on groundwater quality. Environ Monit Assess 191, 169 (2019), available at: https://link.springer.com/article/10.1007/s10661-019-7279-5

Despite the geological nature of the Turks and Caicos Islands, with highly permeable coral limestone extremely favourable to host permanent aquifers, their generally low and flat morphology and limited extension together with a scarcity of rainfalls, only offer limited possibility for the development of relevant freshwater bodies. The high hydraulic transmissivity of the limestone bedrock hosting the aquifer combined with the tidal movement constantly removes and dilutes the pollutants slowly transferring them to the adjacent marine environment [4].

This chapter presents the available data related to the hydrogeology of the sites with focus on Providenciales and Grand Turk, for which also groundwater monitoring data is available. The contents of this Chapter serve, albeit with limitations, the purpose of providing an overview of the actual status of the groundwater quality and of guiding the development of mitigation strategies in the ESIA.

7.1.5.1 Providenciales

The bedrock of Providenciales, made up of sands and limestones, is anticipated to be highly permeable, with some areas possibly exhibiting karst features and even deep cavern systems (see images in Annex B). It is expected that groundwater is present within these layers, and this groundwater is likely to be in hydraulic connection with the ocean that surrounds it. Consequently, it is predicted that groundwater flowing beneath the landfill site will ultimately discharge into the marine environment[88].

The surface's relatively high permeability facilitates the swift infiltration of rainwater, leading to the replenishment of the aquifer below. However, the volume of water that actually infiltrates will be constrained by the area's very high evapotranspiration rates. These rates limit the effective annual rainfall - that is, the portion of rainfall that doesn't evaporate - to approximately 150 mm per year, with recharge occurring predominantly after instances of heavy rainfall. Given the high permeability of both the surface layer and the underlying bedrock geology, it is expected that the rate of aquifer recharge in the vicinity of the Providenciales dumpsite will likely be close to this figure[88].

Groundwater monitoring data from 2017

In 2017, a study commissioned by the EHD assessed the groundwater quality at the Providenciales dumpsite (no coordinates of the sampling wells are available). It can be inferred that some of the parameters recorded exceeded the Groundwater Cleanup Target Level (GTCL)[89].

The following table illustrates the monitored parameters that exceeded the GTCL. Information on the main human health effects associated with these pollutants is included.

[88] Providenciales Landfill Liquid Waste Disposal Environmental Impact Assessment and Liquid Waste Facility Proposal for Pan American Health Organization, GWP Consultants LLP, 2022

[89] GCTL: Groundwater Cleanup Target Level (Table I, Chapter 62-777 FAC); this chapter is part of the Florida Administrative Code-FAC_ and the chapter refers to Groundwater and Surface Water Cleanup Target Levels established by the Florida Department of Environmental Protection (DEP). : https://floridadep.gov/waste/district-business-support/documents/table-i-groundwater-and-surface-water-cleanup-target

Table 7-1: Analytical results: groundwater monitoring in the Providenciales dumpsite in 2017 - exceedances to the GTCL

Parameter exceeding the GTCL		Unit	GCTL	Well A	Well B	Well C	Non-Cancer Target Organs/Systems or Effects	Carcinogenic
Water Metals	Thallium	ug/L	2	2	2	2	Hair Loss Liver	
	Cobalt	ug/L	140			310	Cardiovascular Immunological Neurological Reproductive	
Water pesticides herbicides and PCBs	Aldrin	ug/L	0.002	0.040	0.0020	0.0020	Liver	yes
	alpha-BHC	ug/L	0.006	0.082				yes
	beta-BHC	ug/L	0.02	0.14				yes
	DIELDRIN	ug/L	0.002	0.032			Liver	yes
Water Volatiles	1,2,3-TRICHLOROPROPANE	ug/L	0.02	0.59	0.59	0.59	Kidney Liver	yes
	1,3-DICHLOROPROPANE	ug/L	0.4	0.49	0.49	0.49	Gastrointestinal Nasal	yes
	ACRYLONITRILE	ug/L	0.06	2.6	2.6	2.6	Nasal Reproductive	yes
	cis-1,3-DICHLOROPROPENE	ug/L	0	0.19	0.19	0.19		
	trans-1,3-DICHLOROPROPENE	ug/L	0	0.15	0.15	0.15		
Water Wet Chemistry	CHLORIDE (AS Cl)	ug/L	250,000	8,900,000	17,000,000	7,000,000	None Specified	
	SULFATE (AS SO_4)	ug/L	250,000	1,200,000	2,500,000	1,000,000	None Specified	

While the location of the monitoring points in not known at this stage, it can reasonably be assumed that at least in part the contaminants found in the groundwater result from leachate from the Providenciales dumpsite. Some of these contaminants are reported as having carcinogenic effects and/or target human health in another way. It is essential that the groundwater within the sampling area is not used by the local populations for any effect, and that monitoring is done regularly to assess eventual improvements in the groundwater quality as a consequence of the implementation of the ISWM Project.

Groundwater monitoring data from 2022

GWP Consultants LLP undertook a groundwater monitoring campaign in 2022 at the Providenciales dumpsite. For this, the team collected four samples of groundwater from three boreholes (BH1, BH2 and BH5), and an on-site open well (Well 1), utilized for abstracting water for dust suppression (Figure 7-16). An additional sample was taken from a household well (well 2) in the Blue Hills Settlement (at an unconfirmed location). Additional effluent samples were collected to determine the contaminants that may be emanating from the present practices of disposing liquid waste.



Source: GWP Consultants, 2022

Figure 7-16: Site sampling locations for groundwater monitoring campaign in 2022

The aim of this sampling was to identify pollutants in the groundwater at the site from the liquid waste disposal and to compare it to levels of pollution in potential receptors. The results of the samples indicate the following conclusions:

- The groundwater sample laboratory analyses show elevated concentrations of nutrients and heavy metals also identified within the liquid waste. Nitrate concentrations range from 0.5 to 0.6 mg/l and phosphate concentrations range from 3 to 24 mg/l.
- Arsenic was detected in BH1.
- Lead was detected in BH2 and well 1
- Fecal coliforms and chromium were not detected in any of the samples.
- The in-field analysis identified elevated ammonium, high chemical oxygen demand (COD, in part due to the ammonium), and elevated biological oxygen demand (BOD, which must be caused by microbiological activity).

Further pollutants were identified by the chemical testing, not associated with the liquid waste disposal due to their absence from the effluent samples, but likely originating from the solid waste at the landfill. The assessment of the impact of the solid waste was beyond the scope of GWP Consultant's report, however, their presence both in the groundwater at the landfill site and at some of the receptor sampling locations provided GWP Consultants the confidence that a contaminant pathway exists.

Groundwater monitoring data from 2023

In 2023, a subsequent groundwater monitoring campaign was conducted at the Providenciales dumpsite by the Main Consultant. The campaign involved the collection of three groundwater samples from three boreholes, namely BH1, BH2, and BH5. These boreholes were the same locations where sampling was conducted during the previous monitoring campaign in 2022. The samples were sent for analysis to Italy, and the laboratory compared the values with applicable Italian legislation[90]. The results of the samples indicate the following:

- *Metals including arsenic, total chromium, nickel, lead, copper and zinc:* Detected in all samples. The concentration ranges are below the applicable Italian legal limits and are as follows: arsenic from 0.90 to 2.90 micrograms per liter (µg/L), total chromium from 0.60 to 1.20 µg/L, nickel from 0.70 to 6.20 µg/L, lead at 0.10 µg/L, copper from 0.70 to 1.30 µg/L and zinc from 21 to 147 µg/L.
- *Cadmium:* Concentrations were below the detection limits in all samples.
- *Mercury:* Detected only at BH1 at 0.100 µg/L, which is below the Italian legal limit, with levels below detection limits in the other two samples.
- *Total Organic Carbon (TOC):* Detected in all samples, ranging from 3.5 to 6.40 milligrams per Liter (mg/L).
- *Biological Oxygen Demand (BOD):* Below detection limits in all samples.
- *Chemical Oxygen Demand (COD):* Detected in all samples, ranging from 9 to 49 mg/L O_2.
- *Elevated levels of inorganic pollutants including sulphates and chlorides:* Detected in all samples, with concentrations ranging from 830 to 1,670 mg/L for sulphates (the Italian legal limit is 250 mg/L) and from 6,434 to 12,722 mg/L for chlorides.
- *Phosphates:* Below detection limits in all samples.
- *Nitrites:* Below detection limits in BH1 and BH2 while detected at BH5 at 100 µg/L (below the Italian legal limit).
- *Notable levels of nitrates:* Detected in all samples ranging from 64.3 to 73.7 µg/L.
- *Ammonia:* Below detection limits in all samples.
- *Total nitrogen:* Detected in all samples ranging from 15.0 to 17.0 µg/L.

The 2023 groundwater monitoring at the Providenciales dumpsite could indicate potential contamination pathways, particularly due to the notably detected levels of nitrates, sulphates, and chlorides.

7.1.5.2 Grand Turk

Groundwater monitoring data from 2017

In 2017, a study commissioned by the EHD assessed the groundwater quality at the Grand Turk dumpsite (no coordinates of the sampling wells are available). The same amounts of volatile compounds found in the groundwater at the Providenciales site were found here. Additionally arsenic and lead levels exceeding the Groundwater Cleanup Target Level (GTCL) were detected in the analysis. The following table shows the results for all exceeding parameters.

[90] *Decreto Legislativo 3 aprile 2006*, n. 152, available at https://www.gazzettaufficiale.it/dettaglio/codici/materiaAmbientale

Table 7-2: Analytical results: groundwater monitoring in the Grand Turk dumpsite in 2017 - exceedances to the GTCL

Parameter exceeding the GTCL		Unit	GCTL	Well 1	Well 2	Non-Cancer Target Organs/ Systems or Effects	Carcinogenic
Water Metals	ANTIMONY	ug/L	6		6.9	Blood	
	ARSENIC	ug/L	10	13	55	Cardiovascular Skin	yes
	LEAD	ug/L	15	40		Neurological	
	THALLIUM	ug/L	2	2	2	Hair Loss Liver	
Water pesticides herbicides and PCBs	Aldrin	ug/L	0.00	0.0080	0.0080	Liver	Yes
	alpha-BHC	ug/L	0.006	0.016	0.016		yes
	beta-BHC	ug/L	0.02	0.028	0.028		yes
	DIELDRIN	ug/L	0.002	0.0064	0.0064	Liver	yes
Water Volatiles	1,2,3-TRICHLOROPROPANE	ug/L	0.02	0.59	0.59	Kidney Liver	yes
	1,3-DICHLOROPROPANE	ug/L	0.4	0.49	0.49	Gastrointestinal - Nasal	yes
	ACRYLONITRILE	ug/L	0.06	2.6	2.6	Nasal Reproductive	yes
	cis-1,3-DICHLOROPROPENE	ug/L	0	0.19	0.19		
	trans-1,3-DICHLOROPROPENE	ug/L	0	0.15	0.15		
Water Wet Chemistry	CHLORIDE (AS Cl)	ug/L	250,000	10,000,000		None Specified	
	NITROGEN, AMMONIA (AS N)	ug/L	2,800	3,500	4,000		
	SULFATE (AS SO4)	ug/L	250,000	1,200,000	2,500,000	None Specified	

It can reasonably be assumed that at least in part the contaminants found in the groundwater result from leachate from the Grand Turk dumpsite. Some of these contaminants are reported as having carcinogenic effects and/or target human health in another way. It is essential that the groundwater within the sampling area is not used by the local populations for any effect, and that monitoring is done regularly to assess eventual improvements in the groundwater quality as a consequence of the implementation of the ISWM Project.

Groundwater monitoring data from 2023

In 2023, a subsequent groundwater monitoring campaign was conducted at the Grand Turk dumpsite by the Main Consultant. The campaign involved collecting a water sample from one borehole, namely BH3. The sample was sent for analysis to Italy, and the laboratory compared the values with applicable Italian legislation[90]. The results of the sample indicate the following:

- *Metals:* Except for mercury, all other metals including arsenic, cadmium, total chromium, nickel, lead, copper, and zinc were measured above detection limits. The concentrations are as follows: arsenic at 1.20 µg/L, cadmium at 0.100 µg/L, total chromium at 0.300 µg/L, nickel at 0.80 µg/L, lead at 0.300 µg/L, copper at 50.05 µg/L, and zinc at 6.00 µg/L. All values are below the Italian legal limits.
- *Total Organic Carbon (TOC):* Detected at 6.8 mg/L.

- *Biological Oxygen Demand (BOD):* Below detection limit.
- *Chemical Oxygen Demand (COD):* Detected at 17.0 mg/L O_2.
- *Sulphates and Chlorides:* Measured above detection limits, with sulphates at 1,430 mg/L (the Italian legal limit is 250 mg/L) and chlorides at 11,146 mg/L.
- *Phosphates:* Below detection limit.
- *Nitrites:* Below detection limit.
- *Nitrates:* Detected at 76.9 µg/L (below the Italian legal limit).
- *Ammonia:* Below detection limit.
- *Total Nitrogen:* Detected at 18 mg/L.

The 2023 groundwater monitoring at the Grand Turk dumpsite could indicate potential contamination pathways, particularly due to the notably detected levels of nitrates, sulphates, and chlorides.

7.1.5.3 Other islands

There is no data regarding groundwater tests at the other sites. The DECR informed the ESIA Team that many homes and businesses on North and Middle Caicos rely primarily on groundwater for their water source (including bathing and cooking, and likely, in some cases, drinking) despite EHD's condemnation of household use of groundwater. In Kew, a government managed farm located with the dumpsite's AoI makes uses of uncontrolled and untested groundwater for irrigation of crops. Reportedly, the water has became brackish.

7.1.6 Surface water resources and quality

7.1.6.1 Providenciales

Within the Providenciales site's AoI, coastal waters and inland waters are the available surface water resources. The inland surface waters compose the Wheeland Pond, located north of the Wheeland Phase One community. This is a wetland formed from former sand mining pits that flooded to create inland saline ponds (Figure 7-17).

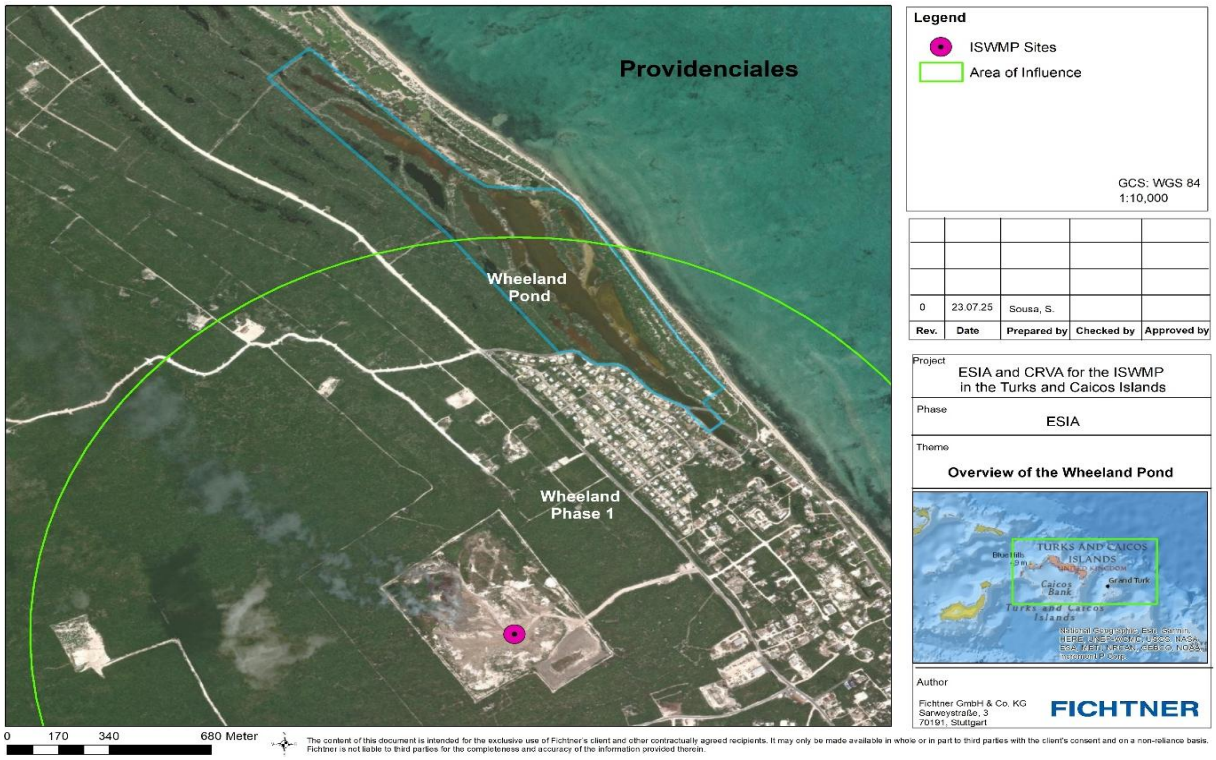


Figure 7-17: Wheeland Pond within the Providenciales site's AoI

The Wheeland Pond supports a broad variety of flora and fauna species and is frequently used for environmental education by the Department of Environment and Coastal Resources. Although not directly impacted by daily landfill operations, it is occasionally affected by smoke and residue from landfill fires. According to the DECR, the Wheeland Pond is also subject to considerable dumping of household, construction, and vehicular waste, particularly following severe weather events.

Coastal and pond water monitoring data from 2022

GWP Consultants LLP undertook monitoring of surface water quality at the Wheeland pond and the coastal area close to the Providenciales site in November 23rd, 2022: two surface water coastal samples were taken from coastal areas (one to the northeast and the other one to the east of the site) and two samples from coastal ponds (Figure 7-18)[88].



Source: GWP Consultants, 2022

Figure 7-18: Off-site sampling locations for surface water monitoring campaign in 2022

The surface water samples at the off-site locations show no exceedances of World Health Organization (WHO) Guidelines for Drinking-Water Quality (GDWQ) with the exception of faecal coliforms. However, detections consistent with the elevated effluent concentrations and groundwater detections are present. Nitrate concentrations at Pond 1 and 2 are 0.6mg/l and 0.8mg/l respectively; nitrate concentrations in Coast 1, taken to the northeast of the site in the assumed groundwater flow direction are higher (0.7mg/l) than at Coast 2 (0.4mg/l); phosphate concentrations are notably higher in Pond 1 than Pond 2 (10 and 3mg/l respectively); phosphate concentrations in the coastal samples are similar with 5mg/l in Coast 1 and 4mg/l in Coast 2; arsenic was detected in all four coastal and pond samples and lead was detected at Coast 2; chromium was not detected; faecal coliforms, the only parameter exceeding the WHO standards, were detected at Pond 1 and in both Coast 1 and 2 at respective concentrations of 5, 5 and 6 cfu/100ml [91].

GWP Consultants identified the Wheeland Pond as a receptor of concern for contamination migration (nutrients, heavy metals and faecal coliforms) from the disposal of liquid waste at the Providenciales dumpsite. This has the potential to be detrimental to both ecological and human health and could result in economic damage by preventing development to the affected parts of the island or by reducing the usefulness of ecological resources. According to the same source, the DECR has recognized the Wheeland Pond and the adjacent marine and reef areas to the northeast of the disposal site as especially sensitive and concerning in terms of environmental impact. Additionally, there is a concern that local inhabitants who reside between the disposal site and the coastline might be using groundwater for non-drinking purposes, which poses a risk of direct exposure to contamination.

[91] The WHO Guidelines for Drinking-Water Quality (GDWQ) state "*Escherichia coli* (*E. coli*) or thermotolerant coliform bacteria must not be detectable in any 100 ml sample". https://iris.who.int/server/api/core/bitstreams/69c17edd-ee26-425b-9d34-33799377e886/content

7.1.6.2 Other islands

Surface water features are located within the AoI of the following sites (see Figure 4-1 in Chapter 4 - Area of Influence of the Project):

- Providenciales: Wheeland Pond and Atlantic Ocean (see previous Chapter 7.1.6.1)
- North Caicos - Bottle Creek: Atlantic Ocean at the far end of the AoI; low lying areas within the AoI which are flood prone due to high water tables and may be of value to agricultural production
- Middle Caicos: small wetland adjacent to the dumpsite
- South Caicos: Atlantic Ocean corresponding to approximately the whole west half of the AoI
- Grand Turk: Atlantic Ocean in the western and eastern parts of the AoI; Town, Great and Red Salinas
- Salt Cay: Atlantic Ocean in the western and eastern parts of the AoI

There is no data regarding surface water tests at any of the dumpsites besides Providenciales (see previous Chapter 7.1.6.1).

7.1.7 Soil quality

Generally, it can be assumed that the soil at all sites is contaminated due to leaching and burning of the solid waste, and infiltration of the liquid waste. The soils are extremely permeable, but precipitation is not so frequent in the islands, meaning that a significant fraction of the pollutants is reasonably expected to be retained in the first meters of soil. An exception may be the cases of Kew and South Caicos, where the waste is deposited in trenches, which implies that the polluted soil is underneath the waste at 3 or more meters down.

No soil sampling data is available to FICHTNER presently, for what the exact nature and extent of soil contamination is unknown.

7.1.8 Topography

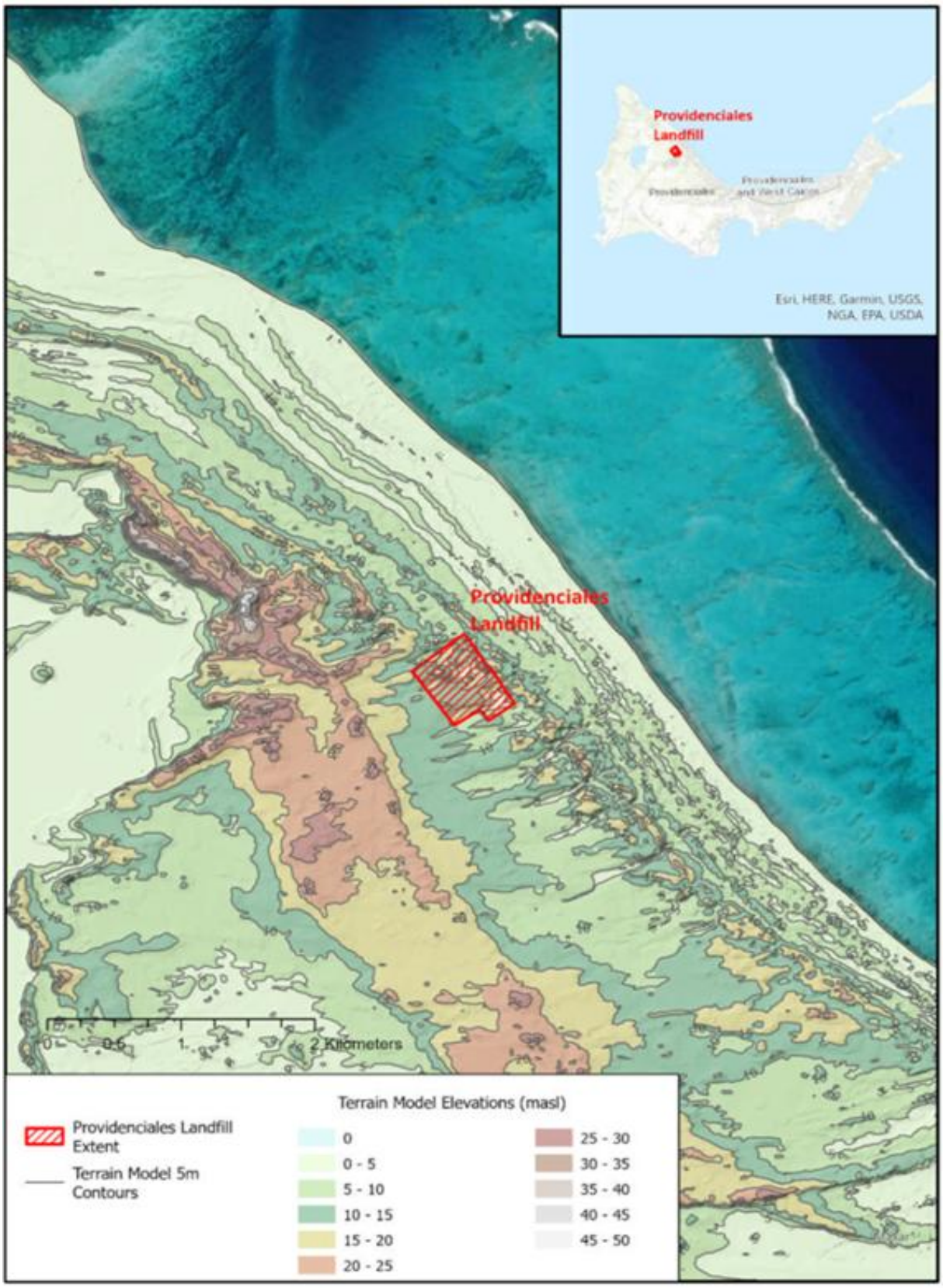
The Turks and Caicos Islands are generally flat, with the highest point on Providenciales island reaching 50 m above sea level and Flamingo Hill on the northwestern point of East Caicos standing at approximately 49.68 m. The islands are characterized by sinkholes, caves, and ridge formations. They are primarily composed of Pleistocene oolitic limestones and loosely packed Holocene sands [92].

The NPDP (2020) produced topographical maps of each of the islands (Annex B, Figure 15-17 to Figure 15-22). Also, topographical surveys have been undertaken and are planned at the main Project sites. The results (not available at the time of writing this report) will be considered in later versions of this ESIA.

7.1.8.1 Providenciales

The Providenciales dumpsite is situated approximately 600 meters to the southwest of the Blue Hills settlement and about 4.3 kilometers to the northwest of the Providenciales International Airport. Positioned on the inland side of a ridge that extends from northwest to southeast, the site's elevation ranges from 5 to 15 meters above sea level, as indicated by a topographic model from the Department of Survey and Mapping. The terrain increases in elevation southwest of the site to roughly 20 meters above sea level and reaches heights of approximately 45 meters above sea level to the northwest of the site (see Figure 7-19 below).[88]

[92] TCI 2011 Biodiversity Snapshot: https://www.researchgate.net/publication/282647578_UK_Overseas_Territories_and_Crown_Dependencies_2011_Biodiversity_snapshot



Source: GWP Consultants, 2022

Figure 7-19: Topography of the Providenciales site

In order to check the accuracy of the waste generation estimates, two topographic surveys of the Providenciales disposal site were carried out by the Main Consultant, the first on the March 15th, 2023 and the second on February 14th, 2024. The increase in volume of the waste deposit, as estimated through the waste generation assessment (81,000 m^3), matches at 95% with the volume measured through the topographic surveys in the 11 months considered period (85,000 m^3). It is estimated that a residual 1 million m^3 of residual airspace could be made available by a more adequate waste filling plan (Figure 7-20)[4].

Site	Description
Providenciales No further expansion Residual volume: 1,000,000 m^3	The site cannot be further substantially expanded due to the presence of residential areas in the immediate surroundings. The presently fenced area (67 acres, 27 hectares) has been randomly used for the waste disposal, not implementing a designed filling plan. As a result the waste mass is variously arranged with several high and low areas, lack of surface drainage and several unexploited marginal areas. It is estimated that a residual 1M m^3 of residual airspace could be made available by a more adequate waste filling plan.

Source: Draft Feasibility Study[4]

Figure 7-20: Available residual airspace at the Providenciales site

7.1.8.2 Other sites

Between March and May 2023, topographic surveys have been carried out by the Main Consultant also on the other Project sites. Based on the topographic surveys a preliminary assessment of the possible residual volume has then been implemented using specific software and simulating a conceptual final shape of the site. A summary of the results of this study and other observational notes are presented in Figure 7-21.

Bottle Creek (NC) Possible expansion Residual volume: Up to 1,000,000 m^3 and more	The area where the waste is presently deposited is limited but there is room for substantial expansion uphill toward the ridge of the slope on the West. Considering that the waste is regularly burned, the present area allows for disposal of waste for the duration of the considered 20 year period. The areas uphill will allow for the construction of new landfill cells up to 1M m^3 and more.
Kew (NC) Limited expansion Residual volume: Critical	The area is in the vicinity of the Kew settlement and adjacent to the local cemetery. Limited lateral expansion is possible at the expenses of the planned residential and industrial uses. Vertical expansion within the limits of the present area is not seen as technically and environmentally advisable.
Middle Caicos Limited expansion Residual volume: Limited	Similarly to the Bottle Creek site the waste is constantly set on fire. Whilst very small in size, the site consists of a depression likely due to previous quarry activities. it therefore offers airspace sufficient for the foreseen 20 years period operated at the present conditions and with vertical expansion. The lateral expansion is limited since the surrounding areas are classified as prone to flooding.
South Caicos No expansion Residual volume: Critical	The site lays in a private lot. No lateral expansion is foreseeable, vertical expansion very limited. The site is actually already in critical conditions and as such the waste is regularly burned. No other sites are available within the island in public lands.
Grand Turk Possible expansion Residual volume: 150,000 m^3	The site offers possibility of additional volumes within the fenced area and, by lateral expansion, in the surrounding areas toward East. A vertical expansion of the present waste deposit can provide up to additional an 135,000 m^3 volume that appears to be sufficient for the duration of the planning period.
Salt Cay Limited expansion Residual volume: Locally adequate	The site can be laterally expanded and if better operated can provide sufficient volume for the duration of the planned period and further at the foreseeable waste generation local conditions.

Source: Draft Feasibility Study[4]

Figure 7-21: Available residual airspace at the present waste disposal sites

7.1.9 Hazards and risks

The Turks and Caicos Islands National Multi-Hazard Mitigation Plan (Final Draft)[93], indicates that the TCI are susceptible to a variety of natural and man-made hazards, having endured thousands of such events that have led to financial losses totalling 22.5 million US dollars. In that sense, The National Socio-Economic Development Framework from 2008 to 2017 acknowledges the susceptibility of the TCI to hazards and emphasizes the need for a suitable framework to mitigate risks to the safety of citizens, visitors, and resources.

Hazards relevant to the nation have been recognized, classified into natural and human-caused categories, ranked in terms of priority, and charted (Figure 7-22). The hazards listed under the two categories align with those mentioned in the Turks and Caicos Islands Comprehensive Disaster Management Policy and are tackled in the National Disaster Management Plan.

[93] Turks and Caicos Islands National Multi-Hazard Mitigation Plan (Final Draft): file:///D:/OneDrive%20-%20FICHTNER%20GmbH%20&%20Co.%20KG/1-Projects/FIS0000489_CDB_ISWM_ESIA/From%20TCI%20Official/downloaded/Hazard%20Mitigation%20Plan.pdf#page=20&zoom=100,92,349

The Turks and Caicos Islands are at risk from impacts from multiple natural and human-induced hazards:	
Natural Hazards	Technological/Human-induced
1. Droughts 2. Earthquakes, 3. Fires 4. Floods 5. Hurricanes and Tropical storms 6. Storm surge 7. Tsunamis	1. Aviation accidents 2. Cruise ship/maritime accidents 3. Marine accidents 4. Oil and Hazardous material spills 5. Road transport accidents 6. Environmental hazards 7. Health and epidemic hazards 8. Utilities shortages

Source: Turks and Caicos Islands National Multi-Hazard Mitigation Plan83

Figure 7-22: Natural and technological/human-induced hazards causing safety risks in the TCI

7.1.9.1 Flood hazard

The TCI's Department of Disaster Management and Emergencies (DDME) mapped the flood prone areas in the islands. The resulting maps are shown in Annex B (Figure 15-23 to Figure 15-27).

Providenciales

According to the Main Consultant [86], the area of the Providenciales dumpsite is not expected to be flooded. Additionally, Figure 15-23 in Annex B shows that the dumpsite is not located within a flood prone area.

Middle and South Caicos

The AoI in Middle and South Caicos are also not located in flood prone areas (See Annex B, Figure 15-25 and Figure 15-27).

North Caicos

Annex B, Figure 15-24 shows that the Bottle Creek and the Kew sites are located within flood prone areas.

Grand Turk

The Grand Turk dumpsite is partially located within a flood prone area (see Annex B, Figure 15-26). The low-lying terrain and proximity to the salt marshes make it an area of significant interest. In this regard, the Environmental Assessment conducted by UNEP in 2008 after Hurricane Ike[94] determined that the current condition of the landfill presents a contamination hazard to both the groundwater and nearby aquatic systems, primarily due to hazardous materials found there. Additionally, the Ike-induced flood's leftover standing water was situated near a stream that flew into a salt pond, which in turn is linked to the beach.

[94] Environmental Assessment : Hurricane Ike, 2008 : https://eecentre.org/wp-content/uploads/2019/06/Turk-and-Caicos-Mission-report-2008.pdf

7.1.9.2 Hurricanes and severe storms hazard

North and Middle Caicos

Similar to other upland areas, hurricanes generate rainfall that can happen during the storms or from their feeder bands, significantly affecting waste disposal sites with strong winds and occasional intense rainfall events (exceeding 12 inches within 24 hours). While storms cause an irregular increase in the production of green waste, the amount of construction debris from these upland areas is expected to decrease over time as building standards improve and are more rigorously applied[86].

Grand Turk, South Caicos and Salt Cay

The sites near to the coast such as the low-lying Grand Turk, South Caicos and Salt Cay facilities, that are characterized by elevations at or below +12 ft MSL (feet above mean sea level), will be vulnerable to climate change. Elevations of +12 ft MSL are within the upper threshold of the anticipated effects of storm surge for low frequency, i.e. 50 to 100-year return interval events.

Climate change poses specific challenges for solid waste facilities located on tropical low-lying islands, particularly due to the rising groundwater levels and increased stormwater runoff. These islands typically have groundwater levels that are influenced by the tides and are approximately at Mean Sea Level. To mitigate the risks associated with these climate change effects, the solid waste facilities can be re-graded[86].

According to the Climate Risk Vulnerability Assessment (CRVA) carried out by CBCL in 2022[95], during periods of cold fronts, storms from the north or west, and hurricanes, the existing seawall may experience considerable effects from waves, including strong wave impacts, waves surging over the top of the seawall, flooding, and the movement of sand caused by the force of the water.

In that sense, the area of Duke Street in Grand Turk requires priority design solutions. One of the priority sections is the seawall, which is the main coastal protection along Duke Street for inland assets. Assets behind the seawall include several historic buildings, communications infrastructure, and salt ponds. Other sites considered high priority are the groynes located west of Front Street to prevent longshore sediment transport and undermining of the seawall and road. Beaches are present along Front Street, providing a buffer for storm surge and waves, and recreational space for residents and tourists, and a flood management pump system is installed on top of a concrete groyne on Cockburn Town Beach. These areas are near of AoI of the Grand Turk site, while the priority areas in Salt Cay (the harbour) are outside of the AoI of the disposal site.

7.1.9.3 Seismicity hazard

According with the TCI Earthquake Contingency Plan (2017)[96], the earthquake risk for the TCI is evaluated based on its seismic activity, which is influenced by its proximity to the boundary between the Caribbean and North American tectonic plates, as well as on the monetary value of assets that could be affected by seismic events.

[95] The report Climate Resilient Coastal Protection and Management Turks and Caicos Islands, provides through its Climate Change Risk Assessment, the potential impacts of climate change for three priority coastal zones in Providenciales, Grand Turk and Salt Cay
[96] TCI Earthquake Contingency Plan (2017): https://drive.google.com/file/d/1XijX6HicS-ix2sW6J1VwhGz1taDFEO0A/view

The TCI is situated in an area with low to moderate seismic risk. Despite the Septentrional Fault System, the most northern active boundary of the Caribbean tectonic plate, being several hundred kilometers south of the TCI, the country is still susceptible to moderately high ground acceleration due to seismic movements of the Caribbean Plate and local fault systems. Historical evidence, such as the 1842 earthquake with an epicenter in northwestern Haiti, shows that earthquakes in the region can produce ground acceleration levels that have the potential to cause significant damage throughout the TCI.

While detailed data on the value of assets at risk from hazard impacts in the TCI is limited, aggregated data, including that for earthquakes provided by the Caribbean Catastrophe Risk Insurance Facility (CCRIF)[97], suggests that the exposure value of physical assets is around US$1.5 billion. Such a level of impact from an earthquake could lead to widespread social and economic disruption across the TCI.

7.1.10 Climate change

According to the Intergovernmental Panel on Climate Change (IPCC)[98], small Caribbean islands are experiencing a trend of climate change characterized by rising temperatures, intensified impacts from tropical cyclones, storm surges, droughts, changes in rainfall patterns, sea level rise and coral bleaching. Additionally, climate change is affecting community infrastructure, health and wellbeing, water resources, food security, as well as the economic and cultural aspects of these regions.

According with the IUCN (2008)[99], there are two main receptors being impacted by climate change in the TCI: biodiversity and socio-economy.

Impacts on biodiversity

Being mostly low-lying, the TCI are extremely vulnerable to sea level rise. About half of their land area is susceptible to flooding. The extensive mangrove areas and sandbanks are particularly at risk, as they are biologically crucial breeding grounds for conchs and lobsters, and also serve as important nesting sites for migratory birds. Numerous studies suggest that populations of migratory wading birds from the Caribbean could be affected by changes in wind patterns caused by climate change. In the marine environment, bleaching has been observed in several reefs around Providenciales and West Caicos, although the extent of the affected areas has not been quantified.

Socio-economic implications

The coastal tourism and fishing are significant attractions and sources of substantial income for the archipelago. These sectors are directly threatened by the degradation of coastal areas, the deterioration of coral reefs, and the impacts on fish stocks. Furthermore, over 70% of the residential zones in the archipelago are located in low-lying coastal areas, which are directly threatened by rising sea levels. Additionally, the archipelago has limited freshwater resources, relying on private cisterns to collect rainwater. The encroachment of saltwater would further diminish the already scarce freshwater resources.

[97] The Caribbean Catastrophe Risk Insurance Facility was recently created to offer governments of the Caribbean Community (CARICOM) an insurance mechanism designed to meet their needs. Similar to business interruption insurance, this tool will supply them with immediate cash flow in the event they are impacted by a hurricane or earthquake.
[98] IPCC, Small Islands: https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_Chapter15.pdf
[99] IUCN Climate Change and Biodiversity in the Overseas Territories of the European Union, TCI: https://www.cbd.int/islands/doc/idr/Climate%20Change%20and%20Biodiversity%20in%20EU%20overseas%20entities/Reunion%20publication-es.pdf

7.2 Biological Environment

7.2.1 National protected areas

Accepted National Protected Areas

According with the information available on the Turks and Caicos Data Portal[100], there are 33 (thirty-three) designated Protected Areas (PA) in the TCI since 2020. These PA, also known as "accepted protected areas", cover four (4) categories and are distributed as follows:

- 7 (seven) are Areas of Historical Interest (HA);
- 11 (eleven) are National Parks (NP);
- 11 (eleven) are Nature Reserves (NR);
- and 4 (four) are Sanctuaries (S).

The 33 accepted PA are described in Table 7-3 and shown in Figure 7-23.

Table 7-3: Protected Areas in the TCI

Code	Name	Category
HA 27	Boiling Hole Area of Historical Interest	Area of Historical Interest
HA 28	Cheshire Hall Area of Historical Interest	Area of Historical Interest
HA 29	Fort George Area of Historical Interest	Area of Historical Interest
HA 30	H.M.S. Endymion Wreck Area of Historical Interest	Area of Historical Interest
HA 31	Molasses Reef Wreck Area of Historical Interest	Area of Historical Interest
HA 32	Salt Cay Area of Historical Interest	Area of Historical Interest
HA 33	Sapodilla Hill Area of Historical Interest	Area of Historical Interest
NP 1	Admiral Cockburn Land and Sea National Park	National Park
NP 2	Chalk Sound National Park	National Park
NP 3	Columbus Landfall Marine National Park	National Park
NP 4	Conch Bar, Indian, Jacksonville and East Caicos Caves National Park	National Park
NP 5	East Bay Islands National Park	National Park
NP 6	Fort George Land and Sea National Park	National Park
NP 7	Grand Turk Cays Land and Sea National Park	National Park
NP 8	Northwest Point Marine National Park	National Park
NP 9	Princess Alexandra Land and Sea National Park	National Park
NP 10	South Creek National Park	National Park
NP 11	West Caicos Marine National Park	National Park
NR 12	Admiral Cockburn Nature Reserve (Long Cay, Six Hill Cays, Middleton Cay)	Nature Reserve
NR 13	Bell Sound Nature Reserve	Nature Reserve
NR 14	Cottage Pond Nature Reserve	Nature Reserve
NR 15	Dick Hill Creek and Bellefield Landing Pond Nature Reserve	Nature Reserve
NR 16	Lake Catherine Nature Reserve	Nature Reserve
NR 17	North, Middle and East Caicos Nature Reserve (International Ramsar Site)	Nature Reserve
NR 18	Northwest Point Pond Nature Reserve	Nature Reserve
NR 19	Pigeon Pond and Frenchman's Creek Nature Reserve	Nature Reserve
NR 20	Princess Alexandra Nature Reserve	Nature Reserve

[100] Turks and Caicos Data Portal, Protected Areas 2020: https://dataportal.gov.tc/dataset/protected-areas-tci

Code	Name	Category
NR 21	Pumpkin Bluff Pond Nature Reserve	Nature Reserve
NR 25	Vine Point (Man O'War Bush) and Ocean Hole Nature Reserve	Nature Reserve
S 23	Big Sand Cay Sanctuary	Sanctuary
S 24	French, Bush and Seal Cays Sanctuary	Sanctuary
S 25	Long Cay Sanctuary	Sanctuary
S 26	Three Mary Cays Sanctuary	Sanctuary

Source: Elaborated based on the Turks and Caicos Data Portal; "Protected Areas Accepted (2020)"

Proposed National Protected Areas

The TCI Data Portal also lists a group of "proposed" Protected Areas[101], which includes proposed changes in some existing protected areas and the proposed consolidation of new ones. The proposed PA include National Parks (NP), Natural Reserves (NR) and Areas of Historical Interest (HA), and include a fifth category of PA - Critical Habitat Reserves (CR). The proposed PA are identified in Table 7-4. According to information that FICHTNER received from the DECR, the proposed PA are not gazetted and therefore not officially approved yet. Notwithstanding this fact, and given the possibility that an approval is imminent, these areas are considered in the E&S Scoping Study and the ESIA.

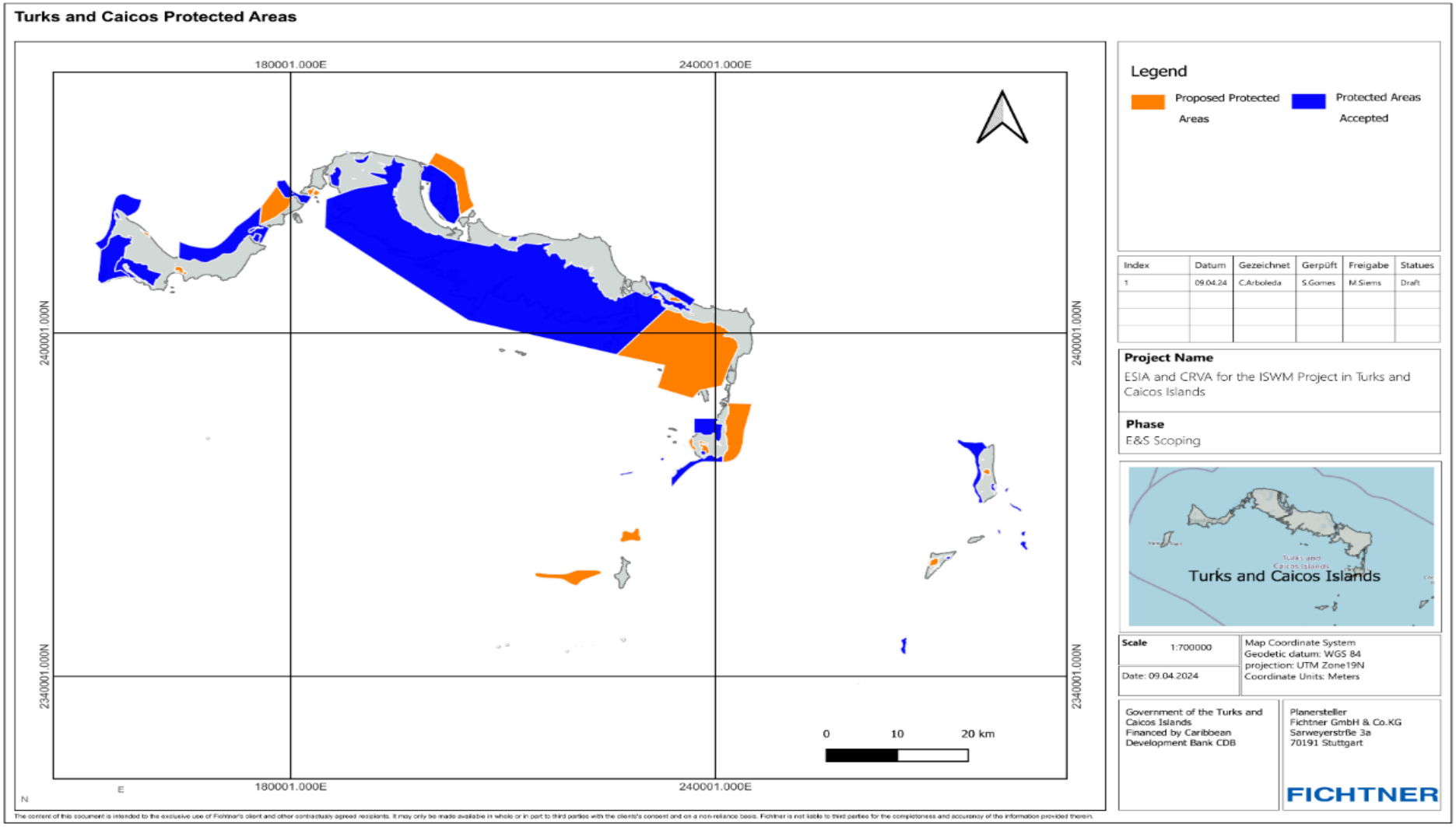
Table 7-4: Proposed Protected Areas in the TCI

Code	Name	Category
NP9	Princess Alexandra Land and Sea National Park (Fishing Zone)	National Park - Fishing Zone
NP11	West Caicos Marine National Park (Fishing Zone)	National Park - Fishing Zone
NP1	Admiral Cockburn Land and Sea National Park (Fishing Zone)	National Park - Fishing Zone
NP4	Conch Bar, Indian, Jacksonville and East Caicos Caves National Park	National Park
NP5	East Bay Islands National Park (Fishing Zone)	National Park - Fishing Zone
NR26	Wheeland Pond Nature Reserve	Nature Reserve
NR27	North and South Wells Nature Reserve	Nature Reserve
NR29	Little Ambergris Cay and Fish Cays Nature Reserve	Nature Reserve
NR30	Salt Cay Area Nature Reserve	Nature Reserve
NR31	Boiling Hole Nature Reserve	Nature Reserve
HA32	Salt Cay Area of Historical Interest	Area of Historical Interest
HA41	Town Pond Salina Area of Historical Interest	Area of Historical Interest
HA42	Red Salina Area of Historical Interest	Area of Historical Interest
HA43	Wades Green and Teren Hill Area of Historical Interest	Area of Historical Interest
HA44	Yankee Town and Causeway Area of Historical Interest	Area of Historical Interest
CHR46	Bell Sound Wetland Critical Habitat Reserve	Critical Habitat Reserve
CHR47	Leeward Islands Wetland Critical Habitat Reserve	Critical Habitat Reserve
CHR48	South Caicos Wetland Critical Habitat Reserve	Critical Habitat Reserve
CHR46	Cheshire Hall Pond Critical Habitat Reserve	Critical Habitat Reserve

Source: Elaborated based on Turks and Caicos Data Portal; "TCI Proposed Protected Areas"

See Chapter 2.1.3 for a description of the five types of PA and respective limitations imposed to development projects within their borders.

[101] TCI Data Portal, Protected Areas Proposed: https://dataportal.gov.tc/dataset/protected-areas-tci/resource/9efbe654-6f04-407f-bfeb-26ced819ca73



Source of the geodata: TCI Marine Spatial Tool[102]

Figure 7-23: Protected Areas in the TCI (accepted and proposed)

[102] Marine Spatial Tool TCI : https://webgis.gov.tc/index.php/view/map/?repository=01tci&project=tcimsp-open

7.2.2 International natural protected areas

7.2.2.1 North, Middle, and East Caicos Ramsar site

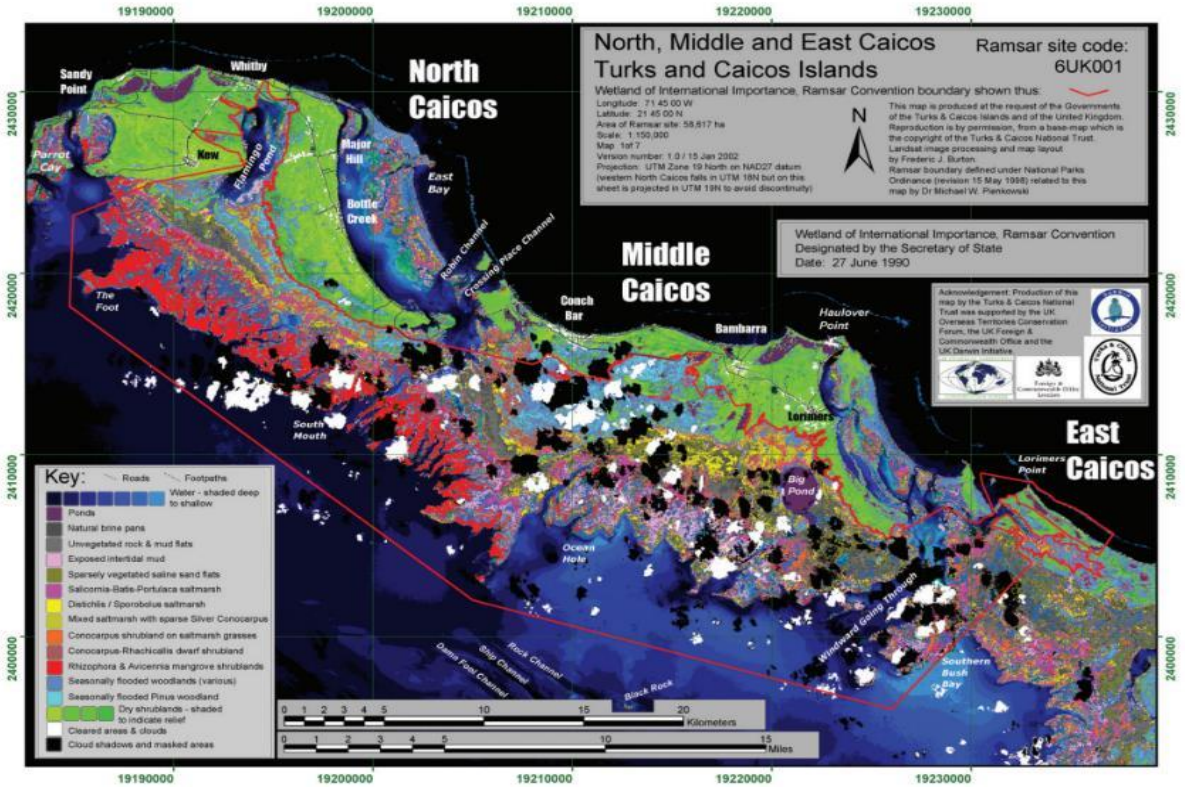
The North, Middle, and East Caicos Islands, designated as a Nature Reserve on June 27, 1990 (code NR 17), cover an area of 144,846 acres (58,617 hectares). Besides being nationally protected, this is a globally significant wetland site (Ramsar site) that encompasses a range of marine and coastal habitats, along with intricate natural transitions. It is distinguished by its mangrove swamps, diverse bird populations, and several inlet cays.

The entire area serves as an excellent representation of coastal wetland habitats in the Caribbean, offering refuge and breeding grounds for various species of waterfowl, turtles, and commercially valuable fish. Some internationally important species of reptiles and amphibians occur on the site, and endemic species like the gecko *Aristelliger hechti* (Critically Endangered (CR)), Curly tail *Leiocephalus psammodromus,* the Caicos Islands Reef Gecko *Sphaerodactylus caicosensis,* species of snakes like the Caicos Islands Trope Boa *Tropidophis greenwayi.* Others important species like the Turks & Caicos Rock Iguana *Cyclura carinata carinata*. Marine turtles, including species such as *Chelonia midas*, *Eretmochelys imbricata*, and *Caretta caretta*, are frequently found in the area, often nesting on numerous cays.[103] This place also supports some Important Bird Areas (IBA; this topic is covered in Chapter 7.2.5).

The Ramsar site is the fourth largest Wetland of International Importance designated by the UK and its Overseas Territories. This is important because there is increasing evidence that the long-term survival of many populations of animals and plants is dependent on the continued existence of large, continuous blocks of suitable habitats [104].

[103] Ramsar Information Sheet for Wetlands of International Importance: https://rsis.ramsar.org/RISapp/files/RISrep/GB493RIS.pdf

[104] Pienkowski, M. "Plan for Biodiversity Management and Sustainable Development around Turks and Caicos Ramsar Site." CABI Bioscience, Berkshire, UK (2002). more information on: https://www.ukotcf.org.uk/wp-content/uploads/2020/04/TCIRamsarSiteManPlan.pdf



Source: Ramsar Information Sheet for Wetlands of International Importance

Figure 7-24: North, Middle and East Caicos Ramsar Site[103]

7.2.2.2 Protected areas with IUCN categories

The International Union for Conservation of Nature (IUCN) is a global organization dedicated to nature conservation and to provide information of natural resources. The IUCN considers 7 management Categories to classify protected areas at international level[105]. Table 7-5 illustrates those categories.

Table 7-5: IUCN Categories' description

IUCN Category	Description
I	Strict protection – i.e., a) Strict Nature Reserve, and b) Wilderness Area
II	Ecosystem conservation and protection – i.e., National Park
III	Conservation of natural features – Natural Monument
IV	Conservation through active management – i.e., Habitat/Species Management Area
V	Landscape/seascape conservation and recreation – i.e., Protected Landscape/Seascape
VI	VI Sustainable use of natural resources – i.e., Managed Resource Protected Area

Source: IUCN, 2004

According to the Protected Planet portal[106], nine of the thirty-three accepted PA are listed on an IUCN Category (Table 7-6). It is important to mention that some names, areas and types can vary between the information from Protected Planet and that of the TCI Data Portal, but the location of each site is confirmed as being the same in both web sites.

[105] IUCN Categories for Protected Areas: https://www.iucn.org/sites/default/files/import/downloads/14_3lowres.pdf

[106] UNEP-WCMC (2024). Protected Area Profile for Turks and Caicos Islands from the World Database on Protected Areas, January 2024. Available at: www.protectedplanet.net

Table 7-6: Protected Areas in the TCI with an attributed IUCN Category (Source: based on IUCN [105] and UNEP-WCMC [106])

IUCN Management Category	Code	Name of Protected Area	PA Category	Type	Status year	Extent	Location	Area (km2)	
								Protected Planet	TCI Data Portal
III	NR 15	Dick Hill Creek and Bell field Landing Point	Nature Reserve	Terrestrial and Inland Waters Protected Areas	1992	National	North Caicos	3.94	4.01
III	NR 20	Princess Alexandra Marine	Nature Reserve	Marine Protected Area	1992	National	Parrot Cay	1.82	2.12
IV	NP 4	Conch Bar Caves	National Park	Terrestrial and Inland Waters Protected Areas	1987	National	Middle Caicos	0.95	1.04
IV	NP 3	Columbus Landfall Marine	National Park	Marine Protected Areas	1992	National	Grand Turk - Cockburn Town	5.18	11.26
IV	NR 17	North, Middle and East Caicos	Nature Reserve	Marine Protected Areas	1992	National-International (Inside is located a Ramsar Site)	North, Middle and East Caicos	544	585.77
V	NR 14	Cottage Pond	Nature Reserve	Terrestrial and Inland Waters Protected Areas	1992	National	North Caicos	0.08	0.07
V	HA 28	Cheshire Hall	Area of Historical Interest	Terrestrial and Inland Waters Protected Areas	1992	National	Providenciales	0.01	0.01
V	HA 33	Sapodilla Rock Carving	Area of Historical Interest	Terrestrial and Inland Waters Protected Areas	1992	National	Providenciales	0.01	0.0005
V	HA 29	Fort George	Area of Historical Interest	Terrestrial and Inland Waters Protected Areas	1992	National	Fort George Cay	0.01	0.004

It is important to highlight that, according to the Environmental and Social Review Procedures of the Caribbean Development Bank, the protected areas with IUCN Categories (I-VI), as well Ramsar sites are important in the definition of Critical Habitats. A Critical Habitat is defined by the CDB as a natural or modified habitat with high biodiversity value that may include regionally significant and or highly threatened or unique eco-systems, as well as habitats important to globally significant concentrations of migratory species [107].

[107] Environmental and Social Review Procedures, CDB, Appendix 1: Critical Naturals Habitats, Biodiversity and Ecosystem Services (page 29): https://www.caribank.org/about-us/policies-and-strategies/environmental-and-social-review-procedures

7.2.2.3 Key biodiversity areas

Key Biodiversity Areas (KBAs) are locations that play a crucial role in preserving biological diversity across terrestrial, freshwater, and marine ecosystems[108]. KBAs are considered the most important places in the world for species and their habitats, according to Wood, Kathleen (2019) [109] . The presence of KBAs is some of the relevant triggers of possible Critical Habitats, according with the IFC [110]. A Critical Habitat is defined by the IFC as "areas with high biodiversity value" that may include at least one or more of the five following values ("critical habitat criteria") - 1: Critically Endangered (CR) and/or Endangered (EN) species; 2: Endemic and/or restricted-range species; 3: Migratory and/or congregatory species; 4: Highly threatened and/or unique ecosystems; 5: Key evolutionary processes.

In TCI there are 12 KBAs identified [111] (see Figure 7-25).



Source: Key Biodiversity Areas portal

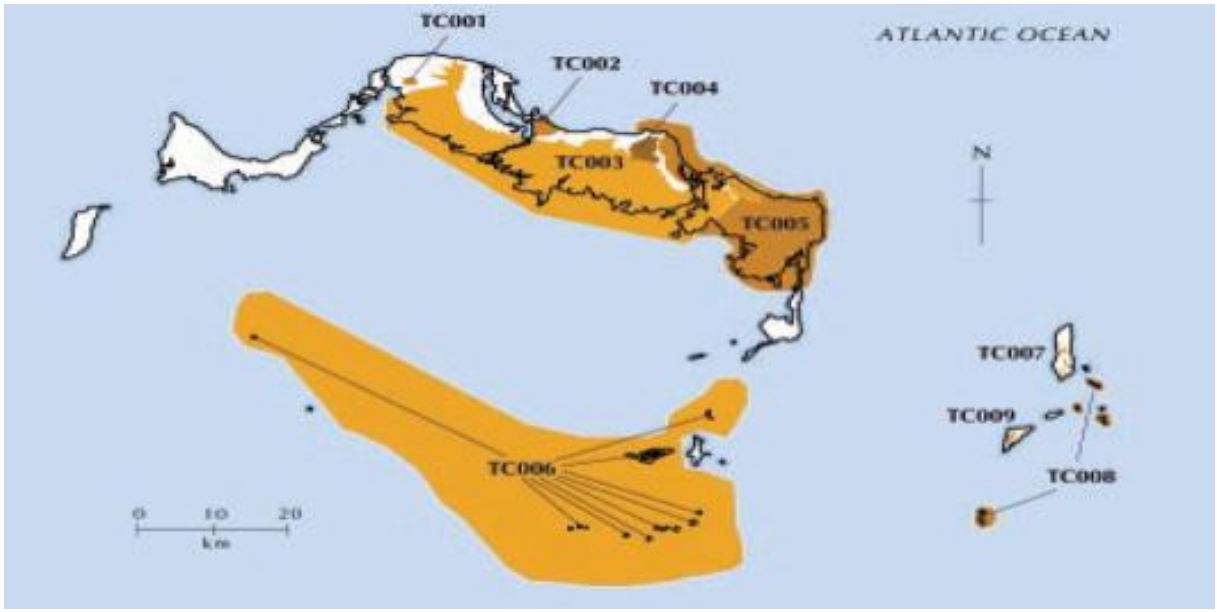
Figure 7-25: TCI KBAs[111]

7.2.2.4 Important bird & biodiversity areas

Important Bird & Biodiversity Areas (IBAs) are KBAs that focus on birds. According to Bird Life International, in TCI there are 9 IBAs with a total of 210 bird species, from which 3 are globally threatened: *Chaetura pelagica* (VU), *Hydrobates leucorthous* (VU) and *Tyrannus cubensis* (EN)[112].

[108] IUCN. A Global Standard for the Identification of Key Biodiversity Areas: https://portals.iucn.org/library/sites/library/files/documents/2016-048.pdf
[109] Important Bird Areas Turks and Caicos Islands (Kathleen Wood, 2019): https://www.academia.edu/en/48987797/Turks_and_Caicos_Important_Bird_Areas
[110] IFC: Guidance Note 6. Biodiversity Conservation and Sustainable Management of Living Natural Resources GN53. Critical Habitat Definition: https://www.ifc.org/content/dam/ifc/doc/2010/2012-ifc-performance-standards-guidance-note-en.pdf
[111] KBA Portal, TCI: https://www.keybiodiversityareas.org/kba-data
[112] Bird Life International TCI: https://datazone.birdlife.org/country/turks-and-caicos/ibas

There are IBAs located in the Project islands of North, Middle, and East Caicos, Grand Turk, and Salt Cay (Figure 7-26).



Source: M. W. Pienkowski [113]

Figure 7-26: IBAs in the TCI

7.2.3 National Protected Areas in the AoI

Of the 33 accepted PA in TCI, 6 PA intersect with the ISWMP's Area of Influence: 2 Nature Reserves in North Caicos; 2 National Parks in Grand Turk; 1 Area of Historical Interest in South Caicos; and 1 Area of Historical Interest in Salt Cay. It is important to highlight that 3 of these PA are assigned an IUCN Category. Table 7-7 shows the mentioned PA and their locations.

Table 7-7: Accepted Protected Areas in AoI

Name of the accepted PA	Type	IUCN Management Category	Location
Cottage Pond	Natural Reserve (NR)	V	North Caicos
North, Middle & East Caicos Islands	Natural Reserve (NR) (Ramsar Site)	IV	North and Middle and East Caicos
Columbus Landfall Marine	National Park (NP)	IV	Grand Turk
South Creek National Park	National Park (NP)	Not Reported	Grand Turk
Boiling Hole Area of Historical Interest	Area of Historical Interest (HA)	Not Reported	South Caicos
Salt Cay Area of Historical Interest	Area of Historical Interest (HA)	Not Reported	Salt Cay

Some proposed Protected Areas also intersect with the Area of Influence (Table 7-8).

[113] "The Turks and Caicos Islands", more information on: http://datazone.birdlife.org/userfiles/file/IBAs/CaribCntryPDFs/turks_and_caicos_islands_%28to_uk%29.pdf

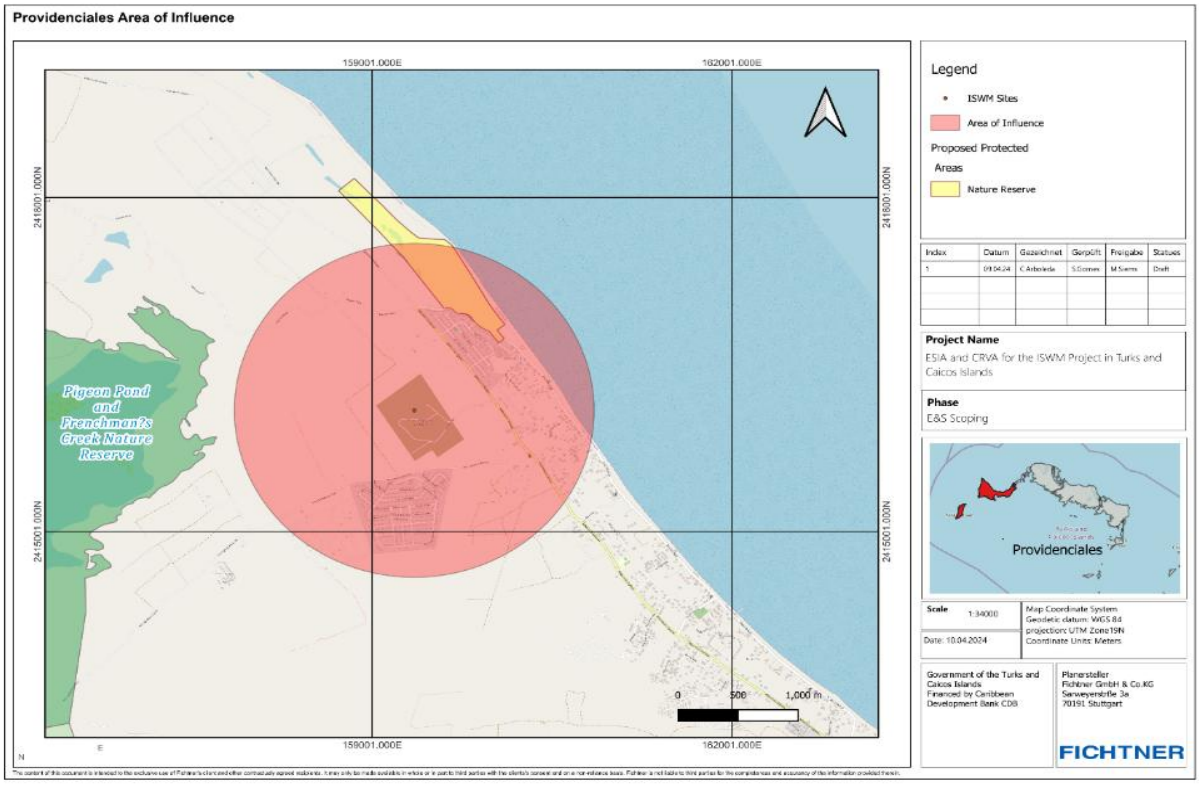
Table 7-8: Proposed Protected Areas in the AoI

Name of the proposed PA	Type	Location
Wheeland Pond Nature Reserve	Natural Reserve (NR)	Providenciales
Wades Green and Teren Hill Area of Historical Interest	Area of Historical Interest (HA)	North Caicos
Town Pond Salina Areas of Historical Interest	Area of Historical Interest (HA)	Grand Turk
Red Salina Area of Historical Interest	Area of Historical Interest (HA)	Grand Turk
Salt Cay Nature Reserve	Natural Reserve (NR)	Salt Cay
Salt Cay Area of Historical Interest	Area of Historical Interest (HA)	Salt Cay
Boiling Hole Nature Reserve	Natural Reserve (NR)	South Caicos
South Caicos Wetland Critical Habitat Reserve	Critical Habitat Reserve (CR)	South Caicos

Maps showing the intersections of natural PA (accepted and proposed) with the AoI can be consulted in the following sections. A description is provided of the intersected PA based on the NPDP (2020). Intersection of Areas of Historical Interest with the AoI are shown later on in Chapter 7.2.9.2 - Human environment.

7.2.3.1 Providenciales

Figure 7-27 shows that there are no officially designated/accepted PA intersecting with the AoI of the Providenciales site. An intersection is however noted with the proposed PA Wheeland Pond Nature Reserve.



Source of the geodata: TCI Data Portal[114])

Figure 7-27: Providenciales AoI and intersection with PA

[114] Turks and Caicos Data Portal: https://dataportal.gov.tc/group/environment

Wheeland Pond proposed Nature Reserve

The Wheeland Ponds are a complex system of natural saline ponds and manmade water-filled pits that have formed at the former site of a sand quarry. These ponds range in salinity from brackish (semi-salty water) to hypersaline, and are a haven for birdlife. Among the proposed changes to the National Parks in the Turks and Caicos is the creation of the Wheeland Pond Nature Reserve, a 96-acre (38.8-hectare) protected area [115].

The proposed PA Wheeland Pond Nature Reserve possesses key conservation attributes, such as being an essential nesting and migration area for numerous waterfowl species, playing a vital role in environmental regulation through flood mitigation and groundwater replenishment, and providing opportunities for ecotourism due to its proximity to Providenciales' major tourist resorts and ease of access [116].

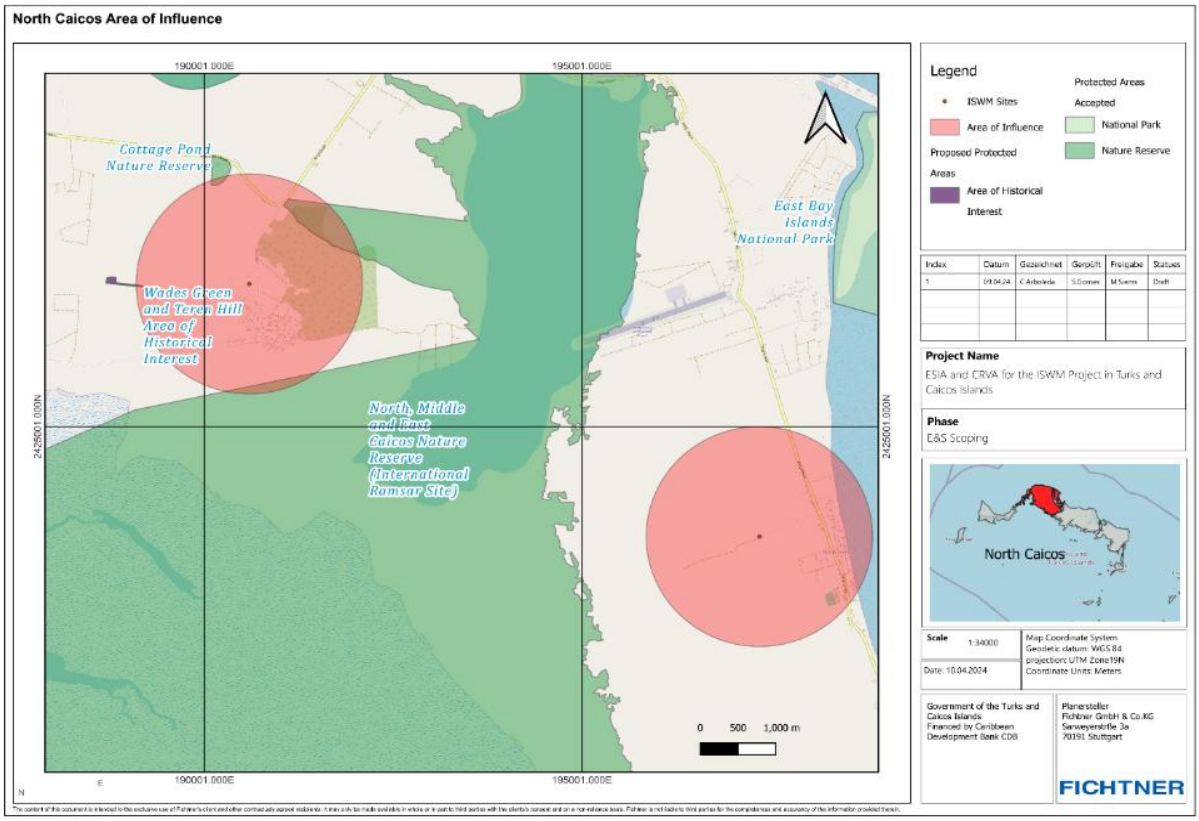
GWP Consultants (2022) identified this pond as a receptor of concern for contamination migration (nutrients, heavy metals and faecal coliforms) from the disposal of liquid waste at the Providenciales dumpsite. This has the potential to be detrimental to both ecological and human health and could result in economic damage by preventing development to the affected parts of the island or by reducing the usefulness of ecological resources. According to the same source, the DECR has recognized the Wheeland Pond and the adjacent marine and reef areas to the northeast of the disposal site as especially sensitive and concerning in terms of environmental impact. Additionally, there is a concern that local inhabitants who reside between the disposal site and the coastline might be using groundwater for non-drinking purposes, which poses a risk of direct exposure to contamination [117].

7.2.3.2 North Caicos

The AoI of the North Caicos' Kew disposal site intersects partially with the accepted PA Cottage Pond Nature Reserve, with the North, Middle, and East Caicos Ramsar Site, and with one of the proposed PA, the Wades Green and Teren Hill Area of Historical Interest (considered a place for birds' conservation).

The AoI of the Bottle Creek disposal site does not intersect any accepted nor proposed PA.

[115] Visit TCI: https://www.visittci.com/providenciales/wheeland
[116] National Physical Development Plan of TCI, 2020. Appendix A.2.4.0
[117] GWP 2022: Providenciales Landfill Liquid Waste Disposal Environmental Impact Assessment and Liquid Waste Facility Proposal for Pan American Health Organization.



Source of the geodata: TCI Data Portal

Figure 7-28: North Caicos AoI and intersection with PA

Cottage Pond Nature Reserve

The Cottage Pond NR is a submerged sinkhole located 4 km inland from the coast on North Caicos Island. The pond consists of a nearly circular pool, 50 m in diameter, in a shallow, rock-rimmed depression and is habitat to unique small endemic crustaceans, the *Kaloketos pilosus* (Cottage Pond shrimp) [118].

North, Middle and East Caicos Nature Reserve and Ramsar site

The North, Middle and East Caicos NR and Ramsar site is a wetland ecosystem globally acknowledged for its ecological significance, offering vital ecosystem services such as breeding grounds for numerous bird species, nurseries for young game fish, nesting sites for sea turtles, and serving as a repository for diverse plant and animal life. It also underpins extensive food webs both on land and in the marine environment. A more detailed description can be read in Chapter 7.2.2.1.

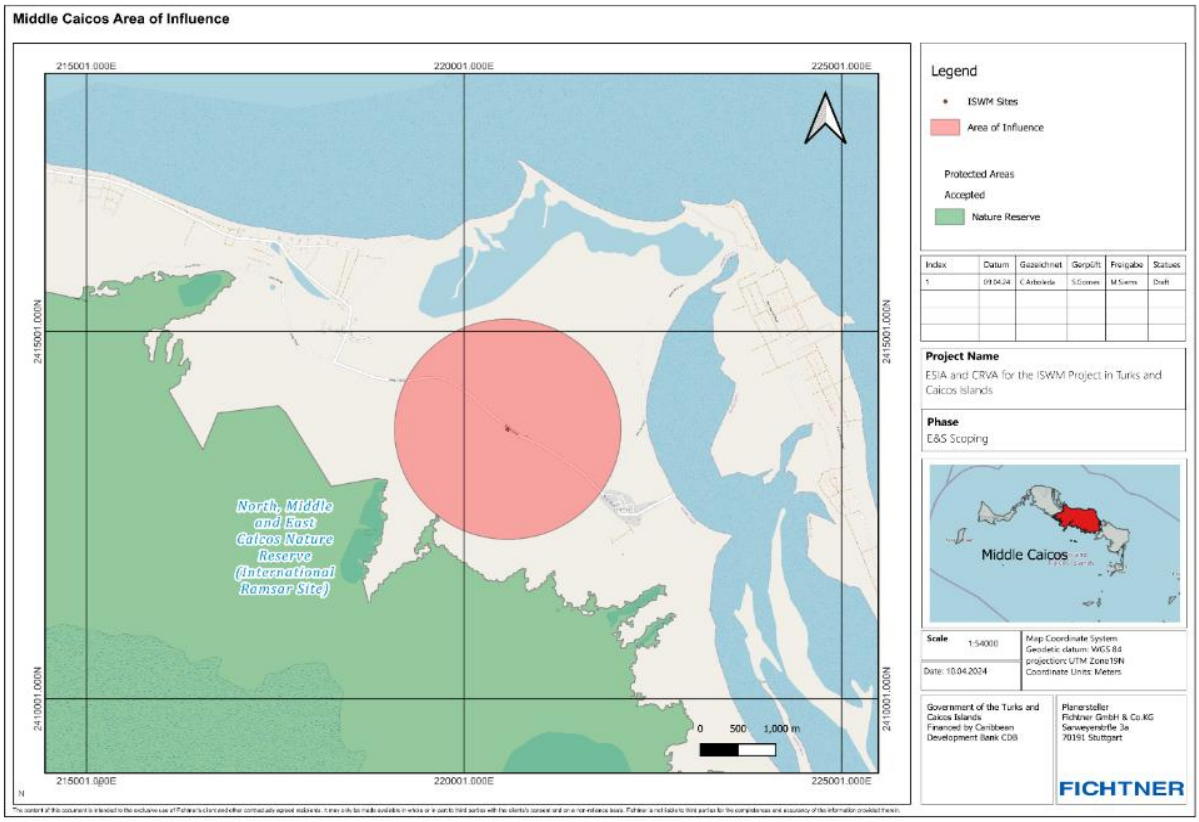
Wades Green and Teren Hill Area of Historical Interest

See description in Chapter 7.3.4.1.

[118] Koenemann, S., et al, 2004, *Kaloketos pilosus, a new genus and species of Remipedia (Crustacea) from the Turks and Caicos Islands*, available at: https://www.researchgate.net/publication/237527539_Kaloketos_pilosus_a_new_genus_and_species_of_Remipedia_Crusta_cea_from_the_Turks_and_Caicos_Islands#pf10

7.2.3.3 Middle Caicos

The AoI of the Middle Caicos disposal site borders the North, Middle and East Caicos NR and Ramsar site (Figure 7-29), previously described in Chapter 7.2.2.1 and Chapter 7.2.3.2.

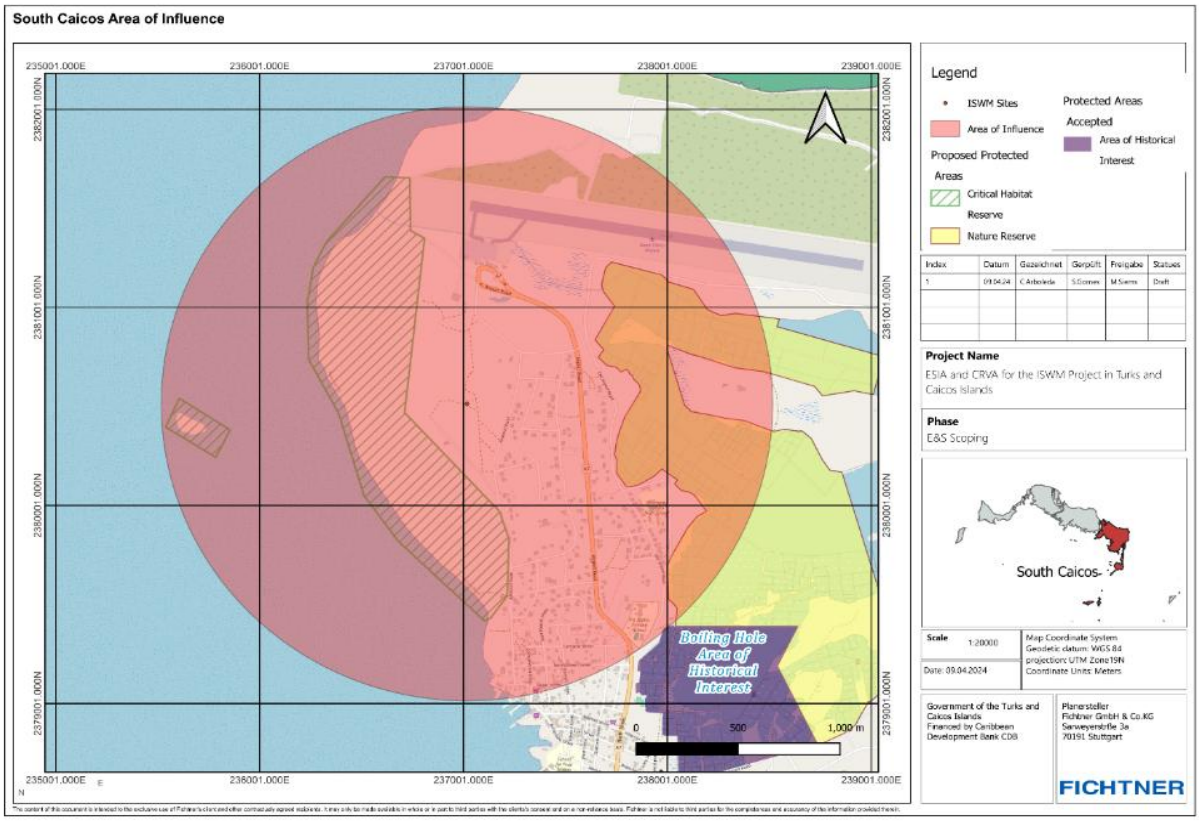


Source of the geodata: TCI Data Portal

Figure 7-29: Middle Caicos AoI and intersection with PA

7.2.3.4 South Caicos

The AoI of the South Caicos site intersects with two proposed natural PA: the South Caicos Wetland Critical Habitat Reserve, and the Boiling Hole Nature Reserve; and borders one Area of Historical Interest (HA) (Figure 7-30).



Source of the geodata: TCI Data Portal

Figure 7-30: South Caicos AoI and intersection with PA

Proposed PA Boiling Hole NR and South Caicos Wetland CR

The Boiling Hole Nature Reserve and the South Caicos Wetland Critical Habitat Reserve are essential habitat for various notable species. The obsolete salina rock walls provide a home for the endemic and endangered (EN as per IUCN Red List) Turks Islands heather (*Limonium bahamense*), while the non-operational salina is a vital habitat for a resident population of American Flamingos (also known as West Indian or Roseate Flamingos). The area supports numerous other shoreline and wading bird species.

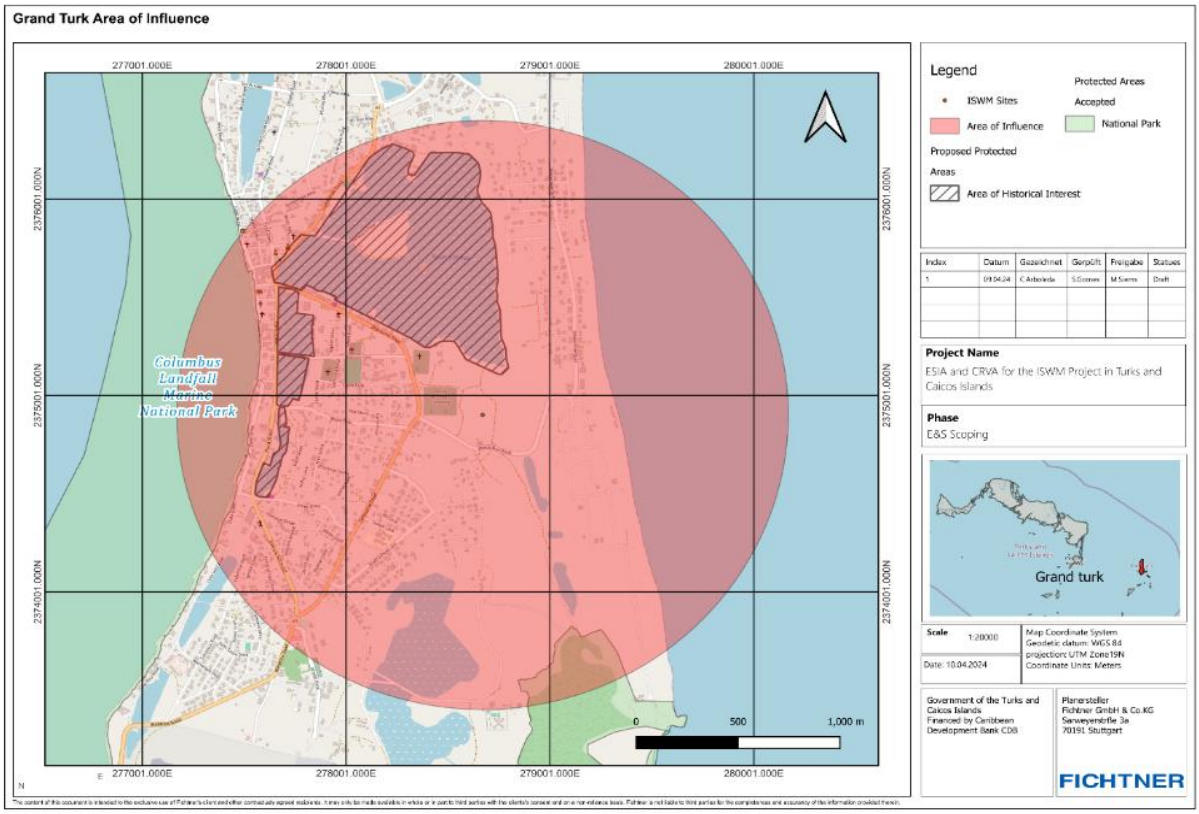
Furthermore, palustrine formations within the area are crucial for the survival of rare, threatened, endangered, and endemic species, including Nash's Pepperwort (*Marsilea nashii*), Fine-leaved buttonweed (*Borreria capillaris*, EN), Milk tree (*Euphorbia gymnonota*, NT), and *Pedilanthus bahamensis*.

Boiling Hole Area of Historical Interest

The bordered HA is described later in Chapter 7.3.4.1.

7.2.3.5 Grand Turk

The AoI of the Grand Turk site intersects with two accepted PA: the Columbus Landfall Marine National Park and the South Creek National Park; and with two proposed PA: the Town Pond and the Red Salinas Areas of Historical Interest, part of the Grand Turk Salinas (Figure 7-31).



Source of the geodata: TCI Data Portal

Figure 7-31: Grand Turk AoI and intersection with PA

Columbus Landfall Marine NP

The Columbus Landfall Marine National Park is a network of marine ecosystems consisting of patch reefs, fringing reefs, and seagrass meadows that serves as a vital habitat for an array of marine life. This includes the Caribbean spiny lobster, queen conch, green and hawksbill turtles, as well as numerous species that are important to commercial fishing. It is also important to mention that in this area is located the Duke Street, one of the priority sites identified by CBCL (2022)[119] for implementation of climate resilience measures.

South Creek NP

South Creek National Park is the sole land-based conservation zone on the southeast area of Grand Turk, which is home to diverse wetland environments with varying levels of salinity, from highly saline ponds to freshwater seasonal wetlands. This area stands out as one of the most crucial bird habitats in the Turks and Caicos Islands, supporting a remarkable variety of resident birds and serving as a key layover for avian species during their migratory seasons.

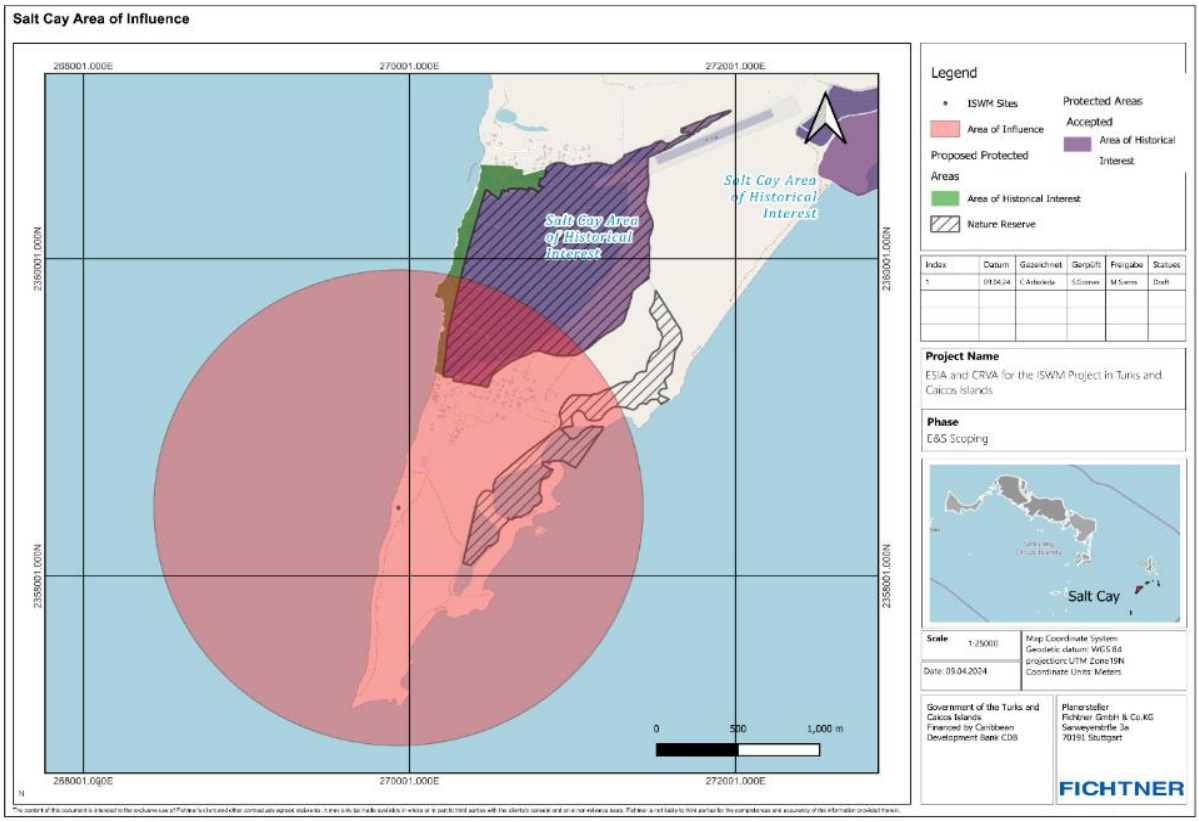
Town Pond and Red Salinas proposed Areas of Historical Interest

The proposed HA Town Pond and Red Salinas are part of the Grand Turk Salinas, considered important in regard to conservation issues[120], and are an internationally recognized Important Bird Area (IBA) and Key Biodiversity Area (KBA), the Turks Bank Cays IBA.

[119] CBCL Report, "Climate Resilient Coastal Protection and Management Turks and Caicos Islands ", May 2022
[120] National Physical Development Plan of TCI. 2020. Appendix A2.4.0, Key Sector Assessment / Environmental Resources, Grand Turk.

7.2.3.6 Salt Cay

The AoI of the Salt Cay disposal site intersects with one accepted PA: the Salt Cay Area of Historical Interest; and with two proposed PA: the Salt Cay Nature Reserve and the (adjusted) Salt Cay Area of Historical Interest. The intersected HA are described later in Section 7.3.4.1.



Source of the geodata: TCI Data Portal

Figure 7-32: Salt Cay AoI and intersection with PA

Proposed Salt Cay Nature Reserve

The proposed Salt Cay NR provides habitat for a wide variety of breeding and migratory waterbirds.

7.2.4 Key Biodiversity Areas in the AoI

A review of the information available in the KBA Portal and the NPDP (2020), supported with a visual verification of the locations of KBAs within the AoI was performed. Geodata of the KBAs is not available and therefore maps could not be drawn.

Five KBAs were identified as possibly[121] intersecting with the Project's AoI in North Caicos, Middle Caicos, Salt Cay and Grand Turk (Table 7-9).

[121] Although official data for the international natural protected areas is unavailable for this study, internet research shows that the pointed intersections are highly probable.

Table 7-9: KBAs within the Project's AoI (Based on KBA-Data[122])

National Site Name	Location	Global KBA Criteria	System	Area of KBA (ha)	Description of the KBA	Biodiversity elements triggering KBA criteria			
						Taxonomic Group	Scientific Name	Common Name	IUCN Red List Category
Wades Green and Teren Hill	North Caicos IBA	Not Reported	Terrestrial	227	The most significant remaining high forest region in the Turks and Caicos Islands is located near two major historic plantation ruins in the northwest area of North Caicos	Birds	*Calliphlox evelynae*	Bahama Woodstar	LC
							Margarops fuscatus	Pearly-eyed Thrasher	LC
							Mimus gundlachii	Bahama Mockingbird	LC
							Vireo crassirostris	Thick-billed Vireo	LC
North, Middle and East Caicos Ramsar Site	North, Middle and East Caicos- IBA	D1a	Terrestrial, Marine	58,838	The location is a wetland system that encompasses a variety of wetland and some connected dry-land ecosystems, with significant natural transitions between them. Includes 3 IBA´s (TC002, TC004 & TC005)	Birds[123]	*Dendrocygna arborea*	West Indian Whistling-duck	NT
						Plants	*Swietenia mahagoni*	Small-leaved Mahogany	NT
						Reptiles	*Cyclura carinata*	Turks and Caicos Rock Iguana	EN
Middle Caicos Forest	Middle Caicos IBA	No Reported	Terrestrial	1,381	Is located within the Lorimers & Bambarra settlements. This site is adjacent to and ecologically connected with TC003 and includes various types of permanent and temporary wetlands	Birds	*Dendrocygna arborea*	West Indian Whistling-duck	NT
							Calliphlox evelynae	Bahama Woodstar	LC
							Margarops fuscatus	Pearly-eyed Thrasher	LC
							Mimus gundlachii	Bahama Mockingbird	LC
							Vireo crassirostris	Thick-billed Vireo	LC

[122] This table and its information are made based on KBA-data available on: https://www.keybiodiversityareas.org/

[123] This KBA reports additionally 19 bird species in IUCN category Least Concern (LC); 5 of them with KBA Criteria D1a: https://www.keybiodiversityareas.org/site/factsheet/19771

National Site Name	Location	Global KBA Criteria	System	Area of KBA (ha)	Description of the KBA	Biodiversity elements triggering KBA criteria			
						Taxonomic Group	Scientific Name	Common Name	IUCN Red List Category
Grand Turk Salinas and Shores[124]	Grand Turk IBA	D1a	Terrestrial, Marine	270	According with KBA portal, it is suggested a Statutory Reserve Status for the historical importance and wildlife[124]. In this place are located one IBA.	Birds	*Charadrius wilsonia*	Wilson's Plover	LC
							Larus atricilla	Laughing Gull	LC
							Limnodromus griseus	Short-billed Dowitcher	LC
							Pelecanus occidentalis	Brown Pelican	LC
							Sternula antillarum	Least Tern	LC
							Thalasseus maxima	Royal Tern	
							Thalasseus sandvicensis	Sandwich Tern	LC
							Tringa flavipes	Lesser Yellowlegs	LC
							Tringa melanoleuca	Greater Yellowlegs	LC
Salt Cay Creek and Salinas	IBA	D1a	Terrestrial, Marine	253	Located in the SE side of Salt Cay Island.	Birds	*Calliphlox evelynae*	Bahama Woodstar	LC
							Charadrius wilsonia	Wilson's Plover	LC
						Reptiles	*Cyclura carinata*	Turks and Caicos Rock Iguana	EN

[124] This KBA includes another 8 bird species with IUCN Category Least Concern (LC); four of them have KBA criteria D1a: https://www.keybiodiversityareas.org/site/factsheet/19775

7.2.5 Important Bird Areas in the AoI

A review was made of the IBAs identified in the NPDP (2020) that are intersected by the Project's AoI in the different islands. Then the information available for each of the IBAs was researched for in the official site of BirdLife International [125]. Five IBAs were identified as possibly[126] intersecting with the Project's AoI in North Caicos, Middle Caicos, Salt Cay and Grand Turk. The results are shown in the following chapters.

Geodata of the IBAs is not available and therefore maps could not be drawn.

7.2.5.1 North Caicos

The IBA (and KBA) Wades Green and Teren Hill possibly intersects with the North Caicos Kew site's AoI. This IBA is the most important remaining high forest area in the TCI and is located in the vicinity of two major historic plantation ruins in Kew (one is Wade's Green Plantation historic attraction with an area of 226 ha). This IBA is considered to support significant populations of the species of birds listed in Table 7-10, and as a KBA it includes several species of fauna and flora (see Chapter 7.2.4).

Table 7-10: Wades Green and Teren Hill IBA

Name of the IBA	Species includes a hyperlink to the website of BirdLife International	Red List Category	Season	Year(s)	Population estimate at site	IBA criteria met
Wades Green and Teren Hill	Bahama Hummingbird *Nesophlox* evelynae	LC	resident	2005	unknown	A2
	Thick-billed Vireo *Vireo crassirostris*	LC	resident	2005	unknown	A2
	Pearly-eyed Thrasher *Margarops fuscatus*	LC	resident	2005	unknown	A2
	Bahama Mockingbird *Mimus gundlachii*	LC	resident	2005	unknown	A2
	Key West quail-dove *Geotrygon chrysia* *	LC	-	-	-	-

Source: Birdlife International[127] and *DECR

7.2.5.2 Middle Caicos

Two IBAs potentially intersect with the Middle Caicos dump site's AoI: the Middle Caicos Forest IBA and the North, Middle and East Caicos IBA (corresponding to the North, Middle and East Caicos NR and Ramsar site).

North, Middle and East Caicos IBA and Ramsar Site

The North, Middle and East Caicos IBA and Ramsar Site is the biggest IBA in TCI, with an area of 58,562 ha. This is a diverse wetland complex that encompasses various wetland types and adjacent dry-land ecosystems, with significant ecological transitions between these areas.

[125] BirdLife data Portal: https://datazone.birdlife.org/site/mapsearch
[126] Although official data for the international natural protected areas is unavailable for this study, internet research shows that the pointed intersections are highly probable.
[127] BirdLife International (2024) Important Bird Area factsheet: Wades Green and Teren Hill. Downloaded from https://datazone.birdlife.org/site/factsheet/wades-green-and-teren-hill-iba-turks-and-caicos-islands-(to-uk) on 24/03/2024.

Table 7-11: North, Middle and East Caicos IBA

Name	Species includes a hyperlink to the website of BirdLife International	Red List Category	Season	Year(s)	Population estimate at site	IBA criteria met
North, Middle and East Caicos IBA (Ramsar Site)	West Indian Whistling-duck Dendrocygna arborea	NT	resident	2005	unknown	A1
	White-cheeked Pintail Anas bahamensis	LC	resident	2005	1,000 individuals	B4i
	American Flamingo Phoenicopterus ruber	LC	winter	2005	3,000 individuals	A4i
	Bahama Hummingbird Nesophlox evelynae	LC	resident	2005	unknown	A2
	Sandhill Crane Grus canadensis	LC	winter	2005	3 individuals	B4i
	Reddish Egret Egretta rufescens	NT	winter	2005	400 individuals	A4i
	Brown Pelican Pelecanus occidentalis	LC	non-breeding	2005	150 individuals	B4i
	Grey Plover Pluvialis squatarola	LC	winter	2005	2,500 individuals	A4i
	Wilson's Plover Charadrius wilsonia	LC	resident	2005	100 individuals	B4i
	Least Sandpiper Calidris minutilla	LC	winter	2005	6,000 individuals	A4i
	Short-billed Dowitcher Limnodromus griseus	LC	winter	2005	3,200 individuals	A4i
	Lesser Yellowlegs Tringa flavipes	LC	winter	2005	5,000 individuals	A4i
	Greater Yellowlegs Tringa melanoleuca	LC	winter	2005	1,000 individuals	A4i
	Laughing Gull Larus atricilla	LC	non-breeding	2005	900 individuals	B4i
	Least Tern Sternula antillarum	LC	non-breeding	2005	100 individuals	B4i
	Common Gull-billed Tern Gelochelidon nilotica	LC	breeding	2005	60 individuals	B4i
	Sandwich Tern Thalasseus sandvicensis	LC	non-breeding	2005	150 individuals	B4i
	Royal Tern Thalasseus maximus	LC	non-breeding	2005	150 individuals	B4i
	Thick-billed Vireo Vireo crassirostris	LC	resident	2005	unknown	A2
	Pearly-eyed Thrasher Margarops fuscatus	LC	resident	2005	unknown	A2
	Bahama Mockingbird Mimus gundlachii	LC	resident	2005	unknown	A2
	A4iii Species group - waterbirds	n/a	unknown	2005	20,000 individuals	A4iii

Source: Birdlife International[128]

[128] BirdLife International (2024) Important Bird Area factsheet: Wades Green and Teren Hill. Downloaded from https://datazone.birdlife.org/site/factsheet/wades-green-and-teren-hill-iba-turks-and-caicos-islands-(to-uk) on 24/03/2024.

Middle Caicos Forest IBA

The IBA Middle Caicos Forest is a forest area located between the settlements of Lorimers and Bambarra. The area of this IBA is 1,374 ha and has the code IBA TC003.

Table 7-12: Middle Caicos Forest IBA

Name	Species	Red List Category	Season	Year(s)	Population estimate at site	IBA criteria met
Middle Caicos Forest IBA	West Indian Whistling-duck Dendrocygna arborea	NT	resident	2005	unknown	A1
	Bahama Hummingbird Nesophlox evelynae	LC	resident	2006	400 individuals	A2
	Thick-billed Vireo Vireo crassirostris	LC	resident	2006	6,700 individuals	A2
	Pearly-eyed Thrasher Margarops fuscatus	LC	resident	2005	unknown	A2
	Bahama Mockingbird Mimus gundlachii	LC	resident	2006	200 individuals	A2

Source: BirdLife International[129]

7.2.5.3 Grand Turk

One IBA potentially intersects with the Grand Turk site's IBA: the Grand Turk Salinas and Shore IBA.

Grand Turk Salinas and Shore IBA

The total area of the Grand Turk Salinas and Shore is 268 ha. It encompasses the abandoned saltpans, wells and adjacent coasts throughout Grand Turk, including ones visible in the center of TCI's capital. The IBA includes the Town Salina, North Salina, South Salina, Great Salina, Hawkes Pond Salina & Hawkes Nest Salina, and the nearby shores.

Table 7-13: Grand Turk Salinas and Shore IBA

Name	Species	Red List Category	Season	Year(s)	Population estimate at site	IBA criteria met
Grand Turk Salinas and Shore IBA	Brown Pelican *Pelecanus occidentalis*	LC	breeding	2005	60 individuals	B4i
	Wilson's Plover *Charadrius wilsonia*	LC	breeding	2005	30 breeding pairs	B4i
	Short-billed Dowitcher *Limnodromus griseus*	LC	winter	2005	4,000 individuals	A4i
	Lesser Yellowlegs *Tringa flavipes*	LC	winter	2005	6,000 individuals	A4i
	Greater Yellowlegs *Tringa melanoleuca*	LC	winter	2005	1,000 individuals	A4i
	Laughing Gull *Larus atricilla*	LC	breeding	2005	900 individuals	A4i
	Least Tern *Sternula antillarum*	LC	breeding	2005	840 breeding pairs	A4i
	Sandwich Tern *Thalasseus sandvicensis*	LC	breeding	2005	60 individuals	B4i
	Royal Tern *Thalasseus maximus*	LC	breeding	2005	40 individuals	B4i

Source: BirdLife International[130])

[129] BirdLife International (2024) Important Bird Area factsheet: Middle Caicos Forest. Downloaded from https://datazone.birdlife.org/site/factsheet/middle-caicos-forest-iba-turks-and-caicos-islands-(to-uk) on 25/03/2024.

[130] BirdLife International (2024) Important Bird Area factsheet: Grand Turk Salinas and Shores. Downloaded from https://datazone.birdlife.org/site/factsheet/grand-turk-salinas-and-shores-iba-turks-and-caicos-islands-(to-uk) on 25/03/2024.

7.2.5.4 Salt Cay

The AoI of Salt Cay's disposal site potentially intersects with the IBA Salt Cay Creek and Salinas.

Salt Cay Creek and Salinas IBA

Located on the southeast side of Salt Cay, the Salt Cay Creek and Salinas IBA is placed along with disused saltpans scattered across the island, particularly those visible from the roads within the settlement. These features enhance the historical appeal provided by the remnants of the salt industry on the island. The total area is 251 ha.

Table 7-14: Salt Cay Creek and Salinas IBA

Name	Species	Red List Category	Season	Year(s)	Population estimate at site	IBA criteria met
Salt Cay Creek and Salinas IBA	Bahama Hummingbird *Nesophlox evelynae*	LC	resident	2008	unknown	A2
	Brown Pelican *Pelecanus occidentalis*	LC	non-breeding	2005	30 individuals	B4i
	Wilson's Plover *Charadrius wilsonia*	LC	breeding	2005	30 breeding pairs	B4i
	Laughing Gull *Larus atricilla*	LC	non-breeding	2005	900 individuals	B4i
	Least Tern *Sternula antillarum*	LC	breeding	2005	280 breeding pairs	A4i
	Sandwich Tern *Thalasseus sandvicensis*	LC	non-breeding	2005	60 individuals	B4i
	Thick-billed Vireo *Vireo crassirostris*	LC	resident	2008	unknown	A2
	Bahama Mockingbird *Mimus gundlachii*	LC	resident	2008	unknown	A2

Source: BirdLife International [131]

7.2.6 Ecosystems and habitats

TCI is a territory rich in several species, including endemic plants, invertebrates, reptiles, and birds, native mammals, bats, turtles, etc., each showcasing distinct genetic variations across the different islands. TCI has been part of the Tentative List for UNECO Site[132] of United Kingdom in 2012[133] due to its high number of species. Additionally, the islands serve as crucial habitats for seabirds in the Caribbean. They also feature wetland sites of global significance, encompassing both marine and coastal environments. Notably, the network of salt cays within these islands provides a rich ecosystem for numerous exceptional species, making it an ecologically valuable area.

[131] BirdLife International (2024) Important Bird Area factsheet: Salt Cay Creek and Salinas. Downloaded from https://datazone.birdlife.org/site/factsheet/salt-cay-creek-and-salinas-iba-turks-and-caicos-islands-(to-uk) on 16.04.2024

[132] The Tentative List is an inventory compiled by a country that identifies and catalogues its significant natural and cultural heritage sites within its own borders that the country believes are worthy of consideration for nomination to the World Heritage List.

[133] Turks and Caicos Islands: https://www.worldheritagesite.org/tentative/former/Turks+and+Caicos+Islands#site_map

7.2.6.1 Reef ecosystem

The archipelago contains the least degraded coral reef in the Caribbean, with an estimated area of around 1,200 square kilometres[134]. The reefs around the Caicos Bank form the second largest barrier reef system in the Western Hemisphere. It is estimated that 60 species of coral – both hard and soft – live on the reefs of the TCI, and that over 250 different fish species live on this ecosystem[135].

The underwater walls are consistently rated among the top wall diving destinations by scuba diving publications[135]. Also, the coral reef is considered critical to the luxury tourism-driven economy and the general well-being of the country[136].

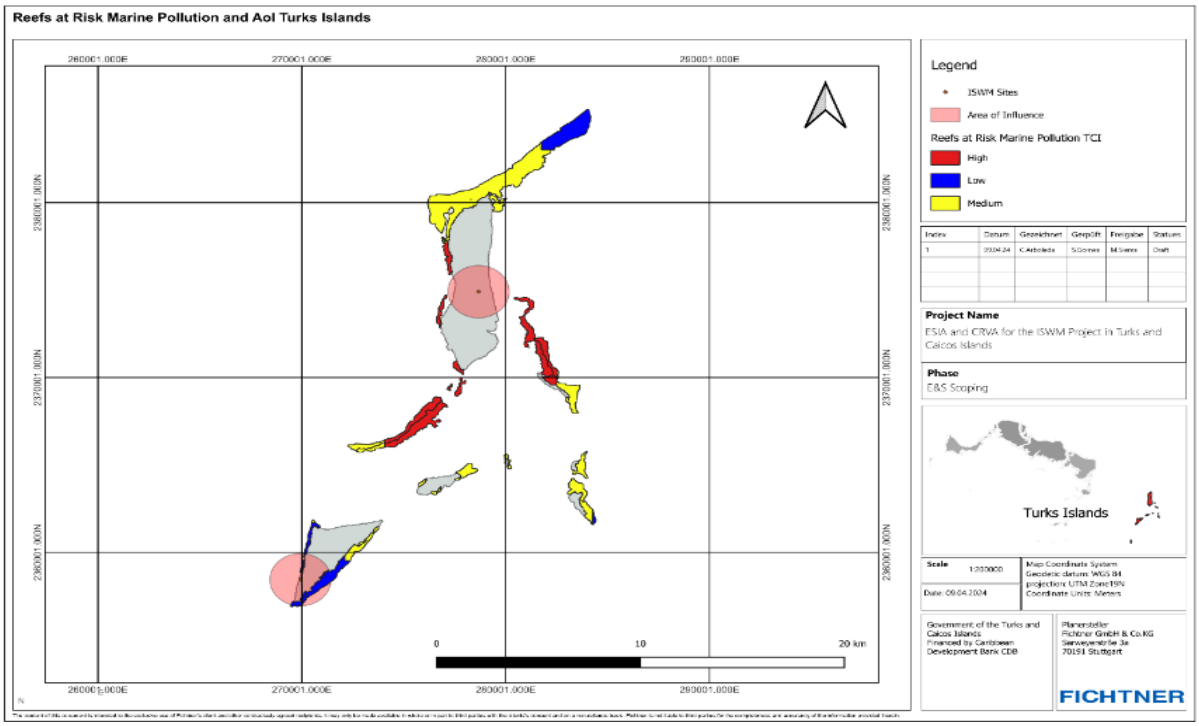
Most of these reefs were in good health in 2011 and hosted a wide variety of corals (over thirty species) [134]. New research has found that 35 key coral species on the TCI remained resilient during a 2014-17 coral bleaching event that damaged reefs around the world. Even corals that did experience bleaching recovered quickly. More, the pigmentation of boulder corals was darker in 2017 than in 2014, suggesting these corals might have been healthier after rebounding from the heat stress. Previous research has offered some clues to factors that might have promoted coral health. For example, some algal types appear to confer added resilience to corals experiencing heat stress. Ocean salinity and acidity likely play a role. The TCI tend to have lower water temperatures than other, more thermally stressed regions of the Caribbean. Additionally, the massive 2017 hurricanes Irma and Maria cooled surface waters and likely contributed to the corals' recovery, according to the researchers [137].

Risk for the reefs derived from pollution

According to the TCI Data Portal, the coral reefs in the Grand Turk are exposed at a high risk of marine pollution (Figure 7-33), while those in Providenciales, North, Middle, and South Caicos and Salt Cay are considered to be exposed to a low risk of marine pollution (Figure 7-34).

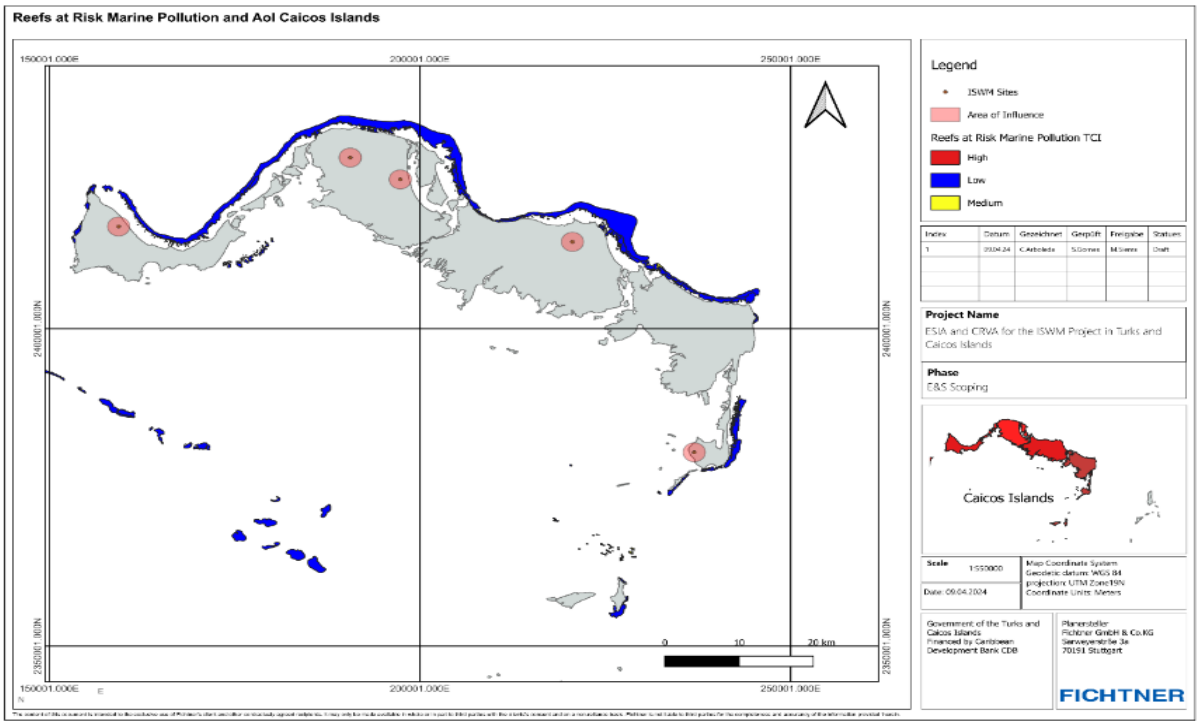
On the other hand, one study indicates that the liquid waste at Providenciales will leach pathogens and contaminants from the landfill into the surrounding sea waters within 7 to 64 days, causing an environmental stress that will impact the local corals in Grace Bay[88].

[134] UK Overseas Territories and Crown Dependencies: 2011 Biodiversity snapshot, page: 116. Available on: https://www.researchgate.net/publication/282647578_UK_Overseas_Territories_and_Crown_Dependencies_2011_Biodiversity_snapshot
[135] The Turks and Caicos Reef Fund: https://www.tcreef.org/turks-and-caicos-coral-reef-facts
[136] Visit TCI: https://www.visittci.com/nature-and-history/geology-ecology-climate/barrier-reef
[137] Oceanographic magazine: Reefs in Turks and Caicos Islands resisted global coral bleaching event 2014-17 - Oceanographic (oceanographicmagazine.com)



Source of the geodata: TCI Data Portal [138]

Figure 7-33: Reefs at risk due to marine pollution and the Project's AoI in the Turks Islands



Source of the geodata: TCI Data Portal

Figure 7-34: Reefs at risk due to marine pollution and the Project's AoI in the Turks Islands[138]

[138] Turks and Caicos Data Portal: https://dataportal.gov.tc/group/environment

Other risks[136]

Poaching, primarily by commercial fishermen from the Dominican Republic, is one threat to the reefs and marine life in the Turks and Caicos. Some vessels caught well within the country's territorial waters were found to have thousands of pounds of illegal catch, representing the entire spectrum of fish typical to the reef, including hundreds of parrotfish.

Overfishing is a tremendous concern with many environmental groups in the Turks and Caicos, primarily for conch, as populations of this giant marine snail have declined significantly in the last few decades.

Other major concerns to the well-being of the reef systems include landscaping and sewage runoff from resorts, which is thought to be damaging the reefs in the Grace Bay area, and particularly the Bight Reef beach snorkelling site. The resulting eutrophication typically has long-lasting and significant impacts on the entire reef ecosystem.

7.2.6.2 Natural habitats in the AoI

According with Tara Pelembe and Gillian Cooper (2011), the Turks and Caicos Islands are home to forty distinct types of terrestrial habitats[139]. The dry forest and mangroves are the main vegetation in the islands, but they also include wetlands that encompass mangroves that are periodically inundated, as well as a variety of swamps and intricate estuaries [140].

The following chapters tentatively identify the habitats within the Project's AoI in the different islands based on the NPDP (2020). Annex B contains the respective maps based on images available in the NPDP's report.

Providenciales

According with the NPDP (2020), 29 types of habitats can be found in Providenciales. The dominant type is the Human Altered Landscape (HAL), followed by Estuarine Non-Vascular and Evergreen/Drought Deciduous Shrubland. In the AoI of the Providenciales dumpsite a small area of Palustrine Non-Vascular can be found that may be associated to the proposed PA Wheeland Pond Nature Reserve.

North Caicos

The most part of North Caicos site's AoI includes a diverse sampling of the terrestrial and wetland habitats of the Turks and Caicos Islands. A small part is HAL.

Middle Caicos

The most prevalent upland habitats in the AoI of the Middle Caicos site are characterized by Mixed Woodlands, but also includes HAL.

[139] UK Overseas Territories and Crown Dependencies (Appendices): https://data.jncc.gov.uk/data/e5d8c245-e94d-4043-b1b8-f353c27cd9b4/ot-biodiversity2011-turks-caicos-appendices.pdf
[140] More information on the Complete Report on: https://www.researchgate.net/publication/282647578_UK_Overseas_Territories_and_Crown_Dependencies_2011_Biodiversity_snapshot

South Caicos

The most part of the island is covered by Palustrine Non-Vascular and Palustrine Non-Vascular, but also important proportions of Drought Deciduous Shrubland and HAL can be found within the South Caicos site's AoI).

Grand Turk

The dominant habitat in Grand Turk is HAL, being present, together with the Palustrine Non-Vascular habitat within the dump site's AoI.

Salt Cay

Palustrine formations and HAL habitats are the dominant habitats in the AoI of Salt Cay's site.

7.2.7 Fauna and flora in the TCI

The TCI are home to several species of animals (birds, mammals, reptiles, amphibians, insects, bats, fishes[141] etc.), including also invasive species. The following table shows the list of species identified by DECR on the context of the 2011 Biodiversity Snapshot [142].

Table 7-15: Distribution of the number of species of fauna per type in the TCI[142]

Type	Number of Species
Endemic Invertebrates	13
Near-Endemic Invertebrates	3
Endemic Reptiles	5
Near-Endemic (Bahamas Archipelago Endemic) Reptiles	4
Endemic Birds	2
Native Mammals	6
Invasive Invertebrates	2
Invasive Fish	2
Invasive Reptiles and Amphibians	6
Invasive Birds	2
Invasive Mammals	10

Source: DECR, 2011

The TCI houses several species of plants including endemic species (9) and significant invasive species (6) - Table 7-16. The following table shows the endemic species and the significant invasive species from TCI. 48 near endemic[143] species are also identified.

[141] More details of fauna of the TCI on the Plan for Biodiversity Management and Sustainable Development around Turks & Caicos Ramsar Site:
https://www.ukotcf.org.uk/wp-content/uploads/2020/04/TCIRamsarSiteManPlan.pdf
[142] DECR, 2011: UK Overseas Territories and Crown Dependencies Appendices, 2011 Biodiversity snapshot, Appendix 4-5:
https://data.jncc.gov.uk/data/e5d8c245-e94d-4043-b1b8-f353c27cd9b4/ot-biodiversity2011-turks-caicos-appendices.pdf
[143] Bahamas archipelago endemics or endemics shared with one other island, such as Cuba

Table 7-16: Endemic and significant invasive species of flora in the TCI

Endemic Plants	Significant Invasive Plants
Turks and Caicos heather *Limonium bahamense*	Cow bush *Leucaena leucocephala*
Caroline's pink flower Stenandrium carolinae	Australian Pine/Cedar *Casuarina equisetifolia*
Caicos Encyclia orchid *Encyclia caicensis*	Hawaiian scaevola *Scaevola taccada*
Britton's buttonbush *Borreria brittonii*	Guinea grass *Panicum maximum*
Capillary buttonbush *Borreria capillaris*	Foxtail grass *Pennisetum setaceum*
Silvery silverbush *Argythamnia argentea*	Brazilian pepper *Schinus terebinthefolius*
Peppergrass *Lepidium filicaule*	
North Caicos milkweed vine *Metastelma stipitatum*	
Lucayan pear bush *Opuntia lucayana*	

Source: DECR, 2011 [142]

7.2.7.1 Reptiles and Amphibians

The TCI do not have native amphibian species; however, studies of reptiles have uncovered a rich and distinctive reptilian fauna, including a snake species found only in this region, the Caicos Islands Trope Boa (*Tropidophis greenwayi),* as well as four lizard species unique to the area, such as the Curly Tail Lizard *(Leiocephalus psammodromus)*, Caicos Islands Reef Gecko (*Sphaerodactylus caicosensis*), Pygmy Gecko (*Sphaerodactylus underwoodi*) and the gecko *Aristelliger hechti.* This last one was considered extinct until it was rediscovered by the Darwing Initiative Project[144]. Additionally, other lizards inhabit the island: Turks & Caicos Bark Anole (*Anolis scriptus scriptus*); Turks & Caicos Rock Iguana (*Cyclura carinata carinata*), and Mabuya Skink (*Mabouya mabuya sloanei)*, now considered as two endemic species: *Spondylurus caicosae* and *Spondylurus turksae*). One snake (the Bahaman Rainbow Boa (*Epicrates chrysogaster chrysogaster*), representing an endemic subspecies, and a native snake (Antillean blind snake - *Antillotyphlops platycephalus*) inhabit the island as well.

While not exclusive to the Turks & Caicos, certain reptiles have very limited ranges: the *Cyclura carinata* subspecies found outside the islands is confined to the small Booby Cay near Mayaguana, and the *Sphaerodactylus mariguanae* is also restricted to Mayaguana and the Turks & Caicos. Additionally, several Turks & Caicos reptiles enjoy international protection or recognized conservation status. These reptiles inhabit scrub habitats across the islands, with moist microsites within these areas playing a crucial role in supporting their survival.

7.2.7.2 Birds

Wetlands have long been recognized as vital for the survival of several migratory and native species. Birds, being more mobile than most animals, are often assumed to relocate if their habitat is compromised. However, recent ecological studies suggest that bird populations only thrive because they have access to a network of habitats, all of which are essential.

[144] The Darwin Initiative is a funding program run by the UK government with the goal of preserving biodiversity and the natural environment via projects based in local communities around the globe. It backs efforts that tackle issues related to conservation, encourage sustainable development, and boost environmental resilience.

Field studies on wetland birds during the Darwin Initiative Project have shown that the TCI Ramsar Site is extremely important for waterbirds, with usage varying seasonally and annually, likely due to weather conditions.

West Indian waterfowl species, including ducks, flamingos, herons, and shorebirds, are losing habitat due to the expansion of tourism-related development in the region. Species of particular concern in the Turks and Caicos include the Reddish Egret, West Indian Whistling Duck, and American Flamingo. Recent studies have shown that dry woodlands are much more important to both native and migratory birds than previously thought, including providing winter habitats for one of the rarest songbirds breeding in the USA.[145]

7.2.7.3 Species classified in the IUCN Red List

The review of the IUCN Red List for the Turks and Caicos Islands allowed the identification of 106 species - from which 10 belong to the Plantae kingdom and 96 belong to the Animalia kingdom - in the threatened categories CR (Critically Endangered), EN (Endangered) and VU (Vulnerable).

Table 7-17: Number of IUCN Red List Species classified as threatened (CR, EN, and VU) in the TCI (Consulted in December 2023 [146])

IUCN Red List Category	Number of Species
CR	24
EN	32
VU	50
Total	106

7.2.8 Fauna and flora in the AoI

This chapter lists the fauna and flora species/groups inhabiting the protected areas (including national PAs, historic sites and IBAs) which are intersected by the AoI on each island. The basis for the data shown is the NPDP (2020) and the biodiversity surveys undertaken for the ESIA in June 2024 (Providenciales) and September 2024 (Grand Turk). A reference to the IUCN Red List Category (if listed) is made for each species.

[145] Plan for Biodiversity Management and Sustainable Development around Turks & Caicos Ramsar Site: https://www.ukotcf.org.uk/wp-content/uploads/2020/04/TCIRamsarSiteManPlan.pdf
[146] https://www.iucnredlist.org/es/search/grid?landRegions=TC&searchType=species

7.2.8.1 Fauna and flora in the AoI of all sites

Table 7-18: Fauna in the AoI of all sites based on NPDP (2020)

Name of Site	Type	Class	Common Name	Scientific Name	IUCN Red List
Providenciales					
Wheeland Pond NR	Proposed Protected Area	Birds	American Flamingo (also known as West Indian or Roseate Flamingo)	*Phoenicopterus ruber*	LC
North Caicos					
Cottage Pond NR	Accepted Protected Area	Remipedia	Endemic Cottage Pond Shrimp	*Kaloketos pilosus*	-
Wades Green and Teren Hill IBA - linked with Wade's Green Plantation (proposed HA)	IBA-KBA & Proposed Protected Area	Birds	See Chapter 7.2.5.1		
		Reptilia	Endemic Caicos barking gecko	*Aristelliger hechti*	VU
		Reptilia	Caicos dwarf gecko	*Sphaerodactylus caicosensis*	LC
		Reptilia	Caicos pygmy boa	*Tropidophis greenwayi*	VU
		Reptilia	Turks and Caicos rainbow boa	*Chilabothrus chrysogaster*	NT
		Reptilia	Flathead worm snake*	*Antillotyphlops platycephalus* *	LC
		Reptilia	Caicos Islands Skink*	*Spondylurus caicosae* *	NT
Middle Caicos					
North, Middle and East Ramsar Site & NR	Accepted Protected Area & KBA-IBA	Reptilia	Endemic Caicos barking gecko	*Aristelliger hechti*	VU
		Reptilia	Caicos dwarf gecko	*Sphaerodactylus caicosensis*	LC
		Reptilia	Caicos Skink	*Spondylurus caicosae*	NT
		Reptilia	Curly-tail Lizards	*Leiocephalus psammodromus*	VU
		Reptilia	Pygmy Boa Constrictor	*Tropidophis greenwayi*	VU
		Reptilia	Caicos Islands Skink	*Spondylurus caicosae*	NT
		Reptilia	Turks and Caicos Rock Iguana	*Cyclura carinata*	EN
		Reptilia	Turks and Caicos Rainbow Boa	*Chilabothrus chrysogaster*	NT
		Reptilia	Green sea turtles	*Chelonia mydas*	EN
		Reptilia	Hawksbill sea turtle	*Eretmochelys imbricata*	CR
		Gastropoda (Molusca)	Queen conch	*Aliger gigas*	-
		Gastropoda (Molusca)	Queen Conch	Lobatus gigas	
		Malacostraca	Caribbean Spiny Lobster	*Panulirus argus*	DD
		Fish	--	Snapper Lutjanus spp	-

Name of Site	Type	Class	Common Name	Scientific Name	IUCN Red List
		Birds	Thick- billed Vireo Vireo (Breeding- Migration habitat)	*crassirostris stalagmium*	-
		BIrds	American kestrel	*Falco sparverius*	LC
		Birds	Greater Antillean Bullfi nch (Breeding- Migration habitat)	*Loxigilla violacea ofella*	-
		Birds	near-endemic Cuban Crow	*Corvus nasicus*	LC
		Birds	Range-restricted Bahama Woodstar	*Calliphlox evelynae*	-
		Birds	Key West Quail Dove	*Geotrygon chrysia*	LC
		Birds	Piping Plover	*Charadrius melodus*	NT
		Birds	Kirtland's Warbler	*Setophaga kirtlandii*	NT
		Birds	White- crowned Pigeon	*Patagioenas leucocephala*	NT
		Birds	biome-restricted Antillean Nighthawk	*Chordeiles gundlachii*	LC
		Birds	White-tailed	*Tropicbird Phaethon lepturus*	-
Middle Caicos Forest	KBA-IBA	Birds	See Chapter 7.2.5.2		
		Mammalia - Bats	Big-eared Bat	*Macrotus waterhousii*	LC
South Caicos					
Boiling Hole HA, Boiling Hole NR and South Caicos Wetland (proposed) CR	Proposed and Accepted Protected Areas	Birds	American Flamingo (West Indian or Roseate Flamingo)	*Phoenicopterus ruber*	LC
		Birds	Reddish Egret	*Egretta rufescens*	NT
		Birds	Laughing Gull	*Larus atricilla*	LC
		Birds	Short-billed Dowitcher	*Limnodromus griseus*	LC
Grand Turk					
South Creek NP	Accepted Protected Area	Malacostraca	Caribbean Spiny Lobster	*Panulirus argus*	DD
		Gastropoda (Molusca)	Queen conch	*Aliger gigas*	
		Reptilia	Hawksbill sea turtle	*Eretmochelys imbricata*	CR
		Reptilia	Green sea turtles	*Chelonia mydas*	EN
Columbus Landfall NP	Accepted Protected Area	Malacostraca	Caribbean Spiny Lobster	*Panulirus argus*	DD
		Gastropoda (Molusca)	Queen conch	*Aliger gigas*	
		Reptilia	Hawksbill sea turtle	*Eretmochelys imbricata*	CR
		Reptilia	Green sea turtles	*Chelonia mydas*	EN
		Reptilia	Caicos dwarf gecko	*Sphaerodactylus caicosensis*	LC
Grand Turk Salinas and Shore (Town Pond and Red Salinas proposed HA)	KBA-IBA & Proposed Protected Area	Birds	See Chapter 7.2.5.3		

Name of Site	Type	Class	Common Name	Scientific Name	IUCN Red List
Salt Cay					
Salt Cay HA	Accepted Protected Area	-	Variety of breeding and migratory waterbirds		
Salt Cay Creek and Salinas (Salt Cay (proposed) NR and Salt Cay (proposed adjusted) HA)	KBA-IBA & Proposed Protected Areas	Birds	See Chapter 7.2.5.4		
		Reptiles	Turks and Caicos Rock Iguana	*Cyclura carinata*	EN

Source: NPDP (2020), IUCN Red List and DECR

Table 7-19: Flora in the AoI of all sites based on NPDP (2020)

Name of Site	Type	Common Name	Scientific Name	IUCN Red List/other information
Providenciales				
Wheeland Pond NR	Proposed Protected Area	Red mangrove	*Rhizophora mangle*	LC
North Caicos				
Cottage Pond NR	Accepted Protected Area	Giant leather fern	*Acrostichum danaeifolium*	LC
		Long strap fern	*Campyloneurum phyllitidis*	-
		Brittons Shadows	*Ponthieva brittoniae*	-
		Green ladies' tresses orchid	*Mesadenus polyanthus*	-
Wades Green and Teren Hill HA	IBA-KBA & Proposed Protected Area	Long strap fern	*Campyloneurum phyllitidis*	-
		Resurrection fern	*Pleopeltis polypodioides*	-
		Rabbit's foot fern	*Davallia fejeensis*	-
		Britton's shadow-witch orchid	*Ponthieva brittoniae*	
		Green ladies' tresses orchid	*Mesadenus polyanthus*	-
Middle Caicos				
North, Middle and East Caicos Ramsar Site & NR	Accepted Protected Area & Ramsar Site	Caicos Islands' Orchid (TCI endemic flora)	*Encyclia caicensis*	EN
		Caroline's Pink (TCI endemic flora)	*Stenandrium carolinae*	CR
		Fine- leaved Buttonweed (TCI endemic flora)	*Spermacoce capillaris*	EN
		Caicos Pine TCI endemic and near-endemic flora)	*Pinus caribaea var. bahamensis*	VU

Name of Site	Type	Common Name	Scientific Name	IUCN Red List/other information
South Caicos				
Boiling Hole HA, Boiling Hole NR and South Caicos Wetland (proposed) CR	Accepted and Proposed Protected Areas	Heather Bahama sea lavender (TCI endemic flora)	*Limonium bahamense*	EN
		Nash's Pepperwort	*Marsilea nashii Underw*	-
		Fine-leaved buttonweed	*Borreria capillaris*	-
		Milk tree	*Euphorbia gymnonota*	NT
		-	*Pedilanthus bahamensis*	-
AoI of the dumpsite *	-	Caicos Encyclia (orchid)	*Encyclia caicensis,*	EN Endemic to the Caicos Islands
		Capillary buttonbush	*Spermacoce capillaris*	EN Only known from South and East Caicos
		Turk's head cactus	*Melocactus intortus*	LC
	According to the DECR, much of the undeveloped land on South Caicos has high occurrence of rare, threatened, and endemic species of plants.			
Grand Turk				
South Creek NP	Accepted Protected Area	Heather Bahama sea lavender (TCI endemic flora)	*Limonium bahamense*	EN
Salt Cay				
Salt Cay Creek and Salinas (Salt Cay (proposed) NR and Salt Cay (proposed adjusted) HA)	Accepted and Proposed Protected Areas	Heather Bahama sea lavender (TCI endemic flora)	*Limonium bahamense*	EN
		Britton's buttonweed	*Borreria brittonii*	-

Source: NPDP (2020), IUCN Red List, and *DECR

7.2.8.2 Fauna and fora in the providenciales site's AoI

An ecological assessment was conducted on 15 July 2024 at the Wheeland Pond in Providenciales ("biodiversity survey"). The results are described below.

The Wheeland Pond, located north of the Wheeland Phase One community is within the Providenciales site's AoI. This is a wetland formed from former sand mining pits that flooded to create inland saline ponds.

Vegetation in and around Wheeland Pond includes red mangroves (*Rhizophora mangle*), black mangroves (*Avicennia germinans*), white mangroves (*Laguncularia racemosa*), and silver buttonwood (*Conocarpus erectus*), which provide important habitat for avian species. These species are of Least Concern according to the IUCN Red List, but with decreasing populations.

A summary of bird species observed at the Wheeland Pond within the Providenciales AoI is presented in Table 7-20 below.

Table 7-20: Bird species observed at the Wheeland Pond based on the ESIA site surveys in 2024

Common Name	Scientific Name	Number Observed	IUCN Red List Conservation Status	Population Status	Date Observed
Green Heron	*Butorides viriscens*	1	LC	Increasing	14.07.24
Snowy Egret	*Egretta thula*	2	LC	Increasing	14.07.24
White-Cheeked Pintail	*Anas bahamensis*	2	LC	Decreasing	14.07.24
Little Blue Heron	*Egretta caerulea*	1	LC	Decreasing	14.07.24
Lesser Yellowlegs	*Tringa flavipes*	4	LC	Decreasing	14.07.24

A comprehensive list of bird species recorded within the past 12 months at Wheeland Pond based on the eBird website[147] is provided in Table 7-21. This list reflects species encountered throughout the year in this area.

Table 7-21: Bird species observed at the Wheeland Pond in 2024 based on the eBird Website

Common Name	Scientific Name	Number Observed	IUCN Red List Conservation Status	Population Status	Date Observed
White-Cheeked Pintail	Anas bahamensis	4			Sept. 2024
Eurasian Collared Dove	*Streptopelia decaocto*	2	LC	Increasing	Sept. 2024
Common Ground Dove	*Columbina passerina*	7	LC	Stable	Sept. 2024
Osprey	*Pandion haliaetus*	2	LC	Increasing	Sept. 2024
Smooth-billed Ani	*Crotophaga ani*	4	LC	Stable	May 2024
Northern Mockingbird	*Mimus polyglottos*	1	LC	Stable	May 2024
Zenaida Dove	*Zenaida aurita*	1	LC	Stable	May 2024
Mourning Dove	*Zenaida macroura*	4	LC	Decreasing	May 2024
Black-bellied Plover	*Pluvialis squatarola*	1	VU	Decreasing	May 2024
Semi-palmated Plover	*Charadrius semipalmatus*	5	LC	Decreasing	May 2024
Willet	*Tringa semipalmata*	1	LC	Decreasing	May 2024
Greater Yellowlegs	*Tringa melanoleuca*	3	NT	Decreasing	May 2024
Ruddy Turnstone	*Arenaria interpres*	7	NT	Decreasing	May 2024
Gull-billed Tern	*Gelochelidon nilotica*	2	LC	Decreasing	May 2024
Royal Tern	*Thalasseus maximus*	1	LC	Stable	May 2024
Yellow-crowned Night Heron	*Nyctanassa violacea*	1	LC	Stable	May 2024
Thick-billed Vireo	*Vireo crassirostris*	1	LC	Stable	May 2024
Palm Warbler	*Setophaga palmarum*	1	LC	Increasing	February 2024
Yellow-rumped Warbler	*Setophaga coronata*	1	LC	Stable	February 2024

[147] eBird. 2024. eBird: An online database of bird distribution and abundance [web application]. Cornell Lab of Ornithology, Ithaca, New York. Available at: https://ebird.org/hotspot/L1464812/bird-list (Accessed: 12 September 2024).

Common Name	Scientific Name	Number Observed	IUCN Red List Conservation Status	Population Status	Date Observed
Short-billed Dowitcher	*Limnodromus griseus*	10	VU	Decreasing	February 2024
Blue-winged Teal	*Spatula discors*	2	LC	Increasing	February 2024
Wilson's Phalarope	*Phalaropus tricolor*	1	LC	Stable	February 2024
Spotted Sandpiper	*Actitis macularius*	2	LC	Stable	February 2024
American Redstart	*Setophaga ruticilla*	1	LC	Increasing	February 2024
Cape May Warbler	*Setophaga tigrina*	1	LC	Increasing	February 2024
Bahama Woodstar	*Nesophlox evelynae*	1	LC	Stable	February 2024
Northern Parula	*Setophaga americana*	2	LC	Increasing	February 2024
Green Heron	*Butorides virescens*	1	LC	Stable	February 2024
Bahama Mockingbird	*Mimus gundlachii*	1	LC	Decreasing	February 2024

7.2.8.3 Fauna and flora in the Grand Turk site's AoI

An ecological assessment was conducted on 10 September 2024 at the Town and Red Salinas in Grand Turk ("biodiversity survey"), that confirmed the ecological significance of the Town and Red Salinas (Grand Turk) as key habitats for avifaunal species.

Adjacent to the dumpsite, the Town Salina (Figure 7-35) supports a wide range of bird life, including American Flamingos (*Phoenicopterus ruber*, IUCN Red List status: LC), which congregate in large numbers (Figure 7-36) and feed in the waters of the salina. Although no water quality data is publicly available, sensorial observations during site visits and some internet sources indicate contamination of the salina[148].



Source: Main Consultant, March 2023

Figure 7-35: View from the Grand Turk dumpsite to the Town Salina

[148] Example: https://www.timespub.tc/2011/03/saving-the-salinas/



Source: FICHTNER, September 2024

Figure 7-36: American flamingos visit the Town Salina, located immediately adjacent to the dumpsite boundary

The Red Salina, also nearby the dumpsite, hosts seasonal and resident bird species. Flamingos were not present at the time of the ecological assessment as they return to the Great Salina in the south of the site in mid-September. The locations of Town Salina and Red Salina are presented in Figure 7-37 below, while a summary of bird species observed there is provided in Table 7-22.

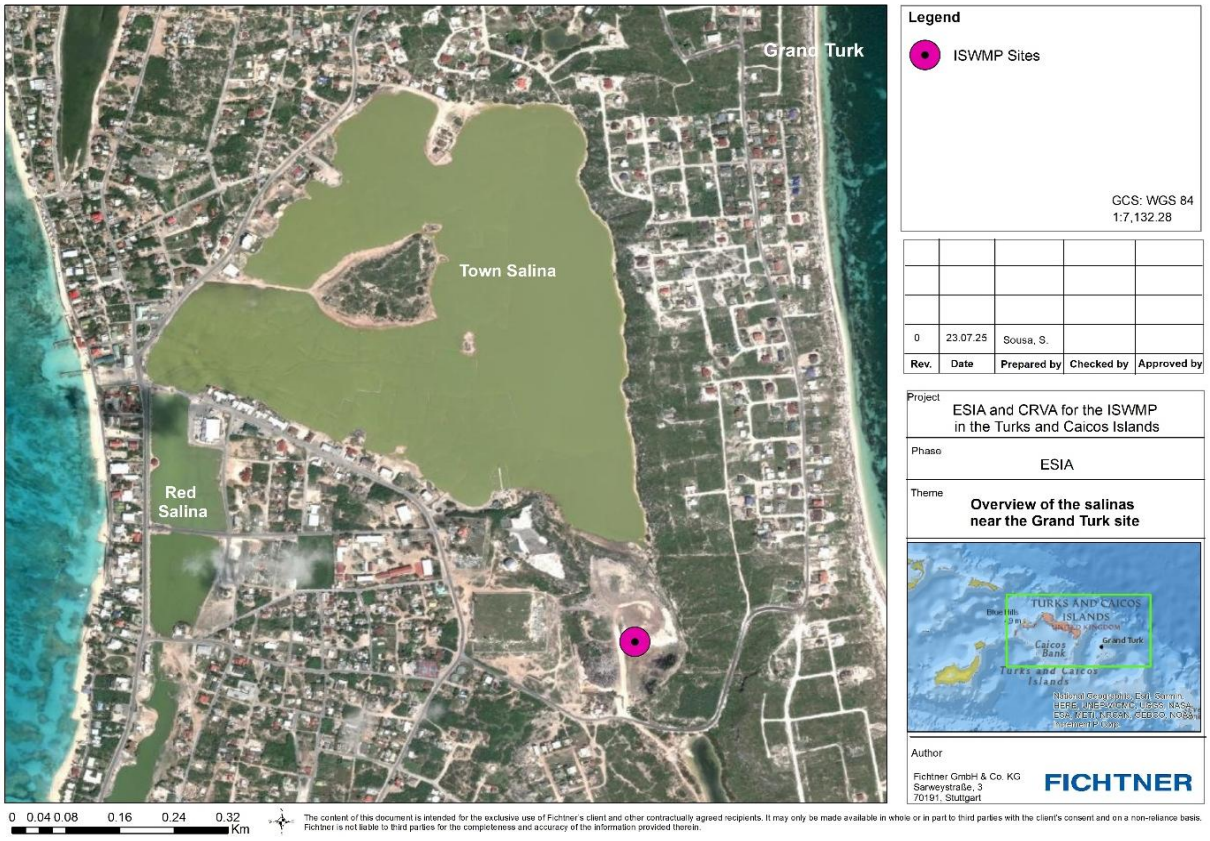


Figure 7-37: Town Salina and Red Salina located in close proximity to the Grand Turk dumpsite

Table 7-22: Bird species observed at the Town and Red Salinas based on the ESIA site surveys in 2024

Common Name	Scientific Name	Number Observed	IUCN Red List Conservation Status	IUCN Red List Population Status	Location	Date Observed
Black-necked Stilt	*Himantopus mexicanus*	6	LC	Decreasing	Town Salina	12.09.24
Snowy Egret	*Egretta thula*	2	LC	Increasing	Town Salina	12.09.24
Reddish Egret	*Egretta rufescens*	1	NT	Decreasing	Town Salina & Red Salina	12.09.24
White-cheeked Pintail	*Anas bahamensis*	6	LC	Not Defined	Town Salina & Red Salina	12.09.24
Brown Pelican	*Pelecanus occidentalis*	1	LC	Increasing	Town Salina & Red Salina	12.09.24
Tri-coloured Heron	*Egretta tricolor*	5	LC	Not Defined	Town Salina & Red Salina	12.09.24
Green Heron	*Butorides virescens*	1	LC	Increasing	Town Salina & Red Salina	12.09.24

A comprehensive list of bird species recorded within the past 12 months at the Town and Red Salinas based on the eBird website[149] is provided in Table 7-25. This list reflects species encountered throughout the year in this area.

Table 7-23: Bird species observed in the Town and Red Salinas in 2024 based on the eBird Website

Common Name	Scientific Name	Number Observed	IUCN Red List Conservation Status	Population Status	Date Observed
Eurasian Collared-Dove	*Streptopelia decaocto*	1	LC	Increasing	March 2024
Greater Yellowlegs	*Tringa melanoleuca*	6	NT	Decreasing	February 2024
Ruddy Turnstone	*Arenaria interpres*	4	NT	Decreasing	February 2024
Semipalmated Sandpiper	*Calidris pusilla*	1	NT	Decreasing	February 2024
White-cheeked Pintail	*Anas bahamensis*	10	LC	Decreasing	January 2024
American Flamingo	*Phoenicopterus ruber*	55	LC	Increasing	January 2024
Lesser Yellowlegs	*Tringa flavipes*	1	VU	Decreasing	January 2024
Sanderling	*Calidris alba*	4	LC	Decreasing	January 2024
Least Sandpiper	*Calidris minutilla*	2	NT	Decreasing	January 2024
Lesser Black-backed Gull	*Larus fuscus*	1	LC	Increasing	January 2024
Tricolored Heron	*Egretta tricolor*	1	LC	Stable	January 2024
Peregrine Falcon	*Falco peregrinus*	1	LC	Increasing	January 2024
Black-necked Stilt	*Himantopus mexicanus*	1	LC	Increasing	December 2023
Brown Pelican	*Pelecanus occidentalis*	1	LC	Increasing	December 2023
Osprey	*Pandion haliaetus*	1	LC	Increasing	December 2023
Laughing Gull	*Leucophaeus atricilla*	1	LC	Increasing	July 2024
Least Tern	*Sternula antillarum*	12	LC	Decreasing	July 2024
Magnificent Frigatebird	*Fregata magnificens*	1	LC	Decreasing	May 2024

[149] eBird. 2024. eBird: An online database of bird distribut1ion and abundance [web application]. Cornell Lab of Ornithology, Ithaca, New York. Available at: https://ebird.org/hotspot/L14648121/bird-list (Accessed: 12 September 2024).

Common Name	Scientific Name	Number Observed	IUCN Red List Conservation Status	Population Status	Date Observed
Snowy Egret	*Egretta thula*	6	LC	Increasing	May 2024
Royal Tern	*Thalasseus maximus*	6	LC	Stable	March 2024
Little Blue Heron	*Egretta caerulea*	1	LC	Decreasing	March 2024
Great Egret	*Ardea alba*	1	LC	Unknown	March 2024
Great Blue Heron	*Ardea herodias*	1	LC	Increasing	March 2024
Killdeer	*Charadrius vociferus*	1	NT	Decreasing	March 2024
Semipalmated Plover	*Charadrius semipalmatus*	XX	LC	Decreasing	March 2024

7.2.9 Fauna and flora at the project sites

Ecological assessments were conducted on 15 July 2024 and 10 September 2024 at the landfill sites on Providenciales and Grand Turk, respectively ("biodiversity surveys"). At both sites, the land within the landfill boundaries was observed to be heavily utilised, with trucks accessing the area throughout the day and heavy machinery continuously moving and compacting waste. These activities significantly limit the ability of vegetation to establish and grow. The findings related to flora and fauna within and in the vicinity of the landfill areas on both islands are detailed below.

7.2.9.1 Fauna and flora at the Providenciales site

Vegetation

At the Providenciales site, vegetation within the landfill is sparse (Figure 7-38), with species such as scarlet cordia (*Cordia sebestena*), giant milkweed (*Calotropis procera*), and sea purslane (*Sesuvium portulacastrum*) identified. None of the plant species recorded during the assessment are listed as being of conservation concern according to the IUCN Red List of Threatened Species. Denser vegetation was observed around the periphery of the site.



Source: FICHTNER, July 2024

Figure 7-38: Sparse vegetation is dispersed among solid waste at the Providenciales landfill site

Birds

The biodiversity survey confirmed the ecological significance of the Wheeland Pond as key habitat for avifaunal species. The findings related to bird populations observed within and in the vicinity of the landfill areas on both islands are detailed below.

Large numbers of the laughing gull (*Leucophaeus atricilla*), a migratory seabird known to nest on the outer cays of the Caicos Bank, were observed feeding on organic waste at the Providenciales landfill site (Figure 7-39). These birds congregate near areas where heavy machinery actively moves and compacts waste, feeding on newly exposed organic material.



Source: FICHTNER, July 2024

Figure 7-39: Large numbers of laughing gull at the Providenciales dumpsite



Source: TCI Seabird Project (2024); personal communication, University of Liverpool, July 2024

Figure 7-40: Image of a breeding adult laughing gull

Laughing gulls (Figure 7-40) are present in the Turks and Caicos Islands seasonally, between April and July.[150] The TCI Seabird Project - a collaborative research initiative between the University of Liverpool, the Turks and Caicos National Trust, and the Royal Society for the Protection of Birds (UK) - conducts annual monitoring at this site as part of their population assessments. According to Dr. Austin of the TCI Seabird Project, the dumpsite becomes an important feeding area for these birds during the summer breeding season. Additionally, Western Cattle Egrets (*Bubulcus ibis*) were observed in small numbers at the periphery of the dumpsite. A summary of bird species observed at the Providenciales dumpsite is presented below.

Table 7-24: Bird species observed at the Providenciales dumpsite during the July 2024 biodiversity survey

Common Name	Scientific Name	Number Observed	IUCN Red List Conservation Status	IUCN Red List Population Status	Date Observed
Laughing Gull[151]	*Leucophaeus atricilla*	250+	Least Concern	Increasing	15.07.24
Western Cattle Egret	*Bubulcus ibis*	24	Least Concern	Increasing	15.07.24

Source: FICHTNER, July 2024

Mammals

Stray dogs were noted within the landfill boundary.

7.2.9.2 Fauna and flora at the Grand Turk site

Vegetation

At Grand Turk, vegetation within the active waste area is minimal (Figure 7-41), but the periphery supports species such as green buttonwood (*Conocarpus erectus*), Portia tree (*Thespesia populnea*), yellow alder (*Turnera ulmifolia*), and Jimsonweed (Datura stramonium). None of the plant species recorded during the assessment are listed as being of conservation concern according to the IUCN Red List of Threatened Species.

[150] Source: TCI Seabird Project. (2024). Personal communication, University of Liverpool, July 2024.
[151] Migratory birds are present in large numbers during the breeding season (April–July), feeding on organic waste at the landfill site while nesting on offshore cays.



Source: FICHTNER, September 2024

Figure 7-41: Sparse vegetation is dispersed among solid waste at the Grand Turk landfill site

Birds

At the Grand Turk dumpsite, a number of Western Cattle Egrets (*Bubulcus ibis*) were observed during the survey feeding on exposed organic waste. Laughing Gulls (*Leucophaeus atricilla*) are known to be present in large numbers during their breeding season (April-July), also feeding on organic waste. This population is known to nest on East Cay on the Turks Bank and is monitored by the TCI Seabird Project.

Table 7-25: Bird species observed at the Grand Turk dumpsite during the September 2024 biodiversity survey

Common Name	Scientific Name	Number Observed	IUCN Red List Conservation Status	IUCN Red List Population Status	Location	Date Observed
Western Cattle[152] Egret	*Bubulcus ibis*	24	Least Concern	N.A.	Grand Turk Dumpsite	10.09.24
Laughing Gull[153]	*Leucophaeus atricilla*	80	Least Concern	N.A.	Grand Turk Dumpsite	10.09.24

[152] Observed at the landfill site where solid waste was being moved and compacted. Also observed congregating at a nearby watering hole.

[153] Migratory birds are present in large numbers during the breeding season (April–July), feeding on organic waste at the landfill site while nesting on offshore cays.

Mammals

Numerous donkeys (*Equus asinus*) were observed feeding on organic waste and drinking from water sources near the entrance, with access facilitated by gaps in fencing (Figure 7-42). Free-roaming horses and stray dogs were also present, and rats are known to inhabit the site, although they were not observed during the assessment.



Source: FICHTNER, September 2024

Figure 7-42: Donkeys inside the Grand Turk landfill site

7.2.10 Ecosystem services

Ecosystem services are the benefits that people, including businesses, derive from ecosystems. Ecosystem services are organized into four types:

- (i) provisioning services, which are the products people obtain from ecosystems
- (ii) regulating services, which are the benefits people obtain from the regulation of ecosystem processes
- (iii) cultural services, which are the nonmaterial benefits people obtain from ecosystems
- and (iv) supporting services, which are the natural processes that maintain the other services.

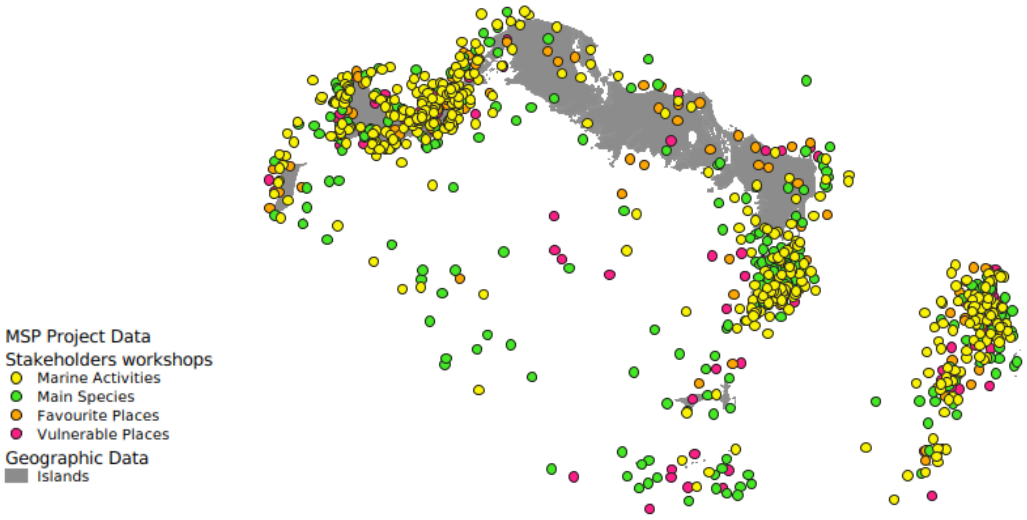
Examples are as follows: (i) provisioning services may include food, freshwater, timber, fibers, medicinal plants; (ii) regulating services may include surface water purification, carbon storage and sequestration, climate regulation, protection from natural hazards; (iii) cultural services may include natural areas that are sacred sites and areas of importance for recreation and aesthetic enjoyment; and (iv) supporting services may include soil formation, nutrient cycling, and primary production (IFC PS 6, 2012).

Some of TCI's ecosystem services have been identified through the project DPLUS094 as part of the Darwin Initiative Project. The main outcome of the DPLUS094 project was the Marine Spatial Planning (MSP) tool developed specifically for the TCI with the objective of enabling long-term planning and

decision-making in the islands' marine environment, while addressing multiple and cumulative uses of the sea, promoting ecological, economic, and social objectives[154].

The project organized several workshops where public and private stakeholders were invited to participate. Discussions covered topics such as marine habitats, vulnerable areas and important marine species in the TCI. Stakeholders also shared their views on their favorite marine sites and human marine activities in the region.

In summary, the DPLUS094 workshop allowed identifying areas that may be ecologically sensitive, threatened or prone by human impact (Vulnerable Places), important marine species that may occur in TCI (Main Species), places holding cultural, recreational or ecological value (Favourite Places), and existing and potential main activities such as fishing, tourism and recreation (Marine Activities). This resulted in a map illustrating the geographical locations of these items (Figure 7-43).



Source: Marine Spatial Planning Tool of the TCI[155]

Figure 7-43: Results of the DPLUS094 stakeholders' workshop

The items resulting from the DLPLUS094 workshop can be considered ecosystem services. The identified Vulnerable Places provide provisioning and regulating services; the Favourite Places provide cultural services; and the Marine Activities are an example of provisioning and cultural services.

Similarly, the NPDP (2020) identified ecosystem services associated with some Protected Areas (accepted and proposed) in the islands[156]:

- The proposed Wheeland Pond NR in Providenciales plays a vital role in environmental regulation through flood mitigation and groundwater replenishment (regulating services); and provides opportunities for ecotourism due to its proximity to Providenciales' major tourist resorts and ease of access (cultural services).
- The Salt Cay lowlands and seasonal wetlands provide also flood control (regulating services) and are considered cultural heritage areas (cultural services). The Salinas may contribute to flood control.

[154] Developing Marine Spatial Planning (MSP) tools for Turks and Caicos (DPLUS094) Project: https://www.darwininitiative.org.uk/project/DPLUS094/
[155] Marine Spatial Tool TCI: https://webgis.gov.tc/index.php/view/map/?repository=01tci&project=tcimsp-open
[156] National Physical Development Plan of TCI, 2020. Appendix A.2.4.0

- South Creek and Columbus Landfall Marine National Parks are habitats for variety of species including Caribbean spiny lobster, queen conch, green and hawksbill turtles and a wide variety of commercial fisheries species (provisioning services).

The DECR informed the ESIA Team that many homes and businesses on North and Middle Caicos rely primarily on groundwater for their water source (including bathing and cooking, and likely, in some cases, drinking) despite EHD's condemnation of household use of groundwater.

7.3 Human Environment

7.3.1 People

This chapter presents a description of the demographic and social characteristics of the people living in the TCI.

7.3.1.1 General demographic information

The Turks and Caicos Islands is an archipelago of approximately 40 islands and cays comprising a landmass of 417 km^2, located southeast of the Bahamas and approximately 144 km north of Haiti. The islands and cays are distributed in two groups, namely the Turks Islands and the Caicos Islands. The Turks Islands group consists of two inhabited islands, Grand Turk and Salt Cay. Cockburn Town, the nation's capital, is located on Grand Turk, which is the seat of the Turks and Caicos Islands Government. The territory of the Caicos Islands includes four main, inhabited islands: South Caicos, Middle Caicos, North Caicos, and Providenciales which accounted for 75.5 percent of the population at the time of the 2012 census.

Many of the Turks and Caicos Islands, along with the rest of the Bahamas chain, were inhabited by an indigenous people, the Arawakan-speaking Lucayan Taino. Within a generation of European contact, the Lucayan Taino had died off from the ill effects of colonization, including introduced diseases and enslavement by the Spanish[157]. Their language remains in the names of many places found on the islands, including the name Caicos, which in the native language was "*caya hico*" meaning "string of islands"[158].

During the latter moments of the period of enslavement (which formally ended in 1838), many of the European plantation and business owners pulled out of the islands between 1833 and 1838 leaving their former enslaved persons behind.

The islands were part of the UK's Jamaican colony until 1962, when they assumed the status of a separate Crown colony upon Jamaica's independence. The governor of the Bahamas oversaw affairs from 1965 to 1973. With Bahamian independence, the islands received a separate governor in 1973. Although independence was agreed upon for 1982, the policy was reversed, and the islands remain until today a British overseas territory (OT).

[157] https://www.britannica.com/place/Turks-and-Caicos-Islands
[158] https://www.cia.gov/the-world-factbook/countries/turks-and-caicos-islands/

7.3.1.2 Population

According to information from the latest census (2012) published by Statistics Authority from TCI, there is evidence of a significant increase in population compared to 2001. This increase was especially reflected in the areas where landfills are established (see Table 7-26). In this sense, it can be considered that in TCI the population exposed to potential impacts associated with inappropriate waste disposal has significantly grown during the last 20 years.

According to the Statistics Authority from TCI, at the end of year 2012, TCI had a total population of 31,458 inhabitants, showing a population increase of 58.2% in comparison to 2001. Women comprised some 49% of the population and men 51%. The dependent population accounted for 24.2% of the population comprising children younger than 15 with 20.2% percent, and the elderly (those 65 and older), accounting for 4.0%.[159]

The 2023 midyear estimate of the Statistics Authority of Turks and Caicos notes an increase to 49,309 persons. A similar population distribution is expected, with Providenciales bearing the largest burden of population increase. A new census is being planned presently that will accurately update the 2012 census data.

Providenciales island was, in 2012, the location with the higher population (23,769 inhabitants), of which 2,517 people live in Wheeland. As mentioned above, the largest disposal sites are located in Providenciales and Grand Turk, the islands with the higher population and therefore exposed to the highest waste loads.

Table 7-26: Total population in the TCI: 2001 vs 2012

TCI-Islands	Total Population 2001	Total Population 2012	Percentage Change (%) 2001-2012
Grand Turk*	3,976	4,831	21.5
Salt Cay	120	108	-10
South Caicos	1,063	1,139	7.1
Middle Caicos	301	168	-44.2
North Caicos	1,347	1,312	-2.6
Parrot Cay	58	131	125.9
Providenciales*	13,021	23,769	82.5
TURKS AND CAICOS	19,886	31,458	58.2

Source: Statistics Authority from TCI, 2012[160]. *Places where the largest disposal sites are located.

7.3.1.3 Migratory dynamics

The Economic Commission for Latin America and the Caribbean (ECLAC) indicates that TCI has experienced a significant increase of population due to migratory dynamics from neighbouring nations attracted by employment opportunities in the growing TCI's tourism sector[161]. This dynamic has promoted rapid population growth and urbanization, increasing the waste generation, pressure on existing landfills and surrounding ecosystems, as well as creating environmental and health consequences for the population.

[159] Government of Turks and Caicos, Statistics Authority TCI. (2017) Labour Force Survey Report 2017 https://www.gov.tc/pressoffice/609-trade-and-labour-force-survey-report-2017
[160] Statistics Authority from TCI: https://www.gov.tc/stats/statistics/social/5-population
[161] The Development of Population Projections for the Turks and Caicos Islands 2012-2027: https://repositorio.cepal.org/server/api/core/bitstreams/1283223a-e4e6-42ac-83ca-c2644c065ebe/content/

42.5% of population over the age of 18 who participated in the last Census in 2012 have been identified as belongers, while 57.5% identified as non-belongers [162]. Related to the migratory origins and vulnerable groups, in 2012, 35% of the legal migrants were Haitians, followed by Jamaicans (8%) and Dominicans (5%). There is a large category of 'Other' which is significant, amounting to some 14%.

Country of Citizenship	NUMBER 2012	Percentage Breakdown (%) 2012
Total	31458	100
TCI	12239	38.9
Haiti	10928	34.7
Dominican Republic	1541	4.9
USA	874	2.8
Bahamas	551	1.8
Canada	423	1.3
England	384	1.2
Other	4518	14.4

Census 2012 data; Source: Statistics Authority TCI

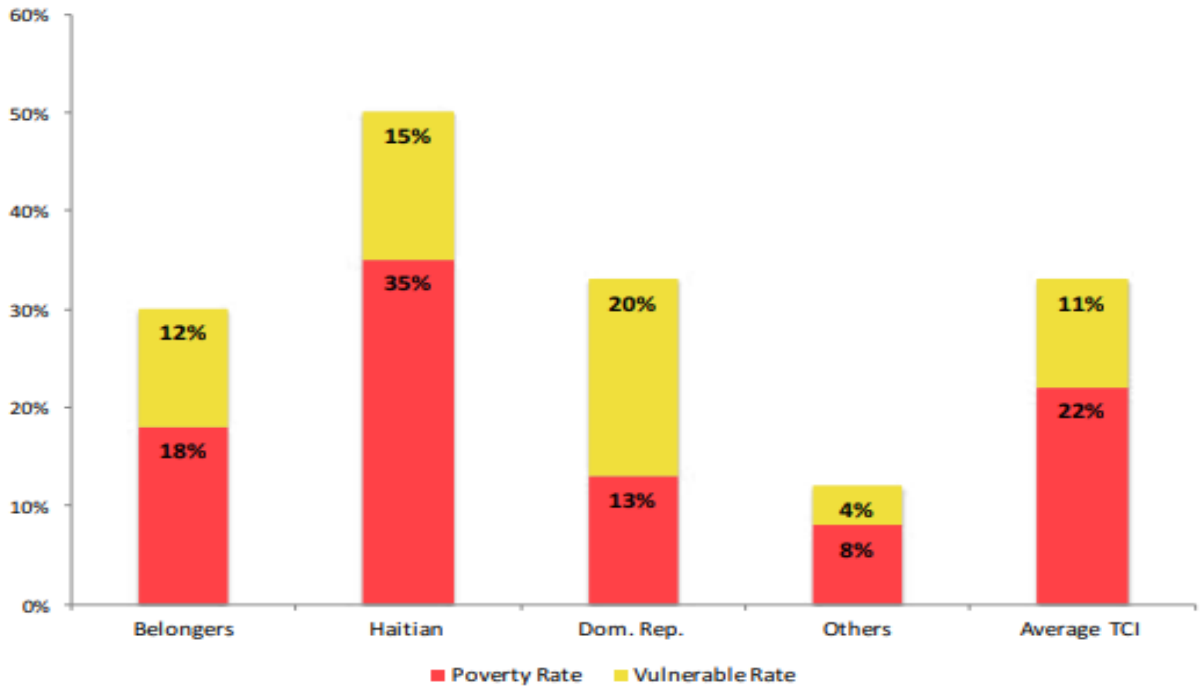
Table 7-27: Population in TCI by country of citizenship

Anecdotal information suggests that since 2012, the inflow of persons, including undocumented immigrants primarily from the island of Hispaniola, is steadily increasing. Other migrants are primarily nationals from Jamaica and countries outside of the Region of the Americas, namely, the Philippines.

According to UNICEF[163], 50% of the Haitians migrants were living in poverty or were facing risk of poverty. Figure 7-44 shows the poverty and vulnerable percentages by nationality.

[162] The Turks and Caicos natives are called "Belongers" or "Turks and Caicos Islanders" and are either descendants from enslaved Africans who were originally labourers in the cotton and salt industries or early migrants from neighbouring Caribbean territories. Belongers status, according with the Section 3 of the Immigration Ordinance, can only be acquired through birth, descent, adoption, being married to a Belonger (if not a Belonger by marriage) for ten years, or being the dependent child of a person who becomes a Belonger through marriage. The provision that allowed a non-Belonger's child to gain Belonger status immediately upon the marriage of their parent to a Belonger, as a stepchild, will no longer be applicable. Additional about the "Belonger status" are available in the Turks and Caicos Islands Constitution Order (2011 No 1681), 132 (1) *Turks and Caicos Islanders*.

[163] Situation Analysis of Children in Turks and Caicos Islands: TCI-SitAN-2016-WEB.pdf (unicef.org)



Source: 2014 Poverty Assessment (Government of TCI et al. 2014).

Figure 7-44: Poverty and vulnerable rates by nationality status in TCI, 2012

7.3.1.4 Ethnic composition, language, and religion

The official language of TCI is English and ethnically the population is comprised of African/Black (87.6%), Caucasian/White (7.9%), mixed (2.5%), East Indian (1.3%) and other (0.7%) (2006 est.) [164].

Most of the population in the TCI are of the Christian faith. Protestants comprise 72.8% (Baptist 35.8%, Church of God 11.7%, Anglican 10%, Methodist 9.3%, Seventh Day Adventist 6%), Roman Catholic 11.4%, Jehovah's Witness 1.8%, and other 14% [164].

7.3.1.5 Households and living conditions

The estimated number of households in TCI amounts to 19,963, with an average household size of 2.47, as detailed in Table 7-28. The territory is an upper-middle-income economy in which the cost of living may be high, but for the most part the quality of life enjoyed by persons living and working in the TCI can be considered to be good [165].

Table 7-28: Selected household indicators

Description	2012	2023	Source
Total Population	31,458	49,309	Census (2012, estimates 2023)
Number of Households	12,168	19,963	Census (2012, estimates 2023)
Household size	2.58	2.47	Census (2012, estimates 2023)

Source: Statistics Authority TCI and Global Data Lab[166]

[164] https://www.cia.gov/the-world-factbook/countries/turks-and-caicos-islands/
[165] https://jamaica.un.org/en/about/turks-and-caicos; and https://www.teacherhorizons.com/countries/central-america-turks-and-caicos-islands/quality-of-life
[166] Global Data Lab: https://globaldatalab.org/areadata/profiles/TCAr101/

Data collected by the Turks and Caicos Multiple Cluster Indicators Survey (MICS) conducted in 2019-2020 [167], of which selected indicators are presented in Annex B, noted that for 99.6% of all households, members reported that their primary reliance for cooking and lighting was clean fuels and technologies. When it came to access to electricity, 94.4% of household members reported to have such access. Although 99.8% of household members indicated drinking from an improved water source, only 44.8% indicated that their water source was tested, free of *E. coli* and available when needed.

With regard to ownership of technology such as television, telephones and computers, the results of the MCIS indicated that more than 90% of households had such devices except in the case of computers which saw only 70% of households reporting ownership. Access to the internet was high with 82.9% of all households reporting access by a device from home.

Safety affects the quality-of-life which people enjoy. The MICS reported that for both women and men aged 15-49 years feeling safe walking alone in their neighbourhood after dark did not receive strong support, as only 45.4% women and 46.5% men reported feeling safe. The data suggests that those who did not feel particularly safe represented more than 50% of the female and male respondents.

7.3.1.6 Health status

There are two hospital facilities: one on Providenciales, the Cheshire Hall Medical Centre, a 20-bed hospital; and the other in Grand Turk, the Cockburn Town Medical Centre. Both are operated by Interhealth Canada. They provide a range of services including diagnostic services, primary care and outpatient specialty clinics, emergency services and inpatient care[168]. Medical treatment overseas is available for all members of the NHIP (National Health Insurance Plan) without a cap, deductible or duration[169].

The PAHO/WHO Health in the Americas Series keeps an on-line health profile of the Turks and Caicos Islands [170] . The report noted that life expectancy at birth in 2023 was 76.1 years, lower than the average for the Region of the Americas and 2.5 years higher that in 2000. The Turks and Caicos Islands maintains the gradual trend of population aging, with an average life expectancy at birth of more than 80 years. See Annex B for population pyramids that illustrate the structure of the TCI population.

The PAHO/WHO data indicate that between 2004 and 2022, infant mortality in the TCI increased from 0 to 16.7 deaths per 1,000 live births. The percentage of low-weight births (less than 2,500g) however, decreased from 7.4% to 7.3% between 2008 and 2022.

Regarding the immunization strategy, measles vaccination coverage was 94% in 2022, a decrease of 5 percentage points from 2000.

In relation to fertility, it was estimated that in 2023 women had an average of 1.6 children throughout their reproductive lives. In the specific case of adolescent fertility, there was a 48.5% decrease, from 30.9 live births per 1,000 women aged 15 to 19 years in 2000 to 15.9 in 2023. In 2021, 100% of births were attended by skilled birth personnel. Between 2011 and 2018 the percentage of pregnant people who received antenatal care had increased from 92% to 100%.

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[167] MCIS, November 2021: mics-surveys-prod.s3.amazonaws.com/MICS6/Latin America and Caribbean/Turks and Caicos Islands/2019-2020/Survey findings/Turks %26 Caicos Islands 2019-20 MICS_English.pdf
[168] https://www.visittci.com/providenciales/national-hospital-providenciales
[169] NHIP: https://sta.uwi.edu/conferences/14/healthfinancing/documents/TurksCaicosNationalHealthInsurancePlan-CCNHFITrinidadandTobago-ver2.pdf
[170] https://hia.paho.org/en/countries-22/turks-caicos-profile

Regarding communicable diseases, the PAHO/WHO data indicates that in 2021 there were zero new cases of tuberculosis in the TCI. In 2021, the estimated human immunodeficiency virus (HIV) infection incidence rate (new diagnoses) was 44.3 per 100,000 persons.

The prevalence of tobacco use among the youth and adults, aged 15 and older was 10.8% for men and 5.7% for women in 2020.

The overall crude death rate[171] was 2.96 per 1,000 persons in 2020, a decrease of 15% compared to 2001 (3.47 deaths per 1,000 persons).

In 2020, the TCI ranked 31st in the Region of the Americas in terms of the number of deaths from COVID-19, and 42nd in 2021.

UK health authorities have classified the TCI as having a risk of Zika virus transmission. No cases of Zika infection had been reported in the islands since January 2017. Cases of dengue fever and chikungunya virus have been confirmed [172].

7.3.1.7 Education level

The Constitution of the TCI and the 1989 Education Ordinance (amended in 2014) recognizes a school system that is comprised of public and private educational institutions. Primary education begins at age of 4 for a six-year period and secondary education for a period of five years, which begins at the age of 12. Education is provided in the main by public schools (64% enrolment). Education is free and compulsory from age 4 to 16; however, families must pay for uniforms, books, lunch, and other non-tuition related fees.

The Education Ordinance regulates pre-primary education and secondary education for public and private schools and defines a 'private school' as a school provided and maintained by some person or authority other than the government. The legislation allows individuals, legal persons, or non-profit organizations to establish a private school in the Turk and Caicos Islands.

There are fourteen public schools in the Turks and Caicos Islands. Ten are primary schools and four are secondary schools. The primary programme caters to the first eight years of a child's school life. The secondary programme caters to the last five years of the child's compulsory school life.

The Ministry of Education (MOE) is the Government entity responsible for the management, administration, and provision of quality educational initiatives in the Turks and Caicos Islands.

The Turks and Caicos Multiple Cluster Indicators Survey (MICS) undertaken in 2019-2020[167], findings of which were published in 2021, found that literacy levels, measured by capacity to read a short simple statement, was 99.9% for women and 100% for men. The MICS noted that the percentage of school age children who are not attending any level of education was 2.1% and the proportion of children of lower secondary school age who are not attending any level of education was lower still at 0.1%. However, the percentage of children of upper secondary school age who are not attending any level of education was 10.6%, suggesting a significant number of out-of-school youth.

[171] The crude death rate is defined as "the mortality rate from all causes of death for a population"
[172] https://www.gov.uk/foreign-travel-advice/turks-and-caicos-islands/health#:~:text=Centre%20(NaTHNaC).-,Health%20risks,Caicos%20Islands%20since%20January%202017.

The MICS survey showed that 79.7% of children ages 7-14 reported that the language teachers used at school was the same language that they spoke at home. This may suggest a smooth transition between home and school and that most learners are able to get more involved in the learning process which speeds up the development of basic literacy skills. Using learners' home language is also more likely to get the support of the general community in the teaching/learning process and creates an emotional stability which translates to cognitive stability. In short, it leads to a better educational outcome. Unfortunately, some 20% of the children may be excluded from this experience and be destined for poor learning outcomes.

7.3.1.8 Employment

In 2017 the Statistical Authority of TCI undertook the survey of the Turks and Caicos labour force. The resulting Labour Force Survey (LFS) Report[173] identified the population of TCI at the time as 39,683 persons, including a labour force comprising of some 25,418 persons, with males accounting for 53.4% and females for 48.6%.

The labour force participation rate (LFPR), which represents the proportion of a country's working-age population that engages actively in the labour market, was 80.3%. The age group 35 to 44 years accounted for 29% of the labour force, followed by the group comprising those who were 25-34 years old, which accounted for 26% and the 45-to-54-year age group accounting for 24%.

The number of unemployed in 2017 was 1,530 resulting in an unemployment rate of 6.0%, which represents a fall from a high of 18.2% in 2012. It is expected that the unemployment rate may have risen during the period of the COVID-19 pandemic (2019 to 2021) due to decreased hours of work and closure of some business as a result of the effects on the tourism sector experienced across the Caribbean region.

Data from the LFS identified "Accommodation and Services" as absorbing 32% of the labour force with women surpassing men by a small margin. The unemployment rate for persons between 35 and 44 years old remained the highest when compared to other age groups of the unemployed. Females experienced a higher unemployment rate (6.4%) than males (5.7%).

In a study to examine the socio-economic impact of the COVID-19 pandemic on children and young people in the Eastern Caribbean area, UNICEF estimated that the average unemployment rate for the countries included in the analysis would increase by 26 percentage points due to the impact on the tourism sector. [174] If this held true for TCI, then the unemployment rate may have been in the vicinity of 32%. A significant proportion would probably be women, in light of the high proportion of women who work in the industry. Since the difficult period of the COVID 19 pandemic, the Statistics Authority reports an unemployment rate for 2023 of 7%.

7.3.1.9 Food security

TCI has concerns of food security, which became more evident during the COVID-19 pandemic. To address this issue, the GOTCI has outlined "Strengthening Agriculture" as one of its 12 Priority Projects to drive socio-economic growth in the territory. The GOTCI has stated that, "The Turks and Caicos Islands is considered to be food insecure, we import nearly all of our food, this leaves the country vulnerable to external shocks such as climate change, natural disasters, and global supply chain disruptions such as shortages, an increase in transportation, and shipping."

[173] Government of Turks and Caicos, Statistics Authority TCI. (2017) Labour Force Survey Report 2017 https://www.gov.tc/pressoffice/609-trade-and-labour-force-survey-report-2017
[174] https://www.unicef.org/easterncaribbean/media/1956/file/Socio-economic%20Impact.pdf

TCI's dependence upon food imports (90%) suggests that the structures of accessing food are defined by the corporate (mainly US) food regime, and the little food produced by the national food industries (fish and seafood) is largely re-directed to the growing industry in tourism [175]. The Agriculture Development and Food Security Plan is designed to strengthen the agriculture sector through the implementation of several programmes that will, in turn, boost economic development, and create jobs and opportunities for technological innovation.[176]

A team from the University of Bristol visited the TCI in the summer of 2019 and reported that "food security in the TCI is a much bigger issue than the region can imagine, as the government does not have accurate statistics on population or what types and amounts of food are being consumed." [175]

7.3.2 Material and economic assets

This chapter presents a description of the land and house ownership status in the TCI, as well as considerations on the gross domestic product (GDP).

7.3.2.1 Land ownership

The Crown is the largest landholder in the Turks and Caicos Islands. This makes Crown Lands the Government's most valuable tangible asset and places an obligation on Crown Land Policy and the government agencies responsible for Crown Land management to address both immediate and medium to long term planning prerequisites.

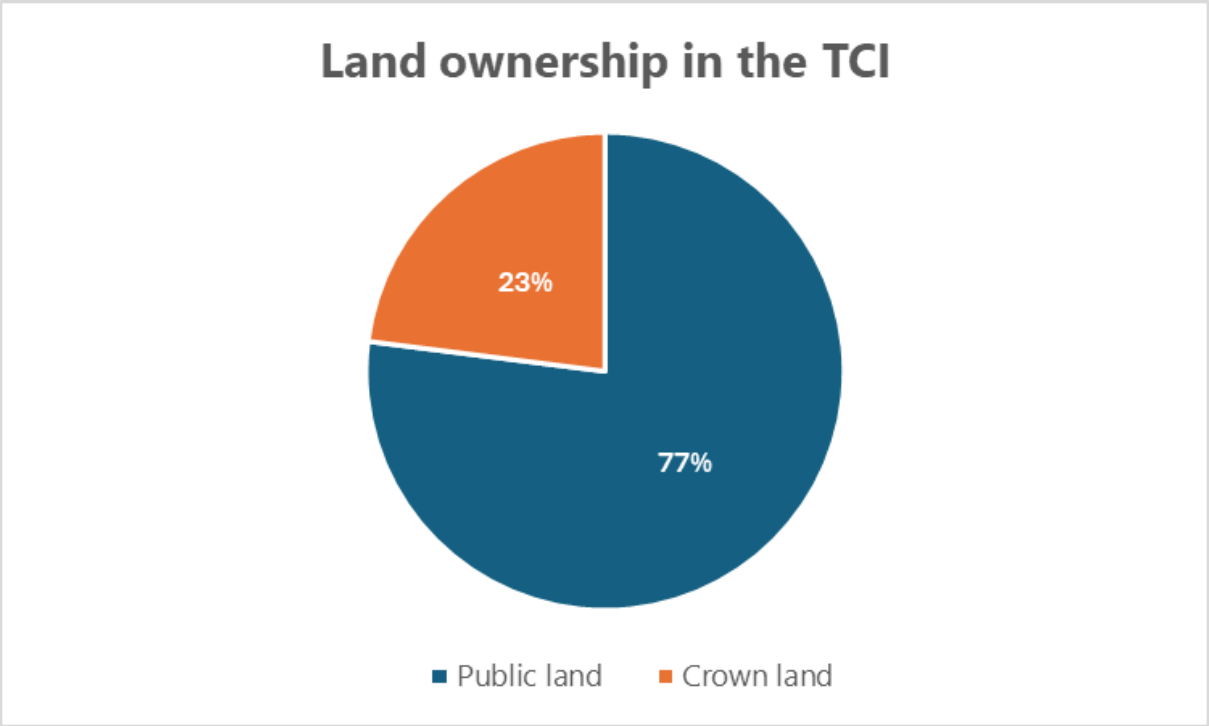
Crown Land is defined as land belonging to the crown and yielding revenues that the reigning sovereign is entitled to. It has come to mean public land in some British dominions or colonies.[177]

The Crown Land Unit is responsible for the administration and management of all Crown Lands including the allocation and divestment of Crown Land by sale, lease, license, easement, and management of leases/licenses including renewal/ extension, variation, surrender, termination, and rent collection. [178]

In 2022, the "Report on Crown Land in the Turks and Caicos Islands" was published[179]. The report embodies the results of a review of the policy, processes, resourcing and the legislation relating to Crown land in the Turks and Caicos Islands. It contains 146 joint recommendations to improve the management of crown land and maximise its use for the benefit of all the people of TCI. The recommendations cover a wide range of areas, including future allocations of crown land, existing conditional purchase leases and unauthorised occupation. It also covers improvements to the processes surrounding crown land in order to reduce unnecessary bureaucracy and improve fairness of the distribution of land rights, and details proposed amendments to the Crown Land Ordinance [180].

[175] https://www.bristol.ac.uk/cabot/what-we-do/turks-caicos/
[176] https://tcweeklynews.com/tcis-agriculture-development-and-food-security-draft-plan-completed-p13585-127.htm
[177] https://www.merriam-webster.com/dictionary/crown%20land#:~:text=noun,some%20British%20dominions%20or%20colonies
[178] https://gov.tc/crownland/
[179] https://drive.google.com/file/d/1L1Sk_cIc0TG1I6Uhc2WcSEolPcSn9aWO/view
[180] https://www.gov.tc/agc/latest-news/crown-land-report-joint-uk-tci-statement#:~:text=The%20final%20report%2C%20published%20on,all%20the%20people%20of%20TCI

The stated goal of using Crown Land to empower Belongers to play an active role in the ongoing economic and social development of the Islands seems quite practical. However, it is felt that the current policy, which has its origin in the mid-1990's, now requires 'modernization' in substance to be fully responsive to the current land-based development pressures on this 'Heritage Asset'. The report notes that available data shows that of all usable land in the islands' territory, only 23% remained as Crown Land, the rest being held in private hands, both corporations and individuals (Figure 7-45).



Source: Fichtner, based on the "Report on Crown Land in the Turks and Caicos Islands" (2022)[179]

Figure 7-45: Land ownership in the TCI

The potential value of Crown Land as a whole has risen dramatically over recent years, and this increase is likely to continue over the next five to ten years, according to the report. It is important that the policy, administrative rules, and standard practice concerning Crown Land allocation, pricing and management, which have been evolving over the years, be consistent with addressing the investment needs of economic and social development and provide long-term benefit to Belongers, both in terms of increasing their role in commercial land development and helping them gain access to land for residential use.

7.3.2.1.1 Land usage and ownership at the ISWMP sites

The following shows the land usage and ownership status of the existing sites and of the area required additionally for extension and/or rehabilitation works.

Table 7-29: Land usage and ownership at the ISWMP sites

Project site	Land usage / ownership - existing site	Land usage / ownership - area needed for extension/ rehabilitation	Notes
Providenciales	Crown land Site is used by informal waste pickers/recyclers	No further land is needed for the landfill's expansion. A buffer zone is recommended. Within the buffer zone, the proposed IWRC is located. Livelihoods of informal waste pickers/recyclers may be disrupted.	The existing site is included in the ones identified by the NPDP (2020) for the location of new waste treatment plants. **A Livelihood Restoration Plan (LRP) is required.**
North Caicos - Kew site	Crown land	No land needed. Livelihoods of informal waste pickers/recyclers may be disrupted.	The site is going to be closed. **A Livelihood Restoration Plan (LRP) is required.**
North Caicos - Bottle Creek site	Crown land	Crown land: - 12 ha/30 acres needed for cell 1, leachate treatment and ancillary facilities. - 6 ha/15 acres needed for each additional cell (total of 4 cells in case of Scenario 2). A buffer zone is recommended (Zone C on Figure 3-11 of the ESIA Report).	A private house is located at the entrance of the Bottle Creek site in North Caicos. Given the planned improvements in the management of the site in both scenarios, a reduction in the present noise and air emissions from vehicles entering and leaving the site is expected. Therefore, **a relocation of the house is not deemed necessary** at this stage.
Middle Caicos	Crown land	No land needed.	The site is going to be closed.
South Caicos	Private land	About 1 ha/2.5 acres needed for a transfer station that can also hold a composting facility and other waste fractions to be transferred to Providenciales. Livelihoods of informal waste pickers/recyclers may be disrupted.	The disposal site is going to be closed. **Land ownership for waste management facilities is entirely private**. The owner is the Sailrock hotel, located adjacent to the South Caicos airport. A suitable location for the new facilities shall be selected. A **Land Acquisition Plan** is required to guide a fair, transparent, and legally compliant process of aquisition. **A Livelihood Restoration Plan (LRP) is required.**
Grand Turk	Crown land	No further land is needed for the landfill's expansion. A buffer zone is recommended (Area 3 on Figure 3-24 of the ESIA Report).	-
Salt Cay	Crown land	No further land is needed for the dumpsite. CA and TSS to be placed at the area of the EHD's office and yard. Whenever there is an ELV it shall be moved to Grand Turk. The CDW shall be placed in an area to be defined together with the community.	The dumpsite is going to be closed.

7.3.2.2 Home ownership

Data from the 2012 Census suggests that home ownership stood at 11% in the TCI. Data published in 2022 indicates that approximately 39% of TCI Islanders are homeowners (Table 7-30), showing an increase of 350% in a period of 10 years. This is not significantly different from homeownership say in the British Virgin Islands, where approximately 38% of the population own their own homes, according to the 2010 Census[181].

Table 7-30: Home ownership in the TCI

Ownership of dwelling	Total for all Islands	Grand Turk	NC, MC, SC, SC	Providenciales
Owned by a household member	39.3%	48.0%	54.1%	37.2%
Not owned by a household member	60.7%	51.4%	45.9%	62.8%
Rented	59.0%	48.3%	42.6%	61.4%
Other	1.7%	3.1%	3.2%	1.4%
Missing/Don't Know	0.1%	0.6%	0.0%	0.0%

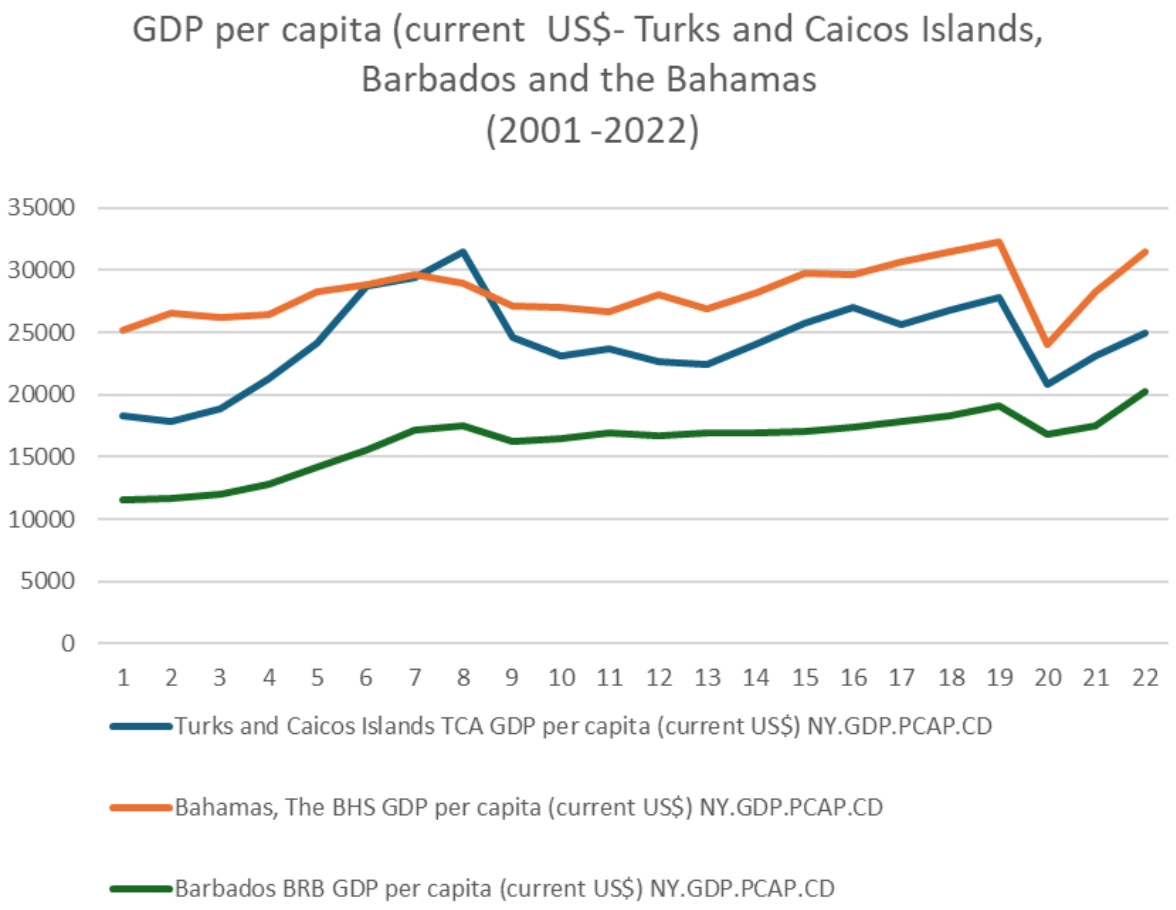
Source: Crown Lands Report, 2022

7.3.2.3 Income and GDP

In recent years not only have Turks and Caicos Islanders' financial position been heavily affected by the effect of the global financial crisis, but also by the devastation to the economy and the built environment that was wrought by hurricanes Ike and Irma. The COVID-19 pandemic also took its toll.

The gross domestic product (GDP) per capita for the TCI for 2022 was US$ 24,917.60. This was somewhat below the Bahamas, which stood at US$ 31,458 and above Barbados, which stood at US$20,358 for the same year. Figure 7-46 illustrates the drop which all three countries, the Bahamas and TCI more so than Barbados, experienced as a result of the impact of the felt the COVID-19 epidemic of 2020.

[181] https://unstats.un.org/unsd/demographic/sources/census/wphc/BVI/VGB-2016-09-08.pdf



Source: World Bank, 2022 data[182]

Figure 7-46: GDP per capita

Although the economy mostly relies upon the tourism sector, the financial system's assets which are mainly offshore assets accounted for almost 450% of GDP in 2015. TCI is home to many niche reinsurance companies based in the United States, although banks account for a significant portion of the system's assets.[183]

Of significance to understanding the economic situation of the population is the wage scale of the working population. Table 7-31 presents the number of persons hired, the mean, median, maximum, and minimum salary /wage during the period July 2015 to June 2016. This information is collected by the Ministry of Border Control's 'National Skills Audit' (2017) [184], page 158, as derived from the survey sample of 171 firms, covering 25% of the employed resident labour population of 12,500 persons (it excludes the agriculture sector and the central government). From the figure the mean monthly salary (in US$) in the private sector for managers is 3,362.34, for professionals is 2,146.05, for technicians and associate professionals is 1,139.02, for clerical and support workers 2,083.87, for plant and machinery operators and for assemblers 1,300, and for elementary occupations 453.81 (weekly).

[182] GDP data, World Bank: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?end=2022&locations=TC-BB-
[183] Turks and Caicos Islands - Commonwealth Chamber of Commerce: https://commonwealthchamber.com/wp-content/uploads/2023/04/turks-and-caicos-islands-commonwealth-chamber-of-commerce_63f6ddf5.pdf
[184] GOTCI National Skills Audit Main Report, Document 1.0, May 2017: https://drive.google.com/file/d/1c2jRw0ih9vuBCul4wzRlncB38JeQSswn/view

Table 7-31: Number of persons hired, mean, median, maximum and minimum salary/wage of persons hired from July 2015 to June 201

Occupation			Amount Wage or Salary Paid				
			Count	Mean	Median	Minimum	Maximum
Major Occupation Group	Managers	Monthly	51	3362.34	2500.00	960.00	9000.00
		Daily	0				
		Hourly	37	10.00	10.00	10.00	10.00
		Weekly	38	888.24	780.00	518.18	1300.00
	Professionals	Monthly	31	2146.05	2000.00	1500.00	4500.00
		Daily	0				
		Hourly	134	6.38	6.36	6.36	6.56
		Weekly	27	661.05	700.00	179.00	1500.00
	Technicians and associate professionals	Monthly	110	1139.02	900.00	850.00	2200.00
		Daily	0				
		Hourly	15	7.50	7.50	7.00	8.00
		Weekly	48	597.49	500.00	100.00	2000.00
	Clerical support workers	Monthly	80	2083.87	2000.00	1300.00	5000.00
		Daily	0				
		Hourly	76	9.52	10.00	6.25	12.50
		Weekly	49	375.41	300.00	300.00	518.18
	Service and sales workers	Monthly	29	1759.26	1500.00	1000.00	3572.84
		Daily	0				
		Hourly	303	9.31	7.00	6.25	50.00
		Weekly	167	527.68	500.00	128.00	3500.00
		Weekly	108	659.23	650.00	240.00	1000.00
	Plant and machine operators, and assemblers	Monthly	15	1300.00	1300.00	1300.00	1300.00
		Daily	0				
		Hourly	30	15.00	15.00	15.00	15.00
		Weekly	11	196.40	120.00	120.00	350.00
	Elementary occupations	Monthly	0				
		Daily	0				
		Hourly	8	6.25	6.25	6.25	6.25
		Weekly	125	453.81	450.00	140.00	1000.00

Source: GOTCI National Skills Audit Main Report, Document 1.0, May 2017[184]

Unavailable is data on the cost of a basket of goods necessary to keep persons above the poverty line.

7.3.3 Tourism

Tourism in the Turks and Caicos Islands generates more than 1 million tourist arrivals per year and is "the main source of revenue for the country". The tourism industry began in the 1980s, with the opening of Club Med Turquoise, the country's first main resort.

Tourism has benefited from the proximity to the United States of America and the stability of being a British OT. The opening of a cruise port on Grand Turk in 2006 resulted in a significant increase in tourism arrivals to the country.

It has become a popular tourist destination, and many cruise ships from the US use it as a port of call. In 2019, it recorded a total of 2 million tourists, and it generated approximately US$ 787 million in revenue in the tourism industry alone. This is equivalent to 65.72% of its GDP and approximately 3% of all international tourism revenue in the Caribbean [183].

Unavailable is the estimated spend of different categories of tourists to better understand the income earned from the sector.

7.3.4 Areas of historical interest and historic attractions

Areas of Historical Interest (HA) are part of the network of nationally Protected Areas (PA) of the TCI and were created primarily for the purpose of protecting an object of historical interest therein. In total there are 7 accepted HA and 5 proposed HA in the islands. The full list can be consulted in Chapter 7.2.1.

Besides the officially listed and proposed Areas of Historical Interest, the islands pose numerous historic attractions. The historic attractions in the Turks and Caicos can generally be split into two groups: the salt industry remnants on Grand Turk, South Caicos, and Salt Cay, and the Caicos Island's plantations. Ruins of many plantations are spread over Providenciales, West Caicos, North Caicos, Middle Caicos, and East Caicos, yet have been largely reclaimed by the persistent vegetation.

It is known that prehistoric Taino natives would travel to the Turks Islands to gather the naturally accumulating sea salt, as did early European explorers. Taino people settled the islands around CE 700 from Hispaniola and created a civilisation (Lucayan people) that lasted until the 1500s (>700 years). By the end of the 1600s, the Bermudians began to seriously establish the industry.

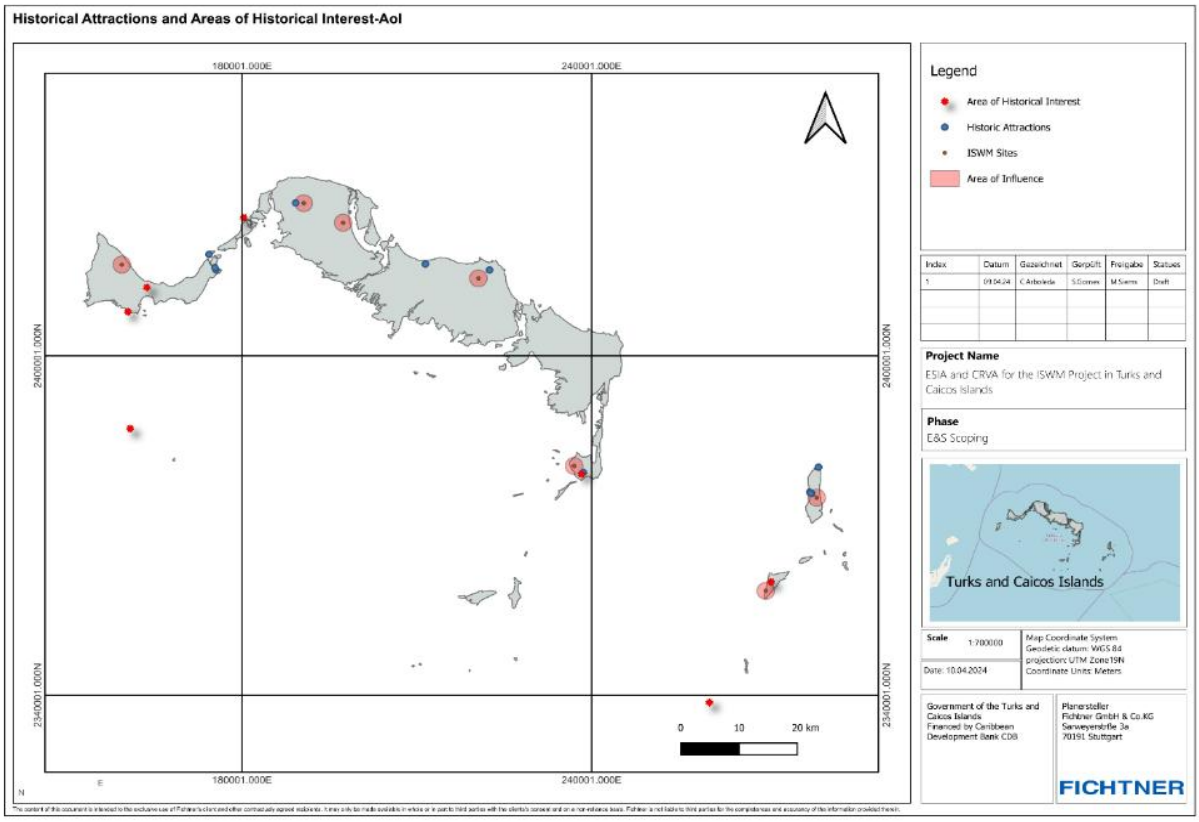
The larger and greener Caicos Islands supported a different kind of industry: cotton and sisal planting. The ruins and historical sites on these islands almost entirely consist of plantations, with field walls, buildings, and support structures. The plantation islands never had the populations or civil buildings that the salt islands had.

Providenciales, North Caicos, and Middle Caicos each have a plantation that has been developed to a limited degree to allow for tourism.

Evidence of the pre-Columbus Taino peoples does exist at a few locations in the Turks and Caicos, yet these features tend to be quite limited in scope and are typically found in the most remote regions of the country. There is no Taino historical site developed for tourist access in the country [185].

Figure 7-47 shows the locations of the Areas of Historical Interest and the historical attractions in the TCI.

[185] https://www.visittci.com/things-to-do/historical-attractions



Source of the geodata: Visit TCI portal[186]

Figure 7-47: Historical attractions and Areas of Historical Interest in the TCI

7.3.4.1 Areas of Historical Interest and Historic Attractions in the AoI

From the historical attractions and HA identified in the islands, 6 are located within the Project's AoI as shown in Table 7-32.

Table 7-32: Historical attractions and Areas of Historical Interest within the Project's AoI

Name	Type	Location
Wade's Green Plantation	Historic Attraction & KBA-IBA	North Caicos
Wade's Green and Teren Hill	Area of Historical Interest (proposed) & KBA-IBA	North Caicos
Boiling Hole	Area of Historical Interest	South Caicos
Her Majesty's Prison	Historic Attraction	Grand Turk
Grand Turk Salt Salinas	Historic Attraction & KBA-IBA Includes the Town Pond and the Red Salinas proposed Areas of Historical Interest	Grand Turk
Salt Cay	Area of Historical Interest	Salt Cay

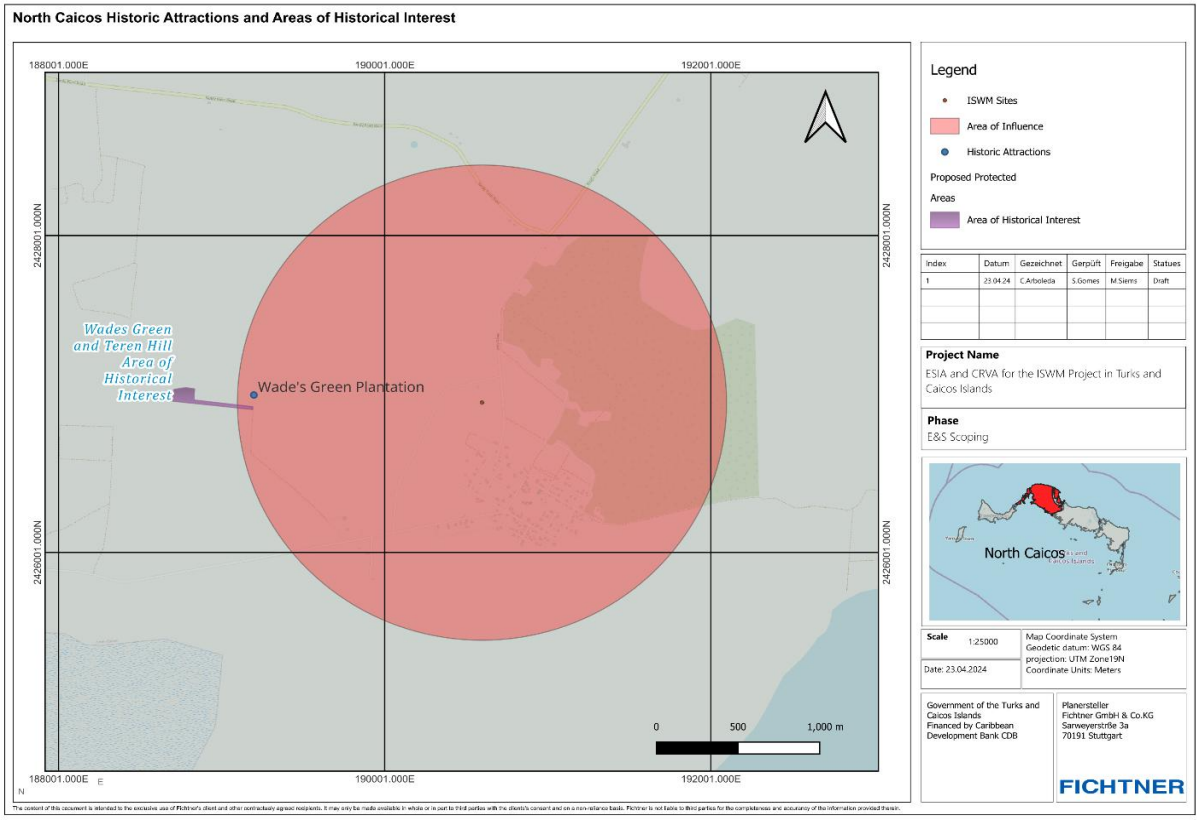
North Caicos Wade's Green Plantation historic attraction

This historical attraction located in Kew is the most well-preserved historical agricultural site in the Turks and Caicos Islands (Figure 7-48).

[186] More information on: https://www.gov.tc/tourism/agencies

North Caicos Wade's Green and Teren Hill proposed Area of Historical Interest

This proposed HA consist of two large historic plantation ruins (Figure 7-48).



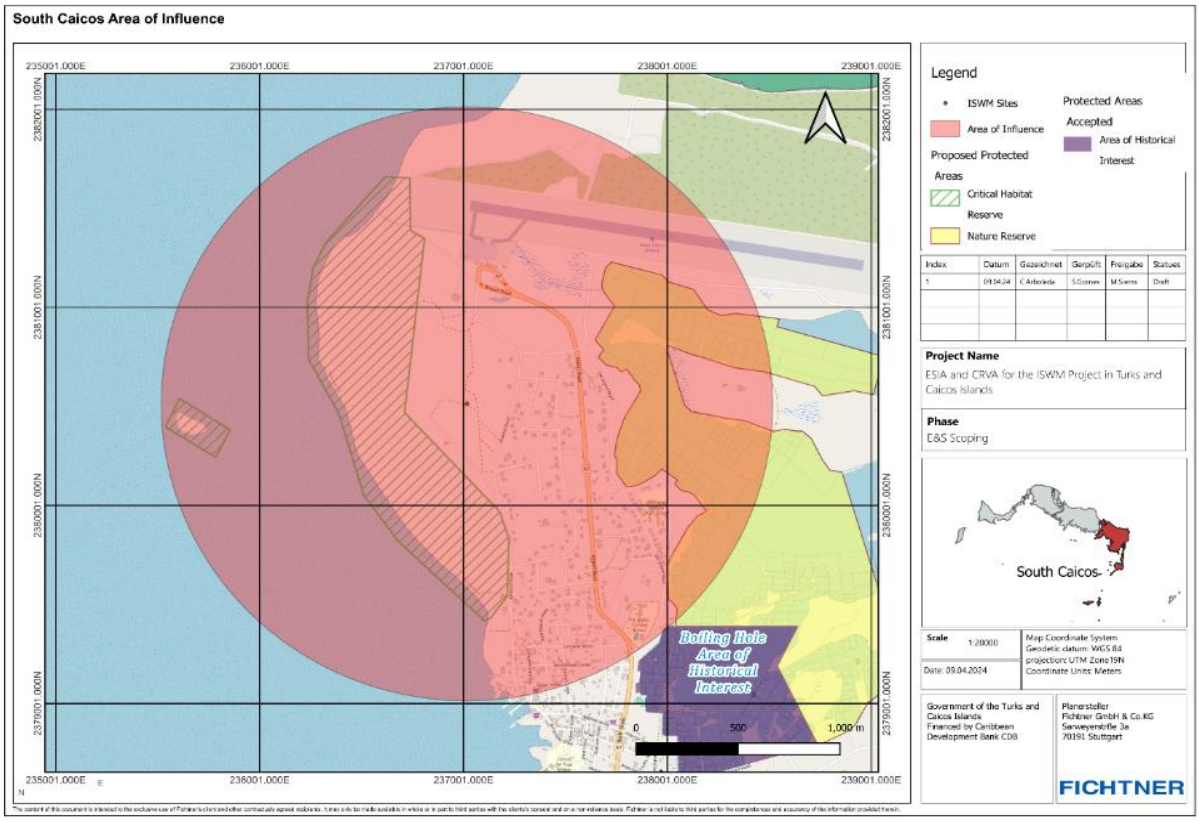
Source of the geodata: TCI Data Portal

Figure 7-48: North Caicos AoI and intersection with the Wades Green and Teren Hill proposed HA/ Wade's Green Plantation historical attraction

South Caicos Boiling Hole Area of Historical Interest

The Boiling Hole is a naturally occurring underwater fissure passage that links the ocean to the primary salina pond in South Caicos. Early sea salt producers capitalized on this formation, modifying it to channel seawater into the salt pans for evaporation.

The AoI of the South Caicos disposal site borders with the Boiling Hole HA (Figure 7-49).



Source of the geodata: TCI Data Portal

Figure 7-49: South Caicos AoI and intersection with the Boiling Hole HA

Grand Turk historic attractions

Grand Turk Salt Salinas

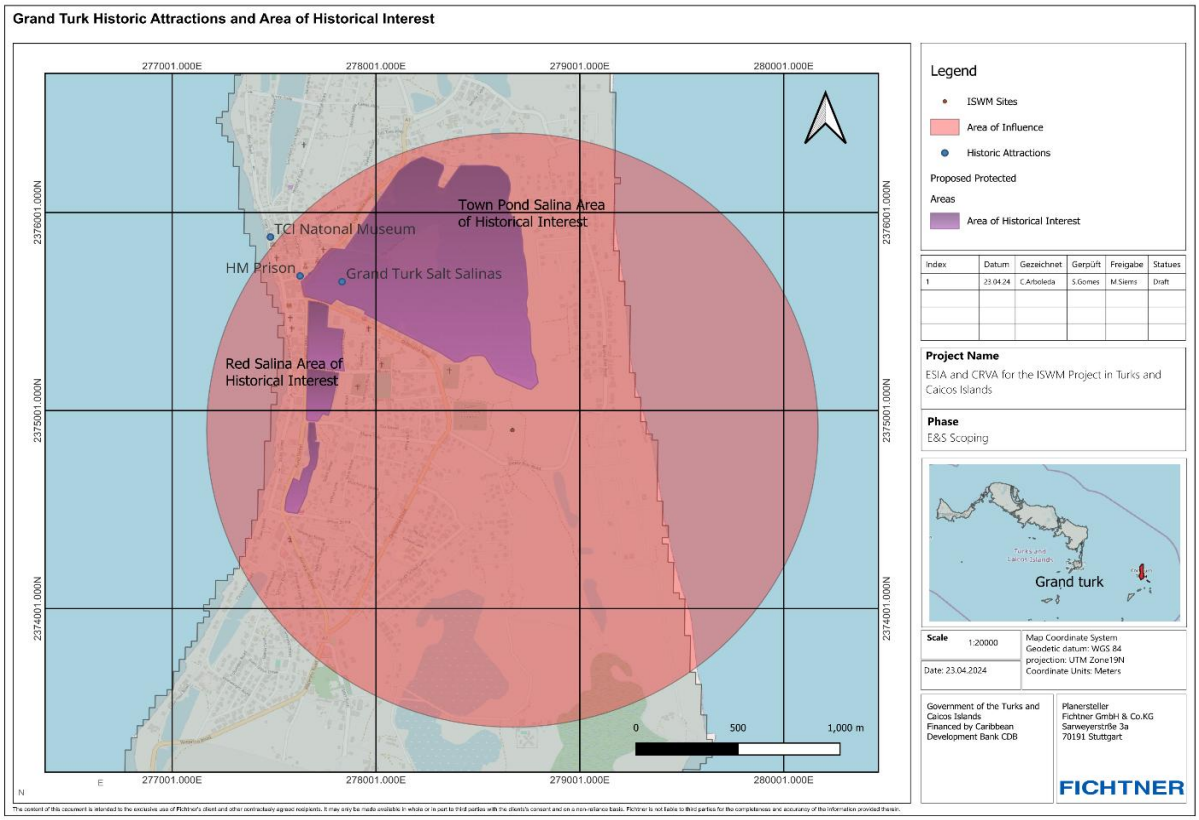
Grand Turk has experienced more development than Salt Cay and South Caicos since the decline of the salt industry. Much of the salt infrastructure has vanished, but dividing walls and sluice gate ruins remain visible. The Hawkes Nest Salina is located near the Grand Turk Cruise Center, this area typically has the highest concentration of salt crystals.

It is important to highlight that the marine ponds host one Bird Importance Area (Grand Turk Salinas and Shore IBA, described in Chapter 0) and attract various wading and coastal birds, including flamingos, egrets, herons, ducks, and more. Grand Turk's birds are easy to approach due to their familiarity with people.

The Grand Turk Salt Salinas include two proposed Areas of Historical Interest, the Twon Pond Salina and the Red Salina (Figure 7-50).

Her Majesty's Prison

Small colonial prison located in Cockburn Town built in 1830 (Figure 7-50).

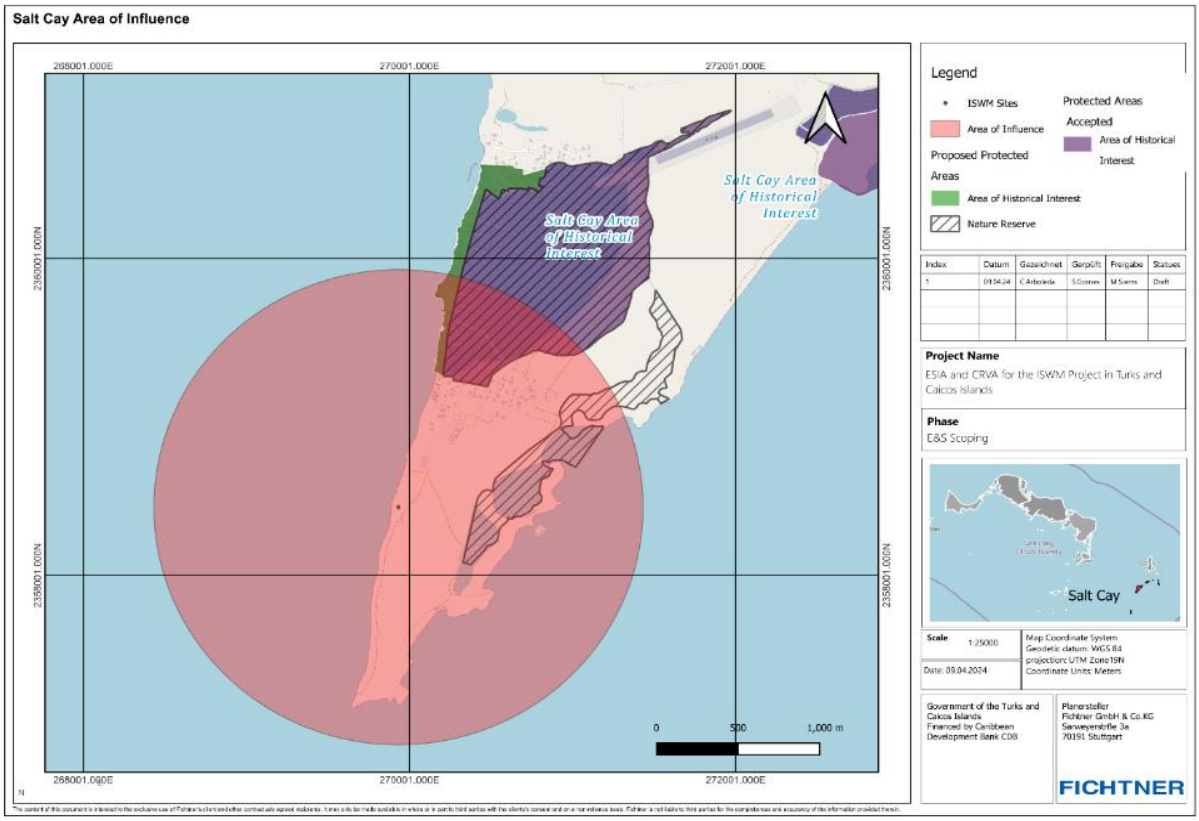


Source of the geodata: TCI Data Portal

Figure 7-50: Grand Turk AoI and intersection with historic attractions, one of which includes two proposed HA

Salt Cay Area of Historical Interest

The protected area Salt Cay Area of Historical Interest is a colonial era archaeological site that partially overlaps with the Salt Cay Nature Reserve. The site is now undergoing a process of change of the borders. Both areas (accepted and proposed Salt Cay HA) are shown in Figure 7-51.



Source of the geodata: TCI Data Portal

Figure 7-51: Salt Cay AoI and intersection with HA

7.3.5 Social infrastructure in the AoI

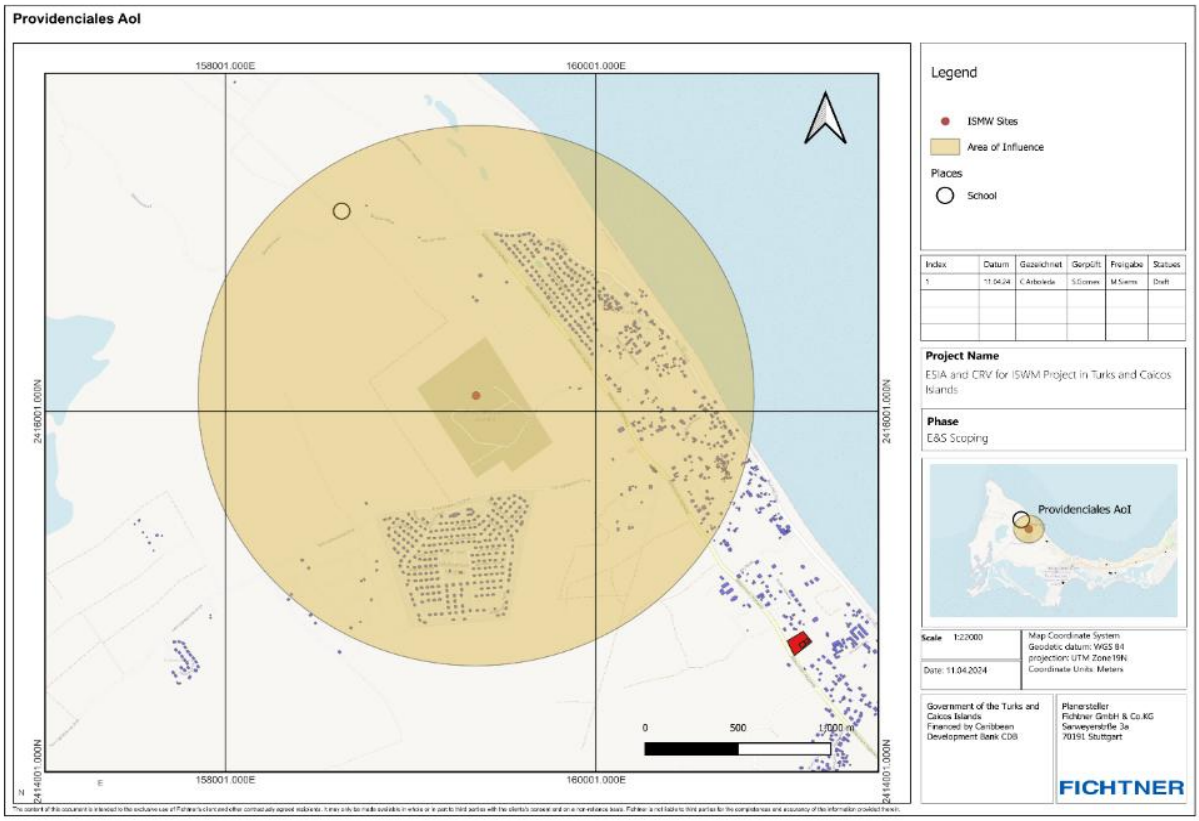
This chapter identifies social infrastructure within the Project's AoI that may be relevant for the E&S Scoping Study and the ESIA. The source of the data shown is the portal The Humanitarian Data Exchange (HDX)[187]. HDX is an open platform managed by the UN Office for the Coordination of Humanitarian Affairs (OCHA). Data comes from trusted organizations (UN agencies, NGOs, research institutions), and all datasets uploaded to the platform are reviewed by the HDX team before publication. Funding gaps may affect updates to the data. The data shown in this Chapter was not verified on site.

The identification of social structures supports the definition of social enhancement measures (such as inviting the local schools to undertake site visits as part of environmental education programs), the choice of venues for the realization of public engagement activities such as focus group discussions and key informant interviews (like churches) and supports the assessment of impacts on groups at higher risk (such as patients in clinics).

7.3.5.1 Providenciales

A Champions for Christ private high school is located within the AoI of the Providenciales site (Figure 7-52).

[187] The Humanitarian Data Exchange (HDX): https://data.humdata.org/group/tca



Source of the geodata: HDX

Figure 7-52: Providenciales AoI and intersection with social infrastructure

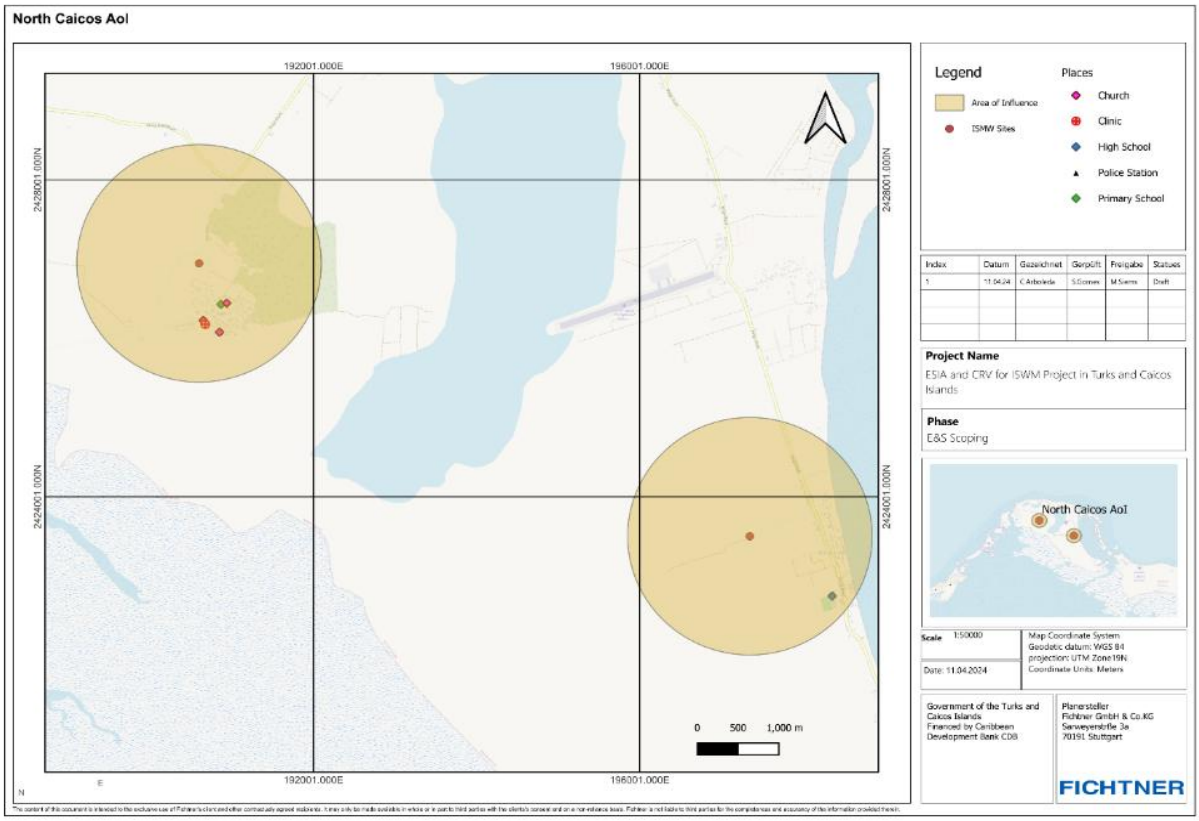
7.3.5.2 North Caicos

Three churches, one clinic, one primary school and one governmentally managed farm were identified within the AoI of the Kew Disposal Site. One high school was identified within the AoI of the Bottle Creek Disposal Site (Table 7-33 and Figure 7-53).

Table 7-33: Social infrastructure within the North Caicos' sites' AoI

Kew disposal site's AoI	Bottle Creek disposal site's AoI
Charles Hubert James Primary School	Raymond Gardiner High School
Bethel Baptiste Church	
Kew Seventh Day Adventist Church	
Kew Clinic	
Kew Lighthouse Church	
Government Farm*	

* The Government Farm is an active location for farmers that do not own land. According to DECR, the farm makes uses of untested groundwater for irrigation of crops.



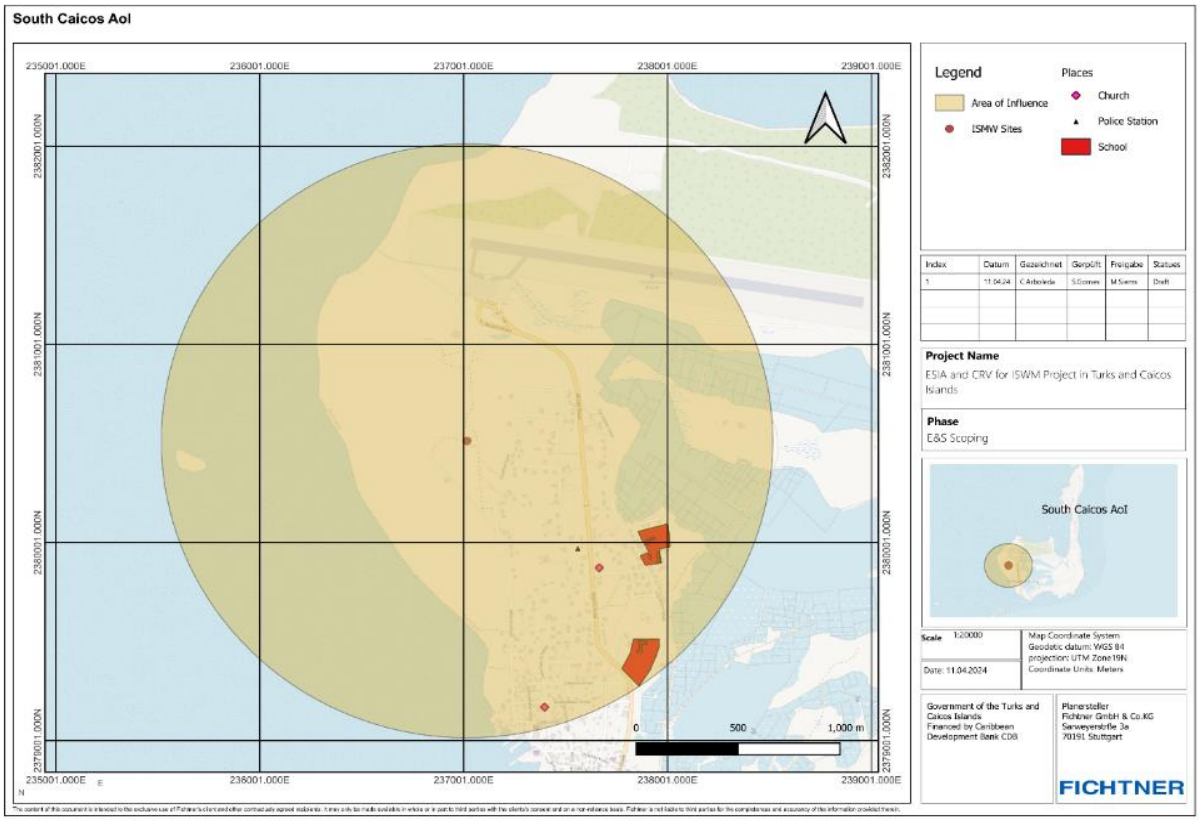
Source of the geodata: HDX and DECR

Figure 7-53: North Caicos AoI and intersection with social infrastructure

7.3.5.3 South Caicos

Two churches, one police station, and two educational centers are located within the AoI of the South Caicos site (Figure 7-54), namely:

- Iris Stubbs Primary School (Government School)
- Marjorie Basden High School (Government School)
- South Caicos Police
- Calvary Baptist Church
- New Testament Church of God.



Source of the geodata: HDX

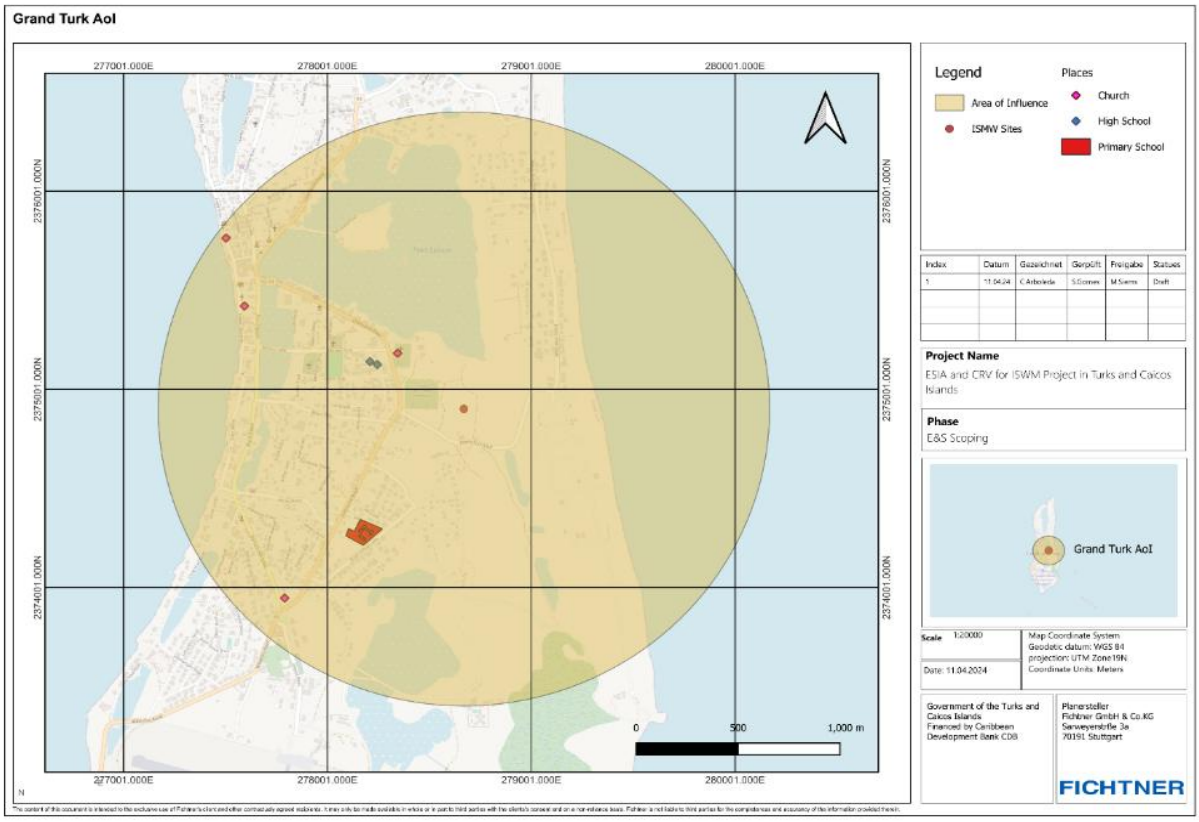
Figure 7-54: South Caicos AoI and intersection with social infrastructure

The local airport has been recently improved to receive international flights and plans for the expansion of the tourism infrastructure and residential development are in place. However, the presence of the dumpsite hinders the planned expansion in the area.

7.3.5.4 Grand Turk

Seven social infrastructure buildings were identified within the AoI of the Grand Turk site consisting of four churches and three are educational institutions (Figure 7-55):

- Eliza Simons Primary School (Government School)
- Helena Jones High School
- HJ Robinson High School
- Ebenezeer Seventh-day Adventist Church
- St Mary's Anglican Pro-Cathedral Church
- St Thomas Anglican Church
- Holy Cross Catholic Church



Source of the geodata: HDX

Figure 7-55: Grand Turk AoI and intersection with social infrastructure

7.3.5.5 Middle Caicos and Salt Cay

No social infrastructure such as schools, clinics, or churches was identified within the AoI of the Middle Caicos and the Salt Cay sites.

7.3.6 Disadvantaged groups in the AoI

The following considerations result from the site work undertaken by FICHTNER consisting of one site visit in December 2023 to selected project sites, a socio-economic survey conducted in 2024, interactions with the Main Consultant, the Client and relevant agencies, and the draft Feasibility Study.

7.3.6.1 Providenciales

The Providenciales disposal site hosts a small group of informal waste pickers (25 – 30 persons, mostly men) collecting waste to recover, possibly sell, and send abroad. Lacking an established recycling system in the TCI, the informal pickers' activity is focused on materials and goods to be used locally in the low-income communities located in the island.

The main waste fractions of interest for the informal pickers are wood from green waste to produce charcoal, timber from pallets and construction demolition as fuel for the coal kilns, timber and other construction materials for construction in the low-income communities, electrical goods for repair/refurbishment, and copper from electrical wires for export.

It is reported that most of the waste pickers are men of Haitian origin, but some women were seen at site as well (Figure 7-56). Their legal status is not clear at the moment. The dumpsite is presently being rehabilitated, and the waste pickers are not allowed entrance at the site anymore.



Source: FICHTNER, December 2023

Figure 7-56: Waste Pickers at the Providenciales site (top picture); Female picker (far right side) among the male pickers at the Providenciales site (bottom picture)

It is presently unknown to FICHTNER where the waste pickers live and how long they commute to reach the dumpsite. Upon consultation with the Informal Settlements Unit (ISU) in March 2024, FICHTNER became aware that some undelineated makeshift shacks exist around the site, but it is unknown who inhabits them, as these are not part of the surveying efforts conducted by the ISU.

A social needs survey was completed by the ISU by the end of April 2024, and the results may shed some light into the living situation of waste pickers, although the survey is not guaranteed to be able to reach these persons. The ISU informed FICHTNER that in one of the informal settlements surveyed (Dock Yard, located 5 km to the southeast of the site), 24,5% of the inhabitants possess no legal status, while the other 75,5% held some form of legal status which allowed them to stay in the island. The report is, at the time of writing this ESIA, not yet available.

7.3.6.2 North Caicos

The initial site visits undertaken by the Main Consultant in March 2023 identified the presence of waste pickers at the Kew site in North Caicos, both male and female.

A private house is located at the entrance of the Bottle Creek site in North Caicos. Given the planned improvements in the management of the site in both scenarios, a reduction in the present noise and air emissions from vehicles entering and leaving the site is expected. Therefore, a relocation of the house is not deemed necessary at this stage.

7.3.6.3 South Caicos

The initial site visits undertaken by the Main Consultant in March 2023 reported the presence of Haitian waste pickers at the South Caicos site to collect metals.

7.3.7 Outcomes of socio-economic household survey

As part of the ESIA for the ISMWP, household surveys were conducted within the defined AoI surrounding the dumpsites sites in Providenciales and Grand Turk. The surveys aimed to capture community-level insights on the impacts of solid waste management, perceptions of current practices, and priorities for future improvements.

A total of 62 household surveys were completed - 30 in Providenciales and 32 in Grand Turk. The demographic composition of respondents was diverse:

- **Community Representation:** Surveys in Providenciales were conducted in Wheeland Phase One (Belglade Gardens) (30%), Wheeland Phase Two (Millennium Heights) (30%), and Blue Hills (40%). In Grand Turk, communities included Back Salina (28%), Overback (12.5%), Front Street (22%), Breezy Brae (16%), Palm Grove (12.5 %), and Church Folly (9%). The proportion of respondents surveyed in the Providenciales and Grand Turk are presented in Figure 7-57 and Figure 7-58, respectively.

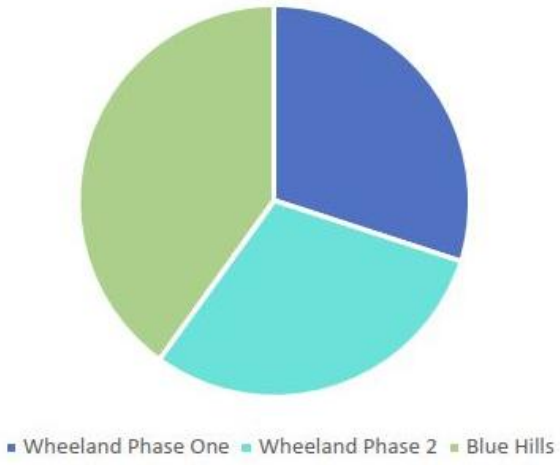


Figure 7-57: Proportion of respondent communities surveyed in Providenciales

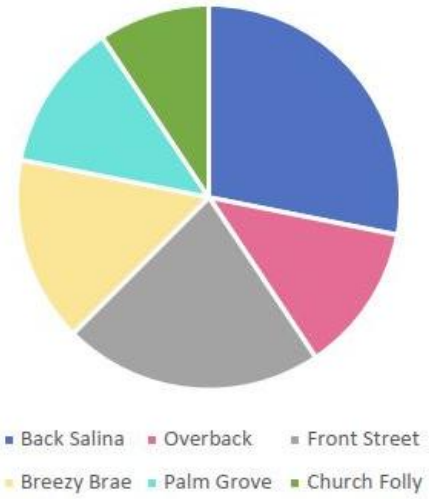


Figure 7-58: Proportion of respondent communities surveyed in Grand Turk

- **Nationality**: In Providenciales, respondents included Turks and Caicos Islanders (55.6% in Wheeland), Haitian nationals (66.7% in Blue Hills), and individuals from other Caribbean and international backgrounds, including Jamaican, Indian, Guyanese, British, Vincentian, and Bahamian. Notably, 16.7% of respondents in Blue Hills identified as Turks and Caicos Islanders, and another 16.7% identified as other nationalities. In Grand Turk, the majority of respondents (75%) were Turks and Caicos Islanders. The remaining participants included Jamaican and Haitian nationals (each comprising 6.25%), as well as individuals from Canada, Germany, South Africa, and the United States. The nationality distribution of respondents surveyed in the Providenciales and Grand Turk is presented in Figure 7-59 and Figure 7-60, respectively.



Figure 7-59: Nationality distribution of respondents surveyed in in Providenciales

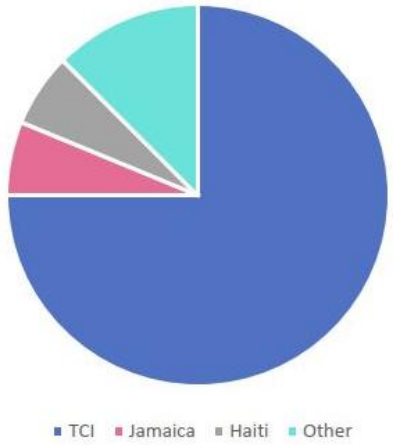


Figure 7-60: Nationality distribution of respondents surveyed in Grand Turk

- **Gender:** In Providenciales, respondents were evenly split between male and female (50% each). In Grand Turk, 69% were male and 31% female.
- **Age:** Participants ranged from 18 to over 66 years of age. In Providenciales, 3% of participants were aged 18–25, 10% were 26–35, 28% were 36–45, 38% were 46–55, 17% were 56–65, and 3% were over 66. In Grand Turk, 9% were aged 26–35, 16% were 36–45, 25% were 46–55, 28% were 56–65, and 22% were over 66 years of age. The most represented age group in Providenciales was 46–55 years (38%), while in Grand Turk it was 56–65 years (28%).

7.3.7.1 General familiarity with waste management practices

To assess the level of general familiarity of the public with solid waste management practices, survey participants were asked: "Do you understand how solid waste management is conducted on this island?".

In Providenciales, general familiarity of solid waste management processes was generally low. Only 23.3% of respondents stated that they understood how waste is managed, while 33.3% reported that they did not understand, and 43.3% were unsure. When asked to elaborate, many respondents expressed uncertainty about what happens to their waste after collection. A common response was*: "They collect the garbage every Wednesday. I'm not sure what happens once it gets there."* Several participants believed that the waste is either burned (23%) or buried (13%), with some expressing concern about the environmental and health implications of these practices. Additional comments included concerns about irregular waste collection and the presence of stray animals interfering with garbage left at the roadside.

In Grand Turk, respondents demonstrated a higher level of general familiarity. 59% of participants stated that they understood how solid waste is managed, while 25% did not, and 16% were unsure. Explanations provided by respondents in Grand Turk included references to waste being buried, compacted, or separated into categories such as tires and metals. 28% of respondents stated that waste is taken to the dumpsite for disposal, although some were unsure of what occurs thereafter. 16% described burial practices, while 9% mentioned compaction using heavy machinery. 3% stated that waste is burned. 16% noted that certain types of waste, such as tires and metals, are separated before disposal. However, other participants expressed concern about the lack of proper separation, with 6% stating that there is "no management" and one respondent describing the practice of burning waste in the past, linking it to health concerns among elderly residents.

7.3.7.2 Satisfaction with waste management services

Survey participants were asked to rate their satisfaction with solid waste management services on their island. Generally, the key driver of satisfaction is the regularity of garbage collection in Grand Turk; and the key drivers of dissatisfaction are, in both islands, the environmental, visual and sensorial impacts resulting from the inadequate management of the sites.

In Providenciales, satisfaction was notably low, with 77% of respondents indicating dissatisfaction—57% were very dissatisfied and 20% dissatisfied. Only 7% reported being satisfied, and none were very satisfied (Figure 7-61). The primary reasons cited for dissatisfaction included frequent fires at the dumpsite, smoke entering residential areas, the absence of recycling initiatives, inconsistent garbage collection, and concerns about the growing volume of waste. Several respondents also expressed frustration about the dumpsite's proximity to residential neighbourhoods.

In contrast, Grand Turk respondents reported slightly higher satisfaction, with 38% stating they were satisfied, though 56% still reported dissatisfaction or strong dissatisfaction, and 6% had no opinion (Figure 7-62). Some participants appreciated the regularity of garbage collection, noting that it was generally timely. However, these comments were often accompanied by suggestions for improvement, such as more frequent pickups and better organization. Concerns raised by respondents included poor containment of the dumpsite site, lack of recycling options, and the visual impact of the dumpsite on the surrounding area. These sentiments were reflected in the broader range of solid waste management issues identified by participants.

Commonly mentioned concerns included collection inefficiencies, dumpsite fires and smoke, infestations of rodents and insects, accumulation of scrap metal, flooding, the prevalence of single-use plastics, stray animals, improper disposal of hospital waste, and potential seepage into the water table.

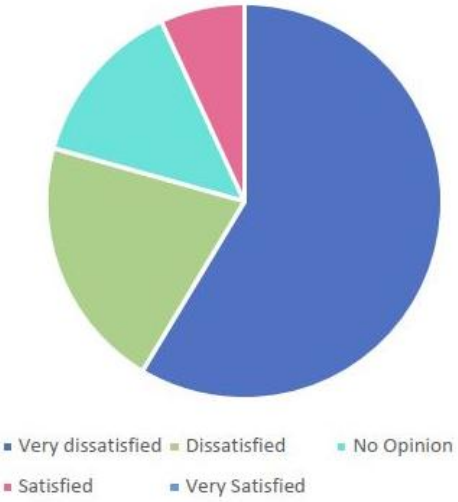


Figure 7-61: Level of satisfaction of respondents in relation to solid waste management in Providenciales

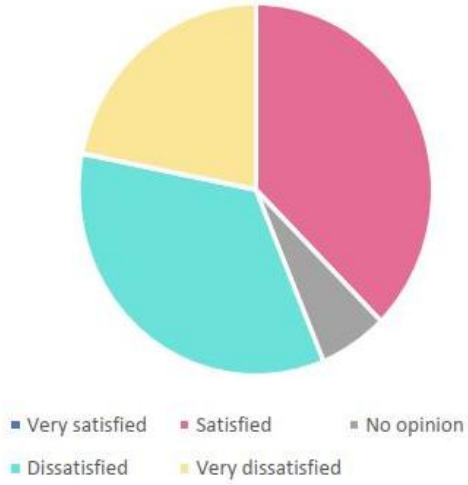


Figure 7-62: Level of satisfaction of respondents in relation to solid waste management in Grand Turk

7.3.7.3 Self-reported Impacts on households

Survey participants were asked whether they thought that they were directly impacted by issues related to solid waste management in their communities.

In Providenciales, a significant 83% of respondents self-reported being directly affected, while 10% self-reported that they were not impacted, and 7% were unsure. The most common self-reported impacts were a range of health problems and disruptions to daily life, which the interviewees attributed to smoke release from dumpsite fires. Self-reported health issues included difficulty breathing and coughing, asthma, chest pain or infections, sinus problems, irritated eyes, severe nosebleeds and cancer. Some residents also described needing to keep windows and doors closed to avoid smoke exposure, which they reported increased their electricity bills due to greater reliance on air conditioning.

In Grand Turk, 41% of respondents self-reported being directly impacted, with health concerns such as asthma and, in some cases, cancer was mentioned. Other self-reported impacts and nuisances included exposure to smoke from dumpsite fires, strong odours, rodent infestations, flooding during heavy rains, and the presence of flies and mosquitoes. Several respondents also raised concerns about hazardous waste, particularly their view that hospital waste is being disposed of at the dumpsite without proper treatment.

7.3.7.4 Perceived changes in waste management and community observations

Survey participants were asked whether they had noticed any changes in solid waste management in their communities in recent months.

In Providenciales, 67% of respondents reported observing changes, with 77% of those describing the changes as “fairly positive” and 5% as “positive.” Improvements most noted included a reduction in the frequency and intensity of dumpsite fires, less smoke, fewer flies, and a cleaner dumpsite site.

Residents also mentioned witnessing the installation of drop boxes at the dumpsite entrance and improved site cleanliness. However, 33% of respondents either did not notice any changes (20%) or were unsure (13%). Some expressed scepticism about whether improvements would last, citing past experiences of short-lived changes tied to shifts in political leadership or management contracts.

In Grand Turk, 52% of respondents reported noticing changes, with 42% describing them as "positive" and another 42% as "fairly positive." Improvements included fewer fires, better security at the dumpsite, and a generally cleaner environment. However, 48% of respondents either did not notice any changes (44%) or were unsure (4%). Some residents also expressed concern about rumours of new charges for garbage collection and questioned whether recent improvements would be sustained.

Since the communities' perception of the changes relates to the few months before the interviews took place, it can be safely stated that these are connected to recent improvements in the management of the Providenciales and the Grand Turk sites.

7.3.7.5 Recycling awareness and participation

Survey participants were asked about their awareness of current recycling initiatives on their islands.

In Providenciales, 72% of survey respondents indicated that no recycling activities were currently taking place, while 16% reported awareness of existing recycling initiatives, and 12% were uncertain as to whether such initiatives were operational. A limited number of participants referenced TCI Waste Disposal Services, a private entity offering recycling services on a fee-for-service basis. However, concerns were raised regarding the credibility and transparency of these services. Both community members and representatives from the dumpsite management expressed scepticism, suggesting that separated recyclable materials collected by the service provider were ultimately disposed of at the dumpsite site. This perception has contributed to a broader mistrust in the recycling process. Notwithstanding these concerns, respondents consistently expressed a willingness to engage in recycling initiatives if they were introduced.

In Grand Turk, 88% of respondents reported that no recycling initiatives were currently in operation, while the remaining participants were either unaware of any such programs or uncertain of their existence. Although some community members recalled historical efforts—such as school-based can collection schemes and the reuse of glass bottles, these initiatives were no longer active at the time of the assessment. Additionally, a proposed recycling collaboration between Carnival Cruise Corporation and the GOTCI announced during a 2023 Town Hall Meeting, had not progressed, contributing to a perception of inaction. Despite the absence of formal recycling systems, community members expressed a clear interest in improved waste separation and the establishment of recycling opportunities. Respondents indicated that, with appropriate education and community engagement, they would be willing to participate in such initiatives.

Note: the stated mistrust in the recycling services points to the need for enforcing transparency in the recycling process. This is further developed as an enhancement measure in the ESIA (Chapter 9.1.4) and respective monitoring measures are defined in the ESMoP (ESIA Chapter 11.19).

7.3.7.6 Employment and business opportunities on waste management

Survey participants were asked if they would be interested in working in solid waste management if there were opportunities available.

In Providenciales, only 20% of respondents expressed interest in working in solid waste management, both of whom were Haitian nationals residing in economically vulnerable areas. The majority (80%) indicated no interest. When asked about potential business ventures, a small number of respondents (7%) suggested initiatives related to recycling and composting.

In contrast, Grand Turk respondents demonstrated a comparatively higher level of interest. Of those who responded to the question, 44% expressed interest in working in the sector, 44% stated they would not be interested, and 10% were unsure. Respondents noted that their willingness to participate would depend on the nature of the work available, with interest shown in roles related to dumpsite operations, waste collection, and recycling initiatives. One participant remarked "*If there's a training, I'd like to be involved*", highlighting the importance of capacity-building and structured employment pathways. When asked about business opportunities, nine respondents proposed the establishment of recycling enterprises focused on materials such as glass, plastics, cans, scrap metal, cardboard, and food waste.

7.3.7.7 Community concern and priorities

Survey participants were asked whether they have concerns for the future related to solid waste management.

In Providenciales, 70% of respondents stated that they do have concerns, 13% indicated that they did not have any concerns, and 10% were unsure. In Grand Turk, 78% of respondents expressed concerns, 6% stated they had no concerns, and 16% were unsure.

In Providenciales, the most frequently cited concern was the ongoing issue of fires at the dumpsite and the resulting smoke, which respondents associated with a range of health impacts. Several participants also raised concerns about the lack of waste separation, improper disposal of hazardous materials, and the perceived inaction of authorities despite previous consultations. Some respondents expressed frustration regarding the financial burden of managing smoke exposure and the impact on property values.

In Grand Turk, concerns focused on the limited capacity of the dumpsite, its proximity to residential areas and the salinas, and the potential for environmental contamination. Respondents highlighted the need for improved infrastructure, including the introduction of an incinerator, better waste separation, and the removal of scrap metal and derelict vehicles. Health concerns were also raised, particularly in relation to the burning of waste and the disposal of medical and septic waste. The visual impact of the dumpsite on tourism and the broader community was also noted.

When asked about future priorities, respondents across both islands emphasized different needs, that the ESIA team considers fitting into three different groups:

- Group 1: Priorities to tackle in the short-term (< 1 year from now)
  - Air quality monitoring and health assessments.
  - Education and awareness campaigns.
- Group 2: Priorities to tackle in the medium-term (1-5 years from now)
  - Improved waste separation and recycling.

- Group 3: Priorities to tackle in the long-term (5-10 years from now):
  - Relocation or redesign of dumpsite sites.
  - Infrastructure investment and long-term planning.

In Providenciales, 17% (n = 5) of respondents specifically recommended relocating the dumpsite away from residential areas. In Grand Turk, 22% prioritized recycling, 13% emphasized scrap metal removal, and 13% called for improved cleanliness and public waste infrastructure.

7.3.8 Outcomes of key informant interviews

As part of the ESIA for the ISMWP, key informant interviews (KIIs) were conducted on the islands of Providenciales, Grand Turk, North Caicos, and Middle Caicos.

In **Providenciales,** four KIIs were conducted with stakeholders from the community and businesses associated with the dumpsite. Two interviews were conducted with female informants (TCI and Jamaican nationals) and two with male informants (TCI nationals). Members of the Haitian community in Blue Hills were approached but declined to participate.

Representatives of the TCI Green Ecological Corporation Limited, the company managing the Providenciales dumpsite since March 2024, participated in KIIs and discussed operational challenges, including limitations related to the scope of their contract and lack of control over waste collection. They also addressed the issue of "waste pickers" who previously lived and worked at the dumpsite site, noting that these activities have ceased following the introduction of new management and security measures.

Additional KIIs were conducted with community members in Wheeland Phases One and Two. These community members expressed concerns about the perceived lack of government response to ongoing waste management issues and the associated perceived health and financial impacts on residents. Interviewees expressed that the community perceives a lack of government responsiveness to waste management issues, despite multiple public consultations and studies. Residents reported financial and personal hardships, including constraints on relocation due to high land prices. Also and the need to temporarily vacate homes during periods of intense smoke exposure was noted. One respondent noted, "*We can't move house if we wanted to because of the price of land here. When the smoke is bad, we have to leave home and stay somewhere else because we can't breathe*." Another respondent stated "*We didn't expect the dump to become an issue at the time of purchase, but it became so with changes in management. It doesn't impact the people that influence the change*."

Health concerns associated with environmental exposure from the Providenciales dumpsite were self-reported by interviewees. These member of the community mentioned respiratory issues and chronic stress potentially linked to smoke and poor air quality. A need was expressed for public health services to incorporate environmental and situational factors into patient assessments. It was noted that this would allow identifying systemic health impacts and inform more targeted interventions. One community member stated that this would highlight clear patterns within the community, and fuel targeted action from the Government.

Concerns were also raised regarding the proposed 20-year waste management program, which was perceived as insufficiently responsive to immediate community needs. Interviewees questioned the sustainability of financing and implementation and emphasized the need for more transparent and inclusive planning processes.

In **Grand Turk,** KIIs were conducted with a representative of the dumpsite management and two community members. All informants were male, including two Turks and Caicos Islanders and one Jamaican national. The dumpsite management representative noted the need for a separate enclosed facility for waste separation and highlighted the limited scope of the current management contract. They also identified the shipment of scrap metal and large waste items off-island as a potential improvement. Fires caused by individuals burning wires to extract copper were mentioned, along with suspected underground fires. Community informants raised concerns about leaching into the salina and groundwater. Others mentioned the historical use of the site during the U.S. Naval Base era, and the need for corporate contributions to infrastructure. Suggestions included improving the aesthetics of the dumpsite, implementing recycling and waste-to-energy programs, and increasing community education and involvement.

Residents noted the potential health risks associated with wire burning and suspected underground fires at the dumpsite. The unlined nature of the site and its historical use during the U.S. Naval Base era raised fears of contamination, including a potential self-perceived asbestos exposure.

Additionally, residents highlighted the dumpsite's proximity to residential areas and its visibility from tourism zones. Suggestions included planting trees and enclosing the site to improve aesthetics and reduce visual impact. The inability to relocate due to land constraints was also mentioned, reinforcing the peoples' perception of the need for infrastructure upgrades and community-focused planning. Stakeholders emphasized that addressing solid waste management should be a national priority, with calls for greater investment from both government and private sector actors, particularly those benefiting from development on the island.

In **North Caicos,** the District Commissioner participated in a KII and identified issues including the lack of a functioning garbage truck, absence of dumpsite security, and the need for clear dumpsite boundaries. He noted the potential for North Caicos to serve as a pilot site for recycling initiatives and emphasized the importance of community education and school outreach.

In **South Caicos** and **Salt Cay**, potential informants were contacted by email, but no responses were received.

8 Important Environmental and Social Components

The baseline assessment undertook so far and described in Chapter 7 allowed identifying the important environmental and social components (IESCs) for the ISWMP, i.e., those elements of the biological, physical and human environment expected to be negatively or positively affected by the Project's implementation, and that require defining enhancement, avoidance, mitigation, and/or compensation measures.

The IESCs for the ISWMP are described in Table 8-1.

Table 8-1: Important environmental and social components (IESCs) for the ISWMP

IESCs for the ISWMP	Site	Justification of the IESC	Note
Physical Environment			
#1 - Air quality and odour	Providenciales	At the site hot spots from internal fires have been documented; fire extinguishment exercises were performed in 2023 and 2024, temporarily increasing dust levels; large open fires have occurred in the recent past; smouldering odours are felt in the area; an old incinerator for medical waste releases air emissions of which neighbouring inhabitants complain; near the site, coal is produced in illegal kilns by burning green waste; inhabitants complain of respiratory and other health issues, as well as restrictions to life quality caused by air emissions from the site.	-
	North Caicos Middle Caicos Grand Turk Salt Cay South Caicos	The Main Consultant reports that waste is burnt at all the sites (reportedly except in South Caicos); decomposition of waste deposited at open-air (dead animals, domestic waste and sewage sludge) causes odours; incineration of medical waste in the GT site causes air emissions; there are inhabited areas within the AoI of all sites, except in MC.	No air quality data is presently available for these sites, but generally air quality is a sensitive receptor for the Project's impacts
#2 - Noise	Providenciales	Intense/regular truck noise (delivery of waste or cover materials); noise from large numbers of scavenging birds	-
	North Caicos Middle Caicos South Caicos Grand Turk Salt Cay	Occasional truck noise (delivery of waste or cover materials)	-
#3 - Groundwater quality	Providenciales Grand Turk	The presence of contaminants such as heavy metals, pesticides, water volatiles, and nutrients in groundwater was identified (2017, 2022, and 2023).	

IESCs for the ISWMP	Site	Justification of the IESC	Note
	North Caicos Middle Caicos South Caicos Salt Cay	No groundwater quality data is presently available for the other sites. However, the possibility cannot be ignored that there are aquifers below the sites that can be affected by their operation.	Despite the geological nature of the Turks and Caicos Islands, with highly permeable coral limestone extremely favourable to host permanent aquifers, their generally low and flat morphology and limited extension together with a scarcity of rainfalls, only offer limited possibility for the development of relevant freshwater bodies.
#4 - Surface water quality	Providenciales	Faecal coliforms in exceedance of the WHO standards[91] were detected in the Wheeland Pond and in 2 points along the coastline near the Providenciales site (2022 data). Other contaminants were also detected (levels below the WHO standards), which are consistent with elevated liquid effluent concentrations and groundwater detections. The Wheeland Pond was identified as a receptor of concern regarding contamination migration from the disposal of liquid waste at the Providenciales site.	-
	North Caicos - Bottle Creek Middle Caicos South Caicos Grand Turk Salt Cay	No surface water quality data is presently available for these sites, but the presence of surface water within the AoI allows the classification of this feature as IESCs	In Kew there are no surface water features within the AoI
#5 - Soil quality	All sites	Generally, it can be assumed that the soil at all sites is contaminated.	No soil quality data is presently available but visual observations indicate that soil quality is a IESC at all sites.
Biological Environment			
#6 - National Natural Protected Areas	Providenciales	Wheeland Pond Nature Reserve (proposed PA) was identified as a receptor of concern regarding contamination migration from the disposal of liquid waste at the Providenciales site.	-
	North Caicos	The AoI of the Kew Dumpsite intersects with the Cottage Pond Nature Reserve and with the North, East and Middle Caicos Nature Reserve (which is also a Ramsar Site and a KBA-IBA).	-
	Middle Caicos	The AoI of the Middle Caicos site borders the North, Middle and East Caicos Nature Reserve (which is also a Ramsar Site and a KBA-IBA).	-
	South Caicos	The AoI of the South Caicos site intersects with two proposed natural PA: the South Caicos Wetland Critical	-

IESCs for the ISWMP	Site	Justification of the IESC	Note
		Habitat Reserve, and the Boiling Hole Nature Reserve.	
	Grand Turk	The AoI of the Grand Turk site intersects with two natural PA: the Columbus Landfall Marine National Park and the South Creek National Park; and with one proposed natural PA: the Town Pond (part of the Grand Turk Salinas).	-
	Salt Cay	The AoI of the Salt Cay disposal site intersects with one proposed natural PA: the Salt Cay Nature Reserve.	-
#7 - International Natural Protected Areas: Ramsar Sites, KBAs and IBAs	North Caicos	The AoI of Kew dumpsite possibly intersects with the KBA-IBA Wades Green and Teren Hill and with the North, Middle and East Caicos Ramsar Site and KBA-IBA (which is also a national natural PA).	Although official data for the international natural protected areas is unavailable for this study, internet research shows that the pointed intersections are highly probable and therefore the IESC can be safely established.
	Middle Caicos	The AoI of Middle Caicos site is possibly within the Middle Caicos Forest KBA-IBA (TC004). The AoI may also intersect with the IBA North, Middle and East Caicos Ramsar Site and KBA-IBA (which is also a national natural PA).	
	Grand Turk	The AoI of Grand Turk possibly intersects with the Grand Turk Shores and Salinas KBA-IBA.	
	Salt Cay	The Salt Cay AoI possibly intersects with the KBA-IBA Salt Cay Creek and Salinas.	
#8 - Fauna & flora	Providenciales	The Wheeland Pond Nature Reserve (proposed PA), located within the site's AoI, is a habitat for many birds, including American flamingos, as well as red mangrove (both least concern, LC), and reportedly some species of VU and NT birds. The site itself and its periphery is visited by a few LC bird scavenging species.	-
	North Caicos	The AoI of the Kew site intersects with habitat for one endemic shrimp species and two vulnerable (VU) reptile species, including one endemic reptile species. It also intersects with habitat for LC resident bird species.	-
	Middle Caicos	The AoI of the Middle Caicos site intersects with habitat for VU, endangered (EN) and critically endangered (CR) reptiles, as well as with habitat for near-threatened (NT) and LC birds (among other non-threatened species).	-
	South Caicos	The AoI of the South Caicos site intersects with habitat for NT and LC birds.	-

IESCs for the ISWMP	Site	Justification of the IESC	Note
	Grand Turk	The AoI of the Grand Turk site intersects with habitat for EN and CR reptiles (turtles), and with habitat for breeding and wintering LC bird species, and NT and VU bird species. The site itself is visited by a few LC bird species.	-
	Salt Cay	The AoI of the Salt Cay site intersects with habitat for resident, breeding and non-breeding LC bird species, and potentially with habitat for an EN reptile species (iguana).	-
#9 - Ecosystem services	Providenciales	The proposed Wheeland Pond NR, located within the site's AoI, provides flood mitigation and groundwater replenishment (regulating services); and opportunities for ecotourism (cultural services). Also, the DPLUS094 workshop[154] on Chapter 7.2.9.2 identified places around the site as "vulnerable places" (provide provisioning and regulating services), and as places for "marine activities" (provisioning and cultural services).	-
	North Caicos	The DPLUS094 workshop identified places around the Bottle Creek site as "favourite places" (providing cultural services).	-
	Middle Caicos	The DPLUS094 workshop identified places around the site as "favourite places" (providing cultural services), and places for "marine activities" (provisioning and cultural services).	-
	South Caicos	The DPLUS094 workshop identified places around the site as "vulnerable places" (provide provisioning and regulating services), "favourite places" (cultural services), and places for "marine activities" (provisioning and cultural services).	-
	Grand Turk	The AoI of the Grand Turk site intersects with two natural PA: the Columbus Landfall Marine National Park and the South Creek National Park, which are habitat for a wide variety of commercial fisheries species (provisioning services). Also, the DPLUS094 workshop identified places around the site as places for "marine activities" (provisioning and cultural services).	-
	Salt Cay	Salt Cay lowlands, seasonal wetlands and Salinas provide flood control (regulating services) and cultural services. Also, the DPLUS094 workshop identified places around the	-

IESCs for the ISWMP	Site	Justification of the IESC	Note
		site as "vulnerable places" (provide provisioning and regulating services).	
Human Environment			
#10 - Areas of Historical Interest (HA)	North Caicos	The AoI of the Kew site intersects with the Wades Green and Teren Hill Area of Historical Interest (proposed PA).	-
	South Caicos	The AoI of the South Caicos disposal site borders with the Boiling Hole HA.	-
	Grand Turk	The AoI of the Grand Turk site intersects with two proposed HA: the Town Pond and the Red Salinas Areas of Historical Interest (part of the Grand Turk Salinas).	-
	Salt Cay	Part of the accepted and proposed Salt Cay HA falls within the Salt Cay's site AoI.	-
#11 - Historic Attractions	North Caicos	The AoI of the Kew site intersects with the Wades Green Plantation.	-
	Grand Turk	The AoI of the Grand Turk site intersects with two historical attractions: the HM Prison and the Grand Turk Salt Salinas (within the Grand Turk Salinas two proposed HA are included - see respective reference above).	-
#12 - Livelihoods	Providenciales	Around 20-30 waste pickers, among them men and women, collect waste at the site to recover, possibly sell, and send abroad.	-
	North Caicos	Men and women are reportedly working informally as pickers at the Kew site in North Caicos.	-
	South Caicos	Reportedly, there are waste pickers at the South Caicos site that collect metals.	-
#13 - Private assets	South Caicos	About 1 ha of privately owned land (Sailrock hotel) may be needed for the new facilities at the South Caicos site.	A suitable location for the new facilities is proposed by the GOTCI nearby the dumpsite. A Land Acquisition Plan is required.
#14 - Occupational Health & Safety	All sites	In all sites there will be need for some sort of intervention using working force that will therefore be exposed to H&S risks.	-
#15 - Community Health & Safety	All sites	The waste management sites carry a risk for the H&S of surrounding communities and visitors due to pollutant and noise emissions, for example. A direct contact with the non-fenced sites poses a direct risk of injuries and accidents. All the 4 sites are surrounded by social infrastructure.	No social infrastructure such as schools, clinics, or churches, as well as houses and hotels was identified within the AoI of the Middle Caicos and the Salt Cay sites. Notwithstanding this, the sites can be easily reached by road by anyone.

Natural hazards such as earthquakes, floods, hurricanes, storms and tsunamis, and the increase in their frequency and intensity due to climate change pose specific challenges for all the TCI solid waste facilities. They are however, not exacerbated by the Project. This means that the Project does not increase the occurrence or intensity of natural hazards. On the other hand, natural hazards impact the Project. The impacts *of* natural hazards, specifically those aggravated by climate change are treated in the separate Climate Risk and Vulnerability Assessment (Chapter 10).

8.1 Sensitivity of the IESCs

This chapter classifies the degree of sensitivity of the IESCs to the expected Project impacts according to the methodology described in Chapter 5.2.1. For the sake of clarity, the characteristics of all sites in general are used for the classification of the sensitivity of the IESCs, i.e., a classification per IESC per site is not prepared. In case one IESC has different sensitivity levels on different sites, the strictest classification is used as a general case. For example, the IESC "Air quality and odour" is classified for the whole ISWMP as "medium" because some of the sites (Providenciales and Grand Turk) have many human receptors.

Table 8-2 shows a summarized classification of the sensitivity of each of the 15 IESCs for the ISWMP. Table 8-3 to Table 8-5 show the detailed classification process.

Table 8-2: Classification of the sensitivity level of the IESCs - Summary table

IESC	Sensitivity
#1 - Air Quality and Odour	Medium
#2 - Noise	Medium
#3 - Groundwater Quality	Medium
#4 - Surface Water Quality	Medium
#5 - Soil Quality	Low
#6 - National Natural Protected Areas (PAs)	High
#7 - International Natural Protected Areas	High
#8 - Fauna & flora	Medium
#9 - Ecosystem Services	Medium
#10 - Areas of Historical Interest (HA)	Medium
#11 - Historic Attractions	Low
#12 - Livelihoods	High
#13 - Private assets	Medium
#14 - Occupational Health & Safety	Medium
#15 - Community Health & Safety	Medium

Table 8-3: Classification of the sensitivity level of the physical environment IESCs

Sensitivity of the IESCs - Physical Environment										
	#1 - Air Quality and Odour		#2 - Noise		#3 - Groundwater Quality		#4 - Surface Water Quality		#5 - Soil Quality	
Criteria	Classification	Scoring	Classification	Scoring	Classification	Scoring	Classification	Scoring	Classification	Scoring
Existing regulations and guidance	Low protection level	1	Low protection level	1	Low protection level	1	Low protection level	1	Low protection level	1
Value of the receptor	High	3	Medium	2	High	3	Very high	4	Medium	2
Vulnerability to the changes	High	3	Medium	3	High	3	High	3	Low	1
Reasoning	No legal national limit values; international guidelines are not of mandatory application; clean air is very valuable to society and some sites have many sensitive receptors.		No legal national limit values; international guidelines are not of mandatory application; low noise is very valuable to society and some sites have many sensitive receptors.		No legal national limit values; international guidelines are not of mandatory application; groundwater is used directly by the population in North and Middle Caicos (despite warnings not to) and therefore the value is assumed to be high; due to the island's underground permeability, even small discharges to the soil could substantially pollute the groundwater.		No legal national limit values; international guidelines are not of mandatory application; surface water (ocean, lagoons, salinas) are of very high recreational, touristic, and environmental value; moderate discharges to the water are needed to substantially pollute the ocean due to its dispersion ability; however, for the lagoons and salinas, a small pollutant discharge is enough to substantially change their status.		No legal national limit values; international guidelines are not of mandatory application; the soil at all sites is assumed to be contaminated, for what its vulnerability to changes is low; in most sites, the surrounding soils are also degraded or urbanized; the receptor is of medium value to the society, particularly on those cases where a rehabilitation of the sites will allow the soil to be used for new purposes.	
Sum	**7**		**6**		**7**		**8**		**4**	
Sensitivity of the receptor	**Medium**		**Medium**		**Medium**		**Medium**		**Low**	

Table 8-4: Classification of the sensitivity level of the biological environment IESCs

Sensitivity of the IESCs - Biological Environment

	#6 - National Natural Protected Areas (PAs)		#7 - International Natural Protected Areas		#8 - Fauna & flora		#9 - Ecosystem Services	
Criteria	Classification	Scoring	Classification	Scoring	Classification	Scoring	Classification	Scoring
Existing regulations and guidance	High protection level	3	High protection level	3	High protection level	3	High protection level	3
Value of the receptor	High	3	High	3	Medium	2	High	3
Vulnerability to the changes	High	3	High	3	Medium	2	Medium	2
Reasoning	PAs are protected by national legislation, and this may impact the Project's feasibility; their environmental, landscape, recreational and touristic, value to the population is high; for some of the sites (Salinas for example), a small pollutant discharge is enough to substantially affect their status.		The areas are internationally protected, and this may impact the Project's feasibility; their environmental, landscape, recreational and touristic value to the population is high; for some of the sites (Salinas and the Ramsar Site for example), a small pollutant discharge is enough to substantially affect their status.		The AoI of all sites intersects with habitats for protected and/or threatened species, even if the sites themselves present no high biological value; the environmental value for the society is deemed high; the vulnerability of the species identified to changes brought by the Project is deemed medium for all sites in general.		Cultural, provision and/or regulating ecosystem services are valued throughout all project AoIs and protected in different forms by national regulations and international agreements; their vulnerability to changes caused by the Project is classified as medium.	
Sum	**9**		**9**		**7**		**8**	
Sensitivity of the receptor	**High**		**High**		**Medium**		**Medium**	

Table 8-5: Classification of the sensitivity level of the human environment IESCs

Sensitivity of the IESCs - Human Environment												
	#10 - Areas of Historical Interest (HA)		#11 - Historic Attractions		#12 - Livelihoods		#13 - Private assets		#14 - Occupational Health & Safety		#15 - Community Health & Safety	
Criteria	Classification	Scoring	Classification	Scoring	Classification	Scoring	Classification	Scoring	Classification	Scoring	Classification	Scoring
Existing regulations and guidance	High protection level	3	Low protection level	1	High protection level	4	High protection level	4	Very high protection level	4	Very high protection level	4
Value of the receptor	Medium	2	Low	1	Medium	2	Low	1	Medium	2	Medium	2
Vulnerability to the changes	Low	1	Medium	2	High	3	Low	1	Medium	2	Medium	2
Reasoning	HAs are protected by national legislation, and this may impact the Project's feasibility; the value of HAs to society can be considered generally as medium due to the provision of recreational and touristic value; these sites are not deemed to be particularly vulnerable to the Project impacts		Historic attractions do not have a legal Protected Area status; some of them have a touristic value, and some are abandoned; these sites are not deemed to be particularly vulnerable to the Project impacts		The Providenciales site hosts informal waste pickers (20-30), as well as a local secondary economy. The right to work and to earn an income enjoys a universally recognized right to protection, and is highly valued by society; the number of people depending on the site for their livelihood is not large; but even a very small external change could substantially affect their livelihood.		About 1 ha of privately owned land (Sailrock hotel) may be needed in South Caicos. Private land is protected by law and may prevent the development; although this is a highly valued receptor, the number of people owing private assets is very limited (one company); changes caused by the Project will affect the status of the private land, but being this a small area, the vulnerability is considered to be low.		The receptor "people", including workers, is highly protected by national and international regulations. Considering that the labour needs are relatively small for the construction, rehabilitation, decommissioning and operation of the sites, the value of the receptor and the vulnerability to changes can be classified as medium		The receptor "people" is highly protected by national and international regulations. Considering that the sites are not inhabited, and only a few persons use them, the value of the receptor can be classified as medium, and the vulnerability to changes as well.	
Sum	**6**		**4**		**9**		**6**		**8**		**8**	
Sensitivity of the receptor	**Medium**		**Low**		**High**		**Medium**		**Medium**		**Medium**	

9 Environmental and Social Impact Assessment

The IESCs identified in Chapter 7.3.7 are evaluated and analysed in this Chapter for potential positive and negative impacts during the lifetime of the Project. The analysis of E&S impacts focuses spatially on the Area of Influence (AoI) of the Project. The AoI represents the geographical extent of each of the sites' potential E&S impacts.

The rehabilitation, construction, operation and decommissioning of the existing dumpsites, the new landfill, and the new supporting structures are considered. Specifically, for each phase, the following is considered:

- Rehabilitation:
  - fire extinguishing at the dumpsite in Providenciales
  - reshaping and rearrangement of the dumpsites in Providenciales and in Grand Turk
  - removal of the undesired bulky waste on site in Providenciales and in Grand Turk
- Construction:
  - of the ISWR in Providenciales
  - of the new landfill and new facilities (CAS, TSS, CDW Centre and CP) in North Caicos (Bottle Creek)
  - of the new facilities in Grand Turk (CAS, TSS, CDW Centre and CP), Salt Cay (CAS, TSS, CDW Centre, and CF) and South Caicos (TS, CAS, TSS, CDW Centre, and CF)
- Operation:
  - of the dumpsite and ISWR in Providenciales
  - of the new landfill and new facilities (CAS, TSS, CDW Centre and CP) in North Caicos (Bottle Creek)
  - of the new facilities in Grand Turk (CAS, TSS, CDW Centre and CP), Salt Cay (CAS, TSS, CDW Centre, and CF) and South Caicos (TS, CAS, TSS, CDW Centre, and CF)
  - of the dumpsite in Grand Turk
- Decommissioning:
  - of the dumpsites in North Caicos (Kew), Middle Caicos, South Caicos, and Salt Cay

Types of mitigation, enhancement and compensation to be considered are described.
The assessment is based on the current available information and understanding of the Project using as a basis the Preliminary Design Report (May 2025, Rev. 02), and the environmental and social baseline of the Project's AoI described in Chapter 7 of this report.

The significance of the impacts is classified based on Fichtner's methodology described in Chapter 5.2 and which consists of the following 3 steps:

- Step 1: Distinguish positive and negative impacts
- Step 2: Dismiss non-significant impacts
- Step 3: Multi-criteria analysis for significant impacts pre- and post-mitigation:
  - Step 3(a): During rehabilitation
  - Step 3(b): During construction
  - Step 3(c): During operation
  - Step 3(d): During decommissioning

9.1 Step 1: Distinguish positive and negative Impacts

9.1.1 Positive impacts on the physical environment

The rehabilitation and/or closure of existing uncontrolled or poorly managed sites is expected to have positive impacts on the physical environment of the respective AoI.

The fire extinguishing exercises in Providenciales aim at ending the proliferation of the underground fires that have been causing pollutant **air emissions** and being the root cause for many complaints of the nearby residents. The same holds true for other sites that will be permanently closed and where presently garbage is burnt regularly, namely in Kew, Middle Caicos, South Caicos and Salt Cay.

Local **noise levels** caused by the operation of the sites will be eliminated after the decommissioning of the Kew, Middle Caicos, South Caicos and Salt Cay disposal sites.

The remediation of the Middle Caicos and Salt Cay sites will result in the full restoration of the sites with the removal of the deposited waste, with positive impacts on **land stability, erosion, morphology, and quality of the soil**. The foreseen decommissioning in Kew and South Caicos will not remove the waste (because it is buried too deep) but will provide a suitable cover and reshaping of the surface with positive impacts on land stability, erosion, and morphology.

At the Providenciales site, a positive effect may be felt in the **groundwater and surface water quality** as a consequence of better operational practices causing less decomposable waste to be landfilled and decreasing the formation of leachate.

9.1.2 Positive impacts on the biological environment

Generally, **wildlife** is expected to benefit from the closure and remediation of the sites, as the present operation is known to cause detrimental conditions in the natural habitats. For example, the liquid waste deposited at Providenciales is known to leach pathogens and contaminants from the landfill into the surrounding sea waters, impacting the local corals in Grace Bay and causing bleaching (see footnote 88 on Chapter 7.1.5.1).

Also, the soil, groundwater and surface water pollution, who will be reduced due to closure/better operational practices, will benefit fauna, flora and their habitats, including **protected areas**. The positive impacts may not be so evident in Providenciales and Grand Turk, where landfills will not be lined and will continue releasing leachate, albeit less after rehabilitation and improved operational practices.

9.1.3 Positive impacts on the human environment

The ISWMP project is expected to bring about a series of positive impacts on the human environment. Starting with an increase, even if limited, of **job, business and capacity building opportunities** in the better managed sites. An effort shall be made to source workers, including women, youth and persons living with disabilities, materials and service providers locally, including from surrounding communities, or nationally, as this will help minimizing negative impacts on community stability and cohesion and anti-social behaviour, as well as enhancing the positive economic and educational effects.

In this context, it is worth highlighting that socio-economic surveys participants were asked about their interest in working on eventually available solid waste management opportunities. In Providenciales, interest was very limited. Only a couple of individuals, both Haitian nationals from economically vulnerable areas, expressed willingness to work in the sector. Nonetheless, some respondents mentioned potential business ideas, such as recycling or composting. In contrast, responses from Grand Turk reflected a more balanced perspective with the level of interest depending on the type of work involved; roles in landfill operations, waste collection, and recycling were perceived as being more appealing. The importance of training was highlighted, and several business opportunities were mentioned related to recycling ventures.

Formal waste sector jobs may be created to replace unsafe informal livelihoods. This transition will be managed via a Livelihood Restoration Plan as further described in Chapter 9.1.4.

The improvement measures to be taken at the Providenciales site will provide positive **human rights** impacts on the surrounding communities, specifically on those female-headed households who expressed the hardships they have experienced (negative health impacts on them and their children) and increasing burden of health care.

The Project should result in the improvement in the **health and wellbeing** of the directly affected population in Providenciales (Wheeland Phase 1 and 2), who will be less exposed to odours and gradually freed from exposure to burning smoke from the Providenciales site. This should result in residents being able to open windows, allow children to play outdoors and be at reduced risk of respiratory illnesses. The same is valid for the other sites, where either improved practices or the shutting down of the sites will bring benefits to the health and wellbeing of nearby inhabitants and visitors.

Additionally in Providenciales, a considerable volume of approximately one million cubic meters is still available if the site is properly remediated and then operated in accordance with a designed filling plan. This volume, compared with the waste generation estimates and considering the foreseen diversion of the waste fractions as part of improved operational procedures, will allow for MSW disposal for the next 20-year period without needing to further expand the landfill laterally. This reduces the **physical footprint** of the site which is nowadays already quite close to the nearby houses.

By modernizing the sites, and only if usage of PPE is enforced, **occupational health & safety** will see improvements as well in comparison with the present situation, where workers are exposed to smoke, unproperly stored dangerous materials, decomposing organic waste, faults on the ground, scavenging animals, etc.

The foreseen decommissioning in Kew and South Caicos will not remove the waste (because it is buried too deep) but will provide a suitable cover and reshaping of the surface. Because the underlying waste will not allow for the construction of rigid and permanent structures on top, both sites shall be used for green and recreational areas only. This causes an enhancement of the **ecosystem services** of the island, allowing a presently degraded area to be used for recreational, cultural, and touristic activities. The DECR states that the best option is to replant the sites with native vegetation while controlling invasive species of plants, and stated their availability to advise the rehabilitation contractor on the matter. Attention shall be given to the need to test the soil quality before implementing future uses of the sites (see Chapter 13.1).

Generally, a positive impact on **tourism** is expected, resulting from the reduction of odours, noise, and visual intrusion, as well as the marketing-added value of a country that places importance on the waste management, cleanliness, and wellbeing of its citizens and visitors.

The ISWMP foresees a set of **capacity building** measures for the GOTCI agencies and other key stakeholders (these measures are planned and implemented by the Main Consultant are therefore not discussed in detail in the ESIA). When implemented, the measures will allow for a stronger and better-advised waste management, monitoring and compliance enforcing by the responsible stakeholders.

9.1.4 Enhancement measures for positive impacts

For the ISWMP to bring the desired benefits, certain base conditions need to be guaranteed. Besides the logical requirements of budget and political will, other actions shall be undertaken to assure a successful implementation of the Project. Certain important topics have been discussed by the Main Consultant on their deliverables, with focus on the Inception Report (Rev. 2.0, July 2023).

Campaign of environmental education and awareness

The ESIA recommends a widespread campaign of environmental education and awareness to be launched across the islands. This campaign would aim to inform communities about the Project's goals, the importance of managing their waste in a compatible way with the improved waste management system of the islands, and how individuals can actively participate in building a cleaner, healthier environment.

The campaign would use a mix of communication tools—such as radio, social media, school programs, and community events—to reach diverse audiences, including residents, youth, businesses, and informal workers. Activities would include interactive workshops, recycling drives, educational materials in multiple languages, and partnerships with local stakeholders and artists to create engaging content.

A tailored focus shall be placed in campaigning in the locations where existing dumpsites will be decommissioned, i.e., in Kew, Middle Caicos and South Caicos. This is to avoid that the closed/rehabilitated sites continue being illegally used to deposit waste. At the same time, prohibition signs are recommended to be placed at the sites.

Alignment with TCI's tourism marketing strategy

The GOTCI can use the ISWMP as an opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may entail an increase in emissions and disturbances on the one hand, on the other hand they provide long-term solutions for the unfavourable waste management situation in the island with a net positive outcome for the environment.

If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.

Capacity building within authorities

Institutional strengthening, capacity building and awareness for GOTCI agencies and other key stakeholders is one of the key components of the ISWMP that has been developed by the Main Consultant. The ESIA recommends pursuing this measure and build capacity within central but also relevant local authorities and stakeholders for long-term planning, enforcement, and service delivery.

This measure involves equipping central but also district-level institutions with the skills, tools, and resources needed to manage solid waste systems effectively over time. It includes training staff in areas such as waste management planning, environmental monitoring, budgeting, data collection, and community engagement.

Strengthening enforcement capabilities ensures that regulations—such as illegal dumping bans or recycling mandates—are consistently applied, while improving service delivery means ensuring regular, reliable waste collection and facility operations. Additionally, fostering inter-agency coordination and creating clear institutional roles can help avoid overlaps and gaps, making the system more resilient and responsive to future challenges.

Support the development of local markets for compost, recyclables, and construction material reuse

Supporting the development of local markets for compost, recyclables, and construction material reuse means creating the conditions for these materials to be economically valuable and widely used within the country, rather than treated as waste. This has been one of the issues that stakeholders interviewed for the ESIA showed interest in. This could involve:

- Stimulating demand by encouraging farmers and landscapers to use locally produced compost through, and as feasible, subsidies, aiming at specific quality standards of the produced compost, and demonstration projects.
- Creating supply chains for recyclables by connecting collection points, sorting facilities, and buyers (e.g., for plastics, metals, glass) and ensuring consistent quality and volume.
- Promoting reuse of construction and demolition materials (like crushed concrete or salvaged wood) in public works like land reclamation, housing, and infrastructure projects through procurement policies and technical guidelines.
- Providing incentives such as tax breaks, grants, or low-interest loans for businesses that process or use these materials.
- Raising public awareness about the environmental and economic benefits of buying recycled or reused products.

To make sure that no unsafe/contaminated materials are reused in local markets some preventive measures need to be undertaken:

- The EHD or a specialized agency shall provide the operation contractors at the landfill, dumpsites, transfer and storage stations (where users can potentially collect materials for reusage) easy-to-understand guidelines on how to identify potentially hazardous materials.
- The operation contractors shall label hazardous material and ensure they are not taken by users and are given the adequate final destination according to the ISWMP
- Materials that haven't been tested shall be storied in secure areas until they can be screened for safety.
- The EHD shall educate the community about safety concerns and the importance of proper handling of salvaged materials.

Incentives to the waste generators

It is suggested to provide incentives to the commercial waste generators (hotels, supermarkets) to separate the waste into usable fractions by imposing a significantly higher gate fee for the landfill than for delivery to Civil Amenity Sites or Temporary Storage Sites. A monitoring mechanism to track whether the fee structure leads to increased use of CAS/TSS instead of landfill or unregulated disposal is proposed within the Environmental and Social Monitoring Programme (Chapter 11.19).

Strengthening transparency in recycling services

During stakeholder consultations, some participants referenced TCI Waste Disposal Services, a private entity offering recycling services on a fee-for-service basis. Both community members and representatives from the dumpsite management expressed concerns regarding the credibility and transparency of these services. Specifically, there was scepticism that separated recyclable materials collected by the service provider were ultimately disposed of at the dumpsite rather than being properly recycled. This perception of mistrust highlights a critical need for greater accountability and transparency in the recycling process.

To address these concerns and enhance environmental performance, the Project is encouraged to implement measures aimed at improving confidence in recycling practices. These include:

- Mandatory process disclosure: Service providers shall be required to document and share clear information on the handling, processing, and final destination of recyclable materials.
- Independent verification: Third-party audits by the EHD shall be introduced to confirm that recyclables are processed according to agreed standards and not redirected to landfill sites.
- Public reporting and communication: Regular reports on recycling outcomes shall be made publicly accessible, detailing quantities collected, processed, and reused or exported.
- Stakeholder oversight: A community-based monitoring mechanism shall be established to review recycling practices and provide feedback, fostering trust and accountability. This can be incorporated into the General Public Grievance Mechanism proposed in Chapter 12.5.1.
- Compliance and enforcement: Contracts with recycling service providers shall include transparency obligations and penalties for non-compliance.

Biodiversity off-set measures

The Middle Caicos dumpsite is located within the Middle Caicos Forest Key Biodiversity Area. As part of the decommissioning of the Middle Caicos site, the area shall be replanted with local indigenous species from the wider area. This will enhance the quick recovery of the area to the conditions of the remaining Middle Caicos Forest, potentially deter a renewed illegal waste deposition and compensate for the years of disturbance from the illegal uncontrolled dumping activities.

The site could in this form be used as a good-practices example by the GOTCI for environmental education purposes.

Leveraging cultural assets for socio-economic development

The proximity of many ISWMP sites to proposed or designated Areas of Historical Interest and Historic Attractions presents a unique opportunity to link heritage tourism with waste management initiatives, reinforcing the message of sustainability and cultural preservation of the Project.

Enhancing waste management near historical sites will prevent littering, chemical leakage, and physical damage to cultural assets, thereby safeguarding their integrity and visual appeal. At the same time, the ISWMP can serve as a platform for community-oriented programs that integrate heritage conservation with socio-economic development. These programs may include cultural interpretation initiatives that educate visitors and residents on the connection between sustainability and heritage protection, creating awareness and fostering responsible tourism.

Additionally, the ISWMP can generate local employment opportunities in waste handling, recycling, and site maintenance, while supporting small businesses such as eco-friendly souvenir shops and local craft markets.

These measures will not only protect historical sites but position the Project as a model for integrating environmental management with cultural heritage enhancement.

Develop inclusive livelihood transition plans for vulnerable groups

Developing inclusive livelihood transition plans for vulnerable groups affected by the ISWMP—such as informal waste pickers—is essential to ensure that no one is left behind as waste systems are modernized.

This process begins with identifying and engaging these individuals to understand their current roles, needs, and aspirations. Tailored training programs can then equip them with new skills in areas like recycling, composting, facility operations, or small business management, enabling them to transition into formal employment or entrepreneurship. By integrating these individuals into the formal waste management system and recognizing their contributions, the Project not only improves environmental outcomes but also promotes social equity and economic inclusion.

Where opportunities for support to related NGOs arise, these shall be considered.

The ESIA recommends the preparation of a Livelihood Restoration Plan to further define these measures under respect of the laws of the TCI and the social safeguards of the CDB.

9.2 Step 2: Dismiss Non-Significant Impacts

The IESCs are not affected equally in all Project sites and during all types of activities. When IESCs are not expected to be significantly impacted (i.e., they will be subject of no impacts or non-significant impacts), they are excluded from the impact assessment. In some cases, monitoring measures will still apply. Table 9-1 shows an overview of the dismissed IESCs.

Table 9-1: Dismissed IESCs for each ISWMP activity and site [188]

Site	Dismissed IESC	Justification/notes
Rehabilitation		
Providenciales	#3: Groundwater quality	Rehabilitation works are not expected to cause interference with the groundwater above the present baseline
	#4: Surface water quality	The Wheeland Pond is located almost 1 km away from the site and is not expected to be affected by any rehabilitation related emissions
	#5: Soil quality	Rehabilitation works are not expected to cause interference with the soil above the present baseline
	#6: National Natural Protected Areas	The Wheeland Pond is located almost 1 km away from the site and is not expected to be affected by any rehabilitation related emissions
	#7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs	None within the AoI
	#8: Fauna & Flora	The Wheeland Pond is located almost 1 km away from the site and is not expected to be affected by any rehabilitation related emissions
		The scavenging birds feeding at the site usually do not get scared away by heavy machinery or noise and are expected to remain during the whole rehabilitation period.
	#10: Areas of Historical Interest (HA)	None within the AoI
	#11: Historic Attractions	
	#13: Private assets	No private assets to be affected
Grand Turk	#3: Groundwater quality	Rehabilitation works are not expected to cause interference with the groundwater above the present baseline
	#4: Surface water quality	Rehabilitation will consist of simple works that are not foreseen to add further impacts to the presently degraded baseline of the salinas
		The coastal waters are not expected to be affected by any rehabilitation related emissions
	#5: Soil quality	Rehabilitation works are not expected to cause interference with the soil above the present baseline
	#6: National Natural Protected Areas	Rehabilitation will consist of simple works that are not foreseen to add further impacts to the presently degraded baseline of the salinas
	#7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs	
	#8: Fauna & Flora	The Salinas are not expected to be affected by any rehabilitation related emissions above the present baseline
		The scavenging birds feeding at the site usually do not get scared away by heavy machinery or noise and are expected to remain during the whole rehabilitation period.
	#10: Areas of Historical Interest (HA)	Rehabilitation works are not expected to cause any impacts to the presently degraded baseline of the salinas nor to the relatively distant HM Prison
	#11: Historic Attractions	
	#12: Livelihoods	No waste pickers are reported at the site
	#13 - Private assets	No private assets will be affected

[188] Groundwater, surface water, air quality, biodiversity and social factors monitoring throughout the different ISWMP stages is suggested in the ESMoP.

Site	Dismissed IESC	Justification/notes
Construction		
Providenciales	#5: Soil quality	The new facilities will be located within a site without particular ecological value nor agricultural value, and therefore the losses of soil below the facilities and eventual impacts in surrounding soil areas are not significant
	#6: National Natural Protected Areas	The Wheeland Pond is located almost 1 km away from the site and is not expected to be affected by any construction related emissions
	#7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs	None within the AoI
	#8: Fauna & flora	The Wheeland Pond is located almost 1 km away from the site and is not expected to be affected by any construction related emissions
		The scavenging birds feeding at the site usually do not get scared away by heavy machinery or noise and are expected to remain during the whole construction period.
	#10: Areas of Historical Interest (HA)	None within the AoI
	#11: Historic Attractions	
	#12: Livelihoods	Impacts on livelihoods are delivered during rehabilitation
	#13: Private assets	No private assets to be affected
North Caicos (Bottle Creek)	#6: National Natural Protected Areas	The AoI of the Bottle Creek disposal site does not intersect any accepted nor proposed PA, and no international protected area
	#7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs	
	#12: Livelihoods	No waste pickers are reported at the site
	#13: Private assets	No private assets will be affected
South Caicos	IESC #7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs	None within the AoI
	#10 - Areas of Historical Interest (HA)	Construction works are not foreseen to have any impact on the existing HA of Boiling Hole due to their relatively simple, brief and localized nature and the distance of almost 1,5 km to this area
	#11: Historic Attractions	None within the AoI
	#12: Livelihood	Impacts previously delivered during decommissioning of the site
Grand Turk	#5: Soil quality	The new facilities will be located within a site without particular ecological value nor agricultural value, and therefore the losses of soil below the facilities and eventual impacts in surrounding soil areas are not significant
	#12: Livelihoods	No waste pickers are reported at the site
	#13: Private assets	No private assets will be affected
Salt Cay	#5: Soil quality	The new facilities will be located within the EHD compound without particular ecological value nor agricultural value, and therefore the losses of soil below the facilities and eventual impacts in surrounding soil areas are not significant
	#11: Historic Attractions	None within the AoI
	#12: Livelihoods	No waste pickers reported at the site
	#13: Private assets	No private assets will be affected

Site	Dismissed IESC	Justification/notes
Operation		
Providenciales	#7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs	None within the AoI
	#10: Areas of Historical Interest (HA)	None within the AoI
	#11: Historic Attractions	
	#12: Livelihoods	Impacts on livelihoods are delivered during rehabilitation
	#13: Private assets	No private assets to be affected
North Caicos (Bottle Creek)	#4: Surface water quality	The coastal waters are located at the far end of the AoI, almost 1.5 km away from the site and are not expected to be affected by any operation related emissions
	#6: National Natural Protected Areas	The AoI of the Bottle Creek disposal site does not intersect any accepted nor proposed PA, and no international protected area
	#7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs	
	#10: Areas of Historical Interest (HA)	None within the AoI
	#11: Historic Attractions	
	#12: Livelihoods	No waste pickers are reported at the site
	#13: Private assets	No private assets will be affected
South Caicos	IESC #7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs	None within the AoI
	#10 - Areas of Historical Interest (HA)	Operation works are not foreseen to have any impact on the existing HA of Boiling Hole due to their relatively simple and localized nature and the distance of almost 1,5 km to this area
	#11: Historic Attractions	None within the AoI
	#12: Livelihood	Impacts previously delivered during decommissioning of the site
Grand Turk	#12: Livelihoods	No waste pickers are reported at the site
	#13: Private assets	No private assets will be affected
Salt Cay	#11: Historic Attractions	None within the AoI
	#12: Livelihoods	No waste pickers reported at the site
	#13: Private assets	No private assets will be affected
Decommissioning		
North Caicos - Kew	#1: Air Quality and Odour	Decommissioning works are not expected to cause significant air and odour emissions
	#3: Groundwater quality	Decommissioning works are not expected to cause interference with the groundwater
	#4: Surface water quality	No surface water features within the AoI
	#5: Soil quality	Decommissioning works are not expected to cause interference with the soil above the present baseline
	#6: National Natural Protected Areas	Decommissioning works are not foreseen to have any impact on the Cottage Pond Nature Reserve nor the Ramsar site due to their relatively simple and localized nature and the distance to these areas
	#7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs	
	#8: Fauna & Flora	Decommissioning works are not expected to cause interference with fauna and flora in the area due to their localized nature
	IESC#9: Ecosystem Services	No ecosystem services identified within the Kew AoI

Site	Dismissed IESC	Justification/notes
	#10: Areas of Historical Interest (HA)	Rehabilitation works are not expected to cause any impacts to the Wades Green and Teren Hill Area of Historical Interest nor to the Wades Green Plantation due to their localized nature
	#11: Historic Attractions	
	#13: Private assets	No private assets will be affected
Middle Caicos	#1: Air Quality and Odour	Decommissioning works are not expected to cause significant air and odour emissions
	#3: Groundwater quality	Decommissioning works are not expected to cause interference with the groundwater
	#5: Soil quality	Decommissioning works are not expected to cause interference with the soil above the present baseline
	#6: National Natural Protected Areas	Decommissioning works are not foreseen to have any impact on the North, Middle and East Caicos Nature Reserve due to their relatively simple and localized nature and the distance to this area
	IESC#9: Ecosystem Services	No impacts expected on the ecosystem services identified within the AoI due to their distance to the site and the relatively simple, brief and localized nature of the works
	#10: Areas of Historical Interest (HA)	None within the AoI
	#11: Historic Attractions	
	#12: Livelihoods	No waste pickers are reported at the site
	#13: Private assets	No private assets will be affected
South Caicos	#1: Air Quality and Odour	Decommissioning works are not expected to cause significant air and odour emissions
	#3: Groundwater quality	Decommissioning works are not expected to cause interference with the groundwater
	#5: Soil quality	Decommissioning works are not expected to cause interference with the soil above the present baseline
	#7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs	None within the AoI
	#10: Areas of Historical Interest (HA)	Decommissioning works are not foreseen to have any impact on the existing HA of Boiling Hole due to their relatively simple, brief and localized nature, and the distance of almost 1,5 km to this area
	#11: Historic Attractions	None within the AoI
Salt Cay	#1: Air Quality and Odour	Decommissioning works are not expected to cause significant air and odour emissions
	#2: Noise	Noise generated by decommissioning works is not expected to affect the surrounding areas due to the distance to protected areas and living areas
	#3: Groundwater quality	Decommissioning works are not expected to cause interference with the groundwater
	#5: Soil quality	Decommissioning works are not expected to cause interference with the soil above the present baseline
	#6: National Natural Protected Areas	Decommissioning works are not foreseen to have any impact on the proposed protected area Salt Cay Nature Reserve due to their relatively simple, brief and localized nature and the distance of 300 m to this area

Site	Dismissed IESC	Justification/notes
	#7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs	Decommissioning works are not foreseen to have any impact on the KBA-IBA Salt Cay Creek and Salinas due to their relatively simple, brief and localized nature and the distance of to this area (located 300 m to the west and 900 m to the north of the site)
	#8: Fauna & Flora	Decommissioning works are not expected to cause interference with fauna and flora in the area due to their localized nature
		Donkeys feeding at the site are domesticated and are expected to be provided with other food sources by their owners
	#9: Ecosystem Services	No impacts expected on the ecosystem services identified within the AoI due to the relatively simple, brief and localized nature of the works
	#10: Areas of Historical Interest (HA)	Decommissioning works are not foreseen to have any impact on the proposed Salt Cay HA due to their relatively simple, brief and localized nature and the distance of 900 m to this area
	#11: Historic Attractions	None within the AoI
	#12: Livelihoods	No waste pickers reported at the site
	#13: Private assets	No private assets will be affected

9.3 Step 3 (a): Multi Criteria Analysis - Impacts and Mitigation Measures During Rehabilitation

Rehabilitation works will be performed in two of the ISWMP sites: Providenciales and Grand Turk. A brief description and duration of the rehabilitation works, as well as the significantly affected IESCs is presented in the Table 9-2.

Table 9-2: Description of the rehabilitation activities and affected IESCs

Site	Rehabilitation activities	Duration	Significantly affected IESCs
Providenciales	▪ Fire extinguishing as priority and preliminary task ▪ Reshaping and rearrangement of the waste pile ▪ Removal of the undesired bulky waste on site	Ten (10) months	▪ IESC#1: Air Quality and Odour ▪ IESC#2: Noise ▪ IESC#9: Ecosystem Services ▪ IESC#12: Livelihoods ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety
Grand Turk	▪ Reshaping and rearrangement of the waste pile ▪ Removal of the undesired bulky waste on site	Three (3) months	▪ IESC#1: Air Quality and Odour ▪ IESC#2: Noise ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety

The impact assessment on these IESCs is shown in the following sections.

9.3.1 IESC#1: Air quality and odour (Providenciales and Grand Turk)

The rehabilitation activities will be localized and will be carried out within the dumpsite boundaries. However, impacts on air quality and odour will cross the borders of the sites and may affect nearby communities and users of the surrounding areas.

Dust and gases like carbon monoxide (CO), sulfur dioxide (SO_2), and nitrous oxide (NO) are expected to be generated at the sites due to circulation of the necessary machinery for the fire extinguishing activities (in Providenciales), the reshaping and rearrangement of the waste pile and the removal of the bulky waste (on Providenciales and Grand Turk).

Additionally high levels of dust and smoke odour are expected to be released during excavations to reach the underground fire spots and due to pouring of water to extinguish the fires in Providenciales (Figure 9-1). This will result in temporary negative impacts on air quality and odour that can be significant depending on the meteorological conditions (wind direction / wet or dry weather), the age/condition of the vehicles and machinery, and the timing of rehabilitation activities, among others.



Source: Main Consultant, February 2024

Figure 9-1: Significant emissions of dust during the 2024 fire extinguishing activities at the Providenciales dumpsite

The impacts on air quality negatively affect the health and well-being of local inhabitants and users of the nearby areas, especially those in the Wheeland communities (the closest houses are merely 160 m away), those in Cockburn Town in Grand Turk (the closest houses are merely 130 m away) and construction workers (impacts on workers are treated later on the chapter related to OHS impacts). All the above impacts are anticipated to be temporary as they are limited to the rehabilitation period: ten (10) months in Providenciales and three (3) months in Grand Turk.

The impact is classified as local because the emissions are at the ground-level and will therefore not spread beyond a few hundred meters at a maximum; the duration is short-term because it is an activity that lasts for less than 1 year; the frequency is repeatedly because it will happen throughout the whole rehabilitation period; the impact is reversible because baseline conditions will revert back after rehabilitation works are completed; probability is definite because the impact will definitely occur and is unavoidable; intensity is high.

Given the above, the pre-mitigation impact is considered of medium magnitude. Considering that the sensitivity of the IESC "air quality and odour" is classified as medium, the impacts' significance is classified as medium. Mitigation and avoidance measures are required to reduce the magnitude of the impact.

MAGNITUDE - Impacts on air quality and odour
REHABILITATION| PRE-MITIGATION | PROVIDENCIALES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Definite	-4
Intensity	High	-3
Sum		-13
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The following identifies the suggested mitigation measures to be applied by the Contractor during the rehabilitation phase:

- Regular watering of rehabilitation areas when dust levels are expected to be high (dry and windy days)
- Trucks and vehicles crossing housing areas shall reduce their speed to a maximum of 30 km/h and traffic speed on unpaved access roads shall be reduced to 15 km/h
- Optimization of transportation management to avoid needless truck drives
- Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase
- Prohibit burning of waste

Because the activities above, even when correctly implemented, cannot eliminate completely the air emissions, it becomes necessary to reduce the impact at the receptors. It is in this sense important to continuously coordinate and inform the nearby communities of the start and duration of any expected high dust generating activities (particularly the fire extinguishing exercises) so people can prepare by closing windows and remaining indoors, for example.

The mitigation measures may allow reducing the impact's probability to possible and its frequency to seasonal only. Therefore, the magnitude post-mitigation is reduced to low. Based on the significance matrix, the significance of the residual impact (impact post-mitigation) is classified as low.

MAGNITUDE - Impacts on air quality and odour
REHABILITATION| POST-MITIGATION | PROVIDENCIALES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Seasonal	-3
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.3.2 IESC#2: Noise (Providenciales and Grand Turk)

During the rehabilitation phase, trucks and excavation equipment, as well as the related activities will produce a temporary significant increase in noise disturbance. Trucks transporting bulky waste outside the sites will also create some noise along access routes.

The impacts on noise negatively affect the health and well-being of local inhabitants and users of the nearby areas, especially those in the Wheeland communities in Providenciales (the closest houses are merely 160 m away), those in Cockburn Town in Grand Turk (the closest houses are merely 130 m away) and construction workers.

The impacts are anticipated to be temporary and of short-term nature as they are limited to the rehabilitation period and are reversible as baseline conditions will be restored upon completion of works. The intensity of noise impacts may reach high levels depending on the activity undergoing.

Given the above, the pre-mitigation impact is considered of medium magnitude. Considering that the sensitivity of the IESC "noise" is classified as medium, the impacts' significance is classified as medium. Mitigation and avoidance measures are required to reduce the magnitude of the impact.

MAGNITUDE - Impacts on noise
REHABILITATION| PRE-MITIGATION | PROVIDENCIALES & GRAND TURK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Definite	-4
Intensity	High	-3
Sum		-13
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



Mitigation measures proposed during rehabilitation activities concerning noise impact include:

- Plan rehabilitation activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)
- Trucks and vehicles crossing housing areas shall reduce their speed to a maximum of 30 km/h and traffic speed on unpaved access roads shall be reduced to 15 km/h
- The Contractor must undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible
- Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase

Because the activities above, even when correctly implemented, cannot eliminate completely the noise emissions, it becomes necessary to reduce the impact at the receptors. It is in this sense important to continuously coordinate and inform the nearby communities of the start and duration of any expected high noise generating activities so people can prepare by closing windows and remaining indoors, for example.

The mitigation measures may allow reducing the impact's probability to possible and its frequency to seasonal only. Therefore, the magnitude post-mitigation is reduced to low. Based on the significance matrix, the significance of the residual impact (impact post-mitigation) is classified as low.

MAGNITUDE - Impacts on noise
REHABILITATION| POST-MITIGATION | PROVIDENCIALES & GRAND TURK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Seasonal	-3
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.3.3 IESC#9: Ecosystem Services (Providenciales and Grand Turk)

The Wheeland Pond provides opportunities for ecotourism (cultural ecosystem service). Also, the DPLUS094 workshop identified places around the site as places for "marine activities" (cultural services). In Grand Turk provisional services (flood protection) are provided by the Salinas, and "marine activities" are also present in the surroundings of the dumpsite.

The increase in smoke and dust emissions from the fire extinguishing activities may further hinder eco-tourism opportunities within the Providenciales AoI. The significance of this impact is classified as medium. It is nonetheless important to highlight that this activity is temporary and will ultimately bring relevant benefits.

MAGNITUDE - Impacts on ecosystem services
REHABILITATION| PRE-MITIGATION | PROVIDENCIALES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-12
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The measures defined previously for mitigation of smoke, dust and noise emissions from the rehabilitation works apply to this IESC as well.

If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7.

Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.

The significance post-mitigation is assessed as low.

MAGNITUDE - Impacts on air ecosystem service
REHABILITATION| POST-MITIGATION | PROVIDENCIALES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Seasonal	-3
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.3.4 IESC#12: Livelihoods (Providenciales)

The Providenciales dumpsite appears to provide livelihoods for two groups of persons: migrants and TCI islanders. The ESIA team identified a vulnerable population group among these composed by members of the Haitian migrant community that regularly visit the site to collect and commercialize some waste fractions, denominated therefore commonly as “waste pickers”.

The waste pickers, who are mostly men and may be regular or irregular migrants, make at least part of their livelihood from the site. Members of the TCI community also benefit from the economic activity thereof generated.

Preliminary data presented to the Consultants by the Informal Housing Settlement Unit of the Government, suggested that 75,5% of Haitian migrants resident in TCI had some form of documentation or regularity, while the 24,5% may be considered irregular.

The new operational practices at the site already partially began with the engagement of a new contractor for managing the site in May 2024. The site's fence has been mended, impeding access to anyone except staff of the management. Therefore, a loss of a source of livelihood for this vulnerable group has already been delivered.

Presently, the spatial extent of the impact cannot be safely established, as the living areas of the affected persons are not clear. As a conservative approach, impacts are considered to be delivered at a municipal level (5-10 km from the site). The activity delivering the impact (rehabilitation) is of short term (10 months), but the impact is irreversible without mitigation. The probability of the impact happening is definite, as the impact already happened. Unknown at this stage is the intensity, i.e., how far do waste pickers depend on this activity as their only, small or main source of livelihood. Also unknown is the level of impact on the secondary parallel economy. As a conservative approach, a "high" intensity pre-mitigation is considered.

MAGNITUDE - Impacts on livelihoods
REHABILITATION| PRE-MITIGATION | PROVIDENCIALES

Criteria	Classification	Scoring
Spatial extent	Municipal	-2
Duration	Short term	-1
Frequency	Repeatedly	-4
Ability to recover	Irreversible	-4
Probability	Definite	-4
Intensity	High	-3
Sum		-18
Magnitude of the impact		High
vs		
Sensitivity of the receptor		High



The most urgent and important measures to be applied to minimize the already delivered impacts is the engagement of a social specialist to prepare a Livelihood Restoration Plan with the core purpose to help waste pickers transition from their informal, precarious work to more stable, dignified, and sustainable sources of income. This measure goes in line with the suggestion of the Main Consultant for the GOTCI to prepare and apply an Informal Sector Inclusion Plan.

The plan shall begin by understanding the specific needs and vulnerabilities of the affected community. From there, it shall aim to provide income support, skills training, and access to new job opportunities—whether in the formal waste management system (specifically, the Providenciales renovated site or new facilities), or entirely new sectors.

It needs to be considered that the employment of undocumented persons in the waste management system may not be possible, for what the negative impacts may become permanent for some of the waste pickers:

In this context, it is key to note that the ILO states that "irregularity does not mean that migrant workers have no rights or that their rights should not be respected. Ensuring respect of human rights, including labour rights, of all migrant workers, is critical to tackling irregular labour migration, and must be a basis for effective management and cooperation at all levels. Social partners play an essential role in designing and implementing measures relating to the prevention of abusive conditions associated with irregular labour migration.[189]"

Crucially, the LRP is not something to be done *to* waste pickers, but *with* them. Their voices, experiences, and aspirations should shape the plan from the start. And once implemented, the plan should be monitored and adapted over time. Chapter 13.3 suggests an annotated table of contents for a tailored LRP for the Providenciales dumpsite.

Although only one or two female pickers were seen on the sites, their circumstance have to be separately considered. Their specific circumstances, roles and vulnerabilities must be assessed to ensure that Project interventions address their unique needs and promote equitable participation and benefits.

Also the Feasibility Study suggests the organisation of training for recyclers and sorters at the sites, and providing corresponding job opportunities. This would also allow reducing landfill dependency and development of the local recycling and circular economy sector.

Any measures to be defined in the LRP shall consider legal provisions of the TCI and the CDB social safeguards.

In an ideal scenario where the LRP is prepared and applied as above described to all affected waste pickers, these would, in one or another form, come out of the situation benefiting from the delivered impacts. In this case, the outcome would be an impact with medium significance.

MAGNITUDE - Impacts on livelihoods
REHABILITATION| POST-MITIGATION | PROVIDENCIALES

Criteria	Classification	Scoring
Spatial extent	Municipal	-2
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		-7
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		High



[189] https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@ed_protect/@protrav/@migrant/documents/publication/wcms_832915.pdf

9.3.5 IESC#14: Occupational Health & Safety (Providenciales and Grand Turk)

Rehabilitating a dumpsite in poor condition, especially one affected by underground fires (case of Providenciales), presents a complex and hazardous environment for workers. The absence of proper waste management means that all types of garbage—organic, industrial, medical, and electronic—are mixed and scattered across the site, creating unpredictable and dangerous conditions.

One of the most immediate threats in Providenciales is the presence of underground fires. These fires can smolder for long periods and may reignite or flare up when exposed to oxygen during excavation. Workers risk burns, sudden flare-ups, and even explosions, particularly if flammable gases have accumulated in pockets beneath the surface. In Providenciales, methane or hydrogen are not expected because there is no anaerobic decomposition at the site; however, carbon monoxide is found beneath the surface and is an indicator of the presence of underground fires. Putting out the fires implies a significant release of dust and smoke to which workers are directly exposed.

In Grand Turk no underground fires have been testified during elaboration of the Feasibility Study and the Preliminary Design by the Main Consultant.

In addition to fire hazards, both sites likely contain toxic substances. As workers dig through layers of decomposing waste, they may be exposed to harmful chemicals, heavy metals, and volatile organic compounds. These substances can be inhaled or absorbed through the skin, leading to acute or chronic health issues if workers are not wearing PPE and enter in direct contact with the waste. Leachate, the liquid that drains from decomposing waste, can also be highly corrosive and may contain pathogens or carcinogens.

Biological hazards are another concern on both sites. Decomposing organic matter can harbor bacteria, viruses, and fungi, while improperly disposed medical waste may carry infectious agents. The presence of disease vectors such as rats, flies, and mosquitoes further increases the risk of illness.

The physical environment of the dumpsites is inherently unstable in Providenciales. The waste deposit has in here a very irregular surface, making the ground uneven or prone to collapse due to buried voids or shifting waste layers. Excavation equipment can become unstable, and workers may be injured by falls.

Workers may also be vulnerable to psychological stress and physical strain from working in an unsafe environment. The combination of heat, toxic exposure, physical exertion, and mental pressure can lead to fatigue, anxiety, and long-term health consequences.

Injuries from lifting, carrying, or moving heavy materials, heat exhaustion from working in high temperatures, and sun burns are other associated occupational health & safety risks in both sites.

Impacts on occupational H&S are negative and may be significant. Without proper evaluation and implementation of safety rules to reduce risks of accidents, the impacts will most probably happen repeatedly with high intensity. In case of serious accidents, worker(s) might not be able to fully recover. Given this, impacts pre-mitigation are considered of high magnitude. Considering that the sensitivity of the receptor is classified as medium, the impacts' significance is classified as high.

MAGNITUDE - Impacts on OHS REHABILITATION| PRE-MITIGATION | PROVIDENCIALES & GRAND TURK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Repeatedly	-4
Ability to recover	Irreversible	-4
Probability	Probable	-3
Intensity	High	-3
Sum		-16
Magnitude of the impact		High
vs		
Sensitivity of the receptor		Medium



To mitigate these impacts, it is essential to conduct thorough site assessments and prepare and implement Rehabilitation and OHS Risk Management Plans before the rehabilitation works begin/continue in both sites. Details of these plans are presented in the Environmental and Social Management Plan in Chapter 11.3 of this report. Application of these plans will allow reducing the significance of the impacts delivered to low.

MAGNITUDE - Impacts on OHS REHABILITATION| POST-MITIGATION | PROVIDENCIALES & GRAND TURK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Medium	-2
Sum		-8
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.3.6 IESC#15: Community Health & Safety (Providenciales and Grand Turk)

The proximity of the Providenciales site to the Wheeland communities and of the Grand Turk site to the Cockburn Town enhances the possibility of exposure of the population and visitors to health and safety hazards. Both sites are nowadays fenced, which hinders access of civilians during the works. But limiting the direct access does not eliminate the potential for off-site impacts.

The hazards related to air emissions, odour, and noise have been discussed in the previous items.

Other hazards for the community members and visitors can result from rehabilitation-related traffic. There will be an increase in traffic flow for transporting bulky waste outside the sites, as well as for transporting of equipment and machinery necessary for the works. Risk of traffic accidents can increase in the road network that connects with the dumpsites.

In the event of a fire escalation or explosion, there is a risk of embers or toxic smoke reaching Wheeland and Cockburn Town, especially if the wind carries them beyond the fence. In extreme cases, if the fire spreads to nearby vegetation or structures, it could pose a direct threat to homes and infrastructure.

Impacts on CHS are negative and may be significant. These are anticipated to happen locally, based on a short-term duration activity (<1 year rehabilitation works), possible and reversible. Given this, impacts pre-mitigation are considered of medium magnitude. Considering that the sensitivity of the receptor is classified as medium, the impacts' significance is classified as medium. Mitigation measures are required and suggested below.

MAGNITUDE - Impacts on Community H&S
REHABILITATION | PRE-MITIGATION | PROVIDENCIALES & GRAND TURK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	High	-3
Sum		-12
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The following identifies the mitigation measures related to CHS during rehabilitation of the Providenciales and the Grand Turk sites:

- Because the sites are fenced, community members or visitors are not expected to get close enough resulting in any hazards. To make sure this does not happen, the fences need to be kept in good conditions, and be repaired if damages or vandalism occur
- Induction to the workers, especially drivers to follow the traffic rules e.g. speed limit; this includes a maximum of 30 km/h when crossing housing areas and of 15 km/h on unpaved access roads
- Development of accident prevention/emergency preparedness policy and measures in form of Emergency Response Plans as detailed in Chapter 11.2 of this ESIA Report;
- Development of Traffic Management Plans to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7.

In addition to the measures described, it is important to keep open communication channels between the Contractor and the affected communities. One way of assuring this is granting of free and easy access to an independent and effective Grievance Mechanism for the community to be established by the Contractor as defined in Chapter 12.5.1 of this ESIA Report. This aspect came out as a priority during the Wheeland Community Consultation held on the 24th March 2023 by the Main Consultant.

Also regular engagement with stakeholders, including local communities, environmental organizations, and government agencies, should be maintained during the rehabilitation stage (and throughout the Project's life cycle). This ensures that the Project stays aligned with both environmental conservation goals and the needs of local populations. It also helps in monitoring Project impacts and fine-tuning mitigation

efforts based on stakeholder feedback. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities about upcoming works and the associated impacts and risks (such as fire extinguishment works).

Furthermore, it is essential for the Contractor to implement the noise and air emissions mitigation measures identified in the respective sections of the ESIA report.

Following implementation of the recommended mitigation measures, the Project's impact on CHS post-mitigation can assessed as having low significance

MAGNITUDE - Impacts on CHS
REHABILITATION| POST-MITIGATION | PROVIDENCIALES & GRAND TURK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Medium	-2
Sum		-8
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.4 Step 3 (b): Multi Criteria Analysis - Impacts and Mitigation Measures During Construction

Construction works will be performed in five (5) of the ISWMP sites. A brief listing of the facilities to be built, as well as the significantly affected IESCs is presented in the Table 9-2.

Table 9-3: Description of the facilities to be constructed and affected IESCs

Site	Facilities to be constructed	Significantly affected IESCs
Providenciales	ISWR	▪ IESC#1: Air Quality and Odour ▪ IESC#2: Noise ▪ IESC#3: Groundwater quality ▪ IESC#4: Surface water quality ▪ IESC#9: Ecosystem services ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety
North Caicos (Bottle Creek)	New landfill	▪ IESC#1: Air Quality and Odour ▪ IESC#2: Noise ▪ IESC#3: Groundwater quality ▪ IESC#4: Surface water quality ▪ IESC#5: Soil quality ▪ IESC#8: Fauna & flora ▪ IESC#9: Ecosystem services ▪ IESC#10: Areas of Historical Interest (HA) ▪ IESC#11: Historic Attractions ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety
	Integrated CAS, TSS, CDW centre and CP	

Site	Facilities to be constructed	Significantly affected IESCs
South Caicos	TS, CAS, TSS, CDW centre and CF	▪ IESC#1: Air Quality and Odour ▪ IESC#2: Noise ▪ IESC#3: Groundwater quality ▪ IESC#4: Surface water quality ▪ IESC#6: National Natural Protected Areas ▪ IESC#8: Fauna & flora ▪ IESC#9: Ecosystem services ▪ IESC#10: Areas of Historical Interest (HA) ▪ IESC#13: Private assets ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety
Grand Turk	CAS, TSS, CDW centre and CP	▪ IESC#1: Air Quality and Odour ▪ IESC#2: Noise ▪ IESC#3: Groundwater quality ▪ IESC#4: Surface water quality ▪ IESC#6: National Natural Protected Areas ▪ IESC#7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs ▪ IESC#8: Fauna & flora ▪ IESC#9: Ecosystem services ▪ IESC#10: Areas of Historical Interest (HA) ▪ IESC#11: Historic Attractions ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety
Salt Cay	CAS, TSS, and CF	▪ IESC#1: Air Quality and Odour ▪ IESC#2: Noise ▪ IESC#3: Groundwater quality ▪ IESC#4: Surface water quality ▪ IESC#5: Soil quality ▪ IESC#6: National Natural Protected Areas ▪ IESC#7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs ▪ IESC#8: Fauna & flora ▪ IESC#9: Ecosystem services ▪ IESC#10: Areas of Historical Interest (HA) ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety

The impact assessment on these IESCs is shown in the following sections.

9.4.1 IESC#1: Air Quality and Odour (all construction sites)

The construction activities are localized and will be carried out within the Project boundaries. However, impacts on air quality will cross the borders of the sites and may affect especially those in the direct vicinity of the construction site (especially critical in Providenciales and Grand Turk), people living along the access roads, touristic accommodation areas (for example in South Caicos), surrounding ecosystems and construction workers.

Dust and gases like carbon monoxide (CO), sulfur dioxide (SO2), and nitrous oxide (NO) are expected to be generated due to vegetation clearing in some of the sites, excavation, circulation of construction vehicles and machinery, and increase in overall traffic flows around the construction sites and the access roads. Other source of air pollution is the emissions from diesel generators, if required to be run for construction power purposes. Odour emissions are not expected during this stage.

The above activities will result in temporary negative impacts on air quality that can be significant depending on the meteorological conditions (wind, rain), the age/condition of the vehicles and machinery, the circulation speeds, and the timing of construction activities, among others.

The impact is classified as local because the emissions are at the ground-level and will therefore not spread beyond a few hundred meters at a maximum; the duration is medium-term because the construction activities may last for more than 1 year; the frequency is repeatedly because it will happen throughout the whole construction period; the impact is reversible because baseline conditions will revert back after construction works are completed; probability is definite because the impact will definitely occur and is unavoidable; intensity is medium, especially during excavation and other earthing works.

Given the above, the pre-mitigation impact is considered of medium magnitude. Considering that the sensitivity of the IESC is classified as medium, the impacts' significance is classified as medium. Mitigation and avoidance measures are required to reduce the magnitude of the impact.

MAGNITUDE - Impacts on air quality and odour
CONSTRUCTION | PRE-MITIGATION | ALL CONSTR. SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Definite	-4
Intensity	Medium	-2
Sum		-14
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The following identifies the mitigation measures to be applied by the Contractors during the construction phase. Such measures include:

- Apply basic dust control and suppression measures which include:
  - regular watering of construction areas when dust levels are expected to be high (dry and windy days);
  - proper management of stockpiles and excavated material (e.g. watering, containment, covering, bunding);
  - proper covering of trucks transporting aggregates and fine materials (e.g. through the use of tarpaulin);
- Trucks and vehicles crossing housing areas shall reduce their speed to a maximum of 30 km/h and traffic speed on unpaved access roads shall be reduced to 15 km/h;
- Optimization of transportation management to avoid needless truck drives;
- Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase
- Prohibit burning of waste.

Because the activities above, even when correctly implemented, cannot eliminate completely the air emissions, it becomes necessary to reduce the impact at the receptors. It is in this sense important to continuously coordinate and inform the nearby communities, tourism operators and road users of any expected high dust generating activities which could affect them so people can prepare by closing windows and remaining indoors, for example (particularly at Providenciales and Grand Turk).

The mitigation measures may allow reducing the impact's probability to possible and its frequency to "irregular". Therefore, the magnitude post-mitigation is reduced to low. Based on the significance matrix, the significance of the residual impact (impact post-mitigation) is classified as low.

MAGNITUDE - Impacts on air quality and odour
CONSTRUCTION | POST-MITIGATION | ALL CONSTR. SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium-term	-2
Frequency	Irregular	-2
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.4.2 IESC#2: Noise (all construction sites)

In a similar way as the impacts on air quality, impacts on noise levels will be felt along the entire construction period in all sites with special emphasis for the initial activities of clearing and levelling of the sites and of raising some sections of the access road in Bottle Creek. Trucks transporting materials to the sites will also create some noise along access routes.

The impacts on noise negatively affect the health and well-being of local inhabitants and users of the nearby areas (especially critical in Providenciales, South Caicos and Grand Turk), people living along the access roads, surrounding ecosystems and construction workers.

The impacts are anticipated to be temporary and of medium-term nature as they are limited to the construction period and are reversible as baseline conditions will be restored upon completion of works. The intensity of noise impacts may reach high levels depending on the activity undergoing.

Given the above, the pre-mitigation impact is considered of high magnitude. Considering that the sensitivity of the IESC "noise" is classified as medium, the impacts' significance is classified as high. Mitigation and avoidance measures are required to reduce the magnitude of the impact.

MAGNITUDE - Impacts on noise
CONSTRUCTION| PRE-MITIGATION | ALL CONSTR. SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Definite	-4
Intensity	High	-3
Sum		-15
Magnitude of the impact		High
vs		
Sensitivity of the receptor		Medium



Mitigation measures proposed during construction activities concerning noise impact include:

- Plan rehabilitation activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)
- Trucks and vehicles crossing housing areas shall reduce their speed to a maximum of 30 km/h and traffic speed on unpaved access roads shall be reduced to 15 km/h
- The Contractor must undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible
- Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase.

Because the activities above, even when correctly implemented, cannot eliminate completely the noise emissions, it becomes necessary to reduce the impact at the receptors. It is in this sense important to continuously coordinate and inform the nearby communities of any expected high noise generating activities which could affect them so people can prepare by closing windows and remaining indoors, for example (particularly at Providenciales and Grand Turk).

The mitigation measures may allow reducing the impact's intensity to low, its frequency to seasonal and its probability to possible. Therefore, the magnitude post-mitigation is reduced low. Based on the significance matrix, the significance of the residual impact (impact post-mitigation) is classified as low.

MAGNITUDE - Impacts on noise
CONSTRUCTION | POST-MITIGATION | ALL CONSTR. SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Seasonal	-2
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.4.3 IESC#3: Groundwater quality (all construction sites)

The geological nature of the Turks and Caicos Islands, with highly permeable coral limestone, makes the aquifers susceptible to infiltration of rain and polluted water. Here it is worth noting that many households on North and Middle Caicos are directly dependent on pit wells or bore wells for their civic (household) water sources, despite recommendations of the EHD not to do so.

During the construction of the new landfill in Bottle Creek and the new facilities in all sites, there is a risk of groundwater contamination stemming from various activities. Accidental spills or leaks of hazardous materials, such as fuels, oils, lubricants, chemicals, and construction materials, as well as the storage and refuelling of fuel on-site can pose a threat, as storage tanks, containers, or refuelling equipment may leak and introduce petroleum hydrocarbons and hazardous substances into the groundwater.

Soil disturbance during construction activities, including excavation, grading, trenching, and land clearing, has the potential to disrupt soil layers and release pollutants such as heavy metals, asbestos, pesticides, and industrial chemicals into the groundwater. This disturbance can expose buried contaminants and heighten the risk of groundwater contamination.

Stormwater runoff from the construction site can carry sediment, debris, and pollutants into the ground, leading to groundwater contamination. Of particular concern is the improper disposal of concrete washout water, which can introduce high pH levels, heavy metals, and other contaminants into the soil and groundwater. This is a concern especially during the rainy season from May to November.

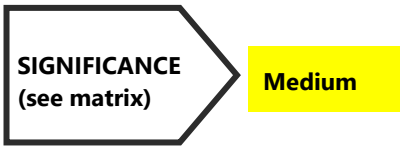
Improper disposal of construction waste, such as dumping, burying, or burning construction debris, building materials, packaging materials, and demolished structures, can also contribute to groundwater contamination. Similarly, cleaning and maintenance activities involving chemicals, solvents, or detergents during construction can result in the release of contaminants into the soil and groundwater. Accidental chemical spills, inadequate disposal of cleaning agents, and lack of proper containment measures further pose a risk of groundwater pollution.

The wastewater generated from temporary toilets can also pose a risk of groundwater contamination if not properly managed and disposed of. Temporary toilets, such as portable toilets or chemical toilets, are commonly used on construction sites to meet the sanitation needs of workers. The wastewater from these toilets may contain human waste, urine, cleaning chemicals, and other contaminants that can impact groundwater quality if not handled appropriately.

The magnitude of the impact is deemed as medium, which combined with a medium sensitivity of the groundwater receptor leads to a medium significant impact. To reduce the impact's significance, it is of advantage to reduce the magnitude of the impact by applying the measures defined below.

MAGNITUDE - Impacts on groundwater quality
CONSTRUCTION | PRE-MITIGATION | ALL CONSTR. SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Likely	-3
Intensity	Medium	-2
Sum		-13
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The groundwater pollution risks can be reduced with adequate HSE construction site management, including measures for handling of waste and hazardous materials in form of a Waste and Hazardous Materials Management Plan containing the following principles:

- Management hierarchy: A waste management hierarchy of avoidance, minimization, reuse, recycling, treatment and disposal
- Segregation: Segregation of all waste based on their nature and ultimate disposal sites - distribute an appropriate number of properly contained litter bins and containers properly marked for the different types of waste, such as: recyclable, hazardous, for landfill, etc.
- Training: Staff training to increase awareness of waste minimization and waste management issues
- Recording: Maintain records and manifests that indicate volume of waste generated onsite, collected, and disposed of - the numbers within the records are to be consistent to ensure no illegal dumping at the site or other areas.

Recommendations for the content of the Waste and Hazardous Materials Management Plan can be consulted in the ESMP, Chapter 11.6.

Other measures suggested are:

- The Contractor must design a temporary drainage system to accommodate storm water runoff and avoid it seeping into the groundwater. The drainage system must be equipped with sediment traps and oil-water separators.
- If drainage water is contaminated and cannot be treated, it must be drained into a dedicated retention basin. Drainage must in these cases be pumped and disposed of as hazardous waste.
- The usage of well-maintained and, whenever possible, new vehicles must be promoted. The maintenance of the vehicles shall only be done in designated areas with an impermeable surface and secondary containment.

Following implementation of the recommended mitigation measures, the magnitude of the expected impact on groundwater is reduced to low due to reduced probability of the impact occurring, intensity and frequency. Post-mitigation impacts are still assessed as having low significance.

MAGNITUDE - Impacts on soil quality
CONSTRUCTION| POST-MITIGATION | NC BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-8
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.4.4 IESC#4: Surface water quality (Providenciales, Bottle Creek, Grand Turk, South Caicos and Salt Cay)

Direct impacts of the construction activities on surface water resources will be confined in time to the construction phase.

Construction activities such as land clearing, grading, and excavation will disrupt the natural soil stability and increase the risk of soil erosion. Eroded soil can be carried by stormwater runoff or wind into the Grand Salina in Grand Turk, the salinas and coastal waters in Salt Cay and South Caicos, and the flood prone low lying areas within the AoI of Bottle Creek, which may be of value to agricultural production. The eroded soil causes (further) sedimentation, turbidity, and habitat and agricultural land degradation.

Of particular concern is the improper disposal of concrete washout water and water resulting from cleaning and maintenance activities involving chemicals, solvents, or detergents, which can introduce high pH levels, heavy metals, and other contaminants into the surface water. Run-off of water contaminated with vehicle oil/fuel, concrete, asphalt, paints, solvents, and other oils, can contain toxic chemicals, posing an additional threat.

Improper disposal of construction waste, such as dumping, burying, or burning construction debris, building materials, packaging materials, and demolished structures, can also contribute to water contamination.

The wastewater generated from temporary toilets can also pose a risk of surface water contamination if not properly managed and disposed of. Temporary toilets, such as portable toilets or chemical toilets, are commonly used on construction sites to meet the sanitation needs of workers. The wastewater from these toilets may contain human waste, urine, cleaning chemicals, and other contaminants that can impact groundwater quality if not handled appropriately.

The magnitude of the impact is deemed as medium, which combined with a medium sensitivity of the surface water receptor leads to a medium significant impact. In order to assure that the impact significance is reduced to low, mitigation is required.

MAGNITUDE - Impacts on surface water quality
CONSTRUCTION| PRE-MITIGATION | GT and SCay

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-13
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The Construction Contractor shall prepare a Soil Erosion and Sedimentation Control Plan for the construction sites in Providenciales, Bottle Creek, Grand Turk, South Caicos and Salt Cay. This plan shall contain measures to prevent the loss of soil during construction by storm water runoff and/or wind erosion, as well as to prevent sedimentation of storm water and the receiving resources. It shall also include the design of a temporary drainage system to accommodate storm water runoff and to protect the construction site from erosion-causing runoff, and the use of appropriate structural measures to prevent erosion.

To avoid further contaminating the Grand Salina in Grand Turk and the coastal waters in Salt Cay and South Caicos, the drainage system must be equipped with sediment traps and oil-water separators. A stormwater detention and retention basin needs also to be installed to temporarily store excessive runoff during storm events, allowing sediment and pollutants to settle out before the water is discharged.

If drainage water is contaminated and cannot be treated, it must be drained into a dedicated retention basin. Drainage must in these cases be pumped and disposed of as hazardous waste once the IWRC in Providenciales is available.

Chapter 11.7 provides guidelines for development of the Soil Erosion and Sedimentation Control Plan.

The usage of well-maintained and, whenever possible, new vehicles must be promoted. The maintenance of the vehicles shall only be done in designated areas with an impermeable surface and secondary containment.

The waste generated by the activities (construction waste, hazardous waste) and the workers (domestic waste) shall be properly managed through a Waste and Hazardous Materials Management Plan in order to avoid its deposition in the water courses containing the following principles:

- Management hierarchy: A waste management hierarchy of avoidance, minimization, reuse, recycling, treatment and disposal
- Segregation: Segregation of all waste based on their nature and ultimate disposal sites - distribute an appropriate number of properly contained litter bins and containers properly marked for the different types of waste, such as: recyclable, hazardous, for landfill, etc.
- Training: Staff training to increase awareness of waste minimization and waste management issues
- Recording: Maintain records and manifests that indicate volume of waste generated onsite, collected, and disposed of - the numbers within the records are to be consistent to ensure no illegal dumping at the site or other areas.

Recommendations for the content of the Waste and Hazardous Materials Management Plan can be consulted in the ESMP, Chapter 11.6. Other measures suggested are:

- The Contractor must design a temporary drainage system to accommodate storm water runoff and avoid it flowing into the surface water courses. The drainage system must be equipped with sediment traps and oil-water separators.
- If drainage water is contaminated and cannot be treated, it must be drained into a dedicated retention basin. Drainage must in these cases be pumped and disposed of as hazardous waste.
- The usage of well-maintained and, whenever possible, new vehicles must be promoted. The maintenance of the vehicles shall only be done in designated areas with an impermeable surface and secondary containment.

Following implementation of the recommended mitigation measures, the magnitude of the expected impact on surface water quality is reduced to low due to reduced probability of the impact occurring, intensity and frequency. Post-mitigation impacts are reduced to a low significance level.

MAGNITUDE - Impacts on soil quality
CONSTRUCTION| POST-MITIGATION | NC BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-8
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.4.5 IESC#5: Soil quality (North Caicos Bottle Creek, South Caicos and Salt Cay)

The Bottle Creek site is surrounded by green areas, the Salt Cay site by coastal untouched areas, and the South Caicos site by rare and threatened vegetation (that depends on good soil quality to thrive). Although at the dumps and quarry site themselves the soil has a low sensitivity, the sensitivity becomes higher in the untouched / plant-rich surroundings.

The soil at the new facilities and new landfill sites will be permanently covered and will be unavailable for other usages. The soils nearby the construction sites may be impacted by material and excavated soil deposition, circulation of machinery, waste pollution, soil mixing, and compaction.

The Bottle Creek site has already been partially excavated by an existent quarry pit. For the construction of the landfill cell the excavation of about 35,000 m^3 of limestone sands is estimated. About 12,000 m^3 additional excavations will be generated by the construction of the leachate equalisation pond and wetland.

Waste pollution in the soils of the areas may arise from a range of sources, including excavated material, domestic garbage like paper, plastic, drink containers, food waste, human waste and wastewater from temporary toilets, and waste from equipment, packaging, materials and vehicles (i.e., concrete, steel cuttings/filings, packaging paper or plastic, waste fuel, grease). The deforestation of the site will result in the production of green waste of different types (woody material, foliage, etc.).

Hazardous materials like fuel, engine oil, lubricants, chemicals, solvents, adhesives, paints, and cleaning agents, as well as respective waste resulting from discharge of empty containers, spills, and unused products are expected as well.

The waste could lead to environmental, soil and water pollution, if not properly managed (e.g., illegal disposal of waste to land, improper management of hazardous waste, hazardous materials, discharge of wastewater without treatment, etc.). This also indirectly leads to adverse impacts to flora/fauna and the general health and safety of workers. It is noted that there are no known water intakes at the Project sites that run the risk of being contaminated.

The magnitude of the impact is deemed as medium, which combined with a low sensitivity of the soil (which is a general evaluation for all sites - see Chapter 8.1) leads to a low significant impact. In order to assure that the impact remains low, it is of advantage to reduce the magnitude of the impact by applying measures defined below.

MAGNITUDE - Impacts on soil quality
CONSTRUCTION| PRE-MITIGATION | NC BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-13
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Low



To avoid impacts on surrounding soils, some rules shall be established at the site:

- Ensure that work site boundaries and limits are in accordance with plans and technical design as agreed upon in advance; all construction activities should be carried out within boundaries; site clearance shall be restricted to the necessary defined areas;
- Do not undertake excavation activities during periods of intense rainfall to avoid erosion, rutting and compaction of the soils. If this is not possible, the ruts shall be repaired as soon as possible. After allowing a short time for the soil to begin drying, a bulldozer shall be used to smooth and fill in the ruts.
- Do not allow off-road driving;
- Return surfaces disturbed during construction to better conditions to the greatest extent possible;
- Routinely inspect vehicles and machinery to check any oil leaks, and immediately seal and remediate if occurred.

In addition to the above, the Construction Contractor shall develop a Waste and Hazardous Materials Management Plan containing the following principles:

- Management hierarchy: A waste management hierarchy of avoidance, minimization, reuse, recycling, treatment and disposal
- Segregation: Segregation of all waste based on their nature and ultimate disposal sites - distribute an appropriate number of properly contained litter bins and containers properly marked for the different types of waste, such as: recyclable, hazardous, for landfill, etc.

- Training: Staff training to increase awareness of waste minimization and waste management issues
- Recording: Maintain records and manifests that indicate volume of waste generated onsite, collected, and disposed of - the numbers within the records are to be consistent to ensure no illegal dumping at the site or other areas.

Recommendations for the content of the Waste and Hazardous Materials Management Plan can be consulted in the ESMP, Chapter 11.6.

Following implementation of the recommended mitigation measures, the magnitude of the expected impact on soil quality is reduced to low due to reduced probability of the impact occurring, intensity and frequency. Post-mitigation impacts are still assessed as having low significance.

MAGNITUDE - Impacts on soil quality
CONSTRUCTION| POST-MITIGATION | NC BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-8
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Low



9.4.6 IESC #6: National Natural Protected Areas, IESC #7: International Natural Protected Areas, and IESC #8: Fauna & Flora, IESC#10: Areas of Historical Interest (HA) and IESC#11: Historic Attractions (North Caicos Bottle Creek, Grand Turk, Salt Cay and South Caicos)

The construction activities may affect natural and cultural sites, fauna and flora in four of the Project sites:

- in Grand Turk, works are very close (albeit not within the footprint of) the Town Salina. This Salina is part of the Town Pond and the Red Salinas Areas of Historical Interest, and of the Grand Turk Salt Salinas historical attraction.
- the new facilities in Salt Cay will be located within the EHD compound in close proximity to the Salt Cay Nature Reserve that coincides with the Salt Cay Area of Historical Interest.
- the AoI of the North Caicos Bottle Creek site does not intersect any nationally or internationally natural protected areas, but since the site is surrounded by green areas, it is necessary to account for eventual impacts on fauna and flora. The site includes the trail head for the permanent monitoring plots of DECR's Caicos Pine Recovery Project, located at the west extreme of the rock quarry.
- the South Caicos dumpsite is nearby the proposed South Caicos Wetland Critical Habitat Reserve, and the proposed Boiling Hole Nature Reserve. Among species present, the NT Reddish Egret is highlighted. According to the DECR, much of the undeveloped land on South Caicos has high occurrence of rare, threatened, and endemic species of plants, including Caicos Encyclia orchid (EN), Capillary buttonbush (EN) and the culturally iconic Turk's head cactus (LC).

The construction activities may affect resident and migratory fauna and flora within natural areas. Indirect impacts may occur derived from noise and dust emissions, as well as contamination of habitats with waste and polluted run-off; on the other hand, direct killings due to collision, withdraw of eggs, damage to nests, caves and other living places, or hunting may directly affect fauna and flora in the area. Circulation of vehicles and machinery, sedimentation and human presence are other pressure factors in the natural environment of the Project areas. These may affect already polluted ecosystems, like the case of the Town Salina in Grand Turk, or areas where human presence has been so far limited and are mostly preserved, like the Salt Cay Nature Reserve and the surroundings of the Bottle Creek site.

While the construction of the facilities / landfill in Grand Turk and Bottle Creek has the potential to have a high impact, the installation of the CAS and TSS in Salt Cay and South Caicos is not anticipated to cause major effects. Impacts are, in general for all considered sites, considered to be of high significance.

MAGNITUDE - Impacts on protected areas, fauna & flora, and historical areas
CONSTRUCTION| PRE-MITIGATION | NC BC, GT & S.CAY

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-13
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		High



The following mitigation measures shall be complied with during the construction phase:

- Secure necessary regulatory approvals for vegetation clearance in Bottle Creek
- Assure the DECR occasional access to the trail head for the permanent monitoring plots of DECR's Caicos Pine Recovery Project in Bottle Creek for conservation and research purposes
- The removal of vegetation should be reduced to the minimum extent possible, in accordance with plans and technical design as agreed upon in advance
- Designated clearance areas for construction activities should be delineated and marked to prevent unintentional clearing and inadvertent encroachment into neighbouring habitats
- Strictly confine all work to the designated areas, with no activities extending beyond those boundaries
- Establish a temporary protective buffer by cordoning off the perimeter of the areas of historical interest and historical attractions that face the construction areas. This can be done in a simple way by means of a red & white warning tape tied around metal pokes. The following sites (only the side facing the construction site) shall be cordoned off:
  - North Caicos: Wades Green and Teren Hill proposed HA/ Wade's Green Plantation historical attraction
  - Grand Turk: Grand Turk Salt Salinas
  - Salt Cay: Salt Cay Area of Historical Interest
  - South Caicos: proposed South Caicos Wetland Critical Habitat Reserve, and proposed Boiling Hole Nature Reserve.
- Strictly apply mitigation measures to minimize dust generation and noise due to construction and transportation activities (described in the respective ESIA chapters).

- Prohibition of littering, making fire and entering protected areas, particularly wetlands
- All types of waste generated during the construction phase must be properly stored and disposed of according to good hygiene practices and a Waste and Hazardous Materials Management Plan (guidance available in Chapter 11.6 of this ESIA).
- Interaction of workers with wildlife and feral animals shall be regulated by prohibition of harming native wildlife and instruction to contact DECR when wildlife incidents occur (or the Department of Agriculture if there are concerns regarding feral animals).

The application of the mitigation measures will allow reducing the impact magnitude to low. However, the significance of the residual impacts remains medium. This is due to the high sensitivity of the natural protected areas that are within the sites' AoIs.

MAGNITUDE - Impacts on protected areas, fauna & flora
CONSTRUCTION| PRE-MITIGATION | NC BC, GT & S.CAY

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		-7
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		High



Considering the above, it is important to apply compensation and awareness measures with focus on the most sensitive affected sites: Bottle Creek and South Caicos. The reason for this selection lays on the following facts:

- Bottle Creek will require deforestation of green areas that will go beyond the footprint of the present dumpsite
- The AoI of South Caicos includes rare, threatened, and endemic species of plants whose location is presently not mapped.
- The construction works in Grand Turk will be circumscribed to a physical space presently severely affected by anthropogenic activities; if measures to restrict entrance in the protected areas surrounding the site are respected, no risks for biodiversity are expected.
- The new facilities in Salt Cay will be located within the EHD compound, which is presently already used and of low biodiversity value; if measures to restrict entrance in the protected areas surrounding the site are respected, no risks for biodiversity are expected.

A detailed Pre-construction Biodiversity Assessment, i.e., an assessment of fauna and flora at the Bottle Creek and South Caicos sites before construction (including pre-construction activities implying soil disturbance) shall be undertaken by an expert (ex., a biologist) to be engaged by the Construction Contractor. In case rare, threatened, and endangered plants, animals or ecosystems, species of commercial importance, and/ or ecosystem services provided by any of these are detected at the investigated sites, the Contractor shall prepare and implement a Biodiversity Rescue Procedure. The ESMP (Chapter 11.8) provides further guidance.

In addition to the above, all temporarily disturbed areas (for example for storage of materials and excavated soil) need to be rehabilitated and restored with indigenous species from the wider area.

Contractors must foster a general awareness of the natural environment among their staff. Worker induction programs should emphasize the importance of protecting biodiversity and local wildlife, promoting responsible behaviour, and strictly prohibiting poaching or any actions that could harm the natural surroundings. DECR stated their support with induction programmes on protecting biodiversity and local wildlife.

9.4.7 IESC#9: Ecosystem services (all construction sites)

The surroundings of all the sites subject to construction of new facilities offer cultural ecosystem services, which include national and international tourism and recreational activities. Regulating and provisional services are also important in some of the sites.

Construction can temporarily or permanently reduce the appeal and demand for cultural ecosystem services in the area due to visual impacts, increase in noise and air emissions, and circulation of heavy vehicles and machinery.

The works may also, as described in the section dedicated to natural protected areas, affect the local biodiversity and ecosystems, affecting regulating and provisional ecosystem services.

The significance of this impact is classified as medium.

MAGNITUDE - Impacts on ecosystem services
CONSTRUCTION| PRE-MITIGATION | ALL CONSTR. SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-12
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The measures defined previously for mitigation of smoke, noise and dust emissions, and for protection of natural protected areas, fauna and flora apply directly to this IESC as well.

If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7.

Coordination with local tourism stakeholders shall be maintained to ensure minimal impact on visitor experience.

Surrounding the new landfill site in Bottle Creek with a green belt within the buffer zone (Zone C on Figure 3 11 of the ESIA Report) will allow a reduced impact on the landscape and therefore on the ecosystem services of the island.

Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.

The significance post-mitigation is assessed as low.

MAGNITUDE - Impacts on ecosystem services
CONSTRUCTION| PRE-MITIGATION | ALL CONSTR. SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Seasonal	-3
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium

SIGNIFICANCE (see matrix) → **Low**

9.4.8 IESC#13: Private assets (South Caicos)

About 1 ha of privately owned land is needed in South Caicos for the new facilities, i.e., a transfer station that can also hold a composting facility and other waste fractions to be transferred to Providenciales. A suitable location for this integrated facility has been proposed by the GOTCI nearby the existing dumpsite. The availability of this area shall be confirmed in cooperation between the GOTCI, the District Commissioner, the Planning Department and the tourist operators owning large portions of the island.

An impact with medium significance is expected without mitigation (in this case compensation) measures.

MAGNITUDE - Impacts on private assets
CONSTRUCTION| PRE-MITIGATION | SC

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Once	-1
Ability to recover	Reversible	-1
Probability	Definite	-4
Intensity	Medium	-2
Sum		-10
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium

SIGNIFICANCE (see matrix) → **Medium**

A Land Acquisition Plan (LAP) needs to be elaborated that establishes the timelines, the responsibilities, the obligations and the rights of the buyer and the seller regarding the acquisition process. The GOTCI has a particular procedure for such cases that shall be followed.

The LAP also needs to comply with the relevant provisions of the IFC Performance Standard 5 - Land Acquisition and Involuntary Resettlement, and with the CDB Performance Requirement 7 - Land Acquisition and Resettlement.

Upon application of the LAP, including payment or establishment of a lease contract for the land to be used, the impacts can be reduced to a low significance.

MAGNITUDE - Impacts on private assets
CONSTRUCTION| POST-MITIGATION | SC

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		**-6**
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.4.9 IESC#14: Occupational Health & Safety (all construction sites)

The construction works will be limited, in the smaller sites, to installation of containers for collection and storage of waste, preparation of composting areas and CDW reception and storage areas. These works are not expected to require significant earthing, levelling and other heavy works. However, the construction of the new landfill in Bottle Creek, along with potential site clearing and levelling at other locations, highlights the importance of addressing occupational health and safety (OHS) considerations. The OHS impacts and mitigation measures outlined below may not apply uniformly across all sites and should therefore be viewed as a conservative baseline. Each contractor is expected to adapt these assessments to reflect the specific conditions and risks of their respective construction sites.

Work accidents may occur at the construction sites from various activities, e.g. accidents involving heavy machinery; cutting vegetation during site clearance; encounters with animals; electrocution or electrical fires from improper handling of electrical equipment and installations; exposure to hazardous chemicals such as fuels and cleaning agents; exposure to the waste deposited at the dumpsites in Providenciales; Bottle Creek and Grand Turk; injuries from lifting, carrying, or moving heavy materials; heat exhaustion from working in high temperatures; sun burns.

Furthermore, there is a potential for health hazards if workers are subjected to inadequate sanitary conditions.

The adverse impact on occupational health and safety during the construction phase of the Project is assessed as of high significance, as the associated risks have the potential to cause severe injuries and even fatalities.

MAGNITUDE - Impacts on OHS
CONSTRUCTION | PRE-MITIGATION | ALL CONSTR. SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Repeatedly	-4
Ability to recover	Irreversible	-4
Probability	Probable	-3
Intensity	High	-3
Sum		**-17**
Magnitude of the impact		High
vs		
Sensitivity of the receptor		Medium



In light of the potential occupational health and safety risks, it is imperative that the Contractor ensures that necessary measures are in place and properly implemented to prevent accidents and health injuries through a comprehensive Occupational Health and Safety Management Plan (OHS Plan). The OHS Plan must include various aspects of occupational health and safety, including, at a minimum, measures to ensure food and water supply for the workers, implement sanitation systems, manage waste and wastewater and maintain camp cleanliness. Specific measures to safeguard the health & safety of the workers at site are listed in Chapter 11.4 of this ESIA Report.

It is also important to ensure that construction workers do not enter into the waste deposit areas in Providenciales, Bottle Creek and Grand Turk and, if they do, are adequately protected with PPE.

Following implementation of the above mitigation measures, the Project's impact on OHS post-mitigation is assessed as low significance.

MAGNITUDE - Impacts to OHS
CONSTRUCTION | POST-MITIGATION | ALL CONSTR. SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Medium	-2
Sum		-8
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.4.10 IESC#15: Community Health & Safety (all construction sites)

As with any construction project, there is potential for impacts to the nearby communities during the construction of the ISWMP facilities.

Dust and engine emissions, noise and vibration created by construction activities could impact the community's health or cause nuisance. This is especially important in Providenciales, where the IWRC will be built very close to the nearest houses in Wheeland. The hazards related to air emissions and noise have been discussed in the previous items.

Other hazards for the community members and visitors can result from any traffic passing by settlements. There may be an increase in traffic flow and interference with current users during the construction of the proposed Project as a number of trucks and earth-moving vehicles will be required to circulate to reach the sites, and transport equipment and construction materials.

In addition to the risks posed by construction vehicles and machinery, there are potential hazards such as exposure to hazardous materials during construction and transport, and accidents resulting from people entering the construction sites.

It is expected that both foreign and national workers will collaborate in the Project's construction. The presence of non-local workforce may bring some discomfort or even social conflict with the local populations. The Bottle Creek and the Salt Cay sites are in this case at a higher risk given that the islands are sparsely inhabited and much quieter than Providenciales and Grand Turk. Also, it is in Bottle Creek that the longest and more intense construction works will happen. The ca. 1 km distance to the nearest houses in Bottle Creek may be a positive factor reducing disturbance to the local inhabitants.

Impacts on CHS are anticipated to happen locally, based on a medium-term duration activity (>1 year construction period), possible and reversible. Given this, impacts pre-mitigation are considered of medium magnitude. Considering that the sensitivity of the receptor "people" is classified as medium, the impacts' significance is classified as medium. Mitigation measures are required and suggested below.

MAGNITUDE - Impacts on CHS
CONSTRUCTION | PRE-MITIGATION | ALL CONSTR. SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	High	-3
Sum		-12
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The following identifies the mitigation measures related to CHS during the construction phase:

- Citizens are generally not expected to get close enough to the construction sites resulting in any hazards. However, the proximity to houses in Wheeland may enhance curiosity in some persons, especially in children. To make sure that the sites are not entered by unauthorised persons, the construction sites need to be fenced. The fences need to be kept in good conditions, and be repaired if damages or vandalism occur.
- A safety distance between the public and any eventually existing non-fenced areas of the Project site can be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons
- Induction to the workers, especially drivers to follow the traffic rules, together with regular supervision of violations or damages to the access roads to reduce the risk of accidents;
- Development of accident prevention/emergency preparedness policy and measures in form of Emergency Response Plans as detailed in Chapter 11.2 of this ESIA Report;

- A Workers' Code of Conduct shall be developed, and the workers shall be thereof informed. A template is available in Chapter 11.10 of this ESIA. The Code of Conduct shall contain provisions such as:
  - "good neighborhood" principle, e.g., the workers shall not cause disturbances to any surrounding community related to noise, littering, or vandalism;
  - gender-based violence and sexual harassment in the workplace ;
  - any potential or real conflicts with the local community shall be immediately reported to the management at site, and resource to direct confrontation shall be prohibited.

In addition to the measures described, it is important to keep open communication channels between the Contractor and the affected communities. One way of assuring this is granting of free and easy access to an independent and effective Grievance Mechanism for the community to be established by the Contractor as defined in Chapter 12.5.1 of this ESIA Report. This aspect came out as a priority during the Wheeland Community Consultation held on the 24th March 2023 by the Main Consultant.

Also regular consultations with stakeholders, including local communities, environmental organizations, and government agencies, should be maintained during the construction stage (and throughout the Project's life cycle). This ensures that the project stays aligned with both environmental conservation goals and the needs of local population. It also helps in monitoring project impacts and fine-tuning mitigation efforts based on stakeholder feedback. This shall include as well disclosing relevant project-related information to stakeholders, including informing the nearby communities about upcoming works and the associated risks.

If project haul routes overlap with public access roads, particularly near Bottle Creek, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7.

Furthermore, it is essential for the construction contractor to implement the noise and air emissions mitigations measures identified in the respective sections of the ESIA report.

Following implementation of the recommended mitigation measures, the Project's impact on CHS post-mitigation can assessed as having low significance.

MAGNITUDE - Impacts on CHS
CONSTRUCTION| POST-MITIGATION | ALL CONSTR. SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Medium term	-2
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Medium	-2
Sum		**-9**
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.5 Step 3 (c): Multi Criteria Analysis - Impacts and Mitigation Measures During Operation

Operation will be undertaken in five (5) of the ISWMP sites. A brief description of the structures to be operated, as well as the significantly affected IESCs is presented in the Table 9-2.

Table 9-4: Description of the structures to be operated and affected IESCs

Site	Facilities	Significantly affected IESCs
Providenciales	Dumpsite	▪ IESC#1: Air Quality and Odour ▪ IESC#2: Noise ▪ IESC#3: Groundwater quality ▪ IESC#4: Surface water quality ▪ IESC#5: Soil quality ▪ IESC#6: National Natural Protected Areas ▪ IESC#8: Fauna & Flora ▪ IESC#9: Ecosystem services ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety
	ISWR	
North Caicos (Bottle Creek)	New landfill	▪ IESC#1: Air Quality and Odour ▪ IESC#2: Noise ▪ IESC#3: Groundwater quality (facilities only) ▪ IESC#5: Soil quality (facilities only) ▪ IESC#8: Fauna & Flora ▪ IESC#9: Ecosystem services ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety
	Integrated CAS, TSS, CDW centre and CP	
South Caicos	TS, CAS, TSS, CDW centre and CF	▪ IESC#1: Air Quality and Odour ▪ IESC#2: Noise ▪ IESC#3: Groundwater quality ▪ IESC#4: Surface water quality ▪ IESC#5: Soil quality ▪ IESC#6: National Natural Protected Areas ▪ IESC#8: Fauna & flora ▪ IESC#9: Ecosystem services ▪ IESC#10: Areas of Historical Interest (HA) ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety
Grand Turk	Dumpsite	▪ IESC#1: Air Quality and Odour ▪ IESC#2: Noise ▪ IESC#3: Groundwater quality ▪ IESC#4: Surface water quality ▪ IESC#5: Soil quality ▪ IESC#6: National Natural Protected Areas ▪ IESC #7: International Natural Protected Areas ▪ IESC#8: Fauna & Flora ▪ IESC#9: Ecosystem services ▪ IESC#10: Areas of Historical Interest (HA) ▪ IESC#11: Historic Attractions ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety
	CAS, TSS, CDW centre and CP	
Salt Cay	CAS, TSS, and CF	▪ IESC#1: Air Quality and Odour ▪ IESC#2: Noise ▪ IESC#3: Groundwater quality ▪ IESC#4: Surface water quality ▪ IESC#5: Soil quality ▪ IESC #6: National Natural Protected Areas

Site	Facilities	Significantly affected IESCs
		▪ IESC #7: International Natural Protected Areas: Ramsar Sites, KBAs and IBAs ▪ IESC #8: Fauna & flora ▪ IESC#9: Ecosystem services ▪ IESC#10: Areas of Historical Interest (HA) ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety

The impact assessment on these IESCs is shown in the following sections.

9.5.1 Impacts of the operation of the new facilities

Table 9-5 describes briefly key aspects of the new facilities to support the impact assessment.

Table 9-5: Brief description of the new SWM facilities

Site	Facilities	Details
Providenciales	ISWR, including:	▪ With surface drainage. ▪ A vegetated perimeter buffer area will be included around the site
	Composting Plant (CP)	▪ Windrow aerobic composting ▪ Use of agricultural type machinery to mechanically lift, shred, turn and screen the compost in long windrows over a 3 month period before sale ▪ Active composting will be covered during rainy season with windrow fabric covers and run off waters will be captured and aerated to prevent biological loading of receiving waters
	CWD (Construction and Demolition Waste) Plant	▪ Crushing and grinding activities ▪ Separation of reusable materials for second hand market.
	Material Recovery Facility (MRF)	▪ Dismantling, bailing, storage ▪ All the conditioned materials are for export toward appropriate recycling plants ▪ Repaired EEE and spare parts for local second hand and repair market
	Hazardous Waste Interim Storage Facility (included into the MRF)	▪ Packaging and labelling of hazardous wastes ▪ Shall require a ventilated secure storage building with fire walls and liquid bunding ▪ To be operated in compliance with Basel convention requirements.
	Civic Amenity Site (CAS)	▪ Large containers ▪ Allows private citizens and small businesses to deliver their waste in separate fractions. ▪ The CAS will be fenced and attended full time
North Caicos (Bottle Creek)	CP	▪ Small windrow aerobic composting site ▪ Use of an agricultural tractor to power a small shredder, windrow turner and load materials
	CDW Centre	▪ Initially, due to relatively small estimated waste quantities, to be located at the landfill site
	CAS	▪ Allows private citizens and small businesses to deliver their waste in separate fractions. ▪ The CAS will be fenced and attended full time ▪ The waste fractions will be periodically sent to the Providenciales IWRC

Site	Facilities	Details
	TSS	▪ Provides space for the temporary storage of bulky waste that will be transferred to the Providenciales IWRC ▪ Front-load containers within the fenced and guarded CAS
South Caicos	CF	▪ Drum (small in-vessel) aerobic container requiring simple operation ▪ For green waste only ▪ Composting process in-vessel will produce the heat required for pathogen kill-off
	CDW Centre	▪ Most of the foreseeable CDW to be generated in the island is coming from the tourism industry
	TS	▪ To transfer the residual waste to North Caicos' new landfill
	CAS	▪ Allows private citizens and small businesses to deliver their waste in separate fractions.
	TSS	▪ For ELVs, recyclable fractions, hazardous waste, EEW, and others ▪ Fenced
Grand Turk	CP	▪ Open windrow composting plant ▪ Aerobic composting ▪ To be located at the dumpsite ▪ Composting process in windrows will produce the heat required for pathogen kill-off
	CDW Centre	▪ To be located at the dumpsite ▪ Considering that the dumpsite lays on a flood prone area, the CDW can conveniently be used to raise the level of the ground for future uses including landfill expansion.
	CAS	▪ Allows private citizens and small businesses to deliver their waste in separate fractions. ▪ The CAS will be fenced and attended full time
	TSS	▪ Covered disassembling area ▪ Covered hazardous waste area
Salt Cay	Composting Facility (CF)	▪ Drum (small in-vessel) aerobic container requiring simple operation ▪ Only minimal dry waste quantities need to be transferred to the Grand Turk dumpsite, reducing transfer cost and odor levels. ▪ Composting process in-vessel will produce the heat required for pathogen kill-off
	CDW Centre	▪ Location for deposit of CDW, and reclamation / disposal area yet to be determined. ▪ Selected materials for recovery and reuse can be delivered to the CAS/TSS.
	CAS	▪ Allows private citizens and small businesses to deliver their waste in separate fractions. ▪ located within the EHD compound ▪ Large containers
	TSS	▪ Large containers ▪ Located within the EHD compound

9.5.1.1 IESC#1: Air Quality and Odour (all operating sites)

All composting operations will utilise aerobic composting. **Windrow composting** (foreseen for Providenciales, Bottle Creek and Grand Turk) comprehends long piles of organic waste mixed with a bulking agent (wood chips, for example) which are exposed to the air and sized for mechanical turning by appropriate machinery. The composting material must be turned frequently to assure an adequate supply of oxygen and assure good conditions of light and temperature. This allows the compost bacterial population to remain active throughout the stabilization period. Unfortunately, the turning process also exacerbates emissions and odors to the extent that major installations have been forced to close when located near urban areas. [190]

While operation of the composting plants and facilities in aerobic conditions significantly reduces the production of methane compared to anaerobic processes, it can still release ammonia, volatile organic compounds (VOCs), and bioaerosols, particularly during turning operations (Figure 9-2). Odours are typically earthy but can become unpleasant if the composting process is poorly managed or if high-moisture or protein-rich materials are included.



Source: ScienceDirect[190]

Figure 9-2: Windrow composting

[190] https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/windrow-composting

In-vessel composting (foreseen for Salt Cay and South Caicos) is accomplished inside an enclosed container or vessel. Mechanical systems are designed to minimized odor and process time by controlling environmental conditions such as airflow, temperature, and oxygen concentration. The popularity of in vessel system increased because of odor control, faster, lower labor costs, and small area requirements.[191].

The **Construction and Demolition Waste (CWD) centres**, which involves crushing and grinding in Providenciales and storage or reusage in the other sites, primarily affects air quality through the generation of dust and fine particulate matter (PM_{10} and $PM_{2.5}$). These particles can become airborne and pose respiratory risks to workers and nearby residents if not controlled. However, odour impacts from CWD are typically minimal unless the waste contains contaminated or decomposing materials.

The **Material Recovery Facilities (MRF)** in Providenciales, which handles a wide range of materials—including scrap metals, end-of-life vehicles (ELVs), tyres, electronic waste (EEE), batteries, and various oils—can contribute to both air pollution and odour. Dismantling and bailing activities may release metal dust, volatile organic compounds (VOCs), and residual fumes from oils and chemicals. Specifically, Electronic-waste dismantling releases fine and ultrafine particles to outdoor and indoor air[192], while dismantling of air condition systems (isolated or from ELVs) releases refrigerants contributing to global warming [193]. Dismantling of lithium-Ion batteries releases dust containing gases, acidic gases, and organic gases[194]. Odours are generally moderate, but improper handling of oils or food-contaminated containers can lead to localized smells.

The **Hazardous Waste Interim Storage Facility** in Providenciales, designed for packaging and storing hazardous materials, poses a risk to air quality if not properly ventilated. Leaks or spills can release toxic vapours, chemical fumes, or VOCs, which may be harmful even at low concentrations. However, odour impacts are typically contained if the facility is well-sealed and ventilated.

Finally, the **Civic Amenity Sites (CAS),** which allow private citizens and small businesses to drop off sorted waste, the **Temporary Storage Stations (TSS)**, foreseen for all sites, and the **Transfer Station** (foreseen for South Caicos), have relatively low air quality impacts. However, if organic waste is not properly managed or if waste is left exposed for extended periods, mild odours and localized dust can occur, especially during peak usage times.

If not mitigated, the impact of the new facilities in air quality and odour levels can be of medium significance, especially in Providenciales, where the more complex facilities will be operated.

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[191] *Technology Fact Sheet - In vessel composting.* Retrieved from https://www.ctc-n.org/sites/default/files/UNFCCC_docs/ref15x07_35.pdf

[192] *E-waste dismantling as a source of personal exposure and environmental release of fine and ultrafine particles*. Retrieved from: https://www.sciencedirect.com/science/article/pii/S0048969722019647

[193] *Illegal treatment of end-of-life vehicles.* Retrieved from https://www.umweltbundesamt.de/sites/default/files/medien/479/publikationen/texte_130-2022_illegal_treatment_of_end-of-life_vehicles.pdf

[194] *Environmental Impact Analysis of Waste Lithium-Ion Battery Cathode Recycling* https://www.jeeng.net/pdf-189187-110778?filename=Environmental%20Impact.pdf

MAGNITUDE - Impacts on air quality and odour
OPERATION FACILITIES | PRE-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long-term	-3
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-14
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



To minimize the air quality and odour impacts associated with the proposed waste management facilities, a range of practical and site-appropriate mitigation measures shall be implemented.

For the **windrow composting plants** in Providenciales, Grand Turk and Bottle Creek, maintaining aerobic conditions is essential to control odour and gas emissions. This can be achieved through regular turning of the compost piles using agricultural machinery as foreseen, which promotes oxygen flow and reduces the formation of odorous compounds. The use of breathable windrow covers or biofilters can further suppress odour emissions. Establishing buffer zones between the composting area and nearby residences will also help reduce nuisance impacts. Buffer zones are foreseen by design in Bottle Creek, Grand Turk and in Providenciales. Here, a green vegetation row is also foreseen to block the view and partially any emissions from the IWRC.

The enclosed nature of **in-vessel composting** systems already provides a strong foundation for odour control, as it prevents the uncontrolled release of gases and particulates. Proper **aeration and moisture control** within the vessel are essential. Maintaining aerobic conditions through controlled airflow prevents the formation of anaerobic zones, which are a primary source of strong odours. Similarly, keeping moisture levels within the optimal range (typically 50–60%) supports efficient microbial activity and reduces the risk of odour-causing imbalances[195].

Operationally, it is important to minimize the time waste is stored before entering the composting system, as decomposition and odour generation can begin quickly. Loading and unloading areas should be kept clean and well-aerated, and any spills or residues should be promptly removed. In addition, routine monitoring of temperature, oxygen, and moisture levels inside the vessel ensures that the composting process remains stable and efficient.

At the **Construction and Demolition Waste (CWD) plant**, dust generation from crushing and grinding activities poses a significant air quality concern. To mitigate this, dust suppression systems such as water spraying or misting should be used during operations. It is recommended to study the feasibility of enclosing or partially cover the processing areas. Additionally, the wheels of the trucks shall be washed to prevent dust from spreading beyond the site.

[195] https://www.researchgate.net/publication/388361608_In-Vessel_aerobic_composting_with_leachate_recirculation_and_biochar_for_enhanced_compost_quality

The **Material Recovery Facility (MRF)**, which handles a variety of recyclable, hazardous and potentially odorous materials, requires targeted measures to manage both dust and other emissions. Separate, well-contained zones shall be designated for handling oils, batteries, and electronic waste, with appropriate spill containment systems in place. Regular cleaning of equipment and storage areas will help prevent the build-up of odorous residues.

Dismantling activities should be carried out in enclosed or semi-enclosed areas equipped with local exhaust ventilation systems fitted with HEPA and activated carbon filters to capture both particulates and VOCs. Specific zones should be designated for the handling of batteries and refrigerant-containing equipment, with certified recovery systems in place to safely extract and contain refrigerants.

For lithium-ion batteries, controlled dismantling procedures are essential to minimize exposure to hazardous emissions. It is recommended to study the feasibility and applicability of the following systems in the MRF in Providenciales during the detailed design of the ISWMP:

- Possible treatment systems for dust containing waste gas are cyclone dust collectors, bag filters, or water spray towers and their combination processes.
- Acidic waste gas can be treated using alkaline spray towers. According to the concentration of pollutants in acidic waste gas and emission control requirements, single-stage, two-stage, or even three-stage alkaline spray towers can be used.
- Organic waste gas can be treated using adsorption or catalytic combustion processes, and the selection of organic waste gas treatment measures should be determined comprehensively based on the amount of waste gas, pollutant concentration, and other factors[194].

The **Hazardous Waste Interim Storage Facility** shall be housed in a secure, ventilated building. All hazardous materials must be stored in sealed, clearly labelled containers with secondary containment. Routine inspections and maintenance are essential to detect and address leaks early, and emergency response protocols should be in place to manage accidental releases.

Finally, the **Civic Amenity Sites (CAS), the Transfer Station (TS)** and the **Temporary Storage Stations (TSS)**, while generally low-risk, can still produce dust and odour if not properly managed. Clear signage and staff supervision are necessary to ensure that waste is correctly sorted and deposited. Organic and odorous waste fractions should be stored in covered containers and removed frequently. Dust from vehicle movement can be controlled through regular sweeping and the use of water sprays.

The site-targeted application of the above stated mitigation measures can reduce the impact significance of the new facilities on air quality and odour to low.

MAGNITUDE - Impacts on air quality and odour
OPERATION FACILITIES | POST-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long-term	-3
Frequency	Irregular	-2
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.5.1.2 IESC#2: Noise (all operating sites)

The waste management facilities proposed under the ISMWP are likely to generate varying levels of noise, depending on the type of operations, machinery used, and proximity to residential or sensitive areas.

The **windrow composting plants**, although relatively low-impact in terms of noise, will still produce sound from agricultural machinery used for turning compost piles. These operations are typically intermittent but can be disruptive if located near homes (case of Providenciales) or quiet zones (case of Bottle Creek). Noise levels may increase during loading and unloading of organic materials, also for the **in-vessel composting** facilities in Salt Cay and South Caicos.

The **Construction and Demolition Waste (CWD) centres** are expected to be one of the louder facilities due to crushing, grinding, and heavy equipment operations. These activities generate continuous and high-decibel noise, particularly from crushers, loaders, and conveyors. Without mitigation, this could affect nearby communities and wildlife, especially during extended operating hours.

The **Material Recovery Facility (MRF)** in Providenciales will also produce moderate to high noise levels, especially during dismantling, bailing, and sorting of materials such as scrap metal, ELVs, and EEE waste. If hydraulic presses, shredders, and forklifts are used, this will contribute to a steady background of mechanical noise. Occasional impacts, such as dropping metal components or compacting materials, may cause sharp, sudden sounds.

The **Hazardous Waste Interim Storage Facility** in Providenciales is expected to have minimal noise impacts, as its operations are primarily focused on packaging and secure storage. However, vehicle movements and handling of containers may still produce low-level noise, particularly during peak delivery times.

The **Civic Amenity Sites (CAS)**, **Temporary Storage Stations (TSS)**, and **Transfer Station (TS)** will generate moderate noise, mainly from vehicle traffic, waste unloading, and manual sorting. While generally less intense than industrial facilities, the cumulative effect of frequent public use can lead to noticeable noise.

If not mitigated, the impact of the new facilities on noise levels can be of medium significance, especially in Providenciales, where the more complex facilities will be operated.

MAGNITUDE - Impacts on noise
OPERATION FACILITIES | PRE-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long-term	-3
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-14
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



To minimize the impact on nearby communities and sensitive receptors, a combination of engineering controls, operational adjustments, and site planning shall be implemented.

At the **windrow composting plants** in Providenciales, Bottle Creek and Grand Turk and the **in-vessel composting** facilities in Salt Cay and South Caicos, operations of turning and loading/unloading organic materials shall be scheduled during daytime hours. Buffer zones are foreseen by design in Bottle Creek, Grand Turk and Providenciales. Here, a green vegetation row is also foreseen that absorbs and deflects sound. Regular maintenance of machinery will also help reduce unnecessary mechanical noise.

At the **Construction and Demolition Waste (CWD) plant,** limiting operations to standard working hours and using low-noise equipment models where possible will reduce community disturbance. Other measures can theoretically be implemented, but their feasibility shall be determined during the detailed design stage:

- Acoustic enclosures or sound barriers shall be installed around high-noise machinery to reduce noise emissions
- Rubber linings in hoppers and chutes can help dampen impact noise.

Indoor processing areas in the **Material Recovery Facility (MRF)** shall be sound-insulated, and vibration-dampening mounts can be used on machinery to reduce structural noise transmission. Staff should be trained to handle materials in a way that minimizes sudden impacts, such as dropping metal components. Where feasible, automated systems can be used to reduce manual handling and associated noise.

Noise from vehicle movements and container handling in the **Hazardous Waste Interim Storage Facility** can be mitigated by using electric forklifts, rubberized flooring (as available and feasible), and quiet loading techniques. Deliveries should be scheduled to avoid early morning and late evening hours.

Usage of the **Civic Amenity Site (CAS)** by the public, and loading and unloading waste in the **Temporary Storage Stations (TSS)** and **Transfer Station (TS)** shall be limited to daily hours during the working week; dropping waste in the evenings and on Sundays shall not be allowed. The foreseen buffers in Bottle Creek, Providenciales, and Grand Turk will also help reducing noise nuisance in the nearby residential areas.

Together, these mitigation measures will help ensure that noise levels remain within acceptable limits, protecting both workers and surrounding communities while supporting the efficient operation of each facility.

MAGNITUDE - Impacts on noise
OPERATION FACILITIES | POST-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long-term	-3
Frequency	Irregular	-2
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.5.1.3 IESC#3: Groundwater quality, IESC#4: Surface water quality, and IESC#5: Soil (all operating sites)

The **windrow composting plants** and the **in-vessel composting** facilities can generate leachate—a liquid byproduct of decomposition that may contain nutrients, pathogens, and organic compounds. If not properly contained, this leachate can infiltrate the soil and contaminate groundwater or run off into surface water bodies (in Grand Turk the Salinas are at particular risk of being impacted; also the Wheeland Pond can be contaminated either due to direct discharge or by contaminated groundwater), especially during heavy rainfall. On the other hand, the sealed nature of the in-vessel system proposed for Salt Cay will prevent leachate from escaping into the environment.

The **Construction and Demolition Waste (CWD) plants** may contribute to water pollution through runoff carrying fine particles, heavy metals, or residues from treated wood and concrete. These pollutants can enter nearby streams (Wheeland Pond, Grand Salina) or groundwater if the site lacks adequate drainage and containment systems. Dust suppression using water sprays can also contribute to runoff if not managed carefully.

The **Material Recovery Facility (MRF)** poses a more complex risk due to the variety of materials processed. Oils, batteries, electronic waste, and end-of-life vehicles can all release hazardous substances such as lead, cadmium, mercury, and hydrocarbons. Spills or improper storage can lead to infiltration of these contaminants into the soil and groundwater. Additionally, stormwater runoff from uncovered storage areas can carry pollutants into nearby surface waters.

The **Hazardous Waste Interim Storage Facility** presents a high risk to water resources if containment fails. Improperly sealed containers, accidental spills, or inadequate drainage systems can result in the release of toxic chemicals into the environment. These substances can persist in groundwater and surface water, posing long-term risks to ecosystems and human health.

The **Civic Amenity Sites (CAS)**, **Temporary Storage Stations (TSS)** and **Transfer Station (TS)**, while generally lower risk, can still contribute to water pollution if waste is not properly sorted or if containers leak. Organic waste, oils, and small quantities of hazardous materials brought by the public can generate contaminated runoff, particularly during rain events.

If not managed, the impacts on soil, groundwater and surface water quality may reach a medium significance in all sites. Here it is worth noting that many households on North and Middle Caicos are directly dependent on pit wells or bore wells for their civic (household) water sources, despite recommendations of the EHD not to do so.

MAGNITUDE - Impacts on groundwater, surface water and soil quality
OPERATION FACILITIES | PRE-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long-term	-3
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-14
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



To safeguard groundwater, surface water and soil resources from contamination risks associated with the proposed waste management facilities, a range of preventive and protective measures shall be implemented. These need to be tailored to the specific operations and materials handled at each site, as well as the availability of equipment and technologies on the TCI.

The **windrow composting plants** shall be installed on impermeable ground equipped with leachate collection and drainage systems. As per the Preliminary Design Report (Main Consultant, May 2025) collected composting leachate in Providenciales will be captured and aerated to prevent biological loading of receiving waters and the soil. The ESIA recommends the same to be applied in Grand Turk. Alternatively, the leachate could be reused within the composting for moisturizing the material before and during the composting process. Collected composting leachate in Bottle Creek will be treated at the constructed wetland.

Given the sealed nature of the **in-vessel composting** systems proposed for Salt Cay and South Caicos, leachate will be prevented from escaping into the environment. Notwithstanding this, its installation on impermeable ground with leachate collection and drainage systems shall be established as a preventive measure.

All crushing and grinding operations in the **Construction and Demolition Waste (CWD) plants** shall be conducted on paved, contained surfaces, and water used for dust suppression and other runoff shall be collected in drainage channels.

Hazardous materials in the **Material Recovery Facility (MRF)** and in the **Hazardous Waste Interim Storage Facility** shall be stored in covered, bunded areas with secondary containment systems and impermeable flooring. Spill kits and emergency response protocols must be in place, and staff should be trained in proper handling and cleanup procedures. Containers shall be regularly inspected for integrity, and any spills must be immediately contained and cleaned using appropriate materials. No direct discharge of water from these facilities shall be permitted. Instead, stormwater from processing and storage areas shall be separately collected and stored as hazardous waste to be exported under Basel-compliant conditions.

The **Civic Amenity Sites (CAS)** shall be designed with segregated drop-off areas and covered bins. These facilities, as well as the **Temporary Storage Stations (TSS)** and **Transfer Station (TS)** shall be placed on top of impermeable surfaces. Frequent waste removal and public education on proper disposal practices will further reduce the risk of contamination. Stormwater should be directed through grated drains and oil-water separators before being released off-site.

The implementation of the mitigation measures proposed, if feasible at all sites, will allow a reduction of the impacts to a low significance level.

MAGNITUDE - Impacts on groundwater, surface water and soil quality
OPERATION FACILITIES | POST-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long-term	-3
Frequency	Irregular	-2
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		**-9**
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.5.1.4 IESC #6: National Natural Protected Areas, IESC #7: International Natural Protected Areas, IESC #8: Fauna & Flora, IESC#10: Areas of Historical Interest (HA) and IESC#11: Historic Attractions (all operational sites)

The potential impacts of the proposed waste management facilities on biodiversity and protected areas are largely indirect, arising from the cumulative effects of emissions and disturbances to the surrounding environment. Here it is worth mentioning that:

- The Wheeland Pond Nature Reserve (proposed PA in Providenciales), is a habitat for many birds, including American flamingos, as well as red mangrove (both least concern, LC), and reportedly some species of VU and NT birds
- the ESIA surveys in 2024 detected the presence of the Near-Threatened Reddish Egret in the Town & Red Salinas in Grand Turk
- the eBird webpage indicates presence of numerous other Near-Threatened and Vulnerable bird species in the Salinas and Wheeland Pond too

- The AoI of the Salt Cay site intersects with habitat for resident, breeding and non-breeding LC bird species, and potentially with habitat for an EN reptile species (iguana).
- The Bottle Creek site is not located within any natural protected area, but is surrounded by green areas and therefore impacts on biodiversity must be taken into account.
- The South Caicos dumpsite is nearby the proposed South Caicos Wetland Critical Habitat Reserve, and the proposed Boiling Hole Nature Reserve. Among species present, the NT Reddish Egret is highlighted. According to the DECR, much of the undeveloped land on South Caicos has high occurrence of rare, threatened, and endemic species of plants, including Caicos Encyclia orchid (EN), Capillary buttonbush (EN) and the culturally iconic Turk's head cactus (LC).

The impacts on natural and cultural protected areas, fauna and flora are not isolated but are closely tied to the broader environmental pressures generated by facility operations and discussed in the previous Chapters.

For instance, air pollution—including dust, fine particles, and volatile organic compounds (VOCs)—can affect nearby vegetation and sensitive habitats such as the surrounding green areas in Bottle Creek and the Grand Turk Salinas.

Noise pollution from machinery, vehicle traffic, and material handling can disturb wildlife, especially in or near protected areas (e.g. the Salinas in Grand Turk; the Salt Cay Nature Reserve and Area of Historical Interest). Chronic noise can lead to habitat avoidance, altered feeding or breeding patterns, and increased stress in sensitive species. Here it needs to be noted that the noise levels at Grand Turk and Providenciales are presently already elevated, but that the Salt Cay and the Bottle Creek project areas have a higher potential to be disturbed by noise. This could be particularly relevant for birds, amphibians, and small mammals that are highly responsive to acoustic changes in their environment.

Water contamination, whether through leachate, runoff, or accidental spills, poses a significant threat to aquatic ecosystems and groundwater-dependent habitats. Pollutants such as heavy metals, hydrocarbons, and nutrients can degrade water quality, harm aquatic organisms, and disrupt food chains. In protected areas, even small changes in water chemistry can have outsized effects on rare or endemic species.

Soil contamination from improperly managed waste (for example drifting plastics being blown by the wind) or hazardous materials can degrade habitat quality, reduce plant diversity, and impair the health of soil organisms that support ecosystem functions. In turn, this can affect the broader ecological balance and resilience of nearby natural areas and wildlife.

If not managed, the impacts on air, noise, soil, groundwater and surface water will impact protected areas, fauna and flora as well, reaching a high significance in all sites.

MAGNITUDE - Impacts on protected areas, fauna & flora
OPERATION FACILITIES | PRE-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long-term	-3
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-14
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		High



After application of the mitigation measures suggested for managing air, noise, soil, groundwater and surface water impact, also the impacts on protected areas and biodiversity can be reduced to a medium significance level.

MAGNITUDE - Impacts on protected areas, fauna & flora
OPERATION FACILITIES | POST-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long-term	-3
Frequency	Irregular	-2
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		**-9**
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		High



To tackle the residual medium significant impacts, compensation measures are suggested.

Before construction, a detailed Pre-construction Biodiversity Assessment and a Biodiversity Rescue Procedure are requested for South Caicos (Chapter 9.4.6). During operation, a monitoring of the rescue procedure shall be performed. The GOTCI shall assure a regular monitoring of the development of the rescued flora (and fauna, may that be the case) and actively intervene in case the rescue measures are not having the expected result.

9.5.1.5 IESC#9: Ecosystem services (all operational sites)

The surroundings of all the sites subject new facilities offer cultural ecosystem services, which include national and international tourism and recreational activities. Regulating and provisional services are also important in some of the sites.

The presence of the waste management facilities can temporarily or permanently reduce the appeal and demand for cultural ecosystem services in the area due to visual impacts, increase in noise and environmental pollution, and circulation of heavy vehicles and machinery.

The facilities may also, as described in the section dedicated to natural protected areas, affect the local biodiversity and ecosystems, affecting regulating and provisional ecosystem services. The significance of this impact is classified as medium.

MAGNITUDE - Impacts on ecosystem services
OPERATION| PRE-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-12
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The measures defined previously for mitigation of air and noise emissions, water and soil impacts, and protection of natural protected areas, fauna and flora apply directly to this IESC as well.

Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may entail an increase in emissions and disturbances on the one hand, on the other hand they provide long-term solutions for the unfavourable waste management situation in the island with a net positive outcome for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship. The significance post-mitigation is assessed as low.

MAGNITUDE - Impacts on ecosystem services
OPERATION | PRE-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Seasonal	-3
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.5.1.6 IESC#14: Occupational Health & Safety (all operation sites)

The operation of the ISWMP facilities will involve a range of OHS risks that vary by facility type, materials handled, and the nature of the processes involved. These risks can affect workers' physical health, safety, and long-term well-being if not properly managed.

At the **composting plants**, workers are exposed to bioaerosols (airborne particles containing bacteria, fungi, and other microorganisms released during the composting process), dust, ammonia (typically

released from combustion of green waste), hydrogen sulphide (from the foreseen future composting of food waste and sewage sludge) and odorous gases during the turning and handling of organic material. These can cause respiratory irritation, allergic reactions, or infections, particularly in individuals with pre-existing conditions. In the case of the in-vessel composting facilities in Salt Cay and South Caicos, their enclosed nature can concentrate these emissions if ventilation is inadequate leading to acute exposure, causing eye, nose, and throat irritation or, in extreme cases, more serious health effects.

The use of agricultural machinery also introduces risks of physical injury, such as cuts, entanglement, or vehicle-related accidents.

The **Construction and Demolition Waste (CWD) plants** presents significant physical hazards due to the use of crushers, grinders, and heavy equipment. Workers may be exposed to high noise levels, vibration, and dust containing silica or asbestos, depending on the materials processed. There is also a risk of falling debris, manual handling injuries, and equipment-related accidents.

The **Material Recovery Facility (MRF)** involves a wide range of OHS risks due to the diversity of materials handled. Workers may be exposed to sharp objects, metal fragments, and hazardous substances such as lead, mercury, and battery acids. Dismantling of electronic waste and ELVs can release toxic dust, flammable gases, and chemical residues. Improper handling of lithium-ion batteries poses a risk of thermal runaway, fire, or explosion. Additionally, repetitive tasks and poor ergonomics can lead to musculoskeletal disorders.

The **Hazardous Waste Interim Storage Facility** carries the highest OHS risk due to the potential for exposure to toxic, corrosive, or flammable substances. Improper packaging, leaks, or spills can result in chemical burns, respiratory distress, or long-term health effects. Workers must also be protected from fire and explosion hazards, especially when handling incompatible substances.

At the **Civic Amenity Sites (CAS)**, **Temporary Storage Stations (TSS)** and **Transfer Station (TS)**, OHS risks are generally lower but still present. These include slips, trips, and falls, manual handling injuries, and exposure to improperly sorted hazardous or sharp waste brought in by the public.

Across all facilities, heat stress, fatigue, and exposure to pathogens are additional concerns, particularly in the TCI climate. Without proper training, personal protective equipment (PPE), and safety protocols, these risks can lead to both acute incidents and chronic health issues. The unmitigated impacts have a high significance.

MAGNITUDE - Impacts on OHS
OPERATION | PRE-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-3
Frequency	Repeatedly	-4
Ability to recover	Irreversible	-4
Probability	Probable	-3
Intensity	High	-3
Sum		**-18**
Magnitude of the impact		High
vs		
Sensitivity of the receptor		Medium



In light of the potential occupational health and safety risks, it is imperative that the Contractor ensures that necessary measures are in place and properly implemented to prevent accidents and health injuries through a comprehensive Occupational Health and Safety Management Plan (OHS Plan) to be adjusted to each facility as relevant. Specific measures to safeguard the health & safety of the workers at site are listed in Chapter 11.4 of this ESIA Report.

Furthermore, the implementation of the previously discussed measures to mitigate air and noise emissions, water, groundwater and soil contamination are important to protected OHS.

Following implementation of the above mitigation measures, the Project's impact on OHS post-mitigation is assessed as of low significance.

MAGNITUDE - Impacts to OHS
OPERATION | POST-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Medium	-2
Sum		-8
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium

SIGNIFICANCE (see matrix) → **Low**

9.5.1.7 IESC#15: Community Health & Safety (all operation sites)

The development and operation of the ISWMP waste management facilities can lead to a range of community health and safety impacts, particularly when facilities are located near residential areas like the case of Providenciales and Grand Turk. These impacts are often indirect, arising from environmental emissions, operational activities, and increased public interaction with waste infrastructure.

One of the most immediate concerns is the deterioration of air quality due to emissions of dust, bioaerosols, and odorous gases from composting, crushing, and waste handling activities as described in the respective Chapter of this ESIA. Prolonged exposure to these pollutants can cause respiratory irritation, headaches, and general discomfort, especially among vulnerable populations such as children, the elderly, and individuals with pre-existing health conditions. Odours, while not always harmful, can significantly affect quality of life and lead to stress or community complaints. Here it is worth noting that the Wheeland community in Providenciales is already presently subject to significant impacts of poor air quality resulting from the dumpsite and that an aggravation of their situation needs to be avoided.

Noise pollution from heavy machinery, vehicle traffic, and material processing can also disrupt daily life, particularly in quiet areas like Salt Cay.

Another critical concern is the potential contamination of surface and groundwater through leachate or runoff, particularly from composting sites, material recovery facilities, and hazardous waste storage. If not properly managed, these pollutants can affect aquatic ecosystems, and public health, with risks ranging from gastrointestinal illness to long-term exposure to toxic substances. Here it is worth noting that many

households on North and Middle Caicos are directly dependent on pit wells or bore wells for their civic (household) water sources, despite recommendations of the EHD not to do so.

Traffic-related risks are also significant, as increased movement of waste collection trucks and delivery vehicles can lead to road congestion, accidents, and pedestrian safety issues.

In facilities handling hazardous or flammable materials, such as batteries, oils, and chemicals, there is a risk of fires or explosions, which could endanger nearby communities, particularly Wheeland one in Providenciales. Smoke and toxic fumes from such incidents can have acute health impacts and may require emergency response or evacuation.

Improperly managed organic waste can attract pests and disease vectors, such as rodents and flies, increasing the risk of vector-borne diseases.

Finally, even in the absence of direct physical harm, the perception of risk—such as fear of pollution, property devaluation, or lack of transparency—can lead to chronic stress, community dissatisfaction, and social tension, especially if residents feel excluded from planning and decision-making processes.

MAGNITUDE - Impacts on Community H&S
OPERATION | PRE-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-3
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	High	-3
Sum		-14
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



To ensure the protection of surrounding communities, a comprehensive suite of health and safety mitigation measures must be implemented across all waste management facilities. The following identifies the mitigation measures related to CHS during the operation phase, to be tailored to each facility type and location as relevant:

- Citizens are generally not expected to get close enough to the facilities (except the CAS) resulting in any hazards. However, the proximity to houses in Wheeland may enhance curiosity in some persons, especially in children. To make sure that the sites are not entered by unauthorised persons, the sites need to be fenced. The fences need to be kept in good conditions and be repaired if damages or vandalism occur.
- A safety distance between the public and any eventually existing non-fenced areas of the sites can be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons
- Induction to the workers, especially drivers to follow the traffic rules e.g. speed limit. This includes imposing a speed limit of 30 km/h on access roads, together with regular supervision of speed limit violations or damages to the access roads to reduce the risk of accidents;
- Development of accident prevention/emergency preparedness policy and measures;

In addition to the measures described, it is important to keep open communication channels between the Contractor and the affected communities. One way of assuring this is granting of free and easy access to an independent and effective Grievance Mechanism for the community to be established by the Contractor as defined in Chapter 12.5.1 of this ESIA Report. This aspect came out as a priority during the Wheeland Community Consultation held on the 24th March 2023 by the Main Consultant.

Also regular consultations with stakeholders, including local communities, environmental organizations, and government agencies, should be maintained throughout the Project's life cycle. This ensures that the Project stays aligned with both environmental conservation goals and the needs of local population. It also helps in monitoring project impacts and fine-tuning mitigation efforts based on stakeholder feedback. This shall include as well disclosing relevant project-related information to stakeholders, including informing the nearby communities about the associated risks.

Furthermore, it is essential for the Contractor to implement the noise, odour, and air emissions reduction measures, as well as the water and soil protection measures identified in the respective sections of the ESIA report.

Following implementation of the recommended mitigation measures, the Project's impact on CHS post-mitigation can assessed as having low significance.

MAGNITUDE - Impacts on CHS
OPERATION| POST-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-3
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		**-8**
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.5.2 Impacts of the operation of the new landfill in Bottle Creek

A new engineered landfill (the first of this kind in TCI) assuring adequate standards of environmental protection and social acceptability is planned for the location of the Bottle Creek dumpsite. In the medium term, the site will host the waste generated in North, Middle and South Caicos. Initially, a 100,000 m^3 landfill cell shall be built, with intention to expand with 250,000 m^3 cells.

A system of peripheral surface drains is foreseen to avoid ingression of stormwater in the designed landfill cell from the surrounding areas. The detailed design will also include internal hydraulic partitions of the cell to limit the leachate generation.

A bottom lining system is foreseen. The landfill bottom will host a leachate drainage system conveying the leachate by gravity to an equalisation basin. From the equalisation basin the leachate will then be pumped into a constructed wetland for treatment. The wetland is planned with native vegetation to avoid introduction of invasive species in the islands.

9.5.2.1 IESC#1: Air Quality and Odour

In the operational phase of the Bottle Creek landfill, the primary air quality concerns relate to the release of volatile organic compounds (VOCs) and particulate matter from waste handling activities, as well as exhaust emissions from on-site machinery to compact and transport the waste. Odour generation is also an inherent aspect of landfill operations, particularly during waste unloading and compaction and release of leachate.

Anaerobic digestion in landfills, resulting from a regular cover and proper compacting of the waste, releases methane (CH_4) and carbon dioxide (CO_2), two greenhouse gases that contribute to global warming. This process also generates VOCs. The emitted gases and odour are majorly generated from the biodegradation of organic matter contained in the waste[196]. Additionally, if the waste contains sulphur (present in certain foods and plastics), specialised bacteria produce hydrogen sulphide (H_2S), a toxic gas with an unpleasant smell. Given the above, the pre-mitigation impact is considered of medium magnitude. Considering that the sensitivity of the IESC is classified as medium, the impacts' significance is classified as medium. Mitigation and avoidance measures are required to reduce the magnitude of the impact.

MAGNITUDE - Impacts on air quality and odour
OPERATION | PRE-MITIGATION | BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-3
Frequency	Medium term	-2
Ability to recover	Repeatedly	-4
Probability	Reversible	-1
Intensity	Definite	-4
Sum		-15
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The design of the landfill—featuring a bottom lining system, leachate drainage infrastructure, and internal hydraulic partitioning—significantly reduces the potential for uncontrolled air and odour emissions from the leachate. The implementation of daily or intermediate cover, combined with the limited size of the initial 100,000 m^3 cell, will help contain odour emissions. The use of native vegetation in the constructed wetland will additionally contribute to passive odour filtration without introducing invasive species.

Due to technical restrictions in the TCI, the Bottle Creek landfill will not be equipped with a biogas capture system. However, this may not be a reason for concern, as aerobic degradation is expected to prevail due to the relatively low quantities of waste landfilled. The Main Consultant recommends to additionally promote aerobic degradation by the operation techniques to ensure that no or very limited residual anaerobic degradation will take place. Furthermore, the final cover will be designed as oxidation cover. This will reduce the emissions of CH_4 and CO_2.

[196] *Landfill air and odour emissions from an integrated waste management facility.* Retrieved from: https://pmc.ncbi.nlm.nih.gov/articles/PMC6582209/

Initially, the landfill will have to accept food waste, as the composting plant will only accept green waste. After some years, once the ISWM system matures and composting of food waste can be done, production of sulphur and other odours components will be greatly reduced at the landfill.

A regular servicing of machinery to reduce exhaust emissions is recommended, as well as the respect for the buffer proposed by the design.

The post-mitigation long-term impact is reduced to low significance.

MAGNITUDE - Impacts on air quality and odour
OPERATION | POST-MITIGATION | BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-3
Frequency	Seasonal	-2
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.5.2.2 IESC#2: Noise

In the operational phase of the landfill, noise sources will include waste delivery vehicles, compactors, and equipment used for daily cover application. These activities are expected to generate consistent but moderate noise levels, particularly during peak delivery hours.

Taking as an example the case of Providenciales, there is a risk that noisy scavenging birds will move to the landfill site in search for food.

Given the above, the pre-mitigation impact is considered of medium magnitude. Considering that the sensitivity of the IESC "noise" is classified as medium, the impacts' significance is classified as medium. Mitigation and avoidance measures are required to reduce the magnitude of the impact.

MAGNITUDE - Impacts on noise
OPERATION | PRE-MITIGATION | BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-1
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-12
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



Mitigation measures proposed concerning noise impact include:

- Restrict delivery and compaction activities between evening hours and early morning hours (from 7 pm till 7 am)
- Trucks and vehicles crossing housing areas shall reduce their speed to a maximum of 30 km/h and traffic speed on unpaved access roads shall be reduced to 15 km/h
- The Contractor must undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible
- Ensure that vehicles undergo periodic maintenance, inspection and review

Furthermore, the design of the landfill, which includes passive leachate treatment via a constructed wetland, contributes to a quieter operational profile by eliminating the need for energy-intensive treatment systems.

To avoid presence of scavenging birds, a daily cover of the waste and a as early as possible transition to waste food composting will be effective measures. If birds feed in the Constructed Wetland, and this becomes a nuisance or causes other types of problems (OHS risks for example), contingency measures shall be developed (noise deterrents for example).

The mitigation measures may allow reducing the impact's probability to possible and its frequency to occasionally only. Therefore, the magnitude post-mitigation is reduced to low. Based on the significance matrix, the significance of the residual impact (impact post-mitigation) is classified as low.

MAGNITUDE - Impacts on noise
OPERATION | POST-MITIGATION | BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-3
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.5.2.3 IESC#8: Fauna & Flora

Although engineered landfills are designed to minimize environmental harm, their operation can still affect local ecosystems, particularly flora and fauna in the surrounding area. The Bottle Creek site is not located within any natural protected area, but is surrounded by green areas and therefore impacts on biodiversity must be taken into account. Additionally, the site is uphill from the Bottle Creek Pineyard, a fire-dependent ecosystem that is threatened by dry-season fires. If waste burning activities are carried out at or in the proximities of the new landfill, an added risk for fires in the vineyard may surge.

Operational activities may attract scavenger species, such as rodents, birds, and feral animals, drawn by the presence of organic waste. These species can outcompete or prey on native fauna, potentially altering local food webs and increasing the risk of disease transmission. If waste is not properly covered or

managed, this attraction effect can become a persistent issue. Additionally, uncovered waste may be blow by the wind and contaminate surrounding habitats, affecting ecological balance and wildlife.

A similar impact could be verified by using non-native plant species in the constructed wetland or landscaping works. Non-native plants may have invasive behaviours and significantly and irreversibly alter local ecosystems.

Additionally, noise and artificial lighting from operational activities may disturb sensitive wildlife, particularly nocturnal species. These disturbances can alter feeding, breeding, and migration behaviors, even if the landfill is not directly encroaching on critical habitats.

The impact pre-mitigation is considered to be of medium significance.

MAGNITUDE - Impacts on fauna & flora
OPERATION | PRE-MITIGATION | BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-1
Frequency	Seasonal	-3
Ability to recover	Irreversible	-4
Probability	Possible	-2
Intensity	Medium	-2
Sum		-13
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



A daily or intermediate cover of waste and a as early as possible transition to waste food composting may be effective measures against scavenger species at the landfill. Perimeter fencing and controlled access will further reduce the likelihood of wildlife intrusion.

Landscaping and wetland construction must prioritize the use of native species to prevent the introduction of invasive plants that could outcompete local flora. The ESIA team, together with the DECR, discussed the issue with the Main Consultant and a decision for using native species in Bottle Creek's wetland has been agreed upon. Details can be read in Chapter 6.4 of this ESIA Report, including a list of wetland species that shall not be used.

Limiting operations to daylight hours and using low-intensity directional lighting will limit impacts on nocturnal animals.

Waste burning is not expected to be necessary at Bottle Creek. This activity shall be forbidden within and around the site (with corresponding warning signs distributed through the area), and controls shall be in place.

Interaction of workers with wildlife and feral animals shall be regulated by prohibition of harming native wildlife and instruction to contact DECR when wildlife incidents occur (or the Department of Agriculture if there are concerns regarding feral animals).

The application of the mitigation measures will allow a reduction of the significance of the impacts on fauna & flora to low.

MAGNITUDE - Impacts on fauna & flora
OPERATION | POST-MITIGATION | BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-3
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.5.2.4 IESC#9: Ecosystem services

The DPLUS094 workshop identified places around the Bottle Creek site as "favourite places" (providing cultural services). The presence of the landfill can temporarily or permanently reduce the appeal and demand for cultural ecosystem services in the area due to visual impacts, increase in noise and odours, and circulation of heavy vehicles and machinery.

The significance of this impact is classified as medium.

MAGNITUDE - Impacts on ecosystem services
OPERATION| PRE-MITIGATION | BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-3
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Medium	-2
Sum		-13
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The measures defined previously for mitigation of air and noise emissions, and protection of fauna and flora apply directly to this IESC as well.

In line with the Main Consultant recommendations, a specifically designed filling plan foresees landscaping in the sense that the vertical faces of the landfill facing the receptors on the east side of the island will be covered with soil and planted at regular intervals ("final cover), allowing for lower impact on the cultural ecosystem services of the area. Furthermore, performing an adequate maintenance of the green belt will further reduce residual visual impacts.

Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may entail an increase in emissions and disturbances on the one hand, on the other hand they provide long-term solutions for the unfavourable waste management situation in the island with a net positive outcome for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.

The significance post-mitigation is assessed as low.

MAGNITUDE - Impacts on ecosystem services
OPERATION | POST-MITIGATION | BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-3
Frequency	Irregular	-2
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.5.2.5 IESC#14: Occupational Health & Safety

Despite the engineered nature of the new landfill, its operation will involve a range of OHS risks that can affect workers' physical health, safety, and long-term well-being if not properly managed.

One of the primary risks involves exposure to hazardous substances, particularly during waste handling and compaction. Workers may come into contact with sharp objects or improperly segregated hazardous materials, which can lead to injuries or contamination. Although engineered landfills typically exclude hazardous waste, cross-contamination from municipal solid waste streams is a possibility to consider.

Vehicle and equipment-related incidents are also a concern. The movement of heavy machinery—such as compactors, bulldozers, and waste transport trucks—creates a high-risk environment for collisions, rollovers, and pedestrian accidents.

Additionally, noise and dust exposure can affect worker health, particularly in areas where waste is actively being deposited or compacted. Prolonged exposure to high noise levels may lead to hearing loss, while inhalation of dust particles can cause respiratory issues.

Fire and explosion hazards—though less common in engineered landfills—can occur due to the accumulation of landfill gas or the presence of flammable materials.

Heat stress and fatigue are additional concerns, particularly in the TCI climate. Without proper training, personal protective equipment (PPE), and safety protocols, these risks can lead to both acute incidents and chronic health issues. The unmitigated impacts have a high significance.

MAGNITUDE - Impacts on OHS
OPERATION | PRE-MITIGATION | BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-3
Frequency	Repeatedly	-4
Ability to recover	Irreversible	-4
Probability	Probable	-3
Intensity	High	-3
Sum		**-18**
Magnitude of the impact		High
vs		
Sensitivity of the receptor		Medium



In light of the potential occupational health and safety risks, it is imperative that the Contractor ensures that necessary measures are in place and properly implemented to prevent accidents and health injuries through a comprehensive Occupational Health and Safety Management Plan (OHS Plan) including, as a minimum, the following recommendations:

- Definition of an organigram of roles and responsibilities related to OHS management at the landfill including at least the information about first aid trained staff and the site Health & Safety Manager
- Assure availability of site specific first aid equipment;
- Set up workplace safety rules. All workers are required to strictly follow safety rules in their working conditions;
- Provide personal protective equipment (PPE) for all staff according to their works. Personal protection equipment must be provided in good conditions to the workers comprising of basic elements such as gloves, helmets, safety boots, ear protection, and dust masks, as well as equipment appropriate for specific works. Periodically check and maintain all the equipment to make sure that it is in good condition for use;
- Provide hygiene facilities such as and washing stations, changing rooms, and clean rest areas to reduce exposure to contaminants
- Rotating shifts and shaded rest areas to prevent heat stress and odour-related discomfort.
- Place noticeboards in place at different locations highlighting the following information:
  - Mandatory PPE at site,
  - Name, location and contact of the Health & Safety Manager and the first aid trained staff at site,
  - Emergency phone number of the nearest fire brigade,
  - Emergency phone number of the nearest hospital,
  - Emergency phone number of the nearest police station,
  - H&S management breaches of the month (“catch of the month”),
  - Summary of the main safety requirements.
- Train staff in H&S topics, conduct daily toolbox talks, allow only qualified personnel for specific tasks;
- Execution of appropriate risk assessments with all needed actions to prevent workers from possible incidents and accidents;
- Emergency response procedures should be put in place through an Emergency Response Plan to ensure that an injured individual will receive competent help as quickly as possible;
- Define clear traffic management plans within the landfill, designate pedestrian zones, and undertake operator training

- Provide and make accessible a transparent Grievance Mechanism for workers to be established by the Contractor as defined in Chapter 12.5.2 of this ESIA Report;
- Report and record any accidents, incidents and/or breach of relevant legislation;
- Prohibit recruiting children who are below the minimum age of 18 years whether to work directly or indirectly on the Project.

Furthermore, the implementation of the previously discussed measures to mitigate air and noise emissions are important to protect OHS. Following implementation of the above mitigation measures, the Project's impact on OHS post-mitigation is assessed as of low significance.

MAGNITUDE - Impacts to OHS
OPERATION | POST-MITIGATION | BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Medium	-2
Sum		-8
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.5.2.6 IESC#15: Community Health & Safety

The development and operation of the Bottle Creek landfill can lead to a range of community health and safety impacts, which in this case are partially attenuated by the distance of the next residences to the site. These impacts are often indirect, arising from environmental emissions, operational activities, and increased public interaction with waste infrastructure.

One of the most immediate concerns is the deterioration of air quality due to emissions of dust and odorous gases from the landfill. Noise pollution from heavy machinery and vehicle traffic can also disrupt daily life.

Traffic and road safety are often cited as key community concerns. Increased heavy vehicle traffic to and from the landfill can lead to congestion, road wear, and heightened risk of accidents, particularly if access routes pass through populated areas. Also a direct contact with the landfill due to trespassing of civilians poses a serious risk to the physical integrity.

Finally, even in the absence of direct physical harm, the perception of risk—such as fear of pollution, property devaluation, or lack of transparency—can lead to chronic stress, community dissatisfaction, and social tension, especially if residents feel excluded from planning and decision-making processes.

MAGNITUDE - Impacts on Community H&S
OPERATION | PRE-MITIGATION | ALL SITES

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-3
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Medium	-2
Sum		-13
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium

SIGNIFICANCE (see matrix) → **Medium**

To ensure the protection of surrounding communities, a comprehensive suite of health and safety mitigation measures must be implemented at the new landfill site:

- Citizens are generally not expected to get close enough to the landfill resulting in any hazards. However to make sure that the landfill is not entered by unauthorised persons, the site needs to be fenced. The fences need to be kept in good conditions and be repaired if damages or vandalism occur
- The fence shall include warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons
- Induction to the workers, especially drivers to follow the traffic rules e.g. speed limit. This includes imposing a speed limit of 30 km/h on access roads, together with regular supervision of speed limit violations or damages to the access roads to reduce the risk of accidents;
- Development of accident prevention/emergency preparedness policy and measures - Emergency Response Plan (see Chapter 11.2of the ESIA Report);

In addition to the measures described, it is important to keep open communication channels between the Contractor and the affected communities. One way of assuring this is granting of free and easy access to an independent and effective Grievance Mechanism for the community to be established by the Contractor as defined in Chapter 12.5.1 of this ESIA Report.

Also regular consultations with stakeholders, including local communities, environmental organizations, and government agencies, should be maintained throughout the Project's life cycle. This ensures that the Project stays aligned with both environmental conservation goals and the needs of local population. It also helps in monitoring project impacts and fine-tuning mitigation efforts based on stakeholder feedback. This shall include as well disclosing relevant project-related information to stakeholders, including informing the nearby communities about the associated risks.

Furthermore, it is essential for the Contractor to implement the noise, odour, and air emissions reduction measures identified in the respective sections of the ESIA report.

Following implementation of the recommended mitigation measures, the Project's impact on CHS post-mitigation can assessed as having low significance.

MAGNITUDE - Impacts on CHS
OPERATION| POST-MITIGATION | BOTTLE CREEK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Long term	-3
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		**-8**
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.5.3 Impacts of the operation of the dumpsites in Providenciales and Grand Turk

The proposed design does not imply actual construction works but rather provides a guideline for the implementation of a more professional operation service of the disposal sites in Providenciales and Grand Turk - including more frequent cover, separate handling of hazardous and decomposable waste, prohibition of burning waste, etc. These improvements are not expected to bring significant enhancements on the environmental performance in any of the sites. In fact, the largest improvements at both sites will be brought up by the rehabilitation measures, thoroughly discussed in Chapter 9.3 of this ESIA Report, and by deviating waste fractions into CAS, TSS, and other facilities as assessed in Chapter 9.5.1.

In none of the dumpsites can leachate collection be reasonably implemented in the present cells. Attenuation measures will nevertheless be implemented by the operation of the site to reduce leachate generation due to the infiltration of rainwater and also to reduce the polluting content of the leachate generated. According to the EEA (European Environmental Agency), waste prevention and proactive waste diversion strategies (like those planned in the scope of the ISWMP) reduce the volume of waste disposed in the landfills, thereby decreasing leachate generation[197]. A decrease in leachate generation in the two sites is expected to bring some reduction of the environmental pollution, whose advantages can only be quantified once continuous monitoring of the impacts of the sites is initiated.

Also, the soil at both sites, assumed to be presently highly contaminated, will not be subject to remediation measures. Instead, best operational practices as described in the previous paragraph to avoid further pollution will be undertaken.

In line with the Main Consultant recommendations, a specifically designed filling plan foresees landscaping in the sense that the vertical faces of the dumpsites facing the receptors will be covered with soil and planted at regular intervals ("final cover), allowing for lower impact on the cultural ecosystem services of the areas.

[197] https://www.eea.europa.eu/en/european-zero-pollution-dashboards/indicators/emission-from-waste-management-facilities

The dumpsite in Grand Turk is located in proximity to the Town Salina and Great Salina; the dumpsite in Providenciales is located close to the Wheeland Pond and the coastal areas. These are ecologically sensitive habitats supporting diverse bird species. Waste disposal areas can attract opportunistic bird species such as gulls, storks, and raptors, potentially altering natural feeding patterns and creating ecological imbalances. Additionally, birds frequenting dumpsites may introduce pathogens into the salina ecosystem or increase predation pressure on native species. Therefore, a structured avifauna monitoring program on both dumpsites is essential to assess and mitigate potential impacts on biodiversity (see ESMoP on Chapters 11.19.3.3 and 11.19.3.9).

Given that the impacts of the existing dumpsites have already been comprehensively assessed in Chapter 7, and that the design of the ISWMP already foresees operational improvements, the formulation of additional mitigation measures at this point is methodologically unnecessary and lacks practical justification.

9.6 Step 3 (d): Multi Criteria Analysis - Impacts and Mitigation Measures During Decommissioning

Four (4) of the ISWMP sites will be decommissioned. A brief description of the decommissioning works, their duration, future uses and the significantly affected IESCs is presented in Table 9-6.

Table 9-6: Description and duration of the decommissioning works, future uses and affected IESCs

Site	Decommissioning works	Duration and equipment	Future uses	Significantly affected IESCs
North Caicos (Kew)	▪ General reshaping of the disposal site ▪ Removal of the bulky waste ▪ Temporarily pile bulky waste on site and then transfer it to the recovery facilities in Providenciales when completed ▪ Buried waste will not be removed because it is buried too deep ▪ Final cover and revegetation	1.5 months 1 excavator 1 dozer	The underlying waste will not allow for the construction of rigid and permanent structures on top. In the future, the Kew site can only be used for green and recreational areas.	▪ IESC#2: Noise ▪ IESC#12: Livelihoods ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety
Middle Caicos	▪ General reshaping of the disposal site ▪ Clearance and removal of waste ▪ Transfer of waste to Bottle Creek ▪ Temporarily pile bulky waste on site and then transfer it to the recovery facilities in Providenciales when completed ▪ Installation of a gate and fence	1 week 1 excavator 1 dozer	Not determined	▪ IESC#2: Noise ▪ IESC#4: Surface Water quality ▪ IESC#7: International Natural Protected Areas ▪ IESC#8: Fauna & Flora ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety

Site	Decommissioning works	Duration and equipment	Future uses	Significantly affected IESCs
South Caicos	▪ General reshaping and clearing of the active disposal site ▪ Covering with soil ▪ Temporarily pile bulky waste on site and then transfer it to the recovery facilities in Providenciales when completed	2 weeks 1 excavator 1 dozer	The underlying waste will not allow for the construction of rigid and permanent structures on top. In the future, the SC site can only be used for green and recreational areas.	▪ IESC#2: Noise ▪ IESC#4: Surface Water quality ▪ IESC#6 - National Natural Protected Areas ▪ IESC#8 - Fauna & flora ▪ IESC#12: Livelihoods ▪ IESC#13: Private Assets ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety
Salt Cay	▪ Excavation of a trench for the disposal of the existing waste ▪ General reshaping and clearing of the area ▪ Demolishing the existing fence ▪ Load of bulky materials into a container and barging them to Grand Turk for disposal or further shipping to Providenciales	2 weeks 1 excavator	Not determined	▪ IESC#4: Surface Water quality ▪ IESC#14: Occupational Health & Safety ▪ IESC#15: Community Health & Safety

9.6.1 IESC#2: Noise (Kew, Middle Caicos, and South Caicos)

During the decommissioning works, dozers and excavators, as well as the related activities will produce a temporary significant increase in noise disturbance. Trucks transporting bulky waste outside the sites will also create some noise along access routes.

The impacts on noise negatively affect the health and well-being of local inhabitants (the Kew site is located 300 m from the nearest houses) and those living along access roads, users of the nearby areas (the South Caicos site is in direct vicinity to touristic areas) or roads, and animals within sensitive natural areas (case of Middle Caicos).

The impacts are anticipated to be temporary and of short-term nature as they are limited to the decommissioning period and are reversible as baseline conditions will be restored upon completion of works. The intensity of noise impacts may reach high levels depending on the activity undergoing.

Given the above, the pre-mitigation impact is considered of medium magnitude. Considering that the sensitivity of the IESC "noise" is classified as medium, the impacts' significance is classified as medium. Mitigation and avoidance measures are required to reduce the magnitude of the impact.

MAGNITUDE - Impacts on noise
DECOMISSIONING | PRE-MITIGATION | KEW, MC & SC

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Irregular	-2
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	High	-3
Sum		-11
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



Mitigation measures proposed during decommissioning activities concerning noise impact include:

- Plan decommissioning activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)
- Trucks and vehicles crossing housing areas shall reduce their speed to a maximum of 30 km/h and traffic speed on unpaved access roads shall be reduced to 15 km/h
- The Contractor must undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible
- Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the decommissioning phase
- Continuously coordinate and inform the nearby communities and tourist operators of the start and duration of any expected high noise generating activities.

The mitigation measures may allow reducing the impact's probability to possible and its frequency to occasionally or never. Therefore, the magnitude post-mitigation is reduced to low. Based on the significance matrix, the significance of the residual impact (impact post-mitigation) is classified as low.

MAGNITUDE - Impacts on noise
DECOMISSIONING | POST-MITIGATION | KEW, MC & SC

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-7
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.6.2 IESC#4: Surface water quality (Middle Caicos, South Caicos and Salt Cay)

The Middle Caicos site is located adjacent to a small wetland, which, according to information shared by the DECR, has been a breeding site for West Indian Whistling Ducks in the past. There is no information on the water quality of this wetland.

The South Caicos dumpsite is nearby the proposed South Caicos Wetland Critical Habitat Reserve, and the proposed Boiling Hole Nature Reserve, also a wetland.

The Salt Cay dumpsite is located less than 100 m from the Atlantic Ocean.

Decommissioning activities such as reshaping, temporarily piling, excavation of trenches (in Salt Cay), and heavy machinery circulation may disrupt the natural soil stability and increase the risk of soil erosion. Eroded soil can be carried by stormwater runoff or wind into the sites' surface water features causing sedimentation, turbidity, and habitat degradation.

Of particular concern is the improper disposal of water resulting from cleaning and maintenance activities involving chemicals, solvents, or detergents, which can introduce high pH levels, heavy metals, and other contaminants into the surface water. Run-off of water contaminated with vehicle oil/fuel, concrete, asphalt, paints, solvents, and other oils, can contain toxic chemicals, posing an additional threat.

Improper conduct and housekeeping practices by workers (i.e. discharge of waste to the environment) could be sources of pollution to the surface water features.

Given the above, the pre-mitigation impact is considered of medium magnitude. Considering that the sensitivity of the IESC is classified as medium, the impacts' significance is classified as medium. Mitigation and avoidance measures are required to lower the magnitude of the impact to low.

MAGNITUDE - Impacts on surface water
DECOMISSIONING | PRE-MITIGATION | MC, SC & SCay

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Irregular	-2
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-10
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium

SIGNIFICANCE (see matrix) → **Medium**

Any works at the sites must be undertaken with particular consideration of the water environment.

The Construction Contractor shall prepare a Soil Erosion and Sedimentation Control Plan for the decommissioning of the sites in Middle Caicos, South Caicos and Salt Cay. This plan shall contain measures to prevent the loss of soil during decommissioning by storm water runoff and/or wind erosion, as well as to prevent sedimentation of storm water and the receiving resources. It shall also include the design of a temporary drainage system to accommodate storm water runoff and to protect the site from erosion-causing runoff, and the use of appropriate structural measures to prevent erosion.

To avoid contaminating the inland and coastal waters, the drainage system must be equipped with sediment traps and oil-water separators. A stormwater detention and retention basin needs also to be installed to temporarily store excessive runoff during storm events, allowing sediment and pollutants to settle out before the water is discharged.

If drainage water is contaminated and cannot be treated, it must be drained into a dedicated retention basin. Drainage must in these cases be pumped and disposed of as hazardous waste once the IWRC in Providenciales is available.

Chapter 11.7 provides guidelines for development of the Soil Erosion and Sedimentation Control Plan.

Littering at the sites or the surroundings shall be forbidden during decommissioning activities. During the 1 to 2 weeks of works, any waste generated shall be collected in bins or plastic bags and be in the end transported to the operational dumpsites.

The measures may allow reducing the magnitude of the impacts delivered to low. The resulting impact will be reduced to low.

MAGNITUDE - Impacts on international natural protected areas, fauna & flora
DECOMISSIONING | POST-MITIGATION | MC

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.6.3 IESC#7: International Natural Protected Areas and IESC#8: Fauna & Flora (Middle Caicos and South Caicos)

The Middle Caicos dumpsite is located within the Middle Caicos Forest KBA-IBA. This is a forest area located between the settlements of Lorimers and Bambarra. The area of this IBA is 1,374 ha and has the code IBA TC003. One species of Near-Threatened bird (West Indian Whistling-duck) is resident in this forest with an unknown number of individuals. Other four (4) bird species (all of Least Concern) are known to reside in the forest as well. The dumpsite is located adjacent to a small wetland which, according to information shared by the DECR, has been a breeding site for the same duck species in the past.

The Middle Caicos dumpsite's AoI borders the North, Middle and East Caicos Ramsar Site, but given the localized, brief and simple nature of the decommissioning works, as well as the distance of ca. 1.5 km to the site, no impacts are foreseen to be delivered in the Ramsar site.

The South Caicos dumpsite is nearby the proposed South Caicos Wetland Critical Habitat Reserve, and the proposed Boiling Hole Nature Reserve. Among species present, the NT Reddish Egret is highlighted. According to the DECR, much of the undeveloped land on South Caicos has high occurrence of rare, threatened, and endemic species of plants, including Caicos Encyclia orchid (EN), Capillary buttonbush (EN) and the culturally iconic Turk's head cactus (LC).

A deficient management of the decommissioning works, for example, through improper conduct and housekeeping practices by workers (i.e. discharge of waste to land) could be sources of stress to the site's and the AoI's habitats and vegetation. Potential impacts to fauna during the decommissioning activities are related to direct fauna disturbance by the workers and traffic, damaging of nests and eggs, or poaching.

Given the above, the pre-mitigation impact is considered of medium magnitude. Considering that the sensitivity of the IESC is classified as high, the impacts' significance is classified as high. Mitigation and avoidance measures are required to lower the magnitude of the impact to low.

MAGNITUDE - Impacts on international natural protected areas, fauna & flora
DECOMISSIONING | PRE-MITIGATION | MC, SC

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Irregular	-2
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-10
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		High



Any works at the sites must be undertaken with particular consideration of the ecological and physical environment.

Only the defined access roads shall be used and no off-road driving shall be allowed. This will prevent impacts on surrounding wildlife and habitats. Littering at the site or the surroundings, making fire, listening to loud music or making other types of excessive noise shall be forbidden during decommissioning activities.

The fence to be placed around the gate must be equipped with prohibition signs and clarification about the decommissioned nature of the site and the attempt to recover its ecological baseline. The fence shall not contain sharp edges, barbed wire, or electric current.

Interaction of workers with wildlife and feral animals shall be regulated by prohibition of harming native wildlife and instruction to contact DECR when wildlife incidents occur (or the Department of Agriculture if there are concerns regarding feral animals).

The measures may allow reducing the magnitude of the impacts delivered to low. The resulting impact will remain medium due to the highly sensitive nature of the protected forest. Therefore, compensation measures are suggested to tackle residual impacts.

MAGNITUDE - Impacts on international natural protected areas, fauna & flora
DECOMISSIONING | POST-MITIGATION | MC, SC

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		High



Considering the above, it is important to apply compensation and awareness measures with focus on the most sensitive affected site: South Caicos. The reason for this selection lays on the following facts:

- The AoI of Middle Caicos includes a NT species of duck that has an habitat not only nearby the site (small wetland), but also within the wider forest surrounding it; if works are restricted to the dumpsite's footprint, a significant impact on biodiversity is not expected.
- The AoI of South Caicos includes rare, threatened, and endemic species of plants whose location is presently not mapped.

In response to a DECR request, a detailed Pre-construction Biodiversity Assessment, i.e., an assessment of fauna and flora at the South Caicos site and the areas where decommissioning machinery will circulate before decommissioning shall be undertaken by an expert (ex., a biologist) to be engaged by the Decommissioning Contractor. In case rare, threatened, and endangered plants, animals or ecosystems, species of commercial importance, and/ or ecosystem services provided by any of these are detected at the investigated sites, the Contractor shall prepare and implement a Biodiversity Rescue Procedure. The ESMP (Chapter 11.8) provides further guidance.

Additionally, as part of the decommissioning of Middle Caicos and South Caicos sites, the areas shall be replanted with local indigenous species from the wider areas. This will enhance the quick recovery of the dumpsites to the conditions of the remaining AoI, potentially deter a renewed illegal waste deposition, and compensate for the years of disturbance from the illegal uncontrolled dumping activities.

The site could in this form be used as a good-practices example by the GOTCI for environmental education purposes.

9.6.4 IESC#9: Ecosystem Services (South Caicos)

Places around the site have been identified as "vulnerable places" (provide provisioning and regulating services), "favourite places" (cultural services), and places for "marine activities" (provisioning and cultural services).

Decommissioning works can temporarily reduce the appeal and demand for ecosystem services in the area due to visual impacts, increase in noise and air emissions, and circulation of heavy vehicles and machinery.

The works may also, as described in the section dedicated to natural protected areas, affect the local biodiversity and ecosystems, affecting provisional ecosystem services.

The significance of this impact is classified as medium.

MAGNITUDE - Impacts on ecosystem services
DECOMMISSIONING| PRE-MITIGATION | SC

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Probable	-3
Intensity	Medium	-2
Sum		-12
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The measures defined previously for mitigation of noise and water impacts, and for protection of natural protected areas, fauna and flora apply directly to this IESC as well.

If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce decommissioning-related disturbances, and clear signage to inform visitors of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7. Coordination with local tourism stakeholders shall be maintained to ensure minimal impact on visitor experience.

Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship. The significance post-mitigation is assessed as low.

MAGNITUDE - Impacts on ecosystem services
DECOMMISSIONING| POST-MITIGATION | SC

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Seasonal	-3
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Low	-1
Sum		-9
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.6.5 IESC#12: Livelihoods (North Caicos Kew and South Caicos)

Informal waste pickers have been reported by the Main Consultant collecting materials at the Kew dumpsite in North Caicos and at the South Caicos dumpsite. Upon decommissioning, these activities will need to cease.

Presently, the magnitude and spatial extent of the impact cannot be safely established, as the number of affected persons and their living areas are not clear. As a conservative approach, impacts are considered to be delivered at a municipal level (5-10 km from the sites). The activity delivering the impact (decommissioning) is of short term (1-2 weeks), but the impact is irreversible without mitigation. The probability of the impact happening is definite. Unknown at this stage is the intensity, i.e., how far do waste pickers depend on this activity as their only, small or main source of livelihood. Also unknown is the level of impact on the secondary parallel economy. As a conservative approach, a "high" intensity pre-mitigation is considered.

MAGNITUDE - Impacts on livelihoods
DECOMMISSIONING| PRE-MITIGATION | NC, SC

Criteria	Classification	Scoring
Spatial extent	Municipal	-2
Duration	Short term	-1
Frequency	Repeatedly	-4
Ability to recover	Irreversible	-4
Probability	Definite	-4
Intensity	High	-3
Sum		-18
Magnitude of the impact		High
vs		
Sensitivity of the receptor		High



The most urgent and important measures to be applied to minimize the expected impacts is the engagement of a social specialist to prepare a Livelihood Restoration Plan with the core purpose to help waste pickers transition from their informal, precarious work to more stable, dignified, and sustainable sources of income. This measure goes in line with the suggestion of the Main Consultant for the GOTCI to prepare and apply an Informal Sector Inclusion Plan.

The plan shall begin by understanding the specific needs and vulnerabilities of the affected community. From there, it shall aim to provide income support, skills training, and access to new job opportunities—whether in the formal waste management system, or entirely new sectors.

It needs to be considered that the employment of undocumented persons in the waste management system may not be possible, for what the negative impacts may become permanent for some of the waste pickers.

In this context, it is key to note that the ILO states that "irregularity does not mean that migrant workers have no rights or that their rights should not be respected. Ensuring respect of human rights, including labour rights, of all migrant workers, is critical to tackling irregular labour migration, and must be a basis for effective management and cooperation at all levels. Social partners play an essential role in designing and implementing measures relating to the prevention of abusive conditions associated with irregular labour migration.[198]"

Crucially, the LRP is not something to be done *to* waste pickers, but *with* them. Their voices, experiences, and aspirations should shape the plan from the start. And once implemented, the plan should be monitored and adapted over time. Chapter 13.3 suggests an annotated table of contents for a tailored LRP for the ISWMP dumpsites.

Although few female pickers were seen on the sites, their circumstance have to be separately considered. Their specific circumstances, roles and vulnerabilities must be assessed to ensure that Project interventions address their unique needs and promote equitable participation and benefits.

Also the Feasibility Study suggests the organisation of training for recyclers and sorters at the sites, and providing corresponding job opportunities. This would also allow reducing landfill dependency and development of the local recycling and circular economy sector.

Any measures to be defined in the LRP shall consider legal provisions of the TCI and the CDB social safeguards.

In an ideal scenario where the LRP is prepared and applied as above described to all affected waste pickers, these would, in one or another form, come out of the situation benefiting from the delivered impacts. In this case, the outcome would be an impact with medium significance.

MAGNITUDE - Impacts on livelihoods
DECOMMISSIONING| PRE-MITIGATION | NC, SC

Criteria	Classification	Scoring
Spatial extent	Municipal	-2
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		-7
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		High



9.6.6 IESC#13: Private assets (South Caicos)

The South Caicos dumpsite is located within privately owned land. The decommissioning works will enter private land at the dumpsite but also in the surroundings, and may cause damages to land and any privately owned assets.

[198] https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@ed_protect/@protrav/@migrant/documents/publication/wcms_832915.pdf

An impact with medium significance is expected without mitigation (in this case compensation) measures.

MAGNITUDE - Impacts on private assets
DECOMMISSIONING| PRE-MITIGATION | SC

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Once	-1
Ability to recover	Reversible	-1
Probability	Definite	-4
Intensity	Medium	-2
Sum		-10
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



A Land Acquisition Plan (LAP) needs to be elaborated that establishes the timelines, the responsibilities, the obligations and the rights of the buyer and the seller regarding the acquisition process. The GOTCI has a particular procedure for such cases that shall be followed.

The LAP also needs to comply with the relevant provisions of the IFC Performance Standard 5 - Land Acquisition and Involuntary Resettlement, and with the CDB Performance Requirement 7 - Land Acquisition and Resettlement.

Upon application of the LAP, including payment or establishment of a lease contract for the land to be used, the impacts can be reduced to a low significance.

MAGNITUDE - Impacts on private assets
CONSTRUCTION| POST-MITIGATION | SC

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Unlikely	-1
Intensity	Low	-1
Sum		**-6**
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.6.7 IESC#14: Occupational Health & Safety (Kew, Middle Caicos, South Caicos, and Salt Cay)

The decommissioning works will be relatively simple for all sites, but not free from occupational risks. The absence of proper waste management at the dumpsites means that all types of garbage—organic, industrial, medical, and electronic—are mixed and scattered across the site, creating unpredictable and dangerous conditions.

All sites likely contain toxic substances. As workers dig through layers of decomposing waste, they may be exposed to harmful chemicals, heavy metals, and volatile organic compounds if they enter in direct contact with the waste and do not wear adequate PPE. These substances can be inhaled or absorbed through the skin, leading to acute or chronic health issues. Leachate, the liquid that drains from decomposing waste, can also be highly corrosive and may contain pathogens or carcinogens.

Biological hazards are another concern. Decomposing organic matter can harbor bacteria, viruses, and fungi, while improperly disposed medical waste may carry infectious agents. The presence of disease vectors such as rats, flies, and mosquitoes further increases the risk of illness.

Injuries from lifting, carrying, or moving heavy materials, heat exhaustion from working in high temperatures, and sun burns are other associated occupational health & safety risks in all sites. In Salt Cay, trenching poses an additional occupational risk.

Impacts on occupational H&S are negative and may be significant. Without proper evaluation and implementation of safety rules to reduce risks of accidents, the impacts will most probably happen repeatedly with high intensity. In case of serious accidents, worker(s) might not be able to fully recover. Given this, impacts pre-mitigation are considered of high magnitude. Considering that the sensitivity of the receptor is classified as medium, the impacts' significance is classified as high.

MAGNITUDE - Impacts on OHS
DECOMISSIONING | PRE-MITIGATION | KEW, MC, SC & SCay

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Repeatedly	-4
Ability to recover	Irreversible	-4
Probability	Probable	-3
Intensity	High	-3
Sum		-16
Magnitude of the impact		High
vs		
Sensitivity of the receptor		Medium



To mitigate these impacts, it is essential to conduct thorough site assessments before the decommissioning works begin. Due to the small areas of the sites, this task shall be easily and quickly concluded. This includes mapping the extent of the waste and identifying areas of different waste types.

Once the sites have been assessed, simple Decommissioning and OHS Risk Management Plans shall be developed for each site (detailed guidelines can be consulted in the ESMP, Chapter 11.5). These plans must include clearly defined zones based on hazard levels, with specific occupational health & safety measures for different hazard levels.

Besides the team handling the machinery and vehicles, the decommissioning works shall be monitored at all times by an expert that will coordinate the works and assure that he OHS risks are kept to a minimum.

Adequate PPE, eye protection and hearing protection shall be provided according to the hazard levels. Machinery operators must be trained and experienced in working on unstable terrain.

Waste shall not be touched at any time and shall only be handled with machinery. This allows a significant reduction of the risks associated with direct contact of the workers with the waste. The expert monitoring the works shall also keep a safe distance and the remaining team shall stay inside the vehicles and machinery.

All workers must wear face goggles and a mask to protect them from the dust resulting from excavation activities. Full-face respirators may not be available in the TCI and may be inconvenient for usage in tropical climatic conditions. Dust suppression techniques, such as water spraying, should be used during excavation and other activities generating high levels of dust.

If resources are available, soil and waste samples should be analyzed to determine the presence of toxic substances, heavy metals, or asbestos. This would allow a more tailored risk assessment of related occupational hazards and definition of workers protection measures.

The Contractor shall foresee a dedicated program for professionally wash the working clothes at necessary intervals or at least at the end of the decommissioning works. Workers shall not take the used clothes to wash at home. Clothing and tools which are suspected to have been contaminated with hazardous substances should be handled and disposed of according to hazardous waste protocols.

Workers should have access to clean water, handwashing stations, and sanitary facilities. Any injuries, especially cuts or punctures, must be treated immediately to prevent infection.

Following implementation of the recommended mitigation measures, the Project's impact on OHS post-mitigation can be assessed as having low significance

MAGNITUDE - Impacts on OHS
DECOMISSIONING | POST-MITIGATION | KEW, MC, SC & SCay

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Medium	-2
Sum		-8
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



9.6.8 IESC#15: Community Health & Safety (Kew, Middle Caicos, South Caicos, and Salt Cay)

The proximity of the Kew site to the Kew community and of the South Caicos site to the tourism areas, as well the existence of access roads leading to all sites enhances the possibility of exposure of the population and visitors to health and safety hazards. In addition, not all sites are fenced.

The hazards related to noise have been discussed in the previous item.

Other hazards for the community members and visitors can result from decommissioning-related traffic. There will be an increase in traffic flow for transporting bulky waste outside the sites, as well as for transporting of equipment and machinery necessary for the works. Risk of traffic accidents can increase in the road network that connects with the dumpsites.

Impacts on CHS are negative and may be significant. These are anticipated to happen locally, based on a short-term duration activity (<1 year decommissioning works), possible and reversible. Given this, impacts pre-mitigation are considered of medium magnitude. Considering that the sensitivity of the receptor is classified as medium, the impacts' significance is classified as medium. Mitigation measures are required and suggested below.

MAGNITUDE - Impacts on Community H&S
DECOMISSIONING | POST-MITIGATION | KEW, MC, SC & SCay

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Repeatedly	-4
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	High	-3
Sum		-12
Magnitude of the impact		Medium
vs		
Sensitivity of the receptor		Medium



The following identifies the mitigation measures related to CHS during decommissioning of the dumpsites:

- Not all sites are fenced, and community members, visitors, or people used to drop waste there may get close enough resulting in hazards. To make sure this does not happen, warnings shall be placed at the access roads with sufficient distance to the sites warning of the works and of the prohibition to use the sites presently and in the future.
- Previous information of the community of the works schedule, duration, potential risks and activities to be performed will help assuring that communities understand that the sites shall not be used during nor after decommissioning works. This shall be the responsibility of the Contractor but needs to be done with support of the EHD and, additionally it is suggested to involve the district commissioners and local information media.
- Induction to the workers, especially drivers to follow the traffic rules
- Development of accident prevention/emergency preparedness policy and measures in form of Emergency Response Plans as detailed in Chapter 11.2 of this ESIA Report;

In addition to the measures described, it is important to keep open communication channels between the Contractor and the affected communities. One way of assuring this is granting of free and easy access to an independent and effective Grievance Mechanism for the community (including private tourism operators) to be established by the Contractor as defined in Chapter 12.5.1 of this ESIA Report. This aspect came out as a priority during the Wheeland Community Consultation held on the 24th March 2023 by the Main Consultant.

If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7.

Furthermore, it is essential for the Contractor to implement the noise emissions mitigation measures identified in the respective section of the ESIA report.

Following implementation of the recommended mitigation measures, the Project's impact on CHS post-mitigation can assessed as having low significance

MAGNITUDE - Impacts on CHS
REHABILITATION| POST-MITIGATION | PROVIDENCIALES & GRAND TURK

Criteria	Classification	Scoring
Spatial extent	Local	-1
Duration	Short term	-1
Frequency	Occasionally or never	-1
Ability to recover	Reversible	-1
Probability	Possible	-2
Intensity	Medium	-2
Sum		-8
Magnitude of the impact		Low
vs		
Sensitivity of the receptor		Medium



10 Climate Risks and Vulnerability Assessment

A Climate Risks and Vulnerability Assessment (CRVA) was performed for identifying the potential impact of climate change in the three main Project facilities: the dumpsites in Providenciales and Grand Turk, and the new landfill in Bottle Creek (hereinafter called "Main Sites").

Based on the identified risks, the CRVA identified resilience (adaptation and mitigation) measures to be included in the Project and in the related institutions. The CRVA was based on the facilities and documents provided by the Main Consultant, specifically the Draft Preliminary Design Report (Rev. 02, May 2025).

The CRVA follows the IFC (International Finance Corporation) Performance Standards regarding Climate Risk Assessment, which requires the identification of risks and impacts of the Project being consistent with international industry practice. Specifically, the methodology developed by Fichtner for the assessment is based on the **EU-Taxonomy regulation**, widely considered as best-practice in the field.

The methodology for the CRVA is detailed in Chapter 5.3.1 of this ESIA Report and in Annex H. In summary, the following steps have been performed for the CRVA:

- identification of physical climate risks in accordance with the EU-Taxonomy classification of climate related hazards that may affect the performance of the Project during its expected lifetime
- high level assessment of climate vulnerability to assess the materiality of the physical climate risks on the Project
- proposal of adaptation or mitigation solutions to reduce the identified physical climate risks.

It is noted that transition risks, i.e., risks related to policies, liabilities, or technology related, such as supply chain, are not included in this assessment. It is understood that specific future regional or country policies could have an additional impact, but these cannot be foreseen and would have to be assessed separately.

The impact assessment begins with analysing each site's exposure and vulnerability to determine climate-related effects on the Project. By using climate projections, it identifies potential future risks that may not have been apparent during the Project facilities' design. Recognizing these risks early allows for timely actions to mitigate them, preventing or limiting future harm.

It is understood that the Project has been designed according to the applicable codes and standards. As a result of the CRVA, and based on the information available, a risk table is provided showing the level of the identified impact (very low, low, medium or high) for the short-term and the mid-term horizons. For those hazards for which a risk has been detected, Fichtner provides recommendations for possible adaptation or mitigation measures. These need to be discussed with EHD and the Main Consultant before being added to the final design and the tender documentation.

10.1 Climate-related hazards and associated impacts

Per the EU-Taxonomy regulation[199], projects must identify physical risks significant to the activity from the available list of climate hazards. The climate-related hazards for consideration are detailed in the table below.

Table 10-1: Classification of climate-related hazards according to the EU-Taxonomy

Hazard type	Temperature-related	Wind-related	Water-related	Solid mass-related
Chronic	Changing temperature (air, freshwater, marine water)	Changing wind patterns	Changing precipitation patterns and types (rain, hail, snow/ice)	Coastal erosion
	Heat stress		Precipitation or hydrological variability	Soil degradation
	Temperature variability		Ocean acidification	Soil erosion
	Permafrost thawing		Saline intrusion[200]	Solifluction
			Sea level rise	
			Water stress	
Acute	Heat wave	Cyclone, hurricane, typhoon	Drought	Avalanche
	Cold wave/frost	Storm (including blizzards, dust and sandstorms)	Heavy precipitation (rain, hail, snow/ice)	Landslide
	Wildfire	Tornado	Flood (coastal, fluvial, pluvial, ground water)	Subsidence

The identified climate-related hazards (Table 10-1) have impacts associated on operation (O&M) and design of the ISWMP facilities. Table 10-2 shows a general overview of impacts of climate change on waste management structures for each hazard category (temperature, wind, water and solid mass-related). Chronic hazards are shown in light green, and acute hazards in dark green.

[199] Appendix A of Commission Delegated Regulation Act Annex 1, Brussels, 4.6.2021

[200] Saline intrusion does not have an effect on the plants themselves, but for the TCI can mean degradation of freshwater ecosystems and soil salinization. Therefore, increased water treatment costs, reduced land value, and migration and relocation of inhabitants can be expected.

Table 10-2: General overview of impacts of climate change on waste management structures

Hazard Category (EU-Taxonomy)	Climate Variable (EU-Taxonomy)	Impact of climate change on waste management structures - general overview	
		Operation and Maintenance	Design
Temperature -related	Increase or decrease of temperature / heat stress	Elevated temperatures combined with drought conditions can increase the likelihood of waste ignition. Additionally, workers face heightened risks due to an expanding population of insects, driven by increased temperatures and humidity. This rise in insect activity may lead to a greater risk of disease transmission among personnel.	If no protective systems like lining, leachate, or landfill gas collection are in place, increased fire risk can lead to structural damage.
	Temperature variability	No impact on O&M.	No impact on landfill or dumpsites body.
	Permafrost thawing	Not applicable in the TCI	Not applicable in the TCI
	Heat waves	O&M limitations due to extreme temperatures. These conditions pose risks to the health of operating personnel, increasing the likelihood of heat exhaustion. Consequently, productivity may decrease, and operational costs can rise.	No impact on landfill or dumpsites body.
	Cold waves	Not applicable in the TCI	Not applicable in the TCI
	Wildfires	The occurrence of wildfires can lead to hazardous emissions through the on-site burning of waste, posing health risks.	If no protective systems like lining, leachate, or landfill gas collection are in place, increased fire risk can lead to structural damage.
Wind-related	Increase or decrease of wind speed or changes in wind patterns	Blowing up waste into the surrounding environment leads to pollution.	No impact on landfill or dumpsites body.
	Cyclones/hurricanes/ Typhoons	Extreme weather events such as cyclones, hurricanes, typhoons, storms, and tornadoes can result in the temporary closure of facilities, creating a bottleneck in waste disposal processes and leading to the accumulation of waste at the source. Additionally, these conditions can hinder access to landfill sites and cause waste to be blown into the surrounding environment.	The high winds associated with these events can lead to foundation and landfill body slide problems, damaging infrastructure and compromising the structural integrity. These conditions can also disrupt drainage systems, increasing the risk of pollutants leaching into the groundwater and surface water, potentially contaminating connected marine ecosystems. Furthermore, the force of the wind may carry waste into the environment.
	Storm (including blizzards, dust and sandstorms)		
	Tornado / severe storms		

Hazard Category (EU-Taxonomy)	Climate Variable (EU-Taxonomy)	Impact of climate change on waste management structures - general overview	
		Operation and Maintenance	Design
Water-related	Increase or decrease in average precipitation	No impact on O&M.	Increasing leachate and/or surface water volume may cause increased pollution of the groundwater and the aquatic ecosystem.
	Changing precipitation patterns and types (rain, hail, snow/ice)	No impact on O&M.	No impact on landfill or dumpsites body.
	Ocean acidification	No impact on O&M.	No impact on landfill or dumpsites body.
	Saline intrusion	Saline intrusion can adversely affect the performance of a leachate treatment plant. Interference can reduce efficiency and potentially lead to higher operational costs and maintenance requirements.	Saline water infiltration may cause degradation of the lining system.
	Sea level rise	The risk of permanent flooding poses significant challenges, potentially resulting in the transport of waste and pollutants into the sea. This situation may necessitate the closure of affected facilities.	Can cause permanent flooding and thus carrying waste/pollution to the sea and necessity of closing facilities; may cause higher saline intrusion.
	Water stress	No impact on O&M.	No impact on landfill or dumpsites body.
	Drought	No impact on O&M.	No impact on landfill or dumpsites body.
	Heavy precipitation (rain, hail, snow/ice)	Heavy precipitation, whether rain or hail, can significantly impact O&M by hindering access to or necessitating the temporary closure of landfill sites. This disruption may create a bottleneck in waste disposal processes, leading to the accumulation of waste at its source. Additionally, increased volumes of leachate and surface water must be managed, requiring enhanced handling and treatment capacities	Can cause increased leachate volume and leaching of pollutants into the groundwater and the surface water and finally contaminating the marine ecosystem because it is connected to the groundwater in TCI. Heavy precipitation increases the risk of landfill and dumpsites body slides, damaging infrastructure and affecting the structural integrity of the landfill body.
	Flood	Flooding can result in the temporary closure of facilities, leading to the accumulation of waste at the source.	Can cause foundation and landfill and dumpsites body slide problems, drainage system problems resulting in contamination of the marine ecosystem (connected to groundwater in TCI), structural damage; waste can be carried to the environment and cause pollution.

Hazard Category (EU-Taxonomy)	Climate Variable (EU-Taxonomy)	Impact of climate change on waste management structures - general overview	
		Operation and Maintenance	Design
Solid mass-related	Coastal erosion	Not applicable.	Not applicable.
	Soil degradation	Not applicable.	Not applicable.
	Soil erosion	Not applicable.	Seismic activity and subsidence can limit access to the landfill site and can increase the risk of landfill body slides, damaging infrastructure and affecting the structural integrity of the landfill body.
	Solifluction		
	Avalanche	Seismic activity and subsidence can temporarily restrict the use of a landfill body, necessitating remediation efforts to restore safety and functionality.	
	Landslide		
	Subsidence		
	Seismic		

10.2 Climate Change Projections Data

For the assessment of the future climatic changes at the main sites, Fichtner obtained climate projection data from the data provider Climate Scale using the CMIP6 (Coupled Model Intercomparison Project Phase 6) ensemble of more than 20 Global Climate Models (GCMs), which typically have a resolution of 100-200 km. Climate Scale increases the resolution to 25 km and a statistical analysis of the obtained results from the models is performed.

The assessment is based on the newest Shared Socioeconomic Pathways (SSPs): SSP1-2.6, SSP2-4.5, SSP3-7.0 and SSP5-8.5 and considers the worst-case scenario. Two temporal horizons were selected to cover the expected lifetime of the Project:

- A short-term horizon (2020-2039) and
- A mid-term horizon (2040-2059)

10.3 Climate-Related Risks

The impact of climate hazards varies depending on the asset type. In this case, the design, operation and maintenance of a Waste Management Site such as landfills and dumpsites are analyzed throughout the entire lifetime. Therefore, the climate-related risks have been divided into 2 categories:

- Risks for general infrastructure (9 risks)
- Specific risks for Waste Management Plants (1 risk)

Table 10-3 includes a definition of the risks for each category. Chronic hazards are shown in light green, and acute hazards in dark green. The complete CRVA Report (Annex H of this ESIA) includes, for each climate variable, the corresponding metrics used, the type of analysis and the thresholds.

Table 10-3: Climate-related risks for general infrastructure and waste management plants

Risk number	Climate Variable (EU-Taxonomy)	Climate-related risk
Risks for general infrastructure		
G1	Heat wave	Tolerance of human body
G2	Wildfire	Damage due to fire
G3	Heavy precipitation (rain, hail, snow/ice)	Damage due to flood
G4	Heavy precipitation (rain, hail, snow/ice)	Damage due to hail
G5	Storm (including blizzards, dust and sandstorms)	Damage due to high wind (storminess)
G6	Cyclones/ hurricanes/ Typhoons	Damage due to cyclones
G7	Subsidence	Damage due to subsidence
G8	Soil erosion	Damage due to soil erosion
G9	Landslide	Damage due to landslide
Specific risks for Waste Management Plants		
W7	Wave Height changes	Damage on structures, reduced accessibility

10.4 Flood Risks

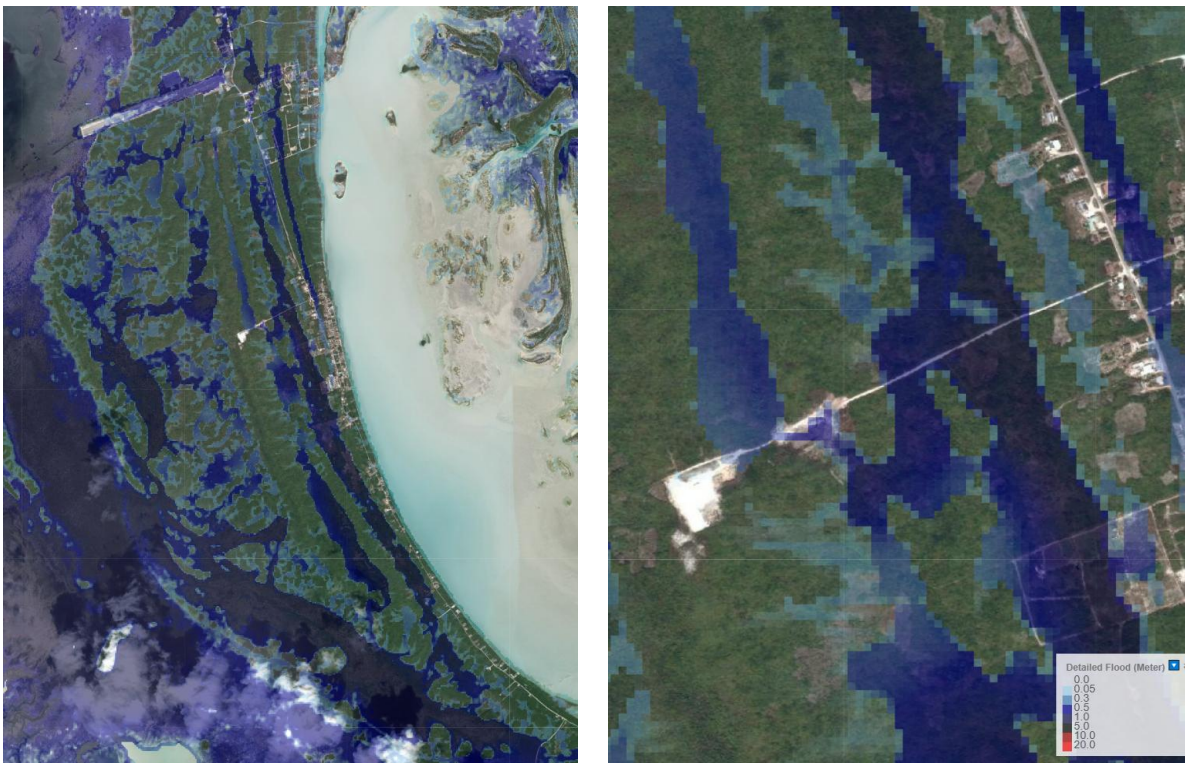
The CRVA considers two types of flood risks:

- **Local flood risk** refers to flooding that originates from conditions within a specific area or island, typically due to intense rainfall, poor drainage infrastructure, or localized topographic features. In the Turks and Caicos, this might include flash flooding in low-lying urban areas like Providenciales, where impermeable surfaces and limited stormwater systems can lead to rapid water accumulation. Local risks are often exacerbated by land use changes, such as coastal development or deforestation, which reduce the land's natural ability to absorb water. These events are usually short-term and spatially confined but can cause significant damage to homes, roads, and local ecosystems.
- **Non-local flood risk**, on the other hand, arises from broader scale hydrometeorological or oceanographic processes that affect the islands from outside their immediate vicinity. This includes storm surges from hurricanes, sea level rise, or regional precipitation patterns that lead to coastal inundation. For the Turks and Caicos, non-local risks are particularly relevant due to their exposure to Atlantic tropical cyclones, which can generate large-scale flooding even if the storm's center does not make direct landfall. These events tend to be more predictable in terms of seasonal patterns but can have widespread and long-lasting impacts, especially when combined with high tides or degraded coastal defenses.

10.4.1 Local flood risks

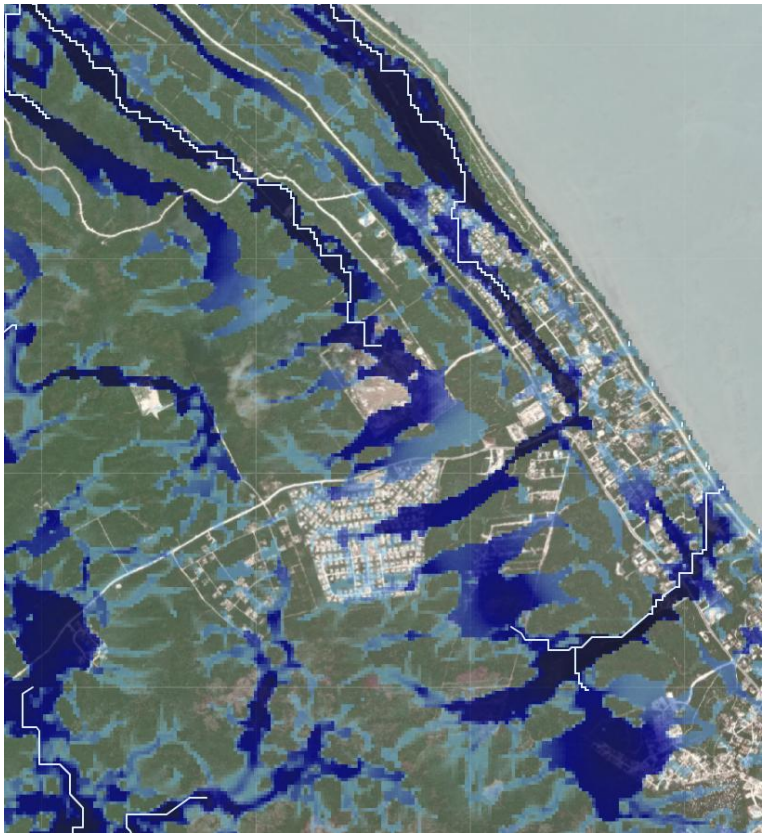
The local risks flood maps are shown in Source: Fichtner
Figure 10-1 to Source: Fichtner
Figure 10-3. A detailed explanation of how the risks were assessed can be read in the complete CRVA report in Annex H.

Although the calculations did not consider actual infiltration rates, infiltration rates during extreme tropical storms are likely to be minimal on small Caribbean Islands. It is reasonable to neglect infiltration during extreme rainfall events on small Caribbean islands, especially when rainfall intensity quickly exceeds the soil's infiltration capacity (which is the case for an extreme storm).



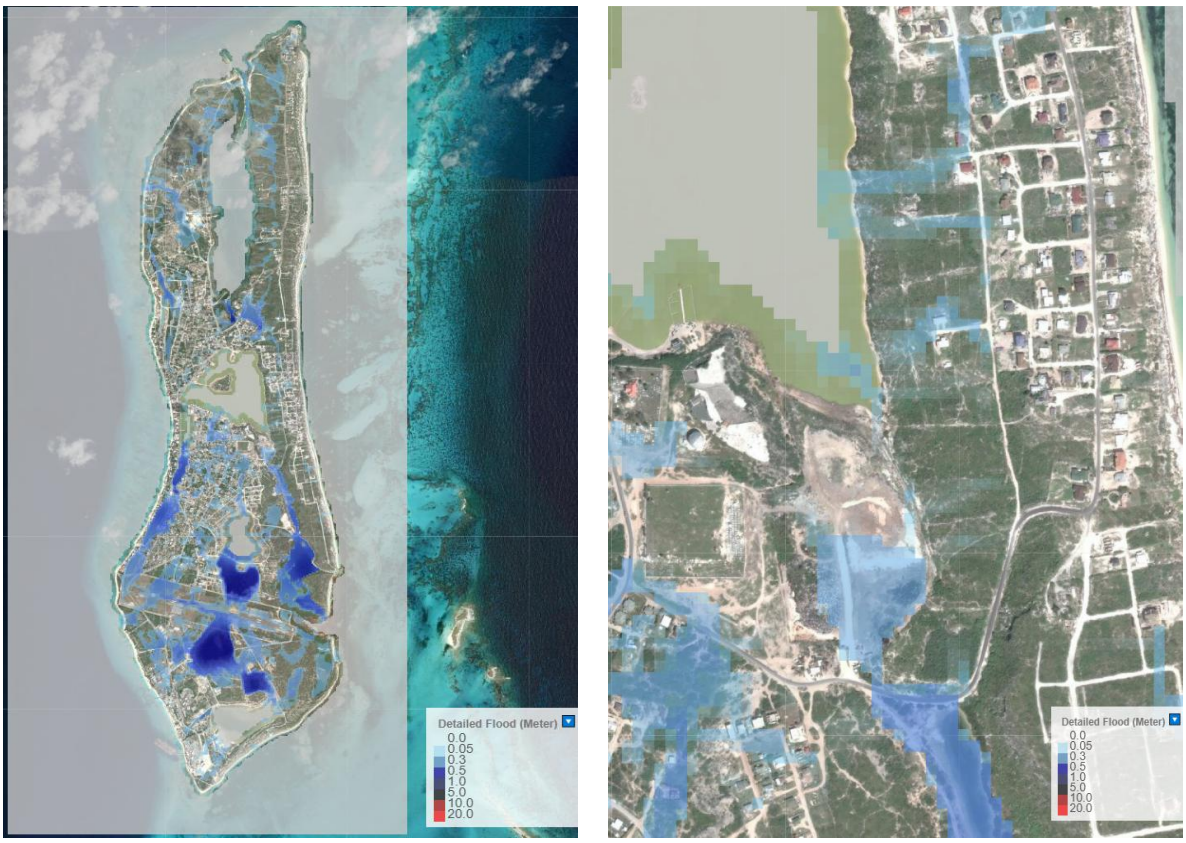
Source: Fichtner

Figure 10-1: Calculated flood map for 24hr storm with 100-year return period in North Caicos Bottle Creek



Source: Fichtner

Figure 10-2: Calculated flood map for 24hr storm with 100-year return period Providenciales



Source: Fichtner

Figure 10-3: Calculated flood map for 24hr storm with 100-year return period Grand Turk Island

The results indicate that all 3 main sites are likely to be impacted from local flooding if no appropriate drainage systems are in place. Most affected will be Providenciales site with significant flooding potential over most of the foreseen area. Although the North Caicos site shows also risk of flooding, the surrounding area is forested, therefore likely to be able to allow some amount of the water to infiltrate and mitigate flood impacts. Least susceptible to flooding from heavy rainfall seems to be the Grand Turk site, where the 100-year storm is only partially flooding the foreseen area.

The risk of flooding from local sources (heavy rainfall) without adequate drainage systems is therefore classified as high for Providenciales and North Caicos Bottle Creek sites, and medium for the Grand Turk site. These risks stay the same for the near and mid-term future.

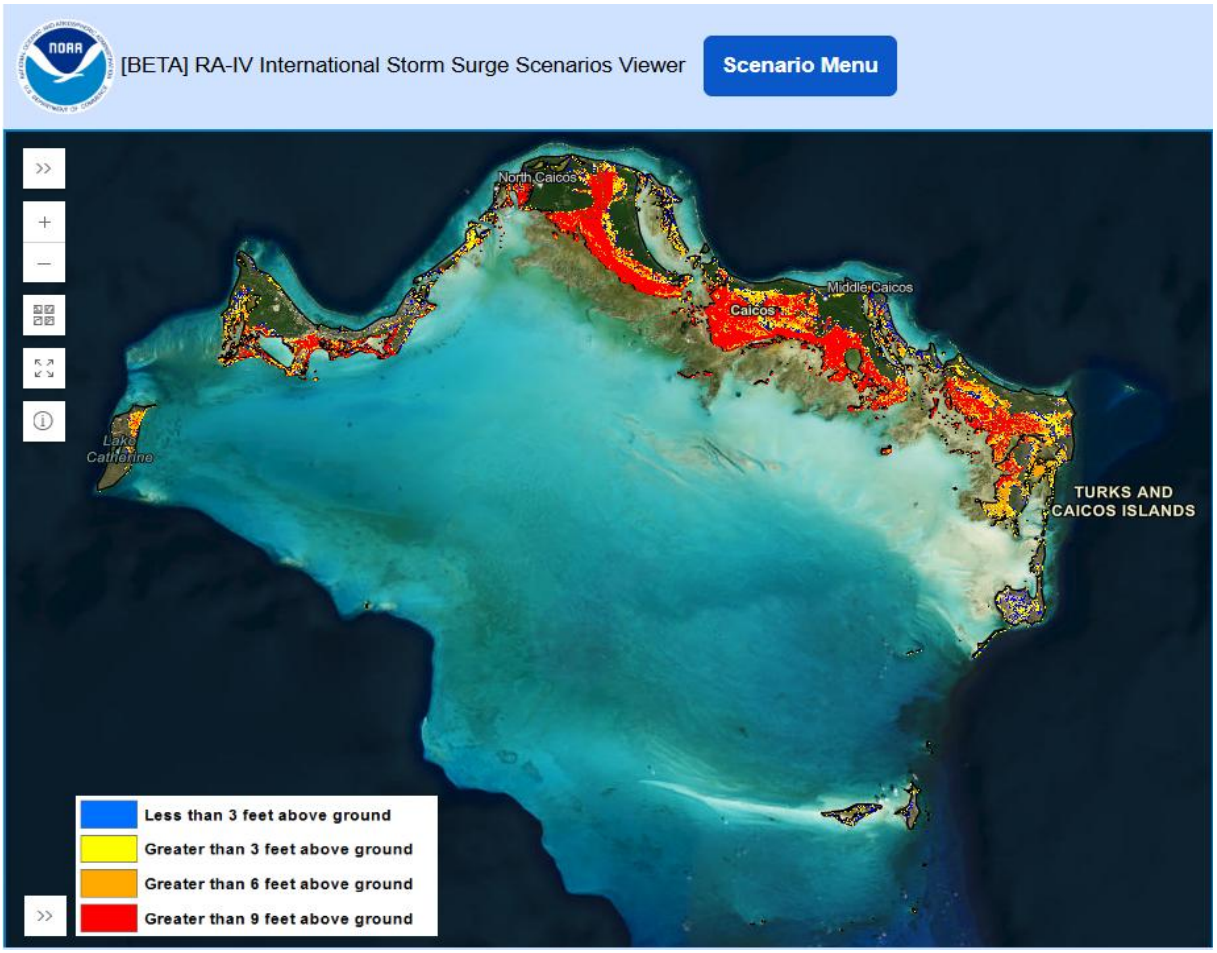
10.4.2 Non-Local flood risks

The Turks and Caicos Islands (TCI) face significant non-local flood risks primarily due to storm surges and hurricanes. The islands' low-lying terrain and limited natural coastal defenses further amplify this vulnerability, allowing seawater to penetrate inland during extreme weather events. As climate change contributes to rising sea levels and potentially more intense hurricanes, the threat of non-local flooding from storm surges is expected to increase, necessitating proactive risk management and adaptation strategies.

Storm surge estimation is a critical component of coastal flood risk assessment, particularly for hurricane-prone regions such as the Turks and Caicos Islands. A detailed description of the methodology used for determining storm surge risks can be read in the full CRVA Report in Annex H of this ESIA.

Refined modelling approach

The results of a scenario which resembles Hurricane Ike (a category 4 hurricane that devastated Grand Turk in September 2008 causing damages in 95% of the houses) is shown in Figure 10-4. The results indicate that although significant areas of TCI might be inundated by a hurricane category 5 with storm surge water levels exceeding 9 feet (~2.74m), the **three main sites Providenciales, North Caicos and Grand Turk are not inundated in this scenario**.



Source: Fichtner

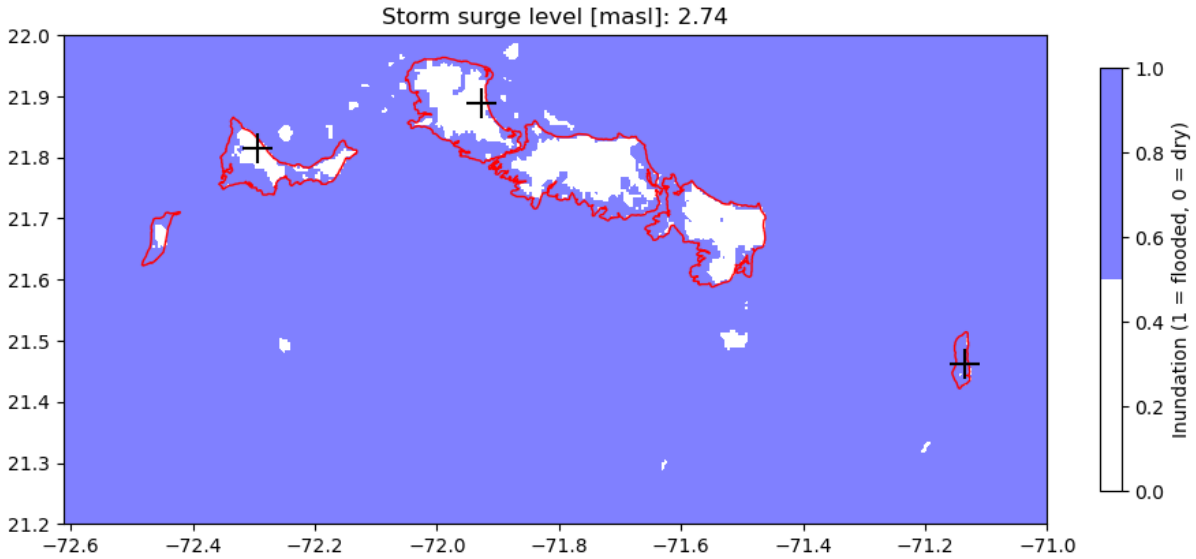
Figure 10-4: Results of a hurricane category 5 and high tide scenario from NOAA's storm surge scenarios viewer for TCI

Simplified modelling approach

In contrast Source: Fichtner

Figure 10-5 shows the result of a simplified approach to calculate inundated areas. It can be clearly seen that the simplified version cannot account for topographic features and hydrodynamic complexity. However, the main features of the complex flood map in Figure 10-4 are also present in the results in Source: Fichtner

Figure 10-5.



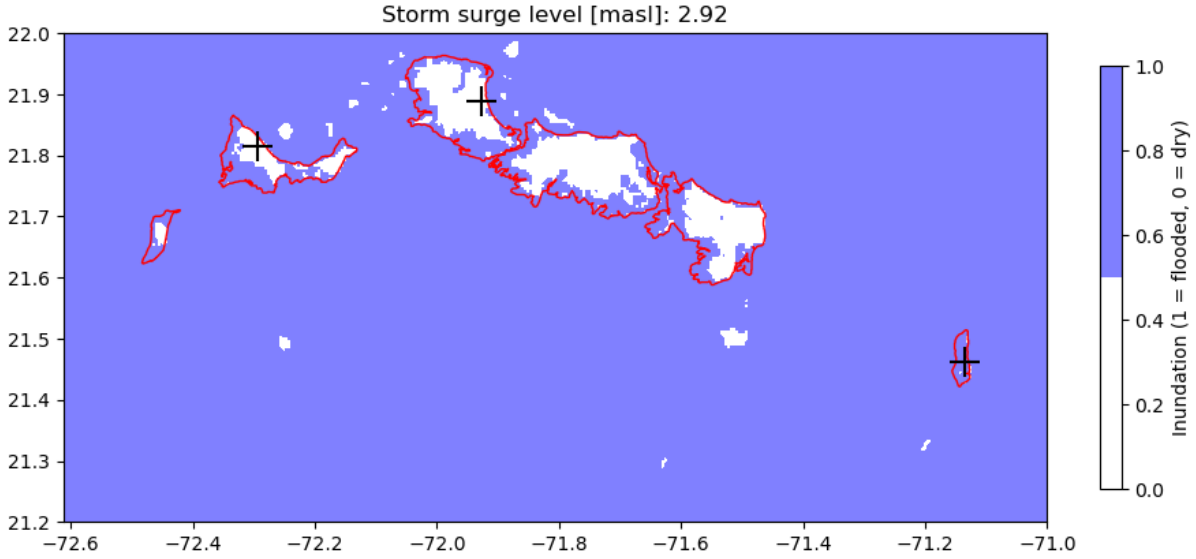
Source: Fichtner

Figure 10-5: Simplified flood map for hurricane with storm surge - water level of 2.74m

According to the downscaled data from Climate Scale, the likely sea level rise related to climate change is in the near future ~18cm and in the mid future ~32cm. Superposing these data in the simplified scenario results in the inundation maps shown in Source: Fichtner

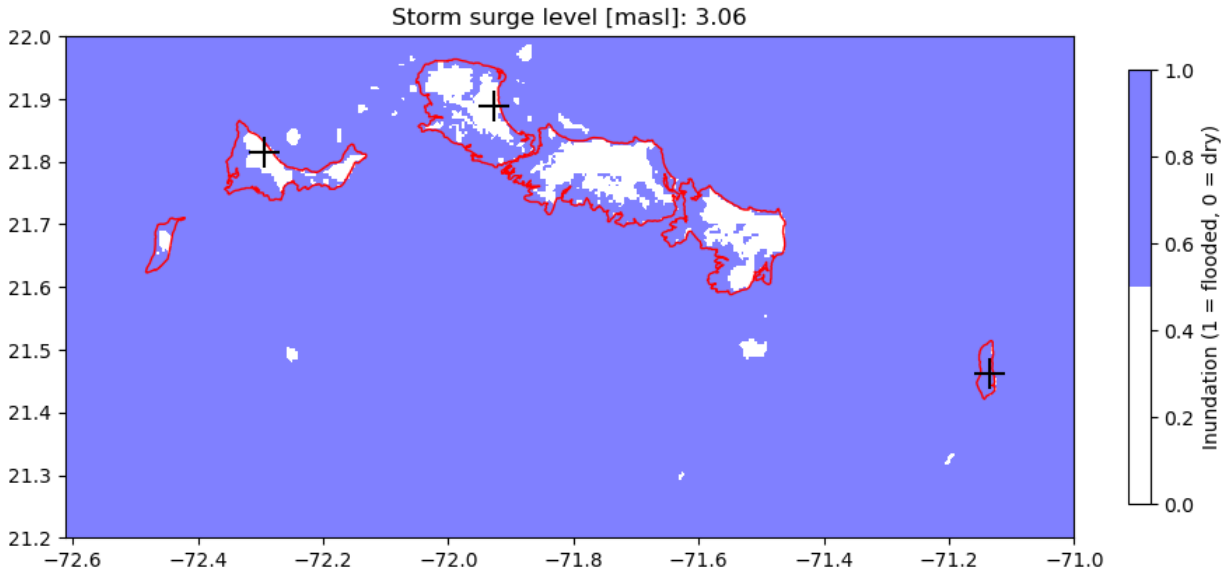
Figure 10-6 and Source: Fichtner

Figure 10-7.



Source: Fichtner

Figure 10-6: Simplified flood map for Hurricane with storm surge - water level of 2.92m (near future)



Source: Fichtner

Figure 10-7: Simplified flood map for hurricane with storm surge - water level of 3.06m (mid future)

In all hurricane induced storm surge scenarios in the simplified modelling approach **Grand Turk is completely flooded**, which contrasts with the hydrodynamic results of the refined modelling approach and past observed hurricanes. This indicates that for low lying terrain the simplified model overestimates the impact. However, due the low altitude of the Grand Turk site, further studies on impacts due to storm surge are recommended.

The sites **North Caicos and Providenciales are not flooded** in any storm surge scenarios resulting from the simplified approach.

10.5 CRVA - Providenciales

The results of the CRVA for Providenciales show that the Project site faces presently:

- medium temperature-related risks:
  - heat waves
  - wildfires
- high wind-related risks:
  - Cyclones/hurricanes/Typhoons
- and high water-related risks:
  - floods.

At a short (2020-2039) and mid-term (2040-2059) horizon, all these risks will increase to/remain high, except the risk for wildfires that will remain medium.

Table 10-4 shows the identified risk type and level and explains the assessment. Further details and reasoning for the assessment can be consulted in the full CRVA Report in Annex H of this ESIA.

Table 10-4: Climate Risk and Vulnerability Assessment for Main Site #1 (Providenciales dumpsite)

Hazard Category (EU-Taxonomy)	Climate Variable (EU-Taxonomy)	PROVIDENCIALES: Assessment	Baseline (2000-2019)	Short Term Horizon (2020-2039)	Mid Term Horizon (2040-2059)
Temperature-related	Increase or decrease of temperature / heat stress	Chronic change of temperature is not of a magnitude that could be considered to impact directly on the ISWMP. However, the increase of air and water sea surface temperatures has a strong impact on frequency and intensity of extreme weather events.	-	-	-
	Temperature variability	Changes in temperature variability predicted are not of a magnitude considered to impact the ISWMP.	-	-	-
	Permafrost thawing	Permafrost thawing is not applicable for the site. For further information: https://tc.copernicus.org/articles/6/221/2012/	-	-	-
	Heat waves	The risk assessment focuses on human body tolerance as defined in risk G1. ISWMP is significantly impacted during O&M due to elevated Wet Bulb Globe Temperature (WBGT) values. With an anticipated increase in the frequency of heat waves, the risk transitions from medium at baseline to high with high confidence in both short-term and mid-term projections at this site. High temperatures impose O&M limitations, posing risks to the health and safety of operating personnel. Heat exhaustion among employees can lead to reduced productivity and increased operational costs.	Medium Risk	High Risk	High Risk
	Cold waves	Future projections show a decrease in the number of days subject to cold waves (see Cold Wave Index). Cold waves are not considered a risk at the site for the baseline as well as for short-term and mid-term future projections.	-	-	-
	Wildfires	The risk of wildfires is low for the baseline as well as for the future projections at Main Site #1. However, the vulnerability of the facilities is considered high as detailed below. Thus, the risk is considered medium for the baseline as well as for the short-term and mid-term horizons. Wildfire can cause hazardous emissions from burning of waste and may also result in a hard-to-extinguish fires with resulting OHS and CHS risks. In addition, the landfill might be temporarily not operational in case of wildfire. Structural damage due to fire may arise to technical components of the landfill if there is lining, leachate or landfill gas collection system in place.	Medium Risk	Medium Risk	Medium Risk
Wind-related	Increase or decrease of wind speed or changes in wind patterns	Chronic changes of wind speed or wind patterns are not considered to impact the ISWMP.	-	-	-

Hazard Category (EU-Taxonomy)	Climate Variable (EU-Taxonomy)	PROVIDENCIALES: Assessment	Baseline (2000-2019)	Short Term Horizon (2020-2039)	Mid Term Horizon (2040-2059)
	Cyclones/ hurricanes/ Typhoons	Tropical cyclones risk is high in the reference period and although there is no specific data for future projections for the site, a high risk is considered also for short-term and mid-term horizons. Consequently, Main Site #1 may be affected by strong winds. The consequences of strong winds can be: ▪ Waste dispersion: Strong winds can scatter lightweight waste (plastics, paper, etc.) over large areas, leading to littering, ecosystem damage, and public health risks. ▪ Damages to access roads and fencing: This can disrupt operations and increase repair costs. These events can cause severe damages, releasing large volumes of waste and pollutants.	High Risk	High Risk	High Risk
	Storm (including blizzards, dust and sandstorms)	The level of risk due to high wind is analysed above, under the assessment of cyclones. Blizzards are not applicable for the site. There is no future climate projection available for dust and sandstorms. However, dust and sandstorms are not considered a risk for the site.	-	-	-
	Tornado / severe storms	There are no documented tornado events in Turks and Caicos. Instead, cyclones and hurricanes frequently occur as analyzed above. Severe storms are analyzed under "heavy precipitation" below and in the Chapter dedicated to flood assessment (10.4).	-	-	-
Water-related	Increase or decrease in average precipitation	The trend indicates a slight increase in the precipitation levels. This rise in mean daily rainfall could lead to increased volumes of leachate and run-off water, potentially exacerbating pollution in both groundwater and the marine ecosystem. Given the interconnectedness of groundwater and the marine environment in TCI, this situation warrants careful monitoring and intervention to mitigate any negative environmental impacts.	Very Low Risk	Low Risk	Low Risk
	Changing precipitation patterns and types (rain, hail, snow/ice)	The chronic change of the precipitation patterns is not considered a risk for the ISWMP.	-	-	-
	Ocean acidification	The chronic change of ocean acidification is not considered a risk for the ISWMP.	-	-	-
	Saline intrusion	Saline intrusion is considered a risk for leachate treatment and lining system, which is not applicable at Main Site #1 (Providenciales 1).	-	-	-
	Sea level rise	The site is currently not exposed to risks associated from flooding due to sea level rise and also won't be in the near and mid future (Chapter 10.4)	Low Risk	Low Risk	Low Risk
	Water stress	The chronic change of water stress is not considered a risk for the ISWMP.	-	-	-
	Drought	Droughts not considered a risk for the ISWMP.	-	-	-

Hazard Category (EU-Taxonomy)	Climate Variable (EU-Taxonomy)	PROVIDENCIALES: Assessment	Baseline (2000-2019)	Short Term Horizon (2020-2039)	Mid Term Horizon (2040-2059)
	Heavy precipitation (rain, hail, snow/ice)	The risk of high rain and hail impacting the site is considered low, with no future projections available for hail events. According to Fichtner, the risk level is expected to remain consistent in both short- and mid-term horizons. However, high rain and hail could still lead to restricted access or temporary closures of the landfill, potentially causing a bottleneck in waste disposal processes. Such weather conditions might increase leachate volumes and the leaching of pollutants into groundwater and surface water, ultimately contaminating the marine ecosystem due to its connection with groundwater in TCI. Additionally, heavy precipitation elevates the risk of landfill body slides, which can damage infrastructure and compromise the landfill's structural integrity. Snow and ice do not pose an applicable risk to the site.	Low Risk	Low Risk	Low Risk
	Flood	The combination of extreme precipitation, storm surges and sea level rise can cause flood and thus the temporary closure of facilities for Main Site #1, with the consequence of waste accumulation at the source. For the landfill body, water saturated waste and soil can lead to slope instability, causing structural damages / landfill collapses causing environmental contamination. Drainage system problems can lead to contamination of groundwater and in consequence the marine ecosystems.	High Risk	High Risk	High Risk
Solid mass-related	Coastal erosion	Not applicable for Main Site #1.	-	-	-
	Soil degradation	Not applicable for Main Site #1.	-	-	-
	Soil erosion	Only available for croplands, not applicable for Main Site #1.	-	-	-
	Solifluction	Not applicable for Main Site #1.	-	-	-
	Avalanche	Not applicable for Main Site #1.	-	-	-
	Landslide	The risk is very low for the baseline period. Fichtner has assumed the same risk level of baseline for future projections, considering the terrain and site conditions. According to [2] the Peak Ground Acceleration (PGA) is in between 0.13 and 0.2 g for TCI. As seismic activities are not related to climate change and it is assumed the risk is considered in detail design, the risk of landslide is kept at very low risk level throughout future time horizon.	Very Low Risk	Very Low Risk	Very Low Risk
	Subsidence	Subsidence can limit the temporary usability of a landfill body and/or necessitate remediation efforts. Additionally, it increases the risk of landfill body slides, which can cause significant damage to infrastructure and compromise the structural integrity of the landfill body.	Very Low Risk	Very Low Risk	Very Low Risk

10.6 CRVA - North Caicos Bottle Creek

The results of the CRVA for Bottle Creek show that the Project site faces presently:

- medium temperature-related risks:
  - heat waves
  - wildfires
- high wind-related risks:
  - cyclones/hurricanes/typhoons
- and high water-related risks:
  - floods.

At a short (2020-2039) and mid-term (2040-2059) horizon, all these risks will increase to/remain high, except the risk for wildfires that will remain medium.

Table 10-5 shows the identified risk type and level and explains the assessment. Further details and reasoning for the assessment can be consulted in the full CRVA Report in Annex H of this ESIA.

Table 10-5: Climate Risk and Vulnerability Assessment for Main Site #2 (North Caicos Bottle Creek landfill)

Hazard Category (EU-Taxonomy)	Climate Variable according to EU-Taxonomy	NORTH CAICOS BOTTLE CREEK: Assessment	Baseline (2000-2019)	Short Term Horizon (2020-2039)	Mid Term Horizon (2040-2059)
Temperature -related	Increase or decrease of temperature / heat stress	Chronic change of temperature is not considered to impact directly on the ISWMP. However, the increase of air and water sea surface temperatures has a strong impact on frequency and intensity of extreme weather events.	-	-	-
	Temperature variability	Changes in temperature variability are not considered to impact the ISWMP.	-	-	-
	Permafrost thawing	Permafrost thawing is not applicable for the site. For further information: https://tc.copernicus.org/articles/6/221/2012/	-	-	-
	Heat waves	The risk evaluated is the tolerance of human body, as defined in risk G1. The ISWMP can have a relatively high impact in O&M due to the high Wet Bulb Globe Temperature (WBGT) values. A slight increase is expected for all sites in the number of heat waves, therefore the risk increases from medium risk for the baseline to high risk with high confidence for the short-term and mid-term horizons for Main Site #2. O&M limitations due to high temperatures, risk on human body (operating personnel), and heat exhaustion of employees can cause lower productivity and increased costs.	Medium Risk	High Risk	High Risk
	Cold waves	Future projections show a decrease in the number of days subject to cold waves (see Cold Wave Index). Cold waves are not considered a risk at the site for the baseline as well as for short-term and mid-term future projections.	-	-	-
	Wildfires	The risk due to wildfires is low for the baseline as well as for the future projections at Main Site #2. However, the vulnerability of the plants is considered high as detailed below. Thus, the risk is considered medium for the baseline as well as for the short-term and mid-term horizons. Wildfire can cause hazardous emissions from burning of waste and may also result in hard-to-extinguish fires with resulting OHS and CHS risks. Given the nearby location of a Pineyard, which is a fire-dependent ecosystem, risk of increases in wildfires are exacerbated. In addition, the landfill might be temporarily not operational in case of wildfire. Structural damage due to fire may arise to technical components of the landfill if there is lining, leachate or landfill gas collection system in place.	Medium Risk	Medium Risk	Medium Risk
Wind-related	Increase or decrease of wind speed or changes in wind patterns	Chronic changes of wind speed or wind patterns are not considered to impact the ISWMP.	-	-	-

Hazard Category (EU-Taxonomy)	Climate Variable according to EU-Taxonomy	NORTH CAICOS BOTTLE CREEK: Assessment	Baseline (2000-2019)	Short Term Horizon (2020-2039)	Mid Term Horizon (2040-2059)
	Cyclones/hurricanes/Typhoons	Tropical cyclones risk is high in the reference period and although there is no specific data for future projections for the sites, a high risk is considered also for short-term and mid-term horizons. Consequently, the Main Site #2 may be affected by strong winds. The consequences of the high wind can be: - Waste dispersion: Strong winds can scatter lightweight waste (plastics, paper, etc.) over large areas, leading to littering, ecosystem damage, and public health risks. - Access roads and fencing: This can disrupt operations and increase repair costs. These events can cause severe damages, releasing large volumes of waste and pollutants.	High Risk	High Risk	High Risk
	Storm (including blizzards, dust and sandstorms)	The level of risk due to high wind is analyzed above, under the assessment of cyclones. Blizzards are not applicable for the site. There is no future climate projection available for dust and sandstorms. However, dust and sandstorms are not considered a risk for the plant.	-	-	-
	Tornado / severe storms	There are no documented tornado events in Turks and Caicos. Instead, cyclones and hurricanes frequently occur as analyzed above. Severe storms are analyzed under "heavy precipitation" below and flood assessment, as presented in Chapter 10.4	-	-	-
Water-related	Increase or decrease in average precipitation	The change in average daily precipitation is being assessed, and the trend indicates a slight increase in these precipitation levels. This rise in mean daily rainfall could lead to increased volumes of leachate and surface water, potentially exacerbating pollution in both groundwater and the marine ecosystem. Given the interconnectedness of groundwater and the marine environment in TCI, this situation warrants careful monitoring and intervention to mitigate any negative environmental impacts.	Very Low Risk	Low Risk	Low Risk
	Changing precipitation patterns and types (rain, hail, snow/ice)	The chronic change of the precipitation patterns is not considered a risk for the ISWMP.	-	-	-
	Ocean acidification	The chronic change of ocean acidification is not considered a risk for the ISWMP.	-	-	-
	Saline intrusion	Saline intrusion may impact the performance of a leachate treatment plant and may cause degradation of the lining system.	Low Risk	Low Risk	Low Risk
	Sea level rise	The site is currently not exposed to risk associated from flooding due to sea level rise and also won't be in the near and mid future.	Low Risk	Low Risk	Low Risk
	Water stress	The chronic change of water stress is not considered a risk for the ISWMP.	-	-	-
	Drought	Droughts not considered a risk for the ISWMP.	-	-	-

Hazard Category (EU-Taxonomy)	Climate Variable according to EU-Taxonomy	NORTH CAICOS BOTTLE CREEK: Assessment	Baseline (2000-2019)	Short Term Horizon (2020-2039)	Mid Term Horizon (2040-2059)
	Heavy precipitation (rain, hail, snow/ice)	The risk of high rain and hail impacting the site is considered low, with no future projections available for hail events. According to Fichtner, the risk level is expected to remain consistent in both short- and mid-term horizons. However, high rain and hail could still lead to restricted access or temporary closures of the landfill, potentially causing a bottleneck in waste disposal processes. Such weather conditions might increase leachate volumes and the leaching of pollutants into groundwater and surface water, ultimately contaminating the marine ecosystem due to its connection with groundwater in TCI. Additionally, heavy precipitation elevates the risk of landfill body slides, which can damage infrastructure and compromise the landfill's structural integrity. Snow and ice do not pose an applicable risk to the site.	Low Risk	Low Risk	Low Risk
	Flood	The combination of extreme precipitation, storm surges and sea level rise can cause flood and thus the temporary closure of facilities for Main Site #2, with the consequence of waste accumulation at the source. For the landfill body, water saturated waste and soil can lead to slope instability, causing structural damages / landfill collapses causing that waste can pollute the environment. Drainage system problems can lead to contamination of groundwater and in consequence the marine ecosystems.	High Risk	High Risk	High Risk
Solid mass-related	Coastal erosion	Not applicable for Main Site #2.	-	-	-
	Soil degradation	Not applicable for Main Site #2.	-	-	-
	Soil erosion	Only available for croplands, not applicable for Main Site #2.	-	-	-
	Solifluction	Not applicable for Main Site #2.	-	-	-
	Avalanche	Not applicable for Main Site #2.	-	-	-
	Landslide	The hazard risk is very low for the baseline period. Fichtner has assumed the same risk level of baseline for future projections, considering the terrain and site conditions. According to [2] the Peak Ground Acceleration (PGA) is in between 0.13 and 0.2 g for TCI. As seismic activities are not related to climate change and it is assumed the risk is considered in detail design, the risk of landslide is kept at very low risk level throughout future time horizon.	Very Low Risk	Very Low Risk	Very Low Risk
	Subsidence	Subsidence can limit the temporary usability of a landfill body and/or necessitate remediation efforts. Additionally, it increases the risk of landfill body slides, which can cause significant damage to infrastructure and compromise the structural integrity of the landfill body.	Very Low Risk	Very Low Risk	Very Low Risk

10.7 CRVA - Grand Turk

The results of the CRVA for Grand Turk show that the Project site faces presently:

- medium temperature-related risks:
  - heat waves
  - wildfires
- high wind-related risks:
  - cyclones/hurricanes/typhoons
- and high water-related risks:
  - sea-level rise
  - floods.

At a short (2020-2039) and mid-term (2040-2059) horizon, all these risks will increase to/remain high, except the risk for wildfires that will remain medium.

Table 10-5 shows the identified risk type and level and explains the assessment. Further details and reasoning for the assessment can be consulted in the full CRVA Report in Annex H of this ESIA.

Table 10-6: Climate Risk and Vulnerability Assessment for Main Site #3 (Grand Turk dumpsite)

Category	Climate Variable according to EU-Taxonomy	Assessment	Baseline (2000-2019)	Short Term Horizon (2020-2039)	Mid Term Horizon (2040-2059)
Temperature -related	Increase or decrease of temperature / heat stress	Chronic change of temperature is not considered to impact directly on the ISWMP. However, the increase of air and water sea surface temperatures has a strong impact on frequency and intensity of extreme weather events.	-	-	-
	Temperature variability	Changes in temperature variability are not considered to impact the ISWMP.	-	-	-
	Permafrost thawing	Permafrost thawing is not applicable for the site.For further information: https://tc.copernicus.org/articles/6/221/2012/	-	-	-
	Heat waves	The risk evaluated is the tolerance of human body, as defined in risk G1. The ISWMP can have a relatively high impact in O&M due to the high Wet Bulb Globe Temperature (WBGT) values. A slight increase is expected for all sites in the number of heat waves, therefore the risk increases from medium risk for the baseline to high risk with high confidence for the short-term and mid-term horizons for the Main Site #3. O&M limitations due to high temperatures, risk on human body (operating personnel), heat exhaustion of employees can cause lower productivity and increased costs.	Medium Risk	High Risk	High Risk
	Cold waves	Future projections show a decrease in the number of days subject to cold waves (see Cold Wave Index). Cold waves are not considered a risk at the site for the baseline as well as for short-term and mid-term future projections.	-	-	-
	Wildfires	The hazard risk due to wildfires is low for the baseline as well as for the future projections at the Main Site #3. However, the vulnerability of the dumpsite is considered high as detailed below. Thus, the risk is considered medium for the baseline as well as for the short-term and mid-term horizons. Wildfire can cause hazardous emissions from burning of waste and may also result in a hard-to-extinguish fire with OHS and CHS risks. In addition, the landfill might be temporarily not operational in case of wildfire. Structural damage due to fire may arise to technical components of the landfill if there is lining, leachate or landfill gas collection system in place.	Medium Risk	Medium Risk	Medium Risk
Wind-related	Increase or decrease of wind speed or changes in wind patterns	Chronic changes of wind speed or wind patterns are not considered to impact the ISWMP.	-	-	-

Category	Climate Variable according to EU-Taxonomy	Assessment	Baseline (2000-2019)	Short Term Horizon (2020-2039)	Mid Term Horizon (2040-2059)
	Cyclones/ hurricanes/ Typhoons	Tropical cyclones risk is high in the reference period and although there is no specific data for future projections for the sites, a high risk is considered also for short-term and mid-term horizons. Consequently, Main Site #3 may be affected by strong winds. The consequences of the high wind can be: - Waste dispersion: Strong winds can scatter lightweight waste (plastics, paper, etc.) over large areas, leading to littering, ecosystem damage, and public health risks. - Structural damage: Cyclones can damage landfill infrastructure such as leachate collection systems - Damages to access roads and fencing: This can disrupt operations and increase repair costs. These events can cause severe damages, releasing large volumes of waste and pollutants.	High Risk	High Risk	High Risk
	Storm (including blizzards, dust and sandstorms)	The level of risk due to high wind is analyzed above, under the assessment of cyclones. Blizzards are not applicable for the site. There is no future climate projection available for dust and sandstorms. However, dust and sandstorms are not considered a risk for the plant.	-	-	-
	Tornado / severe storms	There are no documented tornado events in Turks and Caicos. Instead, cyclones and hurricanes frequently occur as analyzed above. Severe storms are analyzed under "heavy precipitation" below and flood assessment, as presented in Chapter 10.4.	-	-	-
Water-related	Increase or decrease in average precipitation	The change in average daily precipitation is being assessed, and the trend indicates a slight increase in these precipitation levels. This rise in mean daily rainfall could lead to increased volumes of leachate and surface water, potentially exacerbating pollution in both groundwater and the marine ecosystem. Given the interconnectedness of groundwater and the marine environment in TCI, this situation warrants careful monitoring and intervention to mitigate any negative environmental impacts.	Very Low Risk	Low Risk	Low Risk
	Changing precipitation patterns and types (rain, hail, snow/ice)	The chronic change of the precipitation patterns is not considered a risk for the ISWMP.	-	-	-
	Ocean acidification	The chronic change of ocean acidification is not considered a risk for the ISWMP.	-	-	-
	Saline intrusion	Saline intrusion is considered a risk for leachate treatment and lining system, which is not applicable at Main Site #3.	-	-	-

Category	Climate Variable according to EU-Taxonomy	Assessment	Baseline (2000-2019)	Short Term Horizon (2020-2039)	Mid Term Horizon (2040-2059)
	Sea level rise	Sea Level Rise is considered a high risk for the Grand Turk Site (Main Site #3). Storm surge during Hurricanes has caused in the past significant damage on Grand Turks Island. The foreseen site is also within a potentially flooded area during high storm surges and is therefore considered with high risk. As strong Hurricanes become more frequent with climate change this risk remains high for the near and mid future.	High Risk	High Risk	High Risk
	Water stress	The chronic change of water stress is not considered a risk for the ISWMP.	-	-	-
	Drought	Droughts not considered a risk for the ISWMP.	-	-	-
	Heavy precipitation (rain, hail, snow/ice)	The risk of high rain and hail impacting the site is considered low, with no future projections available for hail events. According to Fichtner, the risk level is expected to remain consistent in both short- and mid-term horizons. However, high rain and hail could still lead to restricted access or temporary closures of the landfill, potentially causing a bottleneck in waste disposal processes. Such weather conditions might increase leachate volumes and the leaching of pollutants into groundwater and surface water, ultimately contaminating the marine ecosystem due to its connection with groundwater in TCI. Additionally, heavy precipitation elevates the risk of landfill body slides, which can damage infrastructure and compromise the landfill's structural integrity. Snow and ice do not pose an applicable risk to the site.	Low Risk	Low Risk	Low Risk
	Flood	The combination of extreme precipitation, storm surges and sea level rise can cause flood and thus the temporary closure of facilities for Main Site #3, with the consequence of waste accumulation at the source. For the landfill body, water saturated waste and soil can lead to slope instability, causing structural damages / landfill collapses causing that waste can pollute the environment. Drainage system problems can lead to contamination of groundwater and in consequence the marine ecosystems.	High Risk	High Risk	High Risk
Solid mass-related	Coastal erosion	Not applicable for Main Site #3.	-	-	-
	Soil degradation	Not applicable for Main Site #3.	-	-	-
	Soil erosion	Only available for croplands, not applicable for Main Site #3.			
	Solifluction	Not applicable for Main Site #3.			
	Avalanche	Not applicable for Main Site #3.			
	Landslide	The hazard risk is very low for the baseline period. Fichtner has assumed the same risk level of baseline for future projections, considering the terrain and site conditions. According to [2] the Peak Ground Acceleration (PGA) is in between 0.13 and 0.2 g for TCI. As seismic activities are not related to climate change and it is assumed the risk is considered in detail design, the risk of landslide is kept at very low risk level throughout future time horizon.	Very Low Risk	Very Low Risk	Very Low Risk

Category	Climate Variable according to EU-Taxonomy	Assessment	Baseline (2000-2019)	Short Term Horizon (2020-2039)	Mid Term Horizon (2040-2059)
	Subsidence	Subsidence can limit the temporary usability of a landfill body and/or necessitate remediation efforts. Additionally, it increases the risk of landfill body slides, which can cause significant damage to infrastructure and compromise the structural integrity of the landfill body.	Very Low Risk	Very Low Risk	Very Low Risk
	Heavy precipitation (rain, hail, snow/ice)	The risk of high rain and hail impacting the site is considered low, with no future projections available for hail events. According to Fichtner, the risk level is expected to remain consistent in both short- and mid-term horizons. However, high rain and hail could still lead to restricted access or temporary closures of the landfill, potentially causing a bottleneck in waste disposal processes. Such weather conditions might increase leachate volumes and the leaching of pollutants into groundwater and surface water, ultimately contaminating the marine ecosystem due to its connection with groundwater in TCI. Additionally, heavy precipitation elevates the risk of landfill body slides, which can damage infrastructure and compromise the landfill's structural integrity. Snow and ice do not pose an applicable risk to the site.	Low Risk	Low Risk	Low Risk
	Flood	The combination of extreme precipitation, storm surges and sea level rise can cause flood and thus the temporary closure of facilities for Main Site #3, with the consequence of waste accumulation at the source. For the landfill body, water saturated waste and soil can lead to slope instability, causing structural damages / landfill collapses causing that waste can pollute the environment. Drainage system problems can lead to contamination of groundwater and in consequence the marine ecosystems.	High Risk	High Risk	High Risk

10.8 Adaptation measures

Adaptation measures are proposed to tackle the identified medium and high climate-related risks. These need to be discussed with EHD and the Main Consultant before being added to the final design and the tender documentation.

If EHD wishes the ISWMP to be compliant with EU-Taxonomy, it is not necessary to implement each of the recommended adaptation measures, rather only those that are considered as being the most important and having a material impact on climate change vulnerability. These measures need to be documented within a Climate Adaptation Plan. According to Appendix A of the EU-Taxonomy regulation, there is a timeframe of up to five years to implement the identified adaptation measures. This is an optional alternative, and not of mandatory application within the regional context of the TCI.

Table 10-7 shows an overview of the material climate medium and high risks and adaptation measures identified. Chronic hazards are shown in light green, and acute hazards in dark green.

Table 10-7: Overview of material climate risks and adaptation measures for the Main Sites (medium and high risks)

Climate Variable (EU-Taxonomy)	Baseline (2000-2019)	Short Term Horizon (2020-2039)	Mid Term Horizon (2040-2059)	Adaptation measures
Heat waves (all main sites)	Medium Risk	High Risk	High Risk	O&M: Provision of personnel heat protection measures (e.g. sun-protective clothing, shaded areas, fans or air-conditioning for office space and vehicles, restricted working hours/additional and/or long breaks during hot periods)
Wildfires (all main sites)	Medium Risk	Medium Risk	Medium Risk	O&M: ▪ Implement appropriate fire protection and extinguishing measures ▪ Identify and use temporary emergency disposal areas for waste that cannot be delivered to the landfill in case of prolonged wildfire.
Cyclones/ Hurricane/ Typhoons (all main sites)	High Risk	High Risk	High Risk	O&M: ▪ Daily cover of waste and regular maintenance of access roads and fencing. ▪ Design: secure and reinforce above-ground infrastructure and use wind-resistant covers and anchoring systems.
Sea Level Rise (Providenciales)	High Risk - Grand Turk	High Risk - Grand Turk	High Risk - Grand Turk	Design: ▪ Structural adaptation measures against storm surges include seawalls, levees, and storm surge barriers to block floodwaters, along with breakwaters and artificial reefs to dissipate wave energy. ▪ Beach nourishment and dune restoration enhance natural coastal buffers and are recommended as well as preventive measures. ▪ Additional measures include floodgates, pump systems, and wetland restoration to absorb surge impacts. ▪ Combining hard engineering with nature-based solutions shall be evaluated to ensure resilient and sustainable storm surge defense.

Climate Variable (EU-Taxonomy)	Baseline (2000-2019)	Short Term Horizon (2020-2039)	Mid Term Horizon (2040-2059)	Adaptation measures
Flood (all main sites)	High Risk	High Risk	High Risk	O&M: ▪ Identify and use temporary emergency disposal areas for waste that cannot be delivered to the landfill / disposal sites considering that more waste will be generated due to extreme climatic events. ▪ Close the landfill or dumpsites soon if short- to medium term flooding due to heavy rain is projected and no other flood protection measures can be implemented. Design: ▪ Consider future projections on flooding events due to heavy rain to build the new landfill on a safe site in good time. ▪ Consider flood protection measures to protect the landfill o dumpsites.

11 Environmental and Social Management Plan

Based on the findings of the impact assessment, measures to mitigate or compensate for potential negative environmental and social impacts associated with the ISWM Project are defined. The Environmental and Social Management Plan (ESMP), presented in this chapter ("**Project's ESMP**" or simply "ESMP"), provides a structured overview of the identified impacts and corresponding mitigation/prevention/compensation measures. Monitoring requirements are presented in form of a separate Environmental and Social Monitoring Programme (ESMoP). Both are organized in tabular form.

The Project's ESMP covers the following aspects:

- The environmental or social factor that is likely to be impacted
- A brief summary of the potential impact and/or likely issue
- The identified mitigation, prevention, compensation and/or enhancement actions that aim to eliminate and/or reduce the potential impact to acceptable levels
- Responsibilities for implementation.

The ESMP (including the ESMoP) is a key document that lists the requirements and details the procedures necessary for managing the significant E&S impacts expected from the proposed Project activities. This ESMP can be used as a stand-alone document during the different phases of the Project by the Project Developer, the Contractors, the governmental authorities, the financers, the auditors, and other responsible parties.

This ESMP shall serve as a guidance to the rehabilitation, construction, decommissioning and operation Contractors for development of **Contractors' ESMPs**, which will state how the measures defined in this ESMP and in the Environmental Permit and other related permits will be implemented by them. In other words, the Contractor's ESMPs will provide more details regarding the organization and implementation of environmental, social health and safety management during the Project implementation.

11.1 ESHS Roles and Responsibilities

The Project organization, incl. the roles and responsibilities shall consider at all times the Project´s activities under execution, the number of required workers, the extent and complexity of the works, the site location and any associated environmental, social, health and safety (ESHS) management hazards and risks.

The Contractors shall provide an organization chart of the staff team to be appointed for the rehabilitation, construction, decommissioning and operation work, including ESHS staff members. Changes in the project organization of the Contractors are not allowed without prior written approval request from the Developer.

The general roles and responsibilities of the Project parties regarding ESHS management are outlined below.

Project Developer - GOTCI/EHD

- Coordinate the Project's implementation, including the ESHS compliance
- Tender the services including ESHS compliance as an evaluation item
- Establish contracts for the services including ESHS clauses and the requirement of mandatory compliance with the ESIA, specifically this ESMP
- Review and approve the Contractor's ESMPs
- Regularly audit the works' ESHS performance; perform the respective reporting (an external auditing plan for the works can be consulted in Chapter 11.19.1 of this ESMP)
- Act upon breach of ESHS contractual clauses
- Coordinate with the responsible agencies DECR and/or Department of Planning: regularly reporting and informing of severe breaches of ESHS performance.

Independent ESHS Consultant (optional)

EHD may wish to appoint a qualified Independent ESHS Consultant with relevant expertise to:

- Review the Contractors' ESMPs prior to commencement of any works on the sites
- Conduct regular ESHS site audits during all Project phases; perform the respective reporting (an external auditing plan for the works can be consulted in Chapter 11.19.1 of this ESMP)
- review and approval of the Contractors' monthly reports concerning ESHS issues.

Contractors

The Contractors' responsibilities are to: ·

- Develop the Contractors' ESMPs, which will state how the measures defined in this ESMP and in the Environmental Permit and other related permits will be implemented by each Contractor; this implies providing more details regarding the ESHS organization and implementation during the Project execution.
- Implement the works under consideration of the Contractors' ESMP and the national ESHS legislation
- Assume full responsibility for the ESHS compliance under the contract; extend this responsibility of compliance to the sub-contractors.

For the tasks above, each Contractor shall identify an ESHS team, whose composition will depend on the nature and duration of the works to be performed and on the site characteristics. The minimum required ESHS personnel is:

- Contractor's ESHS Manager:
  - prepares the Contractors' ESMPs, including the sub-management plans referred to in Chapters 11.2 to 11.10 of this ESMP
  - coordinates and manages all ESHS activities, including:
    - assures that all personnel (including sub-contractors) are duly informed of the requirements contained in the Contractor's ESMP, and the associated responsibilities and implication
    - assures implementation of the Contractor's ESMP in practice
    - undertakes ESHS risk assessments
    - approves permits to work
    - approves job safety analysis

    - prepares work procedures and instructions
    - ensures training and induction on ESHS issues
    - undertakes workplace inspections (an internal auditing plan for the works can be consulted in Chapter 11.19.1 of this ESMP)
    - prepares reports
    - investigates incidents and accidents.
    - stops any activities in case of emergency or significant incompliance with the permit to work or the ESHS requirements.
  - acts as main point of contact between the regulatory authorities and the Project on ESHS issues
- Contractor's ESHS Supervisor:
  - reports to the Contractor's ESHS Manager
  - is directly involved in managing and coordinating ESHS activities on-site
  - organizes ESHS trainings
  - undertakes workplace inspections (an internal auditing plan for the works can be consulted in Chapter 11.19.1 of this ESMP)
- Contractor´s Biologist (sub-contractor) - for North Caicos Bottle Creek and South Caicos
  - performs a detailed Pre-construction Biodiversity Assessment, i.e., an assessment of fauna and flora at the Bottle Creek site before construction of the landfill, and at the South Caicos site before decommissioning (including pre-construction activities implying soil disturbance)
  - in case rare, threatened, and endangered plants and/or animals are detected at any of the two sites, prepares and implements a Biodiversity Rescue Procedure
  - issues a clearance for the commencement of construction (in Bottle Creek) or decommissioning (in South Caicos) activities in form of a report to be approved by the EHD.

LRP Consultant and LRP Implementation Consultant

The LRP Consultant shall be asked with preparing the Livelihood Restoration Plan under consideration of the outline presented in this ESIA (Chapter 13.3.1).

The LRP Implementation Consultant shall be tasked with monitoring the adequate implementation of the measures of the LRP into practice, and reporting to EHD and the involved (if any) financing institution. It shall also be tasked with performing the LRP closure audit.

11.2 Emergency Response Plan (ERP)

The Contractors are responsible for developing Emergency Response Plans (ERPs) for potential emergency situations during construction and operation of the new landfill in Bottle Creek, and the new facilities in Bottle Creek, Providenciales, South Caicos, Grand Turk and Salt Cay; during decommissioning of the dumpsites in Kew, Middle Caicos, South Caicos and Salt Cay; and during rehabilitation of the Providenciales and the Grand Turk dumpsites. The objective of the ERPs is to safeguard the welfare of workers, visitors, and the general public at the Project sites and their surroundings.

As one of the primary steps in formulating an effective ERP, the Contractors shall conduct a hazard identification (HAZID) exercise. This process identifies potential emergency scenarios—such as fires, chemical spills, gas leaks, structural failures, or natural disasters—that could impact personnel, equipment, and the surrounding environment. Understanding potential risks will help determine necessary resources, develop appropriate plans, and establish procedures to prepare for emergencies.

The ERP shall be comprehensive, practical, and tailored to the identified risks during the HAZIP exercise, as well as to the duration and intensity of the works. The ERPs shall address at least the following key components:

- Warning and evacuation systems: Establish reliable alarm and communication systems to alert staff and initiate safe evacuation in case of emergencies.
- Coordination with public emergency services: Define clear protocols for contacting local fire departments, medical services, and other relevant authorities promptly.
- First aid capability: Ensure that trained personnel are available on-site to administer first aid and stabilize injured individuals until professional medical assistance arrives.
- Technical response team: Maintain staff who are knowledgeable about facility infrastructure and operational processes, capable of managing leaks, isolating hazardous areas, and minimizing damage.
- Fire control measures: Develop and implement fire prevention and firefighting protocols, including the use of appropriate extinguishing agents for different waste types and hazardous materials.
- Containment and spill management: Include procedures for controlling and cleaning up hazardous spills to prevent contamination of soil, water, and air.
- Emergency drills and training: Schedule regular drills to test the effectiveness of the ERP and ensure all personnel understand their roles during an emergency.
- Communication and reporting: Establish internal and external communication channels for timely reporting and documentation of incidents.

11.3 Rehabilitation and OHS Risk Management Plans for Providenciales and Grand Turk

Rehabilitation works will be performed in two of the ISWMP sites: Providenciales and Grand Turk. In both sites, the rehabilitation works will consist of:

- Reshaping and rearrangement of the waste pile
- Removal of the undesired bulky waste on site.

In Providenciales, the following will be additionally undertaken:

- Fire extinguishing as priority and preliminary task.

Rehabilitating a dumpsite in poor condition, especially one affected by underground fires (case of Providenciales), presents a complex and hazardous environment for workers. The absence of proper waste management means that all types of garbage—organic, industrial, medical, and electronic—are mixed and scattered across the sites, creating unpredictable and dangerous conditions.

To mitigate risks for impacts on occupational health & safety, it is essential that the Contractors conduct thorough site assessments and prepare Rehabilitation and OHS Risk Management Plans before the rehabilitation works begin in both sites following the guidelines below.

11.3.1 Fire extinguishing activities in Providenciales

One of the most immediate threats in Providenciales is the presence of underground fires. These fires can smolder for long periods and may reignite or flare up when exposed to oxygen during excavation. Workers risk burns, sudden flare-ups, and even explosions, particularly if flammable gases have accumulated in pockets beneath the surface. In Providenciales, methane or hydrogen are not expected because there is no anaerobic decomposition at the site; however, carbon monoxide is found beneath the surface and is an indicator of the presence of underground fires. Putting out the fires implies a significant release of dust and smoke to which workers are directly exposed.

Particularly for the fire extinguishment in Providenciales, the following measures are suggested to be taken into consideration for designing the Rehabilitation and OHS Risk Management Plan for the site. These measures have been applied by the Main Consultant during coordination of the previous fire extinguishing exercises in 2023 and 2024 in Providenciales and are therefore adapted to the reality at the site. They allow a safe and coordinated planning of the activities, the detection of hazards and the definition of risk avoidance measures. In case these measures need to be adjusted (e.g. due to the site conditions or availability of equipment or staff at the time), this must be subject to planning and / or approval by a competent expert on the matter.

- Mapping the extent and nature of the waste piles
- Identifying areas of subsurface combustion / hotspots with infrared cameras
- Testing for the presence of carbon monoxide; if present, the underground fire is confirmed
- Mapping, and if needed, retrofit access ways for water trucks
- Mapping stable spots in the proximity of the underground fires where trucks can safely park with no risk of slipping down to the fire pit
- Mapping areas where removed waste will be spread after the fire is put out
- Assure that the temperature of the removed waste falls beneath the self-ignition temperature
- Plan the positioning of the team upstream the main wind direction to minimize exposure to dust and smoke

A team must be present at all times during fire extinguishing composed of at least:

- one person extinguishing the fires with a water hose
- one person driving the truck that carries the water and the machinery
- one person driving the excavator that opens the fire pit
- one person driving the dozer that spreads the excavated waste
- one expert monitoring the works, guiding the equipment and checking for signs of ground movement or collapse

Machinery and vehicle operators must be trained and experienced in working on unstable terrain

Waste shall not be touched at any time and shall only be handled with machinery. This allows a significant reduction of the risks associated with direct contact of the workers with the waste. The person carrying the water hose will be 20-50 meters from the excavation front but shall nevertheless never be in direct contact with the burning waste. The expert monitoring the works shall also keep a safe distance and the remaining team shall stay inside the vehicles and machinery.

All workers must wear face goggles and a mask to protect them from the dust resulting from excavation activities and from the smoke resulting from putting out the fires. Full-face respirators may not be available in the TCI and may be inconvenient for usage in tropical climatic conditions.

Finally, the psychological and physical well-being of workers must be supported. Rotating shifts, regular breaks, and access to shade and hydration are essential to prevent fatigue and heat stress.

11.3.2 Reshaping, rearranging and removing of bulky waste on both sites

Immediately in Grand Turk, and after the fires are extinguished in Providenciales, the reshaping and rearranging of the sites can begin and the bulky waste can be removed.

A Rehabilitation and OHS Risk Management Plan for these activities shall be prepared with the following suggested measures allowing a safe and coordinated planning of the activities, the detection of hazards and the definition of risk avoidance measures. In case these measures need to be adjusted (e.g. due to the site conditions or availability of equipment or staff at the time), this must be subject to planning and / or approval by a competent expert on the matter.

- Mapping the extent and nature of the waste piles
- Mapping, and if needed, retrofit access ways for trucks and machinery

A team must be present at all times during rehabilitation works composed of at least:

- one person driving an excavator
- one person driving the dozer that rearranges the excavated waste
- one person that drives the truck removing the bulky waste
- one expert monitoring the works, guiding the equipment and checking for signs of ground movement or collapse

Machinery and vehicle operators must be trained and experienced in working on unstable terrain.

Waste shall not be touched at any time and shall only be handled with machinery. This allows a significant reduction of the risks associated with direct contact of the workers with the waste. The expert monitoring the works shall also keep a safe distance and the remaining team shall stay inside the vehicles and machinery.

All workers must wear face goggles and a mask to protect them from the dust resulting from excavation activities. Full-face respirators may not be available in the TCI and may be inconvenient for usage in tropical climatic conditions. Dust suppression techniques, such as water spraying, should be used during excavation and other activities generating high levels of dust.

If resources are available, soil and waste samples should be analyzed to determine the presence of toxic substances, heavy metals, or asbestos. This would allow a more tailored risk assessment of related occupational hazards and definition of workers protection measures.

The Contractor shall foresee a dedicated program for professionally wash the working clothes at necessary intervals. Workers shall not take the used clothes to wash at home. Clothing and tools which are suspected to have been contaminated with hazardous substances should be handled and disposed of according to hazardous waste protocols.

Workers should have access to clean water, handwashing stations, and sanitary facilities. Any injuries, especially cuts or punctures, must be treated immediately to prevent infection.

Finally, the psychological and physical well-being of workers must be supported. Rotating shifts, regular breaks, and access to shade and hydration are essential to prevent fatigue and heat stress.

11.4 OHS Management Plan for Construction and Operation

The Contractor constructing the new landfill and associated facilities in Bottle Creek, and the new facilities in Providenciales, South Caicos, Grand Turk and Salt Cay shall ensure that necessary measures are in place and properly implemented to prevent accidents and health injuries through a comprehensive Occupational Health and Safety Management Plan (OHS Plan). In the same sense, the Operation Contractors for the new landfill and new facilities shall prepare comprehensive OHS Plans for operation.

The OHS Plans must include various aspects of occupational health and safety, including, at a minimum, measures to ensure food and water supply for the workers, implement sanitation systems, manage waste and wastewater and maintain camp cleanliness. Specific measures to safeguard the health & safety of the workers at site should also include, but not be limited to:

- Definition of an organigram of roles and responsibilities related to OHS management at the site including at least the information about first aid trained staff and the site Health & Safety Manager
- Assure availability of site specific first aid equipment;
- Set up workplace safety rules. All workers are required to strictly follow safety rules in their working conditions;
- Provide personal protective equipment (PPE) for all staff according to their works. Personal protection equipment must be provided in good conditions to the workers comprising of basic elements such as helmets, safety boots, ear protection, and dust masks, as well as equipment appropriate for specific works such as working in trenches, electrical works, among others. Periodically check and maintain all the equipment to make sure that it is in good condition for use;
- Demark, fence and secure all trenches and manholes;
- Fences and barriers must be in place wherever needed;
- Secure parked trucks, vehicles or machines against unauthorized access and use;
- Place noticeboards at different locations highlighting the following information:
  - Mandatory PPE at site,
  - Name, location and contact of the OHS Manager and the first aid trained staff at site,
  - Emergency phone number of the nearest fire brigade,
  - Emergency phone number of the nearest hospital,
  - Emergency phone number of the nearest police station,
  - H&S management breaches of the month (“catch of the month”),
  - Summary of the main safety requirements.
- Train staff in OHS topics, conduct daily toolbox talks, allow only qualified personnel for specific tasks;

- Execution of appropriate risk assessments with all needed actions to prevent workers from possible incidents and accidents;
- Emergency response procedures should be put in place through an Emergency Response Plan to ensure that an injured individual will receive competent help as quickly as possible (see Chapter 11.2 above);
- Provide and make accessible a transparent Grievance Mechanism for workers to be established by the Contractor as defined in Chapter 12.5.2 of this ESIA Report;
- Report and record any accidents, incidents and/or breach of relevant legislation;
- Prohibit recruiting children who are below the minimum age of 18 years whether to work directly or indirectly on the Project.

11.5 Decommissioning and OHS Risk Management Plan

The decommissioning works in will be relatively simple for all sites, but not free from occupational risks. The decommissioning Contractors for Kew, Middle Caicos, South Caicos and Salt Cay shall prepare and implement Decommissioning and OHS Risk Management Plans following the guidelines below.

Step 1 - Site assessment

Conduct thorough site assessments before the decommissioning works begin. Due to the small areas of the sites, this task shall be easily and quickly concluded. This includes:

- mapping the extent of the waste
- identifying areas of different waste types.

Step 2 - Prepare a simple hazard map

Based on the identified types of waste and respective location, prepare a simple hazard map focusing on:

- Chemical hazards: Identify areas with industrial, electronic, or mixed waste that may contain toxic substances (heavy metals, VOCs, corrosive leachate).
- Biological hazards: Mark zones with decomposing organic matter or medical waste that could harbor pathogens, bacteria, viruses, and disease vectors (rats, flies, mosquitoes).
- Physical hazards: Highlight locations with sharp objects, heavy materials, unstable waste piles, and areas where trenching or excavation will occur.

If resources are available, soil and waste samples should be analyzed to determine the presence of toxic substances, heavy metals, or asbestos. This would allow a more tailored risk assessment of related occupational hazards and definition of workers protection measures.

Step 3 - Prepare the Decommissioning and OHS Risk Management Plan

Once the sites have been assessed, simple Decommissioning and OHS Risk Management Plans shall be developed for each site. These plans must include specific OHS measures for different hazard types and areas identified in Step 2. At a minimum, the following measures shall be included:

- Adequate PPE, eye protection and hearing protection shall be provided according to the hazards identified.
- Machinery operators must be trained and experienced in working on unstable terrain.

- Waste shall not be touched at any time and shall only be handled with machinery. This allows a significant reduction of the risks associated with direct contact of the workers with the waste.
- All workers must wear face goggles and a mask to protect them from the dust resulting from excavation activities. Full-face respirators may not be available in the TCI and may be inconvenient for usage in tropical climatic conditions.
- Dust suppression techniques, such as water spraying, should be used during excavation and other activities generating high levels of dust.
- The Contractor shall foresee a dedicated program for professionally wash the working clothes at necessary intervals or at least at the end of the decommissioning works. Workers shall not take the used clothes to wash at home. Clothing and tools which are suspected to have been contaminated with hazardous substances should be handled and disposed of according to hazardous waste protocols.
- Workers should have access to clean water, handwashing stations, and sanitary facilities. Any injuries, especially cuts or punctures, must be treated immediately to prevent infection.

Besides the team handling the machinery and vehicles, the decommissioning works shall be monitored at all times by an expert that will coordinate the works and assure that he OHS risks are kept to a minimum. The expert monitoring the works shall also keep a safe distance and the remaining team shall stay inside the vehicles and machinery.

11.6 Waste and Hazardous Materials Management Plan

The Contractor constructing the new landfill and associated facilities in Bottle Creek, and the new facilities in Providenciales, South Caicos, Grand Turk and Salt Cay shall assure adequate HSE construction site management, including measures for handling of waste and hazardous materials in form of a Waste and Hazardous Materials Management Plan containing the following principles:

- Management hierarchy: A waste management hierarchy of avoidance, minimization, reuse, recycling, treatment and disposal
- Segregation: Segregation of all waste based on their nature and ultimate disposal sites - distribute an appropriate number of properly contained litter bins and containers properly marked for the different types of waste, such as: recyclable, hazardous, for landfill, etc.
- Training: Staff training to increase awareness of waste minimization and waste management issues
- Recording: Maintain records and manifests that indicate volume of waste generated onsite, collected, and disposed of - the numbers within the records are to be consistent to ensure no illegal dumping at the site or other areas.

The Waste and Hazardous Materials Management Plan shall be tailored to the works' duration and nature and include the following measures as relevant:

Domestic solid waste and green waste

While the new landfill and facilities are not available in Bottle Creek, all domestic non-hazardous solid waste and green waste will continue to be deposited in the existing dumpsites. After finalization of the new landfill, the waste shall be relocated there.

Implement proper housekeeping practices at the construction sites at all times and prohibit fly-dumping of any solid waste to the land are additional measures recommended.

Excavation spoils

The excavation material shall be segregated between rocks, top and lower soil and separately stored. The different soil fractions shall be re-used where relevant in the Grand Turk dumpsite. The excess of material shall be stockpiled on the sites and either used in the future for the final cover of the dumpsites, for internal roads or for other construction uses in the islands.

Wastewater

Waterless toilets are recommended to be used at the sites, for example composting toilets. These require little to no water and avoid wastewater generation entirely.

It is estimated that one (1) unit can serve up to ten (10) workers. The units shall have a ventilation system and a sealed composting chamber. Carbon-rich material (e.g., sawdust) shall be added after each use. The corresponding handwashing stations could function with soap and water or also waterless with alcohol-based sanitizer.

Hazardous waste

Primarily, it is important that the Contractor uses less hazardous alternatives where possible, e.g., low-VOC paints, and biodegradable solvents. A regular maintenance of all equipment and machinery used on site is a good preventive measure against leaks of oily substances and fuel to the ground, as well as incorporating dripping pans at machinery, equipment, and areas that are prone to contamination.

The hazardous waste shall be kept at the sites until the IWRC in Providenciales is ready. Once the IWRC is built, the hazardous waste can be transported to Providenciales and safely stored within the Hazardous Waste Interim Storage Facility prior to aggregated Basel convention-compliant export for reprocessing or disposal.

The storage of hazardous waste (and materials) at the sites shall be done in such a way that they cannot reach the ground surface in case of accidental spillage. This means storage facilities that are of hard impermeable surface, flame-proof, with 110% containment capacity, accessible to authorized personnel only, locked when not in use, and that prevent incompatible materials (e.g., acids and bases, flammables and oxidizers) from coming in contact with one another. It shall be ensured that a minimum of 1,000 liters of general-purpose spill absorbent is available at the hazardous waste and material storage facility. If spillage occurs, spill must be immediately contained, cleaned-up, and contaminated soil treated as hazardous waste.

A register of all hazardous materials used and accompanying Material Safety Data Sheet (MSDS) must be present at the storage and usage locations at all times. Spilled material shall be tracked and accounted for as well.

11.7 Soil Erosion and Sedimentation Control Plan

The decommissioning Contractors for Middle Caicos, South Caicos and Salt Cay dumpsites, as well as the construction Contractors of the new facilities in Providenciales, Bottle Creek, Grand Turk, South Caicos and Salt Cay shall prepare Soil Erosion and Sedimentation Control Plans to avoid impacts on surface water close to the sites.

The Soil Erosion and Sedimentation Control Plans shall contain measures to prevent the loss of soil by storm water runoff and/or wind erosion, as well as to prevent sedimentation of storm water and the receiving resources. The following present measures commonly used in construction sites to prevent erosion of soil. The Contractors shall adapt this list to the sites under their responsibility.

Site preparation and stabilization

- Minimize exposed soil by phasing work and stabilizing disturbed areas quickly.
- Temporary cover (mulch, geotextiles, erosion control blankets) for bare soil.
- Vegetative stabilization (hydroseeding, grass planting) on completed areas.

Runoff and sediment control

- Silt fences or sediment barriers around the perimeter of disturbed areas.
- Sediment traps or basins to capture runoff before it reaches wetlands or water bodies.
- Diversion channels or berms to redirect stormwater away from exposed soil. These temporary drainage systems accommodate storm water runoff and protect the sites from erosion-causing runoff.
- The temporary drainage system must be equipped with sediment traps and oil-water separators.
- A stormwater detention and retention basin needs also to be installed to temporarily store excessive runoff during storm events, allowing sediment and pollutants to settle out before the water is discharged.

Wind erosion prevention

- Water spraying on dry soil during work to reduce dust.
- Windbreaks (temporary fencing or vegetation) in open areas.

Equipment and material management

- Designated wash-down areas with containment for cleaning equipment.
- Proper storage of chemicals, fuels, and oils on impermeable surfaces with spill containment.

Pollution prevention

- Spill response kits on-site and training for workers.
- No direct discharge of wastewater or contaminated runoff into wetlands or surface water.
- Regular housekeeping to prevent waste being thrown to the environment.
- If drainage water is contaminated and cannot be treated, it must be drained into a dedicated retention basin. Drainage must in these cases be pumped and disposed of as hazardous waste once the IWRC in Providenciales is available.

Monitoring and maintenance

- Routine inspection of erosion control measures, especially after rain.
- Immediate repair of damaged silt fences, basins, or covers.

11.8 Biodiversity site studies

A detailed Pre-construction Biodiversity Assessment, i.e., an assessment of fauna and flora at the Bottle Creek site before construction of the landfill, and at the South Caicos site before decommissioning (including pre-construction activities implying soil disturbance) shall be undertaken by an expert (ex., a biologist) to be engaged by the construction Contractor. In case rare, threatened, and endangered plants and/or animals are detected at any of the two sites, the Contractor shall prepare and implement a Biodiversity Rescue Procedure.

11.8.1 Pre-construction Biodiversity Assessment

A Pre-construction Biodiversity Assessment shall be performed in two seasons on each of the Bottle Creek and South Caicos sites to capture seasonal variations. The Assessment shall be primarily planed based on the species expected to be found as discussed in the ESIA, and be expanded with support of local expertise and site investigations.

The Assessment shall focus on:

- Fauna and flora:
  - resident, migratory, rare, endangered, endemic, native, nationally or internationally protected
  - IUCN Red List species within or in areas adjacent to Project sites
- Sensitive natural habitats, including sanctuaries and reserves, biological connectivity, parks or preserves, significant natural sites, national and international protected areas
- Ecosystems and habitats
- Species of commercial importance
- Ecosystem services.

11.8.2 Biodiversity Rescue Procedure

In case:

- rare, threatened, and endangered plants, animals or ecosystems,
- species of commercial importance,
- and/ or ecosystem services provided by any of these

are detected at the investigated sites, the Contractor shall prepare and implement a Biodiversity Rescue Procedure.

For flora, the Procedure shall include the identification of viable seedlings and mature specimens within the Bottle Creek and South Caicos sites' Area of Influence thorough dedicated site surveys; implementation of transplantation procedures to relocate specimens to areas with suitable environmental conditions, within/near the AoI; ensure ongoing monitoring and maintenance of transplanted individuals to support their survival and adaptation.

For fauna, the Procedure shall include the identification and documentation of species presence through targeted ecological surveys; assessment of habitat requirements and threats; implementation of species-specific relocation or habitat enhancement measures, such as the creation of artificial shelters, nesting sites, or corridors to facilitate safe movement; coordination with DECR to ensure compliance with conservation guidelines; and establishment of a monitoring program to track the health, behaviour, and adaptation of relocated or supported individuals.

11.8.3 A note on some of the South Caicos species

The DECR informed the ESIA Team that the South Caicos dump site hosts several rare and endemic plant populations, including the Caicos Encyclia orchid (*Encyclia caicensis*), the Capillary buttonbush (*Spermacoce capillaris*) and the culturally iconic Turk's head cactus (*Melocactus intortus*). Information was also shared about the sensitivity of the cactus, that usually does not survive replanting and, if found, shall be seeded in the new locations instead.

11.9 Traffic Management Plan

The rehabilitation and construction Contractors shall establish Traffic Management Plans (TMP) to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors of temporary changes. Specifically, the TMP shall include the following main items:

1. Development of the Traffic Management Plan

- Identify all entry and exit points, ferry terminals, narrow roads, communities to be crossed, and environmentally sensitive zones (based on this ESIA and any other data to be provided by the GOTCI (ex.: the DECR and the EHD).
- Engage with local authorities, ferry operators, emergency services, and community representatives (District Commissioners, for example) to align traffic strategies.
- Evaluate peak traffic times, delivery schedules, and potential bottlenecks to optimize vehicle movement.
- Document expected vehicle types (e.g., heavy trucks, service vans) and their frequency to plan for road wear and congestion.
- Align traffic plans with construction/rehabilitation phases to anticipate changing needs and rerouting requirements.

2. Implementation Measures

- Install temporary access roads, laydown areas, and turning zones where feasible to reduce impact on public roads.
- Deploy clear signage indicating detours, restricted zones, and safety instructions.
- Employ trained personnel to manage vehicle flow during peak hours.
- Schedule noisy activities during daytime hours, use noise barriers where feasible, and maintain equipment to minimize disturbances.
- Ensure unobstructed routes for emergency vehicles at all times.
- Coordinate with local calendars to avoid disruptions during festivals or community gatherings.
- Maintain coordination with local tourism stakeholders to ensure minimal impact on visitor experience.

3. Monitoring and Adjustment

- Conduct weekly reviews of traffic conditions and adjust plans as needed.
- Establish procedures for reporting and responding to traffic-related incidents or complaints.
- Provide channels for local residents to share concerns and suggestions, and incorporate feedback into TMP updates. This shall be done via the Grievance Redress Mechanisms described in detail in Chapter 12.5 of this ESIA Report.

11.10 Workers' Code of Conduct

A Workers' Code of Conduct shall be developed by the construction Contractors responsible for the construction activities at the new landfill and associated facilities in Bottle Creek, and the new facilities in Providenciales, South Caicos, Grand Turk and Salt Cay. The workers shall be thereof informed. The Code of Conduct shall contain provisions such as:

- "good neighborhood" principle, e.g., the workers shall not cause disturbances to any surrounding community related to noise, littering, or vandalism;
- prevention of gender-based violence and sexual harassment in the workplace;
- any potential or real conflicts with the local community shall be immediately reported to the management at site, and resource to direct confrontation shall be prohibited.

The following template may be used for writing the Workers' Code of Conduct.

Workers' Code of Conduct - Template

1. Purpose

The purpose of this Workers' Code of Conduct is to establish clear behavioural standards for all workers to ensure a safe, respectful, and harmonious working environment and maintain positive relationships with surrounding communities.

2. Scope

This Workers' Code of Conduct applies to all employees, contractors, and subcontractors engaged in construction activities on or near the project site [*insert name of site*]. Compliance is mandatory and forms part of the terms of employment or engagement.

3. Key Provisions

3.1. Good Neighbourhood Principle

Workers shall:

- Respect the rights and well-being of surrounding communities.
- Avoid causing disturbances such as excessive noise, littering, or vandalism.
- Ensure proper waste disposal and maintain cleanliness in and around the worksite.

3.2. Prevention of Gender-Based Violence and Harassment

- The workplace must remain free from any form of gender-based violence, sexual harassment, or discriminatory behavior.
- Workers must treat all colleagues and community members with dignity and respect.
- Any violation will result in disciplinary action, up to and including termination.

3.3. Conflict Management

- Any potential or actual conflict with local communities must be reported immediately to site management.
- Direct confrontation or retaliatory actions by workers are strictly prohibited.
- All disputes will be addressed through official channels and mediation processes.

4. Responsibilities

- Management: Ensure dissemination of this Workers' Code of Conduct, provide training, and enforce compliance.
- Workers: Understand and comply with the provisions outlined in this Workers' Code of Conduct.
- Supervisors: Monitor adherence and report violations promptly.

5. Reporting and Enforcement

- Violations of the Workers' Code of Conduct must be reported to the designated site manager.
- Investigations will be conducted promptly and confidentially.
- Disciplinary measures may include warnings, suspension, or termination, depending on the severity of the violation.

6. Acknowledgment

All workers must sign an acknowledgment confirming they have read, understood, and agree to comply with this Workers' Code of Conduct.

11.11 Training

The successful implementation of the ESMP requires workers to be aware of their roles and responsibilities regarding ESHS (environmental, social, health & safety) conduct and compliance. The rehabilitation, construction, decommissioning and operation Contractors shall initially assess their workforce ESHS competence, identify key qualifications, determine training needs and confirm availability of experienced staff.

The analysis of training needs shall result in a training schedule that includes:

- Training requirements for identified workers in conjunction with the activities and tasks that are needed prior to the commencement of work at site;
- Training requirements for identified workers in conjunction with the activities and tasks that could be provided by training on the job.

In case of training on the job, the Contractors must ensure that a suitable number of qualified and competent foremen and supervisors are available at site for the provision of training, induction and instructions.

The training schedule and the training requirements shall be updated as relevant taking into account the results of site inspections, permits to work, procedures and incident and accident investigation reports.

ESHS training shall be provided in general terms for all staff and in particular issues for relevant personnel with ESHS responsibilities.

No workers shall be allowed to enter the sites and perform their tasks without:

- having received required training and instructions or
- having been especially nominated for training on the job or
- having been introduced to the nominated foreman or supervisor.

11.12 Compilation of the ESMP - Providenciales

11.12.1 Rehabilitation of the Providenciales dumpsite

Table 11-1: Environmental and Social Management Plan for the rehabilitation of the Providenciales dumpsite

REHABILITATION STAGE - PROVIDENCIALES DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
Rehabilitation activities within the dumpsite will generate significant but temporary ground-level emissions of dust, smoke, and gases, potentially impacting air quality and odour in nearby communities—especially Wheeland—due to machinery use, fire extinguishing, and waste handling, with effects influenced by weather, equipment condition, and timing.	Regular watering of rehabilitation areas	Rehabilitation Contractor	When dust levels are expected to be high (dry and windy days)
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Optimization of transportation management to avoid needless truck drives		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		Continuously during works
	Prohibit burning of waste		Continuously during works
	Coordinate and inform the nearby communities of the start and duration of any expected high dust generating activities (particularly the fire extinguishing exercises) so people can prepare by closing windows and remaining indoors, for example.		Five days before any expected high dust generating activities

REHABILITATION STAGE - PROVIDENCIALES DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
The operation of trucks and excavation equipment will cause temporary but significant noise disturbances affecting nearby communities—particularly Wheeland—and construction workers, with impacts depending on the activity type and expected to subside once works are completed.	Plan rehabilitation activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)	Rehabilitation Contractor	Plan before rehabilitation begins Implement continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		Continuously during works
	Coordinate and inform the nearby communities of the start and duration of any expected high noise generating activities (particularly the fire extinguishing exercises) so people can prepare by closing windows and remaining indoors, for example.		Five days before any expected high noise generating activities

REHABILITATION STAGE - PROVIDENCIALES DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Ecosystem Services			
Temporary increases in smoke and dust emissions from fire extinguishing activities may moderately impact ecotourism and cultural ecosystem services around Wheeland Pond and marine activity areas.	The measures defined previously for mitigation of smoke, dust and noise emissions from the rehabilitation works apply.	Rehabilitation Contractor	As per items "Air Quality and Odour" and "Noise" above
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors of temporary changes. Guidance on TMP is provided in Chapter 11.7 of this ESIA.		Plan before construction begins Implement continuouly during works
	Coordination with local tourism stakeholders shall be maintained to ensure minimal impact on visitor experience.		Continuously during works
	<u>Enhancement:</u> Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.	GOTCI	Continuously during works

REHABILITATION STAGE - PROVIDENCIALES DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Livelihoods			
The fencing and restricted access at the Providenciales dumpsite have led to the definite and potentially high-impact loss of livelihood for vulnerable waste pickers—primarily Haitian migrants—who previously relied on informal waste collection, with municipal-level spatial effects and irreversible consequences if no mitigation is applied.	Prepare a gender-inclusive Livelihood Restoration Plan with the core purpose to help waste pickers transition from their informal, precarious work to more stable, dignified, and sustainable sources of income. Chapter 13.3 of the ESIA suggests an annotated table of contents for a tailored LRP for the Providenciales dumpsite.	GOTCI	Immediately, as impacts have been delivered already
Occupational Health & Safety			
Rehabilitating the Providenciales dumpsite presents significant occupational health and safety risks—including exposure to underground fires, toxic substances, unstable terrain, and biological hazards—which may cause repeated, high-intensity impacts on workers' physical and mental well-being unless robust safety measures are implemented.	Prepare and implement a Rehabilitation and OHS Risk Management Plan as detailed in Chapter 11.3.	Rehabilitation Contractor	Prepare before the rehabilitation works begin/continue Implement continuously during the works

REHABILITATION STAGE - PROVIDENCIALES DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Community Health & Safety			
Due to the proximity of the dumpsites to Wheeland, rehabilitation activities pose medium-significance risks to community health and safety, including exposure to air emissions, noise, traffic hazards, and potential fire-related incidents, despite fencing and access restrictions.	Because the sites are fenced, community members or visitors are not expected to get close enough resulting in any hazards. To make sure this does not happen, the fences need to be kept in good conditions, and be repaired if damages or vandalism occur	Rehabilitation Contractor	Continuously during the works
	Induction to the workers, especially drivers to follow the traffic rules		Continuously during the works
	Development of accident prevention/emergency preparedness policy and measures - Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report		Prepare before the rehabilitation works begin/continue
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report		Prepare before the rehabilitation works begin/continue Implement continuously during the works
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities about upcoming works and the associated impacts and risks (such as fire extinguishment works).		Continuously during the works
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors and citizens of temporary changes. Guidance on TMP is provided in Chapter 11.7 of this ESIA.		Plan before construction begins Implement continuously during works
	The measures defined previously for mitigation of smoke, dust and noise emissions from the rehabilitation works apply		As per items “Air Quality and Odour” and “Noise” above

11.12.2 Construction of the Providenciales ISWR

Table 11-2: Environmental and Social Management Plan for the construction of the Providenciales ISWR

CONSTRUCTION STAGE - PROVIDENCIALES ISWR			
Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
Construction activities within the Project boundaries will generate medium-intensity, ground-level emissions of dust and gases—primarily from excavation, vegetation clearing, machinery use, and traffic—which may temporarily affect air quality in nearby communities, ecosystems, and along access roads, with impacts influenced by weather, equipment condition, and construction timing.	Regular watering of construction areas	Construction Contractor	When dust levels are expected to be high (dry and windy days);
	Watering, containing, covering, and/or bunding fine materials, excavated materials and aggregates stockpiles in a way that avoids their spreading by the wind		Continuously during works
	Covering of trucks transporting aggregates and fine materials (e.g. through the use of tarpaulin)		Continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Optimization of transportation management to avoid needless truck drives		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		Continuously during works
	Prohibit burning of waste		Continuously during works
	Coordinate and inform the nearby communities of the start and duration of any expected high dust generating activities so people can prepare by closing windows and remaining indoors, for example.		Five days before any expected high dust generating activities
Noise			
Construction activities, particularly site clearing, levelling, and road works, will generate temporary	Plan construction activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)	Construction Contractor	Plan before construction begins

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
but potentially high noise levels affecting nearby communities, ecosystems, and workers with impacts considered of high magnitude and requiring mitigation due to their medium sensitivity and reversibility upon completion.			Implement continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		Continuously during works
	Coordinate and inform the nearby communities of the start and duration of any expected high noise generating activities so people can prepare by closing windows and remaining indoors, for example.		Continuously during works
Groundwater Quality and Surface Water Quality			
Due to the highly permeable coral limestone geology of the Turks and Caicos Islands, construction activities at dumpsites pose a medium-low risk of groundwater contamination from spills, soil disturbance, stormwater runoff, improper waste disposal, and sanitation facilities, especially in areas where communities rely on pit or bore wells for household water.	Prepare and apply a Waste and Hazardous Materials Management Plan as detailed in Chapter 11.4.	Construction Contractor	Plan before construction begins Implement continuously during works
	Prepare and apply a Soil Erosion and Sedimentation Control Plan as detailed in Chapter 11.7.		Design before construction begins Implement continuously during works

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Construction activities may temporarily impact surface water quality through erosion, sedimentation, and contamination from chemicals, waste, and wastewater, particularly affecting sensitive coastal and wetland areas, with mitigation required to reduce the medium significance of these risks.	The usage of well-maintained and, whenever possible, new vehicles must be promoted. The maintenance of the vehicles shall only be done in designated areas with an impermeable surface and secondary containment.		Continuously during works
Ecosystem Services			
Construction of new facilities may temporarily or permanently reduce the value of cultural, regulating, and provisional ecosystem services—such as tourism, recreation, and biodiversity—due to visual disturbances, noise, emissions, and habitat disruption, with the overall impact assessed as medium.	The measures defined previously for mitigation of smoke, dust, and noise emissions from the construction works apply	Construction Contractor	As per items "Air Quality and Odour" and "Noise" above
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors and villagers of temporary changes. Guidance on TMP is provided in Chapter 11.9 of the ESIA.		Plan before construction begins Implement continuously during works
	Coordination with local tourism stakeholders shall be maintained to ensure minimal impact on visitor experience.		Continuously during works
	<u>Enhancement:</u> Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this	GOTCI	Continuously during works

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.		
Occupational Health & Safety			
The construction phase poses high-significance risks to occupational health and safety, including potential accidents, exposure to hazardous substances and waste, extreme weather conditions, and inadequate sanitation, all of which may result in serious injuries or fatalities if not properly managed.	Prepare and implement an Occupational Health and Safety Management Plan (OHS Plan) - see guidance on Chapter 11.4 of the ESIA Report.	Construction Contractor	Plan before construction begins Implement continuously during works
	Ensure that construction workers do not enter into the waste deposit areas in Providenciales and, if they do, are adequately protected with PPE.	Construction Contractor	Continuously during works
Community Health & Safety			
Construction of ISWMP facilities may cause medium-significance, reversible impacts on nearby communities—particularly in Wheeland—due to dust, noise, traffic, hazardous materials, and potential social tensions from non-local workers, requiring mitigation measures to minimize health, safety, and nuisance risks.	To make sure that the sites are not entered by unauthorised persons, the construction sites need to be fenced. The fences need to be kept in good conditions, and be repaired if damages or vandalism occur.	Construction Contractor	Before construction works begin Continuously during works
	A safety distance between the public and any eventually existing non-fenced areas of the Project site can be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons		Before construction works begin Continuously during works
	Induction to the workers, especially drivers to follow the traffic rules together with regular supervision of violations or damages to the access roads to reduce the risk of accidents.		Continuously during works
	Development of accident prevention/emergency preparedness policy and measures - Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report		Prepare before the construction works begin

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	A Workers' Code of Conduct shall be developed, and the workers shall be thereof informed. The provisions for the Code of Conduct and a template can be consulted in Chapter 11.10 of this ESIA.		Prepare before the construction works begin
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report		Prepare before the construction works begin Implement continuously during the works
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities about upcoming works and the associated impacts and risks.		Prepare before the construction works begin Implement continuously during the works
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan (TMP) to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors and citizens of temporary changes. Guidance on TMP is provided in Chapter 11.7 of this ESIA.		Plan before construction begins Implement continuously during works
	The measures defined previously for mitigation of smoke, dust and noise emissions from the construction works apply.		As per items "Air Quality and Odour" and "Noise" above

11.12.3 Operation of the Providenciales Dumpsite

The proposed design does not imply actual construction works but rather provides a guideline for the implementation of a more professional operation service of the disposal site in Providenciales. Operational measures to reduce impacts are the responsibility of the Operation Contractor and shall be thoroughly implemented during the whole operational period as recommended by the Main Consultant in the Preliminary and Final Design Reports. These include:

- more frequent cover
- separate handling of hazardous and decomposable waste
- prohibition of burning waste.

These improvements are not expected to bring significant enhancements on the environmental performance of the site. In fact, the largest improvements will be brought up by the rehabilitation measures, thoroughly discussed in Chapter 9.3 of this ESIA Report, and by deviating waste fractions into CAS, TSS, and other facilities as assessed in Chapter 9.5.1.

Leachate collection cannot be reasonably implemented in the present cells. The improved operation of the site will nevertheless reduce leachate generation due to the infiltration of rainwater and also reduce the polluting content of the leachate generated. A decrease in leachate generation in the two sites is expected to bring some reduction of the environmental pollution, whose advantages can only be quantified once continuous monitoring of the impacts of the sites is initiated.

The soil at the site, assumed to be presently highly contaminated, will not be subject to remediation. Instead, the improved operational practices will help reducing the pollution charge.

A specifically designed filling plan foresees landscaping in the sense that the vertical faces of the dumpsite facing the receptors will be covered with soil and planted at regular intervals ("final cover), allowing for lower impact on the cultural ecosystem services and the residential areas.

Given that the impacts of the existing dumpsite have already been comprehensively assessed in Chapter 7, and that the design of the ISWMP already foresees operational improvements, the formulation of additional mitigation measures at this point is methodologically unnecessary and lacks practical justification.

11.12.4 Operation of the Providenciales ISWR

Table 11-3: Environmental and Social Management Plan for the operation of the Providenciales ISWR

OPERATION STAGE - PROVIDENCIALES ISWR

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
The proposed waste management operations primarily involve windrow composting, which reduces methane emissions compared to anaerobic processes but can still release ammonia, VOCs, bioaerosols, and unpleasant odors during turning activities. Construction and Demolition Waste centers may generate dust and fine particulate matter, posing respiratory risks if uncontrolled. Material Recovery Facilities (MRFs) can emit metal dust, VOCs, and fumes from dismantling activities, including refrigerants and battery-related gases. Hazardous Waste Interim Storage facilities risk releasing toxic vapors if ventilation fails, while Civic Amenity Sites and Temporary Storage Stations generally have low air quality impacts but may cause mild odors and dust if waste is poorly managed.	**Windrow composting (Composting Plant, CP):**		
	Maintaining aerobic conditions is essential to control odour and gas emissions. This can be achieved through regular turning of the compost piles using agricultural machinery as foreseen, which promotes oxygen flow and reduces the formation of odorous compounds.	Operation Contractor	During operation of the CP
	Use of breathable windrow covers or biofilters to further suppress odour emissions	Operation Contractor	During operation of the CP
	Establish and assure the integrity of buffer zones between the composting area and nearby residences. One vegetated buffer zone is foreseen for Providenciales to block the view and partially any emissions from the IWRC.	Construction Contractor	As per design, during construction
		Operation Contractor	During operation of the IWRC
	Construction and Demolition Waste (CDW) plant:		
	Use dust suppression systems such as water spraying or misting	Operation Contractor	During operation of the CWD plant
	Study the feasibility of enclosing or partially cover the processing areas	Operation Contractor	After contract award, before operation
	The wheels of the trucks shall be washed to prevent dust from spreading beyond the site.	Operation Contractor	During operation of the CWD plant
	Material Recovery Facility (MRF):		
	Separate, well-contained zones shall be designated for handling oils, batteries, and electronic waste, with appropriate spill containment systems in place.	Operation Contractor	After contract award, before operation
	Regular cleaning of equipment and storage areas to help prevent the build-up of odorous residues.	Operation Contractor	During operation of the MRF

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Dismantling activities should be carried out in enclosed or semi-enclosed areas equipped with local exhaust ventilation systems fitted with HEPA and activated carbon filters to capture both particulates and VOCs.	Operation Contractor	During operation of the MRF
	Specific zones should be designated for the handling of batteries and refrigerant-containing equipment, with certified recovery systems in place to safely extract and contain refrigerants. For lithium-ion batteries, controlled dismantling procedures are essential to minimize exposure to hazardous emissions.	Operation Contractor	During operation of the MRF
	It is recommended to study the feasibility and applicability of the following systems in the MRF in Providenciales: ▪ Possible treatment systems for dust containing waste gas are cyclone dust collectors, bag filters, or water spray towers and their combination processes. ▪ Acidic waste gas can be treated using alkaline spray towers. According to the concentration of pollutants in acidic waste gas and emission control requirements, single-stage, two-stage, or even three-stage alkaline spray towers can be used. ▪ Organic waste gas can be treated using adsorption or catalytic combustion processes, and the selection of organic waste gas treatment measures should be determined comprehensive based on the amount of waste gas, pollutant concentration, and other factors.	Operation Contractor	After contract award, before operation
	Hazardous Waste Interim Storage Facility (HWISF):		
	The HWISF shall be housed in a secure, ventilated building.	Operation Contractor	After contract award, before operation
	All hazardous materials must be stored in sealed, clearly labelled containers with secondary containment.	Operation Contractor	During operation of the HWISF
	Routine inspections and maintenance to detect and address leaks early	Operation Contractor	During operation of the HWISF
	Emergency response protocols should be in place to manage accidental releases.	Operation Contractor	After contract award, before operation
	Civic Amenity Site (CAS):		

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Clear signage and staff supervision to ensure that waste is correctly sorted and deposited.	Operation Contractor	After contract award, before operation
	Organic and odorous waste fractions should be stored in covered containers and removed frequently.	Operation Contractor	During operation of the CAS
	Dust from vehicle movement can be controlled through regular sweeping and the use of water sprays.	Operation Contractor	During operation of the CAS
Noise			
Noise levels at ISMWP facilities vary by operation. Windrow composting creates intermittent machinery noise, while CDW centers are the loudest due to crushing and heavy equipment. The Providenciales MRF adds moderate to high noise from dismantling and compacting. Hazardous waste storage has minimal impact, and Civic Amenity Sites and Temporary Storage Stations generate moderate traffic and unloading noise, noticeable during peak times.	**Windrow composting (Composting Plant, CP):**		
	Schedule operations of turning and loading/unloading organic materials during daytime hours.	Operation Contractor	During operation of the CP
	Establish and assure the integrity of buffer zones between the composting area and nearby residences. One vegetated buffer zone is foreseen for Providenciales to block the view and partially any noise from the IWRC.	Construction Contractor	As per design, during construction
		Operation Contractor	During operation of the IWRC
	Assure regular maintenance of machinery to help reduce unnecessary mechanical noise.	Operation Contractor	During operation of the CP
	Construction and Demolition Waste (CDW) plant:		
	Limit operations to standard working hours	Operation Contractor	During operation of the CDW
	Use low-noise equipment models where possible	Operation Contractor	During operation of the CDW
	It is recommended to study the feasibility and applicability of the following systems in the CDW plant in Providenciales: ▪ Acoustic enclosures or sound barriers to be installed around high-noise machinery to reduce noise emissions ▪ Rubber linings in hoppers and chutes to help dampen impact noise.	Operation Contractor	After contract award, before operation

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Material Recovery Facility (MRF):		
	Indoor processing areas shall be sound-insulated	Operation Contractor	After contract award, before operation
	Vibration-dampening mounts shall be used on machinery to reduce structural noise transmission.	Operation Contractor	After contract award, before operation
	Staff shall be trained to handle materials in a way that minimizes sudden impacts, such as dropping metal components.	Operation Contractor	During operation of the MRF
	Where feasible, automated systems shall be used to reduce manual handling and associated noise.	Operation Contractor	During operation of the MRF
	Hazardous Waste Interim Storage Facility (HWISF):		
	Noise from vehicle movements and container handling in the HWISF can be mitigated by using electric forklifts, rubberized flooring (as available and feasible), and quiet loading techniques.	Operation Contractor	During operation of the HWISF
	Deliveries shall be scheduled to avoid early morning and late evening hours.	Operation Contractor	During operation of the HWISF
	Civic Amenity Site (CAS):		
	Usage of the CAS shall be limited to daily hours during the working week; dropping waste in the evenings and on Sundays shall not be allowed.	Operation Contractor	During operation of the IWRC
Groundwater quality, Surface water quality, and Soil			
Composting facilities can produce leachate containing nutrients, pathogens, and organic compounds, which may contaminate soil, groundwater, or nearby water bodies if not properly contained. CDW plants	**Windrow composting (Composting Plant, CP):**		
	The windrow CP shall be installed on impermeable ground equipped with leachate collection and drainage systems. As per the Preliminary Design Report (Main Consultant, May 2025), collected composting leachate in Providenciales will be captured and aerated to prevent biological loading of receiving waters and the soil.	Operation Contractor	During operation of the CP
	Alternatively, the leachate could be reused within the composting for moisturizing the material before and during the composting process.	Operation Contractor	During operation of the CP

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
risk water pollution through runoff carrying fine particles, heavy metals, and treated material residues, while dust suppression can add to runoff issues. MRFs pose complex risks from hazardous substances like lead, cadmium, mercury, and hydrocarbons through spills or stormwater runoff. Hazardous waste storage presents the highest risk if containment fails, releasing toxic chemicals into groundwater or surface waters. Civic Amenity Sites have lower risks but can still cause contamination from leaking containers or poorly managed organic and hazardous waste.	**Construction and Demolition Waste (CWD) plant:**		
	All crushing and grinding operations in the CDW plant shall be conducted on paved, contained surfaces	Operation Contractor	During operation of the CDW plant
	Water used for dust suppression and other runoff shall be collected in drainage channels.	Operation Contractor	During operation of the CDW plant
	Material Recovery Facility (MRF) and Hazardous Waste Interim Storage Facility (HWISF)		
	Hazardous materials in the MRF and HWISF shall be stored in covered, bunded areas with secondary containment systems and impermeable flooring	Operation Contractor	During operation of the MRF and HWISF
	Spill kits and emergency response protocols must be in place, and staff should be trained in proper handling and cleanup procedures.	Operation Contractor	During operation of the MRF and HWISF
	Containers shall be regularly inspected for integrity.	Operation Contractor	During operation of the MRF and HWISF
	Any spills must be immediately contained and cleaned using appropriate materials.	Operation Contractor	During operation of the MRF and HWISF
	No direct discharge of water from these facilities shall be permitted. Instead, stormwater from processing and storage areas shall be separately collected and stored as hazardous waste to be exported under Basel-compliant conditions.	Operation Contractor	During operation of the MRF and HWISF
	Civic Amenity Sites (CAS):		
	The CAS shall be designed with segregated drop-off areas, covered bins, and impermeable surfaces.	Operation Contractor	After contract award, before operation
	Frequent waste removal and public education on proper disposal practices will further reduce the risk of contamination.	Operation Contractor	After contract award, before operation
	Stormwater should be directed through grated drains and oil-water separators before being released off-site.	Operation Contractor	After contract award, before operation

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
National Natural Protected Areas, International Natural Protected Areas, Fauna & Flora, Areas of Historical Interest (HA) and Historic Attractions			
In Providenciales, potential biodiversity impacts are mainly indirect, linked to emissions and disturbances near the proposed Wheeland Pond Nature Reserve, which hosts American flamingos, red mangroves, and several Near-Threatened or Vulnerable bird species. Air pollution from dust and VOCs, noise from machinery and traffic, and risks of water or soil contamination from runoff and drifting waste could degrade habitats and stress wildlife. These pressures may alter feeding and breeding patterns, reduce plant diversity, and affect sensitive species in protected areas.	Apply the mitigation measures suggested for managing air, noise, soil, groundwater and surface water impact	Operation Contractor	As per items “Air Quality and Odour”, “Noise”, and “Groundwater quality, Surface water quality, and Soil” above
Ecosystem Services			
Waste management facilities may reduce the benefits of ecotourism and cultural ecosystem services around Wheeland Pond and marine activity areas. through visual impacts, noise, pollution, and heavy vehicle traffic. They can also affect biodiversity and ecosystems, further diminishing ecosystem services.	Apply the mitigation measures defined previously for mitigation of air and noise emissions, water and soil impacts and protection of natural protected areas, fauna and flora.	Operation Contractor	As per items “Air Quality and Odour”, “Noise”, “Groundwater quality, Surface water quality, and Soil”, and “National Natural Protected Areas, International Natural Protected Areas, Fauna & Flora, Areas of Historical Interest (HA) and Historic Attractions” above

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Enhancement: Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.	GOTCI	Continuously during works
Occupational Health & Safety			
ISWMP operations pose significant OHS risks across facilities. Composting exposes workers to bioaerosols, dust, ammonia, and odorous gases, with added hazards from machinery. CDW plants present risks from heavy equipment, noise, vibration, and dust containing silica or asbestos. MRFs involve sharp objects, toxic substances, and battery-related fire or	Prepare and implement an Occupational Health and Safety Management Plan (OHS Plan) - see guidance on Chapter 11.4 of the ESIA Report.	Operation Contractor	Plan before operation begins Implement continuously during operation

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
explosion hazards, while hazardous waste storage carries the highest risk of exposure to corrosive or flammable chemicals. Civic Amenity Sites have lower risks but include slips, manual handling injuries, and contact with hazardous waste. Heat stress, fatigue, and pathogen exposure are concerns at all sites, requiring strict PPE, training, and safety protocols.	Apply the mitigation measures defined previously to mitigate air and noise emissions, water, groundwater and soil contamination.		As per items "Air Quality and Odour", "Noise", "Groundwater quality, Surface water quality, and Soil" above
Community Health & Safety			
The Providenciales ISWR may impact the nearby communities' health and safety. Key risks include air quality deterioration from dust, bioaerosols, and odorous gases, causing respiratory issues and discomfort; noise pollution disrupting daily life; and water contamination from leachate or runoff, threatening households reliant on wells. Increased traffic raises accident risks, while hazardous material handling introduces fire and explosion hazards. Poor waste management can attract pests	Citizens are generally not expected to get close enough to the facilities (except the CAS) resulting in any hazards. However, the proximity to houses in Wheeland may enhance curiosity in some persons, especially in children. To make sure that the sites are not entered by unauthorised persons, the sites need to be fenced. The fences need to be kept in good conditions and be repaired if damages or vandalism occur.	Operation Contractor	Fence before operation begins Maintain fences continuously during operation
	A safety distance between the public and any eventually existing non-fenced areas of the ISWR can be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons.	Operation Contractor	Before operation begins
	Induction to the workers, especially drivers to follow the traffic rules	Operation Contractor	Continuously during operation
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h	Operation Contractor	When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h	Operation Contractor	On unpaved roads

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
and disease vectors, and perceived risks may lead to stress and social tension if communities feel excluded from decision-making.	Development of accident prevention/emergency preparedness policy and measures, i.e., Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report	Operation Contractor	Plan before operation begins Implement continuously during operation
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report	Operation Contractor	Continuously during operation
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities about associated impacts and risks of the ISWR.	Operation Contractor	Continuously during operation
	Apply the mitigation measures defined previously to mitigate air and noise emissions, water, groundwater and soil contamination.	Operation Contractor	As per items “Air Quality and Odour”, “Noise”, “Groundwater quality, Surface water quality, and Soil” above

11.13 Compilation of the ESMP - North Caicos - Kew

11.13.1 Decommissioning of the Kew dumpsite

Table 11-4: Environmental and Social Management Plan for the decommissioning of the Kew dumpsite

DECOMMISSIONING STAGE - KEW DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
Decommissioning works using heavy machinery and waste transport trucks will temporarily increase noise levels, affecting the nearby community of Kew. Although impacts may be intense, they are short-term and reversible.	Plan decommissioning activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the decommissioning phase		Continuously during works
	Coordinate and inform the nearby communities of the start and duration of any expected high noise generating activities		Five days before any expected high noise generating activities

DECOMMISSIONING STAGE - KEW DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Livelihoods			
Informal waste pickers have been reported by the Main Consultant collecting materials at the Kew dumpsite. Upon decommissioning, these activities will need to cease.	Prepare a gender-inclusive Livelihood Restoration Plan with the core purpose to help waste pickers transition from their informal, precarious work to more stable, dignified, and sustainable sources of income. Chapter 13.3 of the ESIA suggests an annotated table of contents for a tailored LRP for the dumpsite.	GOTCI	Before decommissioning starts
Occupational Health & Safety			
Decommissioning works, though relatively simple, pose significant occupational health and safety risks due to presence of mixed and unmanaged waste, including organic, industrial, medical, and electronic materials. Workers may be exposed to toxic substances, corrosive leachate, and biological hazards such as pathogens and disease vectors, especially without proper PPE. Additional risks include injuries from handling heavy materials, heat stress, and sunburn. These conditions can lead to acute or chronic health issues.	Prepare and implement a simple Decommissioning and OHS Risk Management Plan - guidance is available in Chapter 11.5 of the ESIA Report.	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works

DECOMMISSIONING STAGE - KEW DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Community Health & Safety			
The proximity of the Kew site to the local community, combined with access roads to the site, increases potential exposure of residents and visitors to health and safety risks. The Kew site lacks fencing. Noise-related hazards have been addressed previously. Additional risks stem from decommissioning traffic, including increased movement of bulky waste, equipment, and machinery, which raises the likelihood of traffic accidents on roads connected to the dumpsite.	The site is not fenced, and community members, visitors, or people used to drop waste there may get close enough resulting in hazards. To make sure this does not happen, warnings shall be placed at the access roads with sufficient distance to the sites warning of the works and of the prohibition to use the sites presently and in the future.	Decommissioning Contractor	Before decommissioning begins
	Previous information of the Kew community of the works schedule, duration, potential risks and activities to be performed will help assuring that people understand that the site shall not be used during nor after decommissioning works. This shall be the responsibility of the Contractor but needs to be done with support of the EHD and, additionally it is suggested to involve the district commissioners and local information media.	Decommissioning Contractor EHD North Caicos District Commissioner Local Media	Before decommissioning begins
	Induction to the workers, especially drivers to follow the traffic rules	Decommissioning Contractor	Before decommissioning begins
	Development of accident prevention/emergency preparedness policy and measures in form of Emergency Response Plans as detailed in Chapter 11.1 of this ESIA Report	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report.	Decommissioning Contractor	Continuously during works
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7.	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
	The measures defined previously for mitigation of noise emissions from the decommissioning works apply	Decommissioning Contractor	As per item “Noise” above

11.14 Compilation of the ESMP - North Caicos - Bottle Creek

11.14.1 Construction of the Bottle Creek landfill and new facilities

Table 11-5: Environmental and Social Management Plan for the construction of the Bottle Creek landfill and new facilities

CONSTRUCTION STAGE - BOTTLE CREEK LANDFILL AND NEW FACILITIES

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
Construction activities within the Project boundaries will generate medium-intensity, ground-level emissions of dust and gases—primarily from excavation, vegetation clearing, machinery use, and traffic—which may temporarily affect air quality in nearby communities, ecosystems, and along access roads, with impacts influenced by weather, equipment condition, and construction timing.	Regular watering of construction areas	Construction Contractor	When dust levels are expected to be high (dry and windy days);
	Watering, containing, covering, and/or bunding fine materials, excavated materials and aggregates stockpiles in a way that avoids their spreading by the wind		Continuously during works
	Covering of trucks transporting aggregates and fine materials (e.g. through the use of tarpaulin)		Continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Optimization of transportation management to avoid needless truck drives		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		Continuously during works
	Prohibit burning of waste		Continuously during works
	Coordinate and inform the nearby communities of the start and duration of any expected high dust generating activities		Five days before any expected high dust generating activities

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
Construction activities, particularly site clearing, levelling, and road works, will generate temporary but potentially high noise levels affecting nearby communities, ecosystems, and workers with impacts considered of high magnitude and requiring mitigation due to their medium sensitivity and reversibility upon completion. Special emphasis is given to the initial activities of clearing and levelling of the sites and of raising some sections of the access road in Bottle Creek.	Plan construction activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)	Construction Contractor	Plan before construction begins Implement continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		Continuously during works
	Coordinate and inform the nearby communities of the start and duration of any expected high noise generating activities		Continuously during works
Groundwater and Surface Water Quality			
Due to the highly permeable coral limestone geology of the Turks and Caicos Islands, construction activities at landfill sites pose a medium-low risk of groundwater contamination from spills, soil disturbance, stormwater runoff, improper waste disposal, and sanitation facilities, especially in areas where communities rely on pit or bore wells for household water.	Prepare and apply a Waste and Hazardous Materials Management Plan as detailed in Chapter 11.4.	Construction Contractor	Plan before construction begins Implement continuously during works
	The Contractor must design a temporary drainage system to accommodate storm water runoff and avoid it seeping into the groundwater. The drainage system must be equipped with sediment traps and oil-water separators.		Design before construction begins Implement continuously during works

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Construction activities may temporarily impact surface water (flood prone areas within the AoI which may be of value to agriculture) quality through erosion, sedimentation, and contamination from chemicals, waste, and wastewater, particularly affecting sensitive coastal and wetland areas, with mitigation required to reduce the medium significance of these risks.	If drainage water is contaminated and cannot be treated, it must be drained into a dedicated retention basin. Drainage must in these cases be pumped and disposed of as hazardous waste.		
	The usage of well-maintained and, whenever possible, new vehicles must be promoted. The maintenance of the vehicles shall only be done in designated areas with an impermeable surface and secondary containment.		Continuously during works
Soil Quality			
Construction activities at the Bottle Creek site will result in permanent soil coverage and potential temporary soil degradation in surrounding areas due to excavation, machinery movement, and waste pollution, with medium-magnitude impacts pre-mitigation.	Ensure that work site boundaries and limits are in accordance with plans and technical design as agreed upon in advance; all construction activities should be carried out within boundaries; site clearance shall be restricted to the necessary defined areas	Construction Contractor	
	Do not undertake excavation activities during periods of intense rainfall to avoid erosion, rutting and compaction of the soils. If this is not possible, the ruts shall be repaired as soon as possible. After allowing a short time for the soil to begin drying, a bulldozer shall be used to smooth and fill in the ruts.		Continuously during works
	Do not allow off-road driving		
	Return surfaces disturbed during construction to better conditions to the greatest extent possible		Upon finalization of the works
	Routinely inspect vehicles and machinery to check any oil leaks, and immediately seal and remediate if occurred.		Continuously during works
	Prepare and apply a Waste and Hazardous Materials Management Plan as detailed in Chapter 11.4.		Plan before construction begins Implement continuously during works

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
National Natural Protected Areas, International Natural Protected Areas, Fauna & Flora, Areas of Historical Interest (HA) and Historic Attractions			
Construction activities at the Bottle Creek site may cause medium-magnitude impacts to surrounding sensitive soils, ecosystems, and historical sites due to excavation, machinery movement, and waste pollution, with potential risks to flora and fauna that require careful management to maintain low overall significance.	Secure necessary regulatory approvals for vegetation clearance in Bottle Creek	Construction Contractor	Before site clearing works begin
	Assure the DECR occasional access to the trail head for the permanent monitoring plots of DECR's Caicos Pine Recovery Project in Bottle Creek for conservation and research purposes		Continuously during works
	The removal of vegetation, if any present, should be reduced to the minimum extent possible, in accordance with plans and technical design as agreed upon in advance		Before construction works begin
	Designated clearance areas for construction activities should be delineated and marked to prevent unintentional clearing and inadvertent encroachment into neighbouring habitats		Before construction works begin
	Strictly confine all work to the designated areas, with no activities extending beyond those boundaries		Continuously during works
	Establish a temporary protective buffer by cordoning off the perimeter of the Wades Green and Teren Hill proposed HA/ Wade's Green Plantation historical attraction that faces the construction area. This can be done in a simple way by means of a red & white warning tape tied around metal pokes.		Before construction works begin
	The measures defined previously for mitigation of smoke, dust and noise emissions from the construction works apply		As per items "Air Quality and Odour" and "Noise"
	Prohibition of littering, making fire and entering and entering protected areas		Continuously during works
	Prepare and apply a Waste and Hazardous Materials Management Plan as detailed in Chapter 11.4.		Plan before construction begins Implement continuously during works
	Interaction of workers with wildlife and feral animals shall be regulated by prohibition of harming native wildlife and instruction to contact DECR when wildlife incidents occur (or the Department of Agriculture if there are concerns regarding feral animals).		Continuously during works In case wildlife incidents occur

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	<u>Compensation and awareness measures:</u>		
	▪ Undertake a detailed Pre-construction Biodiversity Assessment, i.e., an assessment of fauna and flora at the Bottle Creek AoI. Chapter 11.8 provides further guidance.	Construction Contractor advised by a Biodiversity expert	In two seasons before construction (including pre-construction activities implying soil disturbance)
	▪ In case rare, threatened, and endangered plants, animals or ecosystems, species of commercial importance, and/ or ecosystem services provided by any of these are detected at the investigated sites, prepare and implement a Biodiversity Rescue Procedure. Chapter 11.8 provides further guidance.		
	▪ In addition to the above, all temporarily disturbed areas (for example for storage of materials and excavated soil) need to be rehabilitated and restored with indigenous species from the wider area.	Construction Contractor advised by a Biodiversity expert and DECR	Upon finalization of the works
	▪ Contractors must foster a general awareness of the natural environment among their staff. Worker induction programs should emphasize the importance of protecting biodiversity and local wildlife, promoting responsible behaviour, and strictly prohibiting poaching or any actions that could harm the natural surroundings. DECR stated their support with induction programmes on protecting biodiversity and local wildlife.	Construction Contractor with support from DECR	Continuously during works
Ecosystem Services			
Construction of new facilities may temporarily or permanently reduce the value of cultural, regulating, and provisional ecosystem services—such as tourism, recreation, and biodiversity—due to visual disturbances, noise, emissions, and habitat disruption, with the overall impact assessed as medium.	The measures defined previously for mitigation of smoke, dust, and noise emissions from the construction works apply	Construction Contractor	As per items "Air Quality and Odour" and "Noise" above
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors and villagers of temporary changes.		Plan before construction begins Implement continuously during works
	Coordination with local tourism stakeholders shall be maintained to ensure minimal impact on visitor experience.		Continuously during works
	Surround the landfill site with a green belt within the buffer zone (Zone C on Figure 3-11 of the ESIA Report)	Construction Contractor	Before construction works finalize

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Enhancement: measures:		
	▪ Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.	GOTCI	Continuously during works
Occupational Health & Safety			
The construction phase poses high-significance risks to occupational health and safety, including potential accidents, exposure to hazardous substances and waste, extreme weather conditions, and inadequate sanitation, all of which may result in serious injuries or fatalities if not properly managed.	Prepare and implement an Occupational Health and Safety Management Plan (OHS Plan) - see guidance on Chapter 11.4 of the ESIA Report.	Construction Contractor	Plan before construction begins Implement continuously during works
	Ensure that construction workers do not enter into the waste deposit areas in Bottle Creek and, if they do, are adequately protected with PPE.	Construction Contractor	Continuously during works
Community Health & Safety			
Construction of ISWMP facilities may cause medium-significance, reversible impacts on nearby communities—particularly in Cockburn Town—due to dust, noise, traffic, hazardous materials, and potential social tensions from non-local workers, requiring	To make sure that the construction site is not entered by unauthorised persons, it needs to be fenced. The fences need to be kept in good conditions, and be repaired if damages or vandalism occur.	Construction Contractor	Before construction works begin Continuously during works
	A safety distance between the public and any eventually existing non-fenced areas of the Project site can be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons		Before construction works begin Continuously during works

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
mitigation measures to minimize health, safety, and nuisance risks	Induction to the workers, especially drivers to follow the traffic rules together with regular supervision of violations or damages to the access roads to reduce the risk of accidents.		Continuously during works
	Development of accident prevention/emergency preparedness policy and measures - Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report		Prepare before the construction works begin
	A Workers' Code of Conduct shall be developed, and the workers shall be thereof informed. The provisions for the Code of Conduct and a template can be consulted in Chapter 11.10 of this ESIA.		Prepare before the construction works begin
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report		Prepare before the construction works begin Implement continuously during the works
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities about upcoming works and the associated impacts and risks.		Prepare before the construction works begin Implement continuously during the works
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan (TMP) to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors and citizens of temporary changes. Guidance on TMP is provided in Chapter 11.7 of this ESIA.		Plan before construction begins Implement continuously during works
	The measures defined previously for mitigation of smoke, dust and noise emissions from the construction works apply.		As per items "Air Quality and Odour" and "Noise" above

11.14.2 Operation of the Bottle Creek landfill

Table 11-6: Environmental and Social Management Plan for the operation of the Bottle Creek landfill

OPERATION STAGE - BOTTLE CREEK LANDFILL

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
During the operational phase of the Bottle Creek landfill, air quality concerns primarily stem from volatile organic compounds (VOCs), particulate matter, and exhaust emissions from waste handling and machinery. Odour issues arise during waste unloading, compaction, and leachate release. Anaerobic digestion of organic waste under regular cover produces methane (CH_4) and carbon dioxide (CO_2), both greenhouse gases, along with VOCs. These emissions and odours mainly result from biodegradation, while sulphur-containing waste can lead to hydrogen sulphide (H_2S) production, a toxic gas with a strong unpleasant smell.	The design of the landfill—featuring a bottom lining system, leachate drainage infrastructure, and internal hydraulic partitioning—significantly reduces the potential for uncontrolled air and odour emissions from the leachate. These systems must be adequately maintained to assure the correct functioning.	Operation Contractor	Continuously during operation
	Implementation of daily or intermediate cover to help contain odour emissions.		Continuously during operation
	Use and adequately maintain the health of native vegetation in the constructed wetland to additionally contribute to passive odour filtration without introducing invasive species.		Continuously during operation of the wetland
	Due to technical restrictions in the TCI, the Bottle Creek landfill will not be equipped with a biogas capture system. However, this may not be a reason for concern, as aerobic degradation is expected to prevail due to the relatively low quantities of waste landfilled. Aerobic degradation shall be additionally promoted by the operation techniques to ensure that no or very limited residual anaerobic degradation will take place.		Continuously during operation
	The final cover will be designed as oxidation cover. This will reduce the emissions of CH_4 and CO_2. The design of the cover must be respected by the Operation Contractor.		Continuously during operation
	Initially, the landfill will have to accept food waste, as the composting plant will only accept green waste. After some years, once the ISWM system matures and composting of food waste can be done, production of sulphur and other odours components will be greatly reduced at the landfill. Operation Contractor to follow-up on the matter and assure that, as soon as the system is mature, food waste is no longer brough to the landfill.		Once food waste can be composted in the CP
	Undertake a regular servicing of machinery to reduce exhaust emissions		Continuously during operation
	Respect the buffer proposed by the design at all times (Zone C on Figure 3-11 of the ESIA Report)		Continuously during operation

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
During landfill operations, noise will primarily come from waste delivery trucks, compactors, and equipment for daily cover, with moderate levels expected, especially during peak hours. Additionally, scavenging birds, as seen in Providenciales, may contribute to noise. Before mitigation, the impact is assessed as medium in magnitude and significance. Therefore, mitigation and avoidance measures are necessary to reduce the impact.	Restrict delivery and compaction activities between evening hours and early morning hours (from 7 pm till 7 am)	Operation Contractor	During delivery and compaction activities
	Ensure that vehicles undergo periodic maintenance, inspection and review		Continuously during operation
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible.		Continuously during operation
	To avoid presence of scavenging birds, cover the waste daily		Daily during operation
	Regularly clean areas around the tipping face and access roads to remove spilled waste that could attract birds.		Regularly during operation
	Initially, the landfill will have to accept food waste, as the composting plant will only accept green waste. After some years, once the ISWM system matures and composting of food waste can be done, the presence of scavenging birds will become minor. Operation Contractor to follow-up on the matter and assure that, as soon as the system is mature, food waste is no longer brough to the landfill.		Once food waste can be composted in the CP
	If, despite the mitigation measures proposed, the presence of birds becomes intense with perceived high noise and nuisance levels for workers and population/visitors, consider the possibility of usage of bird deterrents such as acoustic devices, visual scare tactics (reflective tape, predator decoys), or falconry services to discourage scavenging birds. This needs to be planned under the advise of DECR to make sure not to disturb the area's ecological balance (other birds, or other animals) with the bird deterrent measures.	Operation Contractor under advise of DECR	If presence of scavenging birds becomes a nuisance

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Fauna & Flora			
Although engineered landfills aim to reduce environmental harm, their operation can still impact local biodiversity. The Bottle Creek site, while outside protected areas, is near green zones and uphill from the fire-prone Bottle Creek Pineyard, creating a fire risk if waste burning occurs. Organic waste may attract scavengers like rodents, birds, and feral animals, disrupting ecosystems and spreading disease, especially if waste is left uncovered or blown by wind. Introducing non-native plants in landscaping could further alter habitats irreversibly. Additionally, noise and artificial lighting may disturb sensitive wildlife, affecting feeding, breeding, and migration behaviours.	Apply the measures defined previously for scavenging birds (and other animals)	Operation Contractor Operation Contractor under advice of DECR	As per item "Noise" above
	Install perimeter fencing (and maintain the fence) and assure controlled access to further reduce the likelihood of wildlife intrusion.	Operation Contractor	Before operation Continuously during operation
	Landscaping and wetland construction must prioritize the use of native species to prevent the introduction of invasive plants that could outcompete local flora. Chapter 6.4 of this ESIA Report includes a list of wetland species recommended and a list of those that shall not be used. In case of difficulties in obtaining recommended species, the Operation Contractor shall consult with the DECR.	Operation Contractor (if required) under advice of DECR	Landscaping and wetland planting
	Limiting operations to daylight hours	Operation Contractor	Continuously during operation
	Use low-intensity directional lighting to limit impacts on nocturnal animals.		During the night
	Waste burning is not expected to be necessary at Bottle Creek. This activity shall be forbidden within and around the site (with corresponding warning signs distributed through the area), and controls shall be in place.		Continuously during operation
	Interaction of workers with wildlife and feral animals shall be regulated by prohibition of harming native wildlife and instruction to contact DECR when wildlife incidents occur (or the Department of Agriculture if there are concerns regarding feral animals).		Continuously during operation
	If birds feed in the Constructed Wetland, and this becomes a nuisance or causes other types of problems (OHS risks for example), contingency measures shall be developed (noise deterrents for example).	Operation Contractor (if required) under advice of DECR	Continuously during operation of the Constructed Wetland

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Ecosystem Services			
The presence of the landfill can temporarily or permanently reduce the appeal and demand for cultural ecosystem services in the area due to visual impacts, increase in noise and odours, and circulation of heavy vehicles and machinery.	Apply the measures defined previously for mitigation of air and noise emissions, and protection of fauna and flora.	Operation Contractor Operation Contractor under advice of DECR	As per items "Air Quality and Odour", "Noise", and "Fauna & Flora" above
	The Bottle Creek's filling plan foresees landscaping in the sense that the vertical faces of the landfill facing the receptors on the east side of the island will be covered with soil and planted at regular intervals ("final cover"). The filling plan, whose details will form part of the O&M manual to be prepared by the Main Consultant, must be respected by the Operation Contractor.	Operation Contractor	Continuously during operation
	Perform an adequate maintenance of the green belt	Operation Contractor	Continuously during operation
	<u>Enhancement measures:</u>		
	▪ Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may entail an increase in emissions and disturbances on the one hand, on the other hand they provide long-term solutions for the unfavourable waste management situation in the island with a net positive outcome for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.	GOTCI	Continuously during operation

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Occupational Health & Safety			
The operation of an engineered landfill presents multiple OHS risks that can impact workers' physical health and long-term well-being if not properly managed. Key hazards include exposure to hazardous substances during waste handling, potential injuries from sharp objects, and cross-contamination from municipal waste. Heavy machinery movement increases the risk of collisions and rollovers, while noise and dust exposure can lead to hearing loss and respiratory issues. Additional concerns include fire and explosion hazards from landfill gas, heat stress, and fatigue, particularly in hot climates. Without adequate training, PPE, and safety protocols, these risks can result in serious acute incidents and chronic health problems.	Prepare and implement an Occupational Health and Safety Management Plan (OHS Plan) - see guidance on Chapter 11.4 of the ESIA Report.	Operation Contractor	Plan before operation begins Implement continuously during operation
	Apply the mitigation measures defined previously to mitigate air and noise emissions.		As per item "Air Quality and Odour"

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Community Health & Safety			
The development and operation of the Bottle Creek landfill can indirectly impact community health and safety through environmental emissions, operational activities, and increased interaction with waste infrastructure. While the distance from residences reduces some risks, concerns remain about air quality deterioration from dust and odors, noise pollution from machinery, and traffic hazards caused by increased heavy vehicle movement, which can lead to congestion, road damage, and accidents. Additionally, trespassing poses a serious physical safety risk for civilians.	Citizens are generally not expected to get close enough to the landfill and the wetland resulting in any hazards. However, to make sure that the site is not entered by unauthorised persons, the landfill and the wetland need to be fenced. The fences need to be kept in good conditions and be repaired if damages or vandalism occur.	Operation Contractor	Fence before operation begins Maintain fences continuously during operation
	A safety distance between the public and any eventually existing non-fenced areas can be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons.		Before operation begins
	Induction to the workers, especially drivers to follow the traffic rules		Continuously during operation
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved roads
	Development of accident prevention/emergency preparedness policy and measures, i.e., Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report		Plan before operation begins Implement continuously during operation
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report		Continuously during operation
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities about associated impacts and risks of the landfill.		Continuously during operation
	Apply the mitigation measures defined previously to mitigate air and noise emissions		As per items “Air Quality and Odour”, and “Noise”

11.14.3 Operation of the new facilities in Bottle Creek

Table 11-7: Environmental and Social Management Plan for the operation of the new facilities in Bottle Creek

OPERATION STAGE - NEW FACILITIES IN BOTTLE CREEK

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
The proposed waste management operations in Bottle Creek involve a Construction and Demolition Waste (CDW) center that may generate dust and fine particulate matter, posing respiratory risks if uncontrolled, and windrow composting causing emissions and odours during turning operation, as well as a Civic Amenity Site and a Temporary Storage Station. These generally have low air quality impacts but may cause mild odors and dust if waste is poorly managed.	**Construction and Demolition Waste (CDW) center:**		
	Use dust suppression systems such as water spraying or misting	Operation Contractor	During operation of the CDW center
	Study the feasibility of enclosing or partially cover the processing areas		After contract award, before operation
	The wheels of the trucks shall be washed to prevent dust from spreading beyond the site.		During operation of the CDW center
	Windrow composting (Composting Plant, CP):		
	Maintaining aerobic conditions is essential to control odour and gas emissions. This can be achieved through regular turning of the compost piles using agricultural machinery as foreseen, which promotes oxygen flow and reduces the formation of odorous compounds.	Operation Contractor	During operation
	Use of breathable windrow covers or biofilters to further suppress odour emissions		During operation of the CP
	Assure the integrity of buffer zones (Zone C on Figure 3-11 of the ESIA Report) and the green belt between the composting area/the landfill and nearby residences.		During operation
	Civic Amenity Site (CAS) and Temporary Transfer Station (TSS):		
	Clear signage and staff supervision to ensure that waste is correctly sorted and deposited.	Operation Contractor	After contract award, before operation
	Organic and odorous waste fractions should be stored in covered containers and removed frequently.		During operation of the CAS and TSS
	Dust from vehicle movement can be controlled through regular sweeping and the use of water sprays.		During operation of the CAS

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
Noise levels at the Bottle Creek facilities will vary by operation. Windrow composting creates intermittent machinery noise, while the CDW center is the loudest due to crushing and heavy equipment. The Civic Amenity Site and the Temporary Storage Station generate moderate traffic and unloading noise, noticeable during peak times.	**Construction and Demolition Waste (CDW) center:**		
	Limit operations to standard working hours	Operation Contractor	During operation of the CDW center
	Use low-noise equipment models where possible		During operation of the CDW center
	It is recommended to study the feasibility and applicability of the following systems in the CDW center in Bottle Creek: ▪ Acoustic enclosures or sound barriers to be installed around high-noise machinery to reduce noise emissions ▪ Rubber linings in hoppers and chutes to help dampen impact noise.		After contract award, before operation
	Windrow composting (Composting Plant, CP):		
	Schedule operations of turning and loading/unloading organic materials during daytime hours.	Operation Contractor	During operation of the CP
	Assure the integrity of buffer zones (Zone C on Figure 3-11 of the ESIA Report) and the green belt between the composting area/the landfill and nearby residences.		
	Assure regular maintenance of machinery to help reduce unnecessary mechanical noise.		
	Civic Amenity Site (CAS) and Temporary Transfer Station (TSS):		
	Usage of the CAS and movement of waste in the TSS shall be limited to daily hours during the working week; dropping waste in the evenings and on Sundays shall not be allowed.	Operation Contractor	During operation of the CAS and the TSS

OPERATION STAGE - NEW FACILITIES IN BOTTLE CREEK

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Groundwater quality, Surface water quality, and Soil			
Composting facilities can produce leachate containing nutrients, pathogens, and organic compounds, which may contaminate soil, groundwater, or nearby water bodies if not properly contained. CDW centers risk water pollution through runoff carrying fine particles, heavy metals, and treated material residues, while dust suppression can add to runoff issues. Civic Amenity Sites and Transfer Stations have lower risks but can still cause contamination from leaking containers or poorly managed organic and hazardous waste.	**Construction and Demolition Waste (CWD) center:**		
	All crushing and grinding operations in the CDW center shall be conducted on paved, contained surfaces	Operation Contractor	During operation of the CDW center
	Water used for dust suppression and other runoff shall be collected in drainage channels.		
	Windrow composting (Composting Plant, CP):		
	The windrow CP shall be installed on impermeable ground equipped with leachate collection and drainage systems. Collected composting leachate in Bottle Creek shall be treated at the constructed wetland.	Operation Contractor	During operation of the CP and the constructed wetland
	Alternatively, the leachate could be reused within the composting for moisturizing the material before and during the composting process.		During operation of the CP
	Civic Amenity Site (CAS) and Temporary Transfer Station (TSS):		
	The CAS and TSS shall be designed with segregated drop-off areas, covered bins, and impermeable surfaces.	Operation Contractor	After contract award, before operation
	Frequent waste removal and public education on proper disposal practices will further reduce the risk of contamination.		After contract award, before operation
	Stormwater should be directed through grated drains and oil-water separators before being released off-site.		After contract award, before operation
Fauna & Flora			
The Bottle Creek site is not located within any natural protected area, but is surrounded by green areas and therefore impacts on biodiversity must be taken into account. The impacts on fauna and flora are not isolated but are closely tied to the broader environmental pressures generated by facility operations and discussed in the previous Chapters.	Apply the mitigation measures suggested for managing air, noise, soil, groundwater and surface water impacts	Operation Contractor	As per items "Air Quality and Odour", "Noise", and "Groundwater quality, Surface water quality, and Soil" above

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Ecosystem Services			
The presence of the landfill can temporarily or permanently reduce the appeal and demand for cultural ecosystem services in the area due to visual impacts, increase in noise and odours, and circulation of heavy vehicles and machinery.	Apply the mitigation measures suggested for managing air, noise, soil, groundwater and surface water impacts, and protection of fauna and flora.	Operation Contractor	As per items "Air Quality and Odour", "Noise", "Groundwater quality, Surface water quality, and Soil" and "Fauna & Flora" above
	<u>Enhancement:</u> Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.	GOTCI	Continuously during works

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Occupational Health & Safety			
ISWMP operations pose significant OHS risks across facilities. Composting exposes workers to bioaerosols, dust, ammonia, and odorous gases, with added hazards from machinery. CDW centers present risks from heavy equipment, noise, vibration, and dust containing silica or asbestos. Civic Amenity Sites and Temporary Storage Stations have lower risks but include slips, manual handling injuries, and contact with hazardous waste. Heat stress, fatigue, and pathogen exposure are concerns at all sites, requiring strict PPE, training, and safety protocols.	Prepare and implement an Occupational Health and Safety Management Plan (OHS Plan) - see guidance on Chapter 11.4 of the ESIA Report.	Operation Contractor	Plan before operation begins Implement continuously during operation
	Apply the mitigation measures defined previously to mitigate air and noise emissions, water, groundwater and soil contamination.	Operation Contractor	As per items "Air Quality and Odour", "Noise", "Groundwater quality, Surface water quality, and Soil" above
Community Health & Safety			
The new facilities in Bottle Creek may impact the nearby communities' and visitors' health and safety. Key risks include air quality deterioration from dust, bioaerosols, and odorous gases, causing respiratory issues and discomfort; noise pollution disrupting daily life; and water contamination from leachate or runoff, threatening households reliant on wells. Increased traffic	**Construction and Demolition Waste (CWD) center:**		
	Citizens are generally not expected to get close enough to the CDW center resulting in any hazards. However, the proximity to access roads may enhance curiosity in some persons. To make sure that the site is not entered by unauthorised persons, it needs to be fenced. The fences need to be kept in good conditions and be repaired if damages or vandalism occur.	Operation Contractor	Fence before operation begins Maintain fences continuously during operation
	A safety distance between the public and any eventually existing non-fenced areas of the CWD center shall be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons.		Before operation begins

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
raises accident risks. Poor waste management can attract pests and disease vectors, and perceived risks may lead to stress and social tension if communities feel excluded from decision-making.	**All facilities:**		
	Induction to the workers, especially drivers to follow the traffic rules	Operation Contractor	Continuously during operation
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved roads
	Development of accident prevention/emergency preparedness policy and measures, i.e., Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report		Plan before operation begins Implement continuously during operation
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report		Continuously during operation
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities about associated impacts and risks of the new facilities.		Continuously during operation
	Apply the mitigation measures defined previously to mitigate air and noise emissions, water, groundwater and soil contamination.		As per items “Air Quality and Odour”, “Noise”, “Groundwater quality, Surface water quality, and Soil” above

11.15 Compilation of the ESMP - Middle Caicos

11.15.1 Decommissioning of the Middle Caicos dumpsite

Table 11-8: Environmental and Social Management Plan for the decommissioning of the Middle Caicos dumpsite

DECOMMISSIONING STAGE - MIDDLE CAICOS DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
Decommissioning works using heavy machinery and waste transport trucks will temporarily increase noise levels, affecting people living along/nearby access roads and animals within sensitive natural areas of Middle Caicos. Although impacts may be intense, they are short-term and reversible.	Plan decommissioning activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the decommissioning phase		Continuously during works
	Coordinate and inform the nearby communities of the start and duration of any expected high noise generating activities		Five days before any expected high noise generating activities

DECOMMISSIONING STAGE - MIDDLE CAICOS DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Surface water			
The Middle Caicos site is next to a small wetland. Decommissioning work, including land reshaping and heavy machinery use, could cause soil erosion and sedimentation in the wetland. There is also a risk of chemical contamination from cleaning activities and runoff containing oils, fuels, and other pollutants. Poor waste management by workers could further threaten the wetland.	Prepare and apply a Soil Erosion and Sedimentation Control Plan as detailed in Chapter 11.7.	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
	Littering at the site or the surroundings shall be forbidden during decommissioning activities. During the 1 to 2 weeks of works, any waste generated shall be collected in bins or plastic bags and be in the end transported to the operational dumpsites.		Continuously during works At the end of the works
International Natural Protected Areas and Fauna & Flora			
The Middle Caicos dumpsite lies within the Middle Caicos Forest KBA-IBA (1,374 ha), home to the Near-Threatened West Indian Whistling-duck and other bird species. A small wetland nearby the site exists, that is known to have been a breeding site for the same duck species. Risks include habitat stress from poor waste management and fauna disturbance through traffic, nest damage, or poaching during decommissioning. Although the AoI borders the Ramsar Site, its distance (1.5 km) and the short, localized works mean no expected impacts there.	Only the defined access roads shall be used and no off-road driving shall be allowed. This will prevent impacts on surrounding wildlife and habitats.	Decommissioning Contractor	Continuously during works
	Littering at the site or the surroundings, making fire, listening to loud music or making other types of excessive noise shall be forbidden during decommissioning activities.	Decommissioning Contractor	Continuously during works
	The fence to be placed around the gate must be equipped with prohibition signs and clarification about the decommissioned nature of the site and the attempt to recover its ecological baseline. The fence shall not contain sharp edges, barbed wire, or electric current.	Decommissioning Contractor	At the end of the decommissioning works
	Interaction of workers with wildlife and feral animals shall be regulated by prohibition of harming native wildlife and instruction to contact DECR when wildlife incidents occur (or the Department of Agriculture if there are concerns regarding feral animals).	Decommissioning Contractor	Continuously during works In case wildlife incidents occur

DECOMMISSIONING STAGE - MIDDLE CAICOS DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Occupational Health & Safety			
Decommissioning works, though relatively simple, pose significant occupational health and safety risks due to presence of mixed and unmanaged waste, including organic, industrial, medical, and electronic materials. Workers may be exposed to toxic substances, corrosive leachate, and biological hazards such as pathogens and disease vectors, especially without proper PPE. Additional risks include injuries from handling heavy materials, heat stress, and sunburn. These conditions can lead to acute or chronic health issues.	Prepare and implement a simple Decommissioning and OHS Risk Management Plan - guidance is available in Chapter 11.5 of the ESIA Report.	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
Community Health & Safety			
The existence of access roads to the Middle Caicos site increases potential exposure of residents of Bambarra and Lorimers, as well as visitors to health and safety risks. Noise-related hazards have been addressed previously. Additional risks stem from decommissioning traffic, including increased movement of bulky waste, equipment, and machinery, which raises the likelihood of traffic accidents on roads connected to the dumpsite.	The site is presently not fenced, and community members, visitors, or people used to drop waste there may get close enough resulting in hazards. To make sure this does not happen, warnings shall be placed at the access roads with sufficient distance to the site warning of the works and of the prohibition to use the site presently and in the future.	Decommissioning Contractor	Before decommissioning begins
	Previous information of the Bambarra and Lorimers community of the works schedule, duration, potential risks and activities to be performed will help assuring that people understand that the site shall not be used during nor after decommissioning works. This shall be the responsibility of the Contractor but needs to be done with support of the EHD and, additionally it is suggested to involve the district commissioners and local information media.	Decommissioning Contractor EHD Middle Caicos District Commissioner Local Media	Before decommissioning begins

DECOMMISSIONING STAGE - MIDDLE CAICOS DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Induction to the workers, especially drivers to follow the traffic rules	Decommissioning Contractor	Before decommissioning begins
	Development of accident prevention/emergency preparedness policy and measures in form of Emergency Response Plans as detailed in Chapter 11.1 of this ESIA Report	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report.	Decommissioning Contractor	Continuously during works
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7.	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
	The measures defined previously for mitigation of noise emissions from the decommissioning works apply	Decommissioning Contractor	As per item “Noise” above

11.16 Compilation of the ESMP - South Caicos

11.16.1 Decommissioning of the South Caicos dumpsite

Table 11-9: Environmental and Social Management Plan for the decommissioning of the South Caicos dumpsite

DECOMMISSIONING STAGE - SOUTH CAICOS DUMPSITE			
Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
Decommissioning works using heavy machinery and waste transport trucks will temporarily increase noise levels, affecting people living nearby, touristic places, and people living along/nearby access roads Although impacts may be intense, they are short-term and reversible.	Plan decommissioning activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the decommissioning phase		Continuously during works
	Coordinate and inform the nearby communities and tourism operators of the start and duration of any expected high noise generating activities		Five days before any expected high noise generating activities

DECOMMISSIONING STAGE - SOUTH CAICOS DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Surface water quality			
The South Caicos dumpsite is nearby the proposed South Caicos Wetland Critical Habitat Reserve, and the proposed Boiling Hole Nature Reserve, also a wetland. Decommissioning work, including land reshaping and heavy machinery use, could cause soil erosion and sedimentation in the wetland. There is also a risk of chemical contamination from cleaning activities and runoff containing oils, fuels, and other pollutants. Poor waste management by workers could further threaten the wetland.	Prepare and apply a Soil Erosion and Sedimentation Control Plan as detailed in Chapter 11.7.	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
	Littering at the site or the surroundings shall be forbidden during decommissioning activities. During the 1 to 2 weeks of works, any waste generated shall be collected in bins or plastic bags and be in the end transported to the operational dumpsites.		Continuously during works At the end of the works
National Natural Protected Areas and Fauna & Flora			
The South Caicos dumpsite is nearby the proposed South Caicos Wetland Critical Habitat Reserve, and the proposed Boiling Hole Nature Reserve. Risks include habitat stress from poor waste management and fauna disturbance through traffic, nest damage, or poaching during decommissioning.	Only the defined access roads shall be used and no off-road driving shall be allowed. This will prevent impacts on surrounding wildlife and habitats.	Decommissioning Contractor	Continuously during works
	Littering at the site or the surroundings, making fire, listening to loud music or making other types of excessive noise shall be forbidden during decommissioning activities.		
	The fence to be placed around the gate must be equipped with prohibition signs and clarification about the decommissioned nature of the site and the attempt to recover its ecological baseline. The fence shall not contain sharp edges, barbed wire, or electric current.		At the end of the decommissioning works

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Interaction of workers with wildlife and feral animals shall be regulated by prohibition of harming native wildlife and instruction to contact DECR when wildlife incidents occur (or the Department of Agriculture if there are concerns regarding feral animals).		Continuously during works In case wildlife incidents occur
	Compensation measures:		
	Undertake a detailed Pre-construction Biodiversity Assessment, i.e., an assessment of fauna and flora at the South Caicos AoI. Chapter 11.8 provides further guidance.	Decommissioning Contractor advised by a Biodiversity expert	In two seasons before construction (including pre-construction activities implying soil disturbance)
	In case rare, threatened, and endangered plants, animals or ecosystems, species of commercial importance, and/ or ecosystem services provided by any of these are detected at the investigated sites, prepare and implement a Biodiversity Rescue Procedure. Chapter 11.8 provides further guidance.		
	In addition to the above, all temporarily disturbed areas (for example for storage of materials and excavated soil) need to be rehabilitated and restored with indigenous species from the wider area.	Decommissioning Contractor advised by a Biodiversity expert and DECR	Upon completion of the works
Ecosystem services			
Site surroundings include vulnerable, favorite, and marine activity areas. Decommissioning may temporarily reduce ecosystem services due to visual, noise, and air impacts, heavy traffic, and potential biodiversity loss.	Apply the measures defined previously for mitigation of noise emissions, impacts on water, protected areas and fauna & flora	Decommissioning Contractor	As per items “Noise”, “Surface water quality”, and “National Natural Protected Areas, and Fauna & Flora” above
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors and villagers of temporary changes. Guidance on TMP is provided in Chapter 11.9 of the ESIA.		Continuously during works
	Coordination with local tourism stakeholders shall be maintained to ensure minimal impact on visitor experience.		

DECOMMISSIONING STAGE - SOUTH CAICOS DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Enhancement: Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.	GOTCI	Continuously during works
Private Assets			
The South Caicos dumpsite is located within privately owned land. The decommissioning works will enter private land at the dumpsite but also in the surroundings, and may cause damages to land and any privately owned assets.	Elaborate and apply a Land Acquisition Plan (LAP) that establishes the timelines, the responsibilities, the obligations and the rights of the buyer and the seller regarding the acquisition process. The GOTCI has a particular procedure for such cases that shall be followed. The LAP also needs to comply with the relevant provisions of the IFC Performance Standard 5 - Land Acquisition and Involuntary Resettlement, and with the CDB Performance Requirement 7 - Land Acquisition and Resettlement. Further guidance can be consulted in Chapter 13.3.2 of the ESIA Report.	GOTCI	Before decommissioning starts
Livelihoods			
Informal waste pickers have been reported by the Main Consultant collecting materials at the South Caicos dumpsite. Upon decommissioning, these activities will need to cease.	Prepare a gender-inclusive Livelihood Restoration Plan with the core purpose to help waste pickers transition from their informal, precarious work to more stable, dignified, and sustainable sources of income. Chapter 13.3.1 of the ESIA suggests an annotated table of contents for a tailored LRP for the dumpsite.	GOTCI	Before decommissioning starts

DECOMMISSIONING STAGE - SOUTH CAICOS DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Occupational Health & Safety			
Decommissioning works, though relatively simple, pose significant occupational health and safety risks due to presence of mixed and unmanaged waste, including organic, industrial, medical, and electronic materials. Workers may be exposed to toxic substances, corrosive leachate, and biological hazards such as pathogens and disease vectors, especially without proper PPE. Additional risks include injuries from handling heavy materials, heat stress, and sunburn. These conditions can lead to acute or chronic health issues.	Prepare and implement a simple Decommissioning and OHS Risk Management Plan - guidance is available in Chapter 11.5 of the ESIA Report.	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
Community Health & Safety			
The existence of access roads to the South Caicos site increases potential exposure of residents and tourists to health and safety risks. Noise-related hazards have been addressed previously. Additional risks stem from decommissioning traffic, including increased movement of bulky waste, equipment, and machinery, which raises the likelihood of traffic accidents on roads connected to the dumpsite.	The site is not fenced, and community members, visitors, or people used to drop waste there may get close enough resulting in hazards. To make sure this does not happen, warnings shall be placed at the access roads with sufficient distance to the site warning of the works and of the prohibition to use the site presently and in the future.	Decommissioning Contractor	Before decommissioning begins
	Previous information of the community and tourist operators of the works schedule, duration, potential risks and activities to be performed will help assuring that people understand that the site shall not be used during nor after decommissioning works. This shall be the responsibility of the Contractor but needs to be done with support of the EHD and, additionally it is suggested to involve the district commissioners and local information media.	Decommissioning Contractor EHD South Caicos District Commissioner Local Media	Before decommissioning begins

DECOMMISSIONING STAGE - SOUTH CAICOS DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Induction to the workers, especially drivers to follow the traffic rules	Decommissioning Contractor	Before decommissioning begins
	Development of accident prevention/emergency preparedness policy and measures in form of Emergency Response Plans as detailed in Chapter 11.1 of this ESIA Report	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
	Keep open communication channels between the Contractor and the affected communities, as well as tourism operators: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report.	Decommissioning Contractor	Continuously during works
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7.	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
	The measures defined previously for mitigation of noise emissions from the decommissioning works apply	Decommissioning Contractor	As per item “Noise” above

11.16.2 Construction of the new facilities in South Caicos

Table 11-10: Environmental and Social Management Plan for the construction of the new facilities in South Caicos

CONSTRUCTION STAGE - NEW FACILITIES IN SOUTH CAICOS			
Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
Construction activities within the Project boundaries will generate medium-intensity, ground-level emissions of dust and gases—primarily from excavation, vegetation clearing, machinery use, and traffic—which may temporarily affect air quality in nearby residential and touristic areas, ecosystems (nearby salina), and along access roads, with impacts influenced by weather, equipment condition, and construction timing.	Regular watering of construction areas	Construction Contractor	When dust levels are expected to be high (dry and windy days)
	Watering, containing, covering, and/or bunding fine materials, excavated materials and aggregates stockpiles in a way that avoids their spreading by the wind		Continuously during works
	Covering of trucks transporting aggregates and fine materials (e.g. through the use of tarpaulin)		
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Optimization of transportation management to avoid needless truck drives		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		
	Prohibit burning of waste		
	Coordinate and inform the nearby communities and tourism operators of the start and duration of any expected high dust generating activities.		Five days before any expected high dust generating activities

CONSTRUCTION STAGE - NEW FACILITIES IN SOUTH CAICOS

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
Construction activities, particularly site clearing, levelling, and road works, will generate temporary but potentially high noise levels affecting nearby residential and touristic areas, ecosystems, and workers with impacts considered of high magnitude and requiring mitigation due to their medium sensitivity and reversibility upon completion.	Plan construction activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)	Construction Contractor	Plan before construction begins Implement continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible		
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		Continuously during works
	Coordinate and inform the nearby communities and tourism operators of the start and duration of any expected high noise generating activities.		
Groundwater Quality, Surface Water Quality			
Due to the highly permeable coral limestone geology of the Turks and Caicos Islands, construction activities at the new facilities' site in South Caicos pose a medium-low risk of groundwater contamination from spills, soil disturbance, stormwater runoff, improper waste disposal, and sanitation facilities.	Prepare and apply a Waste and Hazardous Materials Management Plan as detailed in Chapter 11.4.	Construction Contractor	Plan before construction begins Implement continuously during works
	Design a temporary drainage system to accommodate storm water runoff and avoid it seeping into the groundwater or flowing into the surface water courses. The drainage system must be equipped with sediment traps and oil-water separators.		Design before construction begins Implement continuously during works

CONSTRUCTION STAGE - NEW FACILITIES IN SOUTH CAICOS

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Construction activities may temporarily impact surface water quality through erosion, sedimentation, and contamination from chemicals, waste, and wastewater, particularly affecting sensitive coastal and wetland areas, with mitigation required to reduce the medium significance of these risks.	If drainage water is contaminated and cannot be treated, it must be drained into a dedicated retention basin. Drainage must in these cases be pumped and disposed of as hazardous waste.		Continuously during works
	The usage of well-maintained and, whenever possible, new vehicles must be promoted. The maintenance of the vehicles shall only be done in designated areas with an impermeable surface and secondary containment.		Continuously during works
Soil Quality			
Construction activities at the South Caicos site will result in permanent soil coverage and potential temporary soil degradation in surrounding areas due to excavation, machinery movement, and waste pollution, with medium magnitude impacts to local sensible flora pre-mitigation.	Ensure that work site boundaries and limits are in accordance with plans and technical design as agreed upon in advance; all construction activities should be carried out within boundaries; site clearance shall be restricted to the necessary defined areas	Construction Contractor	Continuously during works
	Do not undertake excavation activities during periods of intense rainfall to avoid erosion, rutting and compaction of the soils. If this is not possible, the ruts shall be repaired as soon as possible. After allowing a short time for the soil to begin drying, a bulldozer shall be used to smooth and fill in the ruts.		
	Do not allow off-road driving		
	Return surfaces disturbed during construction to better conditions to the greatest extent possible		Upon finalization of the works
	Routinely inspect vehicles and machinery to check any oil leaks, and immediately seal and remediate if occurred.		Continuously during works
	Prepare and apply a Waste and Hazardous Materials Management Plan as detailed in Chapter 11.4.		Plan before construction begins Implement continuously during works

CONSTRUCTION STAGE - NEW FACILITIES IN SOUTH CAICOS

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
National Natural Protected Areas and Fauna & Flora			
Construction activities at the South Caicos new facilities' site may cause impacts to the proposed South Caicos Wetland Critical Habitat Reserve and the proposed Boiling Hole Nature Reserve due to excavation, machinery movement, and waste pollution, with potential risks to flora and fauna that require careful management.	The removal of vegetation, if any present, should be reduced to the minimum extent possible, in accordance with plans and technical design as agreed upon in advance	Construction Contractor	Before construction works begin
	Designated clearance areas for construction activities should be delineated and marked to prevent unintentional clearing and inadvertent encroachment into neighbouring habitats		
	Strictly confine all work to the designated areas, with no activities extending beyond those boundaries		Continuously during works
	Establish a temporary protective buffer by cordoning off the perimeter of the proposed South Caicos Wetland Critical Habitat Reserve and the proposed Boiling Hole Nature Reserve that faces the construction area. This can be done in a simple way by means of a red & white warning tape tied around metal pokes.		Before construction works begin
	The measures defined previously for mitigation of smoke, dust and noise emissions from the construction works apply		As per items "Air Quality and Odour" and "Noise"
	Prohibition of littering, making fire and entering the proposed South Caicos Wetland Critical Habitat Reserve and the proposed Boiling Hole Nature Reserve		Continuously during works
	Prepare and apply a Waste and Hazardous Materials Management Plan as detailed in Chapter 11.4.		Plan before construction begins Implement continuously during works
	Interaction of workers with wildlife and feral animals shall be regulated by prohibition of harming native wildlife and instruction to contact DECR when wildlife incidents occur (or the Department of Agriculture if there are concerns regarding feral animals).		Continuously during works In case wildlife incidents occur

CONSTRUCTION STAGE - NEW FACILITIES IN SOUTH CAICOS

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Ecosystem Services			
Site surroundings include vulnerable, favorite, and marine activity areas. Decommissioning may temporarily reduce ecosystem services due to visual, noise, and air impacts, heavy traffic, and potential biodiversity loss.	The measures defined previously for mitigation of smoke, dust, and noise emissions from the construction works apply	Construction Contractor	As per items "Air Quality and Odour" and "Noise" above
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors and villagers of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7.		Plan before construction begins Implement continuouly during works
	Coordination with local tourism stakeholders shall be maintained to ensure minimal impact on visitor experience.		Continuously during works
	<u>Enhancement:</u> Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.	GOTCI	Continuously during works
Private Assets			
About 1 ha of privately owned land is needed in South Caicos for the new facilities. A suitable location for this integrated facility has been proposed by the GOTCI nearby the existing dumpsite. The availability of this area shall be confirmed in cooperation between the GOTCI, the District Commissioner, the Planning Department and the tourist operators owning large portions of the island.	Elaborate and apply a Land Acquisition Plan (LAP) that establishes the timelines, the responsibilities, the obligations and the rights of the buyer and the seller regarding the acquisition process. The GOTCI has a particular procedure for such cases that shall be followed. The LAP also needs to comply with the relevant provisions of the IFC Performance Standard 5 - Land Acquisition and Involuntary Resettlement, and with the CDB Performance Requirement 7 - Land Acquisition and Resettlement. Further guidance can be consulted in Chapter 13.3.2 of the ESIA Report.	GOTCI	Before construction begins

CONSTRUCTION STAGE - NEW FACILITIES IN SOUTH CAICOS

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Occupational Health & Safety			
The construction phase poses high-significance risks to occupational health and safety, including potential accidents, exposure to hazardous substances and waste, extreme weather conditions, and inadequate sanitation, all of which may result in serious injuries or fatalities if not properly managed.	Prepare and implement an Occupational Health and Safety Management Plan (OHS Plan) - see guidance on Chapter 11.4 of the ESIA Report.	Construction Contractor	Plan before construction begins Implement continuously during works
Community Health & Safety			
Construction of ISWMP facilities may cause medium-significance, reversible impacts on nearby communities and touristic areas due to dust, noise, traffic, hazardous materials, and potential social tensions from non-local workers, requiring mitigation measures to minimize health, safety, and nuisance risks.	To make sure that the site is not entered by unauthorised persons, it need to be fenced. The fences need to be kept in good conditions, and be repaired if damages or vandalism occur.	Construction Contractor	Before construction works begin Continuously during works
	A safety distance between the public and any eventually existing non-fenced areas of the Project site can be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons		Before construction works begin Continuously during works
	Induction to the workers, especially drivers to follow the traffic rules together with regular supervision of violations or damages to the access roads to reduce the risk of accidents.		Continuously during works
	Development of accident prevention/emergency preparedness policy and measures - Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report		Prepare before the construction works begin
	A Workers' Code of Conduct shall be developed, and the workers shall be thereof informed. The provisions for the Code of Conduct and a template can be consulted in Chapter 11.10 of this ESIA.		

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report		Implement continuously during the works
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, tourism operators and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities and tourism operators about upcoming works and the associated impacts and risks.		
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan (TMP) to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors and citizens of temporary changes. Guidance on TMP is provided in Chapter 11.7 of this ESIA.		
	The measures defined previously for mitigation of smoke, dust and noise emissions from the construction works apply.		As per items “Air Quality and Odour” and “Noise” above

11.16.3 Operation of the new facilities in South Caicos

Table 11-11: Environmental and Social Management Plan for the operation of the new facilities in South Caicos

OPERATION STAGE - NEW FACILITIES IN SOUTH CAICOS

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
The proposed waste management operations in South Caicos involve a Construction and Demolition Waste (CDW) center that may generate dust and fine particulate matter, posing respiratory risks if uncontrolled, as well as a Civic Amenity Site, a Transfer Station and a Temporary Storage Station. These generally have low air quality impacts but may cause mild odors and dust if waste is poorly managed. Finally, an in-vessel composting facility (CF) is proposed, which is a method designed to minimized odor release, as it prevents the uncontrolled release of gases and particulates.	**Construction and Demolition Waste (CDW) center:**		
	Use dust suppression systems such as water spraying or misting	Operation Contractor	During operation of the CDW center
	Study the feasibility of enclosing or partially cover the processing areas		After contract award, before operation
	The wheels of the trucks shall be washed to prevent dust from spreading beyond the site.		During operation of the CDW center
	Civic Amenity Site (CAS), Temporary Storage Station (TSS) and Transfer Station (TS)		
	Clear signage and staff supervision to ensure that waste is correctly sorted and deposited.	Operation Contractor	After contract award, before operation
	Organic and odorous waste fractions should be stored in covered containers and removed frequently.		During operation of the CAS, TSS and TS
	Dust from vehicle movement can be controlled through regular sweeping and the use of water sprays.		
	Composting Facility, CF (in-vessel composting):		
	Maintain aerobic conditions through controlled airflow to prevent the formation of anaerobic zones, which are a primary source of strong odours.	Operation Contractor	During operation of the CF
	Keeping moisture levels within the optimal range (typically 50–60%) to support efficient microbial activity and reduce the risk of odour-causing imbalances.		
	Minimize the time waste is stored before entering the composting system, as decomposition and odour generation can begin quickly.		
	Routine monitoring of temperature, oxygen, and moisture levels inside the vessel ensures that the composting process remains stable and efficient.		

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
Noise levels at the South Caicos facilities will vary by operation. The CDW center will be the loudest due to crushing and heavy equipment. The Civic Amenity Site, the Temporary Storage Station and the Transfer Station generate moderate traffic and unloading noise, noticeable during peak times. Noise levels may increase during loading and unloading of organic materials to the CF.	**Construction and Demolition Waste (CDW) center:**		
	Limit operations to standard working hours	Operation Contractor	During operation of the CDW center
	Use low-noise equipment models where possible		
	It is recommended to study the feasibility and applicability of the following systems in the CDW center in South Caicos: ▪ Acoustic enclosures or sound barriers to be installed around high-noise machinery to reduce noise emissions ▪ Rubber linings in hoppers and chutes to help dampen impact noise.		After contract award, before operation
	Civic Amenity Site (CAS), Temporary Storage Station (TSS) and Transfer Station (TS)		
	Usage of the CAS and movement of waste in the TSS and TS shall be limited to daily hours during the working week; dropping waste in the evenings and on Sundays shall not be allowed.	Operation Contractor	During operation of the CAS, the TSS and the TS
	Composting Facility, CF (in-vessel composting):		
	Schedule operations of turning and loading/unloading organic materials during daytime hours.	Operation Contractor	During operation of the CF
Groundwater quality, Surface water quality, and Soil			
Composting facilities can produce leachate containing nutrients, pathogens, and organic compounds, which may contaminate soil, groundwater, or nearby water bodies if not properly contained. CDW centers risk water pollution through runoff carrying fine particles, heavy metals, and treated material residues, while dust suppression can add to runoff issues. Civic Amenity Sites, Temporary Storage	**Construction and Demolition Waste (CWD) center:**		
	All crushing and grinding operations in the CDW center shall be conducted on paved, contained surfaces	Operation Contractor	During operation of the CDW center
	Water used for dust suppression and other runoff shall be collected in drainage channels.		
	Civic Amenity Site (CAS), Temporary Storage Station (TSS) and Transfer Station (TS)		
	The CAS shall be designed with segregated drop-off areas, and covered bins. The CAS, TSS and TS shall be placed on impermeable surfaces.	Operation Contractor	After contract award, before operation
	Frequent waste removal and public education on proper disposal practices will further reduce the risk of contamination.		
	Stormwater should be directed through grated drains and oil-water separators before being released off-site.		

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Sites and Transfer Stations have lower risks but can still cause contamination from leaking containers or poorly managed organic and hazardous waste.	**Composting Facility, CF (in-vessel composting):**		
	Given the sealed nature of the in-vessel composting system proposed for South Caicos, leachate will be prevented from escaping into the environment and instead re-used in the composting process. Notwithstanding this, the installation of the drum on impermeable ground with leachate collection and drainage systems shall be established as a preventive measure.	Operation Contractor	Before installing and operating the CF
National Natural Protected Areas and Fauna & Flora			
The South Caicos dumpsite is nearby the proposed South Caicos Wetland Critical Habitat Reserve, and the proposed Boiling Hole Nature Reserve. Among species present, the NT Reddish Egret is highlighted. According to the DECR, much of the undeveloped land on South Caicos has high occurrence of rare, threatened, and endemic species of plants, including Caicos Encyclia orchid (EN), Capillary buttonbush (EN) and the culturally iconic Turk's head cactus (LC). Air and noise pollution, water contamination, and soil degradation could disrupt ecosystems and cultural areas, leading to medium-level biodiversity risks if unmanaged.	Apply the mitigation measures suggested for managing air, noise, soil, groundwater and surface water impacts	Operation Contractor	As per items "Air Quality and Odour", "Noise", and "Groundwater quality, Surface water quality, and Soil" above
	<u>Compensation:</u> Before construction, a detailed Pre-construction Biodiversity Assessment and a Biodiversity Rescue Procedure are requested for South Caicos (Chapter 9.4.6). During operation, a monitoring of the rescue procedure shall be performed. The GOTCI shall assure a regular monitoring of the development of the rescued flora (and fauna, may that be the case) and actively intervene in case the rescue measures are not having the expected result (see ESMoP in Chapter 11.19.	GOTCI	As per ESMoP (Chapter 11.19.)

OPERATION STAGE - NEW FACILITIES IN SOUTH CAICOS

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Ecosystem Services			
Site surroundings include vulnerable, favorite, and marine activity areas. Decommissioning may temporarily reduce ecosystem services due to visual, noise, and air impacts, heavy traffic, and potential biodiversity loss.	Apply the mitigation measures defined previously for mitigation of air and noise emissions, water and soil impacts and protection of protected areas, fauna and flora.	Operation Contractor	As per items "Air Quality and Odour", "Noise", "Groundwater quality, Surface water quality, and Soil", and "National Natural Protected Areas, Fauna & Flora, and Areas of Historical Interest (HA)" above
	<u>Enhancement:</u> Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.	GOTCI	Continuously during operation

OPERATION STAGE - NEW FACILITIES IN SOUTH CAICOS

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Occupational Health & Safety			
Waste management operations pose significant OHS risks across facilities. CDW centers present risks from heavy equipment, noise, vibration, and dust containing silica or asbestos. Civic Amenity Sites, Transfer Stations and Temporary Storage Stations have lower risks but include slips, manual handling injuries, and contact with hazardous waste. Heat stress, fatigue, and pathogen exposure are concerns at all sites, requiring strict PPE, training, and safety protocols.	Prepare and implement an Occupational Health and Safety Management Plan (OHS Plan) - see guidance on Chapter 11.4 of the ESIA Report.	Operation Contractor	Plan before operation begins Implement continuously during operation
	Apply the mitigation measures defined previously to mitigate air and noise emissions, water, groundwater and soil contamination.	Operation Contractor	As per items "Air Quality and Odour", "Noise", "Groundwater quality, Surface water quality, and Soil" above
Community Health & Safety			
The new facilities in South Caicos may impact the nearby communities' and visitors' health and safety. Key risks include air quality deterioration from dust, bioaerosols, and odorous gases, causing respiratory issues and discomfort; noise pollution disrupting daily life; and water contamination from leachate or runoff, threatening households reliant on wells. Increased traffic raises accident risks. Poor waste management can attract pests	**Construction and Demolition Waste (CWD) center:**		
	Citizens are generally not expected to get close enough to the CDW center resulting in any hazards. However, the proximity to residences and touristic places may enhance curiosity in some persons, especially in children. To make sure that the site is not entered by unauthorised persons, it needs to be fenced. The fences need to be kept in good conditions and be repaired if damages or vandalism occur.	Operation Contractor	Fence before operation begins Maintain fences continuously during operation
	A safety distance between the public and any eventually existing non-fenced areas of the CDW center shall be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons.	Operation Contractor	Before operation begins
	All facilities:		
	Induction to the workers, especially drivers to follow the traffic rules	Operation Contractor	Continuously during operation

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
and disease vectors, and perceived risks may lead to stress and social tension if communities feel excluded from decision-making.	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved roads
	Development of accident prevention/emergency preparedness policy and measures, i.e., Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report		Plan before operation begins Implement continuously during operation
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report		Continuously during operation
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities and tourism operators about associated impacts and risks of the new facilities.		Continuously during operation
	Apply the mitigation measures defined previously to mitigate air and noise emissions, water, groundwater and soil contamination.		As per items “Air Quality and Odour”, “Noise”, “Groundwater quality, Surface water quality, and Soil” above

11.17 Compilation of the ESMP - Grand Turk

11.17.1 Rehabilitation of the Grand Turk dumpsite

Table 11-12: Environmental and Social Management Plan for the rehabilitation of the Grand Turk dumpsite

REHABILITATION STAGE - GRAND TURK			
Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
Rehabilitation activities within the dumpsite will generate significant but temporary ground-level emissions of dust, smoke, and gases, potentially impacting air quality and odour in nearby communities—especially Cockburn Town —due to machinery use and waste handling, with effects influenced by weather, equipment condition, and timing.	Regular watering of rehabilitation areas	Rehabilitation Contractor	When dust levels are expected to be high (dry and windy days)
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Optimization of transportation management to avoid needless truck drives		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		
	Prohibit burning of waste		
	Coordinate and inform the nearby communities of the start and duration of any expected high dust generating activities so people can prepare by closing windows and remaining indoors, for example.		Five days before any expected high dust generating activities
Noise			
The operation of trucks and excavation equipment will cause temporary but significant noise disturbances affecting nearby communities—particularly Cockburn Town—and	Plan rehabilitation activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)	Rehabilitation Contractor	Plan before rehabilitation begins Implement continuously during works

REHABILITATION STAGE - GRAND TURK

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
construction workers, with impacts depending on the activity type and expected to subside once works are completed.	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		
	Coordinate and inform the nearby communities of the start and duration of any expected high noise generating activities so people can prepare by closing windows and remaining indoors, for example.		Five days before any expected high noise generating activities
Ecosystem Services			
The rehabilitation works can temporarily reduce the for cultural ecosystem services in the area due to visual impacts, increase in noise and odours, and circulation of heavy vehicles and machinery.	The measures defined previously for mitigation of dust, smoke and noise emissions from the rehabilitation works apply.	Rehabilitation Contractor	As per items "Air Quality and Odour" and "Noise" above
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors of temporary changes. Guidance on TMP is provided in Chapter 11.7 of this ESIA.		Plan before construction begins Implement continuouly during works
	Coordination with local tourism stakeholders shall be maintained to ensure minimal impact on visitor experience.		Continuously during works
	<u>Enhancement:</u> Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.	GOTCI	Continuously during works

REHABILITATION STAGE - GRAND TURK

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Occupational Health & Safety			
Rehabilitating the Providenciales dumpsite presents significant occupational health and safety risks—including exposure to toxic substances, unstable terrain, and biological hazards—which may cause repeated, high-intensity impacts on workers' physical and mental well-being unless robust safety measures are implemented.	Prepare and implement a Rehabilitation and OHS Risk Management Plan as detailed in Chapter 0	Rehabilitation Contractor	Prepare before the rehabilitation works begin/continue Implement continuously during the works
Community Health & Safety			
Due to the proximity of the dumpsites to Cockburn Town, rehabilitation activities pose medium-significance risks to community health and safety, including exposure to air emissions, noise, and traffic hazards, despite fencing and access restrictions.	Because the sites are fenced, community members or visitors are not expected to get close enough resulting in any hazards. To make sure this does not happen, the fences need to be kept in good conditions, and be repaired if damages or vandalism occur	Rehabilitation Contractor	Continuously during the works
	Induction to the workers, especially drivers to follow the traffic rules e.g. speed limit; this includes a maximum of 30 km/h when crossing housing areas and of 15 km/h on unpaved access roads		Speed limits: When crossing housing areas and on unpaved access roads
	Development of accident prevention/emergency preparedness policy and measures - Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report		Prepare before the rehabilitation works begin/continue
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report		
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities about upcoming works and the associated impacts and risks.		Continuously during the works
	The measures defined previously for mitigation of smoke, dust and noise emissions from the rehabilitation works apply		As per items “Air Quality and Odour” and “Noise” above

11.17.2 Operation of the Grand Turk dumpsite

The proposed design does not imply actual construction works but rather provides a guideline for the implementation of a more professional operation service of the disposal site in Grand Turk. Operational measures to reduce impacts are the responsibility of the Operation Contractor and shall be thoroughly implemented during the whole operational period as recommended by the Main Consultant in the Preliminary and Final Design Reports. These include:

- more frequent cover
- separate handling of hazardous and decomposable waste
- prohibition of burning waste.

These improvements are not expected to bring significant enhancements on the environmental performance of the site. In fact, the largest improvements will be brought up by the rehabilitation measures, thoroughly discussed in Chapter 9.3 of this ESIA Report, and by deviating waste fractions into CAS, TSS, and other facilities as assessed in Chapter 9.5.1.

Leachate collection cannot be reasonably implemented in the present cells. The improved operation of the site will nevertheless reduce leachate generation due to the infiltration of rainwater and also reduce the polluting content of the leachate generated. A decrease in leachate generation in the two sites is expected to bring some reduction of the environmental pollution, whose advantages can only be quantified once continuous monitoring of the impacts of the sites is initiated.

The soil at the site, assumed to be presently highly contaminated, will not be subject to remediation. Instead, the improved operational practices will help reducing the pollution charge.

A specifically designed filling plan foresees landscaping in the sense that the vertical faces of the dumpsite facing the receptors will be covered with soil and planted at regular intervals ("final cover), allowing for lower impact on the cultural ecosystem services and the residential areas.

Given that the impacts of the existing dumpsite have already been comprehensively assessed in Chapter 7, and that the design of the ISWMP already foresees operational improvements, the formulation of additional mitigation measures at this point is methodologically unnecessary and lacks practical justification.

11.17.3 Construction of the new facilities in Grand Turk

Table 11-13: Environmental and Social Management Plan for the construction of the new facilities in Grand Turk

CONSTRUCTION STAGE - NEW FACILITIES IN GRAND TURK

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
Construction activities within the Project boundaries will generate medium-intensity, ground-level emissions of dust and gases—primarily from excavation, vegetation clearing, machinery use, and traffic—which may temporarily affect air quality in nearby residential and touristic areas, ecosystems (nearby salinas), and along access roads, with impacts influenced by weather, equipment condition, and construction timing.	Regular watering of construction areas	Construction Contractor	When dust levels are expected to be high (dry and windy days);
	Watering, containing, covering, and/or bunding fine materials, excavated materials and aggregates stockpiles in a way that avoids their spreading by the wind		Continuously during works
	Covering of trucks transporting aggregates and fine materials (e.g. through the use of tarpaulin)		Continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Optimization of transportation management to avoid needless truck drives		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		Continuously during works
	Prohibit burning of waste		Continuously during works
	Coordinate and inform the nearby communities and tourism operators of the start and duration of any expected high dust generating activities so people can prepare by closing windows and remaining indoors, for example.		Five days before any expected high dust generating activities

CONSTRUCTION STAGE - NEW FACILITIES IN GRAND TURK

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
Construction activities, particularly site clearing, levelling, and road works, will generate temporary but potentially high noise levels affecting nearby residential and touristic areas and ecosystems, and workers with impacts considered of high magnitude and requiring mitigation due to their medium sensitivity and reversibility upon completion.	Plan construction activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)	Construction Contractor	Plan before construction begins Implement continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible		
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		Continuously during works
	Coordinate and inform the nearby communities and tourism operators of the start and duration of any expected high noise generating activities.		
Groundwater Quality and Surface Water Quality			
Due to the highly permeable coral limestone geology of the Turks and Caicos Islands, construction activities at the new facilities' site in Grand Turk pose a medium-low risk of groundwater contamination from spills, soil disturbance, stormwater runoff, improper waste disposal, and sanitation facilities.	Prepare and apply a Waste and Hazardous Materials Management Plan as detailed in Chapter 11.4.	Construction Contractor	Plan before construction begins Implement continuously during works
	Design a temporary drainage system to accommodate storm water runoff and avoid it seeping into the groundwater or flowing into the salinas. The drainage system must be equipped with sediment traps and oil-water separators.		Design before construction begins Implement continuously during works
	If drainage water is contaminated and cannot be treated, it must be drained into a dedicated retention basin. Drainage must in these cases be pumped and disposed of as hazardous waste.		Continuously during works

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Construction activities may temporarily impact surface water (salinas) quality through erosion, sedimentation, and contamination from chemicals, waste, and wastewater, particularly affecting sensitive coastal and wetland areas, with mitigation required to reduce the medium significance of these risks.	The usage of well-maintained and, whenever possible, new vehicles must be promoted. The maintenance of the vehicles shall only be done in designated areas with an impermeable surface and secondary containment.		Continuously during works
National Natural Protected Areas, International Natural Protected Areas, Fauna & Flora, Areas of Historical Interest (HA) and Historic Attractions			
In Grand Turk, works are very close (albeit not within the footprint of) the Town Salina. This Salina is part of the Town Pond and the Red Salinas Areas of Historical Interest, and of the Grand Turk Salt Salinas historical attraction. Excavation, machinery movement, and waste pollution pose potential risks to flora and fauna that require careful management to maintain low overall significance.	The removal of vegetation, if any present, should be reduced to the minimum extent possible, in accordance with plans and technical design as agreed upon in advance	Construction Contractor	Before construction works begin
	Designated clearance areas for construction activities should be delineated and marked to prevent unintentional clearing and inadvertent encroachment into neighbouring habitats		Before construction works begin
	Strictly confine all work to the designated areas, with no activities extending beyond those boundaries		Continuously during works
	Establish a temporary protective buffer by cordoning off the perimeter of the Salt Cay Area of Historical Interest and Nature Reserve that faces the construction area. This can be done in a simple way by means of a red & white warning tape tied around metal pokes.		Before construction works begin
	The measures defined previously for mitigation of smoke, dust and noise emissions from the construction works apply		As per items “Air Quality and Odour” and “Noise”
	Prohibition of littering, making fire and entering protected areas		Continuously during works
	Prepare and apply a Waste and Hazardous Materials Management Plan as detailed in Chapter 11.4.		Plan before construction begins Implement continuously during works

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Interaction of workers with wildlife and feral animals shall be regulated by prohibition of harming native wildlife and instruction to contact DECR when wildlife incidents occur (or the Department of Agriculture if there are concerns regarding feral animals).		Continuously during works In case wildlife incidents occur
Ecosystem Services			
The construction works can temporarily or permanently reduce the appeal and demand for provisioning and cultural ecosystem services in the area due to visual impacts, increase in noise and odours, water pollution, and circulation of heavy vehicles and machinery.	The measures defined previously for mitigation of smoke, dust, and noise emissions from the construction works apply	Construction Contractor	As per items "Air Quality and Odour" and "Noise" above
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors and villagers of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7.		Plan before construction begins Implement continuouly during works
	Coordination with local tourism stakeholders shall be maintained to ensure minimal impact on visitor experience.		Continuously during works
	<u>Enhancement:</u> Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.	GOTCI	Continuously during works

CONSTRUCTION STAGE - NEW FACILITIES IN GRAND TURK

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Occupational Health & Safety			
The construction phase poses high-significance risks to occupational health and safety, including potential accidents, exposure to hazardous substances and waste, extreme weather conditions, and inadequate sanitation, all of which may result in serious injuries or fatalities if not properly managed.	Prepare and implement an Occupational Health and Safety Management Plan (OHS Plan) - see guidance on Chapter 11.4 of the ESIA Report.	Construction Contractor	Plan before construction begins Implement continuously during works
Community Health & Safety			
Construction of ISWMP facilities may cause medium-significance, reversible impacts on nearby communities—particularly in Cockburn Town—due to dust, noise, traffic, hazardous materials, and potential social tensions from non-local workers, requiring mitigation measures to minimize health, safety, and nuisance risks.	To make sure that the site is not entered by unauthorised persons, it need to be fenced. The fences need to be kept in good conditions, and be repaired if damages or vandalism occur.	Construction Contractor	Before construction works begin Continuously during works
	A safety distance between the public and any eventually existing non-fenced areas of the Project site can be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons		
	Induction to the workers, especially drivers to follow the traffic rules together with regular supervision of violations or damages to the access roads to reduce the risk of accidents.		Continuously during works
	Development of accident prevention/emergency preparedness policy and measures - Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report		Prepare before the rehabilitation works begin Implement continuously during the works
	A Workers' Code of Conduct shall be developed, and the workers shall be thereof informed. The provisions for the Code of Conduct and a template can be consulted in Chapter 11.10 of this ESIA.		
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report		

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities and tourism operators about upcoming works and the associated impacts and risks.		
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan (TMP) to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors and citizens of temporary changes. Guidance on TMP is provided in Chapter 11.7 of this ESIA.		
	The measures defined previously for mitigation of smoke, dust and noise emissions from the construction works apply.		As per items “Air Quality and Odour” and “Noise” above

11.17.4 Operation of the new facilities in Grand Turk

Table 11-14: Environmental and Social Management Plan for the operation of the new facilities in Grand Turk

OPERATION STAGE - NEW FACILITIES IN GRAND TURK			
Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
The proposed waste management operations in Grand Turk involve a Construction and Demolition Waste (CDW) center that may generate dust and fine particulate matter, posing respiratory risks if uncontrolled, and windrow composting causing emissions and odours during turning operation, as well as a Civic Amenity Site and a Temporary Storage Station. These generally have low air quality impacts but may cause mild odors and dust if waste is poorly managed.	**Construction and Demolition Waste (CDW) center:**		
	Use dust suppression systems such as water spraying or misting	Operation Contractor	During operation of the CDW center
	Study the feasibility of enclosing or partially cover the processing areas		After contract award, before operation
	The wheels of the trucks shall be washed to prevent dust from spreading beyond the site.		During operation of the CDW center
	Windrow composting (Composting Plant, CP):		
	Maintaining aerobic conditions is essential to control odour and gas emissions. This can be achieved through regular turning of the compost piles using agricultural machinery as foreseen, which promotes oxygen flow and reduces the formation of odorous compounds.	Operation Contractor	During operation
	Use of breathable windrow covers or biofilters to further suppress odour emissions		During operation of the CP
	Assure the integrity of buffer zones (Area 3 on Figure 3-24 of the ESIA Report) between the composting area/the dumpsite and nearby residences.		During operation
	Civic Amenity Site (CAS) and Temporary Transfer Station (TSS):		
	Clear signage and staff supervision to ensure that waste is correctly sorted and deposited.	Operation Contractor	After contract award, before operation
	Organic and odorous waste fractions should be stored in covered containers and removed frequently.		During operation of the CAS and TSS
	Dust from vehicle movement can be controlled through regular sweeping and the use of water sprays.		During operation of the CAS

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
Noise levels at the Grand Turk facilities will vary by operation. Windrow composting creates intermittent machinery noise, while the CDW center is the loudest due to crushing and heavy equipment. The Civic Amenity Site and the Temporary Storage Station generate moderate traffic and unloading noise, noticeable during peak times.	**Construction and Demolition Waste (CDW) center:**		
	Limit operations to standard working hours	Operation Contractor	During operation of the CDW center
	Use low-noise equipment models where possible		During operation of the CDW center
	It is recommended to study the feasibility and applicability of the following systems in the CDW center in Grand Turk: ▪ Acoustic enclosures or sound barriers to be installed around high-noise machinery to reduce noise emissions ▪ Rubber linings in hoppers and chutes to help dampen impact noise.		After contract award, before operation
	Windrow composting (Composting Plant, CP):		
	Schedule operations of turning and loading/unloading organic materials during daytime hours.	Operation Contractor	During operation of the CP
	Assure the integrity of buffer zones (Area 3 on Figure 3-24 of the ESIA Report) between the composting area/the dumpsite and nearby residences.		
	Assure regular maintenance of machinery to help reduce unnecessary mechanical noise.		
	Civic Amenity Site (CAS) and Temporary Transfer Station (TSS):		
	Usage of the CAS and movement of waste in the TSS shall be limited to daily hours during the working week; dropping waste in the evenings and on Sundays shall not be allowed.	Operation Contractor	During operation of the CAS and the TSS
Groundwater quality, Surface water quality, and Soil			
Composting facilities can produce leachate containing nutrients, pathogens, and organic compounds, which may contaminate soil, groundwater, or	**Construction and Demolition Waste (CDW) center:**		
	All crushing and grinding operations in the CDW center shall be conducted on paved, contained surfaces	Operation Contractor	During operation of the CDW center
	Water used for dust suppression and other runoff shall be collected in drainage channels.		

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
nearby water bodies if not properly contained. CDW centers risk water pollution through runoff carrying fine particles, heavy metals, and treated material residues, while dust suppression can add to runoff issues. Civic Amenity Sites and Transfer Stations have lower risks but can still cause contamination from leaking containers or poorly managed organic and hazardous waste.	**Windrow composting (Composting Plant, CP):**		
	The windrow CP shall be installed on impermeable ground equipped with leachate collection and drainage systems. As per the Preliminary Design Report (Main Consultant, May 2025), collected composting leachate in Providenciales will be captured and aerated to prevent biological loading of receiving waters and the soil. The ESIA recommends the same to be applied in Grand Turk.	Operation Contractor	During operation of the CP
	Alternatively, the leachate could be reused within the composting for moisturizing the material before and during the composting process.		
	Civic Amenity Site (CAS) and Temporary Transfer Station (TSS):		
	The CAS and TSS shall be designed with segregated drop-off areas, covered bins, and impermeable surfaces.	Operation Contractor	After contract award, before operation
	Frequent waste removal and public education on proper disposal practices will further reduce the risk of contamination.		
	Stormwater should be directed through grated drains and oil-water separators before being released off-site.		
National Natural Protected Areas, International Natural Protected Areas, Fauna & Flora, Areas of Historical Interest (HA) and Historic Attractions			
The Grand Turk Salinas host sensitive habitats where surveys confirmed the Near-Threatened Reddish Egret and other vulnerable bird species. Proposed waste facilities could indirectly impact these areas through air pollution (dust and VOCs), noise from machinery and traffic—already elevated locally—water contamination from leachate or spills, and soil degradation from drifting plastics.	Apply the mitigation measures suggested for managing air, noise, soil, groundwater and surface water impacts	Operation Contractor	As per items “Air Quality and Odour”, “Noise”, and “Groundwater quality, Surface water quality, and Soil” above

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
These cumulative pressures risk altering feeding and breeding patterns, degrading aquatic ecosystems, and reducing habitat quality, making mitigation essential to protect biodiversity.			
Ecosystem Services			
The presence of the new facilities can temporarily or permanently reduce the appeal and demand for provisioning and cultural ecosystem services in the area due to visual impacts, increase in noise and odours, water pollution, and circulation of heavy vehicles and machinery.	Apply the mitigation measures suggested for managing air, noise, soil, groundwater and surface water impacts, and protection of National Natural Protected Areas, International Natural Protected Areas, Fauna & Flora, Areas of Historical Interest (HA) and Historic Attractions.	Operation Contractor	As per items "Air Quality and Odour", "Noise", "Groundwater quality, Surface water quality, and Soil" and "National Natural Protected Areas, International Natural Protected Areas, Fauna & Flora, Areas of Historical Interest (HA) and Historic Attractions" above
	<u>Enhancement:</u> Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.	GOTCI	Continuously during works

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Occupational Health & Safety			
ISWMP operations pose significant OHS risks across facilities. Composting exposes workers to bioaerosols, dust, ammonia, and odorous gases, with added hazards from machinery. CDW centers present risks from heavy equipment, noise, vibration, and dust containing silica or asbestos. Civic Amenity Sites and Temporary Storage Stations have lower risks but include slips, manual handling injuries, and contact with hazardous waste. Heat stress, fatigue, and pathogen exposure are concerns at all sites, requiring strict PPE, training, and safety protocols.	Prepare and implement an Occupational Health and Safety Management Plan (OHS Plan) - see guidance on Chapter 11.4 of the ESIA Report.	Operation Contractor	Plan before operation begins Implement continuously during operation
	Apply the mitigation measures defined previously to mitigate air and noise emissions, water, groundwater and soil contamination.		As per items "Air Quality and Odour", "Noise", "Groundwater quality, Surface water quality, and Soil" above
Community Health & Safety			
The new facilities in Grand Turk may impact the nearby communities' and visitors' health and safety. Key risks include air quality deterioration from dust, bioaerosols, and odorous gases, causing respiratory issues and discomfort; noise pollution disrupting daily life; and water contamination from leachate or runoff, threatening households	**Construction and Demolition Waste (CWD) center:**		
	Citizens are generally not expected to get close enough to the CDW center resulting in any hazards. However, the proximity to residences may enhance curiosity in some persons, especially children. To make sure that the site is not entered by unauthorised persons, it needs to be fenced. The fences need to be kept in good conditions and be repaired if damages or vandalism occur.	Operation Contractor	Fence before operation begins Maintain fences continuously during operation
	A safety distance between the public and any eventually existing non-fenced areas of the CDW center shall be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons.		Before operation begins

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
reliant on wells. Increased traffic raises accident risks. Poor waste management can attract pests and disease vectors, and perceived risks may lead to stress and social tension if communities feel excluded from decision-making.	**All facilities:**		
	Induction to the workers, especially drivers to follow the traffic rules	Operation Contractor	Continuously during operation
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved roads
	Development of accident prevention/emergency preparedness policy and measures, i.e., Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report		Plan before operation begins Implement continuously during operation
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report		Continuously during operation
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities about associated impacts and risks of the new facilities.		Continuously during operation
	Apply the mitigation measures defined previously to mitigate air and noise emissions, water, groundwater and soil contamination.		As per items “Air Quality and Odour”, “Noise”, “Groundwater quality, Surface water quality, and Soil” above

11.18 Compilation of the ESMP - Salt Cay

11.18.1 Decommissioning of the Salt Cay dumpsite

Table 11-15: Environmental and Social Management Plan for the decommissioning of the Salt Cay dumpsite

DECOMMISSIONING STAGE - SALT CAY DUMPSITE			
Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Surface water			
The Salt Cay site is next to the coast (Atlantic Ocean). Decommissioning work, including land reshaping and heavy machinery use, could cause soil erosion and sedimentation in the waters. There is also a risk of chemical contamination from cleaning activities and runoff containing oils, fuels, and other pollutants. Poor waste management by workers could further threaten the water.	Prepare and apply a Soil Erosion and Sedimentation Control Plan as detailed in Chapter 11.7.	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works
	Littering at the site or the surroundings shall be forbidden during decommissioning activities. During the 1 to 2 weeks of works, any waste generated shall be collected in bins or plastic bags and be in the end transported to the operational dumpsites.		Continuously during works At the end of the works
Occupational Health & Safety			
Decommissioning works, though relatively simple, pose significant occupational health and safety risks due to presence of mixed and unmanaged waste, including organic, industrial, medical, and electronic materials. Workers may be exposed to toxic substances, corrosive leachate, and biological hazards such as pathogens and	Prepare and implement a simple Decommissioning and OHS Risk Management Plan - guidance is available in Chapter 11.5 of the ESIA Report.	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
disease vectors, especially without proper PPE. Additional risks include injuries from handling heavy materials, heat stress, and sunburn. These conditions can lead to acute or chronic health issues.			
Community Health & Safety			
The existence of access roads to the Salt Cay dumpsite increases potential exposure of residents of Balfour Town, as well as visitors to health and safety risks. Additional risks stem from decommissioning traffic, including increased movement of bulky waste, equipment, and machinery, which raises the likelihood of traffic accidents on roads connected to the dumpsite.	Community members, visitors, or people used to drop waste there may get close enough resulting in hazards. To make sure this does not happen, warnings shall be placed at the access roads with sufficient distance to the site warning of the works and of the prohibition to use the site presently and in the future.	Decommissioning Contractor	Before decommissioning begins
	Previous information of the Balfour Town of the works schedule, duration, potential risks and activities to be performed will help assuring that people understand that the site shall not be used during nor after decommissioning works. This shall be the responsibility of the Contractor but needs to be done with support of the EHD and, additionally it is suggested to involve the district commissioners and local information media.	Decommissioning Contractor EHD Salt Cay District Commissioner Local Media	Before decommissioning begins
	Induction to the workers, especially drivers to follow the traffic rules	Decommissioning Contractor	Before decommissioning begins
	Development of accident prevention/emergency preparedness policy and measures in form of Emergency Response Plans as detailed in Chapter 11.1 of this ESIA Report	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works

DECOMMISSIONING STAGE - SALT CAY DUMPSITE

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report.	Decommissioning Contractor	Continuously during works
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7.	Decommissioning Contractor	Plan before decommissioning begins Implement continuously during works

11.18.2 Construction of the new facilities in Salt Cay

Table 11-16: Environmental and Social Management Plan for the construction of the new facilities in Salt Cay

CONSTRUCTION STAGE - NEW FACILITIES IN SALT CAY

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
Construction activities within the Project boundaries will generate medium-intensity, ground-level emissions of dust and gases—primarily from excavation, vegetation clearing, machinery use, and traffic—which may temporarily affect air quality in nearby residential and touristic areas, ecosystems (nearby salina), and along access roads, with impacts influenced by weather, equipment condition, and construction timing.	Regular watering of construction areas	Construction Contractor	When dust levels are expected to be high (dry and windy days);
	Watering, containing, covering, and/or bunding fine materials, excavated materials and aggregates stockpiles in a way that avoids their spreading by the wind		Continuously during works
	Covering of trucks transporting aggregates and fine materials (e.g. through the use of tarpaulin)		Continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Optimization of transportation management to avoid needless truck drives		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		Continuously during works
	Prohibit burning of waste		Continuously during works
	Coordinate and inform the nearby communities and tourism operators of the start and duration of any expected high dust generating activities so people can prepare by closing windows and remaining indoors, for example.		Five days before any expected high dust generating activities

CONSTRUCTION STAGE - NEW FACILITIES IN SALT CAY

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
Construction activities, particularly site clearing, levelling, and road works, will generate temporary but potentially high noise levels affecting nearby residential and touristic areas and ecosystems, and workers with impacts considered of high magnitude and requiring mitigation due to their medium sensitivity and reversibility upon completion.	Plan construction activities to ensure that noisy activities are restricted between evening hours and early morning hours (from 7 pm till 7 am)	Construction Contractor	Plan before construction begins Implement continuously during works
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h		When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h		On unpaved access roads
	Undergo best practices for minimizing noise emissions, such as turning off engines of unused equipment, and use lower noise emission equipment to the extent possible		Continuously during works
	Apply a regular inspection and scheduled maintenance program for vehicles, machinery, and equipment to be used throughout the rehabilitation phase		Continuously during works
	Coordinate and inform the nearby communities and tourism operators of the start and duration of any expected high noise generating activities.		Continuously during works
Groundwater Quality, Surface Water Quality			
Due to the highly permeable coral limestone geology of the Turks and Caicos Islands, construction activities at the new facilities' site in Salt Cay pose a medium-low risk of groundwater contamination from spills, soil disturbance, stormwater runoff, improper waste disposal, and sanitation facilities.	Prepare and apply a Waste and Hazardous Materials Management Plan as detailed in Chapter 11.4.	Construction Contractor	Plan before construction begins Implement continuously during works
	Design a temporary drainage system to accommodate storm water runoff and avoid it seeping into the groundwater or flowing into the surface water courses. The drainage system must be equipped with sediment traps and oil-water separators.		Design before construction begins Implement continuously during works

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Construction activities may temporarily impact surface water and soil quality through erosion, sedimentation, and contamination from chemicals, waste, and wastewater, particularly affecting sensitive coastal and wetland areas, with mitigation required to reduce the medium significance of these risks.	If drainage water is contaminated and cannot be treated, it must be drained into a dedicated retention basin. Drainage must in these cases be pumped and disposed of as hazardous waste.		Continuously during works
	The usage of well-maintained and, whenever possible, new vehicles must be promoted. The maintenance of the vehicles shall only be done in designated areas with an impermeable surface and secondary containment.		Continuously during works
Soil Quality			
Construction activities at the SaLt Cay site will result in permanent soil coverage and potential temporary soil degradation in surrounding areas due to excavation, machinery movement, and waste pollution, with medium magnitude impacts pre-mitigation.	Ensure that work site boundaries and limits are in accordance with plans and technical design as agreed upon in advance; all construction activities should be carried out within boundaries; site clearance shall be restricted to the necessary defined areas	Construction Contractor	Continuously during works
	Do not undertake excavation activities during periods of intense rainfall to avoid erosion, rutting and compaction of the soils. If this is not possible, the ruts shall be repaired as soon as possible. After allowing a short time for the soil to begin drying, a bulldozer shall be used to smooth and fill in the ruts.		
	Do not allow off-road driving		
	Return surfaces disturbed during construction to better conditions to the greatest extent possible		Upon finalization of the works
	Routinely inspect vehicles and machinery to check any oil leaks, and immediately seal and remediate if occurred.		Continuously during works
	Prepare and apply a Waste and Hazardous Materials Management Plan as detailed in Chapter 11.4.		Plan before construction begins Implement continuously during works

CONSTRUCTION STAGE - NEW FACILITIES IN SALT CAY

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
National Natural Protected Areas, International Natural Protected Areas, Fauna & Flora, Areas of Historical Interest (HA) and Historic Attractions			
Construction activities at the Salt Cay new facilities' site may cause impacts to the Salt Cay Nature Reserve that coincides with the Salt Cay Area of Historical Interest due to excavation, machinery movement, and waste pollution, with potential risks to flora and fauna that require careful management to maintain low overall significance.	The removal of vegetation, if any present, should be reduced to the minimum extent possible, in accordance with plans and technical design as agreed upon in advance	Construction Contractor	Before construction works begin
	Designated clearance areas for construction activities should be delineated and marked to prevent unintentional clearing and inadvertent encroachment into neighbouring habitats		Before construction works begin
	Strictly confine all work to the designated areas, with no activities extending beyond those boundaries		Continuously during works
	Establish a temporary protective buffer by cordoning off the perimeter of the Salt Cay Area of Historical Interest and Nature Reserve that faces the construction area. This can be done in a simple way by means of a red & white warning tape tied around metal pokes.		Before construction works begin
	The measures defined previously for mitigation of smoke, dust and noise emissions from the construction works apply		As per items "Air Quality and Odour" and "Noise"
	Prohibition of littering, making fire and entering Salt Cay Area of Historical Interest and Nature Reserve		Continuously during works
	Prepare and apply a Waste and Hazardous Materials Management Plan as detailed in Chapter 11.4.		Plan before construction begins Implement continuously during works
	Interaction of workers with wildlife and feral animals shall be regulated by prohibition of harming native wildlife and instruction to contact DECR when wildlife incidents occur (or the Department of Agriculture if there are concerns regarding feral animals).		Continuously during works In case wildlife incidents occur

CONSTRUCTION STAGE - NEW FACILITIES IN SALT CAY

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Ecosystem Services			
The Salt Cay lowlands and seasonal wetlands provide flood control (regulating services) and are considered cultural heritage areas (cultural services). The island hosts 55 touristic accommodations (cultural services). Construction of new facilities may temporarily or permanently reduce the value of cultural and regulating, ecosystem services due to visual disturbances, noise, emissions, and habitat disruption, with the overall impact assessed as medium.	The measures defined previously for mitigation of smoke, dust, and noise emissions from the construction works apply	Construction Contractor	As per items "Air Quality and Odour" and "Noise" above
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors and villagers of temporary changes. Guidance on TMPs is provided in the ESMP, specifically Chapter 11.7.		Plan before construction begins Implement continuouly during works
	Coordination with local tourism stakeholders shall be maintained to ensure minimal impact on visitor experience.		Continuously during works
	<u>Enhancement:</u> Additionally, the GOTCI can use this opportunity to promote the island as an environmentally conscious and clean tourist destination. The ongoing environmental investments can be framed as part of a broader effort to enhance sustainability. While there may be a temporary increase in emissions and disturbances during the transition period, the long-term outcome will be a net positive one for the environment. If this message is communicated effectively, a potentially negative situation can be transformed into a compelling narrative of progress and commitment to ecological stewardship.	GOTCI	Continuously during works
Occupational Health & Safety			
The construction phase poses high-significance risks to occupational health and safety, including potential accidents, exposure to hazardous substances and waste, extreme weather conditions, and inadequate sanitation, all of which may result in serious injuries or fatalities if not properly managed.	Prepare and implement an Occupational Health and Safety Management Plan (OHS Plan) - see guidance on Chapter 11.4 of the ESIA Report.	Construction Contractor	Plan before construction begins Implement continuously during works

CONSTRUCTION STAGE - NEW FACILITIES IN SALT CAY

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Community Health & Safety			
Construction of ISWMP facilities may cause medium-significance, reversible impacts on nearby communities—particularly in Wheeland—due to dust, noise, traffic, hazardous materials, and potential social tensions from non-local workers, requiring mitigation measures to minimize health, safety, and nuisance risks.	To make sure that the site is not entered by unauthorised persons, it need to be fenced. The fences need to be kept in good conditions, and be repaired if damages or vandalism occur.	Construction Contractor	Before construction works begin Continuously during works
	A safety distance between the public and any eventually existing non-fenced areas of the Project site can be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons		Before construction works begin Continuously during works
	Induction to the workers, especially drivers to follow the traffic rules together with regular supervision of violations or damages to the access roads to reduce the risk of accidents.		Continuously during works
	Development of accident prevention/emergency preparedness policy and measures - Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report		Prepare before the construction works begin Implement continuously during the works
	A Workers' Code of Conduct shall be developed, and the workers shall be thereof informed. The provisions for the Code of Conduct and a template can be consulted in Chapter 11.10 of this ESIA.		Prepare before the rehabilitation works begin Implement continuously during the works
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report		Prepare before the construction works begin Implement continuously during the works

CONSTRUCTION STAGE - NEW FACILITIES IN SALT CAY

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities and oursim operators about upcoming works and the associated impacts and risks.		Prepare before the construction works begin Implement continuously during the works
	If project haul routes overlap with public access roads, the Contractor shall implement mitigation measures to minimize disruption. These shall be part of a Traffic Management Plan (TMP) to ensure safe and efficient flow of vehicles, noise control strategies to reduce construction-related disturbances, and clear signage to inform visitors and citizens of temporary changes. Guidance on TMP is provided in Chapter 11.7 of this ESIA.		Plan before construction begins Implement continuously during works
	The measures defined previously for mitigation of smoke, dust and noise emissions from the construction works apply.		As per items “Air Quality and Odour” and “Noise” above

11.18.3 Operation of the new facilities in Salt Cay

Table 11-17: Environmental and Social Management Plan for the operation of the new facilities in Salt Cay

OPERATION STAGE - NEW FACILITIES IN SALT CAY			
Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Air Quality and Odour			
The proposed waste management operations in Salt Cay involve a Construction and Demolition Waste (CDW) center that may generate dust and fine particulate matter, posing respiratory risks if uncontrolled, as well as a Civic Amenity Site and a Temporary Storage Station. These generally have low air quality impacts but may cause mild odors and dust if waste is poorly managed. Finally, in-vessel composting facility (CF) is proposed, which is a method designed to minimized odor release, as it prevents the uncontrolled release of gases and particulates.	**Construction and Demolition Waste (CDW) center:**		
	Use dust suppression systems such as water spraying or misting	Operation Contractor	During operation of the CWD center
	Study the feasibility of enclosing or partially cover the processing areas		After contract award, before operation
	The wheels of the trucks shall be washed to prevent dust from spreading beyond the site.		During operation of the CWD center
	Civic Amenity Site (CAS) and Temporary Transfer Station (TSS):		
	Clear signage and staff supervision to ensure that waste is correctly sorted and deposited.	Operation Contractor	After contract award, before operation
	Organic and odorous waste fractions should be stored in covered containers and removed frequently.		During operation of the CAS and TSS
	Dust from vehicle movement can be controlled through regular sweeping and the use of water sprays.		During operation of the CAS
	Composting Facility, CF (in-vessel composting):		
	Maintain aerobic conditions through controlled airflow to prevent the formation of anaerobic zones, which are a primary source of strong odours.	Operation Contractor	During operation of the CF
	Keeping moisture levels within the optimal range (typically 50–60%) to support efficient microbial activity and reduce the risk of odour-causing imbalances.		
	Minimize the time waste is stored before entering the composting system, as decomposition and odour generation can begin quickly.		
	Routine monitoring of temperature, oxygen, and moisture levels inside the vessel ensures that the composting process remains stable and efficient.		

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Noise			
Noise levels at the Salt Cay facilities will vary by operation. The CDW center will be the loudest due to crushing and heavy equipment. The Civic Amenity Site and the Temporary Storage Station generate moderate traffic and unloading noise, noticeable during peak times. Noise levels may increase during loading and unloading of organic materials to the CF.	**Construction and Demolition Waste (CDW) center:**		
	Limit operations to standard working hours	Operation Contractor	During operation of the CDW center
	Use low-noise equipment models where possible		
	It is recommended to study the feasibility and applicability of the following systems in the CDW plant in Salt Cay: ▪ Acoustic enclosures or sound barriers to be installed around high-noise machinery to reduce noise emissions ▪ Rubber linings in hoppers and chutes to help dampen impact noise.		After contract award, before operation
	Civic Amenity Site (CAS) and Temporary Transfer Station (TSS):		
	Usage of the CAS and movement of waste in the TSS shall be limited to daily hours during the working week; dropping waste in the evenings and on Sundays shall not be allowed.	Operation Contractor	During operation of the CAS and the TSS
	Composting Facility, CF (in-vessel composting):		
	Schedule operations of turning and loading/unloading organic materials during daytime hours.	Operation Contractor	During operation of the CF
Groundwater quality, Surface water quality, and Soil			
Composting facilities can produce leachate containing nutrients, pathogens, and organic compounds, which may contaminate soil, groundwater, or nearby water bodies if not properly contained. CDW centers risk water pollution through runoff carrying fine particles, heavy metals, and treated material residues, while dust suppression can add to runoff issues. Civic Amenity Sites and Transfer Stations have lower risks but can	**Construction and Demolition Waste (CWD) center:**		
	All crushing and grinding operations in the CDW center shall be conducted on paved, contained surfaces	Operation Contractor	During operation of the CDW center
	Water used for dust suppression and other runoff shall be collected in drainage channels.		
	Civic Amenity Site (CAS) and Temporary Transfer Station (TSS):		
	The CAS and TSS shall be designed with segregated drop-off areas, covered bins, and impermeable surfaces.	Operation Contractor	After contract award, before operation
	Frequent waste removal and public education on proper disposal practices will further reduce the risk of contamination.		
	Stormwater should be directed through grated drains and oil-water separators before being released off-site.		

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
still cause contamination from leaking containers or poorly managed organic and hazardous waste.	**Composting Facility, CF (in-vessel composting):**		
	Given the sealed nature of the in-vessel composting system proposed for Salt Cay, leachate will be prevented from escaping into the environment and instead re-used in the composting process. Notwithstanding this, the installation of the drum on impermeable ground with leachate collection and drainage systems shall be established as a preventive measure.	Operation Contractor	Before installing and operating the CF
National Natural Protected Areas, International Natural Protected Areas, Fauna & Flora, Areas of Historical Interest (HA) and Historic Attractions			
The Salt Cay site overlaps with habitats for various bird species and possibly an endangered iguana, making it sensitive to impacts from waste facilities operations. Air and noise pollution, water contamination, and soil degradation could disrupt ecosystems and cultural areas, with Salt Cay particularly vulnerable to noise and habitat disturbance, leading to medium-level biodiversity risks if unmanaged.	Apply the mitigation measures suggested for managing air, noise, soil, groundwater and surface water impact	Operation Contractor	As per items “Air Quality and Odour”, “Noise”, and “Groundwater quality, Surface water quality, and Soil” above

OPERATION STAGE - NEW FACILITIES IN SALT CAY

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Ecosystem Services			
The Salt Cay lowlands and seasonal wetlands provide flood control (regulating services) and are considered cultural heritage areas (cultural services). The Salinas may contribute to flood control as well. Waste management facilities may interfere with these areas and ultimately with their flood control capacity, if inadequately managed.	Apply the mitigation measures defined previously for mitigation of air and noise emissions, water and soil impacts and protection of natural protected areas, fauna and flora.	Operation Contractor	As per items "Air Quality and Odour", "Noise", "Groundwater quality, Surface water quality, and Soil", and "National Natural Protected Areas, International Natural Protected Areas, Fauna & Flora, Areas of Historical Interest (HA) and Historic Attractions" above
Occupational Health & Safety			
ISWMP operations pose significant OHS risks across facilities. CDW centers present risks from heavy equipment, noise, vibration, and dust containing silica or asbestos. Civic Amenity Sites and Temporary Storage Stations have lower risks but include slips, manual handling injuries, and contact with hazardous waste. Heat stress, fatigue, and pathogen exposure are concerns at all sites, requiring strict PPE, training, and safety protocols.	Prepare and implement an Occupational Health and Safety Management Plan (OHS Plan) - see guidance on Chapter 11.4 of the ESIA Report.	Operation Contractor	Plan before operation begins Implement continuously during operation
	Apply the mitigation measures defined previously to mitigate air and noise emissions, water, groundwater and soil contamination.	Operation Contractor	As per items "Air Quality and Odour", "Noise", "Groundwater quality, Surface water quality, and Soil" above

OPERATION STAGE - NEW FACILITIES IN SALT CAY

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Community Health & Safety			
The new facilities in Salt Cay may impact the nearby communities' and visitors' health and safety. Key risks include air quality deterioration from dust, bioaerosols, and odorous gases, causing respiratory issues and discomfort; noise pollution disrupting daily life; and water contamination from leachate or runoff, threatening households reliant on wells. Increased traffic raises accident risks. Poor waste management can attract pests and disease vectors, and perceived risks may lead to stress and social tension if communities feel excluded from decision-making.	**Construction and Demolition Waste (CWD) center:**		
	Citizens are generally not expected to get close enough to the CDW center resulting in any hazards. However, the proximity to residences and touristic places may enhance curiosity in some persons, especially in children. To make sure that the site is not entered by unauthorised persons, it needs to be fenced. The fences need to be kept in good conditions and be repaired if damages or vandalism occur.	Operation Contractor	Fence before operation begins Maintain fences continuously during operation
	A safety distance between the public and any eventually existing non-fenced areas of the CWD center shall be ensured by implementation of warning and prohibition signs to highlight clearly that the area is restricted and no access is allowed to unauthorized persons.	Operation Contractor	Before operation begins
	All facilities:		
	Induction to the workers, especially drivers to follow the traffic rules	Operation Contractor	Continuously during operation
	Trucks and vehicles shall reduce their speed to a maximum of 30 km/h	Operation Contractor	When crossing housing areas
	Trucks and vehicles shall reduce their speed to a maximum of 15 km/h	Operation Contractor	On unpaved roads
	Development of accident prevention/emergency preparedness policy and measures, i.e., Emergency Response Plans - see guidance on Chapter 11.2 of the ESIA Report	Operation Contractor	Plan before operation begins Implement continuously during operation
	Keep open communication channels between the Contractor and the affected communities: create and grant free and easy access to an independent and effective Grievance Mechanism for the community - see Chapter 12.5.1 of the ESIA Report	Operation Contractor	Continuously during operation
	Maintain regular engagement with stakeholders, including local communities, environmental organizations, and government agencies. This shall include as well disclosing relevant Project-related information to stakeholders, including informing the nearby communities about associated impacts and risks of the new facilities.	Operation Contractor	Continuously during operation

OPERATION STAGE - NEW FACILITIES IN SALT CAY

Issue/Potential Impact	Mitigation, prevention, compensation and/or enhancement measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Apply the mitigation measures defined previously to mitigate air and noise emissions, water, groundwater and soil contamination.	Operation Contractor	As per items “Air Quality and Odour”, “Noise”, “Groundwater quality, Surface water quality, and Soil“ above

11.19 Environmental and Social Monitoring Programme

The Environmental and Social Monitoring Program (ESMoP) for the ISWMP includes:

- Definition and detailing of required monitoring actions
- The frequency, timing and location for the monitoring actions
- Associated responsibilities.

11.19.1 Self-Monitoring and External Auditing

Generally self-monitoring is a basic requirement to show the compliance of development projects with the standards as outlined in the ESMP and represents a suitable basis for the successful realization of the required auditing procedures. In addition, internal inspections are an appropriate method of conservation of evidence in case of an incident, accident or emergency situation.

All data from the internal inspection program during rehabilitation, construction, operation and decommissioning as requested by the ESMP shall be reported by the Contractors to the EHD. Summarized data shall be submitted quarterly to the EHD, who shall then forward the information to the responsible authorities (DECR and/or Department of Planning) for assessment and follow up in accordance to national law and the Environmental Permit's conditions.

Table 11-18: Suggestion of an internal inspection plan for the ISWMP

Project and Phase	Inspection Party	Inspections Schedule
All	Contractor's ESHS Manager	Quarterly ESHS site inspections and reporting to EHD
		Site inspection upon occurrence of an ESHS accident, incident or emergency and reporting to EHD
		Site inspection upon receiving of a worker's or community's grievance and reporting to EHD
	Contractor's ESHS Supervisor	Weekly ESHS site inspections and reporting to the ESHS Manager
		Site inspection upon occurrence of an ESHS accident, incident or emergency
		Site inspection upon receiving of a worker's or community's grievance

Besides the internal inspections, external auditing of the implementation of the mitigation and monitoring measures for the ISWMP is recommended. The Developer or an Independent ESHS Consultant acting on their behalf shall continuously supervise the Project sites during the rehabilitation, construction, decommissioning, and operational phases. In case deviations from the Project's ESMP are identified, the GOTCI or their representative shall request the Contractor to timely define and apply measures to rectify the deviation and related consequences, as applicable. The following auditing plan is suggested.

Table 11-19: Suggestion of an external auditing plan for the ISWMP

Project and Phase	Duration	Auditing Party	Audits Schedule
Rehabilitation of Providenciales and Grand Turk	10 months	GOTCI or Independent ESHS Consultant If resources are available, DECR and/or the Planning Department shall consider joining the audits on a regular basis	First audit at start of the rehabilitation stage and then every 3 months
Rehabilitation of Grand Turk	3 months		First audit at start of the rehabilitation stage and then every 1,5 months
Construction of the new landfill and facilities in Bottle Creek	> 1 year		First audit at start of the construction stage and then every 3 months
Construction of the new facilities in Providenciales, South Caicos, Salt Cay and Grand Turk	3 - 6 months		First audit at start of the construction stage and then every 3 months
Decommissioning of the Kew site	1.5 months		First audit at start of the rehabilitation; second audit at the end
Decommissioning of the Middle Caicos site	1 week		First audit at start of the rehabilitation; second audit at the end
Decommissioning of the South Caicos site	2 weeks		First audit at start of the rehabilitation; second audit at the end
Decommissioning of the Salt Cay site	2 weeks		First audit at start of the rehabilitation; second audit at the end
Operation of all active sites	20 years		First audit at start of the operation; one audit per year until closure of the site

11.19.2 Adaptive Management

The monitoring of the works may reveal the need to adapt the measures of the Contractors' ESMPs to specific site conditions not known at the time of preparation of these documents or the ESIA. Items which are not anticipated in this ESMP of the Contractors' ESMPs may come up, as well as areas that need improvements. The Contractors shall be ready to handle both cases by adapting the dispositions of the respective ESMPs as necessary.

Updates may be also needed to ensure compliance with all permits' requirements. This includes also the permits issued after approval of the ESMPs by the GOTCI.

Any changes to the commitments of the ESIA and the Project's ESMP shall not be undertaken without the previous approval of the GOTCI. The changes must not enhance the negative impacts expected from the Project, reduce the efficiency of the mitigation measures, or propose monitoring exercises which are less strict than those stated within the Project's ESMP.

11.19.3 Compilation of the ESMoP for the ISWMP

The ESMoP predicts two types of monitoring actions:

- Compliance monitoring: monitoring actions to verify if the mitigation measures are implemented, which include: visual inspections of the works, review of reports/plans, and reporting.
- Effects monitoring: monitoring actions to verify if the mitigation measures have the desired result, which include: sampling and analysis of environmental parameters, and visual inspection of environmental factors (e.g., inspecting fences for signs of vandalism).

Compliance monitoring shall be done at all sites during all phases as detailed in Table 11-20.

Table 11-20: Environmental and Social Monitoring Programme for the ISWMP - compliance monitoring

Project and phase	Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
All	Air emissions; noise; water; soil; protected areas; fauna & flora; ecosystems services; OHS; CHS	Visual inspections of the works and the AoI	ESHS Supervisor	Weekly for the entire duration of the works All working, storage, circulation deposition, borrow and access areas; AoI
		Report writing	ESHS Supervisor	Weekly for the entire duration of the works All working, storage, circulation deposition, borrow and access areas; AoI
		Visual inspections of the works and the AoI	ESHS Manager	Monthly for the entire duration of the works All working, storage, circulation deposition, borrow and access areas; AoI
		Report writing	ESHS Manager	Monthly for the entire duration of the works All working, storage, circulation deposition, borrow and access areas; AoI
		Visual inspection	ESHS Supervisor and ESHS Manager	Immediately; At the location of the occurrence And after occurrence is solved

Project and phase	Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
	Environmental and health & safety incidents, accidents, and emergencies	Report writing	ESHS Supervisor and ESHS Manager	Up to one week after the occurrence After occurrence is solved
	Grievances from the public	Revision of the grievance log	GOTCI	Regularly Once a grievance is registered
		Follow-up the resolution of the grievance		Once a grievance is registered until it is solved
	Grievances from the workers	Revision of the grievance log	ESHS Supervisor	Regularly Once a grievance is registered
		Follow-up the resolution of the grievance		Once a grievance is registered until it is solved
	Monitor the recycling process of TCI Waste Disposal Services	Revise contracts with recycling service provider to assure that they include transparency obligations and penalties for non-compliance.	GOTCI	Immediately
		Revise the documents and information shared by the service provider on the handling, processing, and final destination of recyclable materials		Upon receiving of reports by service provider (every 6 months)
		Audit the procedures to confirm that recyclables are processed according to agreed standards and not redirected to landfill sites.		Immediately Afterwards, once per year
		Reporting on recycling outcomes detailing quantities collected, processed, and reused or exported.	TCI Waste Disposal Services	Every 6 months

Project and phase	Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation
Rehabilitation of Providenciales	Livelihoods	As per Livelihood Restoration Plan (LRP) - to be determined	LRP Implementation Consultant	As per LRP schedule - to be determined
Decommissioning of North Caicos Kew				
Decommissioning of South Caicos				
Decommissioning of South Caicos	Private assets (land)	As per Land Acquisition Plan (LAP) - to be determined	GOTCI	As per LAP schedule - to be determined
Construction of the new facilities in South Caicos				

Effects monitoring shall be done at each site as detailed in the following sections. The sampling of environmental parameters shall be the responsibility of EHD / GOTCI. However, they may wish to add some of these sampling obligations as a requirement for the respective contractors to fulfil. May this be the case, the ESMoP to be part of the tender documents and the contracts must clearly state that.

It is recommended to publish the results of the effects monitoring of environmental parameters publicly at the EHD's or the DECR's webpages. This will bring to light the expected positive effects of the ISWMP and at the same time sensibilize the residents of the nearby areas to the residual negative impacts. This may encourage a change in behaviours such as using groundwater for domestic purposes or dumping waste illegally.

11.19.3.1 Rehabilitation of the Providenciales dumpsite

Table 11-21: Environmental and Social Monitoring Programme for the rehabilitation of the Providenciales dumpsite - effects monitoring

Issue	Effects monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Air quality	Operate the planned air quality monitoring stations	GOTCI	In the AoI of the Providenciales dumpsite Continuously throughout rehabilitation	▪ PM_{10} ▪ $PM_{2,5}$ ▪ TSP	WHO Global Air Quality Guidelines, 2021[201]
	Revise the data, perform quality check		Monthly		
	Reporting		Once per month And upon occurrence of high values		
Livelihoods	As per Livelihood Restoration Plan (LRP) - to be determined	LRP Implementation Consultant	As per LRP schedule - to be determined	As per LRP - to be determined	▪ IFC PS 5 ▪ CDB PR 6 and PR 7 ▪ National laws ▪ Others - As per LRP

[201] https://www.ccacoalition.org/resources/who-global-air-quality-guidelines

Issue	Effects monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Rehabilitation Contractor	Continuously during rehabilitation works All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks. ▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training ▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes. ▪ Frequency and results of machinery and tool inspections.	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR): Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture). ▪ Severity rate: Average number of days lost per incident. ▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.

11.19.3.2 Construction of the Providenciales ISWR

Table 11-22: Environmental and Social Monitoring Programme for the construction of the Providenciales ISWR - effects monitoring

Issue	Effects monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Air quality	Operate the planned air quality monitoring stations	GOTCI (optionally via the Construction Contractor)	In the AoI of the Providenciales dumpsite Continuously throughout construction	▪ PM_{10} ▪ $PM_{2,5}$ ▪ TSP ▪ NO_2 ▪ SO_2 ▪ O_3	WHO Global Air Quality Guidelines, 2021[202]
	Revise the data, perform quality check		Monthly		
	Reporting		Once per month And upon occurrence of high values		
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Construction Contractor	Continuously during rehabilitation works All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks. ▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training ▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes.	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR): Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture). ▪ Severity rate: Average number of days lost per incident.

[202] https://www.ccacoalition.org/resources/who-global-air-quality-guidelines

Issue	Effects monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
				▪ Frequency and results of machinery and tool inspections.	▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.

11.19.3.3 Operation of the Providenciales dumpsite and ISWR

Table 11-23: Environmental and Social Monitoring Programme for the operation of the Providenciales dumpsite and ISWR - effects monitoring

Issue	Effects monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Air quality	Operate the planned air quality monitoring stations	GOTCI	In the AoI of the Providenciales dumpsite Continuously throughout operation	▪ PM_{10} ▪ $PM_{2,5}$ ▪ TSP ▪ NO_2 ▪ SO_2 ▪ O_3	WHO Global Air Quality Guidelines, 2021[203]
	Revise the data, perform quality check		Monthly		
	Reporting		Twice per year And upon occurrence of high values		
Groundwater	Perform groundwater sampling and analysis	GOTCI (optionally via the operation contractor)	Every 6 months during the first 2 years of operation; afterwards annually If detected pollution values fall below the WHO guidelines in 3 consecutive analysis for some or all parameters, update the monitoring programme in consultation with the DECR. 4 boreholes within the dumpsite (north, south, east and west) 2 operational wells in Wheeland (1 in Phase 1 and one in Phase 2)	▪ Temperature ▪ Dissolved Oxygen (DO) ▪ pH ▪ Electrical Conductivity ▪ Total Suspended Solids (TSS) ▪ Ammonia (as N) ▪ Total oxidized nitrogen (TON) (as N) ▪ Biochemical Oxygen Demand (BOD) ▪ Chemical Oxygen Demand (COD) ▪ Metals (calcium, magnesium, sodium, potassium, iron, manganese, cadmium, chromium (total), copper,	WHO Guidelines for Drinking-Water Quality (GDWQ) [204]
	Revise the data, perform quality check		Every 6 months during the first 2 years of operation; afterwards annually / in accordance with the monitoring programme		
	Reporting to DECR				

[203] https://www.ccacoalition.org/resources/who-global-air-quality-guidelines

[204] https://iris.who.int/server/api/core/bitstreams/69c17edd-ee26-425b-9d34-33799377e886/content | The WHO GDWQ are recommended in this context because people in the islands are said to use groundwater for domestic purposes

Issue	Effects monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Surface water	Perform surface water sampling and analysis	GOTCI (optionally via the operation contractor)	Every 6 months during the first 2 years of operation; afterwards annually If detected pollution values fall below the WHO guidelines for some or all parameters in 3 consecutive analysis, update the monitoring programme in consultation with the DECR. 2 sampling points at the Wheeland Pond 2 sampling points at the coast	nickel, lead, zinc, arsenic, boron and mercury) ▪ Total alkalinity (as $CaCO_3$) ▪ Sulphate ▪ Chloride ▪ Cyanide (Total) ▪ Fluoride ▪ Faecal & Total Coliforms	WHO Guidelines on recreational water quality: Volume 1 - Coastal and Fresh Waters[205]
	Revise the data, perform quality check		Every 6 months during the first 2 years of operation; afterwards annually / in accordance with the monitoring programme		
	Reporting to DECR				
Avifauna	Avifauna Monitoring Programme. Objectives: ▪ To establish baseline data on bird species diversity, abundance, and seasonal patterns near the dumpsite and Wheeland Pond	GOTCI (optionally via the operation contractor)	Quarterly monitoring in the first 2 years of operation; shall include during peak migratory and breeding seasons of target species. Further monitoring routine to be established based on the results and in consultation with DECR. Methodology: ▪ Point counts and transect walks for species identification and abundance estimation. ▪ Opportunistic observations for behavioral changes (e.g., feeding at dumpsite).	▪ Species richness and abundance trends. ▪ Presence of opportunistic species associated with waste sites. ▪ Nesting or roosting activity near the dumpsite.	▪ Number of sightings per month of species known to be attracted to waste sites. ▪ Percentage change in vulnerable species richness and abundance compared to the previous year. ▪ Number of active nesting sites identified and monitored each year.

[205] https://www.who.int/publications/i/item/9241546808

Issue	Effects monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
	▪ To monitor changes in avifauna behavior and population dynamics resulting from waste management activities. ▪ To identify and mitigate risks of ecological disturbance, disease transmission, and human-wildlife conflicts.		Monitoring Locations: ▪ Wheeland Pond ▪ Dumpsite		
	Revise the data, perform quality check		Quarterly monitoring in the first 2 years of operation; afterwards in accordance with the monitoring programme		
	Reporting to DECR				
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Construction Contractor	Continuously during operation All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks. ▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training ▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes.	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR): Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture).

Issue	Effects monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
				▪ Frequency and results of machinery and tool inspections.	▪ Severity rate: Average number of days lost per incident. ▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.
Gate fee - higher gate fee for the dumpsite than for delivery to Civil Amenity Sites (CAS) or Temporary Storage Sites (TSS)	Track the usage of dumpsite vs. CAS/TSS Objective: incentive commercial waste generators (hotels, supermarkets) to separate the waste into usable fractions instead of dumping it	Operation Contractor	Continuously via daily waste registers	▪ Usage of dumpsite ▪ Usage of CAS/TSS	▪ Annual quantity of mixed waste brought to the dumpsite ▪ Annual quantity of recyclable fractions brought to the CAS/TSS

11.19.3.4 Decommissioning of the Kew dumpsite

Table 11-24: Environmental and Social Monitoring Programme for the decommissioning of the Kew dumpsite

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Illegal waste disposal	Verify if waste continues being illegally deposited	GOTCI	Regularly throughout the first 3 years after decommissioning; afterwards sporadically or as needed (upon receiving of a complaint, for example) Former dumpsite and former AoI shall be inspected	Visual Grievances from the community Information from the District Commissioner	Presence or absence of waste
	Inspect status of the fence				Status of the fence
Livelihoods	As per As per Livelihood Restoration Plan (LRP) - to be determined	LRP Implementation Consultant	As per LRP schedule - to be determined	As per LRP - to be determined	▪ IFC PS 5 ▪ CDB PR 6 and PR 7 ▪ National laws ▪ Others - As per LRP
Groundwater	Perform groundwater sampling and analysis	GOTCI	Every 6 months during the first 3 years after decommissioning; afterwards annually If detected pollution values fall below the WHO guidelines in 3 consecutive analysis for some or all parameters, update the monitoring programme in consultation with the DECR. 4 boreholes within the landfill area (north, south, east and west) 1 operational well in Kew and 1 operational well in the Government Farm	▪ Temperature ▪ Dissolved Oxygen (DO) ▪ pH ▪ Electrical Conductivity ▪ Total Suspended Solids (TSS) ▪ Ammonia (as N) ▪ Total oxidized nitrogen (TON) (as N) ▪ Biochemical Oxygen Demand (BOD) ▪ Chemical Oxygen Demand (COD)	WHO Guidelines for Drinking-Water Quality (GDWQ) [206]

[206] https://iris.who.int/server/api/core/bitstreams/69c17edd-ee26-425b-9d34-33799377e886/content | The WHO GDWQ are recommended in this context because people in the islands are said to use groundwater for domestic purposes

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
	Revise the data, perform quality check Reporting to DECR		Every 6 months during the first 3 years after decommissioning; afterwards annually/in accordance with the monitoring programme.	▪ Metals (calcium, magnesium, sodium, potassium, iron, manganese, cadmium, chromium (total), copper, nickel, lead, zinc, arsenic, boron and mercury) ▪ Total alkalinity (as $CaCO_3$) ▪ Sulphate ▪ Chloride ▪ Cyanide (Total) ▪ Fluoride ▪ Faecal & Total Coliforms	
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Decommissioning Contractor	Continuously during decommissioning works All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks. ▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training ▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes. ▪ Frequency and results of machinery and tool inspections.	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR): Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture). ▪ Severity rate: Average number of days lost per incident.

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
					▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.

11.19.3.5 Operation of the North Caicos Bottle Creek landfill and new facilities

Table 11-25: Environmental and Social Monitoring Programme for the operation of the North Caicos Bottle Creek landfill and new facilities - effects monitoring

Issue	Effects monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Groundwater	Perform groundwater sampling and analysis	GOTCI (optionally via the operation contractor)	Every 6 months during the first 2 years of operation; afterwards annually 4 boreholes within the landfill area (north, south, east and west) 2 operational wells in Bottle Creek If detected pollution values fall below the WHO guidelines in 3 consecutive analysis for some or all parameters, update the monitoring programme in consultation with the DECR.	▪ Temperature ▪ Dissolved Oxygen (DO) ▪ pH ▪ Electrical Conductivity ▪ Total Suspended Solids (TSS) ▪ Ammonia (as N) ▪ Total oxidized nitrogen (TON) (as N) ▪ Biochemical Oxygen Demand (BOD) ▪ Chemical Oxygen Demand (COD) ▪ Metals (calcium, magnesium, sodium, potassium, iron, manganese, cadmium, chromium (total), copper, nickel, lead, zinc, arsenic, boron and mercury) ▪ Total alkalinity (as $CaCO_3$) ▪ Sulphate ▪ Chloride ▪ Cyanide (Total) ▪ Fluoride ▪ Faecal & Total Coliforms	WHO Guidelines for Drinking-Water Quality (GDWQ) [207]
	Revise the data, perform quality check		Every 6 months during the first 2 years of operation; afterwards annually/ in accordance with the monitoring programme.		
	Reporting to DECR				
Surface water	Perform coastal water sampling and analysis	GOTCI (optionally via the operation contractor)	Every 6 months during the first 2 years of operation; afterwards annually 2 sampling points in the coastal areas along the Bottle Creek village. Suggested points are: ▪ Northeast coast: 2424364.00 m N; 198334.00 m E ▪ Southeast coast: 2422979.00 m N; 198611.00 m E		WHO Guidelines on recreational water quality: Volume 1 - Coastal and Fresh Waters[208]

[207] https://iris.who.int/server/api/core/bitstreams/69c17edd-ee26-425b-9d34-33799377e886/content | The WHO GDWQ are recommended in this context because people in the islands are said to use groundwater for domestic purposes

[208] https://www.who.int/publications/i/item/9241546808

Issue	Effects monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
			The suggested locations may be micro-changed (some meters) after discussions with DECR and/or the sampling contractor. If detected pollution values fall below the WHO guidelines in 3 consecutive analysis for some or all parameters, update the monitoring programme in consultation with the DECR.		
	Revise the data, perform quality check		Every 6 months during the first 2 years of operation; afterwards annually / in accordance with the monitoring programme		
	Reporting to DECR				
Avifauna at the constructed wetland	Bird feeding monitoring at the constructed wetland	Operation Contractor	At the constructed wetland Opportunistic observations	▪ Species richness and abundance trends. ▪ Presence of opportunistic species associated with wetlands. ▪ Nesting or roosting activity near the constructed wetland.	▪ Number of sightings per month of species known to be attracted to wetlands. ▪ Percentage change in vulnerable species richness and abundance compared to the previous year. ▪ Number of active nesting sites identified and monitored each year.
	Report to EHD		Annually		
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Operation Contractor	Continuously during operation All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks.	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR):

Issue	Effects monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
				▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training ▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes. ▪ Frequency and results of machinery and tool inspections.	Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture). ▪ Severity rate: Average number of days lost per incident. ▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.
Gate fee - higher gate fee for the landfill than for delivery to Civil Amenity Sites (CAS) or Temporary Storage Sites (TSS)	Track the usage of landfill vs. CAS/TSS Objective: incentive commercial waste generators (hotels, supermarkets) to separate the waste into usable fractions instead of landfilling it	Operation Contractor	Continuously via daily waste registers	▪ Usage of landfill ▪ Usage of CAS/TSS	▪ Annual quantity of mixed waste brought to the landfill ▪ Annual quantity of recyclable fractions brought to the CAS/TSS

11.19.3.6 Decommissioning of the Middle Caicos dumpsite

Table 11-26: Environmental and Social Monitoring Programme for the decommissioning of the Middle Caicos dumpsite

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Illegal waste disposal	Verify if waste continues being illegally deposited	GOTCI	Regularly throughout the first 3 years after decommissioning; afterwards sporadically or as needed (upon receiving of a complaint, for example) Former dumpsite and former AoI shall be inspected	Visual Grievances from the community Information from the District Commissioner	Presence or absence of waste
	Inspect status of the fence				Status of the fence
Surface water	Perform water sampling and analysis in the nearby wetland	GOTCI	Every 6 months during the first 3 years after decommissioning; afterwards annually If detected pollution values fall below the WHO guidelines in 3 consecutive analyses for some or all parameters, update the monitoring programme in consultation with the DECR. 2 sampling points in the wetland: 1 in the far west end of the wetland (adjacent to the landfill) and 1 in the far east end of the wetland	▪ Temperature ▪ Dissolved Oxygen (DO) ▪ pH ▪ Electrical Conductivity ▪ Total Suspended Solids (TSS) ▪ Ammonia (as N) ▪ Total oxidized nitrogen (TON) (as N) ▪ Biochemical Oxygen Demand (BOD) ▪ Chemical Oxygen Demand (COD) ▪ Metals (calcium, magnesium, sodium, potassium, iron, manganese, cadmium, chromium (total), copper, nickel, lead, zinc, arsenic, boron and mercury) ▪ Total alkalinity (as $CaCO_3$) ▪ Sulphate	WHO Guidelines on recreational water quality: Volume 1 - Coastal and Fresh Waters[209]

[209] https://www.who.int/publications/i/item/9241546808

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
				▪ Chloride ▪ Cyanide (Total) ▪ Fluoride ▪ Faecal & Total Coliforms	
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Decommissioning Contractor	Continuously during decommissioning works All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks. ▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training ▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes. ▪ Frequency and results of machinery and tool inspections.	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR): Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture). ▪ Severity rate: Average number of days lost per incident. ▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.

11.19.3.7 Decommissioning of the South Caicos dumpsite

Table 11-27: Environmental and Social Monitoring Programme for the decommissioning of the South Caicos dumpsite

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Illegal waste disposal	Verify if waste continues being illegally deposited	GOTCI	Regularly throughout the first 3 years after decommissioning; afterwards sporadically or as needed (upon receiving of a complaint, for example) Former dumpsite and former AoI shall be inspected	Visual Grievances from the community Information from the District Commissioner	Presence or absence of waste
	Inspect status of the fence				Status of the fence
Surface water	Perform water sampling and analysis in the nearby protected areas	GOTCI	Every 6 months during the first 3 years after decommissioning; afterwards annually If detected pollution values fall below the WHO guidelines in 3 consecutive analyses for some or all parameters, update the monitoring programme in consultation with the DECR. 2 sampling points in the nearby wetlands: 1 in the South Caicos Wetland Critical Habitat Reserve (located to the west of the dumpsite), and 1 in the proposed Boiling Hole Nature Reserve (located to the east of the dumpsite)	▪ Temperature ▪ Dissolved Oxygen (DO) ▪ pH ▪ Electrical Conductivity ▪ Total Suspended Solids (TSS) ▪ Ammonia (as N) ▪ Total oxidized nitrogen (TON) (as N) ▪ Biochemical Oxygen Demand (BOD) ▪ Chemical Oxygen Demand (COD) ▪ Metals (calcium, magnesium, sodium, potassium, iron, manganese, cadmium, chromium (total), copper, nickel, lead, zinc, arsenic, boron and mercury) ▪ Total alkalinity (as $CaCO_3$) ▪ Sulphate ▪ Chloride ▪ Cyanide (Total)	WHO Guidelines on recreational water quality: Volume 1 - Coastal and Fresh Waters[210]

[210] https://www.who.int/publications/i/item/9241546808

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
				▪ Fluoride ▪ Faecal & Total Coliforms	
Biodiversity - flora	Monitor the success of the Biodiversity Rescue Procedure	GOTCI	Every 3 months during the first 1 year after decommissioning; afterwards annually until 3 years after decommissioning Need for further monitoring shall be discussed and agreed upon with DECR	▪ Survival rate of transplanted species: Percentage of rescued plants still alive after a set period (e.g., 3, 6, 12 months). ▪ Growth parameters: Height, canopy spread, number of leaves, flowering/fruiting occurrence. ▪ Health condition: Visual assessment for stress signs (wilting, pest infestation, disease). ▪ Species diversity: Number of species successfully established compared to baseline. ▪ Habitat stability: Evidence of erosion control, soil compaction, and microhabitat restoration.	▪ Target vs. actual number of plants rescued and thriving. ▪ Meeting deadlines for rescue, transplantation, and stabilization. ▪ Survival rate after 1–3 years
Livelihoods	As per Livelihood Restoration Plan (LRP) - to be determined	LRP Implementation Consultant	As per LRP schedule - to be determined	As per LRP - to be determined	▪ IFC PS 5 ▪ CDB PR 6 and PR 7 ▪ National laws ▪ Others - As per LRP
Private Assets	As per Land Acquisition Plan (LAP) - to be determined	GOTCI	As per LAP schedule - to be determined	As per LAP - to be determined	▪ IFC PS 5 ▪ CDB PR 7 ▪ National laws ▪ Others - As per LAP

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Decommissioning Contractor	Continuously during decommissioning works All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks. ▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training ▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes. ▪ Frequency and results of machinery and tool inspections.	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR): Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture). ▪ Severity rate: Average number of days lost per incident. ▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.

11.19.3.8 Rehabilitation of the Grand Turk dumpsite

Table 11-28: Environmental and Social Monitoring Programme for the rehabilitation of the Grand Turk dumpsite - effects monitoring

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Rehabilitation Contractor	Continuously during rehabilitation works All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks. ▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training ▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes. ▪ Frequency and results of machinery and tool inspections.	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR): Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture). ▪ Severity rate: Average number of days lost per incident. ▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.

11.19.3.9 Operation of the Grand Turk dumpsite and new facilities

Table 11-29: Environmental and Social Monitoring Programme for the operation of the Grand Turk dumpsite and new facilities - effects monitoring

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Groundwater	Perform groundwater sampling and analysis	GOTCI (optionally via the operation contractor)	Every 6 months during the first 2 years of operation; afterwards annually If detected pollution values fall below the WHO guidelines in 3 consecutive analysis for some or all parameters, update the monitoring programme in consultation with the DECR. 4 boreholes within the dumpsite (north, south, east and west) 3 operational wells in Cockburn Town (1 to the west of the dumpsite; 1 to the east; and 1 to the south)	▪ Temperature ▪ Dissolved Oxygen (DO) ▪ pH ▪ Electrical Conductivity ▪ Total Suspended Solids (TSS) ▪ Ammonia (as N) ▪ Total oxidized nitrogen (TON) (as N) ▪ Biochemical Oxygen Demand (BOD) ▪ Chemical Oxygen Demand (COD) ▪ Metals (calcium, magnesium, sodium, potassium, iron, manganese, cadmium, chromium (total), copper, nickel, lead, zinc, arsenic, boron and mercury) ▪ Total alkalinity (as $CaCO_3$) ▪ Sulphate ▪ Chloride ▪ Cyanide (Total) ▪ Fluoride ▪ Faecal & Total Coliforms	WHO Guidelines for Drinking-Water Quality (GDWQ) [211]
	Revise the data, perform quality check		Every 6 months during the first 2 years of operation; afterwards annually / in accordance with the monitoring programme		
	Reporting to DECR				
Surface water	Perform surface water sampling and analysis	GOTCI (optionally via the operation contractor)	Every 6 months during the first 2 years of operation; afterwards annually If detected pollution values fall below the WHO guidelines for some or all parameters in 3 consecutive analyses, update the monitoring programme in consultation with the DECR.		WHO Guidelines on recreational water quality: Volume 1 - Coastal and Fresh Waters[212]

[211] https://iris.who.int/server/api/core/bitstreams/69c17edd-ee26-425b-9d34-33799377e886/content | The WHO GDWQ are recommended in this context because people in the islands are said to use groundwater for domestic purposes

[212] https://www.who.int/publications/i/item/9241546808

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
			6 sampling points around the dumpsite: ▪ #1 - Northeast coast: 2375714.00 m N; 279228.00 m E ▪ #2 - Southeast coast: 2374596.00 m N; 279442.00 m E ▪ #3- Town Salina border: 2375254.00 m N; 278402.00 m E ▪ #4- Town Salina middle: 2375676.00 m N; 278221.00 m E ▪ #5- Northwest coast: 2375237.00 m N; 277568.00 m E ▪ #6 - Southwest coast: 2374735.00 m N; 277491.00 m E The suggested locations may be micro-changed (some meters) after discussions with DECR and/or the sampling contractor.		
	Revise the data, perform quality check		Every 6 months during the first 2 years of operation; afterwards annually / in accordance with the monitoring programme		
	Reporting to DECR				
Avifauna	Avifauna Monitoring Programme. Objectives: ▪ To establish baseline data on bird species diversity, abundance, and seasonal patterns near the dumpsite and salinas	GOTCI (optionally via the operation contractor)	Quarterly monitoring in the first 2 years of operation; shall include during peak migratory and breeding seasons of target species. Further monitoring routine to be established based on the results and in consultation with DECR. Methodology: ▪ Point counts and transect walks for species identification and abundance estimation.	▪ Species richness and abundance trends. ▪ Presence of opportunistic species associated with waste sites. ▪ Nesting or roosting activity near the dumpsite.	▪ Number of sightings per month of species known to be attracted to waste sites. ▪ Percentage change in vulnerable species richness and abundance compared to the previous year. ▪ Number of active nesting sites identified

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
	▪ To monitor changes in avifauna behavior and population dynamics resulting from waste management activities. ▪ To identify and mitigate risks of ecological disturbance, disease transmission, and human-wildlife conflicts.		▪ Opportunistic observations for behavioral changes (e.g., feeding at dumpsite). Monitoring Locations: ▪ Great Salina ▪ Town Salina ▪ Dumpsite		and monitored each year.
	Revise the data, perform quality check		Quarterly monitoring in the first 2 years of operation; afterwards in accordance with the monitoring programme		
	Reporting to DECR				
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Construction Contractor	Continuously during operation All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks. ▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR): Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture).

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
				▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes. ▪ Frequency and results of machinery and tool inspections.	▪ Severity rate: Average number of days lost per incident. ▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.
Gate fee - higher gate fee for the dumpsite than for delivery to Civil Amenity Sites (CAS) or Temporary Storage Sites (TSS)	Track the usage of dumpsite vs. CAS/TSS Objective: incentive commercial waste generators (hotels, supermarkets) to separate the waste into usable fractions instead of dumping it	Operation Contractor	Continuously via daily waste registers	▪ Usage of dumpsite ▪ Usage of CAS/TSS	▪ Annual quantity of mixed waste brought to the dumpsite ▪ Annual quantity of recyclable fractions brought to the CAS/TSS

11.19.3.10 Construction of the new facilities in Grand Turk

Table 11-30: Environmental and Social Monitoring Programme for the construction of the new facilities in Grand Turk - effects monitoring

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Construction Contractor	Continuously during construction works All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks. ▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training ▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes. ▪ Frequency and results of machinery and tool inspections.	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR): Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture). ▪ Severity rate: Average number of days lost per incident. ▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.

11.19.3.11 Decommissioning of the Salt Cay dumpsite

Table 11-31: Environmental and Social Monitoring Programme for the decommissioning of the Salt Cay dumpsite

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Illegal waste disposal	Verify if waste continues being illegally deposited	GOTCI	Regularly throughout the first 3 years after decommissioning; afterwards sporadically or as needed (upon receiving of a complaint, for example) Former dumpsite and former AoI shall be inspected	Visual Grievances from the community Information from the District Commissioner	Presence or absence of waste
	Inspect status of the fence				Status of the fence
Surface water	Perform water sampling and analysis in the nearby coastal water	GOTCI	Every 6 months during the first 3 years after decommissioning; afterwards annually If detected pollution values fall below the WHO guidelines in 3 consecutive analyses for some or all parameters, update the monitoring programme in consultation with the DECR. 1 sampling point in the nearby coastal water	▪ Temperature ▪ Dissolved Oxygen (DO) ▪ pH ▪ Electrical Conductivity ▪ Total Suspended Solids (TSS) ▪ Ammonia (as N) ▪ Total oxidized nitrogen (TON) (as N) ▪ Biochemical Oxygen Demand (BOD) ▪ Chemical Oxygen Demand (COD) ▪ Metals (calcium, magnesium, sodium, potassium, iron, manganese, cadmium, chromium (total), copper, nickel, lead, zinc, arsenic, boron and mercury)	WHO Guidelines on recreational water quality: Volume 1 - Coastal and Fresh Waters[213]

[213] https://www.who.int/publications/i/item/9241546808

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
				▪ Total alkalinity (as $CaCO_3$) ▪ Sulphate ▪ Chloride ▪ Cyanide (Total) ▪ Fluoride ▪ Faecal & Total Coliforms	
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Decommissioning Contractor	Continuously during decommissioning works All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks. ▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training ▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes. ▪ Frequency and results of machinery and tool inspections.	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR): Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture). ▪ Severity rate: Average number of days lost per incident. ▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.

11.19.3.12 Construction of the new facilities in Salt Cay

Table 11-32: Environmental and Social Monitoring Programme for the construction of the new facilities in Salt Cay - effects monitoring

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Construction Contractor	Continuously during construction works All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks. ▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training ▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes. ▪ Frequency and results of machinery and tool inspections.	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR): Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture). ▪ Severity rate: Average number of days lost per incident. ▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.

11.19.3.13 Operation of the new facilities in Salt Cay

Table 11-33: Environmental and Social Monitoring Programme for the operation of the new facilities in Salt Cay - effects monitoring

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Groundwater	Perform groundwater sampling and analysis	GOTCI (optionally via the operation contractor)	Every 6 months during the first 2 years of operation; afterwards annually If detected pollution values fall below the WHO guidelines in 3 consecutive analyses for some or all parameters, update the monitoring programme in consultation with the DECR. 1 borehole within the facilities' site	▪ Temperature ▪ Dissolved Oxygen (DO) ▪ pH ▪ Electrical Conductivity ▪ Total Suspended Solids (TSS) ▪ Ammonia (as N) ▪ Total oxidized nitrogen (TON) (as N) ▪ Biochemical Oxygen Demand (BOD) ▪ Chemical Oxygen Demand (COD) ▪ Metals (calcium, magnesium, sodium, potassium, iron, manganese, cadmium, chromium (total), copper, nickel, lead, zinc, arsenic, boron and mercury) ▪ Total alkalinity (as $CaCO_3$) ▪ Sulphate ▪ Chloride ▪ Cyanide (Total) ▪ Fluoride ▪ Faecal & Total Coliforms	WHO Guidelines for Drinking-Water Quality (GDWQ) [214]
	Revise the data, perform quality check		Every 6 months during the first 2 years of operation; afterwards annually / in accordance with the monitoring programme		
	Reporting to DECR				
Surface water	Perform surface water sampling and analysis	GOTCI (optionally via the operation contractor)	2 sampling points: 1 in the coastal area to the west of the new facilities' site; and 1 in the proposed Nature Reserve / Area of Historical Interest (Salinas to the east of the site)		WHO Guidelines on recreational water quality: Volume 1 - Coastal and Fresh Waters[215]
	Revise the data, perform quality check		Every 6 months during the first 2 years of operation; afterwards annually / in accordance with the monitoring programme		
	Reporting to DECR				

[214] https://iris.who.int/server/api/core/bitstreams/69c17edd-ee26-425b-9d34-33799377e886/content | The WHO GDWQ are recommended in this context because people in the islands are said to use groundwater for domestic purposes

[215] https://www.who.int/publications/i/item/9241546808

Issue	Compliance monitoring measures	Responsibility for implementation	Timing and/or frequency and/or location of implementation	Indicator Parameters	Performance Indicators
Occupational Health and Safety	Monitor the success of the OHS mitigation measures	Operation Contractor	Continuously during operation All working, storage, circulation deposition, borrow and access areas	▪ PPE compliance rate: Percentage of workers wearing required personal protective equipment. ▪ Number and frequency of site safety audits or toolbox talks. ▪ Count of hazards reported and addressed within a given timeframe ▪ Percentage of workers who completed mandatory safety training ▪ Availability and functionality of first aid kits, fire extinguishers, and evacuation routes. ▪ Frequency and results of machinery and tool inspections.	▪ Lost Time Injury Frequency Rate (LTIFR): Number of lost-time injuries per million hours worked. ▪ Total Recordable Incident Rate (TRIR): Total recordable incidents per 200,000 hours worked. ▪ Near-miss reporting rate: Number of near-miss reports submitted (higher reporting often indicates proactive safety culture). ▪ Severity rate: Average number of days lost per incident. ▪ Corrective actions closure rate: Percentage of identified hazards resolved within the target timeframe. ▪ Workers' health metrics: Absenteeism due to work-related illness or injury.

12 Stakeholder Engagement

The TCI Environmental Charter commits the GOTCI to undertake stakeholder consultation for projects, developments and plans. Additionally, stakeholder engagement, which in technical terms goes beyond "consultation" and includes "disclosure of information" as well, is a requirement of the CDB for every sponsored project that may create significant environmental and social impacts. Therefore, as part of the E&S Scoping Study and the ESIA, FICHTNER developed a Stakeholder Engagement Plan and, together with the Client and supported by the Main Consultant, implemented already some of its activities.

12.1 Basic concepts

Stakeholder engagement is an inclusive process conducted throughout the project life cycle designed and implemented in order to support the development of strong, constructive and responsive relationships that are important for successful management of a project's environmental and social risks (WB ESS 10[216]).

Stakeholder should be understood as every governmental or administrative body, every community, non-governmental organization, groups or individual persons who might get affected (directly or indirectly, positively or negatively) by the proposed project (commonly referred to as "project-affected people", "project-affected communities" or "project-affected parties"), as well as those who might have an interest in, or may influence, the project (the "interested parties") (EIB, 2022[217]; EBRD, 2019 [218]; WB ESS 10 [216]). In a broad way, stakeholders can be referred to as **IAPs - interested and affected parties**.

Disclosure is a formal-sounding term for making information accessible to IAPs. Information is critical to the effective participation of affected citizens near the project. An informed public will better understand the trade-offs between project benefits and disadvantages; be able to contribute meaningfully to project design; and have greater trust in its new neighbours. Communicating such information in a manner that is understandable to the stakeholders is an important first (and ongoing) step in the process of stakeholder engagement (IFC, 2007[219]). Good practice principles in what concerns information disclosure are:

- Early disclosure: in order for the engagement process to be efficient, the disclosure of information about the project shall be undertaken early in the planning schedule, that is, before the decision-making has been finally undertaken. Only this way it is possible to include the stakeholders' visions and opinions on the decisions concerning the project.
- Disclose objective information: as far as possible, inform the stakeholders about numbers and facts (even if preliminary), so to avoid the creation of false expectations or unnecessary alarm.
- Design disclosure to support consultation: crucially, leave sufficient time between the provision of information about the benefits and disadvantages of the project (or changes to project operations and their implications) and the start of consultations.

[216] World Bank E&S Standard 10, Stakeholder Engagement and Information Disclosure: https://thedocs.worldbank.org/en/doc/837721522762050108-0290022018/original/ESFFramework.pdf#page=111&zoom=80
[217] European Investment Bank E&S Standards https://www.eib.org/en/publications/eib-environmental-and-social-standards
[218] European Bank for Reconstruction and Development E&S Policy: https://www.ebrd.com/news/publications/policies/environmental-and-social-policy-esp.html
[219] IFC, Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets https://www.ifc.org/en/insights-reports/2000/publications-handbook-stakeholderengagement--wci--1319577185063

- Provide meaningful information: transmit the information in a matter that is culturally adequate to the targeted public. Consider the local language and dialects, the cultural sensitivity, the ethnic composition, the literacy levels, etc.
- Ensure the accessibility of information: adapt the disclosure techniques to the targeted public. This implies that for some communities it is enough to disclose reports, flyers and briefs in locations open to the general public, but for others it is advised to also make use of public meetings, roadside displays, broadcast media, among others.

Consultation is a process of deliberation, discussion and dialogue. It is more than just disclosing information, although clear, transparent and timely information is the basis for any consultation process. The objective of the consultation is also to seek feedback, advice and opinion of the stakeholders in order to shape the project, to the extent possible, to their needs and concerns. In this sense, the vulnerable groups shall be given a particular chance of having their voice heard. Good practice principles in what concerns public consultation are (IFC, 2007[219]):

- Target it at those most likely to be affected by the project;
- Undertake it early enough to scope key issues and have an effect on the project decisions to which they relate;
- Make it an informed process as a result of relevant information being disseminated in advance;
- Assure that it is meaningful to those consulted by presenting the content in a readily understandable format and by using culturally appropriate techniques;
- Consider it as a two-way process, meaning that both sides have the opportunity to exchange views and information, to listen, and to have their issues addressed;
- Make it gender-inclusive through awareness that men and women often have differing views and needs;
- Localize it to reflect appropriate timeframes, context, and local languages;
- Keep it free from manipulation or coercion;
- Document it to keep track of who has been consulted and the key issues raised;
- Report back in a timely way to those consulted, with clarification of next steps ongoing as required during the life of the project.

12.2 Supporting instruments

To support stakeholder engagement planning, FICHTNER developed a **Stakeholder Engagement Plan (SEP)** describing the engagement activities planned for and already undertaken during the inception, scoping and ESIA stages of the Assignment. Planning of the stakeholder engagement activities for the Project is made under consideration of the requirements of the IFC and the CDB.

Complementary to the SEP, FICHTNER developed a **Grievance Redress Mechanism (GRM)** with the objective to provide an effective and systematic procedure in responding to queries, feedbacks and complaints from IAPs, including Project workers. The GRM provides clarity and predictability on how complaints will be received, assessed, and resolved, as well as monitored.

12.3 Stakeholder mapping

A stakeholder mapping was prepared (Table 12-1) that provides an overview and analysis of the potentially project affected communities and interested parties and identifies the interests and potential concerns of each stakeholder group.

The stakeholder mapping was initially prepared during the Inception stage, updated throughout the E&S Scoping stage and finalized during the ESIA stage to identify interested and affected parties and obtain a gender-differentiated understanding of the baseline situation in the TCI community: identify where women and men differ regarding vulnerability, understand their specific roles regarding waste in the household, to create awareness, to understand who will be impacted more, e.g., whether there is a gender pattern in the informal sector regarding who is active, resettlement and relocation, work patterns and conditions in the formal economy, etc.

Table 12-1: Stakeholders of the ISWMP

Name of Institution	Description	Key Contact	Designation	Telephone	Address	Email address
Ministry of Health and Human Services	Responsible for the oversight and development of a robust and efficient health system that meets the priority health needs of its population. This involves: ▪ Formulation of policies, legislation, and strategies to govern the health and agriculture sectors; ▪ Regulation and licensing of respective facilities and professionals; ▪ Monitoring and evaluation of strategic objectives; ▪ Delivery of health, agriculture and human services; ▪ Execution of essential public and environmental health functions; and ▪ Mitigation of and response to natural and manmade disasters and emergencies that impact the health of the population.	Hon. Shaun D. Malcolm	Minister of Health and Human Services		Butterfield Square, Providence, Turks and Caicos	
		Marah Smith	Head of Secretariat			
Environmental Health Department of the Ministry of Health and Human Services	The Environmental Health Department works to protect public health, safety and the well-being of our communities and environment from the impacts of waste management throughout the Turks and Caicos Islands by: ▪ Monitoring/Managing all waste disposal sites thorough inspection, enforcement, complaint response and education. ▪ Monitoring/Managing refuse collection companies ▪ Ensuring quick response to complaints received regarding refuse collections, illegal dumping and solid waste disposal sites.	Trefa Hinds	Chief Environmental Health Officer	+1 649 338-2143/44		thinds@gov.tc
		Crivanne Adams	Deputy Chief Environmental Health Officer			
		Tiffany Murray	Environmental Health Officer and CDB Integrated Solid Waste Management Project Coordinator	+1 649 241 8841		timurray@gov.tc
		Dwight Hall	Environmental Health Officer, North and Middle Caicos			
		Ms. Shenica				

Name of Institution	Description	Key Contact	Designation	Telephone	Address	Email address
	▪ Promoting inter-agency cooperation with all entities involved in waste management and disposal. ▪ Preventing diseases carried by rats, mosquitoes and other vectors.					
Department of Environment and Coastal Resources (DECR)	The Department of Environment and Coastal Resources (DECR) is mandated to ensure the sustainable use of the natural resources of the Turks and Caicos Islands and to protect and promote biodiversity and economic prosperity through a sustainable fisheries industry, environmentally sustainable development, a Protected Areas system and improved Maritime Affairs.	Roddy McLeod	Department of Environment and Coastal Resources	649)941-5122 (649)338-4170		environment@gov.tc
National Health Policy and Planning Unit of the Ministry of Health and Human Services	Works with Ministry Units/Departments to develop, implement, monitor and evaluate health legislation, policies, plans, programmes and campaigns aimed at improving the health and well-being of persons residing in the TCI. The Unit has seven major functions: ▪ Health planning and policy development; ▪ Policy analysis and advice; ▪ Programme/project development; ▪ Monitoring and evaluation; ▪ Community engagement and partnership development; ▪ Resource mobilization; and ▪ Coordinate with Ministry staff to carryout technical assistance objectives set forth in the Pan American Health Organization (PAHO/WHO) Biennial Work Plan.	Lynrod Brooks	Director of Health Policy and Planning			

Name of Institution	Description	Key Contact	Designation	Telephone	Address	Email address
Turks and Caicos National Trust	The Turks and Caicos National Trust is a membership-based, non-profit organization dedicated to the conservation of the environment.	Winema Sanders-Penn	Executive Director	+1 649-232-6282	Unit #50 Salt Mills Plaza, Grace Bay, Providenciales, Turks and Caicos Islands, Turks and Caicos Islands	info@tcnationaltrust.org
Solid Waste Task Force / Solid Waste Working Group	The Task Force consists of staff from the Ministry of Health and Human Services, the Environmental Health Department and the Public Works Department. The Task Force was established to determine the best immediate course of action to address the ongoing solid waste situation.	Hon Kyle Knowles, Member of Parliament	Chairman	+1 649-338-3759		hoa@gov.tc
Informal Settlements Unit	(ISU) is a government organization tasked with finding solutions to the growing challenges experienced within and by informal settlements across the Turks and Caicos Islands.	Justice Carlos W. Simons, KC Loraine Lewis Alisa Mayham Monic L. Harvey	Strategic Lead Senior Analyst Senior Administrative Officer Executive Administrator			cwsimons@gov.tc lolewis@gov.tc alfolkes@gov.tc mharvey@gov.tc
TCIG National Delivery Unit	The National Delivery Unit is a team of "skilled project management leaders and engineers to lead on TCIG's high-value and most impactful projects to ensure timely delivery of promises and services to the citizens and residents of TCI."	Ashiff Azam	Project Lead	16493417413		ashiff.azam@gov.tc

Name of Institution	Description	Key Contact	Designation	Telephone	Address	Email address
District Commissioners	The TCI are divided into five administrative districts (one in the Turks Islands and four in the Caicos Islands), and the Island of Grand Turk; four of these are headed by District Commissioners, and Providenciales District is run by the Permanent Secretary of the Office of the Premier in Providenciales. The Island of Grand Turk is directly administered by the TCI Government.	Jazmin Walkin - Osborne	District commissioner (North Caicos)			jswalkin@gov.tc
		T. Delaney	District Commissioner (Middle Caicos)			odelaney@gov.tc
TCI Waste Disposal Services	Turks and Caicos' only Solid Waste Recycling and Disposal Facility			Phone: +1 649 941-2411	Millenium Highway, Blue Hills, Providenciales, Turks & Caicos Islands	accounts@tciwaste.com
TCI Recycling Club						
Edward Gartland Youth Centre	Ink Recycling Project: recycling of empty printer cartridges	-	-	+1 649-331-9602	Providenciales, Turks and Caicos Islands, Turks and Caicos Islands	tciinkrecycling@gmial.com
CONRAD Howell High School	Environment club - plant trees					
Example of Christ: Radio Creole 95.1 FM	Pastor Morency has hosted two live radio shows with members of the ISU and its supporting committees, and he is excited to continue his partnership with the organization to help disseminate information in the Haitian community.	Pastor Solomon Morency			Radio Creole 95.1 FM.	

Name of Institution	Description	Key Contact	Designation	Telephone	Address	Email address
Prospective participants for hearings	Interested Parties	Elwood Harvey	Marine Environment Services			
		Don Stark	TCI Reef Fund			
		Kathleen Wood	SWA Environmental			
		Mary Lightburn	TCI Tourist Board			
		W. Sanders-Penn	TCI National Trust			
		Marsha Pardee	Survey and Mapping Dept			
		Cyprian Smith	Survey and mapping Dept.			
		Walter Henchell	Department of Planning			
		Carlos Tamayo	Public Works Department			
		Lanardo Jolly	Coastal Radar			
		Rodman Johnson	Central Information and Technology Unit			
Individual women and men	Householders; entrepreneurs; teachers; public health service providers; agriculturalists; youth; PWD; migrants; informal recyclers; persons likely affected by land acquisition and economical displacement.	To be determined during the Scoping stage	To be determined during the Scoping stage	To be determined during the Scoping stage	To be determined during the Scoping stage	To be determined during the Scoping stage

12.4 Stakeholder Engagement Plan

During the E&S Scoping Stage, one dedicated SEP was prepared and discussed with the Client to agree upon the dates and responsibilities of each party, and implemented. An overview of the SEP and the engagement activities undertaken during the E&S Scoping stage can be read in Annexes F and G.

Table 12-2 shows the draft SEP updated for the ESIA Stage. It consists of on-site activities of consultation and information disclosure planned for the September 2025 throughout the country.

Table 12-2: Draft SEP for the ESIA Stage

Type of activity planned								Role of Responsible Parties	
Engagement activity/media	Target groups	Written communication channel	Time Period	Verbal communication channel	Time Period	Visual communication channel	Time period	Consultants	National agencies with a mandate on the Project
Information disclosure	IPs/OIPs in the TCI	Government Websites online and in Public Libraries (for ex.), Printed copies in all inhabited islands	July/August September 2025					FICHTNER to prepare draft Non-Technical Executive Summary	Client takes responsibility to have information uploaded to Government websites and printed copies placed in Libraries 28 days in total
Radio spots	IPs/OIPs in the TCI			15 to 45 sec radio spots on national and local radios in all inhabited islands alerts population of project documents and where they can be found (on government websites and Printed version in Libraries(for ex.))	July/ August September 2025				Client takes responsibility to have radio spots produced and aired on national and local radio stations
Radio spots	IPs/OIPs in the TCI			60 sec spot inviting public to the Public hearings	Week 1 and 2 of September 2025				Client takes responsibility to have radio spots produced and aired on national and local radio stations
Social Media	IPs/OIPs in the TCI	Updates on the consultation events and where documents can be consulted; ~~info of the project~~ on	July/August September 2025						Prepare content for Social Networks, and publish it; engage influencers as relevant

Type of activity planned								Role of Responsible Parties	
Engagement activity/media	Target groups	Written communication channel	Time Period	Verbal communication channel	Time Period	Visual communication channel	Time period	Consultants	National agencies with a mandate on the Project
		LinkedIn, Facebook, Instagram (@tci_health for example), TikTok (whichever media is used by the GOTCI), chatgroups, and/or engage known social media influencers in the country							
Public hearings	IPs/OIPs in the TCI	WhatsApp messages regarding time/ date and information to be shared; Sent to IPs/OIPs in the TCI	Two sets of messages should be sent :1st - one week before; 2nd reminder one day before	Town Hall style Public Hearings in Providenciales, North Caicos and Grand Turk	Week 3 of September 2025	NA	NA	Hydea Presents info on the Project Fichtner presents E&S impacts and leads discussion on E&S matters to illicit participants understanding and views	Prepare content for WhatsApp Message ; Identify locations suitable for public hearings; organize renting the locations and eventual catering with drinks (water); assure the rooms have the necessary technical equipment to allow a presentation, as well as microphones; introduce Consultants; ensure printing of supporting materials, namely: registration sheets and flyers.

Type of activity planned								Role of Responsible Parties	
Engagement activity/media	Target groups	Written communication channel	Time Period	Verbal communication channel	Time Period	Visual communication channel	Time period	Consultants	National agencies with a mandate on the Project
Call-in Radio Programme	Haitian waste pickers and Interested members of their community, resident in TCI	None		One night during the third week in September that is convenient to the Pastor who runs the programme in Radio Creole 95.1 FM and to the listening audience (and during a time that Consultants are in Providenciales)	3rd Week in September			Fichtner leads the radio programme; Hydea joins to clarify technical questions	Client sends a representative also for clarifying questions; Interfaces with the pastor to secure his willingness to host a call-in radio programme about the ProjecT; and to ensure his willingness to act as translator

IPs: interested parties IPs are directly affected persons such as homeowners in the Wheeland community Phase 1 and 2 and the waste pickers

OIPs: other interested parties; OPIs are those possibly indirectly affected or those not affected but interested: environmentalists, advocates for the Haitian Community, documented members of the Haitian Community, institutions of the GOTCI, etc.

IPs + OIPs = IAPs (Interested and Affected Persons)

12.5 Grievance Redress Mechanisms

12.5.1 Grievance Redress Mechanism - General Public Grievance Mechanism

A Grievance Redress Mechanism (GRM) is a locally based, formalized process for receiving, assessing, and resolving community feedback or complaints. It should provide an accessible entry point for submitting grievances and a predictable process and timeline for communities to receive a response. The credibility of the GRM depends on its fairness, transparency, and effectiveness.

Purpose and Scope

The GRM is designed to receive complaints from individuals and communities affected by the project who believe that the ISWM Project has caused or may cause them harm. Its goal is to ensure a prompt, fair, and effective resolution of grievance issues.

The GRM should be introduced to stakeholders during the project design and planning stages. The responsibility for its implementation and management lies with the EHD.

Submission of Complaints

- **Complainants:** A complaint may be submitted by one or more individuals, or their representative(s), who believe they are directly and adversely affected.
- **Identity of complainants:** The complaint must include the name of the individual(s) submitting it, and indicate whether they are project-affected individuals, a community or a representative.
- **Confidentiality:** Complainants may request that their identity be kept confidential. This request should be included with the complaint and will be respected.
- **Representatives:** Complaints may be submitted through an authorized representative. The representative must provide their name and contact details, sign the complaint, and submit written proof (e.g., a signed letter) of their authority to act on behalf of the complainant(s).
- **Anonymous complaints:** Anonymous complaints are inadmissible. However, if such a complaint contains specific information about Project-related issues, it will be forwarded to the EHD for information and follow-up, where appropriate.

How to Submit a Complaint

Complaints can be submitted through the following channels:

- Mail: Ministry of Health & Human Services, Turks and Caicos Islands Government
- Website: www.gov.tc
- Phone: +1 649 241 8841

Scope and Admissibility of Complaints

Complaints are admissible if they meet the following criteria:

- The Project is active.
- The complaint is filed by Project-affected individuals and/or communities, or their representatives.
- The complaint alleges that the Project has caused or will cause harm to the individuals and/or communities submitting the complaint.
- Only substantiated or verifiable complaints will be addressed.

Formulation of Proposal and Implementation

Formulation of Proposal

- EHD (or a designated party) contacts the complainant(s) within 10 business days of determining the complaint's admissibility to review concerns and agree on next steps.
- A proposal to address the issues raised is formulated and presented within 30 business days. In exceptional cases, this timeline may be extended with prior notice to the complainant(s).
- The proposal includes an action plan with a defined timeframe for implementation.
- The complaint is registered in the grievances log

Agreement by Complainant(s)

- If the proposal is accepted by the complainant(s), EHD implements it according to the process and timeframe. Agreement should be reached within 30 business days after the initial proposal is presented. Once accepted, the proposal is signed by both parties and implemented accordingly.

Rejection by Complainant(s)

- If the proposal is rejected and/or the complaint cannot be resolved through this process, the complainant(s) will be informed that no resolution could be reached. EHD will refer the complainant(s) to other appropriate avenues for remedy, where appropriate.

Implementation of Proposal

- Once accepted, the Project team promptly begins implementation. The proposed timeframe will depend on the nature of the actions. EHD will inform the complainant(s) in advance and explain the scope and proposed timeline of the action plan.

Case Closure

- **Resolution:** The case is closed when both EHD and the complainant(s) agree that the proposal has been successfully implemented and the issues addressed.
- **No satisfactory resolution:** If the complainant(s) believe the complaint has not been adequately addressed, they may appeal.
- **Appeals:** The GRM facilitates an appeals process through a designated officer.

12.5.2 Grievance redress mechanism - workers grievance mechanism

Workers Grievance Redress Mechanism are formal procedures within an organization that allow employees to raise and resolve workplace issues or complaints. These mechanisms provide a structured way for employees to voice concerns, seek remedies, and for the organization to address those concerns fairly and transparently.

Effective grievance mechanisms contribute to a positive work environment by fostering trust, improving employee morale, and reducing the risk of legal issues or reputational damage. They also help organizations comply with labour laws and regulations, as well as internal policies and ethical standards. Workers GRM are a crucial component of responsible and ethical business practices, promoting a fair and respectful workplace for all employees. The responsibility for its implementation and management lies with the decommissioning, construction, operation and rehabilitation Contractors.

Purpose and Scope

The purpose of the workers GRM is to ensure that all employees have a safe, confidential, and accessible way to raise concerns and seek resolution. It aims to:

- Promote fairness and transparency in the workplace
- Provide timely and effective resolution of grievances
- Prevent escalation of workplace conflicts
- Support compliance with legal and ethical standards

This mechanism applies to all employees and covers a wide range of workplace issues, including:

- Workplace harassment and sexual harassment
- Discrimination and unfair treatment
- Pay and benefit disputes
- Health and safety concerns
- Any other employment-related grievances

Process

The workers GRM should follow a formal process. While it may begin with informal attempts at resolution, it should allow for escalation into more structured steps, such as:

- Submitting a written complaint
- Meeting with Human Resources or a supervisor
- Investigation
- Mediation or arbitration
- Documenting in a grievances log

It is important that the workers GRM is both confidential and fair. All employees must feel safe to raise concerns without fear of retaliation. They must also have easy access to the mechanism and understand how to initiate it.

To ensure timely handling of complaints:

- Acknowledgment of the written complaint should be made within 3 working days
- A resolution should be made within 10 working days

If there are any delays, they must be clearly communicated to everyone involved.

12.5.3 Grievance Redress Mechanism - the CDB Procedure

In addition to the two ESIA-related GRMs presented in the previous sections, complaints about suspected fraud and/or corruption may be submitted to the Office of Integrity, Compliance and Accountability of the CDB via their Ethics Point page [220]. Allegations may be made by a variety of sources including staff, consultants, contractors, and other persons who may consider themselves participants in, witness to or victims of wrongdoing.

[220] https://secure.ethicspoint.com/domain/media/en/gui/55678/index.html

13 Recommendations

The elaboration of the ESIA Study was preceded by an Inception and Scoping stages that, among other objectives, performed a thorough collection and assessment of existing E&S baseline data on all Project sites consisting of desktop research, consultation of official reports and governmental documentation on the islands, interviews with governmental staff, exchanges with the Main Consultant, site walk-thorughs and specialized surveys, consultations with affected persons and key informants, and obtaining of data via the GOTCI.

Nonetheless, some data could not be retrieved nor collected due to logistical, timing, resources or contractual issues. Given the importance of some of this data for the future monitoring of the sustainable implementation of the ISWMP, this ESIA leaves some recommendations for future studies and campaigns to fill remaining data gaps.

13.1 Baseline monitoring campaigns

The following baseline monitoring campaigns may have to be additionally procured (i.e., in addition to the campaigns already being planned by the GOTCI):

- **Surface water quality campaign in Grand Turk and Bottle Creek**: for all sites except Providenciales, there is a lack of surface water quality data. If placing a focus on the landfill sites, then at least Grand Turk and Bottle Creek shall be subject of surface water quality campaigns. In Grand Turk, the campaign would cover the adjacent Town Salina and the coastal areas to the east and the west of the landfill; in Bottle Creek, the coastal areas along the Bottle Creek community would need to be surveyed.
- **Baseline soil analysis campaigns**: a soil characterisation is recommended at the South Caicos site and at the Kew site in North Caicos. These sites will be rehabilitated and closed to be in the future used as parks / recreational areas. The soil characterization shall be done before the actual public use of the areas. In case of soil contamination above regulatory levels/international standards, soil remediation measures may need to be undertaken.

The data resulting from the recommended campaigns would allow establishing the present situation and comparing it with the situation after the rehabilitation measures are in place. This would allow detecting improvements in groundwater and soil or, on the contrary, justifying the need for stricter preventive or remediation measures at the sites. Specifically, the campaigns would also provide valuable information to eventual users of the beaches of the dangers in case of contamination and would inform the authorities about the need for soil remediation measures.

13.1.1 Guidelines for procuring and planning the baseline monitoring campaigns

The campaigns shall be undertaken by specialized contractors which prove to respect international best practice and that use internationally approved sampling and analysis methods. This can be assured by a transparent depiction of the methods and practices by the contractors.

The campaigns shall be spatially representative. This means that they need to cover at least the site's Area of Influence (defined as a circle with a radius of 1,500 meters around the centre of each site).

Monitoring or water and soil shall and be undertaken at different times of the year to capture seasonal variations and assure representativeness of the data.

It needs to be noted that this report recommends the campaigns that *at a minimum* shall be undertaken considering the characteristics of the sites, the data gaps, and the eventually high costs that a country-wide monitoring, possibly at least partially with foreign contractors, would imply. Therefore, samplings are not recommended for all parameters in all sites, but only as described above. The GOTCI is encouraged to extend the campaigns to all sites, if technically and financially feasible.

13.2 Follow-up monitoring campaigns

It is recommended to implement continuous air and water quality monitoring at the Providenciales, Grand Turk and Bottle Creek sites to track environmental improvements and identify emerging risks. This data can be used to inform adaptive management (see Chapter 11.19.2) and demonstrate progress to stakeholders.

13.3 Additional specialist social studies

The following additional specialist studies are recommended:

13.3.1 Livelihood Restoration Plan (LRP)

A LRP shall be prepared to manage the impacts caused on the informal waste workers / waste pickers' livelihoods reportedly working at the disposal site of Providenciales, South Caicos and North Caicos Kew.

The LRP shall provide an overview of the socio-economic impacts of the planned interventions, document consultation meetings undertaken with persons potentially affected by economic displacement and include measures (following the mitigation hierarchy) to address economic displacement.

The LRP shall conform to the national legislation of the TCI, with relevant international and regional conventions, treaties and agreements, with the IFC Performance Standard 5 - Land Acquisition and Involuntary Resettlement, and with the CDB Performance Requirements 6 - Vulnerable Groups and 7 - Land Acquisition and Resettlement.

The following annotated outline for the LRP describes the recommended tasks to be performed and contents of the LRP report.

- Purpose and objectives of an LRP
  - Based on international recommendations of CDB and other lending institutions and best international practice
- Background to the ISWMP in the TCI
  - Dependent on the Preliminary Design Report, including the designated scenario
- Sites of concern
  - Identification of the Area of Influence of the dumpsites for socio-economic impacts (in this case, economic displacement of waste pickers)
- Informal economic activity at the dumpsites
  - An investigation of the economic activities being undertaken by informal workers at the dumpsites

- Legal and policy framework specific to informal economic activity
- Project intervention and displacement of informal waste pickers
  - Investigation into what already has happened as a result of the Project intervention with the informal waste pickers
- Determination of income losses, either temporary or permanent, resulting from already delivered and eventual additional future displacement of affected persons from income-generating resources
- Emerging economic activities
  - Identify emerging economic opportunities
- Development of the Livelihood Restoration Plan
  - A combination of (1): social screening which involves individual consultations with DAPs (directly affected persons) on livelihood restoration activities and their eligibility and interest in participating; and (2): analysis of collected data through various socio-economic surveys and reports such as: population and housing census, Labour Force Survey, MICs
  - Determination of eligibility to participate in the livelihood restoration activities and preparation of an entitlement matrix.
  - Consultations with livelihood restoration service providers on the islands, and community gatekeepers
  - Identification of possible programmes; identification of resources necessary for sustainability of the programme and achievement of expected outcomes
- Prepare the LRP report:
  - Identification of Institutional mechanisms for implementation
  - Roles and responsibilities of various actors/entities
  - Development of a Grievance Procedure
  - Development of a Monitoring & Evaluation Framework

13.3.2 Land Acquisition Plan (LAP)

A suitable location for the new facilities in South Caicos shall be selected in agreement between the GOTCI and the District Commissioner. About 1 ha of privately owned land (Sailrock hotel) may be needed for this purpose. The GOTCI proposes to use land adjacent to the dumpsite for building the new facilities.

A Land Acquisition Plan (LAP) needs to be elaborated that establishes the timelines, the responsibilities, the obligations and the rights of the buyer and the seller regarding the acquisition process. The GOTCI has a particular procedure for such cases that shall be followed.

The LAP also needs to comply with the relevant provisions of the IFC Performance Standard 5 - Land Acquisition and Involuntary Resettlement, and with the CDB Performance Requirement 7 - Land Acquisition and Resettlement.

14 Conclusion

The general improvements to be done to the waste management system in the islands, with proper separation of waste streams, composting of organic fractions and generally better operational practices fuelled by suggested investments in capacity building allow to state that the impacts of the Project may be managed to a level that the Project benefits will overcome its negative impacts.

The ESIA concludes that the Project can be implemented without having significant adverse impacts on the ecological and social environment under consideration of a **detailed and unconditional** implementation of the mitigation and avoidance measures stipulated in the ESMP throughout all Project phases, while aligning with the suggested enhancement measures.

Ultimately, it is the responsibility of the Project Developer to ensure that all mitigation, monitoring, compensation and enhancement measures recommended in this report are fully implemented to avoid or reduce the negative impacts to the lowest possible level and enhance the positive impacts of the proposed Project to the highest level.

15 Annexes

15.1 Annex A: TCI Climate Change Charter

Climate Change Charter
Turks and Caicos Islands

Guiding Principles

For the Government of the Turks and Caicos Islands, the private sector, and for the people of the Turks and Caicos Islands.

The Parties share the common understanding that:

- Scientific consensus has developed that the increasing emissions of human caused greenhouse gases (GHG), including carbon dioxide, methane and other GHG emissions, that are released into the atmosphere are affecting the Earth's climate;
- Reducing GHG emissions will generate environmental and health benefits for individuals, families, and communities;
- Climate change and reducing GHG emissions are issues of importance to TCI residents;
- Governments urgently need to implement effective measures to reduce GHG emissions and anticipate and prepare for climate change impacts;
- Protecting the environment can be done in ways that promote economic prosperity; and
- It is important to take action and to work together to share best practices, to reduce GHG emissions and address the impacts of climate change.

The Parties acknowledge that each has an important role in addressing climate change and that the Parties will:

1. Recognise that Climate Change affects all people and the environment; that Climate Change affects vulnerable populations disproportionately, and that the effects of Climate Change on the environment can have permanent and irreversible impacts.
2. Recognise that Climate Change has unpredictable impacts on future generations, and to make decisions regarding Climate Change to prioritise benefits to future generations.
3. Recognise that education & raising awareness amongst all sectors including the government, public sector, businesses, communities & individuals are critical steps in tackling climate change.
4. Identify the cross-cutting Climate Change-related opportunities, costs and risks in all Government policies and strategies.
5. Seek expert advice and consult openly with interested parties on decisions with Climate Change implications and relevant environmental impact, and to make best decisions using that advice and consultation.
6. Support climate change adaptation through mitigation & design of disaster resilient building & infrastructure.
7. Aim for wise-use options in development which lower Climate Change impact and which feature Climate Change projections into adaptation & mitigation one century forward.
8. Enforce regulations governing natural land clearance and development in carbon sink habitats, and protect and restore key habitats including seagrass beds, coral reefs, sand dunes, mangroves, ephemeral wetlands, and tropical dry forests.
9. Encourage and invest in renewable energy, fuels, and resource technologies that benefit Climate Change mitigation.
10. Require investors and developers to adopt genuine Climate Change adaptation & mitigation technologies.
11. Reduce the Turks and Caicos Islands carbon footprint in the tourism sector (and other intensive industries like transport)
12. Contribute towards the improvement of the global Climate Change situation through public education and outreach to schools, decision makers and the general public.

Climate Change Charter
Turks and Caicos Islands
(cont.)

Commitments

The Government of the Turks and Caicos Islands will:

1. Develop a roadmap to help build capacity to support and implement Climate Change adaptation and mitigation strategies which is consistent with the Turks and Caicos Islands' own plans for sustainable development.
2. Use global and local expertise to seek advice and improve knowledge of technical and scientific issues; initiating, reviewing, and updating Climate Change legislation.
3. Promote better cooperation and the sharing of knowledge, experience and expertise between the Turks and Caicos Islands Government, private sector, other Overseas Territories and other states and communities which face similar Climate Change problems.
4. Reinstate the Conservation Fund with earmarked components for Climate Change Adaptation & Reduction, to establish public funding for projects of lasting benefit to the Turks and Caicos Islands.
5. Ensure that legislation and policies reflect the principle that Carbon polluters pay for prevention or remediation; and to establish effective monitoring, enforcement mechanisms and the implementation of a viable carbon price.
6. Engage community groups and encourage teaching within schools to promote the value of our local environment and effects Climate Change will have in Turks and Caicos Islands and to explain its role within the regional and global environments.
7. Develop and implement a comprehensive waste management and anti-littering plan that incorporates recycling initiatives.
8. Enact appropriate legislation to support renewable energy initiatives.
9. Create Carbon Reduction Programs to incentivise homeowners, homebuilders and developers to reduce carbon footprint.

The Private Sector of the Turks and Caicos Islands will:

1. Invest in renewable energy and sustainable building and operational practises.
2. Invest in and promote ecotourism, tree planting, and other environmentally friendly projects; reduce wholesale land clearance; and eliminate infilling or destruction of wetlands, mangroves, and seagrass beds.
3. Take stock of private entities' carbon footprint and how they can be reduced.
4. Ensure that Environmental Impact Assessments are properly conducted before major developments and mitigation measures are executed. A universal standard should be designed to assure quality of approved EIAs including climate change adaptation and mitigation.
5. Create a Coastal Resilience Plan for immediate surroundings (e.g. re-establishing sand dunes, ensuring mangrove protection, and regulating sustainable use of the reefs).
6. Improve scrap metal and waste management (to include the implementation of a 3-R program) in an effort to reduce associated environmental impacts.
7. Promote corporate social responsibility that spreads awareness of special features of the environment in the Turks and Caicos Islands and the effects of Climate Change; and promote within the Turks and Caicos Islands the guiding principles set out above.
8. Encourage partnerships among private sector organizations to implement carbon reduction initiatives.

Climate Change Charter
Turks and Caicos Islands

Signatory Page

Signed this 22nd day of April, 2022

Hon. Josephine Connolly, Minister of Tourism, Environment, Fisheries and Marine Affairs, Culture and Heritage, Agriculture, Religious Affairs & Gaming

Stacy Cox, Chief Executive Officer, Turks and Caicos Hotel and Tourism Association

Ruth Forbes, Chief Executive Officer and President, FortisTCI

Alizee Zimmerman, Executive Director, Turks and Caicos Reef Fund

Provo Water Company Ltd. (Representative)

15.2 Annex B: Report of the initial site visit (December 2023)

Summary:

The initial site visit of the Assignment (Scoping site visit; Scoping Task 2) occurred during the period December 4th to December 8th, 2023. The Consultant had the opportunity to obtain a first impression of the site, its characteristics, eventual legacy situations (existing soil or water contamination, for example); identify and define the necessary boundaries of the project areas for the field investigations needed during the ESIA stage; identification of important environmental and social components (IESCs) to be potentially impacted by the project; verification and supplementing the baseline information collected at the desktop studies stage; determination of the grade and extent of potential impacts of the project on the IESCs; and to initially engage with stakeholders and their representatives.

Of note was that the Consultant undertook the visit in conjunction with the Main Consultant's team, which initiated collaboration and auger well for positive outcomes.

Five sites were visited in four islands, two meetings were held with the Solid Waste Working Group (SWWG), and one meeting was held with key informants (KIIs). Visits to sites and consultations with stakeholders and their representatives suggested that the two sites which presented the most significant challenges were that of the Providenciales and of the Grand Turk landfills.

The Providenciales landfill site is the most pressing as it is the largest and is situated within one of the most densely populated areas on the island, the Wheeland Community. It was reported by key Informants of the community that the landfill had been emitting smoke and odours for a significantly long period of time, giving rise to many health and socio-economic issues (see the Consultation report - Key Informant Interviews at the end of this Annex).

At the debriefing meeting on the morning of 7th December at Grand Turk, in order to address the community's concerns, the SWWG agreed on the following action:

- to undertake the immediate task of extinguishing the deep waste fires on the dump; and
- the installation of air quality monitoring systems in the Wheeland community (one in each Phase).

The Chief Environmental Officer Mr Trefa Hinds indicated that the extinguishing of the fires at the Providenciales landfill should start immediately. It was also agreed that the Task Force would draft the communications plan for the community and circulate to the Main Consultant and to Fitchner for commenting.

Below is a visual representation of the site visits with notes, followed by the Consultation report.

Day by day in pictures:

Day 1 – December 4th: afternoon site visit at Providenciales Landfill



Figure 15-1: Providenciales Landfill with Phase 2, housing settlement Millennium Heights in the background



Figure 15-2: Waste Pickers at the Providenciales site



Figure 15-3: Female picker (far right side) among the male pickers at the Providenciales site



Figure 15-4: Traces of smoke visible at the Providenciales site

Day 2 – December 5th: North and Middle Caicos site visit



Figure 15-5: Dump site in North Caicos with limited management



Figure 15-6: The cemetery across the fence from the site in North Caicos



Figure 15-7: Dump site in Middle Caicos far from human habitation



Figure 15-8: Orderly dump in Middle Caicos



Figure 15-9: Dump site Middle Caicos orderly far from human habitation



Figure 15-10: Waste from Parrot Cay waiting to be dumped found at the ferry dock

Day 3 - Dec 6th: Interviews and site visit to Phase 1 and 2 in Wheeland (Providenciales). See also written report.



Figure 15-11: Day care Centre at Community Plaza Phase 2



Figure 15-12: Key Informant Interview with one resident of Phase 1 by Fitchner and the Main Consultant

Day 4 - Dec. 7th: Site Visit at Grand Turk Landfill



Figure 15-13: Road leading to the landfill



Figure 15-14: Construction waste at the landfill. Cemetery in the background.



Figure 15-15: Historic Salinas with flamingos



Figure 15-16: Tire waste

Meeting report - Providenciales, Providenciales, Ministry of Health and the Environment Conference Room, 4th December 2023

Participants:

- Ms. Tiffany Murray - Environmental Health Officer and ISWMP Coordinator
- Mr. Ian Constantine - Technical liaison for the ISWMP
- Mr. Ashiff Azam - Representative of the Premier's office
- Ms. Foreman - Representative of the Government of TCI; Communications specialist
- Mr. Nigel Blair - CDB (on-line)
- Mr. Hopeton Peterson - CDB (on-line)
- Ms. Asha Kambon - Representative of FICHTNER; Assignment's Regional E&S Expert and Social and Gender Impact Specialist
- Ms. Sara Monti - Main Consultant
- Mr. Michele Lambertini - Main Consultant

Items discussed:

- Brief presentation of Climate Report by the Main Consultant
- Discussion on the received comments to the Climate Report from EHD and CDB
- Discussion on the major implications and repercussions on the ISWM facilities sitting and design
- Discussion on proposed main features of the upcoming FICHTNER's CRVA Report

Consultation report - Key Informant Interviews in Wheeland, Providenciales, on 6th December 2023

Interviews were held at the Conference room of the Environmental Health Department, Providenciales. The interviews were facilitated by the member of Parliament, with two men and three women as follows:

- 10:00 - One private entrepreneur
- 10:30 - One public servant (Government employee)
- 11:00 - One private person (did not attend)
  - One retiree
  - One Member of Parliament
- 12:00 - One Public Health Worker (Government employee)

Summary

There are deep fears and real concerns of the key informants who represented the residents of the Wheeland community comprising of Phase 1 and Phase 2.

The fears were mainly focused on the health and well-being of themselves and their children. Some were grounded on real problems, i.e. the deep smouldering of waste on the dump site which has been identified by the Main Consultant as significant and real, requiring immediate remediation. The smouldering is caused by the combustion of chemicals produced through the deep underground burning that is taking place continuously. Those chemicals can have negative health impacts on the population that is exposed. Other fires are formed through the unintentional burning of tyres on the dump site and the intentional burning of medical waste.

The secondary fear is from the burning of green waste by the waste pickers for production of charcoal. The Main Consultant views this process as by and large non-harmful waste, as it is produced from untreated green waste (discarded pallets accumulated through the process of the importation of goods; and foliage deposited from landscaping activity). There is some reported use of forested material extracted from the tropical dwarf forest. The charcoal is used as a fuel for cooking on the island and exported to Haiti.

There is some social fear of the waste pickers (who in the main are Haitians - possibly legal and/or illegal migrants) [221].

Phase one is the eldest community and is located across the highway from the entrance to the dump on the bay side, called Garden Land. The structure of the population in Phase 1 seems to be comprised of many elders and a mixed group of expatriates and local islanders. Phase 2, Millenium Heights, is comprised of many middle-income local islanders who may be considered middle level and high-level

[221] Much of the discourse around migrant communities in the TCI is conflated with the fear of "otherness". The notion of 'self' and 'other' has found its way into the foreground of the discourse in social science since the early 1980's (https://www.unige.ch/sciences-societe/geo/files/3214/4464/7634/OtherOtherness.pdf). Otherness is defined as the ability to objectify a part of self, another person, and/or a group of people that results in an imbalance of power. The human ability to 'other' allows for detachment to happen in social and personal relationships (https://digitalcommons.cwu.edu/ijurca/vol7/iss2/19/#:~:text=The%20other%20or%20otherness%20is,the%20self%2Dperception%20and%20identity). The fear of otherness is closely linked to the fear of the unknown and to the degree of trust in people. It is based on the fact that someone by their existence endangers what we consider "our own" or "ours." It is often manifested in the form of fear that someone who has a different cultural characteristic to us – such as faith, language, customs and value system – endangers "our" culture and way of life (https://cegasebojis.wordpress.com/the-fear-of-otherness/#:~:text=The%20expressed%20fear%20of%20strangers,people%2C%20such%20as%20skin%20colour).

professionals such as teachers, nurses, police men and women, and other government employees. The families in Phase 2 are younger and have many children.

There is a large well-designed plaza in Phase 2. Originally intended to provide services to the community, the plaza is underutilised due to smoke and odours emissions from the dump site across the street. A primary school had to be closed due to emissions; a day care centre still seems to be operational - information as to number of children and attendants was unavailable. All other buildings were unused barring one, for a once-a-week church service.

Of the participants on the KIIs, two came from Phase 1 on the Bay side, while three were residents of Phase 2 on the mountain side. Together they comprise a good cross section of the Wheeland community.

The residents have real health concerns. The Phase 1 residents reported health problems and being diagnosed with chronic obstructive pulmonary disease (COPD) and other respiratory problems. Phase 2 residents were concerned about their children's health and their own diagnosed complaints.

The Consultant did not observe any householders outside in yards or on verandas and any doors or windows open when a drive-through was conducted for both Phases of the community. The drive-through took place after 4 pm in the afternoon on a workday, during which we should have observed children at home from school playing in their yards and homeowners going about their business. One yard had workmen. The drive-through confirmed what was shared by community members, i.e., that people don't leave doors and windows open to avoid odours and smoke filling their homes. And children are kept indoors to avoid contamination.

To address the community's concerns, the SWWG has agreed on the following:

- to undertake the immediate task of extinguishing the deep waste fires on the dump; and
- the installation of air quality monitoring systems in the Wheeland community (one in each Phase).

Detailed Report (the below reflects the statements of the interviewees and not FICHTNER's opinion on any person or any matter of discussion)

Private entrepreneur

He has been living in the community since 2008. There is some confusion as some persons think it is a Government Housing but in reality, it was just a Government Housing Project for which the developer received some support in the construction process.

He made the following statements:

- Everyone knew that there was a dump on that site, but it was ok. the manager was from Arkansas; he managed well and had grass growing on the site.
- Hurricane Irma changed everything tremendously. Things fell apart thereafter. There are now subterranean fires ongoing for ten years. From the hillside roads one can see the fires. It is challenging to remedy but not impossible.
- Smoke affects us when the wind is blowing in our direction. We are affected at least once a week.

- Then there are the coal kilns operating on the site. Not only are they (the waste pickers/ kiln operators) deforesting the bush, but they are also scavenging material just outside the fence. The stench is very bad.
- Respiratory problems. Air BnB[222] can't work - guests complain.
- Land values have become stagnant.
- The Government is looking for a lofty solution and things that are too advanced for a small country like TCI. Just get a dedicated manager who knows what should be done and do it and pay them what they want.
- We need an air monitoring system to understand what we are dealing with.
- People who are scavengers should not be there. The fire setting seems to be the responsibility of the scavengers. There are about 20-30 persons up there.
- People just stopped complaining; they have become complacent.
- But the smoke is affecting our health and then there is the volume of trucks. The smoke permeates everything. You cannot put on your central air-conditioning (AC). It affects my wife's back yard gardens, the chickens, the fruit. The smoke needs to be controlled.
- Rumour is that the fires are a light for sloops to land illegally.
- The elderly are being affected. My wife is a perfect example: she has just returned from 2 weeks in the Cayman – she cannot work, as after 10 minutes she must rest for 30 minutes.
- If TCI doesn't have the capacity to manage the dump, then get somebody/ some firm from abroad to get the job done.

Public servant

She was born in the Grand Turk and has been living in Wheeland since around 2010. She made the following statements:

- The situation where we live has gotten significantly worse. I realised this when I had children.
- Three main problems: Smoke, landfill, kiln.
- I cannot put on the AC; I have to keep windows closed; the smoke seeps in; children cannot go out to play; the smell is strong as soon as you hit the neighbourhood.
- People have asthma (2 or 3 times a week), children 7,5,3 years of age wake up with headaches and scratchy throat. Last night and the night before, which was terrible.
- We have been complaining since the previous governments. We cannot see the effects of what has been done, if anything.
- Will it move further away? It seems like it is getting closer; can't it be moved away from the residential area?
- What should be done?
  - Move it
  - Stop the kiln (burning of coal)
  - Stop the smoke in the bush
  - Stop the strong smells – chemical like plastic or tyres burning.
- You can find this community that produces the coal on the dirt road before Moonstone; you see the community walking through the bush they burn to keep away mosquitoes.

[222] A type of touristic lodge, where private persons temporarily rent available space in their homes to visitors.

- We are concerned that our children will get sick. We are considering rental of property and purchase elsewhere.
- We must use an air purifier, but it doesn't seem to work for me and my family. Some persons are affected more than others.
- We have to see where the smoke is coming from. It looks like fog, but you can smell it.
- My wish list:
  - Move the dump. There are persons that live on it and we should move them away – the persons who live there burn and cause these issues. I have seen men and women but no children.
  - Deal with the people living there and the kiln problem (there is a reported small coal making industry near the site).
  - Turn it into something else: a possible golf course?
- I hope this is not just another conversation and that nothing happens.

One retiree

She has been living in the community (Phase 1) since 2008, just a few years after the dump was moved there. She made the following statements:

- In 2008 the situation was fine. Later the landfill was operated without management, and everything was burned; it was always burning. Then in 2012/13 we started having bigger issues - never ceased, no management, things were just dumped, no specifically designated areas – there seemed to be no plans, no laws, no evaluations. Then there was a redevelopment plan but no implementation.
- I have just returned one year now. My dog is sick with a respiratory complaint, and I have recently been diagnosed with COPD. People are suffering with other complaints. There are no children playing in the streets.
- The last 4 nights have been terrible.
- I fear this slow burn, methane gas, possible explosion.
- The dump is just not run properly.
- We live in the most densely populated area. We are almost like a second city. There are elderly and children facing problems. People just don't know what to do.

One Member of Parliament

He has been living for 10 years now in the community. He made the following statements:

- The concerns are worrisome but manageable.
- One problem is the use of dump material to fire kiln mounds; people are selling the coals and making money.
- We must do something about smoke, take some mitigation actions.
- Maybe we can licence to collect and sell copper wire; the EHD can grant licences to monitor.
- We need to monitor air quality.
- I have two children: a two-month-old and a six-year-old. They cannot go outside.
- Air is bad in Blue Hills
- Water quality is not a major issue now, but could it get worse in the future?
- Fire emissions from the carbon and plastic smoke are not good.
- The wood is untreated and therefore may not be harmful.
- Who is being held accountable?

- We need to find a way to communicate with the population.
- Recommendations:
  - Test air quality
  - Extinguishing of the fires
  - EHD needs more help.

One Public Health Worker

She has lived in the Wheeland community for 13 years, in Phase 2. She made the following statements:

- There was no bad smell in the community in 2010, no odour, no foul smells. In 2014/2016 the dump started burning, mostly in the afternoon, and releasing foul smell of burning. Over the years it has gotten worse. Almost every week you can't open doors to let cool breeze in; sometimes smoke, sometimes foul smell of burning.
- I have childhood asthma and sleep apnoea, so I have respiratory issues. I am afraid to open the house and I have a 9-year-old daughter and a one-year-old son: I don't let them go outside.
- I am thinking of moving; I feel that the dump has displaced me and my family, I don't want to open windows and doors; I don't want to go out.
- What to do about it? There is no separation of waste so you have tyres, recyclables, baby diapers and other human waste all in the same place.
- We need control and management - control of the combustibles and less contamination.
- We have other discomforts such as rats and stray dogs from the dump who come into our yards, but these are minor issues in comparison to the chemical inhalants that are coming from the smoke in the dump.
- Children are really at risk.
- Between COVID-19 and the dump I had an attack of respiratory issues and was hospitalised for a month.
- There is a day care in the community, it is in the Plaza.
- Worrying matters are the smoke and the deep burning – you cannot leave clothes on the line to dry.
- The electricity bills are skyrocketing as AC alone can be about 500 USD a month when all your utility bills should not amount to more than 500 USD.
- Economically it can be a strain; sometimes you just have to go to a hotel for a week at a time so that the children can play outdoors and get some fresh air.
- What can be done?
  - Stop the burning; and
  - Communities need to invest in recycling.

15.3 Annex B: Additional information to complement the “Physical Environment” description (Chapter 5.1)

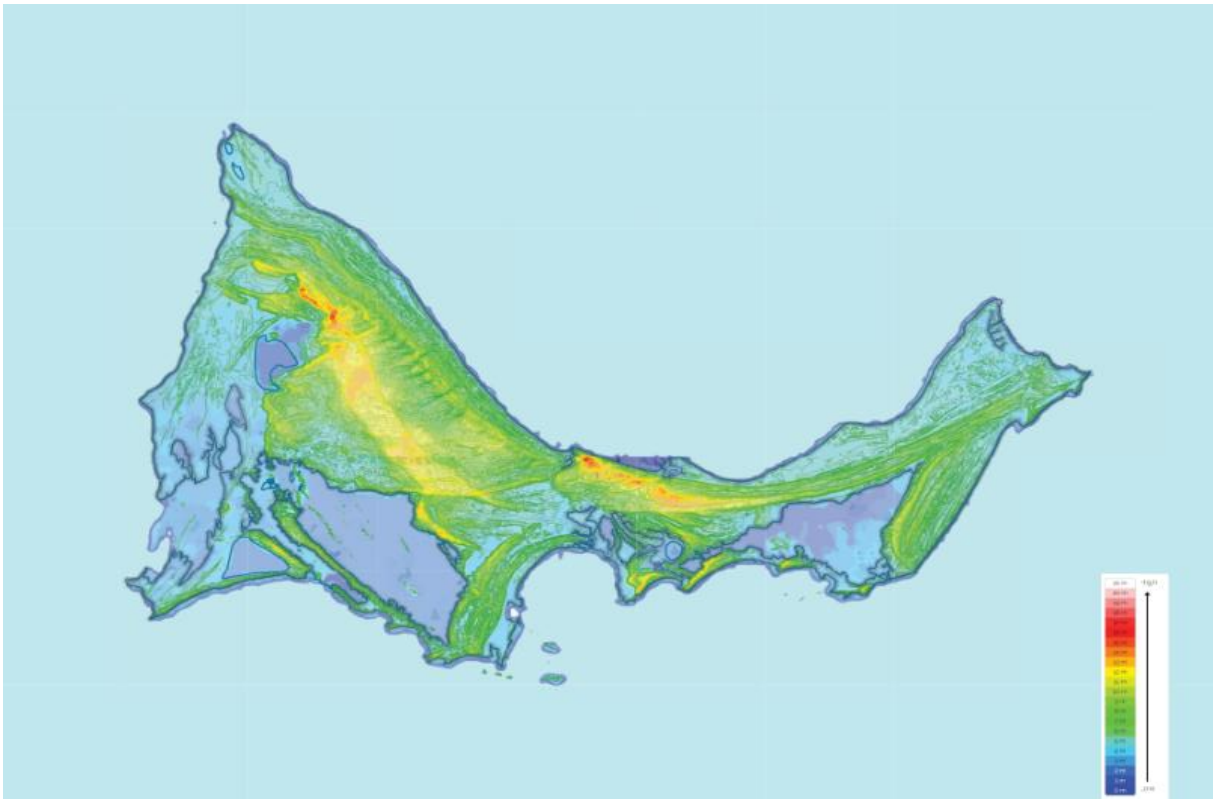


Figure 15-17: Providenciales Elevation - Hydrology (Source: NPDP, 2020, Appendix 3.1)

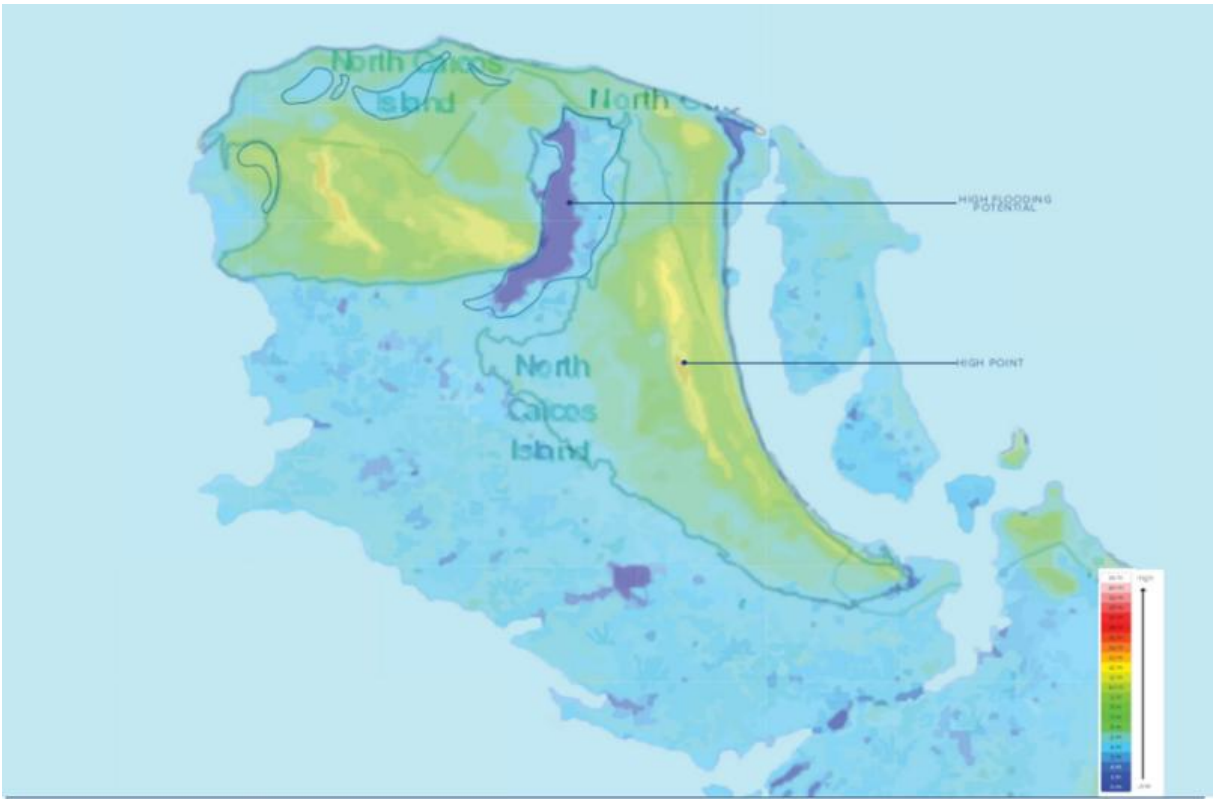


Figure 15-18: North Caicos Elevation - Hydrology (Source: TCI NPDP, 2020, Appendix 3.2)

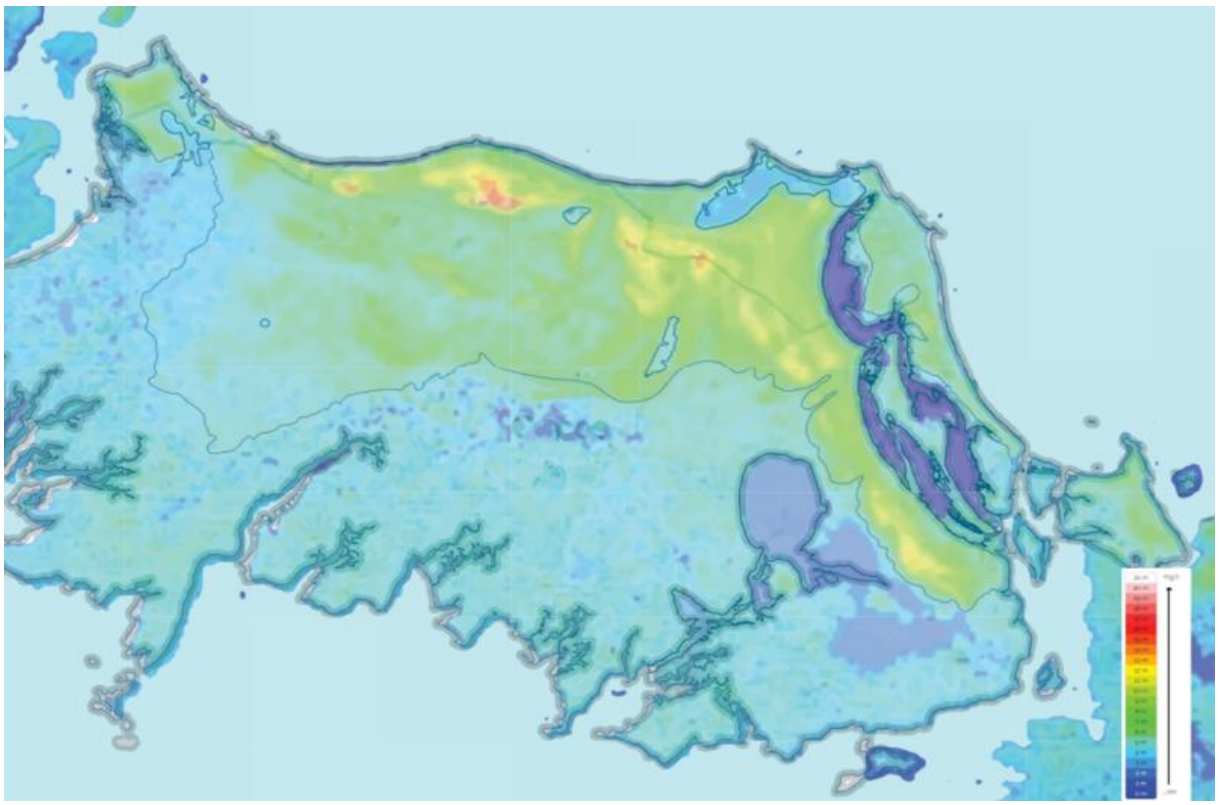


Figure 15-19: Middle Caicos Elevation - Hydrology (Source: TCI NPDP, 2020, Appendix 3.3)

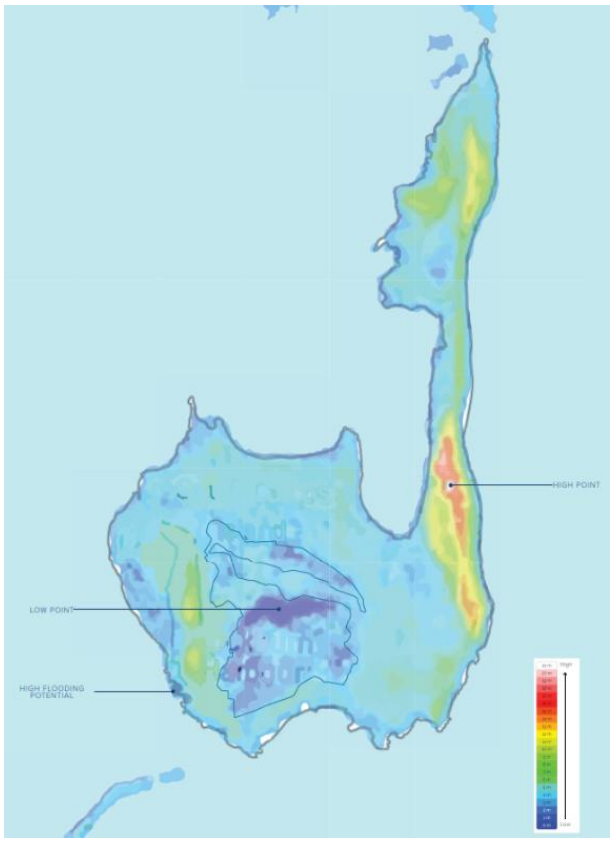


Figure 15-20: South Caicos Elevation - Hydrology (Source: TCI NPDP, 2020, Appendix 3.4)

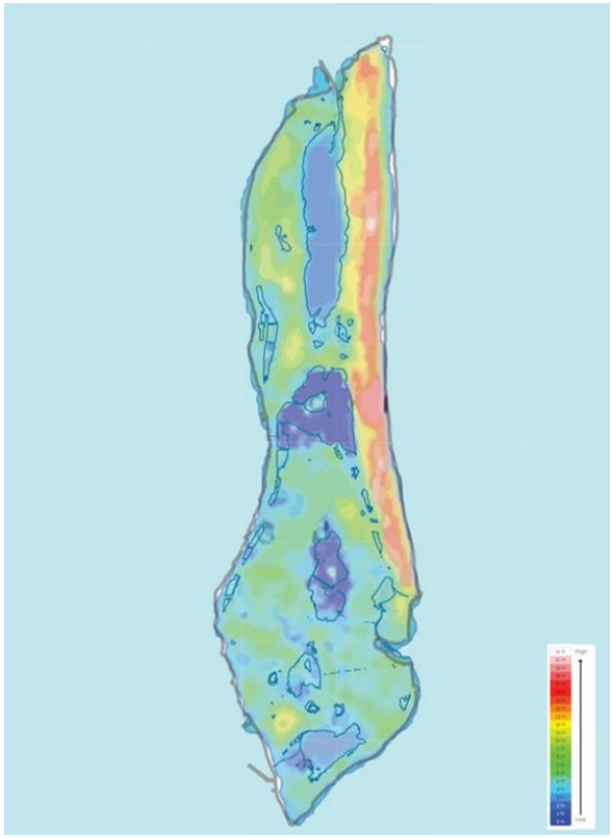


Figure 15-21: Grand Turk Elevation - Hydrology (Source: TCI NPDP, 2020, Appendix 3.5)

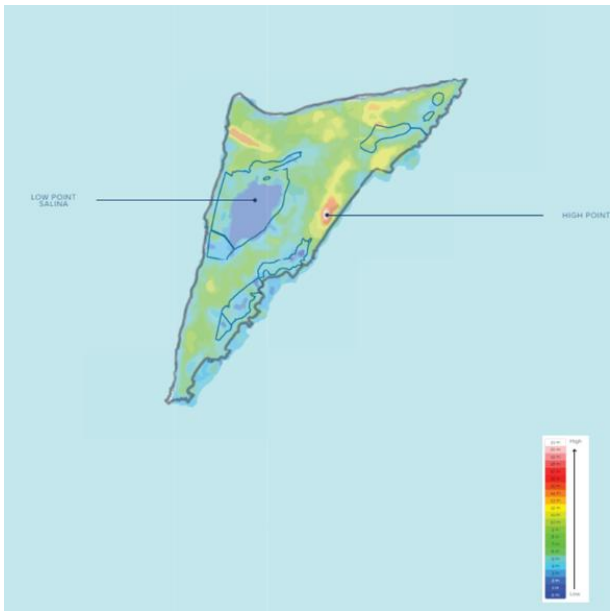


Figure 15-22: Salt Cay Elevation - Hydrology (Source: TCI NPDP, 2020, Appendix 3.6)

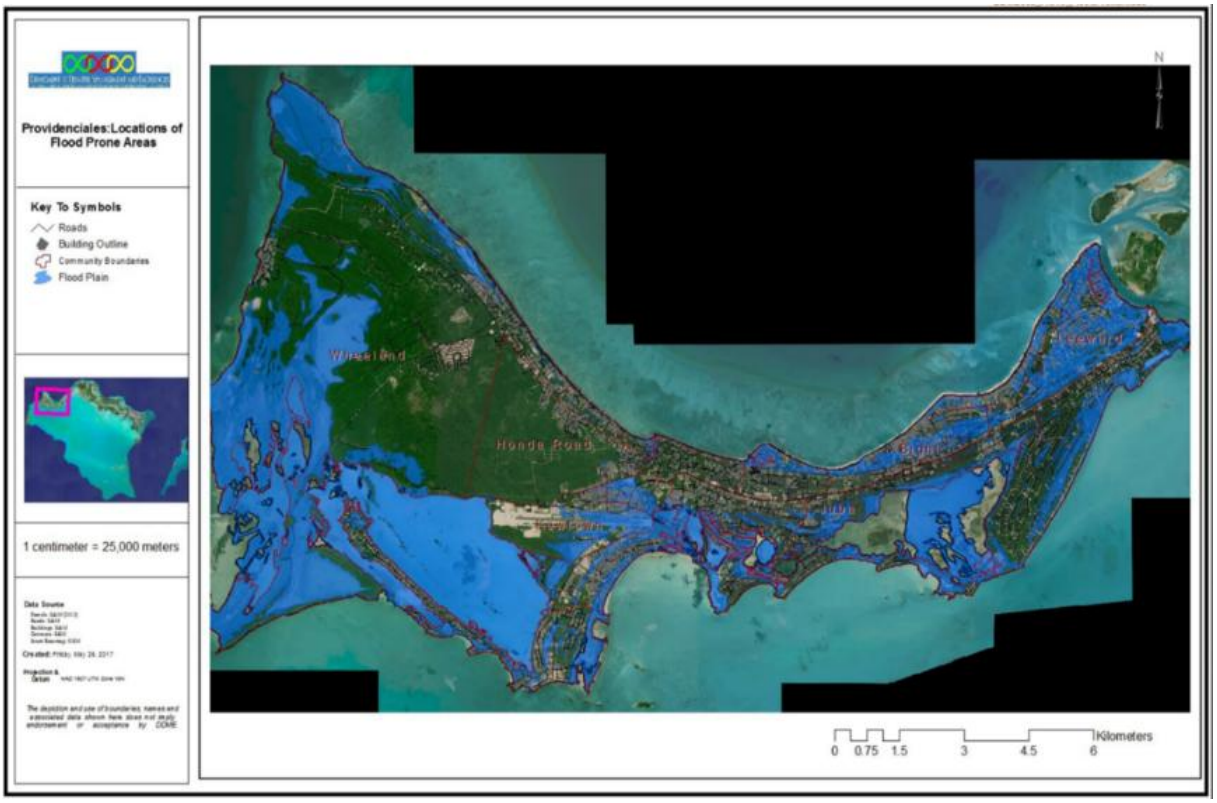


Figure 15-23: Providenciales flood prone areas (Source: TCI Department of Disaster Management and Emergencies [223])

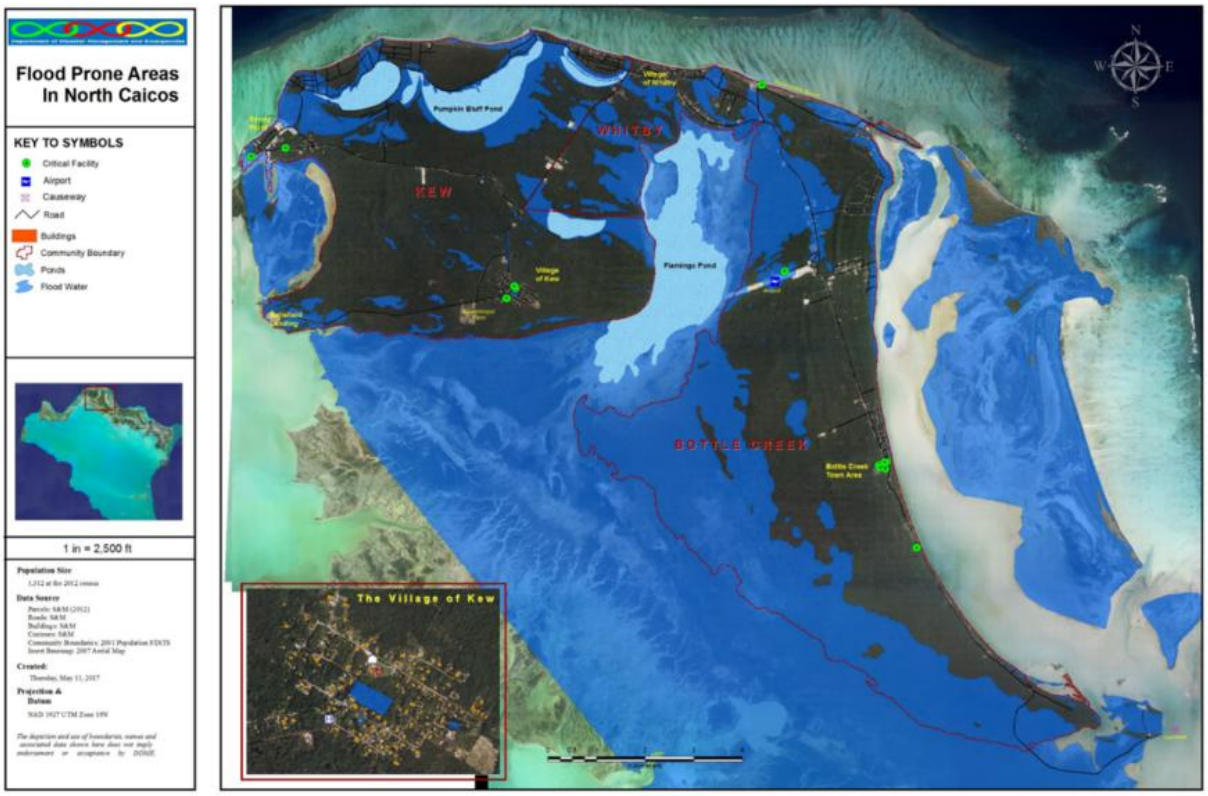


Figure 15-24: North Caicos flood prone areas (Source: TCI Department of Disaster management and Emergencies[223])

[223] https://www.gov.tc/ddme/resources/maps

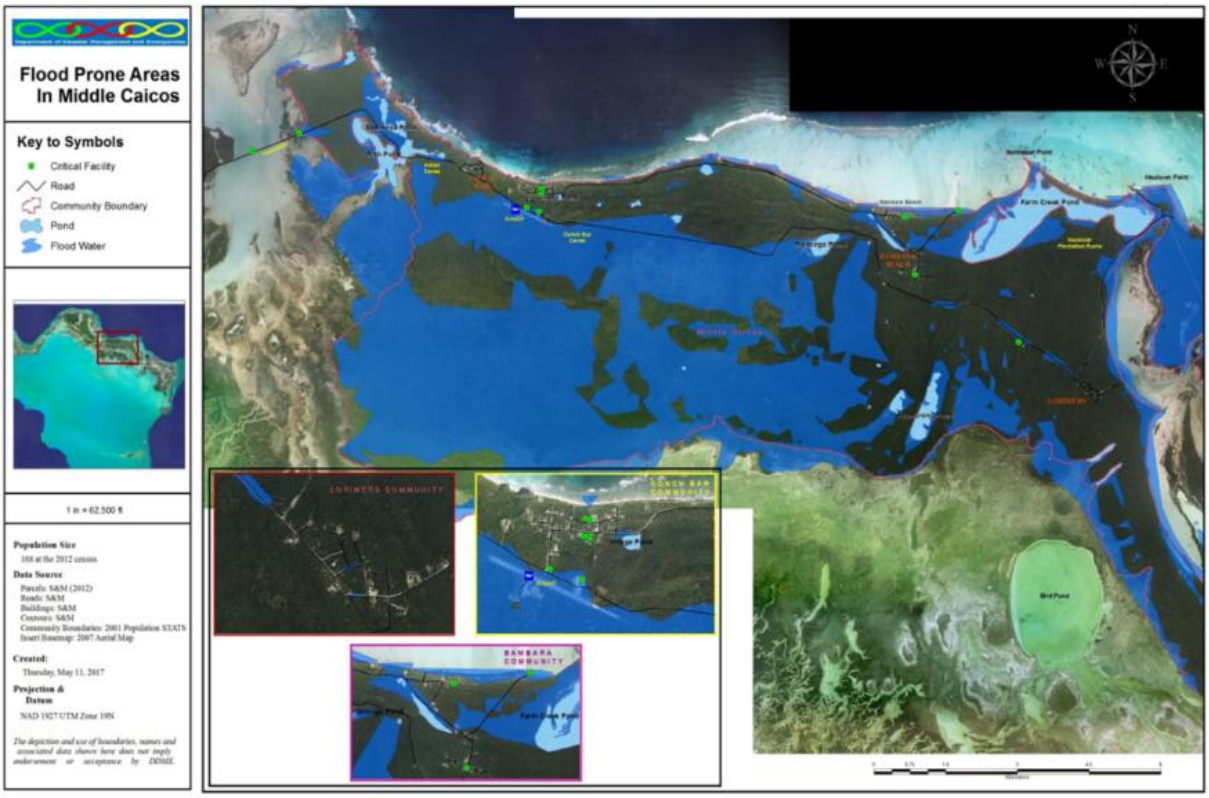


Figure 15-25: Middle Caicos flood prone areas (Source: TCI Department of Disaster management and Emergencies[223])



Figure 15-26: Grand Turk flood prone areas (Source: TCI Department of Disaster management and Emergencies[223])

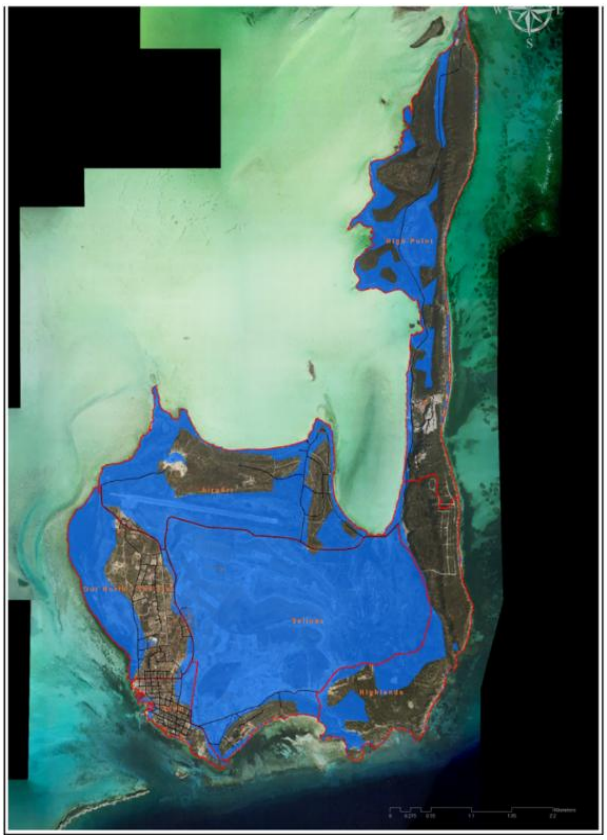


Figure 15-27: South Caicos flood prone areas (Source: TCI Department of Disaster management and Emergencies[223])

15.4 Annex C: Additional information to complement the “Biological Environment” description (Chapter 5.2)

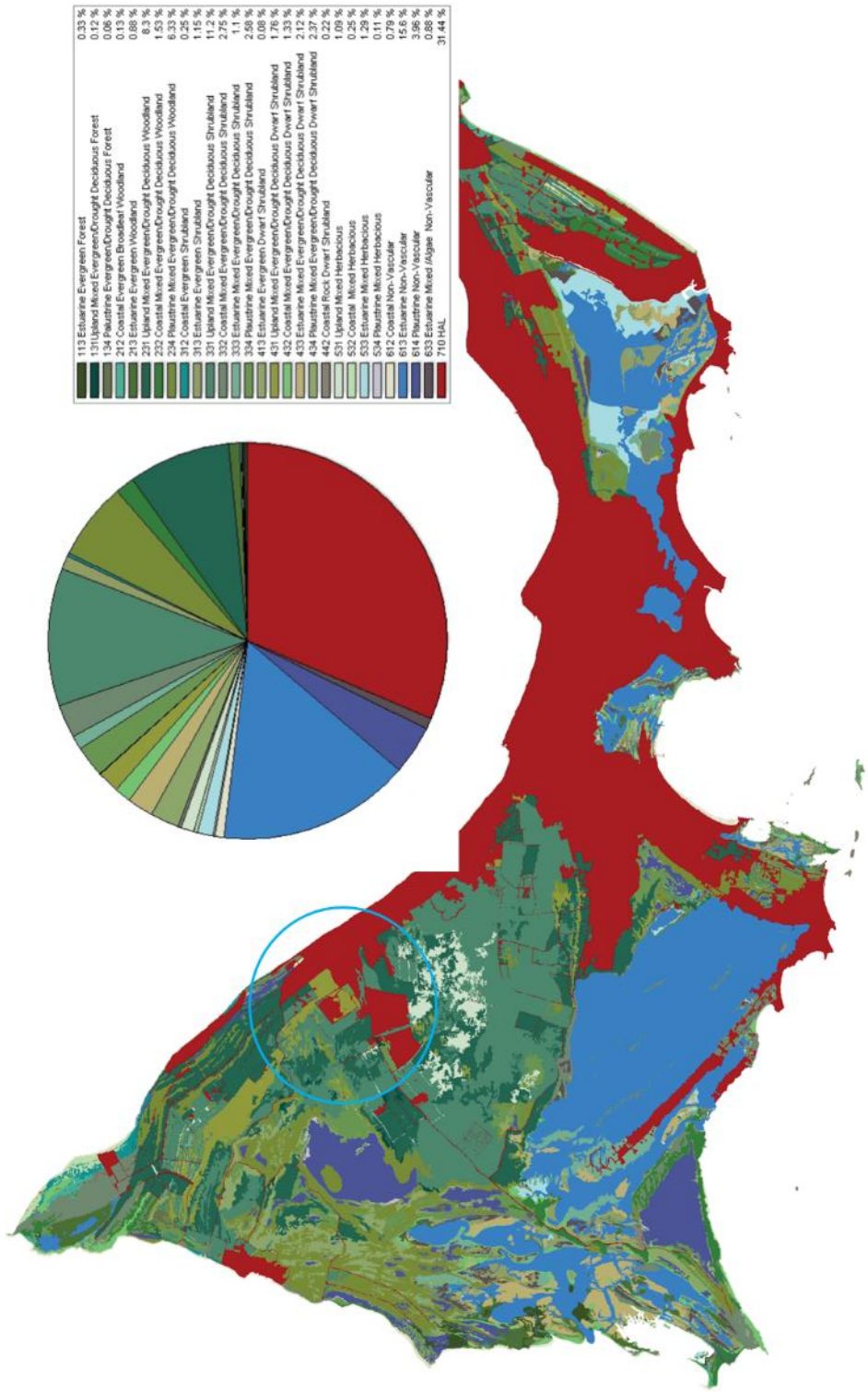


Figure 15-28: Providenciales habitats (adapted from NPDP, 2020)

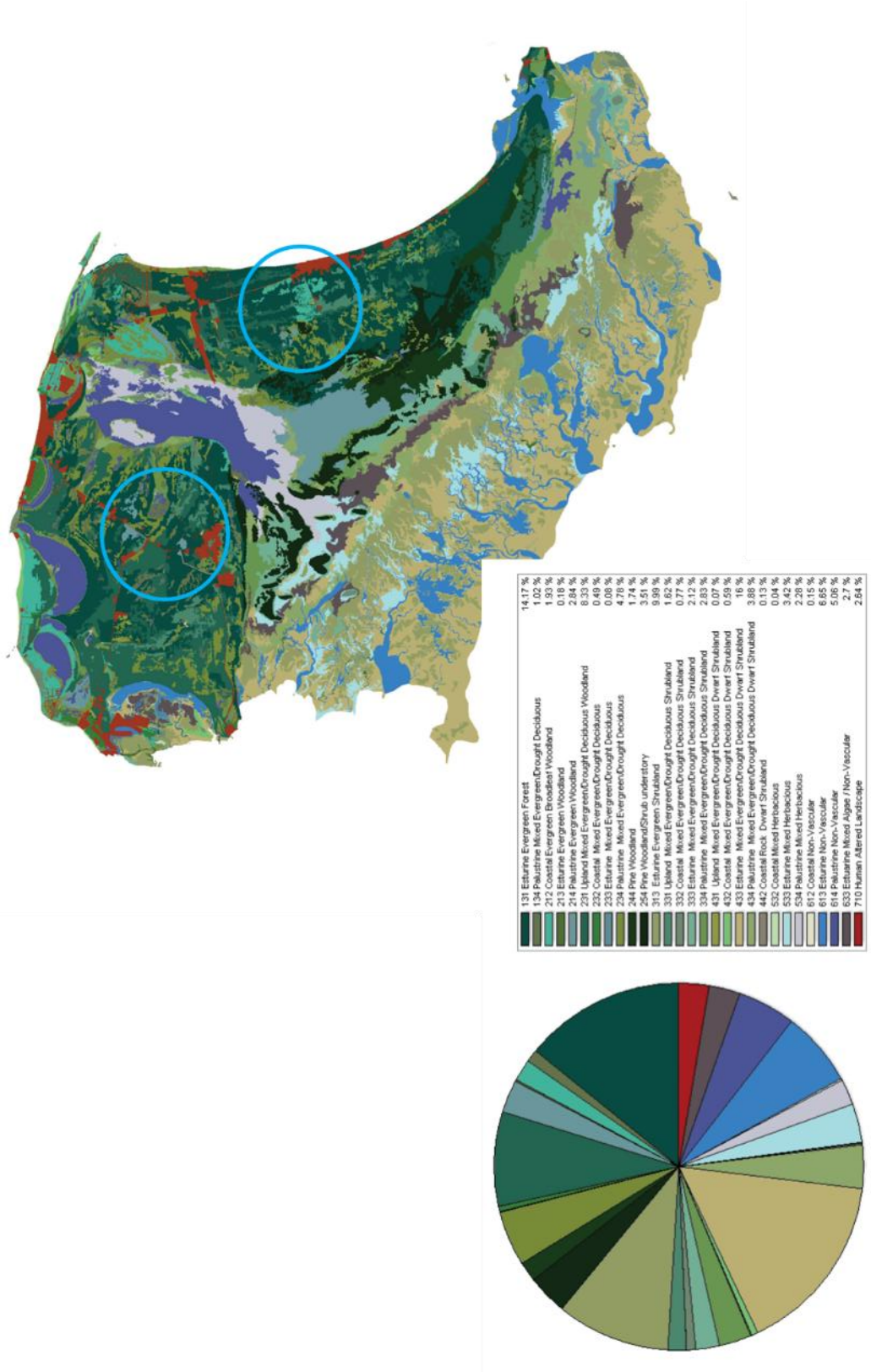


Figure 15-29: North Caicos habitats (adapted from NPDP, 2020)

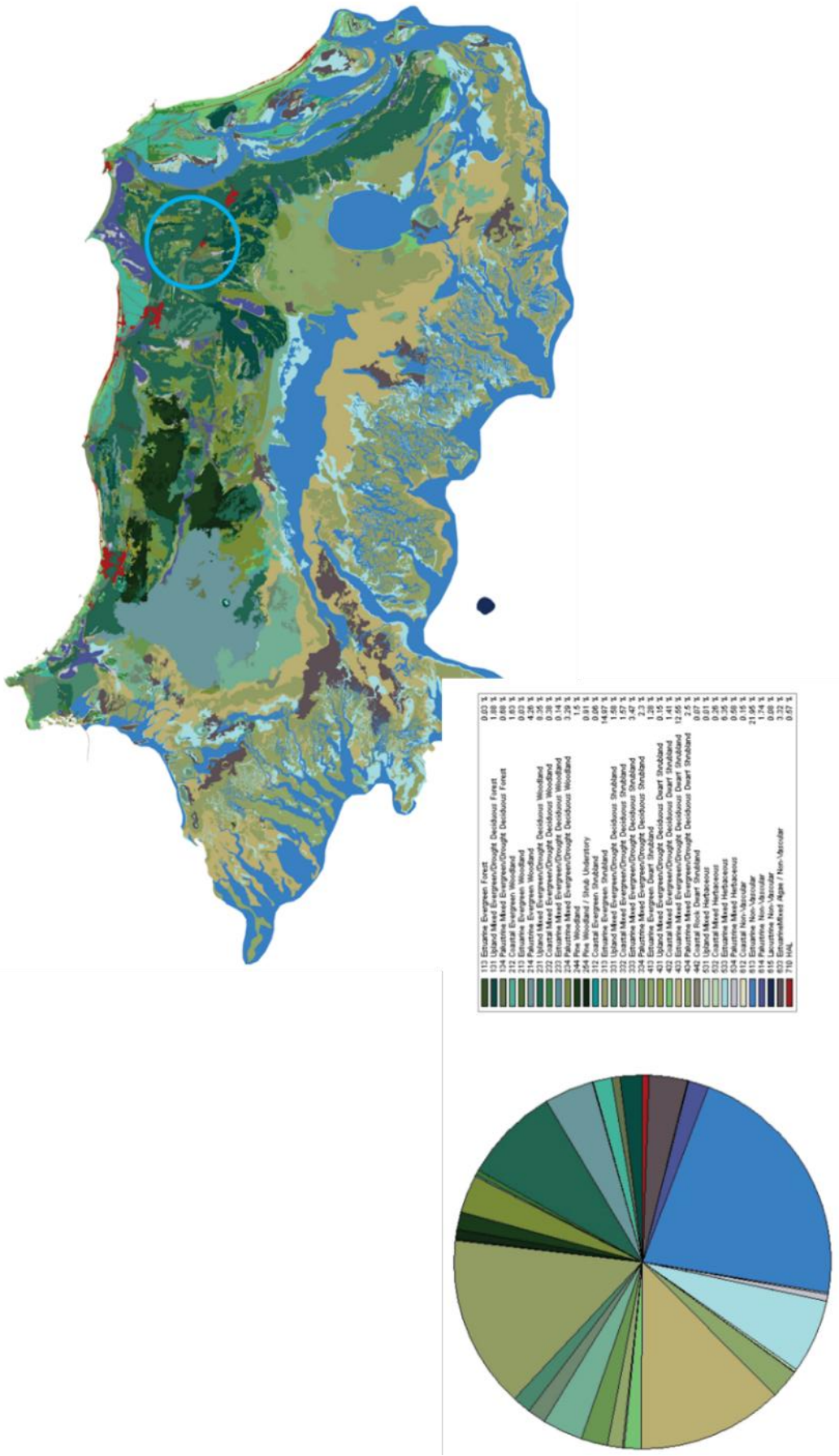


Figure 15-30: Middle Caicos habitats (adapted from NPDP, 2020)

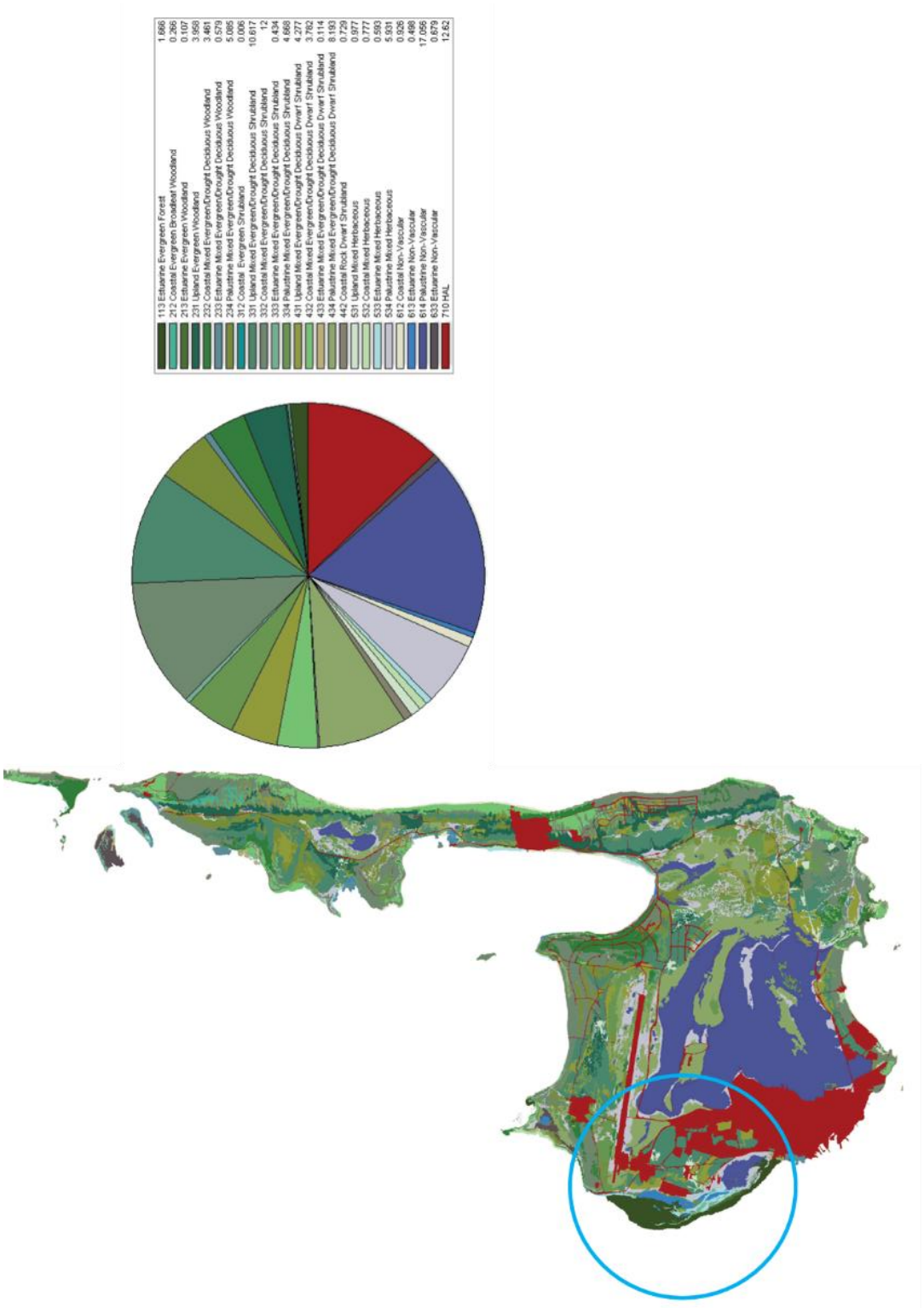


Figure 15-31: South Caicos habitats (adapted from NPDP, 2020)

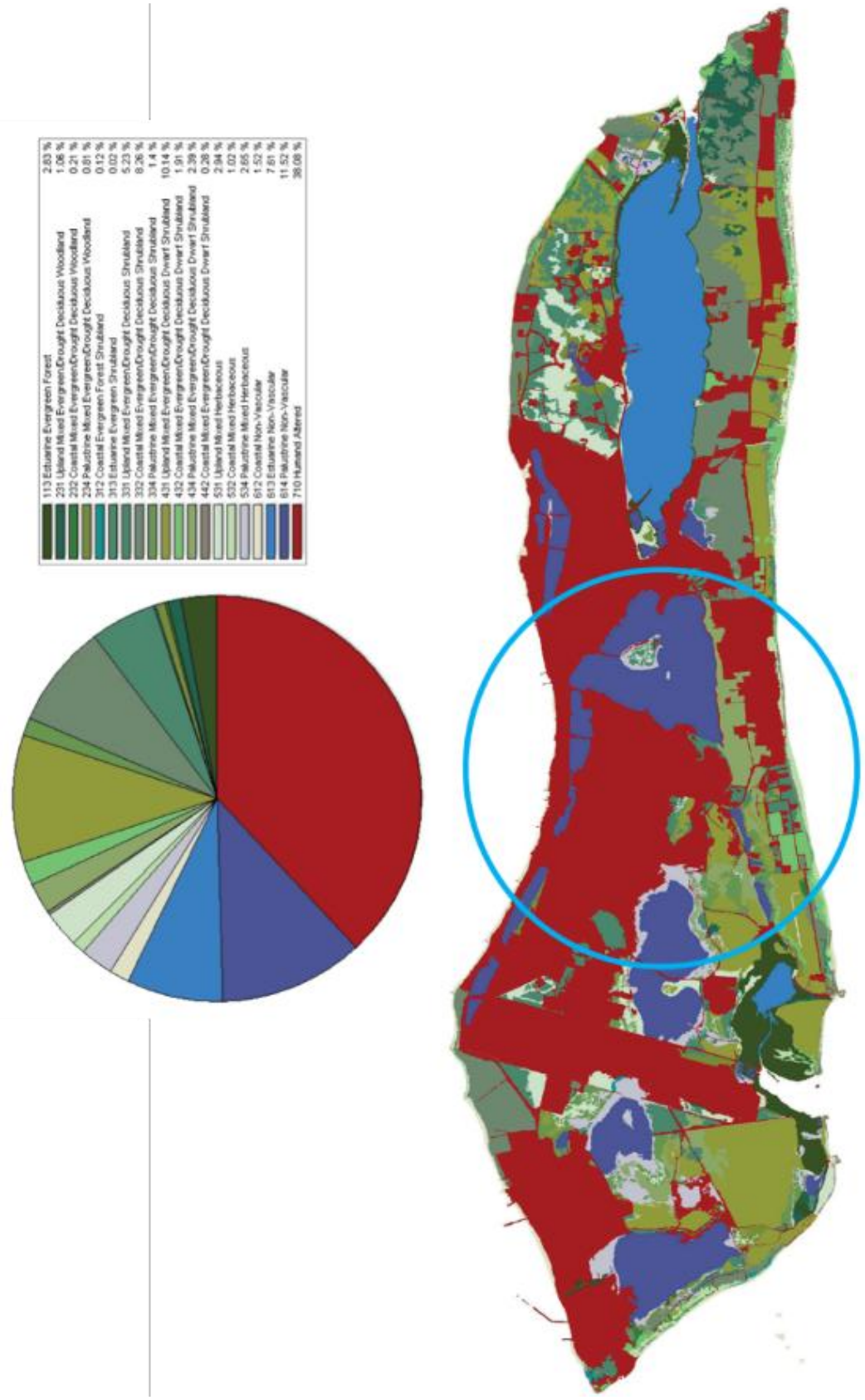


Figure 15-32: Grand Turk habitats (adapted from NPDP, 2020)

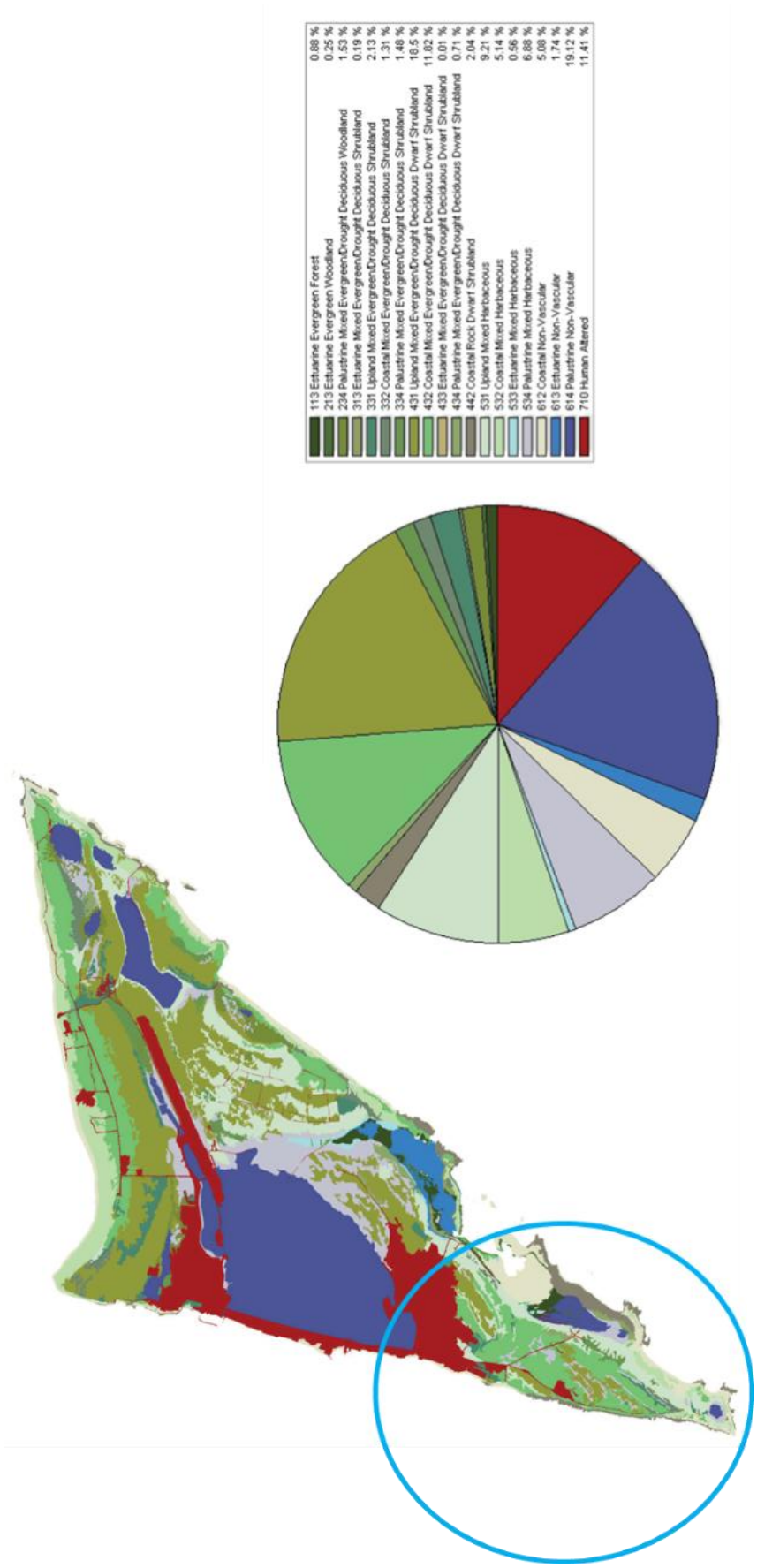


Figure 15-33: Salt Cay habitats (adapted from NPDP, 2020)

Bird species - Wheeland Pond (Providenciales AoI)

Bird species observed at Wheeland Pond, within the AoI in Providenciales, within a 12 month period, 2023-2024 (www.ebird.org).

Common Name	Scientific Name	Number	Date Observed
White-Cheeked Pintail	*Anas bahamensis*	4	September 2024
Eurasian Collared Dove	*Streptopelia decaocto*	2	September 2024
Common Ground Dove	*Columbina passerina*	7	September 2024
Osprey	*Pandion haliaetus*	2	September 2024
Smooth-billed Ani	*Crotophaga ani*	4	May 2024
Northern Mockingbird	*Mimus polyglottos*	1	May 2024
Zenaida Dove	*Zenaida aurita*	1	May 2024
Mourning Dove	*Zenaida macroura*	4	May 2024
Black-bellied Plover	*Pluvialis squatarola*	1	May 2024
Semi-palmated Plover	*Charadrius semipalmatus*	5	May 2024
Willet	*Tringa semipalmata*	1	May 2024
Greater Yellowlegs	*Tringa melanoleuca*	3	May 2024
Ruddy Turnstone	*Arenaria interpres*	7	May 2024
Gull-billed Tern	*Gelochelidon nilotica*	2	May 2024
Royal Tern	*Thalasseus maximus*	1	May 2024
Yellow-crowned Night Heron	*Nyctanassa violacea*	1	May 2024
Thick-billed Vireo	*Vireo crassirostris*	1	May 2024
Palm Warbler	*Setophaga palmarum*	1	February 2024
Yellow-rumped Warbler	*Setophaga coronata*	1	February 2024
Short-billed Dowitcher	*Limnodromus griseus*	10	February 2024
Blue-winged Teal	*Spatula discors*	2	February 2024
Wilson's Phalarope	*Phalaropus tricolor*	1	February 2024
Spotted Sandpiper	*Actitis macularius*	2	February 2024
American Redstart	*Setophaga ruticilla*	1	February 2024
Cape May Warbler	*Setophaga tigrina*	1	February 2024
Bahama Woodstar	*Nesophlox evelynae*	1	February 2024
Northern Parula	*Setophaga americana*	2	February 2024
Green Heron	*Butorides virescens*	1	February 2024
Bahama Mockingbird	*Mimus gundlachii*	1	February 2024

Bird species - Town and Red Salinas (Grand Turk AoI)

Bird species observed at Town Salina and Red Salina, within the AoI in Grand Turk within a 12 month period 2023-2024. (www.ebird.org).

Common Name	Scientific Name	Number	Date Observed
Eurasian Collared-Dove	*Streptopelia decaocto*	1	March 2024
Greater Yellowlegs	*Tringa melanoleuca*	6	February 2024
Ruddy Turnstone	*Arenaria interpres*	4	February 2024
Semipalmated Sandpiper	*Calidris pusilla*	1	February 2024
White-cheeked Pintail	*Anas bahamensis*	10	January 2024
American Flamingo	*Phoenicopterus ruber*	55	January 2024
Lesser Yellowlegs	*Tringa flavipes*	1	January 2024
Sanderling	*Calidris alba*	4	January 2024
Least Sandpiper	*Calidris minutilla*	2	January 2024
Lesser Black-backed Gull	*Larus fuscus*	1	January 2024
Tricolored Heron	*Egretta tricolor*	1	January 2024
Peregrine Falcon	*Falco peregrinus*	1	January 2024
Black-necked Stilt	*Himantopus mexicanus*	1	December 2023
Brown Pelican	*Pelecanus occidentalis*	1	December 2023
Osprey	*Pandion haliaetus*	1	December 2023
Laughing Gull	*Leucophaeus atricilla*	1	July 2024
Least Tern	*Sternula antillarum*	12	July 2024
Magnificent Frigatebird	*Fregata magnificens*	1	May 2024
Snowy Egret	*Egretta thula*	6	May 2024
Royal Tern	*Thalasseus maximus*	6	March 2024
Little Blue Heron	*Egretta caerulea*	1	March 2024
Great Egret	*Ardea alba*	1	March 2024
Great Blue Heron	*Ardea herodias*	1	March 2024
Killdeer	*Charadrius vociferus*	1	March 2024
Semipalmated Plover	*Charadrius semipalmatus*	XX	March 2024

15.5 Annex D: Additional information to complement the "Human Environment" description (Chapter 5.3)

Table 15-1: Turks and Caicos Multiple Cluster Indicators Survey (MICS) - Selected Social Indicators

TCI Selected Social Indicators	
Description	**Value**
Percentage of household members with primary reliance on clean fuels and technologies for cooking and lighting	99.6
Percentage of household members with access to electricity	94.4
Percentage of women and men age 15-24 years who are able to read a short simple statement about everyday life or who attended secondary or higher education	
Women	99.9
Men	100
Percentage of households that have a radio	58.7
Percentage of households that have a television	92.4
Percentage of households that have a telephone (fixed line or mobile phone)	99.5
Percentage of households that have a computer	70
Percentage of households that have access to the internet by any device from home	82.9
Percentage of children attending the first grade of primary school who attended early childhood education programme during the previous school year	89.3
Percentage of children of	
(a) primary school age who are not attending any level of education	2.1
(b) lower secondary school age who are not attending any level of education	0.1
(c) upper secondary school age who are not attending any level of education	10.6
Percentage of children age 7-14 years attending school who at home speak the language that teachers use at school	79.7
Percentage of children age 5-17 years who are involved in child labour	6.1
Percentage of women and men age 15-49 years who experienced physical violence of robbery or assault within the last 12 months	
Women	3.2
Men	2.4
Percentage of women and men age 15-49 years feeling safe walking alone in their neighbourhood after dark	
Women	45.4
Men	46.5
Percentage of women and men age 15-49 years having personally felt discriminated against or harassed within the previous 12 months on the basis of a ground of discrimination prohibited under international human rights law	
Women	20.8
Men	6.5

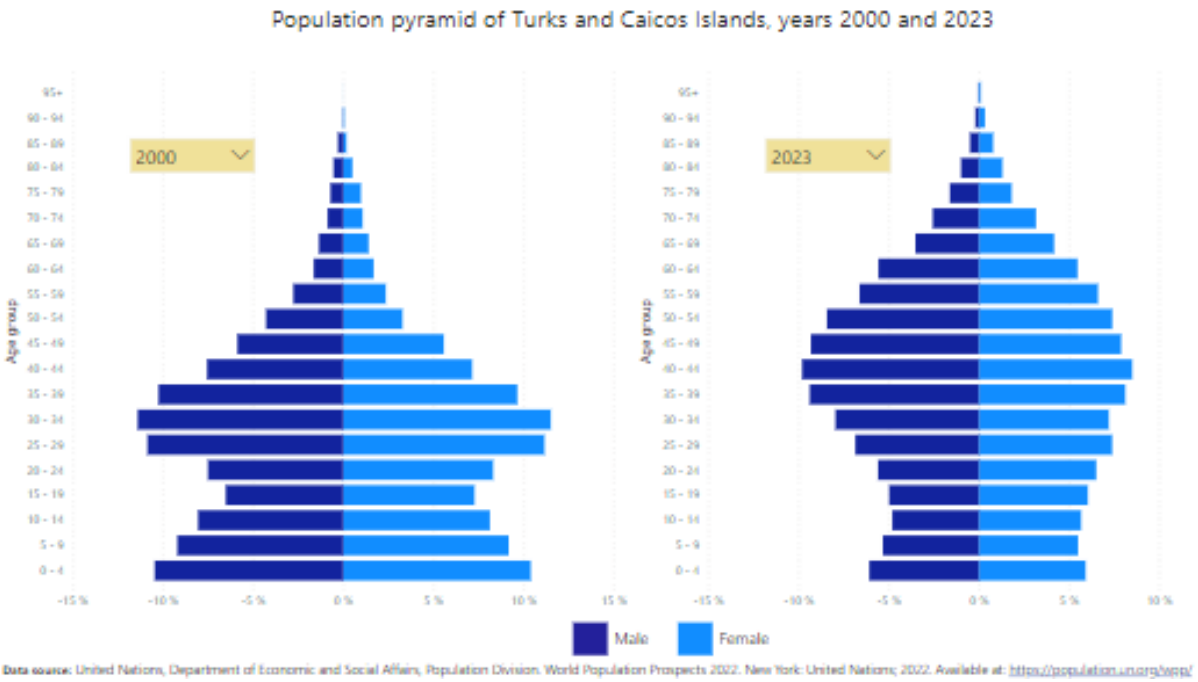


Figure 15-34: Population pyramids of Turks and Caicos, years 2000 and 2023 (Source: PAHO/WHO [170])

15.6 Annex E: Draft flyer template for the Public Hearings

Page 1 (cover):	Page 2: *Project info, location, facilities, dates*

Page 3:	Page 4 (back):
Impacts and mitigation *Public consultation* *Grievance redress* *How to comment on the scoping*	*Contact of the GOTCI, useful links*

15.7 Annex F: Stakeholder Engagement Plan for the E&S Scoping Stage

Table 15-2: SEP for the E&S Scoping Stage

Type of activity planned									Role of Responsible Parties		Implementation status / notes
Engagement activity/media		Target groups	Written communication channel	Time Period	Verbal communi-cation channel	Time Period	Visual communi-cation channel	Time period	Consultants	National agencies with a mandate on the Project	
CONSULTATION	**Public hearings**	IPs/OIPs[224] in Wheeland and Cockburn	WhatsApp messages regarding time/ date and information to be shared; Sent to Wheeland and Cockburn Community members - if contacts available, send throughout the islands	Two sets of messages should be sent: 1st - one week before (**21.05 & 21.05**); 2nd reminder one day before (**27.05 & 28.05**)	Town Hall style meetings for Provo and Cockburn	**Tuesday 28.05** (Provo); **Wednesday 29.05** Cockburn	None	Not applicable	Hydea- Present info on the Project FICHTNER - presents E&S impacts and leads discussion on E&S matters to illicit participants understanding and views; provides an initial list of stakeholders to invite; prepares simple leaflet with project summary	Prepare content for WhatsApp Message; approve the final list of invitees; identify a location suitable for a public hearing; organize renting the location and eventual catering with drinks (water); assure the room has the necessary technical equipment to allow a presentation, as well as microphones; introduce Consultants; ensure printing of supporting materials, namely: copies of the leaflet and of the comments form.	Town Hall style meetings were undertaken in Provo (29.05) and Grand Turk (28.05). The sessions were utilised as an opportunity for full disclosure and clarification about the Project.

[224] IPs: interested parties IPs are directly affected persons such as homeowners in the Wheeland community Phase 1 and 2 and the waste pickers; OIPs: other interested parties; OPIs are those possibly indirectly affected or those not affected but interested: environmentalists, advocates for the Haitian Community, documented members of the Haitian Community, institutions of the GOTCI, etc. IPs + OIPs = IAPs (Interested and Affected Persons)

Type of activity planned								Role of Responsible Parties		Implementation status / notes
Engagement activity/media	Target groups	Written communication channel	Time Period	Verbal communi-cation channel	Time Period	Visual communi-cation channel	Time period	Consultants	National agencies with a mandate on the Project	
Focus Groups Discussions (FGD)	IPs/OIPs such as community representatives, collectives or lead organizations in North, Middle and/or South Caicos (tentatively)	WhatsApp messages regarding time/ date and information to be shared; Sent to NC, SC and MC community members	Two sets of messages should be sent: 1st - one week before (**23.05**); 2nd reminder one day before (**29.05**)	Focus Groups Discussions for North, Middle, and South Caicos (tentatively)	**Thursday 30.05** FGD in North and Middle Caicos (one in the morning and one in the afternoon); TENTATIVELY **Friday 31.05** in South Caicos	None	Not applicable	FICHTNER leads FGD; provides an initial list of stakeholders to invite Hydea joins to clarify technical questions	Client sends a representative also for clarifying questions; contacts DC for list of invitees; identifies a location suitable for the meeting , church or community space; organizes renting the location and eventual catering with drinks (water).	FGD's were undertaken in 30.05 in North Caicos and in Middle Caicos.
Focus Groups Discussions (FGD)	Haitian waste pickers (IPs) and interested members of their community (OIPs)	None	Not applicable	Focus Groups Discussions in Provo	**Tentatively Monday 27.05** Cottage meeting in Provo	Suggestion : Billboard in Kweyol and English announcing a cottage meeting with pickers and other interested parties	Billboard should be up the week before the cottage meeting (**20.05**)	FICHTNER leads FGD; provides an initial list of stakeholders to invite Hydea joins to clarify technical questions	Client sends a representative also for clarifying questions; approves the final list of invitees; identifies a location suitable for a cottage meeting, church or community space; organizes renting the location and eventual catering with drinks (water); identifies Kweyol speaker from the community to lead /translate meeting; introduces Consultants.	FGD was undertaken on 27.05 with 3 male members of the Haitian Community (2 seniors and one young).

	Type of activity planned								Role of Responsible Parties		Implementation status / notes
	Engagement activity/media	Target groups	Written communication channel	Time Period	Verbal communi-cation channel	Time Period	Visual communi-cation channel	Time period	Consultants	National agencies with a mandate on the Project	
INFORMATION DISCLOSURE	**Media releases**	IPs/OIPs	Media releases - radio, newspapers, television (leaflets)	To appear in the Sunday media of the week of meetings and also on the previous sunday, i.e., **19.05** and **26.05**	None	Not applicable	None	Not applicable	FICHTNER to prepare simple leaflet with project summary	Prepare media releases and disseminate; choose the most adequate media to release the info	-
	GOTCI Websites	IPs/OIPs	Publication of project summaries and updates on consultation events on Government websites and social media	From Mid-May and continuing through the life of the project	None	Not applicable	None	Not applicable	FICHTNER to prepare simple leaflet with project summary	Prepare content for Social Networks; upload on government Websites	-
	Leaflets	IPs/OIPs	Leaflets available in Community information centres	From Mid-May and continuing through the life of the project	None	Not applicable	None	Not applicable	FICHTNER to prepare simple leaflet with project summary	Print and distribute leaflets	-

15.8 Annex G: Scoping Public Consultation Report

(separate PDF file)

15.9 Annex H: CRVA Report

(separate PDF file)