2024

ANI T&C Boutique Hotel Development North Caicos

NC1246 – ENVIRONMENTAL IMPACT ASSESSMENT

KATHLEEN MCNARY WOOD

MARSHA PARDEE

OSHIN WHYTE

KATHLEEN FITZPATRICK

7th October 2024

Contents

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

List of Figures

List of Tables

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

1.0 Introduction

1.1 Project References

The following document addresses the environmental, socioeconomic, and cultural impacts associated with preliminary activities, construction, and operations for the ANI T&C Boutique Hotel, located at block/parcel #s 50102/103 (9.88 acres in total) at Sandy Point, North Caicos, Turks and Caicos Islands. The environmental impact assessment (EIA) Team is comprised of four members (see Appendix A for team short CVs), including:

Kathleen McNary Wood
Principal at SWA Environmental
301 Neptune Court
Providenciales, Turks and Caicos Islands
kw@swa.tc
+1 (649) 431-6133

Marsha Pardee
Marine Ecologist at SWA Environmental
marsha@merangel.net
+1 (649) 431-7031

Oshin Whyte
Independent environmental and socioeconomic and cultural consultant
oshinwhyte@yahoo.com
+1 (649) 232-3884

Kathleen Fitzpatrick
Coastal Engineer
kathyfitz000@gmail.com

The Project proponent is ANI T&C Ltd.
c/o Richard Hesford
richard@domusidl.co.uk

+1 (649) 232-8383

Respectfully revised and submitted this seventh day of October 2024.

1.2 Non-technical Summary

The proposed project comprises a 15-bedroom fully serviced and staffed rental residence, which includes luxury accommodation, support infrastructures, and recreational facilities, such as an in-house theatre, gym, lounge, bird-watching area, mini golf, tennis, basketball, pickleball, games area, pools, etc. The development will take place in a single phase with a construction period of approximately two years to complete the full build. The concept of the ÀNI Private Resort Collection is a highly bespoke luxury experience, offering a villa-style rental for a single group in residence but also with a resort-like atmosphere, which includes dedicated staff, enhanced services, and resort-like amenities and facilities.

The area slated for development borders sensitive marine habitats, including seagrass meadows and the Three Mary Cays Sanctuary protected area; therefore, consideration regarding best practices to minimize land and tourism-based impacts on these critical habitats has been incorporated throughout this EIA.

As a low-density, high-end, luxury facility, this development will also set a precedent for North Caicos as part of that island's fledgeling but growing tourism market, also offering an alternative to the dominant Providenciales tourism market. Unlike most tourism developments in TCI, the ANI T & C Private Resort will be owned and operated exclusively as a rental residence, rather than being sold initially as condominium units. As the leading industry in the Turks and Caicos Islands (TCI), tourism has been associated with myriad terrestrial, marine, socioeconomic, and cultural impacts, the severity and benefits of which depend on the density and appropriateness of the development (Albuquerque & McElroy, 1992; Beekhuis, 1981; Douglas, 2006; Lee & Jamal, 2008). This Environmental Impact Assessment (EIA) will assess these potential threats and benefits and provide decision-makers with the information needed to make informed choices regarding development permissions.

The vast majority of the project site and surrounding areas are in a natural state and are free from large-scale development with the exception of some poorly maintained roadways and a few scattered single-family residences. Nevertheless, some of the site and surrounding areas, particularly along the shoreline, have already been impacted by human activities, particularly alien invasive species (AIS). The baseline environment of the site, predicted impacts, and recommended monitoring and mitigation measures to reduce impacts to a no net loss level are summarized in the sections that follow.

1.2.1 Summary of the baseline environment

1.2.1.1 Summary of the baseline terrestrial environment

- Intact terrestrial habitats likely to be affected by the project are largely comprised of mosaic coastal formation vegetative communities, including mixed herbaceous, mixed shrubland, mixed woodland, and mixed forest habitats. These habitats have high ecological values as compared with other sites across the Turks and Caicos Islands but are typical of those found in undisturbed areas across the northern coast of North Caicos.
- Human altered landscapes include areas compromised by the naturalization of AIS, particularly *Casuarina equisetifolia* and *Scaevola taccada* along the shoreline.
- Intact terrestrial habitats contain a wide variety of species and populations of interest, including rare, threatened, endangered (RTE), and endemic flora and fauna (see Section 2.2.1.2 and Table 9 - Species of conservation interest). Such circumstances are typical of undeveloped and intact lands in TCI. However, the site does possess some unique attributes of interest, which are discussed in further detail in Section 2.2.1 – Baseline terrestrial environment.

1.2.1.2 Summary of the baseline marine environment

- The Ani T&C Boutique Hotel in North Caicos is located approximately 250m west of Three Mary Cays Sanctuary. The proposed development's property also borders a 109m stretch of beach.
- The nearshore marine environment (within 100m of shore) is composed of patch to dense seagrass meadows and sand. Average benthic cover is 30% seagrasses, 5% algae, 2.5% sponge/tunicates, and 0.1% coral cover. The substrate cover is 62% sand with 0.5% rubble.
- Historical imagery indicates that an area of seagrass to the east of the Ani property boundary was removed between 2012 and 2013. The excavated area has increased in size over time with little to no seagrass cover.

1.2.1.3 Summary of the baseline physical environment

- The physical environment of the site is typical of coastal communities across the Caicos Islands, with various limestone derivatives forming the bedrock and substrates.
- Substrates underlying coastal formations are largely comprised of cemented sand and oolite sands with limited organic materials.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

- In Woodland and Forest habitats, which increase in occurrence with distance from the shoreline, underlying substrates are comprised of sand, fragmented limestone rock, and some organic soils comprised largely of decomposing leaf litter.
- Longshore currents in the vicinity of the project site move from east to west, as is typical of the north shore of the Caicos Banks.
- Coastal areas and beaches adjacent to the project site appear to be stable and accreting despite the presence of the AIS *Casuarina equisetifolia* and *Scaevola taccada,* which have naturalized along the shoreline.
- Land with similar geological features in TCI – e.g. comprised by large expanses of sandy substrates, typically have some fresh groundwater resources in the form of subterranean fresh or brackish water pockets within the water table. Other indications are that this is the case at the project site. For further information see Section 2.3.4 - Hydrology.

1.2.2 Summary of predicted impacts

- Sources of pollution into the marine environment potentially include runoff from landscaping maintenance chemicals and petroleum derivatives from vehicular traffic, solid wastes, and poorly maintained sewage treatment facilities.
- Direct environmental impacts associated with the proposed development will be localized and cumulative; and impacts, both positive and negative, will take place during pre-construction, construction, and operational phases. These impacts will be reversible, permanent, direct, and indirect.
- Results of EIA analyses determined that during the pre-construction phase, defined as non-construction-related, preliminary work, impacts will include positive socio-economic effects. Socio-economic impacts include direct economic benefits associated with the employment of locally based persons and companies to carry out project management and EIA services, enrichment of small local businesses through travel expenses for scoping and research, and payment of fees to Planning and other government agencies, required for permissions and approvals. The payment of stamp duties on the purchase of the Project land also constitutes a direct, one-time economic benefit. Indirect economic benefits are associated with increased spending in the local economy because of expenditures made within the local economy by tourists, investors, consultants, and employees for subsistence.

- Positive environmental impacts will also result from pre-construction clean-up of the site. The clean-up and removal of AIS, and solid wastes and hoarding of the site will prevent environmental impacts, which may currently be occurring due to distribution into the marine environment of solid and hazardous wastes by wind and the disbursal of AIS from the site. Pre-construction impacts will be one-time effects.
- Impacts during the construction phase include potential impacts to the terrestrial and marine environments and socio-economic and cultural impacts. Localized and cumulative terrestrial environmental impacts will take place during the construction phase of the development and include the following:
    - Because of the developer's stated preference for preserving as much terrestrial vegetation as possible during construction, impacts to terrestrial biodiversity and ecosystem services during the construction phase due to land clearance, earthworks, noise, and nuisance are expected to be largely low. Furthermore, because of the project's green philosophical underpinnings, many impacts may result in net positive effects. Predicted impacts may include the following:
        - Nutrition ecosystem services: low potential indirect, avoidable, reducible, repairable, and offsetable impacts to fisheries productivity from pollution and habitat degradation and loss in nearshore areas.
        - No impacts to hydrological features are expected if clearance of vegetation is undertaken by hand.
        - Materials ecosystem services: low potential direct, positive and negative, avoidable, reducible, repairable, and offsetable losses of ornamental floral species and medicinal plants.
        - High positive impacts to energy resources due to the incorporation of solar photo voltaic (PV) electrical generation.
        - Regulation of waste ecosystem services: low potential direct, positive and negative, reducible, repairable, and offsetable loss of intact (filtering) natural vegetation, production of waste, and loss of permeable surfaces.
        - Regulation of flows ecosystem services: low potential direct, avoidable, reducible, repairable, and offsetable loss of intact natural vegetation.

- Regulation of physical environment ecosystem services: low potential direct positive and negative, avoidable, reducible, repairable, and offsetable loss of intact (carbon sinking) natural vegetation and positive impacts from replanting of trees and use of solar PV.
- Cultural symbolic ecosystem services: low potential direct and indirect, positive and negative, avoidable, reducible, repairable, offsetable, and compensable impacts due to loss of natural heritage and the setting of green development precedents for the area.
- Cultural intellectual and experiential ecosystem services: low potential direct and indirect, positive and negative, avoidable, reducible, repairable, offsetable, and compensable loss of recreational values and scientific values of natural communities.
- RTE species biodiversity values: low potential negative, direct, avoidable, reducible, repairable, offsetable, and compensable loss of IUNC, CITES and SPAW-listed species.
- Endemic species biodiversity values: low potential negative, direct, avoidable, reducible, repairable, offsetable, and compensable loss of regional, Lucayan Archipelago and TCI endemic species.
- Spatial/Temporal concentrations of species biodiversity values: low potential negative, direct, avoidable, reducible, offsetable, and compensable loss and/or disturbance of migratory bird habitats and populations.
- Viable proportions of the great majority of species biodiversity values: low potential negative, direct and indirect, offsetable, and compensable loss of characteristic coastal habitats of high ecological value.
- Irreplaceability biodiversity values: low, negative, avoidable and compensable losses due to the presence of unique biodiversity features, including a unique *Encyclia inaguensis x E. Rufa* hybrid at the site (see Section 2.2.1.2).
- RTE ecosystems biodiversity values: low to moderate, negative, potential direct and indirect, avoidable, reducible, repairable, offsetable, and compensable loss of RTE tropical dry coastal vegetation communities.

No construction is taking place within the marine environment, so no direct marine impacts are envisioned during the construction phase. Indirect impacts may result from land-based construction activities. These indirect impacts could include the following:

- Solid waste contamination if construction debris are windblown into the marine environment
- Sedimentation via airborne dust from construction
- Runoff of fine sediments and topsoil if vegetation buffers are not retained intact
- Construction noise pollution if care is not taken to schedule construction during daylight hours when wildlife populations will be less affected
- Toxic chemical contamination from heavy machinery if equipment isn't properly maintained and the emergency mitigation plan is not implemented

During the operational phase of the project, impacts to the terrestrial environment will be positive and negative, permanent and irreversible, avoidable, reducible, repairable, offsetable, and compensable and may include the following:

- Impacts to the site's carrying capacity for wildlife populations will be positive or negative depending on the developer's sensitivity to landscaping and maintenance.
- Noise-related impacts will be positive or negative depending on entertainment activities associated with the project and the degree to which the project proponents provide their guests with information regarding best practices.
- Biodiversity values for the site could be maintained or increased due to the project's commitment to preserving natural vegetation and using native floral species for landscaping purposes.

During the operational phase, impacts to the marine environment may include the following:

1. Avoidable, direct impacts to seagrass beds via trampling by guests, anchoring of vessels, prop scarring or other tourism-related activities.
2. Avoidable and reducible water quality concerns from run-off and seepage of sewage/greywater, sunscreens, use of herbicides, pesticides, fertilizers, petrochemicals, and other hazardous wastes,
3. Avoidable, reducible, and repairable solid waste contamination from beach and marine recreational activities and airborne wastes from land-based activities if appropriate solid waste management procedures (see Section 6 – Mitigation) are not in place.

4. Avoidable and reducible negative impacts to wildlife populations from noise and light pollution.
5. Avoidable navigation and safety implications.
6. Offsetable impacts due to the increase in use of marine resources.

Socio-economic and cultural impacts associated with the project will be positive and negative and reversible and will include the following:

- Positive, one-time economic benefits associated with direct investment of approximately $30 million.
- Positive economic benefits associated with payment of work permit fees for temporary foreign construction labour.
- Positive impacts associated with employment of locally based construction labour.
- Offsetable and compensable negative economic impacts due to public sector costs associated with increased foreign migration and employment.
- Reducible and reversible negative impacts to nearby residences due to construction noise, dust, and other nuisances.
- Permanent improved localized security.
- Permanent aesthetic alteration of landscape.
- Indirect air quality impacts associated with increased transportation, which could be offset with alternative electrical energy generation.
- Potential improved localized infrastructures and amenities.
- Positive economic benefits associated with employment of locally based persons.
- Possible negative impacts associated with employment of new foreign immigrants and public costs associated with increased associated strain on public infrastructures.
- Positive and negative cultural impacts associated with the setting of precedents for the area.
- Positive, direct economic benefits associated with government revenue generation in the form of tourism taxes, import duties, work permit fees, and other governmental fees.
- Positive, direct economic benefits associated with increased spending in the local economy by visitors.
- Positive economic indirect multiplier effects associated with increased employment and associated local spending and visitor spending.

- Potential positive social effects associated with improved livelihoods if local labour resources are used and training opportunities are provided.
- Negligible impacts to traffic associated with increased temporary and permanent populations in the area.
- Positive and negative impacts to land/property values and property rights due to likely increased property values of surrounding areas and the setting of precedents.
- Impacts to political systems may be positive or negative, depending on levels of transparency and the incorporation of public opinion in all decision-making processes.

1.2.3 Summary of recommended mitigation and monitoring measures

In accordance with the International Finance Corporation's Performance Standards (IFC, 2012); mitigation and monitoring measures to avoid, reduce, repair, offset, and/or compensate potential environmental and socioeconomic impacts to a no net loss level are made below for all predictable impacts:

- To avoid and reduce impacts to terrestrial species and habitats, land clearance should be restricted to infrastructure and building footprints only, leaving all other areas intact. Hand, rather than machine clearance of vegetation is also preferred. The project proponents have committed to undertaking this recommendation where practicably feasible in addition to minimizing footprints by building a number of the villas on stilts to allow for additional vegetation to be retained.
- Terrestrial impacts can be reduced, offset, and compensated by implementing removal and ongoing control of AIS as part of an operational environmental management plan. The project proponents have agreed to incorporate this recommendation into a comprehensive integrated landscaping management plan.
- All rescuable floral species of interest should be removed from site prior to any land clearance taking place for later reuse in landscaping applications, particularly RTE, endemic, and unique species. The project proponents have agreed to incorporate this mitigation measure wherever feasible.
- Preconstruction hoarding is recommended for all areas not incidental to building and infrastructural footprints to avoid trampling and accidental damages to sensitive vegetation in addition to controlling airborne dust and solid waste debris from windborne disbursal. This recommendation is typically required as a condition of development permissions, and the project proponents will comply.

- As a component of the project's green ethos, information regarding the unique ecological features of the site and appropriate guest environmental etiquette will be provided to all guests. This action aims to avoid impacts to terrestrial and marine wildlife populations and sensitive habitats.
- Although the project site does not directly border the Three Mary Cays Sanctuary, guests will also be provided with information regarding the laws governing activities in a Sanctuary (e.g. no entry without permission and for the purposes of scientific research). This measure will serve to avoid and/or reduce any impacts to the ecosystem services and biodiversity values associated with that protected area.
- Maintenance crews will be trained in integrated landscape management. This measure will help to control impacts caused by AIS, avoid impacts to sensitive wildlife populations and marine water quality from the use of toxicants, and repair and enhance biodiversity values at the project site.
- Design features, safety considerations, and maintenance protocols should ensure sewage effluents do not negatively affect terrestrial and marine communities through runoff/seepage/leaching or airborne dispersal. Sewage effluent should be used for irrigating landscaping and effluent water quality parameters should be tested during routine maintenance checks to ensure that the system is operating optimally.
- Baseline water quality assessment associated with this EIA can serve as pre-construction monitoring. Post-construction monitoring is also recommended immediately following construction and as a component of a comprehensive, long-term water quality monitoring program that incorporates quarterly monitoring of nutrients to an ultra-low level and testing for faecal coliform. As well as serving as a public health preventative measure, this measure will serve to avoid, reduce, and compensate for potential contamination to the marine environment.
- The marine baseline biological assessment associated with this EIA also serves as pre-construction monitoring. Because the project does not include any components in the marine environment, post-construction monitoring is not recommended; however, if any unforeseen accidents do occur, habitat restoration to the baseline condition is recommended.
- All construction-phase mitigation measures recommended in this EIA, should be incorporated into the construction contract and the project contractor should be required to provide the labour and expertise to fulfil them. These include but are not limited to the following:
    - Use of hoarding, daily site clean-ups, provision of refuse bins, supervision of crew, and crew orientation for disposal of solid waste debris are recommended throughout the

construction phase to prevent the disbursal of solid wastes and dust into the marine environment.
    - Substrates should be watered down during earthworks, and all dust-producing construction works should be avoided during high wind days to avoid sedimentation threats to the marine environment.
    - Construction activities should be constrained to within normal daylight hours, avoiding dawn and dusk crepuscular periods to avoid noise and disturbance impacts to wildlife and nearby human residents.
    - Heavy equipment should be properly maintained in order to avoid potential leakages of toxicants.
    - The emergency mitigation plan (Section 4.10.11) should be operational throughout all phases of development.
- During the operational phase, continuous beach clean-ups should be part of regular maintenance and operations activities and conducted throughout the day to contain solid waste debris, and receptacles should be provided at all beach access areas.
- To maintain healthy coastal water quality, the following precautions should be implemented:
    - Regular maintenance and effluent quality testing of sewage treatment facilities
    - Use of integrated pest management to limit the use of herbicides, pesticides, and chemical fertilizers
    - Limit land clearance to avoid sedimentation and runoff of substrates
    - Chemically treated water, such as swimming pool water, should not be disposed of directly into the environment.
    - Storm water drainage and treatment should be provided for.
    - Permeable surfaces should be used for all walkways, roads, and parking areas as feasible.
- Beach access should be provided to avoid sensitive dune vegetation, and guests should be directed to swim areas where seagrass meadows are not present (see Sections 2.2.2 and 6.1.1 for specific locations). The proponents of the project are investigating options for how best to mitigate disturbance to the seagrass while providing a swimmable area for guests. Options may include the relocation of seagrasses and or new propagation to offset any disturbance. These options, if undertaken, will necessarily require a separate Planning application.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

- Navigation and safety plans for all water-based activities should be developed, with demarked vessel access lanes and designated swim areas.
- Any marine vegetation that washes up on the shoreline should be retained to provide fodder for sea and shorebirds. If this is not possible, then vegetation should be buried rather than removed to enhance shoreline stabilization.
- The use of boom boxes or other noise-producing personal entertainment devices by guests should be prohibited.
- Best practices for outdoor lighting should be implemented to reduce overall light pollution and potential impacts to wildlife. See Section 6.1.3 for detailed mitigation recommendations.
- An increase in use of marine resources is a cumulative impact that all resorts and villas contribute to and can be mitigated via increasing available resources through the creation of new reef habitats, coral seed banking, or propagation and other types of coral and/or seagrass restoration. Any of the above measures can serve as compensation for cumulative impacts, and the developer has indicated a desire to participate in such projects.
- Other compensatory mitigation measures for marine impacts may include the installation of vessel moorings, education and awareness programs, sale of only reef safe sunscreens in hotel shops, and the development of beach management plans that incorporate an assessment of beach carrying capacities.
- Because of the presence of sensitive seagrass habitats in the nearshore areas, guests should be informed of the importance of these habitats and best practices for use of these environments, including the use of safe sunscreens and avoidance of trampling.
- A plan should also be in place to create a swimmable area for guests while designating areas that are not to be disturbed.
- Public input should be incorporated into the decision-making process.
- The project includes solar PV components, which will offset impacts to the physical environment.
- Pre-, during-, and post-construction monitoring by an environmental specialist and/or appropriate government agencies is recommended to ensure that the recommendations in this EIA are carried out.

Baseline conditions, an analysis of predicted impacts, and justifications for the above recommendations are elaborated upon in the following sections.

1.3 Project Description and Overview of the Area

The Ani T & C Boutique Hotel is an approximately $30-million, 15-room, boutique hotel development project located at block and parcel #50102/103 between Sandy Point and Pumpkin Bluff, North Caicos (Figure 1). There are no developments immediately adjacent to the project site, and the surrounding areas are relatively undeveloped with the exception of a few single-family residences (villas) nearby. Although not adjacent, the site is also in close proximity to the Three Mary Cays Sanctuary (Figure 2). A comprehensive description of the development is detailed in Section 4.1 – Description of the proposed project and this information is therefore not replicated here.

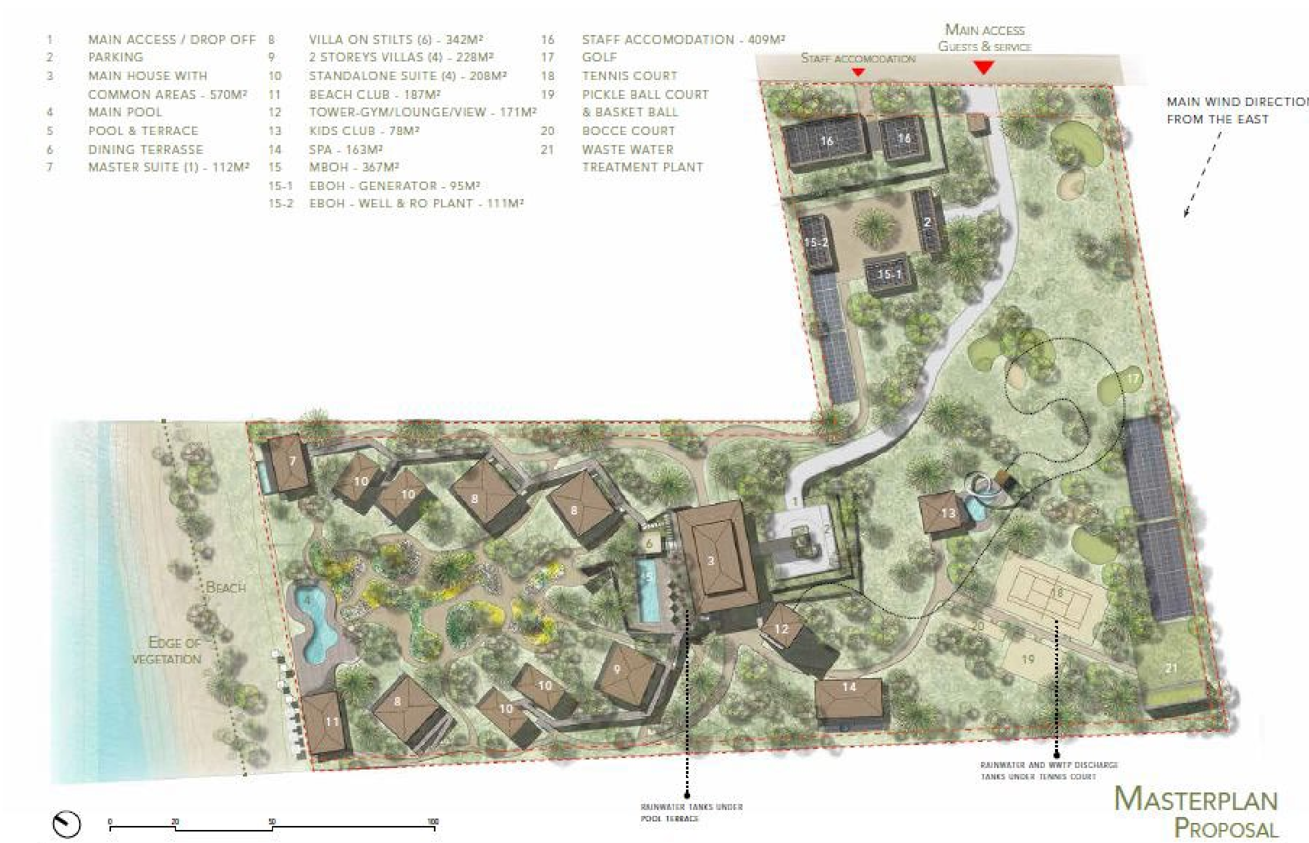

Figure 1 - Project site plan (Source: AW²)

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Figure 2 - Project site and surrounding areas (Source: Google Earth Pro)

1.4 and 1.5 Aims and Objectives of the Assessment and Overview of the Topics to be Addressed

On April 2nd, 2024, The TCI Department of Planning (DoP) issued a Grant of Outline Development Permission (ODP, Appendix B) for the Project, which is conditional and requires an EIA (Condition 4). In accordance with EIA global industry standards (Senecal, 1999), a scoping exercise for the Project was conducted and a Terms of Reference (TOR, Appendix C) was developed by the DoP, based on issues deemed to be germane to the Project and its potential environmental, socioeconomic, and cultural effects. The TOR outlines the framework for the topics to be addressed and serves as the guiding aims and objectives of the following assessment, which include establishing a pre-construction environmental, socioeconomic, and cultural baseline, predicting potential threats posed to the baseline by the proposed project, and identifying mitigation and monitoring measures to reduce those threats to a no net loss level. Each section of this report is numbered and labelled in accordance with the TOR. Within the text, some minor amendments to the original TOR have been undertaken to reduce redundancies, increase efficiencies, and remove suggested studies that are not relevant to the project. Wherever amendments have been made, justifications are outlined within the associated sections of the report.

1.6 Impact Assessment Methods and Analyses

The following EIA summarizes baseline environmental, socioeconomic, and cultural conditions of the site and surrounding areas, reviews the details of the project, and predicts the impacts associated with proposed Project activities. The International Association for Impact Assessment (IAIA) defines basic principles for best practices in the EIA process (Figure 3). All sections of the following report were conducted in accordance with these principles and in accordance with the International Finance Corporation's (IFC) Performance Standards on Environmental and Social sustainability (IFC, 2012).

Basic Principles

Environmental Impact Assessment should be:

Purposive - the process should inform decision making and result in appropriate levels of environmental protection and community well-being.

Rigorous - the process should apply "best practicable" science, employing methodologies and techniques appropriate to address the problems being investigated.

Practical - the process should result in information and outputs which assist with problem solving and are acceptable to and able to be implemented by proponents.

Relevant - the process should provide sufficient, reliable and usable information for development planning and decision making.

Cost-effective - the process should achieve the objectives of EIA within the limits of available information, time, resources and methodology.

Efficient - the process should impose the minimum cost burdens in terms of time and finance on proponents and participants consistent with meeting accepted requirements and objectives of EIA.

Focused - the process should concentrate on significant environmental effects and key issues; i.e., the matters that need to be taken into account in making decisions.

Adaptive - the process should be adjusted to the realities, issues and circumstances of the proposals under review without compromising the integrity of the process, and be iterative, incorporating lessons learned throughout the proposal's life cycle.

Participative - the process should provide appropriate opportunities to inform and involve the interested and affected publics, and their inputs and concerns should be addressed explicitly in the documentation and decision making.

Interdisciplinary - the process should ensure that the appropriate techniques and experts in the relevant bio-physical and socio-economic disciplines are employed, including use of traditional knowledge as relevant.

Credible - the process should be carried out with professionalism, rigor, fairness, objectivity, impartiality and balance, and be subject to independent checks and verification.

Integrated - the process should address the interrelationships of social, economic and biophysical aspects.

Transparent - the process should have clear, easily understood requirements for EIA content; ensure public access to information; identify the factors that are to be taken into account in decision making; and acknowledge limitations and difficulties.

Systematic - the process should result in full consideration of all relevant information on the affected environment, of proposed alternatives and their impacts, and of the measures necessary to monitor and investigate residual effects.

Figure 3 - IAIA basic principles for best practices in EIA (Senecal, Goldsmith et al. 1999)

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Standards for EIA vary widely by jurisdiction. In TCI, EIA standards are limited to those outlined in the Development Manual (2021, Chapter 7 – Guidelines for Environmental Impact Assessment Studies). According to Development Manual guidelines, the following information is required in an EIA:

a) an executive summary;
b) description of the physical, biological, economic and socio-cultural environment of the development;
c) the data necessary to identify and assess the main effects which that development is likely to have on the environment;
e) a description of the likely significant effects, direct and indirect, on the environment of the development;
f) a plan to monitor the implementation of mitigating measures for the development during construction and operation.
g) the measures proposed to mitigate adverse effects identified with respects to any of the measures envisaged in order to avoid, reduce or remedy these effects.

7.2.3 An EIA may include, by way of explanation or simplification, any specified information on any of the following matters:
a) the land use requirements during construction and operational phases:
b) the main characteristics of any production process proposed, including the nature and quality of the materials to be used;
c) the estimated type and quantity or expected residues and emissions (including pollutants of water, air or soil, noise, vibration, light, heat and radiation) resulting from the proposed development when in operation;
d) the likely significant direct and indirect effects of the proposed development on the environment which may result from:
i) the use of natural resources,
ii) the emission of pollutant, the creation of nuisances, and the elimination of waste.
e) a description of the alternatives if any that were examined in respect of the development and an identification of other alternatives which would achieve the same objective."

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

This EIA report complies with all TCI's existing EIA guidelines as required within the Development Manual. This EIA also incorporates the IFC's Performance Standards on Environmental and Social Sustainability throughout this report (IFC, 2012). This standard, as defined by IFC, is that suitably qualified individuals, in their respective areas of expertise, and with relative experience, can determine likely impacts associated with development, their level of severity, and appropriate monitoring and mitigation measures to alleviate potential harms.

Given that environmental impact assessment standards vary widely on a global scale, and in the absence of comprehensive TCI EIA standards, we have used TCI's Development Manual guidelines and the TOR for guidance while applying the IFC standard. Our methods include literature review, accepted standardized field survey methods, interviews with key informants and other stakeholders, and standard and accepted analyses to draw conclusions.

1.6.1 Methods for terrestrial assessment

Terrestrial field studies were undertaken during the timeframe from 20th – 22nd May, 2024 during crepuscular and daylight hours and incorporating standardized qualitative and quantitative sampling techniques, including stratified transects, representative quadrat samples, and species censusing (Causton, 2012; Sayre et al., 2000). A total of 90 survey points, encompassing the entire habitat gradient across the site were taken (Figure 4). Our assessment also included a review of historic information and relevant documents, including a review of a Strategic Environmental Assessment previously conducted in the vicinity (Williams et al., 2003).

Figure 4 - Survey points and the project site

The proposed development site and surrounding areas comprise largely undeveloped lands, with some low-density residential development nearby. While most habitats are in a natural state, some areas, particularly along the shoreline, are severely impacted by AIS. Prior to conducting field studies, aerial imagery of the site was reviewed to remotely identify the spatial distribution of habitats and other features of interest. A series of transect lines were then stratified to target all discernible habitat gradients. Along transect lines, quantitative 1 x 1m quadrat samples were taken within herbaceous habitats; 3 x 3m quadrat samples were taken in shrubland and woodland habitats; and 5 x 5 quadrat samples were taken in forest habitats along transect lines at intervals determined randomly by throwing a stone over the shoulder. This method was used due to the dense shrub layer present throughout most of the site, which prohibited the laying of a physical transect line.

Within each quadrat sample, all floral species were identified using standardized and accepted texts (Correll & Correll, 1982; Freid et al., 2014; Wood, 2003) and quantified (see Appendix D – Terrestrial Quantitative Analyses). After a series of quadrat samples within which species compositions remained consistent, samples were then taken across habitat gradients wherever new characteristics or species of interest were noted. The entire site was examined to determine the presence/absence of RTE and endemic species and other features of interest. These methods are industry accepted as standardized vegetative sampling techniques (Sayre et al., 2000).

Any birds and reptiles observed overhead or in the vicinity of the site and surrounding areas were also identified using standardized texts ((Kirwan et al., 2019; Raffaele et al., 2003; Schwartz & Henderson, 1991), recorded, and quantified. Invertebrates were identified using seminal texts (Smith et al., 1994) and recorded. Invertebrates without definitive taxonomy were identified to a genus or family level. Habitats were then identified and classified in accordance with the National Standardized Vegetation Classification System for the Turks and Caicos Islands (Wood & Brunnick, 2010), which is based on the Nature Conservancy's Caribbean vegetation types (Areces-Mallea et al., 1999). Surveys for fauna were conducted during the late spring season, which allowed for observation of some migratory winter visitors in addition to locally resident birds. Only one species of summer visiting migrant was observed during the study period, although the timing of field studies probably precluded inclusion of this demographic. Most winter migrants would have also already headed north during the timeframe during which field studies took place, and this is a limitation of the amount of time available to conduct survey work associated with EIAs. This limitation is addressed in Section 6 - Mitigation.

All flora and fauna noted during field studies are listed in Appendix E – Species Lists. All nomenclature for flora was confirmed at www.worldfloraonline.org. Conservation status and nomenclature for birds was confirmed at www.birdlife.org, and conservation status for all other organisms was confirmed at www.IUCNredlist.org and by consulting the TCI list of protected species. Endemism was determined via peer-reviewed literature sources and standardized texts (Correll & Correll, 1982; Freid et al., 2014; Schwartz, 1991; Smith et al., 1994).

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Quantitative terrestrial data were assessed for floral species density, relative density, frequency, relative frequency, importance value, and Shannon Weaver Biodiversity Index value (H) (Appendix D– Terrestrial Quantitative Analyses). These variables are defined by the following formulas:

Density = Number of individuals/area sampled
Relative density = (density for a species/total density for all species) x 100
Frequency = total number of plots in which a species occurs/total number of plots sampled
Relative frequency = (frequency value for a species/total of frequency values for all species) x 100
Importance value = relative density + relative frequency
Biodiversity values for the entire survey area were determined using the Shannon Weaver Index, as described by the following formula:

$$H = -\sum_{i=1}^{s} p_i \ln p_i$$

Ecosystem service and biodiversity values were then used as criteria against which to weigh potential direct and indirect impacts. The sixteen evaluation criteria are as follows:

Ecosystem Service Criteria

1. Nutrition
2. Materials
3. Energy
4. Regulation of wastes
5. Regulation of flows
6. Regulation of physical environment
7. Cultural symbolic
8. Cultural intellectual and experiential

Biodiversity Service Criteria

1. RTE species
2. Endemic species
3. Geographically restricted species
4. Spatial/Temporal concentrations of species
5. Viable proportions of the great majority of species
6. Ecological integrity
7. Irreplaceability
8. RTE ecosystems

1.6.2 Methods for marine assessment

Fieldwork for the marine assessment was undertaken on May 22, 2024. Prior to accessing the site, aerial imagery was used to develop a fieldwork plan for the areas within 100m of the property shoreline. From this remote sensing, it was determined that the majority of the study area comprised seagrass/algal beds and that transects lines, coupled with quadrat sampling at 5m intervals, were needed to collect quantitative information. A strategic fieldwork plan was then prepared for ground truthing the habitats observed in satellite imagery (Figure 5).

Ground truthing revealed that the study area is characterized by shallow depths between 0.3-1.5m (less at low tide). Photo-quadrats were taken where depth allowed, but where depths were less than 0.5m, data was recorded in situ. Quadrat data was analyzed for average percent benthic cover for individual and combined transect lines using Microsoft Excel. Fish and other invertebrate species were noted for presence /absence, and indicator species were included in the benthic habitat assessment. Results and analyses of marine baseline studies appear in Section 2.2.2.

Figure 5 - Strategic plan for marine habitat assessment

1.6.3 Water quality methods

Water quality samples were collected from inshore (20m from MLW mark) and offshore (100m from MLW mark) at the approximate middle of the property shoreline. Samples were collected in situ for temperature, pH, and salinity using an Aero-Gro Multifunction water meter. Dissolved oxygen was analyzed using a DO9100 Dissolved Oxygen Analyzer, and turbidity tested using a LaMotte 2020we turbidity meter. Samples were then kept on ice for transportation to the Provo Water Lab for testing of fecal and total coliform and total dissolved solids (TDS). Additionally, iced samples were then processed by freezing in 125ml sample containers. Chlorophyll analysis requires that a volume of sample water be filtered onto the glass filters provided by the UMCES Nutrient Analytical Services Lab in Maryland. Water samples and filters were then frozen and Fedexed to the UMCES lab for chlorophyll and ultra-low nutrient analyses.

1.6.4 Methods for socioeconomic and cultural assessment

Potential socioeconomic and cultural impacts associated with the Project were assessed using standard and internationally accepted methods, such as SocMon Caribbean (http://www.socmon.org/publications.aspx), the Guidelines and Principles for Social Impact Assessment http://www.nmfs.noaa.gov/sfa/social_impact_guide.htm#sectII), the UNEP Social Impact Assessment Tools and Methods http://unep.ch/etb/publications/EIA_2ed/EIA_E_top13_hd1.PDF), and the United Nations Comprehensive Guide for Social Impact Assessment (http://unpan1.un.org/intradoc/groups/public/documents/cgg/unpan026197.pdf).

International Principles for Social Impact Assessment (SIA)(Vanclay et al., 2015) outlines principles specific to SIA practice (Figure 6). These principles have been fully incorporated into our assessment, as applicable. The IAIA concludes that, “It must be recognized that our knowledge of the social world and of social processes is incomplete and that social knowledge can never be fully complete because the social environment and the processes affecting it are changing constantly and vary from place to place and over time” (IAIA, p. 6). This uncertainty principle allows that studies must be designed and implemented, as is feasible and appropriate for each situation. We recognize such uncertainty and have made efforts to note data and study limitations where applicable.

Socioeconomic and cultural studies included a literature review of existing data and case studies, interviews with key informants and an online Survey Monkey questionnaire, which was advertised on social media (Appendix F – Survey Monkey Responses). In addition, interviews with nine key informants were conducted directly via face-to-face interviews with residents of North Caicos, as those persons are most likely to be affected by the proposed development. In accordance with Regulation 7 of the Physical Planning Ordinance, notices were also sent to owners of all neighbouring parcels within a 200-foot radius of the property boundary. The same notice was posted at a conspicuous location near the Project site (Figure 7).

II(b). Principles specific to SIA practice

1. Equity considerations should be a fundamental element of impact assessment and of development planning.
2. Many of the social impacts of planned interventions can be predicted.
3. Planned interventions can be modified to reduce their negative social impacts and enhance their positive impacts.
4. SIA should be an integral part of the development process, involved in all stages from inception to follow-up audit.
5. There should be a focus on socially sustainable development, with SIA contributing to the determination of best development alternative(s) – SIA (and EIA) have more to offer than just being an arbiter between economic benefit and social cost.
6. In all planned interventions and their assessments, avenues should be developed to build the social and human capital of local communities and to strengthen democratic processes.
7. In all planned interventions, but especially where there are unavoidable impacts, ways to turn impacted peoples into beneficiaries should be investigated.
8. The SIA must give due consideration to the alternatives of any planned intervention, but especially in cases when there are likely to be unavoidable impacts.
9. Full consideration should be given to the potential mitigation measures of social and environmental impacts, even where impacted communities may approve the planned intervention and where they may be regarded as beneficiaries.
10. Local knowledge and experience and acknowledgment of different local cultural values should be incorporated in any assessment.
11. There should be no use of violence, harassment, intimidation or undue force in connection with the assessment or implementation of a planned intervention.
12. Developmental processes that infringe the human rights of any section of society should not be accepted.

Figure 6 - IAIA - Principles specific to SIA practice (Source: http://www.iaia.org/uploads/pdf/IAIA-SIA-International-Principles.pdf)

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Figure 7 - Notice of intention to develop

In addition to the above measures, costs and benefits associated with the project were determined via a review of corporate costs-benefit analyses and review of publicly available statistical data. All economic data related to Project benefits as reported in Section 2.7 were provided by the project proponents.

Guidelines for socioeconomic and cultural (SEC) impact assessment in TCI are established within the Development Manual (2014). Table 7-3 of the Development Manual outlines socioeconomic conditions likely to be affected by projects, divided into project categories. The Project includes project categories 1, 3, 4, 7 and 8: residential accommodation, sewage treatment, infrastructure, earthworks, and public serving facilities, respectively. Relevant sections from Table 7-3 are replicated here (Table 1).

Table 1 - Sociocultural conditions likely to be affected by development (Source: Development Manual, 2014)

Resource	1 Residential (greater than 10 bedrooms)	3 Sewage Treatment	4 Infrastructure	7 Earthworks	8 Public Serving Facilities
Values	S*	-	-	-	S
Traditional Use	S	-	M	-	S
Traffic	M	M	S	-	S
Aesthetics	M	S	m	S	-
Cultural Values	S	-	-	-	m/M
Historic Resources	S	M	S	M	-
Land/property values	S	S	S	S	S
Pollution	S	S	m	S	-
Noise	-	S	S	S	m/M
Congestion	S	M	m	m	S

*S = significant effects, M = moderate, m = minor effects

The Development Manual does not define their levels of predicted impacts. We have therefore classified definitions for socioeconomic and cultural impacts, as follows:

- Significant – For social and cultural values, the development activity will impact associated SEC values to the extent that they are all but eliminated or displaced with foreign values (hereinafter, we refer to these impacts as “High”). For economic values, the economic consequences are likely to be equivalent to at least one percent (positive or negative) of the existing economic variable baseline.
- Moderate – For social and cultural values, the development activity will impact any associated SEC values to the extent that these values will affect at least 50% of predictably affected persons. For economic values, the development activity will have economic consequences (positive or negative), which cannot be quantified as comprising at least one percent of the existing economic

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

baseline but are nevertheless likely to impact the economic baseline in a statistically significant way.

- Minor – For social and cultural values, the development activity will impact any associated SEC values to an extent which impacts less than 50% of affected persons and which allows these values to retain relative viability (hereinafter referred to as "Low" impacts). For economic values, the development activity will have economic consequences (positive or negative), but such consequences are unlikely to affect the economic baseline in a statistically significant way.

The IAIA also recognizes the following socioeconomic and cultural variables that are important for consideration in the SIA:

- *people's way of life – that is, how they live, work, play and interact with one another on a day-to-day basis;*
- *their culture – that is, their shared beliefs, customs, values and language or dialect;*
- *their community – its cohesion, stability, character, services and facilities;*
- *their political systems – the extent to which people are able to participate in decisions that affect their lives, the level of democratization that is taking place, and the resources provided for this purpose;*
- *their environment – the quality of the air and water people use; the availability and quality of the food they eat; the level of hazard or risk, dust and noise they are exposed to; the adequacy of sanitation, their physical safety, and their access to and control over resources;*
- *their health and wellbeing – health is a state of complete physical, mental, social and spiritual wellbeing and not merely the absence of disease or infirmity;*
- *their personal and property rights – particularly whether people are economically affected, or experience personal disadvantage which may include a violation of their civil liberties;*
- *their fears and aspirations – their perceptions about their safety, their fears about the future of their community, and their aspirations for their future and the future of their children"* (Vanclay et al., 2015).

We have also included the IAIA's variables within our assessment of socioeconomic and cultural criteria likely to be affected by the Project.

1.6.5 Other methods

The legislative and regulative context for the proposed development was assessed by reviewing all application materials and correspondence for the project, in addition to reviewing select Ordinances as prescribed in the TOR, the Development Manual, and the TCI Building Code. Section 3 summarizes these findings. Aspects of the development and its construction and operation are outlined in Section 4. Section 4 also provides a detailed description of the proposed development, with various aspects elaborated as per the TOR. The description was derived via review of all existing design documents and via interviews with key informants (Personal communications with project proponents, architects, and other involved parties). Section 4 also details components of construction activities and the construction programme.

A comprehensive analysis of the potential environmental impacts associated with the development is provided in Section 5. Table 7-2 of the Development Manual outlines resources likely to be affected by projects and predicts levels of impacts. In the case of the Project, and according to the Development Manual, numerous resources are likely to be affected by the Project, with varying levels of predicted impacts (Table 2).

Table 2 - Resources likely to be affected by the project (Source: Development Manual 2014 - Table 7-2)-

Resource	1 Residential (greater than 10 bedrooms)	3 Sewage Treatment	4 Infra-structure	7 Earth-works	8 Public Serving Facilities
Mangroves	S*	S	M	-	m
Seagrass	-	M	-	-	M
Reefs	M	S	M	m	-
Groundwater Reserves	m	S	-	-	-
Catchments	m	-	S	S	-
Wetlands	M	M	M	-	m
Surface run-off	S	-	S	S	-

Terrestrial habitats	S	M	M	m	m
Species	M	M	M	S	M
Soil	S	-	S	S	m
Beaches	S	m	M	-	-

*S = Significant effect, M = Moderate Effect, m = minor effects

In order to further predict environmental impact, the impacts in the Development Manual (2014) Table 7-2 have been developed into impact matrix (Table 3), in addition to other predictable impacts and impact predictions recommended in the TOR for the project. Predicted impacts were then contrasted to activities associated with the development, making alterations to the Development Manual's levels of predicted impacts, where applicable.

Table 3 - Environmental impact matrix

Ani Boutique Hotel, North Caicos – NC1246										
Environmental Parameter*	***H***	***M***	***L***	***+/-***	***A***	***R***	***Rp***	***O***	***C***	***P***
Terrestrial Habitats			X	+/-	X	X	X	X	X	X
Species			X	+/-	X	X	X	X	X	X
Mangroves**				N/A						
Seagrass**		X		-	X	X	X	X		X
Reefs**			X	-	X	X	X	X		X
Marine Species**			X	-	X	X	X	X		X
Ground Water			X	-	X	X	X			
Catchment (Watersheds)			X	-		X	X			
Coastal Water Quality**			X	-/+		X			X	
Building Heights			X	-/+		X				X
Architectural Quality		X		+						X
Beaches			X	+/-	X				X	
Site Drainage/Flooding (Surface Runoff)			X	+/-	X		X			X
Natural and Built Landscapes			X	+/-	X	X	X			X
Air Quality			X	+/-		X		X		
Neighbouring Businesses and Residences			X	+/-		X			X	X
Aesthetics			X	+/-		X			X	X
Other Impacts (Geology and Soils)			X	-					X	X
* H = High, M = Moderate, L = Low, A = Avoidable, R = Reducible, Rp = Repairable, O = Offsetable, C = Compensable, P = Permanent										

The Development Manual does not define their levels of predicted impacts. We have therefore taken the liberty of defining them as follows:

- Significant – The development activity will undermine associated Biodiversity and Ecosystem Services (BES) to the extent that they are no longer viable (hereinafter, we refer to these impacts as “High”).
- Moderate – The development activity will undermine any associated BES to the extent that these values are decreased by at least 50%, with associated reduced viability.
- Minor – The development activity will undermine any associated BES to an extent less than 50%, and which allows these services to retain relative viability (hereinafter referred to as “Low” impacts).

Section 6 includes measures for monitoring and mitigation. Conclusions are summarized in a final section, followed by the appendices referred to within the text of this document and sources cited.

2.0 Baseline Assessment of the Site and Surrounding Environment

2.1 Historical overview of the site and existing development

The proposed development site borders critical marine habitats and is in the vicinity of the Three Mary Cays Sanctuary and other undeveloped natural areas. The natural areas of the site are characterized by typical environmental variables for largely undisturbed coastal and nearshore areas along the north shore of North Caicos; however, impacts by AIS are evident along the coast. The project will be the only hotel in the immediate vicinity and will therefore set a development precedent in an area that is otherwise undeveloped with only scattered single-family residences nearby. The project construction period is anticipated to take approximately two years to complete and will be conducted in a single phase.

The National Physical Development Plan (NPDP, 2020) targets North Caicos for diversification of the economy through agriculture and technological advancement, in addition to further development of the tourism sector. With a focus on low-density, high-quality, and sustainability, the project is in keeping with the objectives for North Caicos as espoused in the NPDP.

For the purposes of this assessment, the terrestrial, marine, and socioeconomic and cultural landscapes have been divided into the following classifications:

The biotic marine environment includes all physical parameters and species found beneath the waterline and up to the high-water mark, including intertidal, and benthic marine species (detailed in Section 2.2.2).

The biotic terrestrial environment includes all ecological parameters and species found within the site boundaries above the high-water mark, including flora and fauna and geomorphological features shaping species assemblages (detailed in Section 2.2.1).

The physical environment includes all geological features of the site, including characteristics of substrates, topography, hydrology, and climate (detailed in Section 2.3).

The aesthetic environment includes the visual, auditory, olfactory, and other sensual aspects of the site and surrounding areas (detailed in Section 2.4).

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

The coastal process baseline includes predominant tides and currents and how these factors affect the shoreline and nearshore areas (detailed in Section 2.5).

Water quality pertains to the various chemical characteristics of the ocean water in the nearshore areas adjacent to the project site as outlined in the TOR (detailed in Section 2.6).

The socio-economic and cultural environment includes all past, present, and future persons, structures, human uses, historic cultural values, and economic values contained within or in close proximity to the site, in addition to prevalent cultural memes (detailed in Section 2.7).

Other environmental parameters are defined and detailed in Section 2.8.

2.2 Biological environmental baseline assessment

2.2.1 Baseline terrestrial environment

The following sections address TOR sections 2.2.1.1 – 2.2.1.9, including a description and quantification of habitats, a complete list and description of RTE species, a complete list of all flora and fungi (not observed), a complete list of bird species, a complete list of all reptile and amphibian (not observed) species, a complete list of freshwater fish (not observed), a complete list of mammal (not observed) species, a representative list of invertebrates, and a complete list of cave biota (not observed).

2.2.1.1 Habitats and Ecosystems

The terrestrial environment and ecology of the project site are variable, with much of the site and surrounding areas being undeveloped and/or impacted by low-density, single home residential development and AIS.

The site itself is in a close to natural state, characterized by coastal formation habitats, which have evolved within proximity to the marine environment, with coastal characteristics, defined as assemblages of floral species that are drought, wind, and salt tolerant. Coastal habitats in TCI are at risk due to the desirability of coastal areas for tourism development.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

A total of six terrestrial habitats, among 90 survey points, were identified during field studies (Table 4). All habitats within and surrounding the project site are coastal formations; however, vegetation classes follow successional gradients, ranging from herbaceous to forest with distance from the shoreline, forming mosaics of shrubland (332), and herbaceous (532, 512) in areas closest to the shoreline and mosaics of forest (132), woodland (232), and shrubland (332) in areas with increasing distance from the shoreline. Areas typically designated as primary dunes have been severely impacted by the AIS *Casuarina equisetifolia* and *Scaevola taccada.* These habitats are therefore classified as Human Altered by AIS (730).

Quadrat samples included three samples of coastal mixed forest (132), 36 samples of coastal mixed woodland (232), 35 samples of coastal mixed shrubland (332), twelve samples of coastal herbaceous habitats (512 and 532), and four samples of habitats impacted by AIS (730). Based on the quadrat areas, the frequency of each habitat type for the project site can be translated as 9.1% (132), 39.6% (232), 38.5% (332), 1.5% (512 and 532), and 10.3% (730) (Table 4).

Table 4 - Terrestrial habitats and survey points

Number	Description	Survey Points	%Cover
132	Coastal Mixed Forest	86, 87, 89	9.**1**
232	Coastal Mixed Woodland	6, 11, 28-30, 35, 39-47, 53, 56, 64-68, 72-74, 77, 78, 80-85, 88, 90	**39.6**
332	Coastal Mixed Shrubland	1-5, 7-10, 31-34, 36-38, 48-52, 54, 55, 58-62, 69-71, 75, 76, 79	38.5
512	Coastal Graminoid Herbaceous	19-21	1.5
532	Coastal Mixed Herbaceous	12–16, 22, 25-27	
730	Impacted by Invasive Alien Species	17, 18, 23, 24	10.3

Within all quadrat samples, 71 floral species, eight bird species, two reptiles, and 10 invertebrates were recorded (Appendix E – Terrestrial Species Lists). Total biodiversity for the Project site, using vascular plants as indicators, was measured at H = 3.3443 (Appendix D – Terrestrial Quantitative Analyses). This figure is average when compared with similar sites studied around North Caicos (Erickson et al., 2019; Williams et al., 2003; Wood et al., 2010). Several features of ecological interest also characterize the site, including high rates of endemism and RTE species (see Section 2.2.1.2). Overall, the floral species with the highest importance value on the entire site is *Coccothrianx inaguensis* (27.408), a near-endemic, TCI protected species (see Appendix D – Quantitative Analyses). This specie's dominance reflects high ecological values of the site and also shapes the classification of the habitats at the site, with all shrubland, woodland, and forest habitats being dominated by *C. inaguensis.*

Project site habitats are described below according to their vegetation classes.

2.2.1.1.1 Coastal Graminoid and Coastal Mixed Herbaceous Habitats (512 and 532)

At the project site, coastal herbaceous formations include graminoid herbaceous (512) and mixed herbaceous (532) habitats (Figure 8).

Figure 8 - 512 and 534 Herbaceous Habitats

Herbaceous habitats are characterized by herbaceous vegetation as the dominant growth form, usually comprising greater than 25% coverage (Areces-Mallea et al., 1999). At the project site, coastal graminoid herbaceous habitats (512) are dominated by the species *Uniola paniculata* and occur in scattered clumps along the high-water mark seaward from the primary dune area that has been colonized by AIS (Figure 9). Coastal mixed herbaceous habitats (532) also occur in areas surrounding the primary dune (Figure 10), in addition to having colonized previously cleared areas, such as defunct roads. While the coastal mixed herbaceous habitats inhabiting old roadbeds are secondary growth habitats, they are characterized by a variety of native species and therefore mimic the ecosystem service and biodiversity values of similar primary growth habitats.

Coastal herbaceous habitats at the project site have a combined biodiversity score of H = 2.6907. Typically, coastal herbaceous habitats are dominated by grass or another herbaceous species and therefore have relatively low biodiversity scores based on floral species abundance; however, this does not negate their environmental values, which are critical to flow regulation ecosystem services, such as shoreline stabilization.

Figure 9 - Coastal graminoid herbaceous habitats (512)

Figure 10 - Coastal mixed herbaceous habitats (532)

The floral species with the highest importance values in coastal herbaceous habitats are *Ernodea littoralis* (29.18), *Euphorbia inaguensis* (18.71), and *Uniola paniculata* (16.85) (see Appendix D – Quantitative Analyses). Each of these species is native to TCI and *E. inaguensis* is a near endemic, TCI protected species, attesting to the high ecological values of these habitats. Other species of interest observed in coastal herbaceous habitats during field studies include one regional endemic floral species, four near endemic floral species, one endemic invertebrate, one range-restricted bird species, and one migratory bird species (Table 5).

Table 5 - Species of interest in coastal herbaceous habitats

Species	Common Name	Status
Flora		
Anemotrochus eggersii	Egger's Milkweed Vine	Regional Endemic
Coccothrinax inaguensis	Inagua Silver Palm	Near Endemic/TCI Protected
Euphorbia inaguensis	Inagua Spurge	Near Endemic/TCI Protected
Vachellia choriophylla	Tamarindillo	Near Endemic/TCI Protected
Varronia bahamensis	Bahama Cordia	Near Endemic/TCI Protected
Fauna		
Cerion spp.	Tree Snail	Endemic/TCI Protected
Mimus gundlachii	Bahama Mockingbird	TCI Protected/Range-restricted
Tyrannus dominicensis	Gray Kingbird	TCI Protected/Migratory

It should be noted that the above values appear healthy only because areas impacted by AIS have been evaluated separately. Places on the site now colonized by invasive species now occupy areas that should be established with coastal herbaceous habitats (Figure 11).

2.2.1.1.2 – Habitats impacted by AIS (730)

Areas compromised by the AIS *Casuarina equisetifolia* and *Scaevola taccada* comprise the only significant anthropogenic baseline impacts at the project site. These impacts are confined to the areas of the site bordering the coast and along the primary dune strandline. These impacts are also not confined to the project site and extend in both directions along the coast. For comparative purposes (to natural habitats), biodiversity figures were calculated for human impacted areas. Overall habitats impacted by AIS at the project site have a biodiversity value of H = 1.2644, the lowest of any habitat classifications at the project site, and the species with the highest importance values are (not surprisingly) *S. taccada* (89.63) and *C. equisetifolia* (36.67) (see Appendix D – Quantitative Analyses). These values are several times higher than typical importance values for any species occurring in healthy habitats, thus attesting to the significant impacts these species have as they crowd out other native species thereby reducing overall biodiversity.

Figure 11 - Habitats impacted by AIS

Human altered landscapes are unlikely to return to natural vegetative communities without deliberate and significant human intervention, and they do not currently possess any features of interest; however, some fauna, including *Cerion spp.* and Gray Kingbird, were observed in these areas during field studies.

2.2.1.1.3 Coastal Mixed Shrubland Habitats (332)

Coastal mixed shrubland habitats appear within mosaic communities of shrubland, woodland, and forest across the project site. Coastal shrubland habitats are characterized by shrubs as the dominant growth form with assemblages of floral species comprised of those that are resistant to harsh coastal conditions (Figure 12). In most areas, exposure to wind and sea prevent the accumulation of biomass in soils. Sub-strates are therefore comprised largely of sand, fragmented limestone rock and minimal leaf litter detritus.

Figure 12 - Coastal mixed shrubland habitats

Coastal mixed shrubland habitats at the project site characterized by diverse assemblages of evergreen and drought deciduous floral communities with a biodiversity score of H = 3.2181. The species with the highest importance values in these habitats include *Coccothrinax inaguensis* (24.99)*, Myrcianthes fragrans* (17.97)*, Leucothrinax morrisii* (11.78), and *Encyclia altissima* (10.95) (see Appendix D – Quantitative Analyses). Each of these species is native to TCI, with *C. inaguensis* and *E. Altissima* being both near endemic and TCI protected species, thus attesting to the high biodiversity values at the project site. Furthermore, the dominance of *C. inaguensis* provides data for more-detailed classification of these habitats to *Coccothrinax inaguensis* coastal mixed shrubland (Figure 13).

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Figure 13 - *Coccothrinax inaguensis* coastal mixed shrubland

Within 332 habitats at the project site, a total of 49 floral species and 15 faunal species were observed, several of which are species of conservation concern, including eight regional endemic and 13 near endemic floral species and three TCI endemic and three near endemic faunal species. In addition, two floral species in 332 habitats are considered to be Vulnerable by the IUCN and four are internationally protected under CITES. One faunal species is recognized by the IUCN as Vulnerable (Table 6).

Table 6 - Species of conservation interest in coastal mixed shrubland habitats

Species	Common Name	Status
Flora		
Anemotrochus eggersii	Egger's Milkweed Vine	Regional Endemic
Argythamnia lucayana	Lucayan Argythamnia	Near Endemic/TCI Protected
Catesbaea foliosa	Catesby's Vine	Near Endemic/TCI Protected
Chamaecrista caribaea var. inaguensis	Inagua Senna	Regional Endemic/IUCN VU
Coccothrinax inaguensis	Inagua Silver Palm	Near Endemic/TCI Protected
Dodonaea viscosa	Dogwood	Near Endemic/TCI Protected
Encyclia altissima	Tall Encyclia	Regional Endemic/CITES
E. inaguensis	Inagua Encyclia	Near Endemic/CITES
E. rufa	Rufous Encyclia	Near Endemic/CITES
Ernodea millspaughii	Millspaugh's Ernodea	Near Endemic/TCI Protected
Euphorbia inaguensis	Inagua Spurge	Near Endemic/TCI Protected
Guettarda krugii	Frogwood	Regional Endemic
Jacquemontia cayensis	Island Jacquemontia	Regional Endemic
Lantana involucrata	Sea Sage	Near Endemic/TCI Protected
Lepidaploa arbuscula	Vernonia	Near Endemic/TCI Protected
Passiflora pectinata	Wild Apricot	Regional Endemic
Sarcomphalus taylorii	Taylor's Jujube	Near Endemic/TCI Protected
Sideroxylon americanum	Milk Berry	Regional Endemic
Stenostomum lucidum	Shining Antirhea	Regional Endemic
Tabebuia bahamensis	Five Finger	Near Endemic/TCI Protected
Tillandsia balbisiana	Cuttlefish	CITES
Vachellia acuifera	Acacia	Near Endemic/TCI Protected
Zanthoxylum flavum	Satinwood	IUCN VU
Fauna		
Cerion spp.	Tree Snail	Endemic/TCI Protected

Corvus nasicus	Cuban Crow	TCI Protected/Range-restricted
Leiocephalus psammodromus	Curly-tail Lizard	Endemic/IUCN VU
Memphis intermedia	Dead Leaf Butterfly	Near Endemic/TCI Protected
Mimus gundlachii	Bahama Mockingbird	TCI Protected/Range-restricted
Papilo andraemon	Swallowtail Butterfly	Near Endemic/TCI Protected
Tyrannus dominicensis	Gray Kingbird	TCI Protected/Migratory
Vireo crassirostris	Thick-billed Vireo	TCI Protected/Range-restricted

2.2.1.1.4 Coastal Mixed Woodlands (232)

Similarly to 332 habitats, coastal mixed woodlands (232) occur at the project site in mosaic formations, woven between shrublands, and forests (Figure 14). These habitats typically occur in areas where some protection from the wind allows for greater vegetative growth, and trees with open canopies are the primary growth form. Understories are vegetated with mixed shrubs, lianas, and herbaceous species.

A total of 48 floral species and 14 faunal species were observed in 232 habitats at the project site, which have an overall floral species biodiversity score of H = 3.037. The species with the highest importance values include *Coccothrinax inaguensis* (32.21), *Myrcianthes fragrans* (17.95), and *Tabebuia bahamensis* (11.09) (see Appendix D – Quantitative analyses). Each of these species is native to TCI, with *C. inaguensis* and *T. bahamensis* being near-endemic species, thus attesting to high biodiversity values at genetic and species levels at the site. Similarly to 332 habitats, *C. inaguensis* dominates these habitats allowing for a more-specific habitat classification *C. inaguensis* coastal woodland (Figure 15).

Figure 14 - *Coccothrinax inaguensis* coastal mixed woodlands

Figure 15 - Mosaic *Coccothrinax inaguensis* mixed woodland habitats

232 habitats at the project site exhibit high biodiversity values on a species and genetic level. Of the 48 floral species recorded in these habitats, 23 or 48% (almost half) are of conservation interest, including one endemic, 13 near endemic, and seven regionally endemic floral species, in addition, five that are internationally protected by CITES, one that is considered Vulnerable by the IUCN, and one that is considered Near Threatened by the IUCN. Of note is what appears to be an individual *Encyclia inaguensis x E. rufa* hybrid that was recorded at survey point 40 (Figure 14). This specimen is not only unique genetically, making it of high conservation interest, but also has potentially significant commercial value.

In addition, nine faunal species observed at the project site are of conservation interest, including one endemic invertebrate, two near endemic invertebrates, one endemic reptile, three range-restricted birds, one

Figure 16 - *Encyclia inaguensis x E. Rufa* Hybrid

migratory bird, and one other bird species (Table 7).

Table 7 - Species of conservation interest in coastal mixed woodland habitats

Species	Common Name	Status
Flora		
Anemotrochus eggersii	Egger's Milkweed Vine	Regional Endemic
Argythamnia lucayana	Lucayan Argythamnia	Near Endemic/TCI Protected
Catesbaea foliosa	Catesby's Vine	Near Endemic/TCI Protected
Chamaecrista caribaea var. inaguensis	Inagua Senna	Regional Endemic/IUCN VU
Coccoloba krugii	Crabwood	Regional Endemic
Coccothrinax inaguensis	Inagua Silver Palm	Near Endemic/TCI Protected
Dodonaea viscosa	Dogwood	Near Endemic/TCI Protected
Encyclia altissima	Tall Encyclia	Regional Endemic/CITES
E. inaguensis	Inagua Encyclia	Near Endemic/CITES
E. inaguensis x E. Rufa	Encyclia hybrid	Endemic/CITES
E. rufa	Rufous Encyclia	Near Endemic/CITES
Ernodea millspaughii	Millspaugh's Ernodea	Near Endemic/TCI Protected
Guaiacum sanctum	Lignum Vitae	IUCN VU
Jacquemontia cayensis	Island Jacquemontia	Regional Endemic
Lantana involucrata	Sea Sage	Near Endemic/TCI Protected
Lepidaploa arbuscula	Vernonia	Near Endemic/TCI Protected
Passiflora pectinata	Wild Apricot	Regional Endemic
Sideroxylon americanum	Milk Berry	Regional Endemic
Stenostomum lucidum	Shining Antirhea	Regional Endemic
Tabebuia bahamensis	Five Finger	Near Endemic/TCI Protected
Tillandsia flexuosa	Twisted Wild Pine	CITES
Vachellia choriophylla	Tamarindillo	Near Endemic/TCI Protected
Varronia bahamensis	Bahama Cordia	Near Endemic/TCI Protected

Fauna		
Cerion spp.	Tree Snail	Endemic/TCI Protected
Corvus nasicus	Cuban Crow	TCI Protected/Range-restricted
Eurema chamberlaini	Sm. Sulfur Butterfly	Near Endemic/TCI Protected
Leiocephalus psammodromus	Curly-tail Lizard	Endemic/IUCN VU
Mimus gundlachii	Bahama Mockingbird	TCI Protected/Range-restricted
Papilo andraemon	Swallowtail Butterfly	Near Endemic/TCI Protected
Tyrannus dominicensis	Gray Kingbird	TCI Protected/Migratory
Vireo crassirostris	Thick-billed Vireo	TCI Protected/Range-restricted
Zenaida macroura	Mourning Dove	TCI Protected Species

2.2.1.1.5 – Coastal Mixed Forests (132)

Coastal mixed forest habitats at the project site occur in areas further from the shoreline where geological time, and sufficient sheltering from harsh coastal conditions has allowed for the succession of forest vegetation structures in which trees with closed canopies are the predominant growth form (Figure 17). Because the closed canopies block sunlight, understories are relatively open (Figure 16). The species with the highest importance values in 132 habitats are *Coccothrinax inaguensis* 46.86), *Leucothrinax morrisii* (22.81) and *Metopium toxiferum* (20.35). Each of these is a native floral species, with *C. inaguensis* being a near endemic and TCI protected species, attesting to the high biodiversity values of the site on genetic and species levels.

A total of 17 floral species and three faunal species were observed at the project site during field studies, including five near endemic floral species and one endemic invertebrate (Table 8). These areas had an overall biodiversity score of H = 2.1872; however, it should be noted that due to the relative rarity of these habitats, only three quadrat samples were taken in 132 habitats; therefore, actual species counts and biodiversity are likely higher than what has been quantified for the purposes of this assessment.

Figure 17 - Coastal mixed forest habitats (132)

Table 8 - Species of conservation interest in coastal mixed forest habitats

Species	Common Name	Status
Flora		
Catesbaea foliosa	Catesby's Vine	Near Endemic/TCI Protected
Coccothrinax inaguensis	Inagua Silver Palm	Near Endemic/TCI Protected
Ernodea millspaughii	Millspaugh's Ernodea	Near Endemic/TCI Protected
Tabebuia bahamensis	Five Finger	Near Endemic/TCI Protected
Vachellia choriophylla	Tamarindillo	Near Endemic/TCI Protected
Fauna		
Cerion spp.	Tree Snail	Endemic/TCI Protected

Figure 18 - Coastal mixed forest habitat with closed canopy and open understory

2.2.1.2 Rare, threatened, endangered (RTE), and endemic species

Of the 71 floral species and 20 faunal species recorded during field studies at the site, 29 floral species, and 13 faunal species, comprising 46.15% of all species recorded at the project site, are of conservation interest. This figure - almost half of all species recorded at the project site - is exceptionally high and indicates the considerable conservation value of the project site and surrounding areas.

Furthermore, the site possesses high biodiversity on species and genetic levels with nine regionally endemic, 15 near endemic, and one TCI endemic floral species; and three TCI endemic and five near-endemic faunal species. Species of international conservation concern, include two floral species recognized by the IUCN as Vulnerable, one floral species recognized by the IUCN as Near-threatened, five floral species recognized as threatened by trade through CITES (Appendix II), and one faunal species recognized by the IUCN as Vulnerable (Table 9). All endemic, near-endemic, and internationally protected species are further proposed to be locally protected species in TCI under pending legislation. All birds are protected under the TCI Wild Birds Protection Ordinance (1990, please see Section 3.0 for all laws and policies governing conservation at the project site).

Table 9 - Species of conservation interest

	Ani T & C Ltd., North Caicos		
	Species of conservation interest		
#	***Flora***	**Common Name**	**Comments**
1	*Anemotrochus eggersii*	Egger's Milkweed Vine	Regional endemic
2	*Argythamnia lucayana*	Lucayan Argythamnia	Near Endemic
3	*Catesbaea foliosa*	Catesby's Vine	Near Endemic
4	*Chamaecrista caribaea var. inaguensis*	Inagua Senna	Regional Endemic/IUCN VU
5	*Coccoloba krugii*	Crabwood	Regional endemic
6	*Coccothrinax inaguensis*	Inagua Silver Palm	Near Endemic
7	*Dodonaea viscosa*		Near Endemic
8	*Encyclia altissima*	Tall Encyclia	Regional endemic/CITES
9	*Encyclia inaguensis*	Inagua Encyclia	Near Endemic/CITES
10	*Encyclia inaguensis x E. rufa*	Encyclia Hybrid	Endemic and Rare
11	*Encyclia rufa*	Spring Encyclia	Near Endemic/CITES
12	*Ernodea millspaughii*	Millspaugh's Ernodea	Near Endemic
13	*Euphorbia inaguaensis*	Inagua Spurge	Near Endemic
14	*Guaiacum sanctum*	Lignum Vitae	IUCN NT
15	*Guettarda krugii*	Frogwood	Regional Endemic
16	*Jacquemontia cayensis*	Island Jacquemontia	Regional endemic
17	*Lantana involucrata*	Sea Sage	Near Endemic
18	*Lepidaploa arbuscula*	Vernonia	Near Endemic
19	*Passiflora pectinata*	Wild Apricot	Regional Endemic

20	*Sarcomphalus taylorii*	Bahama Jujube	Near Endemic
21	*Sideroxylon americanum*	Milk Berry	Regional Endemic
22	*Stenostomum lucidum*	Shining Antirhea	Regional Endemic
23	*Tabebuia bahamensis*	Five-finger	Near-endemic
24	*Tillandsia balbisiana*	Cuttlefish	CITES
25	*Tillandsia flexuosa*	Twisted Wild Pine	CITES
26	*Vachellia acuifera*	Acacia	Near Endemic
27	*Vachellia choriophylla*	Tamarindillo	Near Endemic
28	*Varronia bahamensis*	Bahama Cordia	Near Endemic
29	*Zanthoxylum flavum*	Satinwood	IUCN VU
	Fauna	**Common Name**	**Comments**
1	*Cerion spp.*	Tree Snail	Endemic/TCI Protected Species
2	*Coereba flaveola*	Bananaquit	
3	*Columbina passerina*	Common Ground Dove	
4	*Corvus nasicus*	Cuban Crow	Near Endemic
5	*Eurema chamberlaini*	Sm. Sulfur Butterfly	Near Endemic
6	*Leiocephalus psammodromus*	Curly-tail Lizard	Endemic/ IUCNVU
7	*Memphis intermedia*	Dead Leaf Butterfly	Near Endemic/TCI Protected
8	*Mimus gundlachii*	Bahama Mockingbird	Near Endemic
9	*Papilo andraemon*	Swallowtail Butterfly	Near Endemic
10	*Passerina cyanea*	Indigo Bunting	Female
11	*Tyrannus dominicensis*	Gray Kingbird	
12	*Vireo crassirostris*	Thick-billed Vireo	Endemic/TCI Protected Species
13	*Zenaida macroura*	Mourning Dove	

2.2.1.3 Complete list of flora

As noted in previous sections, a total of 71 floral species were observed and recorded during field studies. Please see Appendix E – Species list – for details.

2.2.1.4 Complete list of bird species

Field studies took place between 20-22 May 2024. At this time, almost all winter stopover visitors and winter resident bird species would have been absent from the site and vicinity, and some summer breeding residents would have only recently arrived, in addition to year-round residents being present. A total of nine species and 36 individuals were recorded during the survey period (Table 10). Field studies were

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

also conducted during crepuscular (dawn and dusk) and daytime hours to maximize survey opportunities.

Table 10 - Birds

Ani T & C Ltd., North Caicos				
Birds				Total
20th - 22nd May 2024				
1	*Coereba flaveola*	Bananaquit		2
2	*Columbina passerina*	Common Ground Dove		1
3	*Corvus nasicus*	Cuban Crow	Near Endemic	5
4	*Mimus gundlachii*	Bahama Mockingbird	Near Endemic	3
5	*Passerina cyanea*	Indigo Bunting	Migratory	1
6	*Thalasseus maximus*	Royal Tern	Migratory	2
7	*Tyrannus dominicensis*	Gray Kingbird	Migratory	12
8	*Vireo crassirostris*	Thick-billed Vireo	Endemic sub-species	7
9	*Zenaida macroura*	Mourning Dove		3
				36

All birds are protected under the Wild Birds Protection Ordinance (1990); however, five of the nine species recorded (56%) are also of additional conservation interest, including three migratory species, two near endemic species, and one endemic sub-species. Despite the late spring season of the year when field studies were conducted, one female Indigo Bunting, a winter stopover migrant, was observed, potentially indicating the importance of the site and surrounding areas for migratory passerine birds during the winter season.

2.2.1.5 Complete list of reptiles and amphibians

Two reptile species were recorded during field studies, including the common anole *Anolis sagraei* and the TCI endemic curly-tail lizard *Leiocephalus psammodromus*. The curly-tail lizard is of further conservation interest as it is recognized as Vulnerable by the IUCN. Only two curly-tails were recorded during field studies, indicating that the site's current habitat value for this species is limited; however, in some cases, human development and presence has proven to be beneficial for this species, and this will be discussed in Sections 5.0 – Environmental Impact and 6.0 - Mitigation.

2.2.1.6 Complete list of freshwater fish species

No freshwater features of fish species are present at the project site.

2.2.1.7 Complete list of mammals

No mammals were observed at the project site; however, feral dogs, cats, and rats may roam the area on occasion, as these AIS are ubiquitous on all islands in TCI (Dawson et al., 2015; Iverson, 1978).

2.2.1.8 Representative list of invertebrates

A total of ten representative invertebrate species and 17 individual invertebrates were recorded during field studies, including one spider, one mollusc, one moth, and seven butterflies (Table 11). Of these, members of the tree snail genera *Cerion spp*. has several TCI endemic species, which, like most undeveloped areas in TCI, are ubiquitous across the project site and were too numerous to count. Furthermore, three butterfly species, including the small sulfur *Eurema chamberlaini*, dead leaf *Memphis intermedia*, and Bahama swallowtail *Papilo andraemon*, are near endemic and appear on the proposed TCI protected species list. Implications for development's impact on these species and how to best manage and mitigate for them are elaborated in Sections 5.0 - Environmental Impact and 6.0 – Mitigation.

2.2.1.9 Cave and karst biota

No cave or karst features occur at the project site; therefore, no cave or karst biota are present.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Table 11 - Representative invertebrate species

Ani T & C Ltd., North Caicos				
Invertebrates				Total
20th - 22nd May 2024				818
1	*Argaulis vanillae*	Gulf Fritillary Butterfly		2
2	*Argiope argentata*	Silver Argiope		2
3	*Ascalapha odorata*	Erebus Moth		3
4	*Cerion spp.*	Tree Snail	Endemic	TNTC
5	*Epargyreus zestos*	Skipper Butterfly		1
6	*Ephyriades brunnea*	Skipper Butterfly		4
7	*Eurema chamberlaini*	Sm. Sulfur Butterfly	Near Endemic	1
8	*Eurema dina*	Sm. Sulfur Butterfly		1
9	*Memphis intermedia*	Dead Leaf Butterfly	Near Endemic	1
10	*Papilo andraemon*	Swallowtail Butterfly	Near Endemic	2
				17

2.2.2 Baseline marine assessment

The proposed project for the Ani T & C Boutique Hotel, North Caicos (NC1246) is located along the northern shoreline of North Caicos, just west of the Three Mary Cays Sanctuary (S26). The implications of this are elaborated in Section 3.6 Legislative and Regulative Context – National Parks Ordinance.

For the Ani T & C Boutique Hotel marine assessment, the overall classification framework for marine habitat assessment, as defined by the Ecological Society of America (ESA) and the National Oceanography and Atmospheric Administration (NOAA) Office of Habitat Conservation for marine, estuarine ecosystem and habitat classification (Allee et al., 2000) was used. The NOAA classification framework comprises a total of 13 levels. At the project site, the marine area was consistent through the first six levels (water, marine, non-continental, benthic, shallow <200m). Lower classification levels include specific modifiers and address the environmental conditions found at a particular site, including regional wave/wind energy, bank energy, hydrodynamic features (subtidal, photic, aphotic, and geomorphic types). Geomorphic types include four distinct marine types, including A) soft sediments, B) non-reefal hardbottom, C) reefal hardbottom and D) deep reef resources.

The framework was further classified for the Bahamian ecoregion (Sullivan-Sealey et al., 2002) (Figure 19). The augmented framework includes the following subcategories (Level 12: Ecotype) for habitat classification:

A) Soft Sediment

1. Bare Sand: 0-10% cover
2. Patch Seagrass: 10-30% cover
3. Sparse Seagrass: 30-60% cover
4. Dense Seagrass: 60%+ cover
5. Anthropogenic

B) Non-Reefal Hardbottom

1. Nearshore
2. Channel, Algae dominated
3. Channel, Octocoral/Sponge dominated
4. Platform Margin, Algae dominated

C) Reefal Hardbottom

1. Reefal Hardbottom
2. Platform Margin
3. Nearshore Patch Reef

D) Deep Reef Resources

1. Deep Water: 20m+

Figure 19 - Marine ecotypes in the vicinity of the project site

For ecotypes found in the immediate project area (extending 100m from shore, and for the length of the coastal boundary of the site), the habitat is described as Category A – soft sediments (#1) bare sand, and #2, #3, and #4 (patch to dense seagrass). No trash was found in the nearshore areas during field studies, but some was noted along the beach, thus adding classification #5, anthropogenic. Further offshore, dark bands of seagrass in variable densities can be seen. These also fall under Category A (soft sediments), seagrass densities of over 60%.

Further offshore, Category A continues with variations between bare sand and dense seagrass communities. Category B, non-reefal hardbottom exists further offshore, turning into reefal hardbottom (Category C) approaching the reef ridge crest. Category D, deep reef, exists beyond the reef crest and where the water depth is greater than 20m.

The water depth just offshore of the property is relatively shallow (0.3-1.5m MLW), extending out to approximately 100m offshore along the three shore-perpendicular transect lines. Historic imagery indicates that at some point between 2012 and 2013, a swath of seagrass was removed in areas near the project site (Figure 20). A land access path also appears to have been added during the same timeframe. This beach path and cleared area persist, and the area where seagrass was removed and/or previously dredged appears to have widened slightly over the past 12 years, either due to natural causes or further man-made excavation. Satellite imagery allows for an analysis of changes over time for the channel and the surrounding marine areas (Figure 21and Figure 22).

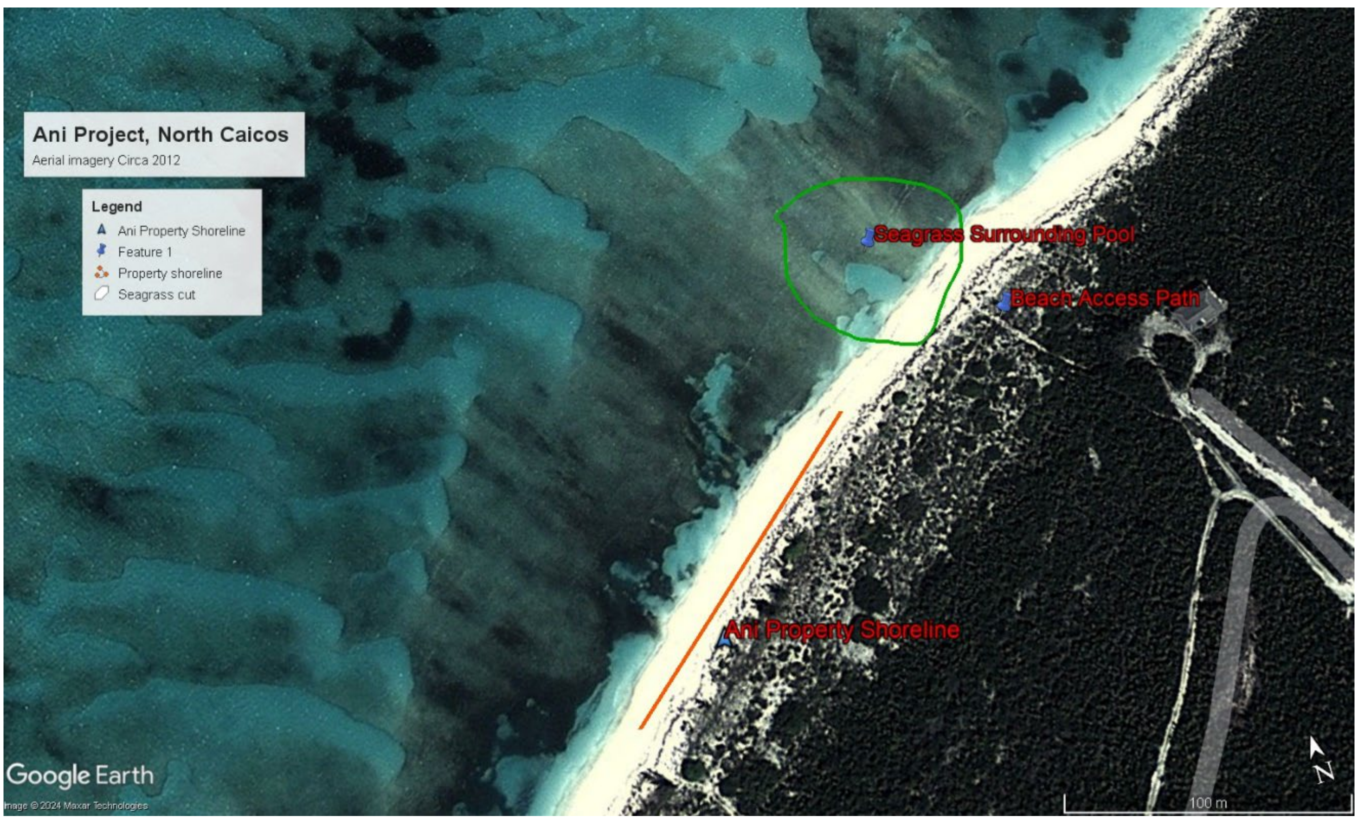

Figure 20 - Satellite imagery (Google Earth, 2012)

Figure 21 - Satellite imagery (Google Earth, 2013)

Figure 22 - Satellite imagery (Google Earth, 2024)

2.2.2.1 – Description and quantification of marine habitats

Quantitative data was collected and analyzed to provide averages of benthic cover across selected areas. Our analyses incorporated three shore-perpendicular transects TE (east), TC (center), TW (west), and one shore-parallel Transect Tp50m (50m from shore). From this data, live cover was calculated for seagrass and algal species, as well as sponge, tunicates and coral. Total live benthic cover for the transects are TE = 32%, TC = 34%, TW = 45%, and Tp50m = 38%. Sand patches surround a large seagrass/algal meadow, with a small deeper area of sandy bottom located along TE approximately 20-30m from shore. This sandy area is surrounded by climax seagrass bed ledges, and this type of ledging typically occurs where thickly layered seagrass roots (.3m:1ft+depth) calve off from the mature seagrass bed (Figure 26). Throughout the area, lighter colored patches indicate where turtle grazing has occurred and seagrasses are cropped (Figure 23). A total of seven juvenile sea turtles (approximately 8-12" carapace length) were counted during field studies A positive identification could not be made of the turtles at that distance, but the most likely species is green turtle *Chelonia mydas,* based on the typical diet of this species, which is seagrass.

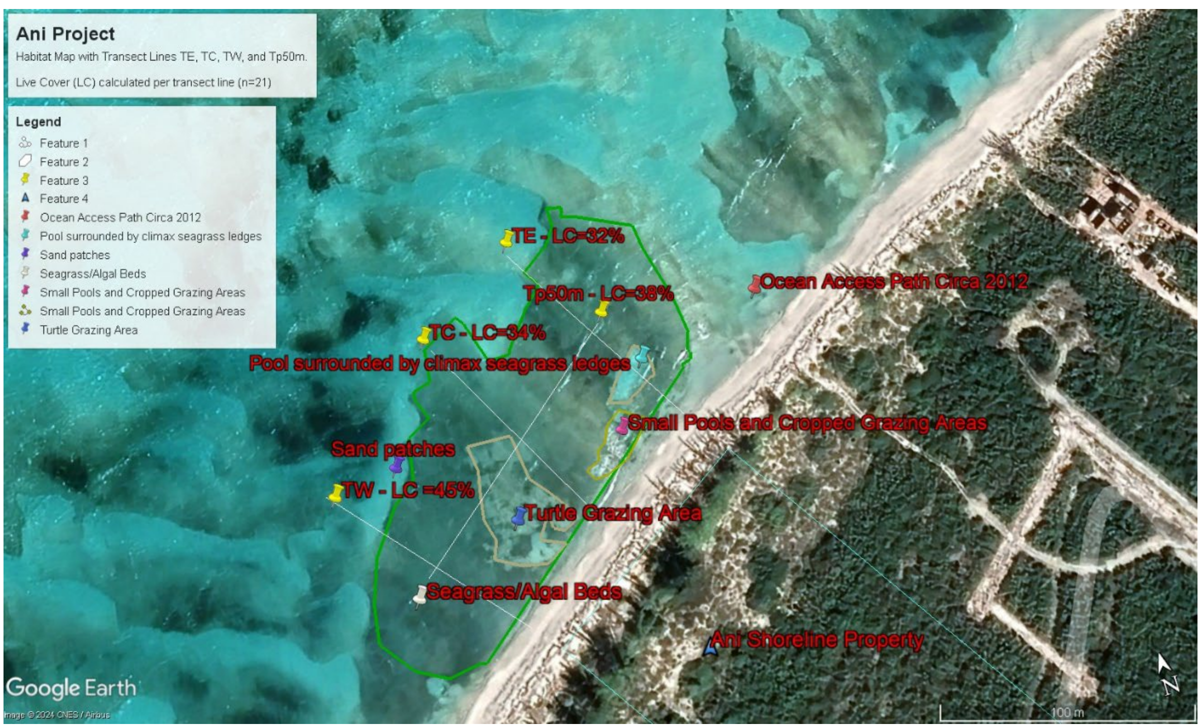

Figure 23 - Habitat map of the nearshore marine environment

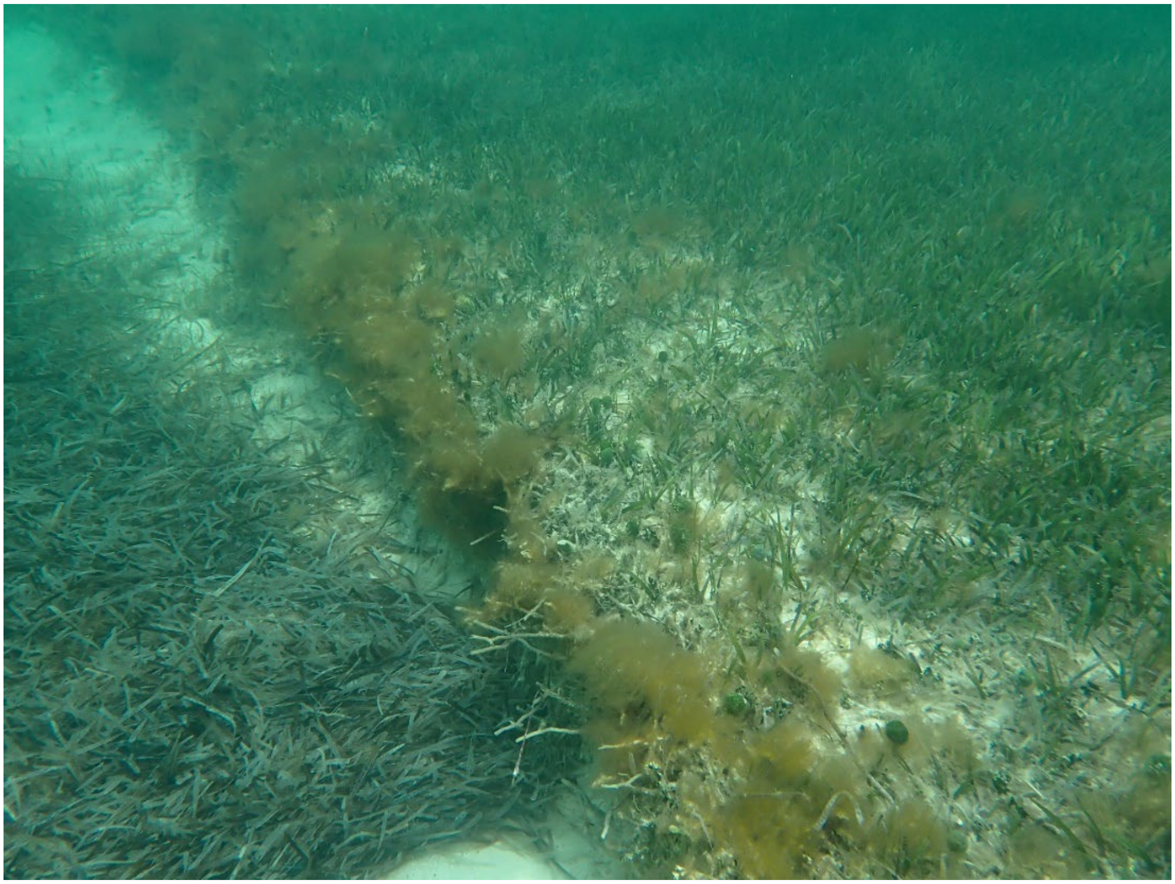

Figure 24 - Climax community seagrass ledge with calving

Live cover percentages within the study area are comprised of various seagrasses and algae as well as other marine benthic species. For all transects lines, turtle grass *Thalassia testudinum* was the dominant species (avg. 25-35%), with small quantities of shoal grass *Halodule wrightii* (<1%) and manatee grass *Syringodium filiforme* (<1.5%). For marine macroalgae, *Halimeda spp*., *Penicillus spp.,* and *Laurencia spp*. were the main species with a small quantity of *Caulerpa spp*. found along the shore parallel transect. Live cover of algal species ranged from 0.2 to 3.7% but combined averages were 2% or less. Other species included a white encrusting tunicate, adhering to seagrass blades, two sponge species (fire sponge *Tedania ignis* and loggerhead sponge *Speciospongia vesparium*), and two species of coral (lesser starlet coral *Sideratrea radians* and mustard coral *Porites astreiodes*), along with a few scattered skeletons of finger coral *Porites porites*. Average live cover for coral species was also less than 2%. Average live cover was highest for Transect TW and lowest for Transect TE, which also had rubble as well as sand for the bare substrate categories (Figure 24).

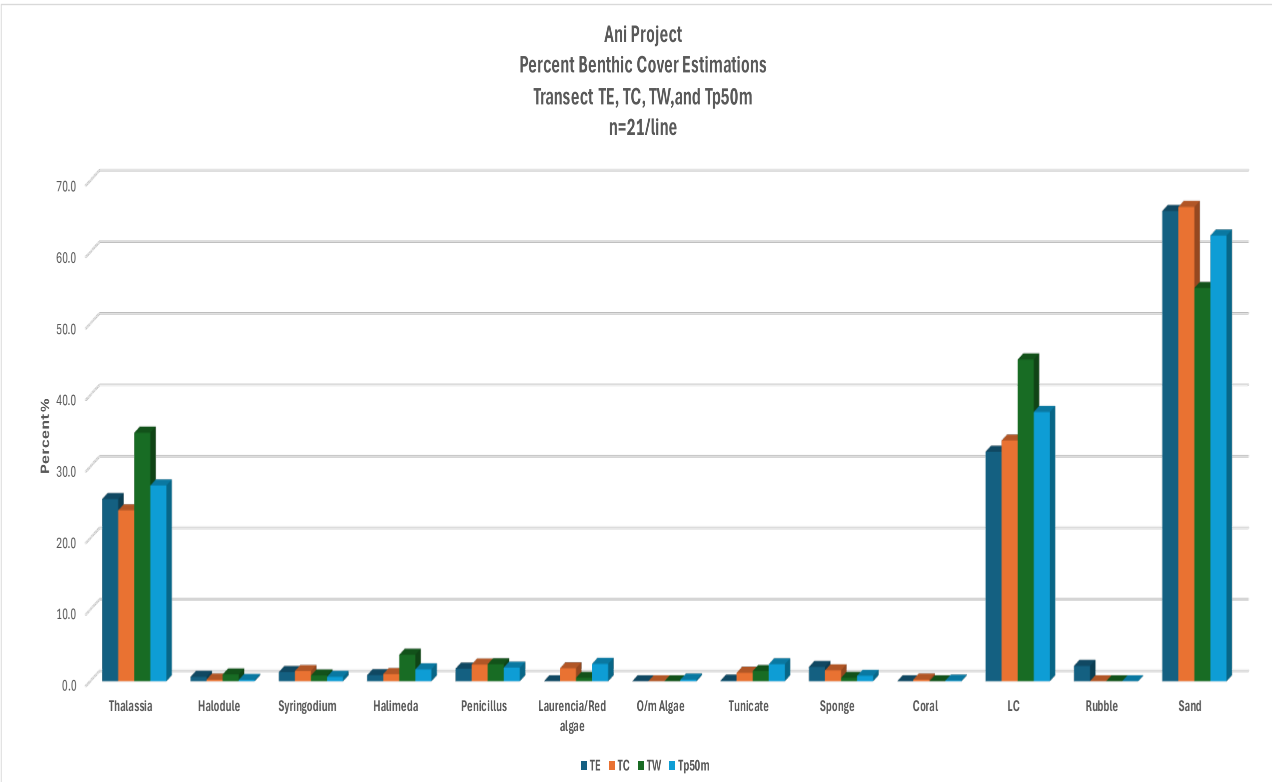

Figure 25 - Percent coverage by species and transect

.

Live cover as a function of distance from shore was also graphed for the three shore-perpendicular transects - TE, TC, and TW – (Figure 25). Along transect TE, the sand pool surrounded by climax seagrass ledges (Figure 23) lies between 15 and 30m from shore. Then, benthic cover gradually increases to 35% at the 10m mark. Along transect TC benthic cover is 30% at the 5m mark; and along Transect TW, 40% benthic cover begins at the 0m mark and maintains a higher density cover until the 75-80m mark, where it drops into a sand patch. Transect TC fluctuates in a couple areas where turtle grazing was observed (Figure 28).

Figure 26 - Percent benthic cover with distance from the shore for transects TE, TC, and TW

Figure 27 - Healthy seagrass and algae habitat

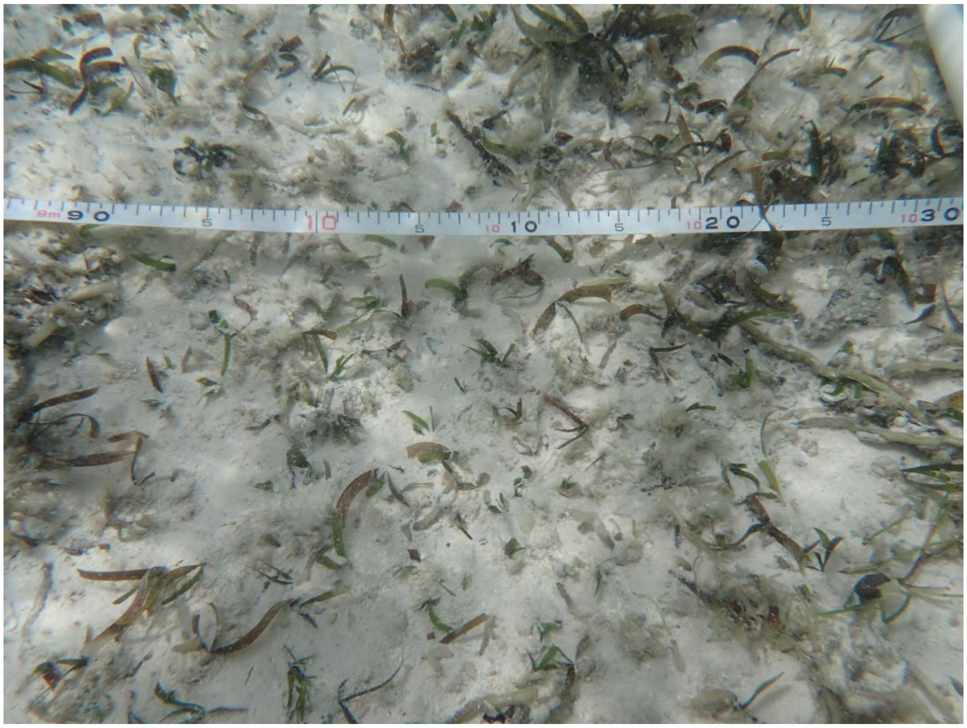

Figure 28 - Seagrass meadow grazed by turtles

2.2.2.2 List of RTE species (marine)

The marine environment adjacent to project site consists of seagrass/algal communities which are listed under SPAW (Specially Protected Areas and Wildlife) Annex 3 for protection in the wider Caribbean region https://www.car-spaw-rac.org. Seagrass species are not listed under the DECR's Draft Proposed Schedule for the Wildlife and Protection Bill (Manco, 2021). The green sea turtle *Chelonia mydas* is listed as Endangered by IUCN and CITES, App 1, while the Hawksbill Turtle *Eretmochelys imbricata* is listed by the IUCN as Critically Endangered and appears in CITES App 1. (https://www.iucnredlist.org; https://checklist.cites.org). Both are included on TCI's Protected Species list as are the coral and sponge species previously mentioned. All hard and soft corals are protected through CITES and the SPAW protocol, with some species of coral listed by the IUCN if they are deemed threatened on a global level (Table 12).

Table 12 - RTE species

Ani T&C Boutique Hotel Marine Assessment RTE Species List			
Species	**Common Name**	**Comments****	**DECR**
Reptiles			
Chelonia mydas	Green Sea Turtle	IUCN Endangered, CITES App 1	X
Eretmochelys imbricata	Hawksbill Turtle	IUCN Critically Endangered, CITES App1	x
Marine Invertebrates			
ORDER Schleractinia	All Hard and Soft Corals	CITES; SPAW (Annex 3)	X
Siderastrea radians	Lesser Starlet Coral	IUCN Least Concern	X
Porites porites	Finger Coral	IUCN Least Concern	X
Porites astreoides	Mustard Hill Coral		X
Spheciospongia vesparium	Loggerhead Sponge		x
Seagrasses			
Halodule wrightii	Shoal Grass	SPAW (Annex 3)	
Syringodium filiforme	Manatee Grass	SPAW (Annex 3)	
Thalassia testudinum	Turtle Grass	SPAW (Annex 3)	

2.2.2.3 – List of marine flora

Marine flora identified at the project site include three species of seagrasses and eight species of macroalga (Table 13).

Table 13 - Marine flora

Seagrass/Algae	
Common Name	Latin Name
Turtle Grass	*Thalassia testudinum*
Shoal Grass	*Halodule wrightii*
Manatee Grass	*Syringodium filiforme*
Halimeda spp.	*H. tuna and H. monile*
Penicillus spp.	*P. pyroformis and P. dumetosus*
Oval-Blade Alga	*Caulerpa prolifera*
Mermaid's Wine Glass	*Acetabularia spp.*
Mermaid's Fan	*Udotea spp.*
Paddle Blade Alga	*Avrainvillea spp.*
Laurencia spp.	*Laurencia spp.*
Liagora spp.	*Liagora mucosa*

2.2.2.4 Coral species

Only three species of coral were identified during field studies (Table 14). Coral diversity is likely limited due to the shallow nature of seagrass meadows and the sedimentation that typically occurs within such habitats.

Table 14 - Coral species

Corals		
Common Name	Latin Name	AGRRA Code
Lesser Starlet Coral	*Siderastrea radians*	SRAD
Mustard Hill Coral	*Porites atreiodes*	PAST
Finger Coral	*Porites porites*	PPOR

Figure 29 - Mustard hill coral in seagrass bed

2.2.2.5 Seabirds

One pair of Royal Terns *Thalasseus maximus,* were the only seabirds observed during field studies.

2.2.2.6 Marine reptiles

Seven sea turtles were observed grazing in nearshore seagrass beds during field studies (Table 15). Positive identification was not possible, but the presence of cropped seagrass and the swimming behaviour of the animals in the water indicates that the turtles were likely green sea turtles *Chelonia mydas*. All were of similar "dinner plate" size with carapaces approximately one foot in diameter. Alternatively, they could have been hawksbills *Eretmochelys imbricata*.

Table 15 - Marine reptiles

Reptiles	
Common Name	Latin Name
Green Sea Turtle	*Chelonia Mydas*
Hawksbill Turtle	*Eretmochelys imbricata*

2.2.2.7 Fish

Few fish were noted throughout the area during field studies (Table 16). Most fish observed occurred in pool areas surrounded by climax community seagrass ledges. All fishes observed were juveniles except for one adult yellowfin mojarra. Seagrass meadows are critical habitats for juvenile fish species as they provide foraging as well as protective habitat (Figure 30).

Table 16 - Marine fish

Fish	
Common Name	Latin Name
Yellofin Mojarra	*Gerres cinereus*
Sergeant Major	*Abudefduf saxatilis*
Slippery Dick	*Halichoeres bivittatus*
Juvenile Grunts	*Haemulon spp.*

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

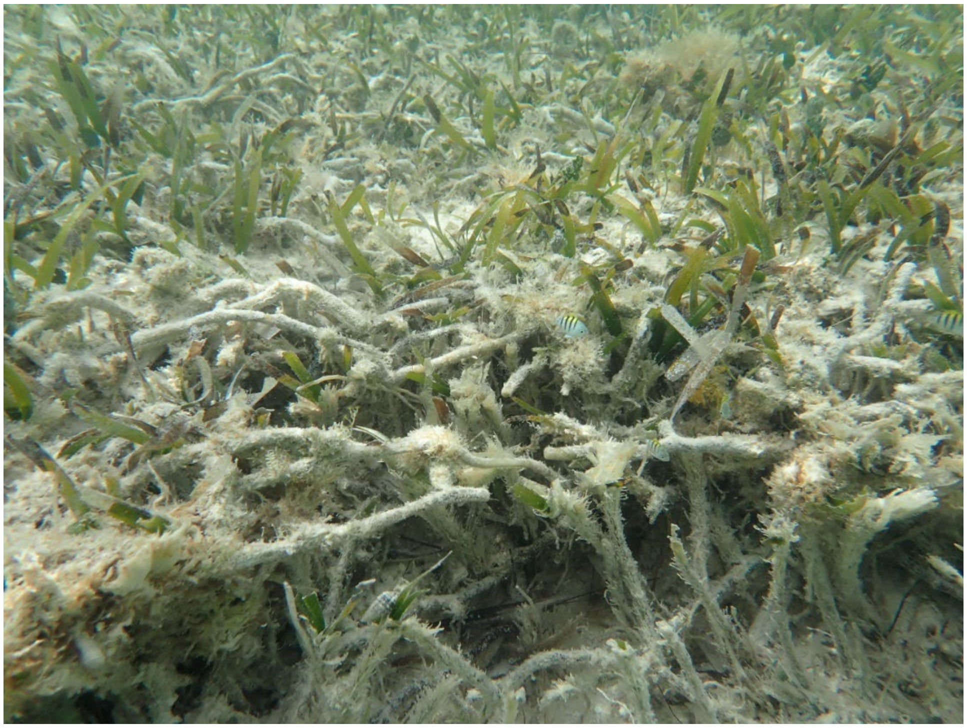

Figure 30 - Juvenile sergeant major and climax seagrass ledge

2.2.2.8 Marine mammals

No marine mammals were observed during field studies at the site or within any surrounding areas.

2.2.2.9 Other marine invertebrates

The existence of other marine invertebrates was determined largely via the examination of shells rather than live specimens. A total of ten invertebrates were observed, with live species including two juvenile queen conch *Strombus gigas*, one pen shell *Pinna carnea*, abundant stocky ceriths *Cerithium litteratum,* and three apple murex *Phyllonotus pomum,* including one with an egg mass (Figure 31). Two types of sponge were also recorded, including fire sponge and loggerhead sponge. (Table 17).

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Table 17 - Other marine invertebrates

Other Invertebrates	
Common Name	Latin Name
Tiger Lucine	*Codakia orbiculata*
Custate Lucine	*Codakia costata*
Stocky Ceriths	*Cerithium litteratum*
Common Atlantic Bubble	*Bulla striata*
Egg Cockle	*Laevicardum laevigatum*
Pen Shell	*Pinna carnea*
Venus Clams	*Chione app.*
Tellins	*Tellina spp.*
Apple Murex	*Phyllonotus pomum*
Queen Conch	*Lobotus gigas (formerly Strombus)*
Fire Sponge	*Tedania ignus*
Loggerhead Sponge	*Spheciospongia vesparium*

Figure 31 - Apple murex cluster with extruding egg mass

Figure 32 - Fire sponge with encrusting tunicates *Botryllus spp.*

Although not technically invertebrates, tunicates were observed encrusting a few blades of seagrass and encrusting sponges (Figure 32 and Figure 33). Tunicates (Phylum Chordata, subphylum Urochordata) do not have a true spinal column, but at some point in their lifecycle had a tail, dorsal central nerve chord, pharyngeal gill clefts, and a notochord.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

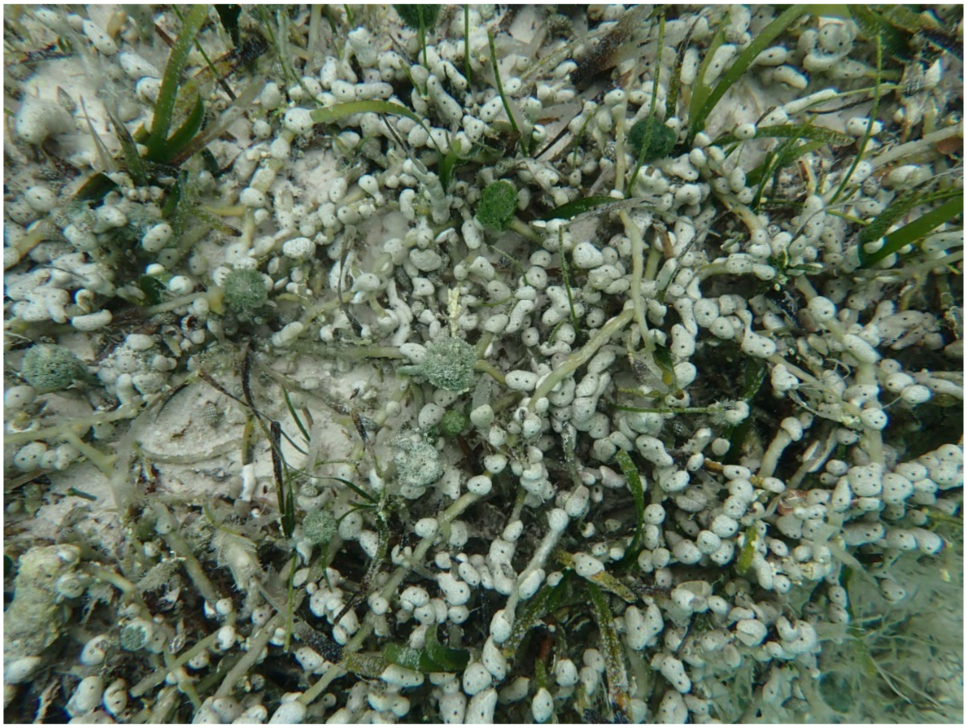

Figure 33 - Encrusting tunicates on seagrass blades

Definitive taxonomy of the observed encrusting tunicates could include one of two species. The overgrowing mat tunicate *Trididemum solidum* is more commonly found on shallow water reefs encrusting and overgrowing corals. More likely, the species observed is an invasive white colonial tunicate of the Genus *Didemnum* (of which there are many species) that has been found around the world. Further identification is needed by an expert in tunicates to difinitively verify the organisms observed at the site.

An excerpt from the Smithsonian Institution website follows:
"Didemnum perlucidum is a widely distributed colonial tunicate. It was first described in Guadeloupe in the Caribbean, but was subsequently found in Brazil, West Africa, the Gulf of Mexico, and the Indo-Pacific, including Hawaii, Guam, and the Pacific entrance to the Panama Canal. We consider *D. perlucidum* to be cryptogenic (status unknown) over much of its range, but there are several recent occurrences in harbors or on man-made structures where it is known to be introduced. These include the Gulf of Mexico, Florida, Guam, Hawaii, and the Pacific Coast of Panama. It is a common member of the fouling

community throughout this range and was likely introduced through ship fouling. It can overgrow a wide range of organisms, including some commercially important species such as cultured mussels." https://invasions.si.edu/nemesis/species_summary/-124

Both green and hawksbill sea turtles are known to eat tunicates as part of their diets. Green turtles are often noted grazing on seagrass blades, but those blades are covered in various epiphytes, such as sponges and tunicates among other marine organisms. Similarly, hawksbills tend to prefer a diet of sponges but also eat tunicates on occasion. https://seaworld.org/animals/all-about/sea-turtles/diet/; https://www.seeturtles.org/sea-turtle-diet/.

2.2.2.10 Sargassum

No fresh or dried mounds of *Sargassum spp.* were observed during field studies. The weed lines ("Rack"), were comprised largely of seagrass blades, onshore, in the nearshore wash zones, and further offshore (Figure 34).

Figure 34 - Old and new lines of shoreline "rack" vegetation

Storm driven waves and tides have deposited weed lines right up to the vegetation line (Figure 35). These older deposits indicate that problematic deposition of *Sargassum spp.* is likely not an issue at the project site.

Figure 35 - Mounds of rack seagrass blades and roots at the high-water mark

2.3 Physical Environmental Baseline

2.3.1 Topography

The topography of the site (Figure 36) comprises relatively low-lying and flat topographical relieve across the project site with elevations ranging from 5.5 feet to 11.5 feet above mean tide. The highest elevations at the site occur near the coastal boundary along the apex of primary and secondary dune structures. As one progresses landward, elevations become shallower, with the lowest elevations occurring at the southern portions of the site. Potential implications associated with topography and mitigation recommendations to alleviate potential issues are discussed in Sections 5 and 6, Environmental Impact and Mitigation, respectively.

Figure 36 - Topographical survey

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

2.3.2 Bathymetry

The TOR call for a bathymetric baseline assessment for the "site shoreline [and] any other underwater areas conceivably affected by the project, extending at least 100 meters from the coast" (p. 5). Since no development associated with the project will take place at the site shoreline or within the nearshore area, all bathymetric data has been derived from the TCI marine spatial planning tools website (https://webgis.gov.tc/index.php/view/map/?repository=01tci&project=tcimsp-open). As confirmed during field surveys, the bathymetric baseline of nearshore areas adjacent to the project site can be described as shallow waters of less than one meter extending for a considerable distance from the shoreline, with some isolated areas of depths up to two meters. (Figure 37). Depth increases rapidly only as one approaches the fringing reef and beyond into the deep ocean environment. The bathymetry of the site will not be affected by project activities; however, because of the site's shallow depths, recreational use may result in impacts to the biotic environment, and these impacts are discussed in Sections 5 and 6 – Environmental Impact and Mitigation.

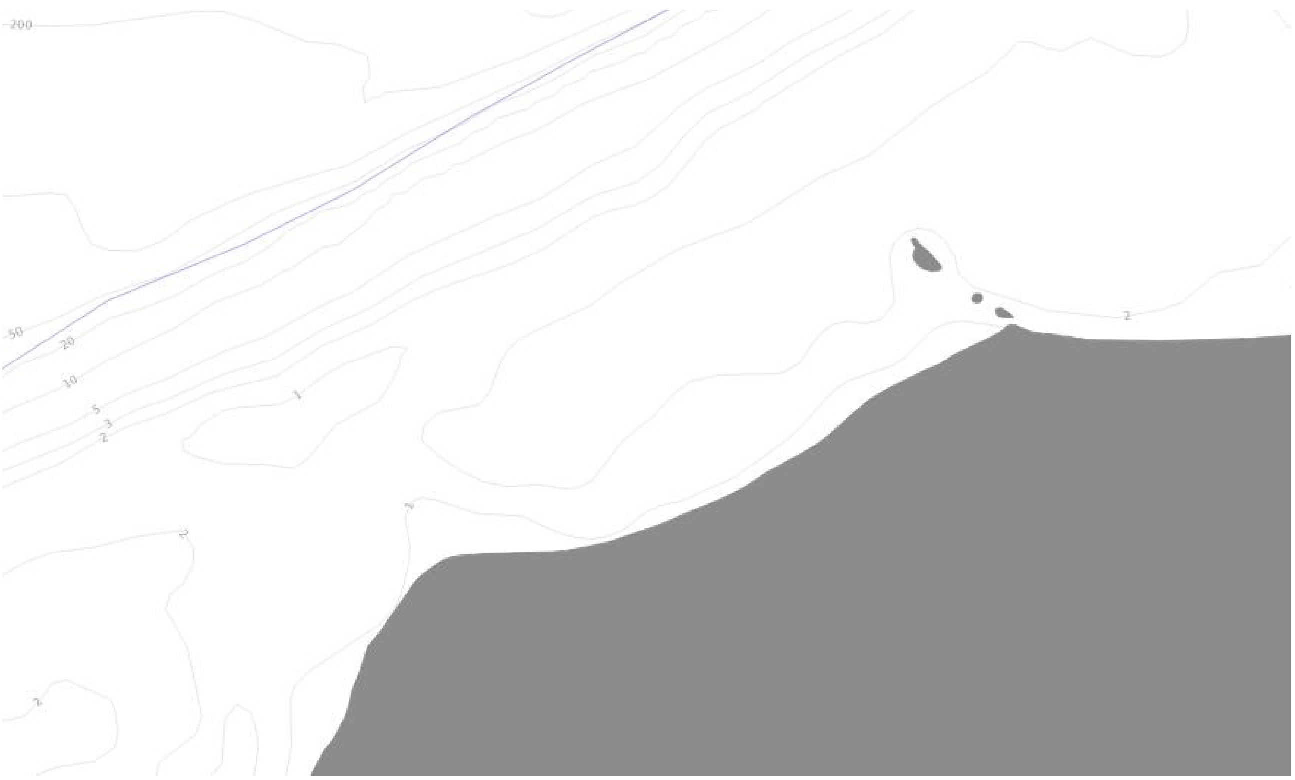

Figure 37 - Bathymetry at the project site and surrounding areas (Source: Marine Spatial Planning Tool for Turks and Caicos)

2.3.3 Geology

The geological features of the site are representative of the wider Caicos Islands northern coastal areas, with substrates of sand and fragmented rock overlying cemented sands and solid limestone. In the case of the project site, loose coral sands overlie cemented sand in the areas closest to the shoreline and loose coral sands with limited organic matter overlying cemented sand, with underlying substrates grading to solid limestone rock as one proceeds inland from the coastline. Most soils at the site are limestone sand-based with small amounts of organic material. In forest and woodland habitats, significant quantities of leaf litter detritus have collected in topographical valleys, covering sandy substrates beneath with a layer of palm and other leaf materials.

Cemented sand continues well into the subterranean water table (Section 2.3.4). Foundations of the proposed buildings will be keyed into the cemented sand and will not come into contact with the water table. Furthermore, compaction studies at similar sites across TCI indicate that cemented sand has a bearing capacity of at least 5,000 psf, and due to the low-density nature of the project, this load-bearing capacity is deemed more than adequate to support the structures being proposed.

The landscape of the Caicos Banks, geologically speaking, is largely homogenous, comprised of various limestone derivatives. The foundational structure of TCI's calcareous bedrock has been proven to be of sufficient load bearing capacity to support structures, such as those proposed by the project. No karst or other features that would undermine load bearing capacity at the site were observed during field studies.

2.3.4 Hydrology

The extent and quality of hydrology in TCI is well-understood (Mather, 1971, 1975, 1988; UNESCO, 1986). On the island of North Caicos, significant fresh groundwater resources exist as freshwater lenses within the vicinities of the Kew and Bottle Creek settlements. Furthermore, scattered shallow pockets of fresh groundwater occur underlying sandy substrates throughout the northern areas between Sandy Point and Whitby (Figure 38). These resources are not exploitable but do provide resources to support plant growth within ecological communities, and the well-developed coastal mixed woodlands and forests prevalent throughout the project site are likely supported and enabled by these limited substratum freshwater pockets. Any significant impacts to the geological formations and percolative capacities of overlying substrates are likely to interfere with the maintenance and recharge of these shallow pocket freshwater lenses; therefore, mitigation and monitoring recommendations to avoid these threats are made in Section 6.0 – Mitigation of this report.

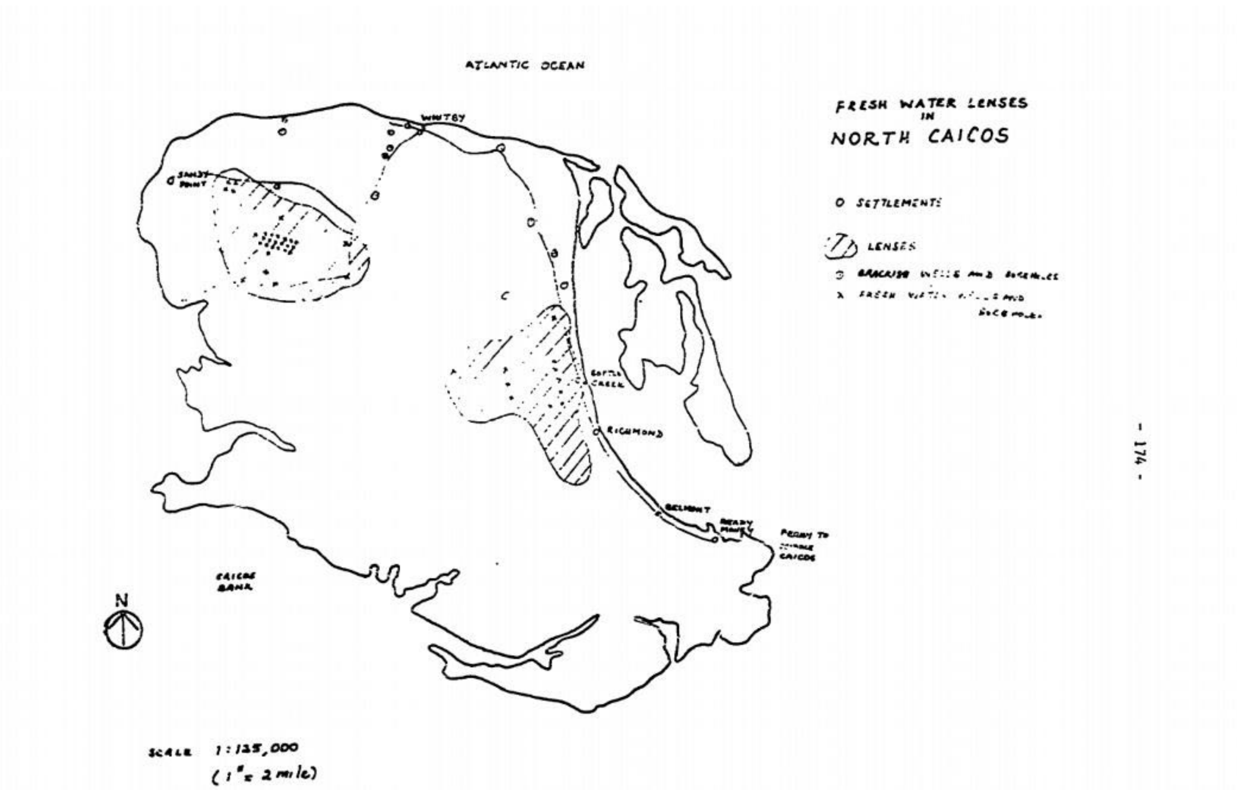

Figure 38 - Fresh groundwater resources on North Caicos (Source: UNESCO, 1986)

2.3.5 Sediment analyses

The TOR request grain size analyses for beach sand and testing for contaminants; however, no beach nourishment or other development is slated for the nearshore zone. The proposed project does not involve any coastal works and will therefore not interfere with the regular drift and deposition of sediments along the shoreline. Furthermore, as the area slated for development has no industrial development history and limited historical use, the probability that sediments contain any contaminants is minimal; therefore, sediment and contaminant analyses have been deemed unnecessary for the purposes of this analysis. The beach sand at the project site is characterized by a gradient of fine to medium-grain aragonite sand particles, which likely settle at this location due to the breakwater effects of the Three Mary Cays islands upstream. Impacts to the flow of sediments and mitigation measures to avoid them are addressed in Sections 5.0 and 6.0 respectively.

2.3.6 Climate and meteorology

Data from NOAA's Atlantic weather station 61010 once collected daily wind speed and direction data that is relevant to TCI, dating back several decades; however, this weather station is no longer active. Another weather station, 41046 (Eastern Bahamas) also provides general data that is relevant to TCI. Furthermore, the project proponents have installed a weather station at the project site to augment the NOAA data, so an accurate picture of daily weather conditions over the past year, and longer-term climate can be determined for the site. These data demonstrate that the site, receives winds predominantly from the east, with a few days each month experiencing winds from the north and northwest and very few days during the month experiencing winds from the south to southwest (Figure 39).

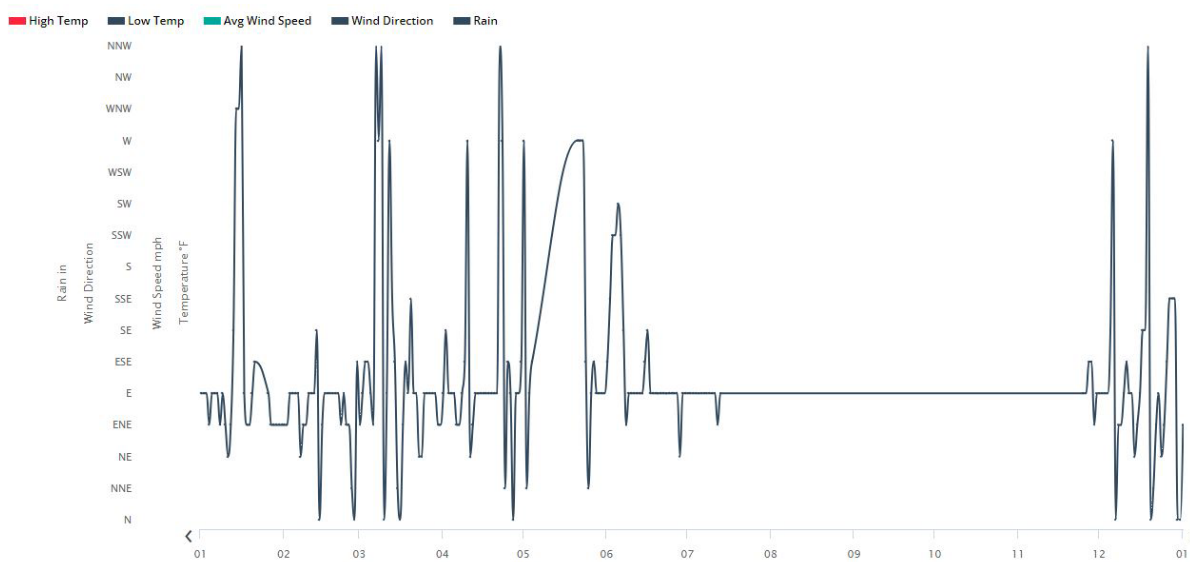

Figure 39 - Site wind direction January 2023 - January 2024 (Source: site weather station)

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Furthermore, wind speeds at the site are highly variable across the year, with typical wind speeds between zero and seven knots and a few days in the winter and early spring, when frontal boundaries are likely to move through, where wind speeds may range up to 11 knots (Figure 40).

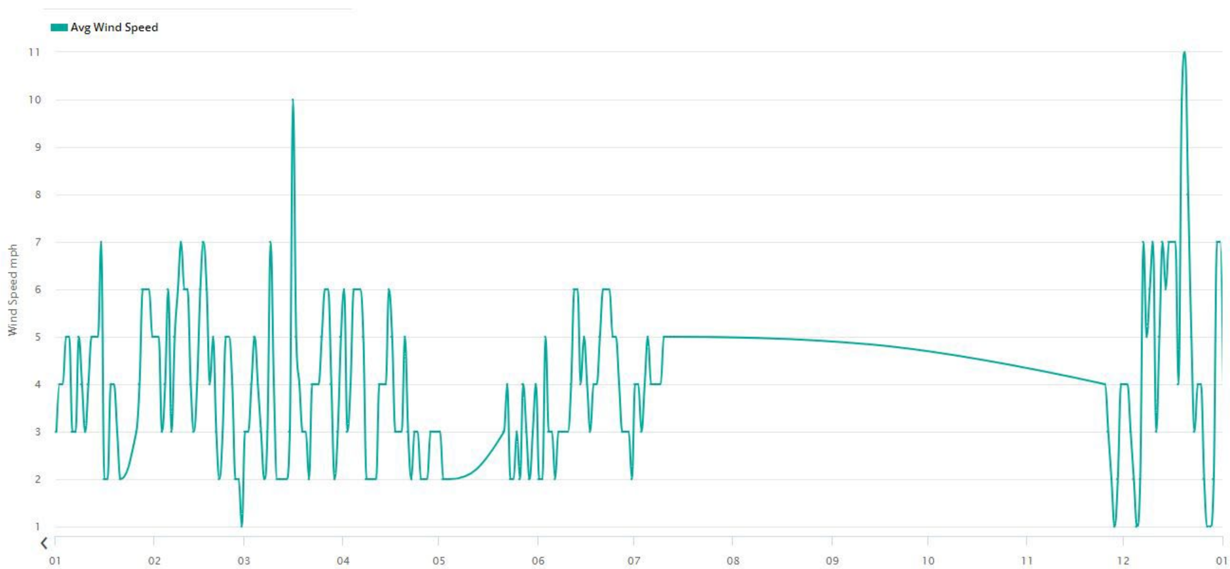

Figure 40 - Wind speed from January 2023 - January 2024 (Source: Site weather station)

Average rainfall on North Caicos is typically higher than for the other islands in TCI and averages up to 40 inches per year (De Booy, 1918; Doran Jr, 1955). The site's weather station recorded consistent rainfall every month in 2023, with some months experiencing as much as four inches per day. Data were not available for the months between July and September 2023; however, data from October through November 2022 indicate that the trend is continuous across the months of the year (Figure 41 and Figure 42).

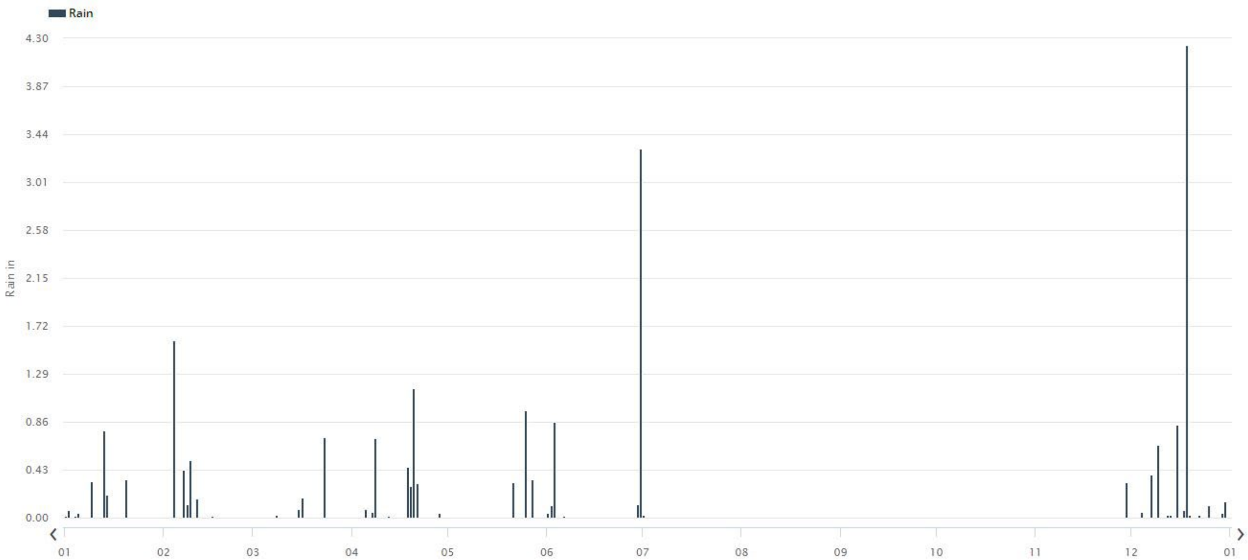

Figure 41 - Rain between January 2023 and January 2024 (Source: site weather station)

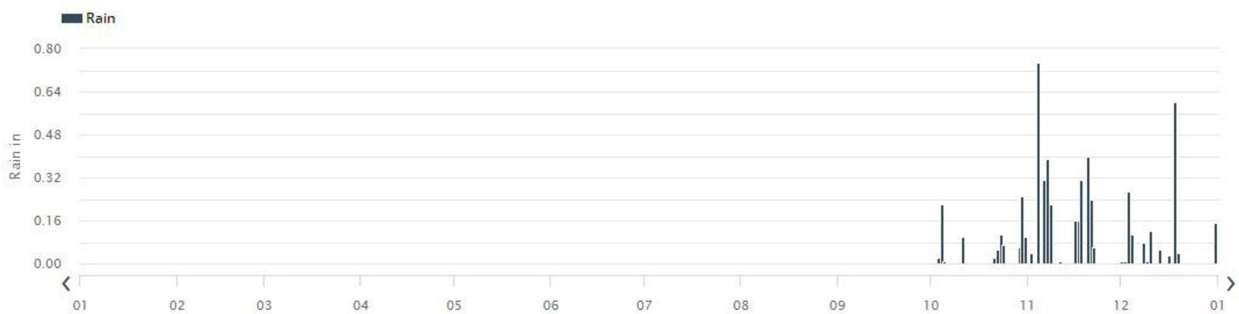

Figure 42 - Rainfall from October through December 2022 (Source: site weather station)

Like all land areas in the Turks and Caicos, the project site is susceptible to seasonal tropical weather systems, such as tropical storms, tornadoes, and hurricanes. The Turks and Caicos have a listing of a high to moderate risk of being in the path of one of these storms, evidenced by the impacts of major storms, including Ike and Irma in 2007 and 2017, respectively. Due to the project's location in a coastal area, this risk is magnified by potential exposure to storm surge and high water associated with tropical weather systems of large magnitudes. The Three Mary Cays Sanctuary appears to provide the site with some coastal protection from wave action and storm surge. See Section 6.3 – Storm surge analysis and mitigation plan for a more detailed assessment.

2.4 Baseline Aesthetics

The current aesthetic baseline of the areas surrounding the project site can be characterized as natural and undeveloped. Additionally, no large-scale developments are in the near vicinity to the project site (Figure 43).

Figure 43 - Aesthetic baseline of the project site

Aesthetics are subjective, with individual tastes in structures varying widely, based on cultural values, level of education and personal experiences. Despite this, an aesthetic baseline can be established by summarizing aesthetic features and values of the existing landscape and via public consultation (see Section 6.12). Impacts to the aesthetic baseline are discussed in Section 5 – Impact Assessment, and recommendations to avoid, reduce, and offset potential impacts are discussed in Section 6 – Mitigation.

2.5 Baseline Coastal Processes and Dynamics

No coastal or nearshore development is associated with the proposed development; therefore, in the interest of EIA best practices, quantitative baseline studies for currents and tides, sediment transport, erosion and accretion, and coastal dynamics have not been conducted in association with this EIA in the interest of economy and efficiency. Qualitatively, the coastal processes and dynamics of the north shore of the Caicos Islands have been well studied, with currents running generally from east to west along the shoreline and tidal ranges of typically less than one meter, barring storm surges and spring tides. Sediments move along the shoreline with currents. The shallow grade and wide depth of the beach indicate long-term shoreline stability. This apparent resilience is further enhanced by the presence of the Three Mary Cays, which could act as a breakwater from prevailing currents and by the wide expanses of seagrass meadow adjacent to the site, which are also known to stabilize shorelines. Please see Section 5.2.11.4 for a comprehensive analysis of the project site's vulnerability to climate change.

2.6 Water Quality

Water samples were collected from 2 locations in the marine environment from the midline of the project shoreline boundary. The two sites sampled were S1- nearshore (20m from shore) and S2 offshore (100m from shore). Data for dissolved oxygen, temperature, salinity, pH and turbidity were collected in situ.

Water samples were collected just before noon on May 22, 2024 and transported on ice to Providenciales. Sample water for testing of total and fecal coliform, E. coli and TDS where taken immediately to the Provo Water Lab, while the remaining sample parameters were tested by the University of Maryland Nutrient Analytical Services Laboratory. These water samples were processed, prepared and shipped as per the NASL specifications. Equipment and specifications are detailed in the water quality methods section (1.6).

Water quality results reflect the limited development in the project site area (Table 18). Levels of nutrient pollutants (e.g. nitrogen and phosphorus compounds) were either below method detection limits or reporting limits. Chlorophyll levels (which serve as an indicator of nutrient pollution) were also below method reporting limits. Fecal coliform and E. coli, which are indicators of sewage effluent pollution, were not detected. Total coliform, which is typically found throughout the marine environment was detected in the offshore area only. Those parameters taken in situ were as would be expected for a healthy shallow water tropical oligotrophic ocean environment supporting lush seagrass beds and corals.

Table 18 - Water Quality Results

Ani T&C Boutique Hotel, North Caicos Water Quality Results Sampled May 22, 2024		
Parameter	S1 Inshore(20m from shore)	S2 Offshore (100m from shore)
Dissolved Oxygen (mg/l)	7.5	8.5
Temperature (F°)	84	84
Salinity (ppt)	37	37
pH	7.69	7.74
Turbidity (NTU)	0.2	0.44
Depth (ft)	1	5
Time Taken (A.M.)	11:00	11:15
TDS (Total Dissolved Solids) (mg/l)	28,000	26,300
Ammonia, as N (mg/l)	0.009	0.009
Nitrate/Nitrite as N (mgN/l)	0.0075	0.0125
Nitrite as N (mgN/l)	0.0009	0.0009
Total Dissolved Nitrogen (mg/l)	0.09	0.13
Total Dissolved Phosphorus (mg/l)	0.0038	0.0017
Total Chlorophyll a (µg/l)	0.68	0.68
Phaeophytin a (µg/l)	0.46	0.46
Active Chlorophyll (µg/l)	0.69	0.69
Fecal Coliform (cfu/100ml)	0	0
Total Coliform (cfu/100ml)	0	14
E. coli (cfu/100ml)	0	0
Method Detection Limits (MDL)		
Ammonia, as N (mgN/l)	0.009	
Nitrate/Nitrite as N (mgN/l)	0.0009	
Nitrite as N (mgN/l)	0.0009	
Total Dissolved Nitrogen (mg/l)	0.05	
Total Dissolved Phosphorus (mg/l)	0.0015	
Total Chlorophyll a (µg/l)	0.68	
Phaeophytin a (µg/l)	0.46	
Active Chlorophyll (µg/l)	0.69	
TNTC - Too Numerous to Count		

2.7 Socioeconomic and Cultural

The following sections describe various socioeconomic and cultural baseline variables. Project-specific components will be discussed in Section 4.11, and potential impacts will be outlined in Section 5.2.11.

2.7.1 Demographics

According to the TCI statistics department (https://www.gov.tc/stats/), as of 2023, TCI had an estimated population of 49,309 human persons, comprising 25,196 males and 24,113 females. In 2012 (the time of the most-recent population census), Providenciales was the most populus island in TCI, with 75.6% of the country's human population. Furthermore, approximately 75% of Provo's population is comprised of non-native, foreign nationals. The country's population has been estimated to be growing at approximately 3.9% annually; however, the actual 2023 population exceeds the original 2023 estimate of 46,060, indicating that TCI is currently growing faster than previously anticipated (https://www.macrotrends.net/countries/TCA/turks-and-caicos-islands/population-growth-rate#:~:text=The%20current%20population%20of%20Turks,a%201.31%25%20increase%20from%202021.). Much of this growth is due to the influx of foreign migrants, as birth rates among TCI Belongers are dropping, and Haitian nationals in 2023 were giving birth at three times the rate of Turks and Caicos Islanders (see https://www.gov.tc/stats/statistics/social/8-vital-statistics).

2.7.2 Employment, labour, and skills

The TCI National Skills Audit (Barnett, 2017) established the most recent labour and immigration baseline. Furthermore, the TCI Statistics Authority offers employment data up to 2020. While these data are now outdated, they can be used as approximate indicators of current trends. The National Skills Audit determined that the Turks and Caicos private sector workforce was comprised of an estimated 14,635 workers, 11,234 (77%) of which were foreign migrants. The public sector employs a higher percentage of Belongers (Table 18); however, non-nationals outnumber Belongers in the labour force at a rate of approximately two to one, and this ratio does not reflect an estimated 9,200 undocumented migrants. Given current population trends outlined in Section 2.7.1, it can be assumed that the percentage of foreign labour in the TCI workforce is increasing.

Table 19 - Labour characteristics (Source: (Barnett, 2017))

Description	Male	Female	Total	TCI Islander (Belonger)	Other
Total population	15,127	15,429	30,556	13,424	17,132
Population 15 years and over	11,909	12,206	24,115	9,432	14,683
Labour Force	9,613	8,820	18,433	6,879	11,554
Employed Labour Force	7,826	7,203	15,029	5,909	9,120
Unemployed Labour Force	1,787	1,617	3,404	970	2,434
Outside the Labour Force	1,410	2,457	3,867	1,680	2,187
Employment Rate	81.41	81.67	81.53	85.90	78.93
Job Seeking Rate (%)	18.59	18.33	18.47	14.10	21.07
% age of population under 14 years	21.27	20.89	21.08	29.74	14.29
% age of population 14 years and over	78.73	79.11	78.92	70.26	85.71
% age of population 14+ - outside the LF	9.32	15.92	12.66	12.51	12.77
LF as % age of total population	63.55	57.17	60.33	51.24	67.44
LF as % age of population 14+	80.72	72.26	76.44	72.93	78.69

According to the TCI Statistics Authority, the rate of unemployment in 2023 was seven percent (https://www.gov.tc/stats/). In 2014, a CDB poverty assessment placed Belonger unemployment at approximately 12%, with an overall unemployment rate of 25% (CDB, 2014), whereas the TCI Statistics Authority records overall unemployment at 12% during the same timeframe. These significant discrepancies in unemployment estimates have not been further studied; however, TCI's population trend of steadily increasing migration is driven by the rapidly growing economy's (14.1% in 2023) need for both skilled and unskilled labour. The number of jobs available far exceeds the number of Belongers in the workforce; therefore, unemployment should be considered as a social rather than economic challenge, as a result of the country's native people not being adequately trained to compete for the jobs being created.

Foreign migration is globally recognized as being a positive economic driver for most countries and TCI is no exception. In 2018, businesses owned by foreign entities in TCI employ an estimated 11,234 people (approximately 77% of the private sector work force) and generate more than $149 million annually. Non-Belongers are generally more likely to start their own businesses (with foreign capital), are well educated, and are experienced, introducing cutting-edge businesses to TCI. The TCINSA projects that TCI's economy will continue to depend heavily on foreign migrants to meet increasing demands for skilled and unskilled labour for the next 25 to 50 years (NSA, 2018).

Table 20 - Employment by sector (Source: TCINSA)

Industry	Male	Female	Total	TCI Islander (Belonger)	Other
Agriculture, Hunting, Forestry & Fishing	154	57	211	55	156
Mining & Quarrying	7	5	12	5	7
Manufacturing	200	169	369	95	274
Electricity, Gas & Water Supply	205	55	260	148	112
Construction	1,097	129	1,226	307	919
Wholesale & Retail, Repairs of Motor Vehicles & Equipment	766	788	1,554	666	888
Hotels & Restaurant Services	2,345	2,228	4,573	1,526	3,047
Transport, Storage & Communication	567	355	922	586	336
Financial Intermediation	138	287	425	324	101
Real Estate, Renting & Business Activities	574	370	944	425	519
Public Administration, Defence, etc.	863	846	1,709	1,097	612
Education	154	415	569	191	378
Health & Social Work	97	274	371	136	235
Other Community, Social & Personal Services	298	342	640	186	454
Private Households with Employed Persons	160	633	793	34	759
Industry not specified	201	250	451	128	323
Total Employed Labour Force	7,826	7,203	15,029	5,909	9,120
Unemployed	1,787	1617	3,404	970	2,434
Total Labour Force	**9,613**	**8,820**	**18,433**	**6,879**	**11,554**

2.7.3 Safety/security concerns within the community

The Turks and Caicos Islands Government does not release statistics on reported crimes, so accurate information regarding the nature and extent of both violent and non-violent criminal acts are difficult to come by. The UK Government bears responsibility for good governance, and by extension law and order, within its overseas territories, having duties for both international protection and the Royal National Police Force. UK government websites do not publish crime-related statistics and continue to refer to TCI as relatively safe, despite the fact that the murder rate exceeds that of many of the most-dangerous countries on Earth. For example, in 2022, Jamaica was named the country with the highest per capita rate of murder at 53.34/100k (https://worldpopulationreview.com/country-rankings/murder-rate-by-country); however, during only the two months in 2022, spanning from September through November in TCI, 21 murders occurred (https://commonslibrary.parliament.uk/research-briefings/cbp-9694/), which translates to 53.84/100k, placing TCI above Jamaica as the country with the highest murder rate in the world, and this is only for a two-month timeframe and assumes there were no other murders in 2022, which is not the case. During the same year, the UK government's House of Commons Crime Report (Loft, 2022) states that "The UK Government considers crime in the Turks and Caicos Islands to be relatively low…" (p. 4).

Foreign migrants are often blamed for crime waves, and the UK Government reinforces this misconception by attributing TCI's increasing crime rates to "The Territory's proximity to "increasingly unstable neighbours" (Loft, 2022, p. 5); however, no statistical correlation exists between influxes of foreign jobseekers and increased crime. In fact, most gang-related murders that took place in 2022 and 2023 were among TCI nationals. Increased crime is a complex social phenomenon influenced by several variables, including but not limited to poverty, disparities between economic classes, drug abuse, mental illness, and other social ills. Coupled with labour and employment statistics, one can deduce that the significant wealth disparity apparent between foreign nationals and the Belonger population is a likely contributing cause, with TCI youth seeing little opportunity for themselves to achieve financial success outside the immediate financial rewards available through criminal enterprises.

Because of TCI's recent crime history, the United States have issued a level two travel advisory (https://travel.state.gov/content/travel/en/traveladvisories/traveladvisories/turks-and-caicos-travel-advisory.html), which suggests the exercise of increased caution when traveling to TCI. Potential impacts arising from the baseline condition of the area and recommendations for mitigating potential issues are addressed in Sections 5 and 6, Environmental Impact and Mitigation, respectively.

2.7.4 Economic impact: short-term and long-term

Short-term and long-term economic impacts that will result from the proposed development are outlined in Section 5.2.10 – Socio-economic Impact.

2.8 Other Baseline Parameters

No other baseline variables are deemed relevant to the proposed development.

3.0 Legislative and Regulative Context

The following sections include all aspects of laws and regulations relevant to NC1246.

3.1 – 3.5 Planning and Building Requirements

As it is currently designed, the proposed development complies with all Planning and building requirements, codes and guidelines as outlined in the TCI Masterplan, National Physical Development Plan (EDSA, 2020), Physical Planning Ordinance (2021), Development Manual (2021), and TCI Building Code (2014).

The subject site is zoned TO1 Tourism (Hotels, Condos & Holiday Homes) according to the TCI Masterplan and National Physical Development Plan, and the development is therefore in full accordance with all current zoning codes.

The Development Manual Section 3.6.4 (b) requires that all hotel and condominium developments i) blend with surroundings in terms of siting, design, scale, height, and landscaping, and ii) have no adverse effect on the environment in terms of noise, traffic, congestion, and/or by destroying features of interest. The areas surrounding the project site are currently undeveloped and/or occupied by single-family residences, and the low-density, low-building height aspects of the project lend themselves to this setting (Figure 44). Furthermore, the project has been designed to blend in with the natural environment, thereby setting a desirable precedent for any future developments in the area if those developments are required to comply with Development Manual Section 3.6.4 (b). Because of the project's low density (e.g. approximately 1.5 units/acre), it far exceeds requirements for density and building heights, which allow for a total of 494 bedrooms under the Development Manual Amendments (2015). The Project's compliance with Development Manual Section 3.6.4 (b) are outlined in Sections 5.2.7 – potential impacts to the aesthetic and built environment.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

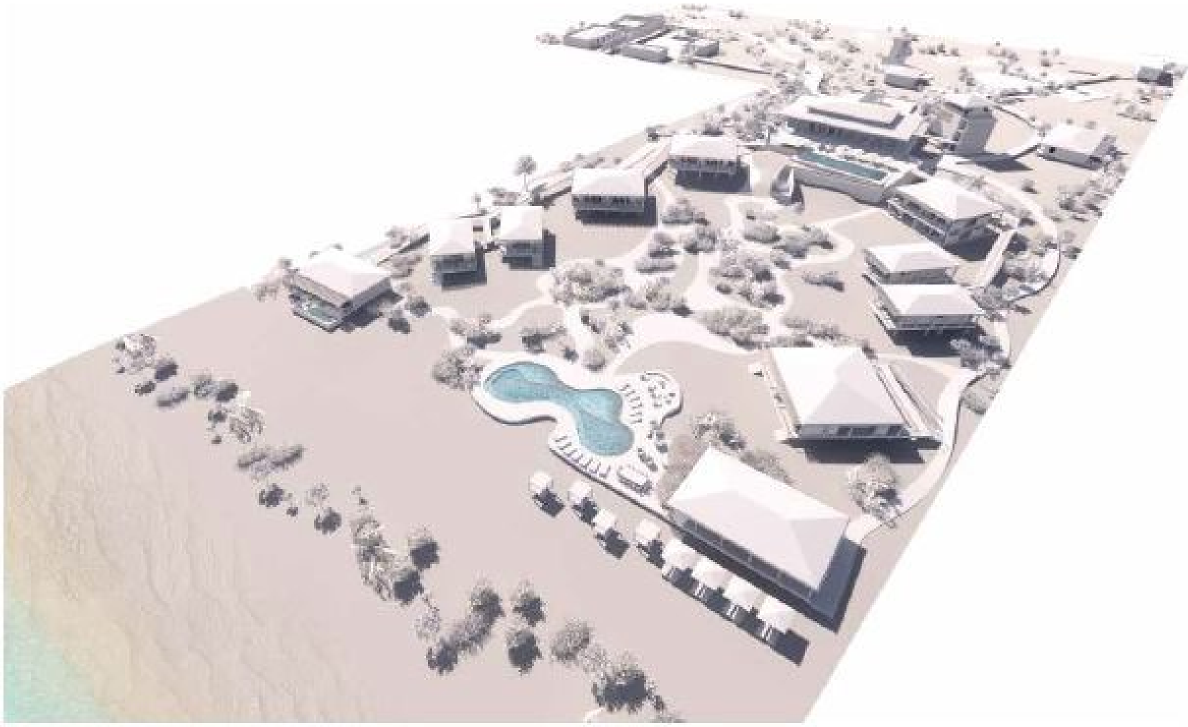

Figure 44 - Project perspective

The Development Manual amendments (2015) also govern setbacks from the beach (Section 3.5.2). Setbacks from the beach are measured from the line of vegetation or high-water line. According to the Development Manual amendments (2015), "the setback for a building up to a maximum of 60 feet or five floors measured from the vegetation line is 100 feet." None of the project elements will exceed 60 feet in height, and no buildings or structures are slated within the setback requirements, as per the outline planning submission.

In accordance with the Physical Planning Ordinance, the proposed development received Outline Development Permission (ODP) from the Department of Planning (NC1246) on 2nd April 2024. Conditions on the ODP relevant to the EIA include:

4 and 5. The Proposed development requires a comprehensive EIA, to be conducted by qualified, experienced and credible professionals.

6. The EIA should be made available to the public for review and scrutiny and then presented in a public consultation by the developer and the EIA team. All questions (either written or verbal representations made in a public forum) must be responded to.
8. Building setbacks shall conform strictly with the site plan without deviation.
10. Beach access must be via a boardwalk to protect the primary dune structure and vegetation.
11. The primary dune shall not be impacted in any way.
12. Primary dunes shall not be cleared and/or revegetated with non-native vegetation.
13. Site clearance shall be restricted to the area of construction only. All native vegetation in other areas not incidental to construction footprints must be protected from damages.
14. Site access and parking shall be as per the approved site plan.
15. All parking and vehicular access areas shall be comprised of compacted fill and asphalt surfaced.
16. All parking areas shall be lighted.
17. DECR has concerns on the installation and maintenance of a golf course.
18. Effects on bird life that utilize Three Mary Cays will be included in the TOR of the EIA.
19. A component of the TOR for the EIA will include community consultation.
20. DECR recommends that all *Casuarina equisetifolia* be removed from dune areas, allowing native vegetation to recover in the area.
21. DECR strongly recommends that the developer be made aware that the removal or disturbance of seagrass shall not be permitted.
22. DECR strongly recommends that wholesale land clearance not be permitted and further recommends that all heavy equipment be power washed before being used at the site to avoid the introduction of AIS and other pantropical weedy species. DECR also recommends that prior to any land clearance, any floral species of interest be rescued for later reuse in landscaping applications.
23. As a community project, the developer is required to improve the roads to the site without impacting nearby protected areas.
25. The developer shall institute a traffic plan to prevent accidents on narrow roads near the project site.
26. The project site is in an area vulnerable to inundation from sea-level rise due to climate change, and the stilted design of the project is commended.
27. An Emergency Response Plan shall be developed to be implemented in the event of emergencies.
28. Staff shall be trained to implement the Emergency Response Plan.
29 and 30. The project proponents must ensure staff safety during construction and operations.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

32. Green technologies should be incorporated into project design.
33. The developer shall be liable for any damages to the natural or built environment that may arise during construction and/or operations.
34. Any beach structures, such as boardwalks, shade structures, etc., occurring on Crown Land, must receive permission and licensing from the Crown Land Unit.
35 and 36. Hoarding and other measures must be implemented during construction to reduce dust, air pollution, and solid waste pollution.
37. A solid waste management plan must be implemented.
38. A storm water management plan must be developed and implemented.
41. The project site must be revegetated after construction, preferably using native vegetation.
42 - 44. A wastewater plant that treats to a tertiary level must be installed and the surrounding ground surface must be graded to prevent surface runoff. The wastewater treatment plant must be maintained in optimal working condition.
47. The construction work schedule shall not occur outside of normal working hours, Monday – Saturday, 0700 to 1700.
48. Noise, dust, smoke, fumes and other nuisances are strictly prohibited.

We address each of the above conditions within the EIA and/or in Table 20 which follows:

Table 21 - Conditions for Outline Development Permission

ODP Condition	Description	EIA Section/Comments
4 and 5	Comprehensive EIA	This document and the associated team satisfy conditions 4 and 5 of the ODP.
6	EIA Public Consultation	After the submission of the draft EIA, a public consultation meeting will be held in accordance with standard Planning policies and procedures.
8	Building Setbacks	See EIA this Section and Section 4.1.
10 - 12	Coastal dune management	See EIA Sections 4.4, 5.2.1, and 6.
15 and 16	Parking and Access	See EIA Sections 4.1 and 6.8.
17	Golf Course	The mini golf course will use artificial turf, so no maintenance chemicals will be used.
18	Effects on TMC Sanctuary	See EIA Sections 2.1 and 5.2.3.

19	Community Consultation	See EIA Section 6.12
20	Removal of AIS	See EIA Section 6.5.
21	Seagrass management	See EIA Sections 2.2.2.3, 5.2.1, and 6.1.1.
13 and 22	Site Clearance and conservation of native floral species	See EIA Sections 4.1, 4.12, 5.2.1, 5.2.11.3, 6.1, 6.4, and 6.6.
23 - 25	Community project and traffic	See EIA Sections 5.2.11.3 and 6.8.
26	Climate change vulnerability	See EIA Sections 5.2.11.4 and 6.9.
27 - 30	Emergency Response Plan and safety	See EIA Section 4.10.11.
32	Green technology	See EIA Sections 4.1 and 6.9.
33	Accidental damages	See EIA Section 4.10.11.
34	Coastal Crown Land	See EIA Section 4.4.
35 - 37	Hoarding and pollution prevention	See EIA Sections 4.6, 4.10.2, and 4.10.9.
38	Storm water and runoff	See EIA Section 4.7.
41	Site revegetation and landscaping plan	See EIA Section 6.6.
42-44	Wastewater treatment	See EIA Sections 5.2.9 and 6.1.2.
47	Work schedule	See EIA Section 4.10.1.
48	Control of nuisances	See EIA Sections 4.10.9, 5.2.11.2, and 6.13.

3.6 National Parks Ordinance

The project site does not directly border any protected area; however, the Three Mary Cays Sanctuary is located nearby, with its coastal boundary being approximately 250-300m from the project site's eastern boundary and between 400-450m from the small cays that lend the sanctuary its name.

Three Mary Cays is currently designated as a Sanctuary (Figure 45); however, a proposal has been made to Cabinet to change this designation from Sanctuary to National Park. As of the writing of this report, the change has not been officially Gazetted and the protected area remains a Sanctuary. According to the National Parks Ordinance (2018), a Sanctuary is designated:

> …for the purpose of the protection of the natural ecology, or of any particular form of living organ ism (including any marine life), in the area, and the avoidance of disturbance of the area by human beings, either at any time or at particular times according to the circumstances and the form of life which it is desired to protect; and entry into a sanctuary shall not be permitted except in accordance with any regulations made in respect of that Sanctuary and no person shall carry out any development in a sanctuary (pp. 5-6).

On the other hand, “an area which is designated as a National Park shall be open to members of the public for recreational use” (p. 5). Therefore, the approval of the suggested change will significantly impact the freedom of hotel guests to access and make use of the Three Mary Cays protected area. It should be noted, however, that during field studies, several groups of tourists were observed in the Sanctuary, presumably without permission and that the area appears as an attraction on tourist maps for North Caicos. In order to comply with the current status of the National Parks Ordinance, Ani hotel guests should be provided with information regarding the regulations pertaining to a Sanctuary and informed that they cannot currently legally enter the site without a permit from DECR.

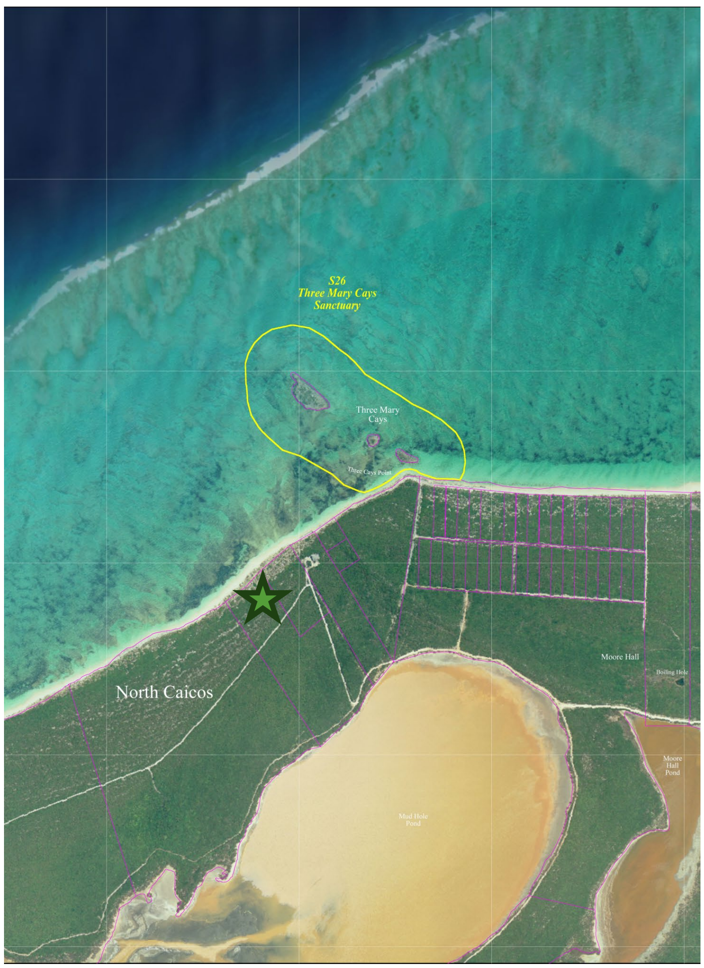

Figure 45 - Protected areas map of the Three Mary Cays Sanctuary (S26) in reference to the project site (Source: TCIG)

3.7 Coast Protection Ordinance and Subsidiary Legislations

No coastal development is associated with the project; however, some provisions of the Coast Protection Ordinance (2018) may apply during the construction and operational phases of the development. Section 3 prohibits "digging up, removing or carrying away sand, earth, stones, coral-rage and/or any calcareous substances" from the coast (p.3). This section may be relevant during the removal of the AIS *Casuarina equisetifolia* from the coastline if any digging is done to remove tree stumps and roots. Mitigation for how to avoid this potential legislative pitfall is outlined in Section 6.5 – Mitigation for control of AIS.

The Coast Protection Ordinance also prohibits depositing an offensive substance on the coast (Section 5) and depositing litter on the coast (Section 6). No offensive substances will be deliberately deposited on the coast; however, a spill contingency plan has been established within the emergency mitigation plan (Section 4.10.11) in the event of an unexpected spillage of gasoline, machine oil, hydraulic fluid or other contaminants associated with the heavy equipment used for construction activities. Furthermore, solid wastes produced during construction and operational phases could pose a threat to the coast if not properly contained and disposed of. To prevent this, the construction site will be surrounded with solid fencing material to limit potential windblown debris, and daily site cleanups will occur at the end of each workday. During the operational phase, beach cleanups and disposal of wastes will be conducted daily as part of regular maintenance activities.

Finally, any toxicants used for landscape maintenance could violate Section 5 of the Coast Protection Ordinance if they enter the coastal environment, either via aerosolization from spraying or via percolation through porous substrates into the water table. Recommendations for how to avoid these impacts and regulatory violations are made in Sections 5.2.1, 5.2.9, and 6.1.2.

3.8 Mineral (Exploration and Exploitation) Ordinance and Subsidiary Legislations

Under the Minerals (Exploration and Exploitation) Ordinance (2018), all minerals on land and beneath TCI territorial waters are the property of the Crown (Section 3), and any exploration and exploitation of minerals may only take place with the issuance of a license (Section 7) and a grant of development permission from the Department of Planning (Section 5). Because of the low-impact nature of the project, very little land clearance and terraforming will take place; however, some materials will be excavated at the site during land clearance and terraforming to create parking areas and for the footprints of buildings that are not elevated on stilts. Any excavated materials will be reused at the project site for fill and roadbed preparation. Typically, TCIG does not require a license for such uses. Topsoil excavated during land clearance will also be stored on site for later reuse for landscaping applications. These activities will be discussed in further detail in Sections 5.2 and 6.6.

3.9 Marine Pollution Ordinance and Subsidiary Legislation

The Marine Pollution Ordinance (2014) governs all vessels within the territorial waters of the Turks and Caicos Islands and the discharge of pollutants therein. It also governs pollutants that may be discharged on land but enter the marine environment (Sections 4 and 5). Under this Ordinance, it is unlawful to discharge oil (Section 9), noxious liquid substances (Section 12), harmful substances as defined by MARPOL (Section 15), sewage (Section 17), garbage (Section 21), and/or hazardous waste (Section 30) into the marine environment. No activities are envisioned in association with the project that will result in such discharges; however, measures to avoid any unforeseen accidents are outlined in Sections 4.10.11 (Emergency Mitigation Plan) and 6 (Mitigation) of this report.

3.10 Fisheries Protection Ordinance and Subsidiary Legislation

Part III of the Fisheries Protection Ordinance (2018) contains provisions for conservation, including restrictions relating to the seabed (Regulation 10) and prohibitions against employing activities or devices that are harmful to marine life, removing, shifting or in any way disturbing coral, sea oats (probably refers to sea grasses), sand, rock or other substances forming part of the seabed. Because the proposed project does not intend to conduct any development within the fisheries limits of TCI, no direct violations of the Fisheries Protection Ordinance are envisioned; however, the shallow nearshore areas adjacent to the project site comprise sensitive seagrass meadow habitats (see Section 2.2.2 – Baseline marine environment). These habitats are vulnerable to tourism activities and are easily impacted via trampling and poor water quality. A comprehensive description of potential impacts is detailed in Section 5.2.1 and recommendations for how to avoid them are made in Section 6.1.1.

3.11 Wild Bird Protection Ordinance

The taking, removing, injuring, or destroying of any nest or egg of any bird is an offense under Section 3(1)(b) of the Wild Birds Protection Ordinance (2018). Significant bird populations at the project site were observed during field studies (see Appendix E and Section 2.2.1.4). To ensure compliance with the Wild Bird Protection Ordinance, mitigation and monitoring protocols are outlined in Section 6.1.1 – Mitigation for impacts to terrestrial and marine life.

3.12 International Treaties and Conventions

The TCI is a signatory to several international treaties and conventions, either directly or under the umbrella of the United Kingdom's commitments.

The Bonn Convention on the Conservation of Migratory Species acknowledges the increased threats posed to species that cross international borders as a component of their regular natural histories and seeks to conserve and manage habitats and populations wherever these species spend a portion of their life cycles. The site appears to be an important foraging area for juvenile and sub-adult green turtles (see Section 2.2.2). Furthermore, nesting behavior for all sea turtle species along North Caicos north shore beaches is currently poorly understood, although none has been recorded in recent years. Shore and seabirds also likely use the area for foraging habitat during their migration periods. For sea turtles and sea and shorebirds, protection entails sensitive approaches to shoreline management, which are outlined in Section 6.1.1 of this report.

Impacts to migratory populations (and TCI's other international conservation obligations) are largely cumulative and cannot be addressed by a single development. TCI's compliance with international obligations must therefore be regulated at a national level, with established policies, guidelines, and legislation for compliance. The implementation of various biodiversity and conservation legislations that have been stalled for several years would go a long way towards meeting these obligations.

In 2009, the Turks and Caicos Islands became a signatory to the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). Under this convention, TCI has an obligation to protect all women and girls against gender-based violence and discrimination. The project proponents are dedicated to offering equal employment opportunities (including equal pay for equal work) and to creating a harassment and violence-free workplace for people of all genders.

Furthermore, the Turks and Caicos Human Rights Commission (HRC) was established in 2008 with an objective of satisfying TCI's obligations under the CEDAW, in addition to the Convention for the Protection of Human Rights, and the Convention on the Elimination of all Forms of Discrimination. The HRC is committed to "core human rights and invigorat[ing] the work of building a fair society that upholds [all] human dignity" (https://www.gov.tc/hrc/).

3.13 Turks and Caicos Islands Vision 2040

The Turks and Caicos Islands Vision statement for 2040 states:

> "By 2040 a united Turks and Caicos Islands will be a global leader in levels of prosperity and human development. Our people will be positioned to be fully responsible for our collective future as a nation. We will have a more resilient country that balances economic, social, and environmental development for the greater benefit of all our people and our posterity."

TCI's current development model is unsustainable, as it is entirely dependent on construction and development in a country where prime real estate is a finite and limiting asset. In order to rise to such a vision, TCI must do a better job preparing its citizens to compete for the high-level jobs currently being filled largely by expatriates (Barnett, 2017). The current focus on quantity of development must be replaced with a focus on quality of development, and development that is largely currently funded by foreign interests must be replaced by development with a primary goal of serving community needs. Measures to achieve these goals are outlined in Section 6 – Mitigation and Monitoring.

3.14 TCI Environment Charter

The TCI Environment Charter (2001) is an agreement between the government of TCI and the UK government. It elaborates ten guiding principles governing sustainable and equitable allocation of natural resources to benefit current and future generations while at the same time safeguarding natural heritage, controlling pollution, and aiming for solutions that benefit both the environment and development. The EIA process has been developed to meet some of TCI's commitments to the Environment Charter; however, the process is only as effective as its implementation and oversight. The identification of impacts and recommended measures to mitigate impacts to a no net loss level are outlined in this report, thereby satisfying the Environment Charter's commitments if these measures are implemented as outlined.

3.15 TCI Climate Change Charter

The Climate Change Charter (2022) for the Turks and Caicos Islands is guided by underlying principles that recognize the threats posed by anthropogenic climate change, that reducing greenhouse gas emissions is an imperative obligation of all peoples and nations, and that actions can be taken to address the impacts of climate change in ways that enhance economic prosperity and public wellbeing. The project ethos takes climate change responsibility seriously, and the project has several components that aim to reduce their own carbon footprint to net zero emissions, including the following:

- Installing solar PV panels to generate electricity and offset carbon emissions from other activities
- Using carbon-capturing technologies for landscaping, such as abstaining from the use of maintenance chemicals, building healthy soils, and mulching
- Retaining carbon-capturing natural vegetation and restoring natural landscapes wherever they have been impacted by development at the project site

Other mitigation measures for climate change adaptation are outlined in Section 6.9 – Climate change mitigation.

3.16 Other Relevant Laws and Regulations

3.16.1 Public and Environmental Health Ordinance

Public and environmental health in the Turks and Caicos Islands is governed by the Public and Environmental Health Ordinance (PEHO). Activities associated with the proposed development to be governed under the PEHO include the following:

Public nuisances are dealt with under Sections 20 and 21 of the PEHO and may include unsafe premises, foul sewage treatment facilities, accumulation of wastes, stagnant water, derelict landscaping and unsafe drinking water. The proposed development should employ standard maintenance procedures for ensuring that public nuisances are avoided and that the PEHO is complied with. Section 4 (Project Description) of this report specifically addresses liquid and solid waste management. Section 6 (Mitigation and Monitoring) addresses recommended monitoring procedures to avoid public nuisance.

Latrine and sewerage facilities are governed by Sections 37 and 38 of the PEHO. These regulations require all facilities housing persons to provide and maintain suitable latrine accommodation. Such facilities should be provided and maintained in accordance with the Ordinance and with requirements established under the Physical Planning Ordinance, Development Manual, and Building Code.

Cleanliness of premises used for food and drink is required under Section 46 of the PEHO. Regulations 1-26 govern food hygiene, including food handling and food premises. All restaurant facilities within the proposed development should comply with these regulations and will be licenced and available for regular inspection by the Environmental Health Department.

Solid waste disposal is governed under Sections 48-50, which require premises to make provisions for appropriate receptacles and waste collection. At the Project site, solid waste disposal facilities will be located throughout the facility and at beach access sites. The proposed development will comply with these regulations and will be available for regular inspection by the Environmental Health Department.

Sections 56 and 57 require premises to provide potable water that conforms to minimum standards. The proposed development will connect to the public water supply for this purpose, which complies with the International Guidelines for Drinking Water Quality 1983, as required by the Ordinance. Water supply will be provided by the Provo Water Company. Please see Section 4.10, water supply and demand, for detailed information.

Regulations 1-6 on the control of rodents should also be complied with. Monitoring recommendations are made in Section 6.

In addition to ensuring compliance during the pre-construction and construction phases of a project, the Environmental Health Department retains enforcement capacity for all environmental and public health nuisances throughout the life of any development. The onus to ensure that the above regulatory requirements are adhered to, therefore, falls on them. At any point that complaints are made regarding public and environmental health violations associated with the Project or any development, the full capacity of the law, including the pressing of charges and cessation of business operations, should be employed.

3.14.2 Other relevant government policies

Other government policies related to the Project include the Turks and Caicos Development Strategy 2013-2017 (TCDS). TCDS speaks directly to the repair and upgrading of public infrastructure in order to meet the requirements of TCI's growing economy (p. 8). The roads in the vicinity of the project site are in need of upgrading and repair, and this subject is addressed in Sections 5.2.11.3 – Impacts to roadways – and 6.8 – Traffic Flow.

In addition, the TCDS states that outlined strategies must be conducted in a sustainable fashion, ensuring protection of the natural environment (p. 11). This EIA represents an attempt at best practices in this regard and the project is based on a sustainability ethos.

Other TCIG legislation that may be relevant to the project includes the Immigration Ordinance and Regulations, the International Fire Code, the International Building Code, and the Disaster Management Ordinance. The project will comply with all laws of the Turks and Caicos Islands. Regarding the Immigration Ordinance and Regulations, no undocumented labourers will be employed within the development. Details of compliance with the International Fire Code and International Building Code will be provided within the Application for Detailed Development Permission and Building Permit. An emergency evacuation plan and closet shelter options will be incorporated into operational procedures.

4.0 Project Description, Construction, Operation, and Alternatives

The following section provides a detailed description of the proposed development, including possible alternatives. In the preparation of this section, SWA Environmental necessarily relied on information provided by the project proponents, architects, and engineers. Any errors or irregularities, if any exist, are therefore the responsibility of and to be clarified by the Project Proponents and their representatives.

4.1 Description of the Project

The Ani T & C fully staffed and serviced rental estate development project comprises a 15-room luxury boutique hotel, located at Block/Parcel# 50102/103 at Sandy Point, North Caicos. The project includes a total of 10 guest accommodation villas, a beach club, main house, tower, kids club, and spa, with associated infrastructure (Figure 46).

Figure 46 - Project masterplan

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

The total built area under cover for the project will be 54,662 sq. ft., and the total area of hardscaping for the project will be 96,311 sq. ft., equating to approximately 35% of total land cover (Table 21).

Table 22 - Project allocation of built areas

		Total Number of Rooms	Unit Area (sq. ft.) (per unit)	Total (sq. ft.)
Unit				
1	Master Suite	1	2,430	2,430
4	Villa V1	4	1,396	5,584
3	Villa V2A	6	2,630	7,980
1	Villa V4	4	2,555	2,555
1	Beach Club			7,825
1	Main House			11,814
1	Tower			1,300
1	Kids Club			3,395
1	Spa			3,415
1	Back of House Staff Accommodation	3	8,454	8,454
	Project Total Covered Area			**54,662**
	Pathways			32,194
	Elevated Walkways			5,745
	Roads			14,925
	Parking			19,291
	Solar Installations			8,840
	Raquet Sports and Basketball			9,731
	Wastewater Treatment			5,585
	Total Hardscaping			**96,311**
	Total Project Footprint			**150,973**
	Total Land Area			**430,373**
	Total Project Land Cover			**35%**

The Project will be built in one phase, commencing at the end of 2024 or beginning of 2025, depending on the progress of the development permissions process. The time to complete construction will be approximately two years, with a tentative opening date set for late 2026/early 2027.

The ÀNI Private Resort concept is to rent the property to one group (20-30 guests) at a time. It is a highly bespoke luxury experience in terms of the staff, service, and amenities provided to guests.

4.2 Project Justification

The overnight stay tourism industry in TCI is currently largely centred on the islands of Providenciales, with Grand Turk dominating cruise ship arrivals. While Experience TCI (formerly the TCI Tourist Board) has not reported comprehensive visitor statistics since 2020, air arrivals into Providenciales in 2023 reached 662,707 passengers – a 6.5% increase over 2022 air arrivals. Most of these air arrival passengers stayed on Providenciales, based on long-term trends (Brough & Sartori, 2015). Other arrivals via cruise ship into Grand Turk, were estimated at 261,000 in 2023 (https://www.gov.tc/stats/statistics/economic/41-tourism). Tourism to North and Middle Caicos has largely been comprised of day visitors, who take the ferry from Providenciales, with a few guest houses and small hotels available for stay-over guests. Because of this, the tourism "brand" for North and Middle Caicos remains malleable; however, many of the respondents to the public opinion survey conducted for this EIA expressed an interest in promoting low-density, environmentally sensitive, and high-end development for these islands, as expressed by the following comments received:

- *I love the fact that it is low density & environmentally sensitive. Exactly what should be encouraged for all of North Caicos.*
- *I support this project because it will increase bed space for longer term stays in North Caicos (my home) and increase overall interest in the island. So long as it is not harmful to the environment…or a tall albatross, I am in full support.*
- *This will hopefully be a wonderful addition to North Caicos. It looks to be a small development in line with what is needed here.*
- *My wish for North Caicos is to see it develop exclusive, high-end accommodation while being an eco-friendly destination focused on a sustainable approach that helps increase the farming industry and supports local farmers.*

The proposed project is in keeping with the above residents' desires for development on North Caicos. Furthermore, the project will offer approximately $30 million in direct investment and myriad other economic benefits (see Section 5.2.11 - Socioeconomic impact).

4.3 Erosion and Accretion

As the proposed development does not include any development in the coastal zone, erosion and accretion are not likely to be affected by any development activities. Furthermore, the project employs a generous setback of at least 100 feet for all structures from the line of vegetation, thereby ensuring that all coastal dune structures will remain intact. Finally, a comprehensive AIS management programme will be implemented to remove detrimental *Casuarina equisetifolia* and *Scaevola taccada* from the coastline, which will further enhance the capacity of native dune vegetation to provide coastal stability.

4.4 Coastal/Beach development and management including beach access

The Development Manual (8.1.4) states that for coastal protection purposes, the destruction and/or removal of sand dunes must be considered (8.5f). The proposed project does not include any development in the coastal zone, and all land-based development will be well outside of building setback requirements from the line of vegetation, thereby ensuring that dune structures and coastal vegetation remains intact and undisturbed (Figure 47).

No official public beach accesses are located within the Project site boundaries; however, a disused road access, which remains accessible by foot or four-wheel drive, was put in just east of the project site coastal boundary and a large section of seagrass was dredged to create a swimming and/or vessel access point at that location (see Section 2.2.2 and Figure 48).

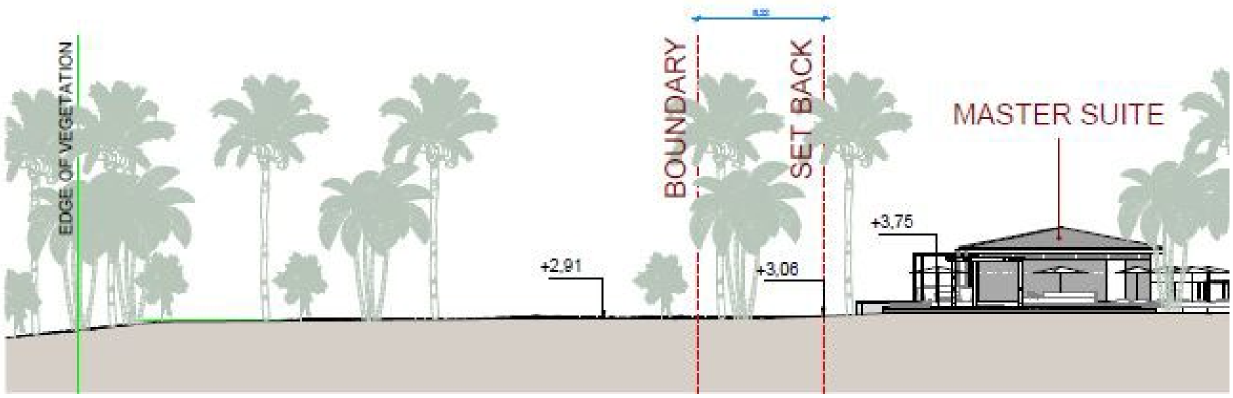

Figure 47 – Project coastal areas and development

Figure 48 - Existing beach access points

A road access to the Three Mary Cays Sanctuary is also present about 450m from the project site's eastern boundary. Both these potential access points are currently used by residents and tourists to access the area beaches for recreational purposes even though the Natural Parks Ordinance prohibits much of these activities (see Section 3.6). Both these beach accesses will continue to be open and available to the public during construction and operations and will not be impeded by any project activities. The project masterplan (Figure 46) does not include any beach access boardwalks, and the inclusion of these to avoid trampling of fragile dune vegetation is highly recommended. Comprehensive beach management recommendations for construction and operational phases are made in Section 6 – Mitigation and Monitoring.

4.5 Source and Quality of Beach Sand, Fill, and Other Materials

Due to the project's low-density nature and the fact that most buildings will be elevated on post foundations above grade, limited terraforming will be associated with the project. Any fill required for levelling will either come directly from the site or will be obtained from the wider North Caicos community.

4.6 Solid Waste Management (Construction and Operation)

During the construction phase of the development, solid wastes will take the form of empty food and beverage containers from construction crews, spent machine fluids and containers, and construction debris. On-site, lidded dumpsters should be available and maintained throughout the construction process as part of the construction contract, which will also produce construction debris, such as offcuts, plastics, packaging, etc. The site should be cleared of all loose debris at the end of each workday. In addition to regular construction hoarding, all site boundaries bordering the coast should also be fenced to prevent windblown waste from entering the marine environment. Such requirements should be stipulated in the Agreement between Owner and Contractor, as well as on building permissions.

During both construction and operations, solid waste receptacles should be emptied on an as-needed basis, at least once daily, to reduce the threat of pests, such as rats and flies. If infestation occurs, remedial measures should be taken immediately in order to avoid threats to local wildlife and nearby businesses and residences. All solid wastes should be regularly transported to the North Caicos landfill and disposed of in accordance with best practices.

During the operational phase, solid waste management will be conducted in association with regular project maintenance activities. Solid wastes will be collected and stored on site, at a location convenient to back of house facilities or near the area slated for wastewater treatment (Figure 46). A step-by-step solid waste management plan should be developed for maintenance crews in order to avoid any adverse effects associated with solid wastes, including the following components:

- Lidded receptacles for solid wastes should be provided at all locations where solid wastes are generated and should be emptied on at least a daily basis. Receptacles should be adequately sized so that no spillover takes place between scheduled emptying.
- Landscaping maintenance staff should be trained to collect and dispose of solid wastes on a daily basis, including smaller wastes, such as cigarette butts, drink mixing straws, bottle caps, etc. from beach areas.
- The management should consider a prohibition against all disposable food containers and utensils for use within any hotel amenities and operations.
- The management should also consider a recycling program for all wastes generated during the operational phase.
- Periodic underwater cleanups in the nearshore area should also be considered as part of regular maintenance.
- Public awareness materials advising against the use of disposable plastic items and environmental threats posed by waste should be made available to guests.
- The solid waste management plan should include concrete steps to reduce infestation by pests in areas where waste is collected and stored.
- Toxic wastes should be disposed of according to the manufacturer's recommendations and in accordance with the TCI Public and Environmental Health Ordinance (2018).

4.7 Surface Runoff Management/Storm Water Runoff and Treatment

In order to avoid surface runoff into sensitive marine habitats, during the construction phase, all vegetation at the project site, with the exception of areas slated for land clearance, will be retained. Although natural plant communities along the shoreline have been severely impacted by the AIS *Casuarina equisetifolia* and *Scaevola taccada,* the retention of this vegetation during the construction phase will still reduce the potential for runoff and sedimentation. Ultimately, the developer should consider removing the AIS from these locations and restoring native dune vegetation to improve overall regulation of flow ecosystem services (see Section 5.2.1). Overall, the retention of vegetation wherever possible will mitigate against potential sedimentation and pollution via runoff, as vegetation traps sediment and toxicants.

Because the proposed development involves limited earthworks, changes to the runoff and drainage characteristics of the site are expected to be nominal. Based on the topography of the site (Figure 36), the highest point currently occurs at the secondary dune, with flows from the watershed moving toward the coast and toward the back of the site (Figure 49). Because of the site's predominantly sandy substrates, percolative capacities are high, and most rainwater will be absorbed into the ground.

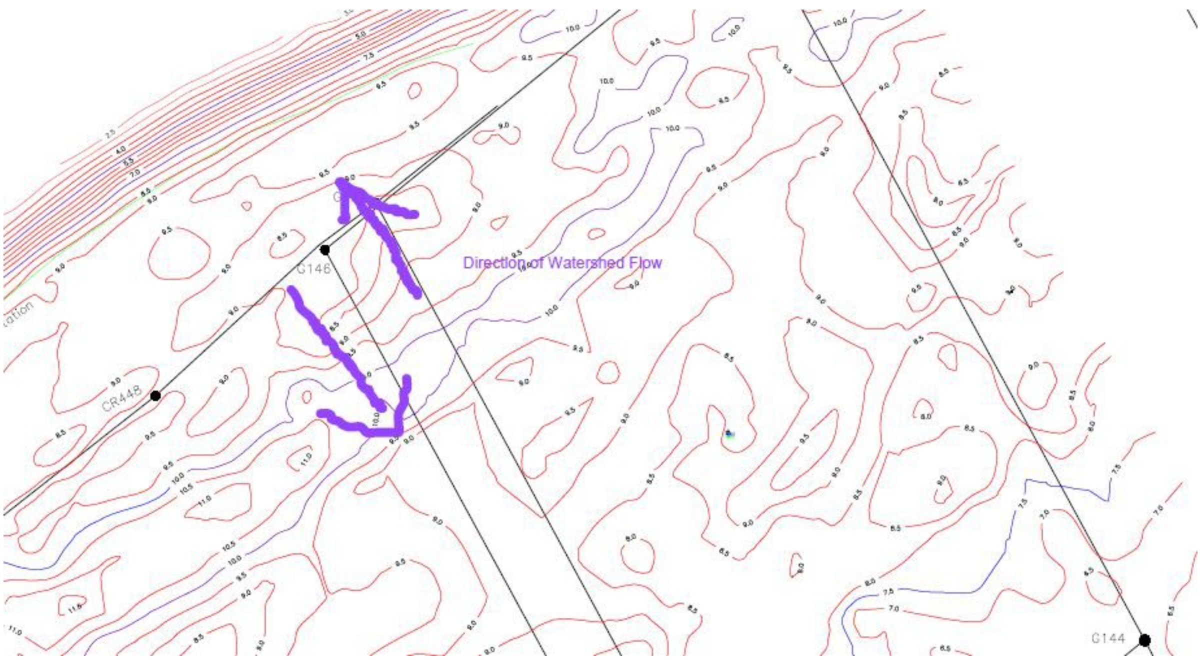

Figure 49 - Site regulation of flows

Furthermore, the Development Manual (2.8.3c) requires an outline of stormwater drainage and wastewater disposal to be provided for detailed development permission. These topics are addressed in detail in the Application for Detailed Development Permission, which ensures that adequate measures will be taken. Standard provisions typically involve the disposal of stormwater runoff into a drainage system for deep-well disposal and/or delivery to the development's wastewater system.

4.8 Water and Electrical Demand and Source

The project plans to produce its own electricity and water via solar photovoltaic (PV) electrical generation and reverse osmosis (RO) water production. A total of up to 8,840 square feet of solar PV panels, generating 90 KW of power will be installed surrounding the back of house area to generate electricity for hotel demands and another installation will be placed near the wastewater treatment plant to meet demands for that facility and for RO. Additional needs for electricity will be supplemented by Fortis during operations. During the construction phase, water onsite will be stored in onsite temporary facilities and delivered by truck as needed. Temporary electrical supply will be provided by Fortis.

4.9 Landscaping (Plan and Operations)

The project will minimize project footprints by elevating villas on post and beam structures, using footpaths rather than roadways throughout the site, and via a low-density design with the aim of retaining as much natural vegetation as possible throughout the project site. Augmented plantings will then only be required to fill in cleared areas around buildings and as feature installations. A landscaping plan has been developed along these lines (Figure 50).

Plant selections will preferentially include native floral species augmented with some tropical and subtropical palms, trees, shrubs, herbs, and ground cover. The project landscape architects have developed a preliminary plant list for this purpose (Appendix G), which is primarily comprised of native plants and a few non-invasive ornamental species. Any other plants considered for landscaping should be reviewed on a species-by-species basis and should be selected for low-maintenance, pest-resistant, and non-invasiveness.

Please see the Environmental Management Plan (Section 6.11) for a detailed summary of integrated pest management and landscaping best practices.

Figure 50 - Landscaping plan

4.10 Construction Phase Activities

4.10.1 Construction methods, program, and phasing

The project structures will be constructed in accordance with the TCI Building Code and adapted to blend in with the unique natural features of the site. Please see the Application for Detailed Development Permission for details of the construction methods. Project construction will take place in a single phase with a target to begin construction in the winter of 2025 and finishing approximately two years later (Table 22).

Table 23 - Project construction program

Pre-construction		
Planning and Government Approvals Development Agreement EIA Approvals DDP and Building Permit	8 months	April 2024 – December 2024
Construction	24 Months	February 2025 – January 2027

4.10.2 Site security and hoarding

Prior to any construction activities taking place, all work areas within the development site will be secured with barriers, constructed with posts and plywood, chain-link fencing covered with nylon mesh or other similar material. The barrier will serve multiple purposes. It will provide some site security, prevent wind-blown solid waste from escaping the site and control dust and noise. At least one, 24-hour security officer will also be posed on-site throughout the construction period.

Protective fencing will also be placed around all vegetation and sensitive ecological areas not incidental to building footprints (see Section 5 – Environmental Impact Assessment and Section 6 – Mitigation).

4.10.3 Storage of materials, equipment, and excavated soil and materials

During site preparation for development, a quantity of sand, rock, and topsoil will necessarily be removed from areas within building and infrastructural footprints. These materials will be stored on site at a location where they will not contribute to additional environmental impact, such as areas slated for back of house and wastewater treatment facilities (Figure 51).

All minerals excavated from the site should be mounded and covered with a tarp to prevent wind dispersal and loss due to rain runoff. Rock and other minerals resulting from site clearance can also be stockpiled. The materials can be used in construction and landscaping applications on the development site, including construction of walls, planters, and walkways. Any unused materials can be sold, noting that government royalties will apply in accordance with the applicable provisions of the Minerals Exploration and Exploitation Ordinance (2018).

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Figure 51 - Areas for recommended materials storage

4.10.4 Beach traffic and safety

No development will take place on or near the beach during the construction phase; therefore, safety considerations regarding the use of equipment and construction activities in the coastal zone are not applicable.

4.10.5 Temporary sanitary facilities

Temporary sanitary facilities will be provided at the construction site during all phases of construction by Blue Loos or similar, accommodating both waste management and sanitary handwashing facilities. The facilities will be emptied and restocked on an as-needed basis but at least once per week. Effluents will be disposed of in a manner that is acceptable to the Department of Environmental Health.

4.10.6 Access and staging

During construction, the access road to the project site will need to be upgraded to accommodate heavy equipment, construction vehicles and construction crews' personal vehicles, as the current unpaved roadways in the vicinity of the project site are currently pitted with potholes and overgrown with vegetation (Figure 52). Other roads, such as the road north road to Sandy Point, may also require regrading to facilitate access to the project site during construction.

Project staging will be directly related to the construction program (Section 4.10.1). During building construction staging and equipment storage should target previously clear-cut areas, rather than clearing new sites for such purposes. The recommended areas for this are the same as those recommended for the storage of materials resorting from land clearance (Figure 51).

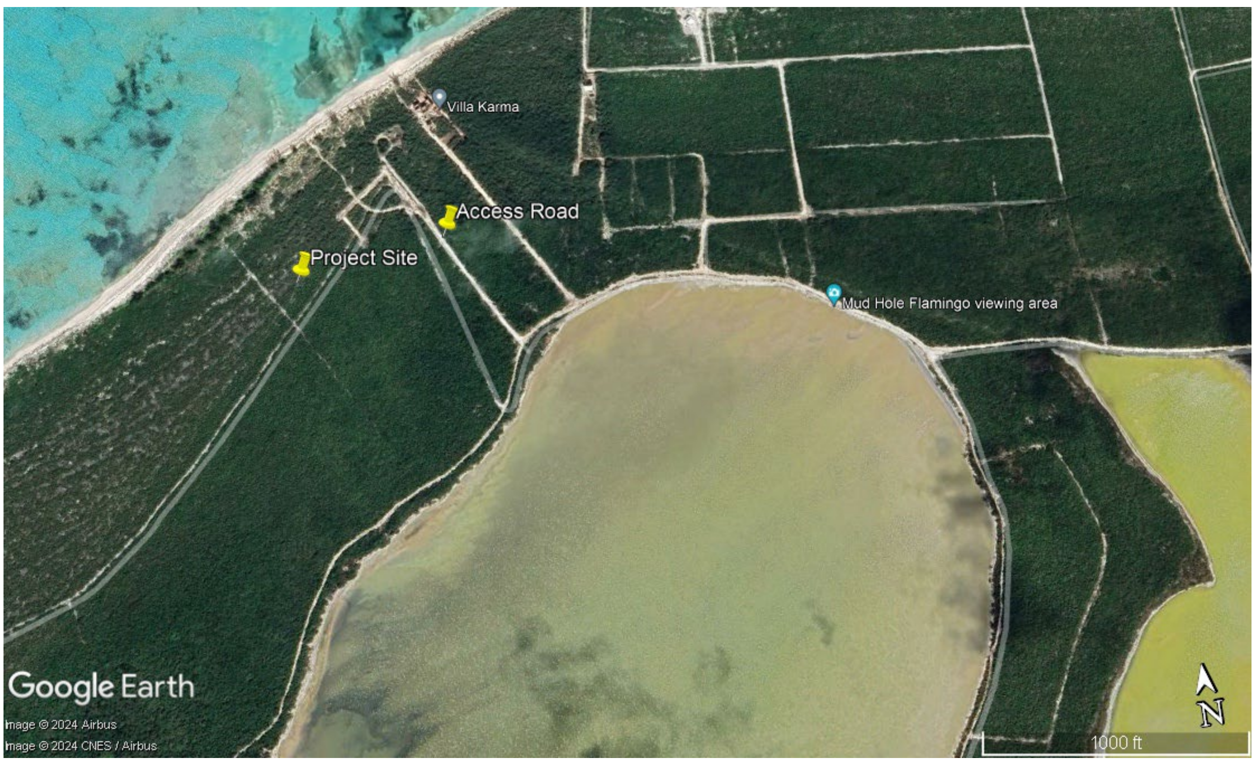

Figure 52 - Project site and access

4.10.7 Solid waste management

See section 4.6 above.

4.10.8 Liquid Waste Management

Potential liquid wastes produced during the construction phase of the project will include potential runoff from machine oils, hydraulic fluids, gasoline, solvents, paint, other chemicals associated with construction, and sediment from the surrounding watershed during rainfall events. and stored liquid contaminants. During the construction phase, oil-absorbent materials, such as cat litter, saw dust, or a commercial product made for such purposes, should be on-site and available at all times to immediately absorb any accidental spills.

4.10.9 Control of air, dust, water, and noise pollution during construction

Air pollutants associated with the project during construction include the byproducts of combustion associated with the use of heavy equipment and calcareous dust particulates that may aerosolize during land clearance, storage of topsoil, and disturbance of topsoil and other substrates during construction. These impacts are temporary and are not predicted to contribute to the existing ambient air quality in an appreciable way. Byproducts from combustion can be reduced by ensuring that all equipment is adequately maintained. Dust can be controlled by wetting down surfaces on a daily basis and installing hoarding around all activity areas.

Pollution of land resources during the construction phase will include solid wastes (see Section 4.10.7) and accidental spillages (see Section 4.10.8). Because TCI's bedrock is comprised of porous limestone, any chemicals or pollutants that are disbursed on the land can eventually make their way into sensitive marine habitats. Land pollutants can also harm wildlife populations.

Land pollution threats from accidental spillages can be avoided and reduced by implementing the emergency mitigation plan at all times during construction and operational phases (Section 4.10.11). Solid waste impacts can be avoided and reduced by implementing the recommendations outlined in Sections 4.6 and 4.10.7. Land pollution threats posed by the Project are detailed in Section 5 – Environmental Impact Assessment.

During construction, water pollution may occur from turbidity and sedimentation associated with dust from land clearance, accidental spillages, and solid waste impacts. These threats and measures to control them are addressed in detail in Section 5 – Environmental Impact Assessment and Section 6 - Monitoring and Mitigation.

Due to the remoteness of the project site, the noise baseline of the area is currently characterized by natural sounds, such as birdsong and occasional use of the area by recreational beach goers. As with all construction, the proposed development is expected to create noise. This noise will result from the use of heavy equipment, land clearance, and other typical construction noises. Such construction noises are not part of the baseline noise levels in the area, and will impact a single nearby residence if residents are home during the construction period (Figure 53).

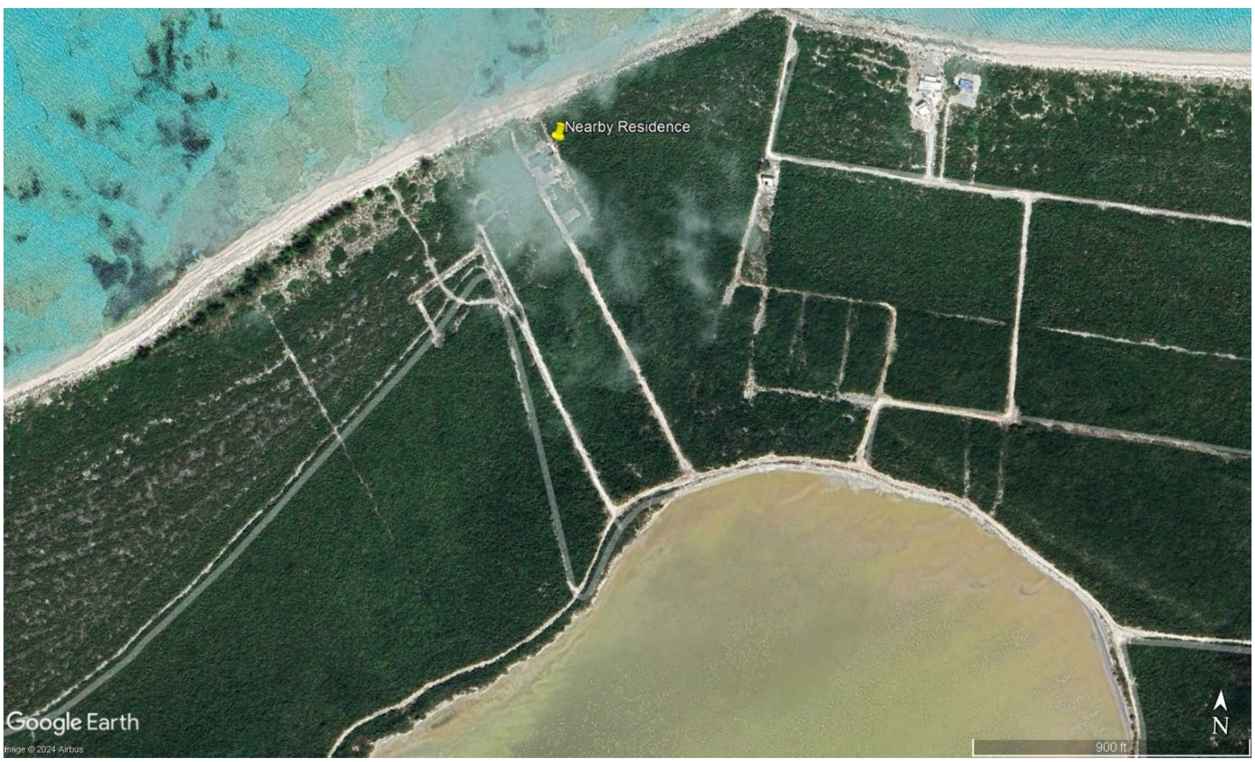

Figure 53 - Project site and nearby residence

By confining construction activities to the working hours outlined in the ODP (Appendix B), these impacts can be reduced. Recommendations to avoid, reduce, and offset noise impacts to wildlife populations are addressed in Sections 5 and 6, Impact Assessment and Mitigation and Monitoring, respectively.

4.10.10 Control and storage of fuels and other hazardous substances

During the construction period, hazardous materials associated with the project may include machine and hydraulic fluids for heavy equipment, paint, paint thinners, PVC cleaners and glues, fuel, and other hazardous substances. In addition to ensuring that the emergency mitigation plan (Section 4.10.11) is in place during all construction activities, the following measures are recommended:

- All hazardous materials should be stored in approved containers.
- Accidental spillages of environmentally persistent materials such as diesel fuel or lubricating oil should be remediated by applying an absorbent medium and excavation and removal of the contaminated soil from the site.
- Any contaminated soil should be transported to a government approved landfill site for disposal.
- Fueling on site should only take place where emergency spill procedures are in place.

Regulations regarding the handling, storage and disposal of hazardous wastes have yet to be adopted under Part VIII, Section 45 (Regulations Concerning Hazardous Wastes or Substances) of the Public and Environmental Health Ordinance, yet every effort should be made throughout construction to ensure that hazardous materials are handled in a manner consistent with the best available standards in TCI and according to manufacturer's instructions.

4.10.11 Emergency Mitigation Plan

Potential hazards in TCI can occur due to natural and anthropogenic causes. Potential emergencies associated the project include accidental spillages of hazardous materials and fuel in terrestrial and marine environments, tropical cyclones, operational safety accidents, and other unforeseen natural and man-made events. TCI's geography, small economic structures, and limited resources make the country particularly vulnerable to potential disasters and emergencies. Effective planning helps to reduce potential impacts. In the case of the Project, the threat of emergencies is small and can be largely avoided with conscientious planning.

The following are events that can require emergency and mitigation responses:

- Hurricanes and Tropical Storms (see Section 6.9 for additional information)
- Spills of liquid contaminants (see Sections 4.10.8 and 4.10.10 for additional information)
- Fire and explosion

Successful emergency management may require the participation of key government agencies, including:

- The TCI Fire Department
- DDME
- Environmental Health
- DECR
- The Turks and Caicos Islands National Healthcare Agency

Success also depends on financial resources, administration, and trained personnel for implementation. Any emergency and mitigation plan should also be seen as a "living" document in that revision and review should take place, incorporating newly available information, changing circumstances, and lessons learned.

Any pollution incident that poses a threat to the natural environment, including uncontrolled spills of hazardous contaminants, explosions, and fires, should be reported immediately to DECR, TCI National Healthcare Services, and the Department of Environmental Health. Spill mitigation materials should be immediately available to construction and operations crews, including booms and absorbent materials, and they should be trained in the use of such materials.

The following are the roles and responsibilities are assigned to the various Project principles:

Project manager and/or monitoring team – Pre-, during-, and post-construction mitigation, contract administration and oversight to ensure that work is compliant with the mitigation measures outlined in this EIA and in the construction contract. The project manager is to ensure that the necessary equipment, manpower and resources are available to ensure an effective and immediate response to an emergency or hazard and to alert relevant authorities immediately. The project manager should also ensure that construction crews are adequately trained to discharge disaster management responsibilities and/or arrange for additional assistance, if required. During operations, all staff members should be informed of emergency procedures, and applicable signage and information should be posted at key locations, such as inside doors at guest villas.

Project Contractor – Pre, during-, and post-construction operations are to be conducted in accordance with the recommended monitoring and mitigation measures in this EIA to ensure that siltation, spills, and pollution are avoided, reduced, restored, and offset, where required. All solid waste generated during construction is to be disposed of daily and any solid wastes with the potential to become airborne are to be disposed of immediately after use. Fueling should not take place at the project site. Spills of construction equipment fluids or other hazardous materials shall be immediately contained on-site and disposed of in an environmentally safe manner as soon as possible. Equipment and machinery shall be serviced, maintained, and washed offsite, away from the marine environment.

DECR – Project oversight to ensure that all recommended mitigation and emergency response measures are adhered to, including biological monitoring pre-, during, and post-construction.

The following procedures are to be taken in the event of an emergency:

- Emergency medical care is to be implemented immediately as needed, and persons trained in first aid should be included in staffing for all phases of development.
- Recording of the actions and decisions taken during any accident should be undertaken to ensure lessons are learned. Any improvements resulting from lessons learned shall be adopted in response to improved technologies, capabilities, etc.
- All relevant factors are to be immediately assessed, including areas potentially affected and resources needed and available.
- Priorities are to be established and response initiated, based on most-critical factors first. The employment of chemical dispersants/oil herders are to be used only under the approval of DECR. Response shall include reduction of impacts in sensitive areas, via the removal of the pollutant in all affected areas.
- Contaminated materials shall be recovered and disposed of on land at the North Caicos landfill. DECR shall oversee and dictate the clean-up strategy and risk assessment.

- Prevailing weather conditions and hazardous material types will determine the equipment and methods to be used.
- Biological and other environmental values, accessibility, and ability to utilize such equipment shall be considerations in selecting the cleanup method.
- Any solid materials should be put into plastic bags and disposed of at the North Caicos landfill.
- Floating booms and skimmers will be used to contain and remove oil and other hazardous liquids on the sea surface, for pumping into containment tanks and disposal at the North Caicos landfill.
- Response shall also include during- and post-incident biological monitoring to determine the effectiveness of the response.

Measures for reporting shall include the following:

- Name of person reporting
- Date and time of incident
- Nature of incident (leak, explosion, spill, fire, etc.)
- Location and source of incident
- Details of injuries and fatalities, causes of injuries, treatments applied
- Identification of material(s) released (if known), manufacturer, label information, characteristics, physical state (e.g. gas, liquid, solid), etc.
- Amount of material released/duration of release
- Affected resources and amount of materials released (e.g. air, water, land), including a description of direction, height, color, odor, plumes, vapor, etc., including wind, current speeds, and directions
- Local conditions
- Response personnel

Hazardous liquid management – A secure location to store hazardous wastes, including petroleum products, old gasoline or gasoline with water, absorbent materials, and oily rags shall be established for all construction phases. Signage shall be placed on all regular trash containers to indicate that hazardous wastes may not be disposed of in the container.

Emergency plan testing and review - This plan should be reviewed and updated every twelve months or as necessary as further information becomes that may influence plan implementation and emergency operations. If an incident should occur prior to review, then the review is to take place immediately following the incident in order to make adjustments as needed, incorporating lessons learned.

4.11 Socioeconomic

4.11.1 Demographic

See Section 2.7.1

4.13.2 Employment – labour and skills and available workforce

See Sections 2.7.2 and 5.2.11

4.13.3 Safety/security concerns within the community

See Section 2.7.3

4.13.4 Issues Raised in Public Consultation

See Section 6.12 - Public Consultation

4.12 Impact to Terrain, Vegetation Loss, Limitations of Wholesale Land Clearance

Please see Section 5.2.1 for a comprehensive summary of impacts to the terrestrial environment from impacts to terrain, vegetation loss, and limitations of wholesale land clearance.

4.13 Potential Alternatives

4.13.1 The no-go alternative

The justification for the Project is outlined in Section 4.2 of this report. An alternative of doing nothing will eliminate potential environmental, socioeconomic, and cultural impacts, both positive and negative, as outlined in Section 5. Specifically, the no-go alternative will result in the following:

- The project site will not be cleared (within building footprints), thus avoiding any impacts to terrestrial and marine environments associated with the loss of landcover.
- Any impacts to terrestrial and marine environments associated with increased human activities will also be eliminated.
- The AIS that are currently proliferating at the site will go unchecked and will therefore likely spread.
- The current limited recreational use of the area by residents and tourists will be unaffected.
- The economic benefits associated with the project, including local employment and business opportunities at North Caicos, and direct investment in the community, will not be realized.

Because the project does not require large-scale land clearance, impacts associated with land clearance are expected to be low as compared with other hotel projects in TCI. Furthermore, with a careful approach to landscaping, increased carrying capacities for wildlife populations can be fostered. If the recommendations outlined in mitigation and monitoring sections of this report (Section 6) are followed, then impacts associated with the loss of landcover can be mitigated to a no-net-loss level.

The project also sets a development precedent for the area, as no hotel development exists in the vicinity of the project site. Many people responding to public consultation indicated that the project represents a desirable precedent, represented by the following comments:

- *I love the fact that it is low density and environmentally sensitive. Exactly what should be encouraged for all of North Caicos.*
- *This will hopefully be a wonderful addition to North Caicos. It looks to be a small development in line with what is needed here.*
- *A development of low scale for this area is highly recommended.*

The environmental, socioeconomic, and cultural impacts associated with the development are outlined in Section 5. It is the responsibility of the various agencies of TCIG to weigh these potential impacts against the potential gains for the community to determine if the no-go option is preferable to development.

4.13.2 Design alternatives

The project is in keeping with all existing development standard and policies, and far exceeds allowable standards regarding densities, setbacks, and building heights (see Sections 3.4 and 4.1). Therefore, most economically viable alternatives would involve increasing these parameters, which would result in greater environmental impacts.

A higher-density build could allow for the maximization of immediate profits for the project proponents. Under existing guidelines as set out in the Development Manual, the project design could comprise twelve-story (150 ft maximum height) components and a maximum density of 50 bedrooms per acre (maximum of 494 bedrooms on a 9.88-acre site). As designed, most project components are a single storey, with some two-storey buildings and one, small footprint, four-storey feature structure. Furthermore, the project design allows for a total of 15 bedrooms, or approximately 1/33rd of the allowable number. In designing the project, proponents took into consideration the scale of the proposed development, with an aim to blend into the natural environment and community as much as possible. As such, the project as designed offers fewer aesthetic impacts than what would otherwise be allowable at the site.

From a socioeconomic perspective, costs and benefits associated with development must also be considered. Although it may seem intuitive that higher-density development would yield higher profits with associated gains in public benefits, such as stamp duties, tourism taxes, and other multiplier effects. A comparative analysis demonstrated that low to moderate-density, luxury accommodation actually produces greater profits and socioeconomic benefits due to higher demand associated with higher-quality development. Guests staying at such developments are also more likely to spend lavishly in the community, rather than traveling on a budget (Wood, 2014). Such considerations have been evaluated by the project proponents in their decision to develop the project as a low-density, luxury hotel.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

5.0 Environmental Impact Assessment

5.1 Impact Identification

This section identifies potential environmental impacts associated with the proposed development. In the Turks and Caicos Islands, guidelines for Environmental Impact Assessment are established within the Development Manual. Table 7-1 of the Development Manual outlines development categories likely to require an EIA. In accordance with Table 7-1 Hotels and condominiums (residential greater than 10 bedrooms) are a category of development likely requiring EIA (Category 1). Other activities associated with the Project (e.g., infrastructure, sewage treatment plants, earthworks, and public serving facilities) are also subject to the EIA process under Table 7-1 (Categories 3, 4, 7 and 8, respectively – see Table 2 of this report for details).

Methods for impact identification and prediction have been previously outlined (see Section 1.6). Environmental impacts will be realized during construction and operational phases of development (see Table 3 – Environmental impact matrix). Given the low-density, low-impact nature of the project, negative impacts associated with the project will be largely low, with the exception of potential moderate impacts to seagrass beds. Positive impacts may be high, moderate, and low, depending on compliance with recommended mitigation measures (Section 6). In accordance with international best practices for mitigation management, we have also further defined predictable impacts according to the mitigation hierarchy (e.g. avoidable, reducible, repairable, offsetable and compensable) (IFC, 2012). Permanent and reversible impacts are also noted.

Cumulative impacts to TCI's overall environment are currently taking place in response to rapid and uncontrolled development practices. These impacts are a direct result of large-scale land clearances, illegal development, and other legal and illegal activities, which result in myriad losses and impacts to ecosystem services and biodiversity values on a landscape level. The EIA process as it currently exists only addresses environmental impacts on a project-by-project basis, and the recently published National Physical Development Plan (NPDP, 2020) has earmarked North Caicos for a focus on agricultural development (EDSA, 2020). Although such development is critical for the diversification of TCI's economy, for food security, and for long-term sustainability, conventional agriculture is also associated with significant environmental impacts. We have addressed the project's contributions to cumulative impacts in light of the

NPDP's overall vision for North Caicos, as well as other direct and indirect impacts, based on the proposed development's predicted effects on the localized ecosystem services and biodiversity values.

Each of the identified impacts is elaborated upon below (Table 23) and in the sections that follow.

Table 24 - Predicted environmental impacts and mitigation potentials

Biodiversity/Ecosystem Service – • ***Ecological Feature***	***Cause of Impact***	***Expected Impact***	***Local***	***Cumulative (North Caicos)***
Nutrition • Seagrasses • Water resources	- construction and operations -terraforming -resource use	-reduced fisheries productivity from pollutants, habitat degradation and loss -reduced groundwater resources	M- A,R,Rp,O	L+/-
Materials • Ornamental floral species • Medicinal plants	-land clearance	-loss of ornamental and medicinal floral species	L- A,R,Rp,O,C	L+/-
Energy	-operations	-use of solar energy	H+ O	L+
Regulation of wastes • Intact vegetation • Seagrasses	-land clearance -earthworks -construction and operations	-loss of intact natural vegetation, -creation of permeable/impermeable substrates, -production of liquid effluents -sedimentation	L- to M- A,R,Rp,O	L-
Regulation of flows • Upland vegetation • Permeable substrates • Seagrasses • Dune vegetation	-land clearance, -earthworks/terraforming -increased beach traffic -runoff and sedimentation -AIS	-loss of intact natural vegetation, -damage to dunes and dune vegetation -Alteration to groundwater recharge	L+/- A,R,Rp,O	L+/-
Regulation of physical environment • Intact vegetation • Seagrasses	-land clearance -runoff and sedimentation -landscaping	-loss of carbon-sequestering intact natural vegetation -loss of carbon-sequestering seagrasses -addition of carbon-sequestering trees	L+/- A,R,Rp,O	L+/-
Cultural symbolic • All natural resources	-land clearance -construction -operations	-loss of natural cultural heritage -loss of cultural landscape	L- A,R,Rp,O,C	L-
Cultural intellectual and experiential • All natural resources	-land clearance -construction noise/nuisance -operations	-recreational values, -scientific values of natural communities	L- A,R,Rp,O,C	L-
RTE species • RTE flora and fauna	-land clearance -construction noise/nuisance -operations	-loss of IUCN, CITES and SPAW-listed species	L- A,R,Rp,O,C	L-
Endemic species • Endemic flora and fauna	-land clearance -construction noise/nuisance -operations	-impacts to endemic floral and faunal species	L- A,R,Rp,O,C	L-

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Spatial/temporal concentrations of species • Migratory birds • Sea turtles • Juvenile marine organisms	-construction noise/nuisance -operations -runoff and sedimentation	-disruption of migratory bird populations -loss of migratory bird habitat -loss of habitat for migratory marine organisms -loss of habitat for juvenile marine organisms	L- A,R,O,C	L-
Viable proportions of the great majority of species • Terrestrial communities • Marine communities	-land clearance -impacts to marine environment	-loss of characteristic natural communities	L- A,R,Rp,O,C	L-
RTE Ecosystems • Seagrass meadows • Coastal woodlands and forests	-land clearance -runoff and sedimentation -operations	-loss of intact coastal woodlands and forests -impact to and loss of seagrass meadows	L- to M- A,R,Rp,O,C	L-
Irreplaceability • Coastal woodlands and forests • Unique floral specimens	-land clearance	-loss of intact coastal woodland and forest habitats -loss of Encyclia inaguensis x E. rufa	L- A,R,C	L-
* H = High, M = Moderate, L = Low, A = Avoidable, R = Reducible, Rp = Repairable, O = Offsetable, C = Compensable				

5.2 Description of Impacts

5.2.1 The biotic environment

The biotic environment includes terrestrial, coastal, and marine communities. Although the TOR requests only an analysis of impacts to coastal and marine assets, we have included all areas, including terrestrial habitats, for which potential impacts have been predicted. Impacts to these environments are discussed below in Sections 5.2.1.1 and 5.2.1.2.

5.2.1.1 Terrestrial and ecosystem service biological impacts

The Project will result in impacts to the terrestrial environment during construction and operational phases. Direct and permanent negative impacts will be associated with land clearance for building and infrastructural footprints, and the increased human activity associated with the operational phase. Reversible impacts will be associated with construction nuisances and construction-phase, pollution-generating activities. Positive cumulative impacts will be associated with the setting of desirable development precedents and the use of solar energy. Indirect impacts to surrounding areas may occur during all phases of development.

Our method for assessing terrestrial impacts, incorporates an assessment of threats to the biodiversity and ecosystem services (Table 23). As per the Development Manual guidelines and our impact matrix (Table 3), we have determined the scope of the predicted impact and levels of mitigation that are applicable. Levels of impact are based on the level of impact to biodiversity and ecosystem service values and are site-specific and cumulative. A comprehensive discussion of each predicted impact follows.

5.2.1.1.1 Impacts to nutrition ecosystem services

Nutrition ecosystem services are defined as natural resources that provide sustenance, including water resources, fisheries, and the floral and faunal populations that are used for food. At the project site and surrounding coastal and marine areas, nutrition ecosystem services include critical seagrass habitats for important fisheries species and groundwater resources. Although some edible floral species are present at the project site, these are not currently being used for nutritional purposes and are therefore classified as cultural assets, rather than nutritional assets. Because nearshore habitats are not protected areas, it is also likely that they have been used as fishing grounds, although shallow depths would prohibit access via vessel to these areas.

Some land-based activities could contribute directly and indirectly to the degradation of nearshore nutrition ecosystem services, including the following:

- The generation of dust from construction activities and land clearance, which could cause sedimentation and subsequent harm to nearshore seagrass beds
- The generation of solid wastes from all phases of construction, which could impact fish and turtles traditionally used as fisheries products
- The use of toxic maintenance chemicals for landscaping, which could lead to nutrification in the nearshore zone and impacts to seagrass meadows
- The generation of nutrient-loaded wastes from inadequate sewage treatment and poor landscaping practices that could lead to nutrification and algal blooms in the nearshore area
- Trampling and consequent degradation and loss of sensitive seagrass habitats via the introduction of tourists into these areas

The above activities are largely indirect (with the exception of trampling) and avoidable; however, because of the vulnerability of shallow seagrass habitats, these impacts are deemed to be moderate on a local level and low on a cumulative level. In addition, they can be reduced, repaired, and offset via the mitigation and monitoring protocols that are outlined in Section 6.

The groundwater resources at the project site are limited and not sufficient to justify any exploitation (see Section 2.3.4 – Hydrology); however, they are ecologically important and likely support RTE coastal woodland and forest habitats by providing a freshwater resource for tree growth. These resources may be threatened by land clearance and terraforming, which could undermine the percolative capacity of the overlying substrates. Any such impacts would be largely permanent; therefore, methods to avoid and reduce these impacts are outlined in Section 6 – Mitigation.

5.2.1.1.2 Impacts to materials ecosystem services

Materials ecosystem services are defined as natural resources that can be said to have monetary value, including ornamental floral and faunal specimens of commercial value (e.g. CITES-listed species), and floral species with medicinal and cultural values (Table 24). Materials in the form of minerals from land clearance, including topsoil, rock, quarry, and sand will also be produced; however, these will be reused exclusively at the project site.

Table 25 - Species at the project site with materials ecosystem service values

Species	Common Name	Comments
Ambrosia psilostarchya	Bay Tansy	Traditional Medicine
Bursera simaruba	Gumbo Limbo	Ornamental/Medicinal
Cassytha filiformis	Love Vine	Traditional Medicine
Consolea nashii	Nash's Prickly Pear	CITES/Ornamental
Encyclia altissima	Tall Encyclia	CITES/Ornamental
Encyclia inaguensis	Inagua Encyclia	CITES/Ornamental
E. inaguensis x E. rufa	Encyclia hybrid	CITES/Ornamental
Encyclia rufa	Spring Orchid	CITES/Ornamental
Leucothrinax morrisii	Thatch Palm	Traditional Roofing Material
Pilosocereus millspaughii	Dildo Cactus	CITES/Ornamental

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Psidium longipes	Bahama Stopper	Traditional Medicine
Tillandsia balbisiana	Cuttlefish	CITES/Ornamental
Tillandsia flexuosa	Twisted Wild Pine	CITES/Ornamental

Land clearance during construction will cause the most significant impacts to the terrestrial environment. The clear-cutting and removal of vegetation from the site will result in the loss of all floral specimens contained within land clearance footprints, including those with materials ecosystem service values. The extent of the impact will be proportional to the area of land cleared. In the case of the project, the total development footprint comprises approximately 35% of the total land area, including hardscaping; however, some of the vegetation underneath elevated villas will be left intact, and the project manager will supervise all land clearance to ensure that extreme caution is exercised when clearing land to avoid damages to any vegetation not immediately incidental to land clearance. Furthermore, the developer has committed to rescuing flora with ecosystem service and biodiversity values from the site prior to land clearance. Not all species can be rescued or avoided, but these measures will reduce impacts, which can further be repaired and offset by using rescued and native floral species for landscaping. Because of these precautions and others outlined in Section 6 – Mitigation, any negative impacts are predicted to be low on a local level, and low positive impacts on a cumulative level may be realized via the setting of desirable precedents.

Once cleared, land areas in TCI are vulnerable to invasion by nuisance exotic species, particularly Australian pine *Casuarina equisetifolia* and scaevola *Scaevola taccada*. These opportunistic species are already present on the development site and will spread to cleared areas if continuous control measures are not put in place. Such measures could be considered as mitigation offsets and compensation, as they will improve upon the existing baseline of the site regarding the pre-existing significant impacts by AIS.

Cumulative impacts will be reducible, offsetable and compensable; however, it is unlikely that overall reductions in materials ecosystem services can be avoided, due to the push for ongoing development and the threat of illegal and unregulated development country wide. Cumulatively, materials impacts can be reduced and compensated by ratifying and implementing legislation to protect TCI's unique biodiversity. Areas where such floral and faunal specimens of conservation interest are located in significant proportions can also be set aside for protection. Cumulative impacts can be offset by offering incentives for the propagation, captive breeding, and further research on relevant flora and fauna. Compensation can also be made via sponsorship for recommended offsets.

The generation of physical environmental materials, such as quarry, topsoil, rock, and sand will not further add negatively to impacts caused from land clearance to biota. Generated minerals may be subject to government royalties, which could result in modest public economic benefits. Ideally, all minerals extracted from the project site should be reused in situ. This measure will serve to avoid contamination and spreading of AIS in the seed bank to other sites. Topsoil and rocks can be used for landscaping applications, and quarry can be used for grading parking areas and roads.

Appropriate recommended mitigation measures for impacts to materials biodiversity and ecosystem services are further detailed in Section 6 – Mitigation

5.2.1.1.3 Impacts to energy ecosystem services

Most of the electricity currently provided by Fortis is generated via the combustion of low-grade fossil fuel, which results in the largely unregulated production of air pollutants and greenhouse gasses. Solar energy resources across TCI are highly exploitable and have been successfully implemented on various scales across TCI. Cumulatively, TCI's failure to exploit abundant renewable resources on a large scale creates equivalent indirect negative impacts from air quality issues associated with Fortis's polluting methods of electrical generation. It also represents missed and valuable economic and positive promotional opportunities for the country. The installation of solar panels on a project-by-project basis could have localized low to high positive impacts on energy ecosystem resources and low positive impacts cumulatively.

Energy efficiency also represents an often-overlooked opportunity for positive environmental impacts associated with energy ecosystem resources. Every energy-saving measure adopted by the project will have a positive impact with air pollution and greenhouse gas reductions equivalent to every kilowatt of energy saved.

Combined with deliberate energy conservation design features, the project masterplan (Figure 46) features 8,840 sq. ft. of solar PV installations, which the project proponents envision will provide sufficient electricity to power RO water treatment facilities and support the daytime electrical needs for the project.

Discussions are underway with Fortis to determine if the energy utility will be willing to tie these installations into the grid, which would allow for nighttime offsetting to be achievable, thus allowing the project to be entirely electrified by solar PVs.

If the project can achieve its objective of 100% renewable energy use, impacts will be high and positive on a local level and low and positive on a cumulative level, as the electricity generated represents only a small fraction of that used across TCI. Nevertheless, the project example will set a desirable precedent that can then be replicated on a broader scale.

5.2.1.1.4 Impacts to regulation of waste ecosystem services

On a local scale, regulation of waste ecosystem services are provided by intact natural terrestrial vegetation communities and seagrass meadows, which sequester nutrients and other wastes within biomass, substrates, and soils. Land clearance will reduce the waste-processing capacity of intact natural vegetation. Because the project proponents are dedicated to preserving as much of the existing vegetative coverage as possible on the site, this impact is predicted to be low.

Any damages or losses to seagrass communities would also reduce waste regulation ecosystem services. These impacts could be caused directly by trampling of these sensitive habitats by hotel guests. The seagrass meadows at the project site are particularly vulnerable to this, as they occur in shallow water. Indirect impacts to seagrass meadows may occur from sedimentation during construction and from pollutants during construction and operations (See section 5.2.1.2 – Marine impacts for greater detail). Because of the large area of climax community seagrass meadows in the nearshore areas adjacent to the project site, such impacts are predicted to be potentially moderate on a local scale.

Impacts to regulation of waste ecosystem services can be avoided and reduced proportionally to the amount of natural vegetation which is left intact, and measures taken to protect the conservation of seagrass meadows. Regulation of waste impacts can be offset by implementing state-of-the-art sewage treatment facilities, implementing regular maintenance cycles for the same and reusing all produced effluent for irrigating landscaping without adding supplemental chemical fertilizers, which can produce additional wastes in the form of nutrient pollutants.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

On a cumulative scale, the loss of regulation of waste ecosystem services due to land clearance is exacerbated by significant increases in the production of wastes associated with rapid development, particularly in coastal areas. The overall contributions that the Project's land clearance will have on this cumulative problem are low; however, in the long-term, if coastal development takes place in North Caicos on a similar scale to that of Providenciales, cumulative impacts could become high. Impacts are reducible on a cumulative scale via improved oversight and monitoring of sewage treatment facilities and effluent quality and stricter oversight of land clearance, in general. Regulation of waste impacts can be offset via incentivization of improved wastewater treatment maintenance and oversight by government authorities. Appropriate recommended mitigation measures for impacts to regulation of waste ecosystem services are further detailed in Section 6 – Mitigation.

5.2.1.1.5 Impacts to regulation of flow ecosystem services

Flow regulation ecosystem services comprise the capacity for natural communities to provide resilience against the forces of air and water. At the project site and surrounding areas, these services are provided by intact natural communities, including seagrass meadows, dune formations, and land-based vegetative communities. Seagrass meadows trap sediments, thereby offering stabilization of coastal areas and making them more resilient to erosion. Well-developed dune vegetation, which controls and enhances the flow and retention of sand, can also facilitate flow regulation ecosystem services; however, at the project site, this has been undermined by the presence of the AIS *Casuarina equisetifolia* and *Scaevola taccada.* The percolative capacity of the site's substrate also regulates the flow of rainwater into pocket freshwater lenses.

Because no development is slated for coastal areas, no direct impacts to seagrass meadows or dune structures will take place as a result of the construction of the proposed development. Furthermore, the developer's sensitive approach to land clearance will reduce flow regulation impacts associated with the loss of vegetation and the alteration of substrates. Therefore, any negative impacts to flow regulation are predicted to be nominal and low. Furthermore, the control of AIS in existing dune areas will improve flow regulation ecosystem services, thereby creating a positive impact locally and setting a desirable precedent cumulatively. Appropriate recommended mitigation measures for impacts to regulation of flow ecosystem services are further detailed in Section 6 – Mitigation.

5.2.1.1.6 Impacts to regulation of physical environment ecosystem services

Physical environment ecosystem services comprise those aspects of ecosystems that regulate physical features, such as atmospheric carbon. Physical environment regulation at the project site is provided by carbon sequestration in seagrass meadows, organic soils, and plant biomass. Impacts to physical environmental regulation ecosystem services provided by intact shrubland, woodland and forest habitats will be proportionate to the quantity of natural vegetation denuded in association with land clearance. Because of the project's sensitive approach to land clearance, initial impacts due to the removal of vegetation are expected to be low on a local level, and positive impacts may be achieved through a sensitive approach to landscaping, incorporating native trees as much as possible, which will sequester carbon as they mature. Reparation and offsetting can also be made by via landscaping practices, such as intensive mulching, which allow for the accumulation of organic soil, and avoidance of the use of soil organism-killing pesticides, herbicides, and fertilizers.

Physical environment ecosystem services may also be undermined if any damages or losses of seagrass meadows occurs as a result of the project. Methods to minimize and mitigate for any such impacts are outlined in Section 6 – Mitigation.

On a cumulative scale, the impact of land clearance on physical environment regulation will be proportionate to the relative loss of vegetation and organic soil production capacity due to the Project. This impact is low in the larger context. Given the trajectory of development in TCI, avoidance of this impact is unlikely; however, it can be reduced via implementation of stronger regulation of land clearance and effective land use management planning. Reparation, offsetting, and compensation can be made via reforestation, wetland mitigation and incentivization of green landscaping management.

The project, as designed, will also have a positive impact on the physical environment as solar PV electricity generation will reduce the amount of greenhouse gasses associated with the project's operational footprint. Setting a desirable precedent in this regard will also have a positive cumulative effect.

Appropriate recommended mitigation measures for impacts to physical environment regulation ecosystem services are further detailed in Section 6 – Mitigation.

5.2.1.1.7 Impacts to cultural symbolic ecosystem services

Cultural symbolic ecosystem services include aspects of the natural environment that are important to cultural activities and traditions, such as intact natural landscapes and flora and fauna that have cultural historical relevance. Sweeping coastlines, unimpeded by visually obtrusive developments characterize the cultural landscape of the area surrounding the Three Mary Cays Sanctuary. Additionally, the flora present at the site have a long and broad history of cultural use. Impacts to cultural symbolic ecosystem services will therefore occur as a result of land clearance and visual alteration to the landscape; however, because of the project's low-density and design, which is intended to blend with, rather than competing with the surrounding environment, these impacts are expected to be low. Impacts will also be reduced by leaving natural vegetation outside of building footprints intact and incorporating only native floral species in landscaping applications.

On a cumulative scale, areas of natural beauty are at risk from development, and the project sets a desirable precedent in its sensitive design approach, thus also contributing negligibly to this impact on a cumulative level. In order to avoid future cumulative impacts on the scale they have already occurred on Providenciales, the aggressive use and regulation of plant protection orders and implementation of legislation designed to conserve biodiversity on a species and community level is recommended.

Appropriate recommended mitigation measures for impacts to cultural symbolic ecosystem services are further detailed in Section 6– Mitigation.

5.2.1.1.8 Impacts to cultural intellectual and experiential ecosystem services

The Project site and surrounding areas currently support some experiential ecosystem services, including recreational uses of the area beaches and the Three Mary Cays Sanctuary. Intellectual ecosystem services in the form of scientific research interests are also relevant.

Impacts to cultural intellectual and experiential ecosystem services associated with recreation could be both positive and negative, as the improved access to the area provided by the project will allow for easier access and recreational use; however, this same improved access will also result in reduced cultural values due to the potential for degradation it potentially brings. Negative impacts to intellectual ecosystem services will arise due to the degradation and/or loss of any natural communities and the potential for increased nuisances to wildlife populations resulting from increased human traffic in the area.

During the construction phase, recreational values will be compromised by noise during the hours when beach goers are likely to be in the vicinity; however, these impacts are reversible. Due to the low-density of the project, any impacts to the community from increased beach traffic associated with the hotel will also be minimal. Impacts to scientific values on a local scale cannot be avoided if development proceeds as planned; however, impacts can be reduced through the recommendations for beach and coastal management made in Section 6 – Mitigation - and compensated via sponsorship of scientific research and preservation and monitoring of the site's features of scientific interest.

Impacts associated with the Project to cultural intellectual and experiential ecosystem services on a cumulative scale are proportionate to the Project's overall contribution to impacts caused by development on North Caicos as a whole and is also expected to be low.

Appropriate recommended mitigation measures for impacts to cultural intellectual and experiential ecosystem services are further detailed in Section 6 – Mitigation.

5.2.1.1.9 Impacts to rare, threatened, and endangered species biodiversity values

The Project site is home to a large proportion of species of conservation interest (see Section 2.2), including floral and faunal species listed by IUCN, CITES, SPAW and the TCI Protected Species list (See Appendix E – Terrestrial Species List). The nearshore areas adjacent to the site were also noted as an important foraging area for Endangered green sea turtles *Chelonia mydas*.

Localized losses of RTE species may be associated with land clearance, habitat losses, and construction and operational phase impacts. These losses are proportionate to the number of species either destroyed (flora) or disturbed (fauna) during all phases of development. All RTE floral species within development footprints will be lost, unless rescued or protected from land clearance. Only one RTE faunal species, the Vulnerable TCI curly-tail lizard *Leiocephalus psammodromus* was recorded during field studies, and only two were observed throughout the site, indicating that the site does not currently function as good habitat for this species. Although ubiquitous, curly-tails are considered Vulnerable to long-term human habitation; however, anecdotal observation around restaurants suggest that this species is adapts to human activities and may even proliferate under some circumstances of human disturbance. Furthermore, because the site will not be clearcut, and because the developer is committed to the rescue and reuse of RTE floral species, impacts to RTE species are predicted to be low.

RTE turtles could be disturbed by increased human presence during the operational phase, and these potential impacts are addressed in Section 5.2.1.2 which follows. To compensate for impacts to RTE populations during the operational phase, resort guests should be provided with information as to best practices for encounters with wildlife.

On a cumulative scale, RTE species populations are declining in TCI due to the land use changes associated with development. The Project's contribution to this impact is expected to be low, based on its sensitive approach. Cumulative impacts can be reduced, offset, and compensated via the implementation and enforcement of biodiversity conservation legislation, large-scale propagation of RTE species for use in landscaping applications, and sponsorship of RTE species research.

Appropriate recommended mitigation measures for impacts to RTE species biodiversity values are further detailed in Section 6 – Mitigation.

5.2.1.1.10 Impacts to endemic species biodiversity values

The project site is also home to a high proportion of endemic species, including nine regionally endemic, 15 near-endemic, and one TCI endemic floral species; and five near-endemic and three TCI endemic faunal species (see Section 2.2.1.2 and Appendix E). Localized losses of endemic species will be associated with land clearance and permanent land use change at the project site. Losses will be proportionate to the number of individuals either destroyed (flora) or disturbed (fauna) during land clearance and/or permanently dislocated due to land use change. Disturbance to endemic fauna will take place during land clearance, due to noise, entombment, and loss of habitat. Permanent losses of endemic fauna will be proportionate to the area of habitat lost or permanently altered. Because of the project's low-density and minimalist approach to land clearance, these localized impacts are expected to be low.

Localized impacts to endemic species can be avoided and reduced by preserving the habitats harbouring them to the greatest extent possible. Impacts can be offset and compensated via rescuing at-risk floral specimens, reusing them for landscaping purposes, selection of wildlife-friendly plants for landscaping purposes, and sponsorship of propagation of endemic species for landscaping purposes, such as making contributions of pots and other materials to the native plant nurseries at DECR and the TCI Environment Club.

On a cumulative scale, endemic species populations are declining due to the permanent land use change associated with development. The Project's contribution to this impact is considered low. Cumulative impacts can be reduced, offset, and compensated via the implementation and enforcement of biodiversity conservation legislation, large-scale propagation of endemic species for use in landscaping applications, and sponsorship of endemic species research. Appropriate recommended mitigation measures for impacts to endemic species biodiversity values are further detailed in Section 6 – Mitigation.

5.2.1.1.11 Impacts to spatial/temporal concentrations of species biodiversity values

Spatial and temporal concentrations of species at the Project site include migratory bird populations and foraging and juvenile habitats for marine species in seagrass meadows. Migratory bird populations (See Appendix E and Section 2.2.1.4) could be disturbed if construction activities take place during migration periods. Any direct impact to birds would also constitute a violation under the Wild Birds Protection Ordinance (See Section 3.11).

As the site was surveyed during the late spring, some summer visitors and winter visitors would not have been recorded during field studies; however, the observation of representatives of these cohorts (See Section 2.2.1.4 and Appendix E) suggests that the site does serve as habitat for these spatial and temporal populations.

Given the ongoing impacts to habitats for spatial/temporal concentrations of bird species on a global scale (e.g. coastal development has significantly reduced habitat for migrant shore and sea birds), any impacts to known habitats also carries a cumulative impact. Such impacts can be avoided by preserving habitats wherever they are observed and through sensitive coastal and land management. Although such impacts cannot be offset where they occur, they can be somewhat compensated via the raising of public awareness and improving overall development policy to protect at-risk populations. Because of the project's ecologically sensitive approach, these impacts are expected to be low both locally and cumulatively.

Please see Section 6 for a detailed description of mitigation measures recommended for potential impacts related to spatial/temporal concentrations of species biodiversity values.

5.2.1.1.12 Impacts to the viable proportions of the great majority of species (VPS) biodiversity values

VPS biodiversity values at the Project site occur in the form of representative nearshore and land-based habitats. Given the site's biodiversity scores and large proportions of RTE and endemic species populations, the site's species compositions are representative of the wider vicinity and therefore contain VPS biodiversity values, although these values continue to be well-represented elsewhere on North Caicos. Coupled with the project's ecologically sensitive approach to development, impacts to VPS biodiversity values resulting from the project are predicted to be low. VPS biodiversity value impacts can be offset and compensated by the use of diverse native vegetation for landscaping and via habitat restoration efforts. Impacts can also be avoided by clearing only areas associated with building footprints and infrastructure, which the project proponents have committed to doing.

On a cumulative scale, VPS biodiversity value impacts associated with the Project are proportionate to the relative percentage of land cleared and permanently altered in addition to the precedent set by the project. Therefore, these impacts are also cumulatively low and can be further reduced, offset, and compensated via implementation of biodiversity conservation legislation that protects biodiversity on a community level and which stresses conservation of intact vegetative communities and sponsorship of habitat restoration efforts.

Predicted VPS impacts to marine habitats are addressed in Section 5.2.1.2, which follows, and appropriate recommended mitigation measures for impacts to VPS biodiversity values are further detailed in Section 6 – Mitigation.

5.2.1.1.13 Impacts to rare, threatened, and endangered ecosystems biodiversity values

RTE ecosystems at the Project site include rare and threatened coastal woodland and forest habitats and seagrass meadows. Tropical dry forests, and woodlands are considered endangered ecosystems on a global scale (Janzen, 1988). In TCI, coastal habitats are particularly at risk because of the desirability of beachfront land for tourism development. For example, in Grace Bay, Providenciales, almost all natural coastal habitats have been lost to development. Localized impacts will be associated with the percentage of these habitats that are lost due to land clearance and permanent land use change at the project site. Given the project's ecologically sensitive approach to land clearance and landscaping, these impacts are predicted to be low on a local level.

On a cumulative scale, the project's approach to land clearance sets a desirable precedent and is therefore predicted to have a low positive impact cumulatively. Impacts to RTE marine habitats are outlined in Section 5.2.1.2, which follows, and appropriate recommended mitigation measures for impacts to RTE ecosystem biodiversity values are further detailed in Section 6 – Mitigation.

5.2.1.1.14 Impacts to irreplaceability biodiversity values

Irreplaceability biodiversity values are those which cannot be mitigated for if impacted. At the project site, the unique *Encyclia inaguensis x E. rufa* hybrid orchid represents an irreplaceable biodiversity asset, which if lost, would represent a potential extinction. While such an impact would be both locally and cumulatively high, it is entirely avoidable, as species of the *Encyclia* genera are easily rescued and transplanted with high success rates. This individual, located at survey point #40, should therefore be rescued prior to any land clearance taking place and cared for until it can be reused for landscaping purposes or donated to DECR for scientific research purposes.

5.2.1.2 Marine biological impacts

No coastal structures extending into the marine environment are proposed for the Ani T&C Boutique Hotel Project on North Caicos, nor is any dredging of the marine benthos being undertaken. The stretch of beach along the property boundary is relatively wide (approximately 20m: 65ft at MLW) with a line of vegetation that will remain intact in the significant setback that is designed (see Figure 47 – Project coastal areas and development). The marine environment extending seaward from the shoreline at the site consists of lush seagrass beds with rhizome root systems extending into underlying sediments as much as 0.5m in many areas. These climax communities have built up over time, trapping sediments and ultimately rendering the area relatively shallow (<.3m -1m and mean tide) with deeper pockets of sand surrounded by sea grass ledges.

The marine environment off the coastline of the Ani property can be classified as a seagrass meadow, which provides several ecosystem services. An excerpt from Coastalwiki (2024, https://www.coastalwiki.org/wiki/Seagrass_meadows) on seagrass meadows gives the following descriptions of major ecosystem services:

- Fisheries (Nutrition) - Seagrasses support global fisheries by providing nursery habitats for fish, bivalve and crustacean species. They provide refuge from predation (especially for fish larvae and juvenile invertebrates) and a basal food source in the form of edible blades, detritus, and epiphytic algae.

- Climate regulation (Regulation of physical environment)- Seagrass meadows store large amounts of carbon in their biomass and underlying sediments.
- Biodiversity (Viable proportions of the vast number of species)- Seagrass meadows host a rich marine biodiversity, including protected and charismatic species such as dugongs, sea turtles, sharks, and seahorses.
- Ocean acidification buffer (Regulation of physical environment) - Seagrass meadows regulate the chemical composition of seawater by releasing oxygen and removing carbon dioxide during day-light, oxygenating water and buffering ocean acidification.
- Water filtration (Regulation of wastes) - Seagrasses are natural filters that trap sediments and ex-cessive nutrients out of the water.
- Coastal protection (Regulation of flows) - Seagrass meadows stabilize the substrate, enhance sed-imentation and dampen wave activity, thereby helping to mitigate coastal erosion and protect against flooding and storm surges.
- Disease control (Regulation of wastes) - Seagrasses can remove microbiological contamination from the water, thus reducing exposure to bacterial pathogens for fish, humans and invertebrates. They produce secondary metabolites with antibacterial and antifungal activity.
- Tourism (Cultural intellectual and experiential) - Seagrass meadows provide cultural services such as sense of identity for local communities and opportunities for recreational activities (e.g. birdwatching, diving, fishing).

No direct impacts of habitat loss and degradation and reduced species populations to the ocean environ-ment are expected during the construction phase since there will be no coastal structures added or any dredging of the marine benthos. Any pollutants or disturbances that enter the marine environment can disrupt the natural balance of nutrient flow needed to support the healthy food chain that provides for growth and sustainability of the dense seagrass beds that occur in this area. Once these habitats become undermined, impacts cascade into the disruption of the value of the ecosystem services and biodiversity values noted above, thus reducing benefits to ecological (including human) communities.

Although marine impacts are expected to be very low for both construction and operation phases, they still need to be considered with mitigation measures employed to avoid, reduce, repair, offset or compensate for any damages.

Coral reefs, mangroves and seagrass habitats are the foundations for healthy fisheries, which in TCI's case, are mainly lobster, conch, and a few finfish species. Commercial fishery products are considered a part of Nutrition and Materials Ecosystem Services, as they are natural resources that provide both sustenance and monetary value. Juvenile queen conch were noted in this area and the climax community seagrass ledges are often preferred habitat for juvenile lobsters and finfish. Green sea turtles are still occasionally fished for a food source with several noted grazing at the site.

Due to the low-density nature of this development (15 bedrooms), operational phase impacts are predicted to be minimal, but should still be addressed. Solid waste debris is a concern with all tourism development, especially when the beach and sea are being used for recreational purposes. Impacts to regulation of waste and flow ecosystem services provided by adjacent terrestrial communities can also affect the marine environment if vegetation buffers are undermined via land clearance, thereby allowing runoff and sediments to infiltrate the marine environment.

Cultural symbolic, intellectual, and experiential ecosystem services will likely be altered slightly during the operational phase when more people will be using the beach and sea. Although increased use may degrade natural resources, this will be offset by increase in experiential values afforded with improved access. At present, it appears people are accessing the beach via a path cut on an adjacent property (see Figure 48 - Existing beach access points) that is approximately 50m east of the eastern Ani property boundary. A path through the seagrass bed was dredged between 2012 and 2013, and regrowth has not occurred (see Section 2.2.1). Guests of the Ani Hotel should also use this area for recreational purposes to avoid trampling of the seagrass meadow in front of the development. A public beach access path that adjoins the main entry road to the development is included in the site drawings and would be another potential beach access path for patrons of the resort.

Once the project is operational, beach goers will use the beach and enter the marine environment for swimming and other recreational activities. Almost all the 100m property shoreline has dense seagrass beds just offshore that can be easily impacted by trampling, boat props and anchoring. In order to reduce impacts to seagrass meadows from these activities, the developer, in association with TCIG and local NGOs might want to consider making a small swimming area in front of the resort where guests can be directed. . A mitigation plan for creating a swimming area for guests while not disturbing the sea grass beds should be considered, with possible relocation and/or propagation of new meadows to offset any potential impact. In any case, the development of a swimming area will require a separate Planning application and approvals.

Not only will there likely be recreational activities (wading, swimming, sailing, kayaking, kite boarding, etc.), but the new amenity will likely attract charter operations for nearby fishing, snorkeling and diving opportunities. Navigation and safety impacts for all these activities need to be addressed (see Section 6.0 – Mitigation). An increase in the number of tourists will increase the use of marine resources, not only at the site, but indirectly across North Caicos as people explore the surrounding areas. One way to lower impacts from the increase use of marine resources is to increase the resources

Artificial lighting impacts to marine organisms are discussed in Section 5.2.4. RTE marine species are discussed in Section 5.2.5. Water quality issues and noise impacts on marine species are discussed in Section 5.2.9. An assessment table for marine impacts is provided in Section 5.3, and Section 6 will detail all measures proposed to mitigate against impacts.

5.2.2 Impacts to coastal processes

As no coastal stabilization structures or beach nourishment are slated for development in coastal areas, no negative impacts to baseline coastal processes will result from the proposed development. Coastal processes can be improved from the baseline via an integrated coastal management plan, which includes the removal and ongoing control of the AIS *Casuarina equisetifolia* and *Scaevola taccada* and their replacement with native dune vegetation, as discussed in Section 6 – Mitigation and Monitoring.

5.2.3 Impact to Three Mary Cays Sanctuary/National Park

Please refer to Section 3.6 regarding the legislative framework that pertains to the Three Mary Cays protected area. The National Parks Ordinance (NPO, 2018) describes the Three Mary Cays Sanctuary as

"An area of 33 acres in North Caicos comprising the total area of the Three Mary Cays and the surrounding 400 ft of sea up to 50 ft seaward of the low water mark of the north coast of North Caicos" (p.20). Furthermore, the NPO lists the protected area's features of interest as "Osprey nest site." The Osprey nest at the site was not in use at the time of field studies, nor were any other species of bird nesting on the cays.

Although Sanctuary is a classification of protected area in TCI that prohibits any use with the exception of scientific research, the Three Mary Cays Sanctuary is currently featured on the North Caicos map that is offered to tourists taking the ferry from Providenciales to North Caicos and is signposted and provided with vehicular access. Consequently, the area is currently frequented by tourists for recreational use in contravention of the National Parks Ordinance (2018). Because the project will have a maximum occupancy of only 30 persons, it is not expected to contribute to any existing tourism impacts in an appreciable way.

5.2.4 Impacts of added lighting

Although sea turtle nesting events have not been recorded along the coast in the vicinity of the project site for several decades, inappropriate onshore lighting would be problematic for turtle nesting activities if they were attempted. Therefore, best practices regarding lighting for the project should be incorporated into the project's detailed design. These measures are outlined in Section 6.1.3 – Mitigation for impacts of noise and light.

The only seabirds noted passing through during the survey work were a pair of Royal Terns with breeding adult plumage. References suggest they tend to breed in large colonies rather than single pairs (https://www.allaboutbirds.org/guide/Royal_Tern/lifehistory), and no nesting activities or behaviors were observed. The Audubon's Shearwater *Puffinus Iherminieri* was also not observed during field studies, and a personal communication with seabird specialist Rhiannon Austin (personal communication, 2024) confirmed that Audubon Shearwater do not nest or use the areas surrounding Three Mary Cays for habitat or foraging. The mitigation measures outlined in Section 6.1.3 will also serve to mitigate against any light-related impacts to night-active birds.

5.2.5 Potential impacts to RTE and endemic species and spatial and temporal populations

Nine RTE marine species that are listed as either locally, regionally, or internationally were recorded during field studies. Seven sea turtles (likely green sea turtles *Chelonia mydas*) were identified at this location based on their foraging behavior in seagrass beds. Green turtles are listed as Endangered by the IUCN and are protected from any international trade by CITES (Appendix I) other than for scientific research purposes. Two of the three species of corals recorded are IUCN listed as Least Concern; however, SPAW Annex 3 protects all Scleractinia, or hard corals, as well as the three most common species of seagrass found in TCI. Furthermore, all seagrass meadows are recognized globally as RTE Ecosystems. Locally, the DECR has listed a total of 7 of the species found at the site as part of the draft Wildlife and Biodiversity Protection Bill (April, 2021). Many of the species found at the site, such as queen conch and corals, are geographically restricted to the Caribbean/southern North Atlantic region but are not endemic to TCI.

The sea turtles observed grazing in the seagrass meadows during field studies were relatively small (approximately 0.25m diameter carapace) and would be considered juveniles and or sub-adults. Therefore, the site offers an important habitat for these temporal populations. There were no indications of turtle nesting (tracks or depressions) on the beach noted during the survey period, nor has turtle nesting been recorded in this area for several decades (Refer to Section 5.2.4 on light pollution and Section 6.1.3 for mitigation measures). The ingestion of solid waste debris can harm turtles, and excessive noise can alter turtle behavior (see section 5.2.9 for further information).

Potential impacts to RTE, endemic, and spatial and temporal species populations in terrestrial communities have been detailed previously in Section 5.2.1.

5.2.6 Potential impacts to the geological environment

Due to the project's ecologically sensitive approach to land clearance and terra forming, impacts to the geological environment are expected to be minimal. In areas where land will necessarily be cleared and levelled, such as parking areas, back of house facilities, and racket sports areas, the topography will be altered from the low undulations that currently exist (please refer to figure Figure 36 - Topographical survey) to flat areas. Because the topographical gradient is currently low, these impacts are also expected to be nominal. No karst, cave, or cavern features are located at the site and therefore, no major impacts associated with alteration of these sensitive geological features are predicted. Recommendations for land clearance and terra forming are detailed in Section 6 – Mitigation and Monitoring.

5.2.7 Potential impacts to the aesthetic and built environment

The proposed development sets a precedent for tourism development in an area currently characterized by largely undeveloped land and sporadic single-family residences. However, the proposed design is intended to blend with the natural environment rather than competing with it. Nevertheless, aesthetics are subjective and are therefore best evaluated via public opinion polling. The EIA team's Survey Monkey questionnaire received the following representative responses regarding aesthetics:

- "So long as it is not harmful to the environment or disadvantageous to the people of Sandy Point, or a tall albatross, I am in full support."
- "I would hate to see another shell of a rundown resort."
- "It looks to be a small development, in line with what is needed here."
- "Perfectly designed for the environment."
- [regarding a vision for North Caicos] "Exactly like this project. Keep the density and heights very low and the quality very high."
- "Small hotels and villas would be ideal. No Ritz Carlton style hotels."

No negative comments regarding the aesthetics of the proposed project were received. Please see Section 6.12 for public consultation results and discussion. Recommendations to mitigate against any aesthetic and built environmental impacts are discussed in Section 6 – Mitigation and Monitoring.

5.2.8 Impacts by AIS

Many AIS have been inadvertently introduced into TCI via the importation of commercial landscaping species from abroad. The pine tortoise scale insect *Toumeyella parvicornis*, which has decimated TCI Caicos pine *Pinus caribaea var. bahamensis* populations, is thought to have been introduced into TCI in a container of Christmas trees. Furthermore, the green tree iguana *Iguana iguana*, Cuban night anole *Anolis equestris* and other reptiles have been introduced via containers of landscaping species. These animals not only threaten native reptile populations by competing for habitat but could also serve as disease vectors. Because TCI's flora and fauna have evolved in isolation, they are highly susceptible to disease and other pathogens that they have not coevolved with. Therefore, measures to prevent the introduction of any unintended species should be avoided, and these measures are outlined in Section 6.0 – Mitigation and Monitoring.

5.2.9 Potential water quality and noise pollution impacts

5.2.9.1 – Noise impacts

No marine mammals were noted in the vicinity of the site during fieldwork, and the deeper reef areas, where large marine mammals could be found, are over 900m (0.5 miles) offshore. Sea turtles were noted swimming and grazing close to the shoreline in the immediate nearshore area, and the area appears to be an important foraging area for them (see Section 2.2.2.6 – Marine reptiles). Excessive noise can be an impact issue for both marine mammals and sea turtles in the surrounding waters. The impacts of noise on marine organisms are poorly understood; however, recent studies with marine mammals indicate that some noises may adversely affect marine mammal populations, upsetting their use of echolocation and damaging their sensory organs (Cope, Thomas, et.al., 2005; Richardson, Greene Jr, et al., 2013). Such research suggests that low-level noise, such as that arising from boat engines, does result in behavioral changes. Similarly, prolonged noise disturbances are believed to affect turtle behavior and ecology (Samuel, 2005).

5.2.9.2 – Water quality impacts

Any impacts from the land-based activities could impact marine water quality, as the terrestrial environment provides a buffer to control runoff and toxicants disbursed via subterranean seepage. During the construction phase, nutrient Eecosystem services are vulnerable to sedimentation from dust and run-off that occurs during land clearance and construction activities. By reducing water clarity, sunlight needed for photosynthesis, and settling out, sediments can be detrimental to seagrass meadows and corals.

Solid waste is another issue that can affect the marine environment during construction and operational phases. During construction, particularly in high wind areas or on tall building construction sites, loose debris can become airborne and end up in the ocean. Marine creatures (fish, sharks, seabirds, turtles, marine mammals and scavenger species) are known to inadvertently ingest plastic and other solid wastes, resulting in direct mortality or migration of toxicants up the food chain via bioamplification. Hazardous wastes (see Section 4.10.8 – Liquid waste management) from heavy equipment and or other construction activities can also leach into the marine environment via percolation into groundwater with similar results. Solid wastes also pose aesthetic impacts and chemical contamination resulting from their breakdown..

During the operational phase, nutrient contaminants from sewage and other toxicant pollution, such as detergents from grey water effluents are a primary concern. Excessive nutrients can cause eutrophication in the marine environment, leading to algal overgrowth that smothers and competes with coral and seagrasses, becomes unsightly, and reduces dissolved oxygen. Loss of flow regulation ecosystem services can increase the potential for run-off and/or seepage through the porous limestone substrates and into the marine environment. In addition to nutrient contaminants, run-off and seepage can consist of a wide variety of other toxicants, herbicides and pesticides, petrochemicals from road surfacing, chemically treated water, and treated freshwater from swimming pools that can reduce salinity. Any of these impacts would alter marine nutrient flow services by changing the natural water quality and/or become imbedded in the substrate for prolonged toxic release.

Effluent water from a correctly installed, operated, and maintained U. S. Environmental Protection Agency tertiary waste treatment facility is rated as suitable for direct discharge to soil interfaces, such as for irrigation of landscaping. The effluent water contains trace amounts of free chlorine from the disinfection process, as well as trace quantities of nitrogen and phosphorous salts. The chlorine is quickly neutralized by exposure to sunlight into inactive forms of chlorine salts. The nitrogen and phosphorous compounds are used by plants as fertilizers. None of the above compounds should present in sufficient quantities to pose a risk to the environment if the system is properly maintained and effluent qualities are tested regularly. The possible presence of disease-causing organisms such as coliforms in the effluent stream can occur if the plant is not properly operated or adequate chlorination levels are not maintained.

In developed countries, independent laboratories and treatment plant service organizations exist to ensure that the quality of treated effluent from privately owned waste treatment facilities is maintained to U. S. Environmental Protection Agency or equivalent local standards. In TCI, project proponents ordinarily contract out the maintenance of treatment plants and testing of effluent quality. We recommend that the developer contract the testing and maintenance services to one of these specialist firms or provide in-house training to maintenance crews to perform this function. TCI should make such practices mandatory for all developments bordering sensitive marine habitats, such as the project, to compensate for lack of resources for monitoring in the public sector.

In case of a mechanical failure or extended power cut, the waste treatment system for the project should incorporate a series of emergency high-level gravity overflow weirs that will permit the liquid waste stream to flow through the various plant structures in the manner of a large septic tank system. The clarified effluent will then flow through the chlorine disinfection process and into the standby deep disposal well. The resulting effluent from this process would be of adequate quality for sub-surface disposal with no significant impact on the environment or increased risk of disease transmission.

The final build-out of the project will also include an emergency generator capable of maintaining full operation of the mechanical waste treatment system in the event of an extended power outage.

Improperly and/or incompletely treated sewage, if applied to landscaped areas as greywater, could result in negative water quality impacts from nutrient loading via run-off or seepage through the porous limestone substrate. As treated effluent is already high in nutrient content, no additional chemical fertilizers are needed for plant health if treated effluent is used for irrigation. The additional use of chemical fertilizers overloads a plant's capacity to absorb nutrients, thereby resulting in the excess flushing into the water table or running off during periods of heavy rainfall and eventually making its way into nearshore waters. Herbicides and pesticides, along with any heavy metals, hazardous wastes, or petrochemical products can also make their way to the marine environment via these same mechanisms.

5.2.10 Ecosystem and economic analyses

Ecosystem services and biodiversity underpin TCI's economy in ways both visible and overlooked, and each of the ecosystem services and biodiversity values identified and evaluated in Section 5.2 has an associated economic value. In 2005, Nautilus Consultants conducted an analysis of the economic values of TCI's natural capital and found that the ecosystems associated with the proposed development site provide a wide range of services as outlined in Section 5.2. Because tourism is the leading industry in TCI, the economic benefits associated with tourism development eclipsed all other natural capital benefits, amounting to $80.2 million annually (Kuyer, 2018). North Caicos also benefits from a boutique-level tourism industry, which depends on intact cultural heritage as well as natural heritage. From our biological assessment (Section 2.2), we note that outstanding marine features of high ecosystem service, in the form of expansive seagrass meadows, are located within the vicinity of the development. These contribute to a fisheries industry that has been valued at $21.7 million/year (Kuyer, 2018). The proportion that the site and surrounding areas contribute to that figure will be a small fraction of the whole, given the relatively small geographic area of the site. The existence of these features within the proximity of the site will also serve to enhance tourism values via providing venues for guests for snorkelling, swimming, and low-impact watersports, such as sailing. Any predicted impacts resulting from the project in the marine environment can be mitigated (Section 6) to avoid the degradation of the ecosystem services and biodiversity values provided, as no development associated with the project is slated to take place in the marine environment.

The ecological values of the coastal and upland habitats are also high from a biological standpoint, with significant levels of ecosystem services and biodiversity values as outlined in Section 5.2. Coastal and terrestrial habitats have not been economically valued in TCI, but an exercise to determine a replacement cost for native coastal and upland vegetation in Thompson Cove was conducted (Wood, 2015) and determined that native vegetation has a replacement cost of $762/m^2. Due to more diverse vegetation on North Caicos in general, this value is probably higher for the project site. This figure accounts only for the cost and installation of vegetation (materials ecosystem service values) and does not assess the 15 other ecosystem services and biodiversity values associated provided by these habitats. Nevertheless, from a purely economic standpoint, intact native floral assemblages have high economic values. These are considered in our comprehensive cost-benefit analysis of the proposed project in the following section.

5.2.11 Socioeconomic impact

The wider socioeconomic and cultural (SEC) baseline relevant to the project is outlined in Section 2.7. This Section predicts impacts to the described baseline associated with the project. Our methods for SEC assessment incorporate socioeconomic conditions as outlined in the Development Manual (Table 7-3), augmented with SEC criteria, as outlined by the IAIA (Vanclay et al., 2015) to establish a SEC baseline. Impacts to the baseline are then predicted by incorporating Development Manual project categories (Table 7-1) with likely effects, as outlined in Development Table 7-3, focusing on impacts specifically outlined in the TOR in addition to other impacts that have been identified throughout the scoping and public consultation associated with this EIA. For a detailed description of SEC methods, see Section 1.6.

Impacts to baseline criteria include impacts to traditional and existing uses, traffic, aesthetics, cultural values, land and property values, labour and immigration, security and crime, economic costs and benefits, and political systems. Impacts to these variables are outlined in the following sections.

As is typical with all tourism development in TCI, the proposed development will result in socioeconomic and cultural impacts that are both positive and negative. Positive impacts will be largely economic, while negative impacts will be largely associated with cumulative impacts to ecological, social, and cultural baselines already significantly impacted by imported cultural values and development trends.

In order to predict SEC impact, the variables in the Development Manual (2014) Table 7-3 have been included in an impact matrix (Table 25), in addition to applicable IAIA variables and other predictable impacts and impact prediction recommended in the TOR for the Project. Predicted impacts were then contrasted to activities associated with the development, making alterations to the Development Manual's levels of predicted impacts, where applicable.

IFC Performance Standards require that the above variables are applicable to all persons with the potential to be affected by a project (IFC, 2012). We have used the SEC variables as outlined by the Development Manual and IFC to outline the socioeconomic and cultural baseline and predict socioeconomic and cultural impacts.

Note that our socioeconomic and cultural impact assessment relies on public consultation data, in addition to information provided by Project proponents and their design team. The EIA team have used the information provided to draw conclusions; however, we are not responsible for the content from which our conclusions are drawn.

Table 26 - Socioeconomic and cultural variables likely to be impacted by the proposed development

Hotel Corp Urban Development Ltd., Northwest Point										
SEC Parameter*	***H***	***M***	***L***	***+/-***	***A***	***R***	***Rp***	***O***	***C***	***P***
Traditional and Existing Use			X	+/-		X			X	X
Traffic			X	+/-					X	X
Aesthetics/Noise/Pollution			X	+/-		X			X	X
Cultural Values			X	-		X			X	X
Historic Resources			X	-		X			X	X
Land/Property Values/Property Rights		X		+/-					X	X
Labor/Immigration			X	+/-		X			X	X
Economic Costs and Benefits		X		+/-		X			X	X
Security			X	+		X			X	X
Political Systems			X	+/-					X	
* H = High, M = Moderate, L = Low, A = Avoidable, R = Reducible, Rp = Repairable, O = Offsetable, C = Compensable, P = Permanent										

SEC impacts will be realized during pre-construction, construction and operational phases of development and will be moderate and low and positive and negative. In accordance with international best practices for mitigation management, we have also further defined predictable impacts according to the mitigation hierarchy (e.g. avoidable, reducible, repairable, offsetable and compensable) (IFC, 2012). Permanent, irreversible impacts are also noted.

5.2.11.1 Public beach access

The project site does not have any registered beach accesses. Potential impacts related to beach access have been previously outlined in Section 4.4 – Coastal/beach development and management including beach access. Please see that section for a detailed summary.

5.2.11.2 Impacts to neighbouring developments, businesses, and residential houses

While the project site has no neighbouring developments and businesses, one single-family residence is nearby, and the project will contribute to some social and cultural issues, which were identified during public consultation. These include traditional and existing use, traffic, aesthetics, cultural values, historic resources, land and property values and rights, and security. Each of these variables is addressed in the following sub-sections.

5.2.11.2.1 Traditional and Existing Use

Traditional and existing uses of the project site and surrounding areas include:

- Low-level tourism and sightseeing
- Beach use
- Fishing

Impacts to traditional and existing uses potentially arising from the project are expected to be positive and negative, low and permanent, and will be reducible and compensable with appropriate mitigation. Negatively, the project will have a low impact on current tourism and beach using experiences, as the low-density nature of the development is not expected to add many users to the area beaches. Fisheries are not expected to be significantly impacted, as the nearshore areas bordering the site are shallow and do not appear to be used frequently for fishing purposes. Furthermore, the value the area adds to fisheries is in the form of ecosystem services, rather than direct use. The necessary improvement of roads and access to the area, which will be required for the project to be constructed and operated, will have an overall positive impact on beach using activities, and the project will have a positive overall effect on the tourism accommodation market in TCI, increasing the number of overall keys available. The project will also create a precedent for tourism development on North Caicos, which from public consultation, is seen as positive.

The Project will also create new amenities in the community, including restaurant, bar, spa, and sports facilities. In order to avoid alienation from the local community, these features should be open to the public.

The Survey Monkey public opinion poll yielded several responses regarding traditional access and use. The following responses, which have been nominally edited for clarity and language, are representative of the broad range of sentiments received:

- "How open will some of the recreational activities be to the public?"
- "I do not think basketball is necessary."
- "The amenities should be available to the public. Make the islanders feel as if they're welcomed to be a part of the resort."

All Survey Monkey responses in their original language are annexed as Appendix H. Measures to mitigate potential impacts to traditional and existing uses are made in Section 6 – Mitigation.

5.2.11.2.2 Traffic (and other infrastructure)

The Development Manual states that "Development is best served by roads which are designed with regard paid to topography, function, and economy of street length. The proposed road system should be integrated into the existing road system and natural features preserved to enhance the development. The layout of roads should provide adequate and safe means of vehicular and pedestrian circulation" (Section 3.1.1). In the case of the project, respondents expressed general concerns regarding North Caicos's infrastructure and how the project could contribute to potential solutions. These opinions are expressed in the following representative comments:

- Will the reverse osmosis plant be available to the public if the current plant for Middle and North is faulty?
- "This will also help kickstart much for both North and Middle and hopefully accelerate works to the airport."
- "More care and vision should be applied to the development of North and Middle than has been apparent in Provo. Infrastructure expansion, attention paid to environmental and ecological sustainability and regeneration of natural spaces through proper conservation area designations."

Although the site and surrounding areas do not currently experience any traffic challenges due to the sparse development that characterizes the area, the existing roads are in poor condition. The site plan for the project (Figure 46) shows access from the southeast along a preexisting, unpaved, graded road (Figure 54). This road, and those nearby, are in a state of disrepair, characterized by vegetation overgrowing the margins and centres, and numerous potholes. These conditions will need to be remedied to allow for unimpeded access for construction equipment and for guest access once the hotel is operational.

The Development Manual describes four classifications of roads, with the following requirements:

- *Main Roads* - main roads linking settlements, require a minimum 75-foot reservation.
- *Secondary Roads* - main roads within a residential area normally used for public transportation or traffic routes, require a minimum 50-foot reservation.
- *Local Roads* - Provide plot access and vehicular circulation between or for access to commercial premises, require a minimum 30-foot reservation.
- *Service Roads* - Provide direct access to individual plots within a residential area or for access to commercial premises, require a minimum 30-foot reservation (Section 3.1.2).

The main road that must be used to access the project site is the road to Sandy Point and Whitby. This road is overgrown and floods frequently, even with normal levels of rainfall. Due to the low-density nature of the project, it is not expected to impact this baseline condition. By upgrading access for guests, the project is likely to have a net positive impact on roads, traffic, and other infrastructure in the vicinity of the project site. Recommendations for how to address any potential impacts are outlined in Section 6 – Mitigation and Monitoring.

Figure 54 - Project site existing road access

5.2.11.2.3 Aesthetics (including noise and pollution)

Please see Section 2.4 regarding baseline aesthetics and predicted impacts to aesthetics in Section 5.2.7. Recommended measures to mitigate potential aesthetic impacts are addressed in Section 6 – Mitigation.

5.2.9.2.4 Cultural Values

The IAIA defines cultural values as "…shared beliefs, customs, values and language or dialect." In TCI, cultural assets include, but are not limited to, herbal lore, basket making, sloop building and other crafts, dance, music, a mixed native and colonial architectural vernacular, a tradition of subsistence fisheries and agriculture, a relatively pristine natural history baseline, primarily Christian faith, and a common dialect.

TCI has undergone significant change in a relatively small timeframe, with resultant negative and largely irreversible impacts on cultural values, which are gradually being replaced with foreign values. This trend has been most significant on the islands of Providenciales and Grand Turk, where the vast majority of tourism development has taken place. The 2012 census records the total population of TCI as 31,618 with current population estimates of 46,461 (https://www.worldometers.info/world-population/turks-and-caicos-islands-population/#:~:text=The%20current%20population%20of%20the,of%20the%20total%20world%20population.) This represents a significant percent increase over the previous census conducted in 2000. In 1970, 96.4 percent of the population were TCI nationals or "Belongers" (TCIG, 2012). Today, it is estimated that Belongers are now a minority, accounting for approximately 40% of the population (Barnett, 2017). 75 percent of the country's population lives on the island of Providenciales, and the vast majority of these residents are foreign nationals.

In 2012, North Caicos had a population of 1,312, which represented a decrease of 2.6% over the previous census period. No updated population estimates are available at the official government website: https://www.gov.tc/stats/statistics/social/5-population; however, because North Caicos's population has remained relatively stable over the past few decades, cultural values remain more intact than on Providenciales, with many residents still practicing traditional ways of life.

The public opinion polling conducted for this EIA indicated that the people of North Caicos are aware of potential impacts to their cultural heritage and would like to prevent them and protect those values that remain in North Caicos. These attitudes are represented by the following comments:

- "Development in North Caicos needs to be controlled and at a pace that's beneficial to local businesses in North to prosper, grow, and succeed."
- "I would like to see the island remain peaceful…I support development, but done properly, the island's peace can still be maintained."

- "…maintaining the 'island feeling' that integrates the great personalities of the island residents."

Recommended measures to mitigate potential cultural values impacts are addressed in Section 6 – Mitigation.

5.2.11.2.5 Land/Property Values Property Rights

Property values have risen steadily in TCI over the past two decades. In particular, beachfront and near-beachfront land values have escalated dramatically, due to the rapid advance of tourism development. In general, tourism development is known to increase property values in surrounding areas (Albuquerque & McElroy, 1992; Harrison et al., 2003; Zappino, 2005). Increases in property values have applied across the region and not just at beachfront properties.

On North Caicos, much of the land is considered "family land," and ownership is often contested. In recent years, significant swaths of land have been sold off to foreign investors, including the project site. The project will be the first tourism development in the vicinity and the low-density, luxury nature of the project will set a precedent, which will likely elevate property values for nearby land. Although this will provide positive impacts for landowners, it could also lead to gentrification, thereby making land unaffordable for residents. The project is therefore expected to have moderate, permanent impact, which could be both positive and negative on land values and property rights, and will be compensable via mitigation.

Public opinions regarding land values and property rights were not reflected in any comments arising from the Survey Monkey questionnaire.

Other property rights include common resources and impacts on existing land and property owners, such as rental markets. Unlike Providenciales, North Caicos has a significant inventory of rental properties that are unoccupied. Therefore, respondents voiced opposition to the worker housing facilities being proposed by the project proponents as expressed by discussions with key stakeholders and the following comment:

- "Housing should be provided by the locals in North."

The project proponents have indicated that they will preferentially seek appropriate housing within the community if it is available and if costs are in line with budgetary expectations. Mitigation measures to compensate for impacts to land values and property rights are outlined in Section 6.

5.2.11.2.6 Labour/Immigration

The Project will require labour during all phases, including preconstruction, construction, and operational phases. During the pre-construction phase, labour requirements include a Project Manager, Project design team (including architects, engineers, surveyors, etc.), environmental impact assessment specialists, etc. Project managers, EIA specialists, and the full engineering with a design team from abroad. team have been sourced locally,

Locally based companies are expected to be contracted for most of the construction of the Project. The full build will require a team of approximately 40 construction workers, over a period of two years, including project managers, skilled labour (carpenters, masons, electricians, plumbers, etc.) and unskilled labour. Construction employment will preferentially be provided by Belongers, according to availability and in accordance with TCI law. Other construction labour will be comprised of Permanent Residents and Work Permit holders already resident in TCI, according to availability. Given the fluidity of the construction industry, actual labour demographics and availability are relatively unpredictable, but as required under TCI law, preference to Belongers must be given, with secondary preference given to resident Permanent Residents and Work Permit holders. As a local construction companies will be contracted for most of the project, the economic benefits associated with the construction process will largely remain in the local economy.

A broad range of capacity and educational requirements characterizes the construction industry. In terms of labour availability, demand outweighs labour supply for positions requiring university or vocational training, whereas supply outweighs demand for positions requiring lower educational levels (e.g. primary and secondary school only) (Barnett, 2017). These demographics indicate that unskilled construction positions can be readily filled using locally available labour, for which there is a surplus; however, skilled labour and management positions, for which there is a deficit, will likely require migrant labour. In general, the construction industry is comprised of approximately 25% Belonger labour, and we use this figure in our calculations of labour supply and demand for the construction phase.

During the operational phase, the Project will also require 40 permanent staff (Table 26). As with the construction phase, and as required under TCI law, hiring preferences will be given to Belongers, with secondary preferences given to Permanent Residents and existing work permit holders.

Table 27 – NC1246: Staffing

Position	Immigrant	Local
Administration	3	1
Financial Management	1	3
Kitchen	2	4
F & B	3	2
Activities	2	1
Spa	3	
Housekeeping and Laundry	4	3
Maintenance	2	3
Landscaping Maintenance	1	2
Pre-opening Task Force	3	
Security (outsourced)	3	4
Totals	24	19

Employing Belongers, OCT Citizens, and Permanent Residents makes economic sense. Given the increasing cost of foreign work permits, such an attitude is both politically correct and economically sensible. While all positions will be filled in accordance with Belonger preference, it must be noted that low and unskilled labour positions are generally not desirable to Belongers and will therefore likely be filled by a majority of non-national labour. In order to reduce negative consequences of increased strain on public infrastructures, second preference should be given to locally based persons, including Permanent Residents and existing work permit holders. Non-resident immigrant labour should only be employed as a last option, when no locally based person is available. No illegal immigrants should be employed during any stage of development. For the purposes of our analysis, we estimate the total immigrant workforce demand (Table 27), will be filled by new immigrants.

The National Skills Audit summarized that rather than having an unemployment problem, TCI has a training problem. Public schools are not adequately preparing students to compete for skilled and

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

professional positions, and Belongers do not want to be employed in unskilled labour positions. A lack of qualified or willing Belongers exacerbates the influx of foreign labour across all sectors and serves to inflame already strained immigrant/Belonger relations. The only solution to resolve this major underlying issue is to make the education and training of Belongers a national priority. Investment in schools and public/private partnerships with developers to encourage local training could ensure that every Belonger who wants a good job can get one.

Due to the fact that the project will contribute to only a small proportion of overall labour demand on North Caicos, the Project's predicted impact with regard to labour and immigration, will be low, positive, and negative. Impacts are not considered permanent, as labour demographics tend to change with relation to markets, which are unpredictable. A further positive benefit could be the return of local residents to North Caicos who have previously emigrated to Providenciales looking for work. Respondents to the Survey Monkey questionnaire expressed opinions regarding labour and immigration as noted in the following representative comments:

- "Less need for imported labour but high quality jobs for those who already call North Caicos home."

Labour and immigration impacts can be reduced and compensated via mitigation measures, which are outlined in Section 6 - Mitigation.

5.2.11.2.7 Economic Costs and Benefits (of Development)

Baseline economic costs per capita can be derived from public expenditure. We use budgeted estimates of expenditure for the 2024-2025 fiscal year and population estimates, as determined by the Statistics Department to determine an approximate per capita public cost. Although unaudited, these figures are determined to be the most representative of the current situation in TCI. The 2024-2025 projected budget is $498,665,638 (https://drive.google.com/file/d/1xfTyK3yx0hppFzZyG3-1xtvIcPRmAuST/view), and the current estimated population of TCI is 46, 461 as of July 31st, 2024. According to these figures, the total budgetary cost per capita in TCI is $10,733 per annum. Per capita public costs will be used as the baseline to determine costs and benefits associated with the increased labour associated with the Project. Note that impacts associated with immigrant labour also include costs of families that relocate. We therefore use the average household size in TCI of 2.47 to further calculate these costs. Therefore, the public cost for each immigrant labourer, including their relocated families, is $26,510 per annum.

Economic impacts resulting from the proposed project will be both positive and negative. Positive impacts include improved infrastructure, such as roads, revenues for government from import duties, stamp duties, accommodation tax, work permits, and other fees, provision of employment, and other benefits. Negative impacts will include potential influxes of foreign labour, with associated economic, social, and cultural costs. Environmental externalities will also result in public costs.

We note that the ecosystem service and biodiversity value externalities should be considered as an economic cost. Rather than calculate these costs, which would be estimates at best (see Section 5.2.10), we approach potential impacts from a mitigation standpoint, with recommendations to avoid, reduce, repair, offset and/or compensate any potential effects to a no net loss level (Section 6). No net loss will equate to no economic costs in terms of environmental externalities, and this should be the goal with all development in TCI.

Our assessment compares costs with potential revenues and benefits (Table 27). All data for economic benefits were taken directly from information provided by the developer, including accommodation rates and other revenues for the proposed development[1].

Because the project will operate exclusively as a hotel rather than as a condo/hotel as is the case with most tourism development in TCI, direct economic benefit variables considered include the direct investment costs of the Project, stamp duty (from the original land sale), revenues from operations, operational costs, airport taxes, and visitor expenditure in the wider community. TCI has not developed multiplier coefficients for the determination of indirect economic benefits from tourism development; however, the multiplier for the Regional Input-Output Modelling System for Dade County, Florida, specific to tourism is 1.45. Multiplier values are estimates only and are not included in our assessment, but it should be recognized that direct economic benefits have indirect positive effects that may represent as much as an additional 50% of direct economic benefits. It should also be noted that a comprehensive quantitative assessment of Project benefits and externalities is beyond the scope of an EIA. We have used the primary

[1] Economic values specific to the Project should be considered confidential and redacted if the EIA is made available for public consultation. SWA Environmental will prepare a redacted copy for this purpose, as required.

economic variables affected by tourism development in our assessment, and our figures should be viewed as estimates of costs and benefits, rather than exact figures.

Table 28 - Estimated Costs and Benefits of the Project

Variable	Annual Benefit	One-time Benefit/Cost
Hotel Revenue (est. annual)	$3,659,040	
Other Taxable Amenity Revenue	$309,120	
Tourism Tax Receipts	$476,179	
Stamp Duty Revenue from Land Sale		$227,500
Import Duties		$1,656,600 (construction)
Government Licence/Work Permit Revenues	$116,900	$298,666 (construction)
Total Estimated Direct Public Tax Benefit	**$593,079**	**$2,182,766**
Public Cost - Construction Immigrant Staff		($1,590,600)
Public Cost - Operations Immigrant Staff	($636,240)	
Total Estimated Public Costs		
Other Economic Benefits		
Cost of Development		$30,000,000
Operational Costs (Including Labour)	$2,400,000	
Total Economic Benefits	**$2,993,079**	**$32,182,766**
Total Economic Costs	**($636,240)**	**($1,590,600)**
Economic Benefits - Costs	**$2,356,839**	**$30,592,166**

Given the small scale of the development, public costs can be offset to practically zero by encouraging Belonger, BOTC, and Permanent Resident participation. Higher government revenue values per unit are also associated with high-end development, from which increased revenues from tourism tax and stamp duties are realized. Because of this dynamic, Belonger training and incentive programs that reduce the immigrant work force can also significantly reduce public costs.

Mitigation measures to address economic costs are outlined in Section 6.

5.2.11.2.8 Security and Crime

Despite rising rates of violent, gang-related crimes on Providenciales, North Caicos remains relatively free of such incidents. Nevertheless, the project will be employing full-time security staff, during all phases of operation, which will help to discourage unlawful and illicit activities at the Project site. As North Caicos's tourism industry develops, care will be required to ensure that the benefits arising from development accrue not just to investors, but also to the community at large to avoid the wealth disparities that have exacerbated crime on Providenciales. Because of these potentials, the project's overall impact on security is expected to be low, positive and negative. Respondents to the Survey Monkey questionnaire did not express any concerns regarding public safety.

5.2.11.2.9 Political Systems

The IAIA defines political systems as "the extent to which people are able to participate in decisions that affect their lives, the level of democratisation that is taking place, and the resources provided for this purpose" (Vanclay et al., 2015). TCI has a parliamentary system, with local and nationwide elected representation within a Cabinet and House of Assembly, and a Premier, who is the functional leader of the majority party. Only Belongers can vote, and the voting population of Belongers does not represent a majority of persons living in TCI (see Section 2.7.1 – Demographics). The majority of TCI's population, therefore, does not have adequate political representation.

Despite the fact that a majority of TCI's population is comprised of non-voters, IFC and IAIA standards require that environmental and socioeconomic impact assessment take into consideration all affected persons. Public consultation for the project did not receive any comments related to political systems (see Appendix H - Survey Monkey responses); however, a majority of respondents described North Caicos as their island of residence, and another opportunity for affected persons to participate in the EIA process will take place when the EIA is made available for public review. Recommended mitigation measures for predicted impacts to political systems are detailed in Section 6– Mitigation.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

5.2.11.3 – Potential impact to roadways for site access

Please see Section 5.2.11.2.2 where these impacts are previously addressed.

5.2.11.4 Potential climate change impacts

Climate change is a global phenomenon that affects continents, countries, cities and individuals. Increased heat, erratic precipitation, rising sea levels, intensifying storms, ecosystem migration, threats to water supply, and other climate anomalies are all attributed to a climate that is changing at an accelerated rate, driven by human activities. While the individual actions of a person or country acting alone will not reverse this acceleration, it will not change without actions by each of them. It has come to be understood that resilience and mitigation actions addressing a changing climate can be incorporated into all processes whether they be in an individual's daily life or in major governmental actions. The international Panel on Climate Change (IPCC) has addressed the amplified importance of climate mitigation to Small Island Nations (SIDs). As stated in the Turks and Caicos Islands Climate Change Green Paper Climate Change Committee, February 2011 "Given that the Caribbean States contribute insignificant amounts of greenhouse gases to the global total, their main priority in addressing climate change is to formulate and implement appropriate strategies for adaptation to minimize the social and environmental impacts of climate change." However, mitigation measures – reducing energy use and greenhouse gas emissions - can complement adaptation measures.

The government of the Turks and Caicos recognized that impacts from climate change are already occurring and must be addressed in its Green Paper in February 2011, Climate Charter in April, 2022, and the new climate change policy currently under development. These documents address the importance of incorporating the most up-to-date climate change analyses, conducting vulnerability assessments based on these analyses, increasing appropriate adaptation responses, and facilitating information exchange – all in the lens of resilience-based growth. These actions occur alongside the acknowledged importance of mitigation through reduction of GHG emissions.

In TCI, climate is characterized by daily average rainfall of approximately 2 – 2.2 mm/day (Figure 55), with wide variations in precipitation volume on a month-to-month basis (Figure 56). The World Bank has also projected increasing variability in TCI's rainfall averages as a result of climate change (Figure 57).

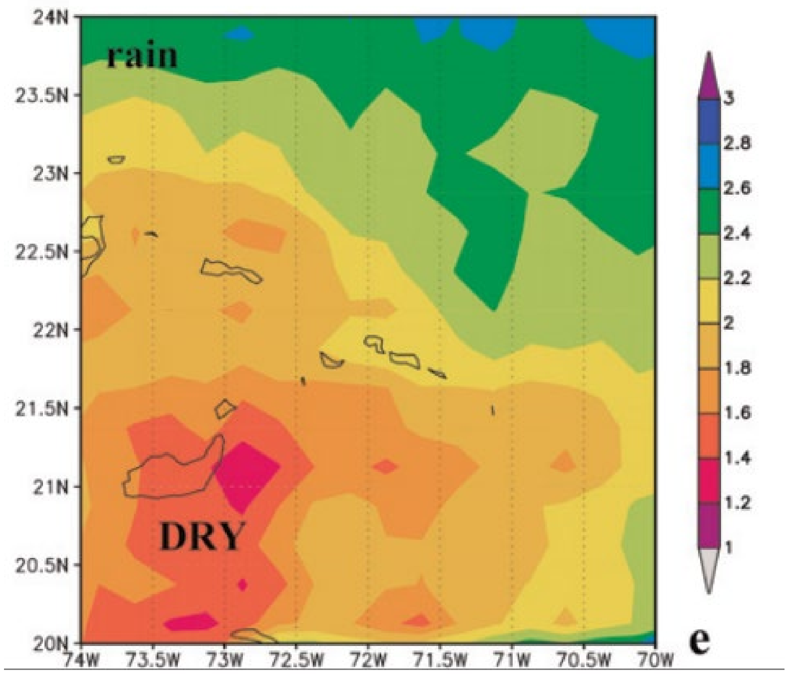

Figure 55 - Average daily rainfall in TCI (Source: Jury, Mark, Earth Interactions, 2013)

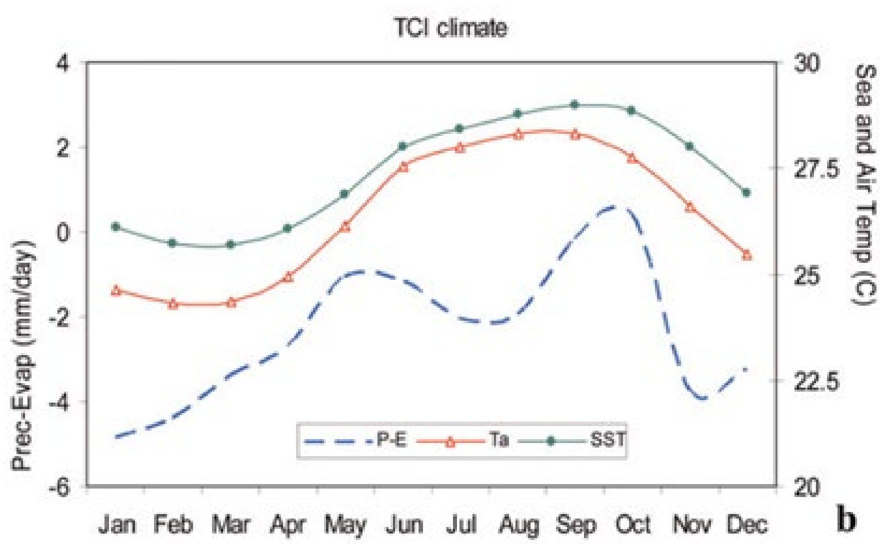

Figure 56 - Turks and Caicos monthly rainfall (Source: Worldbank.org)

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

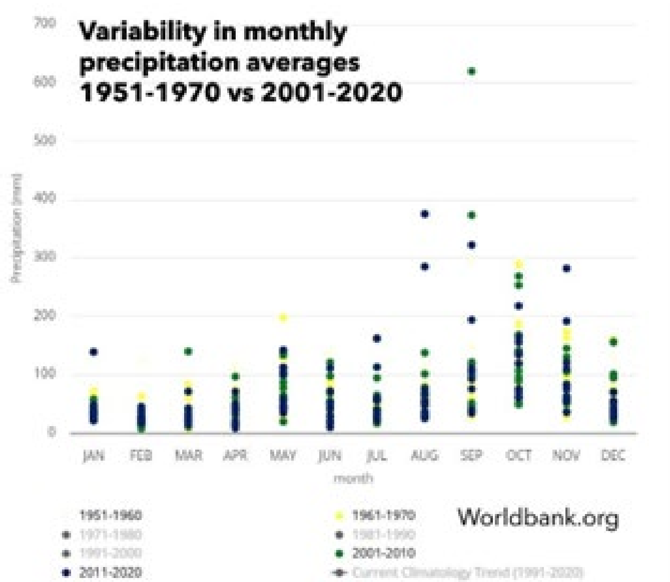

Figure 57 - Predicted variability in monthly precipitation (Source: Worldbank.org)

Current average rainfall encompasses not only extremes within a year but also a wide divergence from year to year with averages that range from 1.2 mm/day to 3 mm/day (Bosart and Schwartz, 1979) and often accumulated in extreme precipitation events generated by passing frontal troughs (Farcia et al., 1978). Tropical storms and hurricanes have historically been major contributors to extreme rain events, with several tracks coming within 100 miles of Turks and Caicos since events have been recorded (Figure 58).

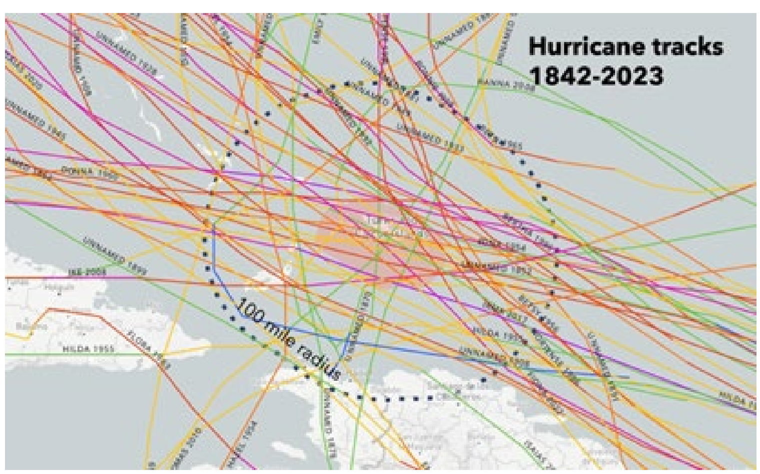

Figure 58 - Hurricane tracks within 100 miles of TCI since 1842

The University of the West Indies, the U.S. National Oceanic and Atmospheric Administration along with non-governmental organizations and universities have analyzed reliable data and made projections of future conditions with increasing certainty. Looking toward the next century, the Caribbean overall is facing increased temperatures, rising sea level, extremes in rainfall (both flood and drought), and increased storm intensity fueled in part by rising sea surface temperatures. The noted increase in precipitation variability is directly related to increased storm intensity. In "The State of the Caribbean Climate" 2020 by the Climate Studies Group Mona at the University of the West Indies, the top prioritized response action they identified was that "consideration should be given to the social and economic costs of inaction or delayed action against the value to be derived from resilience efforts. It is in the best interests of the developer to assist with this response as that will safeguard the welfare of the workforce required to operate the facility." It follows then that it is also in the best interest of the developer to design and construct in a way that anticipates these coming challenges.

The climate vulnerability analysis presented here for the proposed development addresses sea level rise, tidal flooding, storm surge, extreme rainfall, compound flooding and heat. Potential accommodations for the identified vulnerabilities are discussed in Section 6 - Mitigation.

5.2.11.4.1 Sea level rise

Sea level rise (SLR) is the gradual increase in the level of the world's oceans due to climate change. It poses a significant threat to coastal development, ecosystems, and residents. SLR leads to increased coastal flooding, shore erosion, natural habitat transition, and saltwater intrusion. The accelerated pace at which SLR is occurring has resulted in assets that were once considered safe, now being classified as vulnerable. Projections for SLR vary according to different emission pathways in the future for all greenhouse gasses; however, all models predict at least 0.2m of SLR by 2040 and as much as 0.8m by 2080 (Figure 59). Given the project's minimum elevation of approximately nine feet above mean sea level, SLR alone is not expected to have a direct flooding impact in the near future.

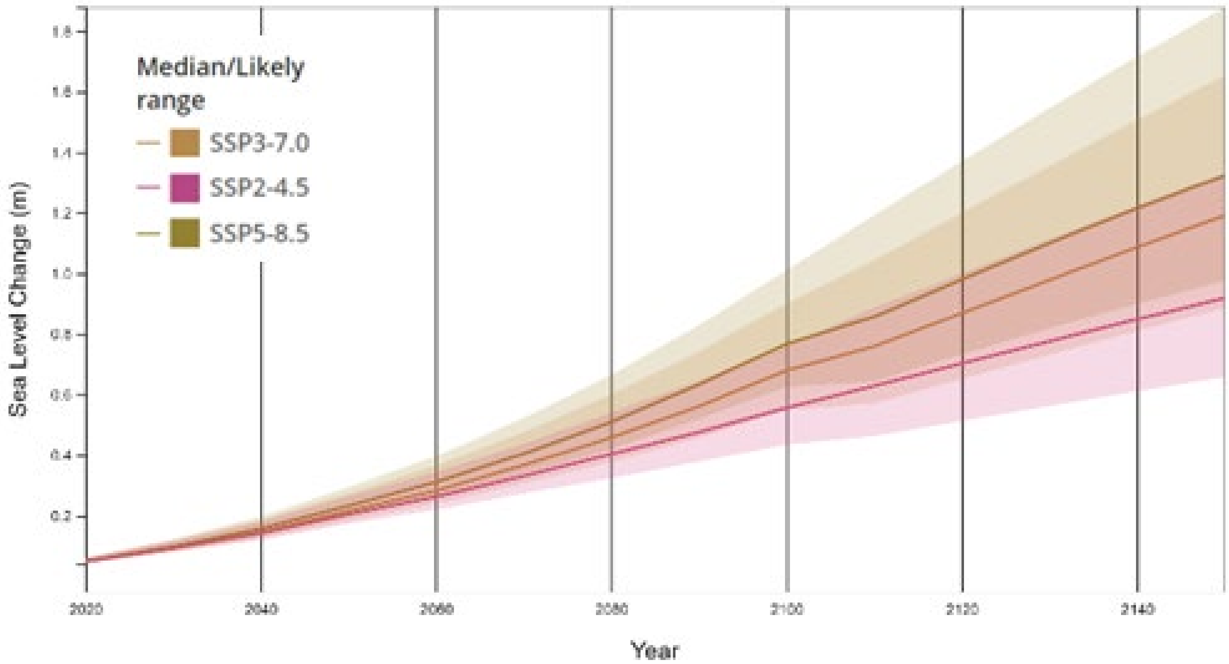

Figure 59 - Projected SLR (in meters) for 2050 and 2080 (Source: IPCC)

5.2.11.4.2 Tidal flooding

Tidal flooding, a consequence of rising sea levels, involves the recurrent inundation of low-lying areas during high tide events. As sea level rises, this poses an increasing threat to areas further and further inland. Tidal flooding jeopardizes infrastructure integrity, including roads, buildings, and natural systems. Additionally, saltwater intrusion accelerates corrosion of infrastructure components and electrical components and leads to the destruction of ecosystems.

Climate Central's SLR mapping tool was used to generate a 2050 and 2080 25-year tidal flooding model, based on peer-reviewed science in leading journals (Figure 60 and Figure 61). As these maps incorporate big datasets, which always include some error, these maps should be regarded as screening tools to identify places that may require deeper investigation of risk. Outside of the United States, maps are based on global-scale datasets for elevation and tides in addition to sea level rise projections using a tideline that denotes the recent mean higher high water (MHHW) line.

Figure 60 - Projected land area below 25-year flood level in 2050

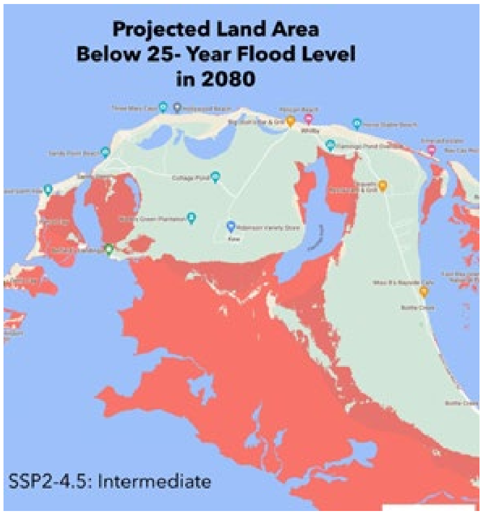

Figure 61 - Projected land area below 25-year flood level in 2080

Little change in flooding is detected between the years 2050 and 2080, with the exception of an expansion of flooded interior wetland areas. This indicates a substantial elevation difference between marsh areas and the remainder of the island. The northern coastal area, including the project site, remain untouched by flooding in these scenarios. While the project site remains dry, access to the area from both the airport and the port may be restricted (Figure 62).

Figure 62 - Map depicting existing roads which may be flooded due to climate change predictions

5.2.11.4.3 – Storm surge

Storm surge is the rise of seawater levels caused by intense sustained onshore winds and low atmospheric pressure during extreme weather events such as tropical storms and hurricanes. Storm surge results in rapid inundation of coastal areas, and the rush of water inland can cause extensive damage to anything in its path, especially when this inundation occurs on an extreme high tide. It can also cause extensive coastal erosion. Moreover, the resulting saltwater intrusion into freshwater systems compromises natural habitats. Studies have documented the significant increase in tropical cyclone activity in the north Atlantic since 1995 with a distinct increase in the number of intense (category 4 and 5) storms (Webster et al. 2005), and since 1990, a high percentage of storms coming within 100 miles of the project site were category 3 or higher (Figure 63).

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

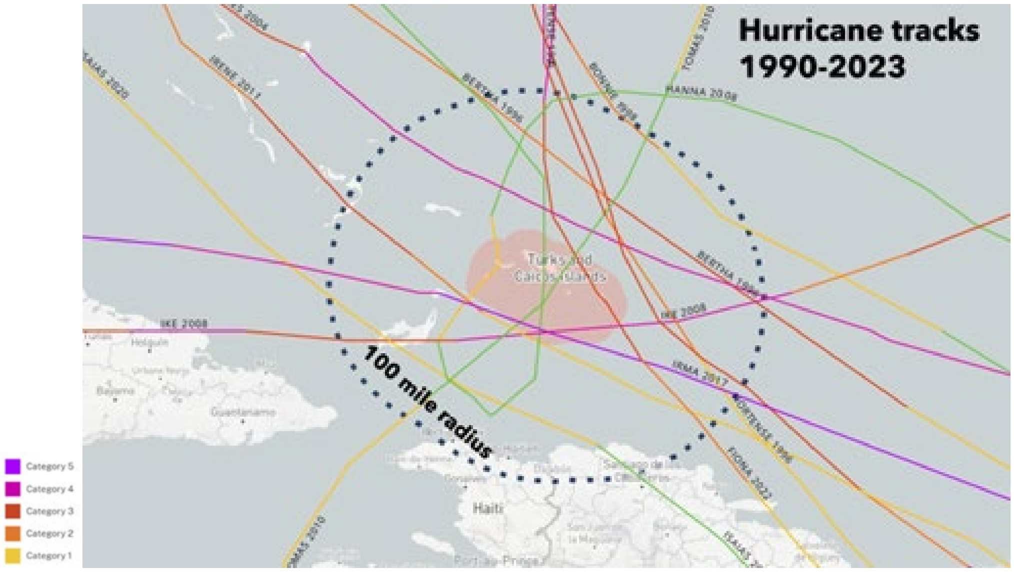

Figure 63 - Tropical cyclones within 100 miles of the project site since 1990

"The State of the Caribbean Climate" (2020) listed the storm activity for various zones in the Caribbean. The Report breaks the Caribbean into 6 zones (Figure 64). While the Turks and Caicos is not located directly inside any of these zones, it is proximal to both zones 3 and 4. The specific values for metrics in each of the zones show small differences and the trends in both zones are the same for all conditions analyzed in the report.

Table 4.4: Named storms by decades that have passed within 200 km of the identified country representing each zone. The table also shows the category of the storm from 1980-2016.

ZONES	COUNTRIES IN ZONE	NUMBER OF HURRICANES IMPACTING THE ZONES BY CATEGORY					TOTAL
		CATEGORY 1	CATEGORY 2	CATEGORY 3	CATEGORY 4	CATEGORY 5	
1	Belize	2	3	2	4	3	14
2	-	6	5	4	5	3	23
3	Jamaica and Bahamas	9	2	3	11	0	25
4	Haiti	12	1	4	7	1	25

Figure 64 - Caribbean hurricane zones

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

In 2013, the average return period of hurricanes that occurred prior to that time and above category 3 was calculated to be 20 years: August 1893, July 1926, September 1926, September 1928, September 1945, September 1960, September 2004, and September 2008. In the twenty years between 2004 and 2024 there were 6 hurricanes above category 3 that came through the same area. The addition of storms in 2011, 2017a, 2017b and 2022 brought the average return period for that timeframe down to just over 2 years. For the entire timespan from 1893 to 2024 the return period is reduced from 20 years to just over 10 years (Figure 65). Storm surges were reported up to 10 m in the area but varied with the proximity and forward speed of the storm as well as the location of interest.

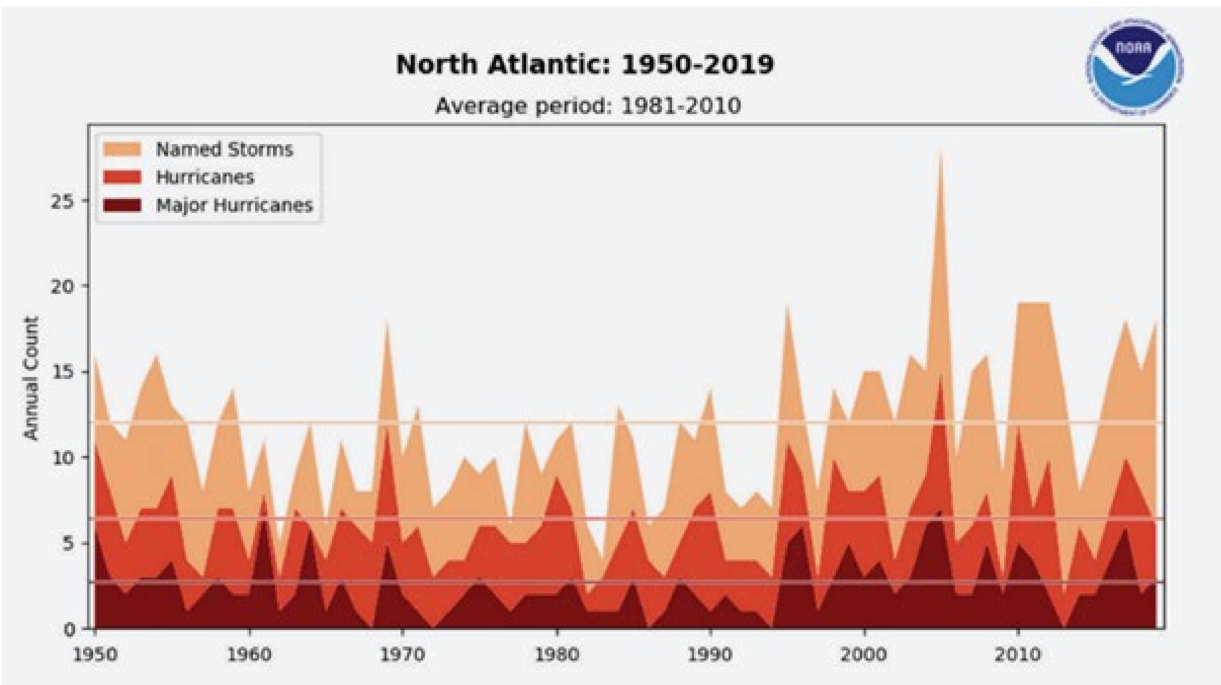

Figure 65 - Increases in storm frequency and intensity

Recognizing that while the last 20 years has brought an increased frequency of storms, climate change experts do not forecast a sustained increase in storm frequency, although intensity is expected to increase. The return period of two years, therefore, seems too conservative, and the return frequency of 10 years for storms over Category 3 may be somewhat generous given the expected increased intensity; therefore, an average of a 6-year return period will be used as an estimate for our analyses. In the 2080 time horizon, the proposed development would be expected to experience a Category 3 or greater hurricane up to nine times. For this aspect of the vulnerability analysis, 6 ft was added to the MHW elevation, representing an expected storm surge 4 ft. based on levels seen in other areas protected by fringing reefs on Providenciales and an additional 1.5 ft. for SLR in 2080 and .5 ft for additional extreme tide (over the MHW levels already incorporated in the model). Combining storm surge with tides and SLR, our analysis reveals minor flooding encroachment on the beach adjacent to the project site, possibly resulting in accelerated erosion; however, flooding of the project site would not be expected (Figure 66). It should be noted, however, that projections and modeling are not exact and storm activity can vary considerably. The project's proposed elevated structures will provide additional climate adaptation and an extra level of safety.

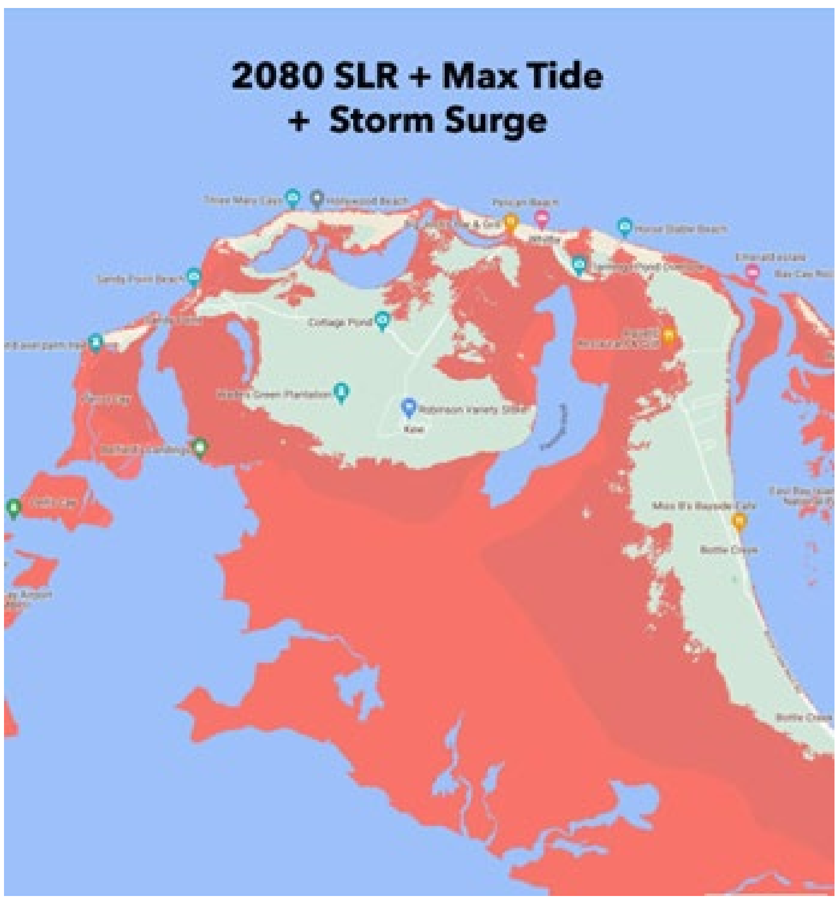

Figure 66 - Model predicting the combined effects of SLR, storm surge, and maximum tides

5.2.11.4.4 Extreme rainfall

Extreme rainfall is defined as increased intensity and duration of precipitation events that often leads to severe flash-flooding in low-lying areas. Extreme rainfall overwhelms stormwater management systems, causing widespread damage to infrastructure such as roads, buildings, homes, and businesses and disrupting essential services and transportation networks. Projections by the IPCC (2021) suggest that extremes in both rainfall and drought will increase throughout the remainder of the century (Figure 67).

Table 5.9: Mean percentage change in rainfall for the Caribbean with respect to 1986-2005. Changes are shown for the four RCP scenarios. Source: AR5 CMIP5 subset, KNMI Climate Change Atlas.

	ANNUAL RAINFALL								
	2020s			2050s			END OF CENTURY		
Averaged over	2020-2029			2050-2059			2091-2100		
	min	mean	max	min	mean	max	min	mean	max
rcp26	-6.44	-0.22	10.06	-8.55	-0.09	14.75	-27.75	-0.46	10.73
rcp45	-12.09	-1.77	8.76	-20.50	-4.30	16.96	-32.45	-5.26	17.44
rcp60	-12.47	-0.86	11.75	-12.26	-2.42	10.62	-34.97	-6.91	10.74
rcp85	-11.33	-0.99	16.36	-20.06	-6.27	15.48	-51.13	-16.95	15.48

Figure 67 - Projected Caribbean rainfall and drought extremes

While total annual precipitation is predicted to remain consistent, the intensity of individual rainstorms will likely increase with longer durations of dry weather or drought in between. In some cases, areas may experience more than a third of their expected annual rainfall over a matter of days. Nevertheless, given the elevation of the site in relation to the surrounding area, and existence of highly percolative, sandy soils, ponded water is not expected to be problematic at the project site.

North Caicos is known for its lush vegetation, which is supported by generous rain patterns.

Despite the fact that the Turks and Caicos as a whole is known throughout the Caribbean for relatively low average rainfall, flooding has been well documented on North Caicos and is largely confined to predictable patterns. Visittci.com reports that "Floods solely from precipitation are more of an inconvenience for road travel rather than an actual danger, and the small settlement of Kew on North Caicos usually sees the worst, with some low points near the village seeing more than 10 feet (3 meters) of standing water." The project may be affected by flooding that regularly occurs along the road to Sandy Point and Whitby during periods of high rainfall, which could impact the ability to move people and goods to and from the site.

Extreme rainfall can also have health impacts via vector borne disease, in this case by mosquitoes. Typically, mosquitos will hatch out a few days after ponding water has persisted. In many parts of the Turks and Caicos the ocean breeze will limit the infestation to a couple of weeks, but due to higher rainfall averages on North Caicos, the island may be more susceptible to a longer threat period. The potential for an inconvenience, at the least, and a health threat at the worst appears to exist in and around the project site.

5.2.11.4.5 Compound flooding

Compound Flooding occurs when multiple causes of flooding coincide simultaneously, including tidal, storm surge, and rainfall-induced flooding, intensified by rising sea levels. This combination produces complex flood scenarios that inform vulnerability assessments.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

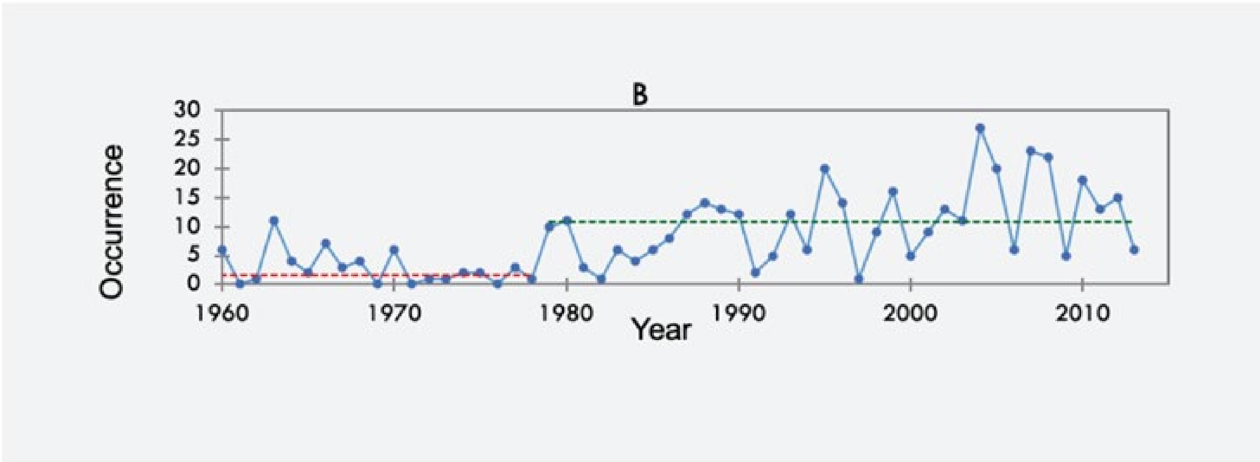

Figure 4.9: Occurrence of Caribbean meteorological disasters from 1960 to 2013. Source Data: EM-DAT database. Adapted from Burgess et al. (2018).

Figure 68 - Occurrence of Caribbean meteorological disasters (Source: Burgess et al. (2018))

Burgess et al. (2018) analyzed Caribbean meteorological disasters during the period from 1960 to 2013 (Figure 68). Occurrences of meteorological damage averaged just less than 2 events per year before 1980. This jumps to nearly 11 events per year from 1980 through 2010. Typically, these damages are a result of combined flooding drivers amplified by rising sea level. Hurricanes are almost always one of the conditions resulting in a disaster as defined here. Given that hurricane season extends into the fall when seasonal tides are at their highest, it is possible for a storm to coincide with an extreme tide. Although hurricanes are not always "wet" storms, the possibility for a large volume of rain over a few days exists. Developing with a clear understanding of the challenges that are expected in the future can serve to avoid damages, costly repairs, and loss of revenue from down-time.

5.2.11.4.6 Temperature extremes

The current and expected increase in average temperatures requires adaptation to accommodate a greater number of very hot days and nights. Before 1970, TCI experienced several days with low temperatures dipping below 23^{o} C in February and 27^{o} in August and September, while highs hovered under 28^{o} in August and September. From 1991-2000, lows for the same periods were above 23^{o} and summer highs above 28^{o}. However, since 2011, February lows have been 1.5^{o} above the 1960's and 1^{o} above the

90's. Highs in the summer months are not too dissimilar from the 1990's; however, in many of the other months the highs were a full degree or more higher than during the 1960's and often 0.5º warmer than during the 1990's (Figure 69).

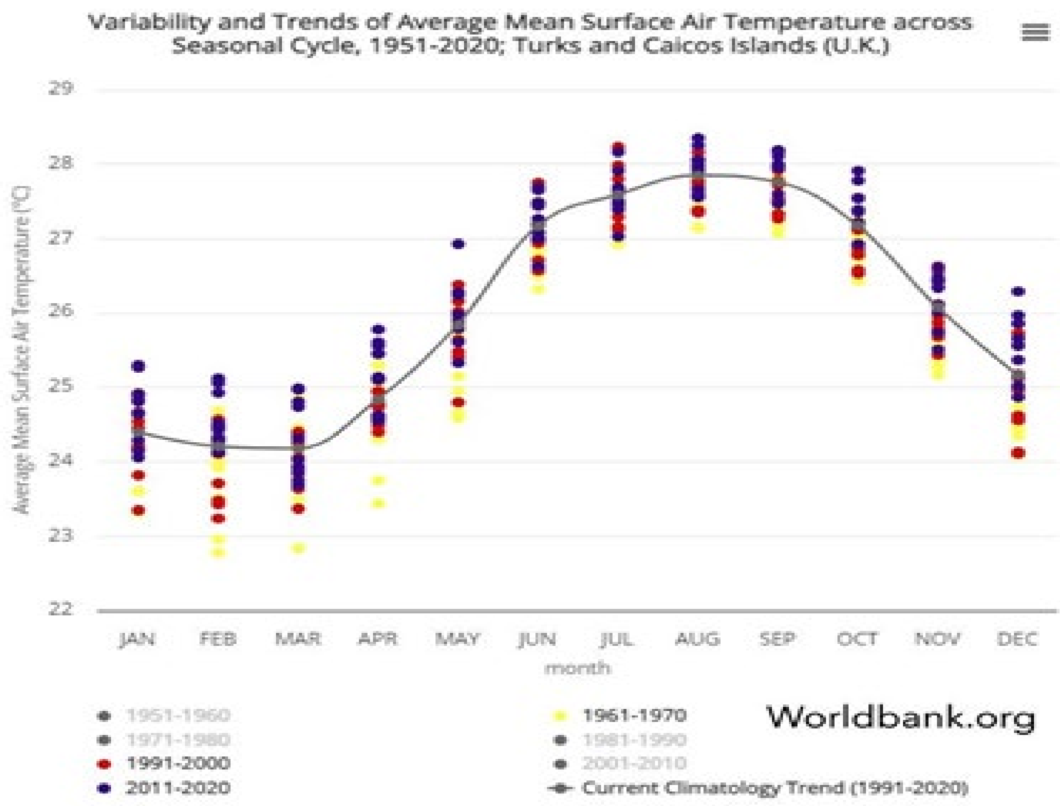

Figure 69 - Temperature variability trends in TCI (Source: World Bank)

This upward trend is projected into the future (Figure 68). The potential temperature range from 2081 to 2100 is expected to rise by up to an additional 1.5ºC by 2060 and 3.05ºC by the end of the century, with the largest increases expected over the larger islands. (State of the Climate, 2020)

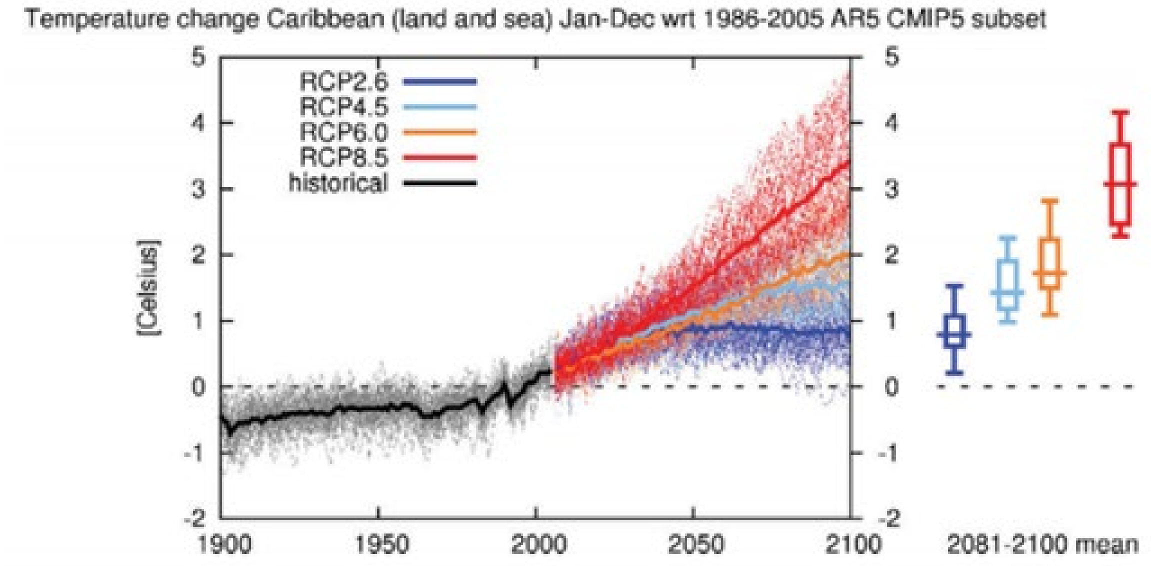

Figure 70 - Projected temperature trends (Source: State of the Climate, 2020)

The State of the Caribbean (2020) breaks the Caribbean into 6 zones (Figure 69). While the Turks and Caicos is not located directly inside any of these zones, it is proximal to both zones 3 and 4. The specific values for metrics in each of these zones show small differences, and the trends in both zones are the same for all conditions analyzed in the report.

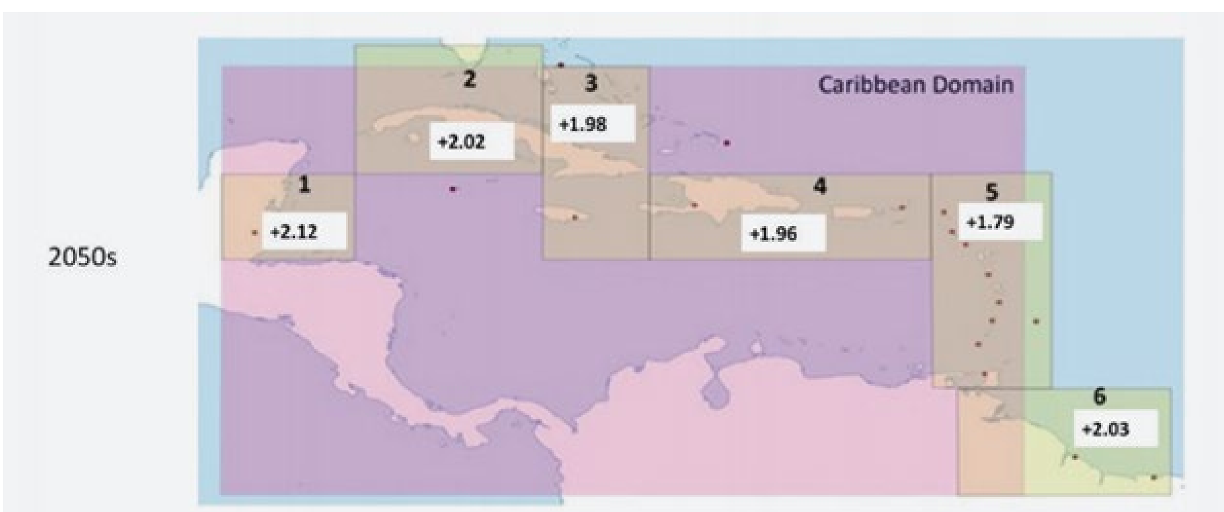

Figure 71 - Caribbean climate zones (Source: State of the Caribbean (2020))

Impacts from increasing air temperature will have a direct impact on the development and must be considered in the design stage.

5.2.11.4.7 Climate change and environment/ecology

A changing climate will exert pressures on the ecological quality of the coastal zone while increasing the potential for human health risks (Storelli, 2008; Judd et al., 2015; Borja et al., 2020; Caviedes et al., 2020; O'Mahony et al., 2020). This creates an urgent need for integrated and strategic management of coastal areas. A popular example of this management is integrated coastal zone management (ICZM) (Ballinger et al., 2010), which is a decision-making process for the "sustainable use, development, and conservation of coastal environments and the most appropriate process for dealing with long-term challenges" (Koutrakis et al., 2011), such as sea level rise and coastal erosion.

Climate change is creating timing changes in the behaviors and responses of plant and animals known as "asynchronous phenological shifts." The result is increased stress when needs and supply no longer are aligned. Animals often can adapt by altering breeding cycles and migration patterns to match availability of food sources - a phenomenon known as "phenological plasticity." But with climate change occurring so rapidly, "individual or population plasticity may not be able to keep up with the rapid environmental changes we are experiencing," (Grist https://grist.org/climate/an-emerging-crisis-the-climate-is-changing-too-fast-for-plants-and-animals-to-adapt/).

The many stresses placed on ecosystems by climate change make it essential that every effort is made to protect, preserve and enhance natural systems where they exist. The proposed development has been surveyed for natural systems and native species. It is important that any development take the responsibility of preserving these elements to the maximum extent possible. Mitigations measures for climate change adaptation are made in Section 6.9.

5.2.11.5 Other impacts

No other impacts are predicted for the proposed development.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

5.3 Impact Assessment

Several methods were incorporated to assess predicted environmental impacts associated with the proposed development (see Section 1.6). The preceding sections (5.1 and 5.2) outline predicted impacts associated with the project. Methods and results are not reproduced here for brevity's sake.

5.4 Derivation of Significance

The methodological approaches selected for impact assessment are based on standardized best practices for baseline and environmental impact assessment (Sayre et al., 2000; Senecal et al., 1999). Significance levels have then been derived as described in Section 1.6 – Impact Assessment Methods. For terrestrial ecological impacts, significance levels are based on predicted impacts to ecosystem services and biodiversity values, based on a percentage of landcover lost and the capacity for mitigation (see Section 5.2.1.1). Since direct impacts to the marine environment are unlikely, the significance of predicted indirect impacts have been derived qualitatively (see Section 5.2.1.2). Derivation of socioeconomic and cultural impacts are based on international best practices (Vanclay et al., 2015) and the Development Manual's derivation of levels of likely impacts (Table 7-3). We have further clarified these benchmarks by defining levels of significance based on the proportion of socioeconomic and cultural impacts to be displaced by foreign values and/or percentage-based economic consequences (see EIA Section 1.6). The significance of results associated with public consultation has been in accordance with SocMon Caribbean methods (http://www.socmon.org/publications.aspx), based on standardized methods of coding (see Section 6.12).

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

6.0 Mitigation and Monitoring

6.1 Proposed Actions and Schedule for Mitigation

International best practices for mitigation incorporate a mitigation hierarchy, which is intended to avoid, reduce, repair, offset, and compensate potential environmental impacts to a no net loss level. The hierarchy is structured in descending order, with avoidance as the most-preferred practice and compensation as the least-preferred option (IFC, 2012). This standard has been applied here. The following section outlines recommended mitigation measures to avoid, reduce, repair, offset and compensate predicted environmental, socioeconomic, and cultural impacts identified in Section 5.2. Mitigation hierarchy terms are defined as follows:

- ***Avoidance****: the first step of the mitigation hierarchy comprises measures taken to avoid creating impacts from the outset, such as careful spatial or temporal placement of infrastructure or disturbance. For example, placement of roads outside of rare habitats or key species' breeding grounds, or timing of seismic operations when aggregations of whales are not present. Avoidance is often the easiest, cheapest, and most effective way of reducing potential negative impacts, but it requires biodiversity to be considered in the early stages of a project.*
- ***Minimization:*** *measures taken to reduce the duration, intensity and/or extent of impacts that cannot be completely avoided. Effective minimization can eliminate some negative impacts. Examples include such measures as reducing noise and pollution, designing powerlines to reduce the likelihood of bird electrocutions, or building wildlife crossings on roads.*
- *Rehabilitation/restoration: measures taken to improve degraded or removed ecosystems following exposure to impacts that cannot be completely avoided or minimized. Restoration tries to return an area to the original ecosystem that occurred before impacts, whereas rehabilitation only aims to restore basic ecological functions and/or ecosystem services (e.g. through planting trees to stabilize bare soil). Rehabilitation and restoration are frequently needed towards the end of a project's life-cycle, but may be possible in some areas during operation (e.g. after temporary borrow pits have fulfilled their use).*

Collectively avoidance, minimization and rehabilitation/restoration serve to reduce, as far as possible, the residual impacts that a project has on biodiversity. Typically, however, even after *their effective application, additional steps will be required to achieve no overall negative impact or a net gain for biodiversity.*

- ***Offsetting:*** *measures taken to compensate for any residual, adverse impacts after full implementation of the previous three steps of the mitigation hierarchy. Biodiversity offsets are of two main types: 'restoration offsets' which aim to rehabilitate or restore degraded habitat, and 'averted loss offsets' which aim to reduce or stop biodiversity loss (e.g. future habitat degradation) in areas where this is predicted. Offsets are often complex and expensive, so attention to earlier steps in the mitigation hierarchy is usually preferable.*
- ***Compensation:*** *measures taken which have positive – but difficult to quantify – effects on biodiversity. These qualitative outcomes do not fit easily into the mitigation hierarchy, but may provide crucial support to mitigation actions. For example, awareness activities may encourage changes in government policy that are necessary for implementation of novel mitigation, research on threatened species may be essential to designing effective minimisation measures, or capacity building might be necessary for local stakeholders to engage with biodiversity offset implementation* (Source: https://www.thebiodiversityconsultancy.com/approaches/mitigation-hierarchy/).

The EIA team has devised mitigation measures, which are intended to avoid, reduce, repair, offset and compensate predicted environmental, socioeconomic and cultural impacts associated with the project to a no net loss level (Table 28). A detailed description of recommended mitigation measures follows.

Table 29 – Mitigation

Impact/Feature/Biodiversity/Ecosystem Service	Code*	Recommended Mitigation Measures
Environmental Terrestrial and Coastal		
Nutrition	a,r,rp,o	-Nearshore critical habitats to be managed and/**or** enhanced to mitigate to a no net loss level. **-**Sewage treatment facilities to be maintained adequately. -Integrated pest management and coastal zone management. -Clearance of vegetation by hand and minimization of terraforming.
Materials	a,r,rp,o,c	-Rescue and reuse of floral species for landscaping. -Augmentation with native ornamental and wildlife-friendly species to be selected for landscaping purposes. -Terrestrial monitoring plan should be implemented.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

		-Control of AIS during operations. -Sponsorship of DECR's native plant research and propagation at North Caicos
Energy	o	-Exploitation of solar resources at the site. -Employment of energy conservation strategies.
Regulation of Wastes	a,r,rp,o	-Intact natural vegetation should be preserved wherever possible. -Implement regular monitoring of effluent quality and maintenance of waste treatment facilities. -Reuse effluent for irrigation. -Avoid the use of chemical fertilizers. Employ emergency mitigation plan throughout all phases of development.
Regulation of Flows	a,r,rp,o	-Preservation of natural vegetation. -Use of permeable surfaces. -Collection and treatment of storm water runoff. -Retain dunes and their vegetation. -AIS control and removal. -Upgrading of access roads.
Regulation of Physical Environment	a,r,rp,o	-Preservation of intact natural vegetation. -Use of native shrubs and trees for landscaping applications. -Solar alternative energy.
Cultural Symbolic	a,r,rp,o,c	-Preservation of venerable floral specimens, rare habitats, and natural vegetation wherever possible. -Management and control of AIS. -Design features that blend rather than compete with natural environment. -Use of local art for décor. -Support and sponsorship of local cultural heritage.
Cultural Intellectual and Experiential	a,r,rp,o,c	-Maintain features of scientific and experiential interest. -Improve access for recreation. -Sponsorship of ecological scientific research. -Provision of public awareness materials.
RTE Species	a,r,rp,o,c	-Avoidance of RTE species during land clearance. -Rescue of RTE species, wherever possible. -Use of RTE species for habitat restoration and landscaping. -Propagation of RTE species. -Sponsorship of public awareness materials and scientific research. -Lighting design. -Integrated waste management. -Integrated coastal zone management.
Endemic Species	a,r,rp,o,c	-Avoidance of endemic species and habitats during land clearance. -Rescue and reuse of endemic floral species, wherever possible. -Habitat restoration and landscaping with endemic species. -Propagation of endemic species.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

		-Sponsorship of educational materials and scientific research for endemic species.
Spatial/Temporal Concentrations of Species	a,r,o,c	-No land clearance during migration periods. -Public awareness materials for resource users. -Sponsorship of monitoring for at-risk populations. -Scheduling of construction activities. -Integrated coastal zone management.
Viable Proportions of the Great Majority of Species	a,r,rp,o,c	-Retain natural vegetation wherever possible. -Hand clearance of vegetation and rewilding post-construction. -Implement AIS control program. -Support public awareness and scientific research. -Expand intact terrestrial areas under protection nationwide.
RTE Ecosystems	a,r,rp,o,c	-Preservation of all terrestrial areas not incidental to building and infrastructure footprints. -Habitat restoration and landscaping with native species. -Removal and control of AIS and restoration of dune habitats. -Avoidance of seagrass habitats throughout all phases of development. -Sponsorship of public awareness and scientific research. -Expand intact RTE ecosystems under protection nationwide.
Irreplaceability	a,r,c	-Preservation of coastal mixed woodland and forest habitats both locally and nationally -Avoidance of coastal mixed woodland and forest habitats during construction. -Rescue of *Encyclia inaguensis x E. rufa* for reuse during landscaping or donation to DECR for scientific research.
Environmental Marine and Water Quality		
Sedimentation from Air Pollutants	a,r	-Use of hoarding during construction. -Water down cleared land during periods of drought and earthworks. -Cessation of construction activities during periods of high wind.
Sedimentation from runoff	a,r	-Hand clearance of vegetation and avoidance of land clearance in all areas not incidental to building and infrastructure footprints. -Grading of land areas away from coastal areas. -Appropriately designed storm drainage treatment systems.
Pollution from Petrochemicals/Heavy Metals	a,r	-Limit use of petrochemicals in road surfaces and roofing. - -Limit use of toxicants near water. -Keep all equipment regularly maintained. -Implement emergency mitigation plan throughout all phases. -Train staff to avoid accidental spills and to respond to accidents.

		-Ensure all equipment and materials needed to respond to an accident, such as absorbent materials, are readily available at all times.
Nutrient Pollution	a,r	-Implement an environmental management plan to adequately maintain sewage treatment plants. -Test effluent and coastal water quality regularly. -Avoid use of fertilizers for landscaping (nutrients are already provided by the use of effluent for irrigation).
Chemically Treated Water/Freshwater	a,r	-Dispose of chemically treated water in retaining systems and treat. -Dispose of all other liquid wastes offsite. -Dispose of all treated water on land, not in the marine environment.
Irrigation Contaminants	a,r	-Use native floral species, especially along the coast, to avoid the need for excessive treatment. -Limit use of fertilizers and follow best practices for integrated pest management.
Construction Solid Wastes	a,r	-Use of hoarding during construction.. -Daily site cleanups. -Avoidance of creation of solid wastes during high wind days. and conduct site clean-ups continuously throughout construction and operational phases.
Operations Solid Waste		-Encourage and participate in recycling programs and avoid use of disposable food containers. -Provide lidded trash receptacles, which are emptied daily at a minimum throughout the development. -Provide guests with reusable water bottles and refreshment stands.
Beach Solid Wastes		-Continuous beach cleanup throughout the day by dedicated beach staff. -Provide abundant refuse and recycling bins in all coastal areas. -Discourage single-use containers.
Construction Noise	a,r	-Restrict construction activities to daytime normal working hours. -Avoid work during dawn and dusk crepuscular hours.
Operational Noise	a,r	-Restrict guest use of speakers, boom boxes, etc. throughout all public areas. -Limit nighttime events featuring loud music. -Avoid fireworks displays. -Consider wind direction and how noise travels when planning events.
Strandline Marine Vegetation (e.g. "rack")	a,o	-Preferably leave all strandline vegetation ("rack") in place for shore and seabird fodder. -Bury if desired for appearance's sake to support coastal stabilization. -Avoid removal of seaweed from beaches.
Public Safety	a	-Create zones for activities (e.g. swim vs water sports). -Implement an emergency response plan.

		-Train staff for rescue and first aid. -Identify and demarcate a motorized vessel access point where swimming and other non-motorized activities are restricted.
Light	a,r	-Avoid installation of lighting at beach areas. -Downward facing solar lighting (on timers) to light footpaths. -Use low-pressure, sodium vapor lighting with monochromatic yellow colours mounted low. -Use motion sensors for all outdoor lighting. -Provide all guest rooms with blackout curtains. -Incorporate lighting design to reduce light pollution throughout all project areas.
Seagrass Meadows	a.r,o	-Guests should be directed away from seagrass areas for swimming and recreation. -The area previously cleared east of the project site should be used for swimming and recreation. -If a small swimming area is made, then transplantation elsewhere will offset associated impacts. -Beach staff should be trained to supervise and steer guests away from vulnerable seagrass habitats.
Sunscreen Impacts	a,r	-Develop public awareness materials regarding the environmental threats of oxybenzene products. -Sell only coral-friendly products within the Project's amenities.
Marine Etiquette	a,r	-Guests should be educated in marine etiquette with the motto "look but don't touch."
Cumulative Impacts Associated with Increased Resource use	o,c	-Provide public awareness materials advising of best user practices for sunscreen use, safety, etiquette. -Increase resources via creation of new habitat, coral seed banks, and other coral restoration projects. – -Incorporate preservation measures such as mooring buoys. -Develop a resort beach management plan. -Cumulative impacts can be compensated by making donations or partnering with TCRF that protect and restore marine resources.
Socioeconomic and Cultural		
Traditional and Existing Use	r,c	-Preserve and enhance beach access. -Make amenities (e.g. spa, restaurants, shops, etc.) available for public use. -Preserve and enhance marine resources.
Traffic	r,c	-Enhance existing vehicular access. -Minimise vehicular traffic within the Project area by maximizing walkable and bikeable routes.
Aesthetics/Noise/Pollution	r,c	-Consider design revision to blend with natural environment. -Avoid outdoor noise, such as live music, after 9:00 pm or keep such activities indoors.

		-Construction activities to take place only during regular business hours. –Implement solar renewable energy, as feasible.
Cultural Values	r,c	-Incorporate local architectural vernacular into project design features. -Enhance beach access. -Integrate local community into the decision-making process. -Make all amenities open to the public.
Land/Property Values/Property Rights	r,c	-Consider exclusion of worker housing to promote rentals locally if they are available and within budgetary expectations -Work with TCIG to integrate equitable land distribution and adequate housing. -Some key staff members will need to be housed on site.
Labour/Immigration	r,c	-Use locally available labour whenever possible. -Provide training for high-level positions. -Sponsor scholarships.
Economic Costs and Benefits	r,c	-Employ locally available labour whenever possible. -Avoid tax reduction incentives. -Aim to retain ecosystem service and biodiversity levels to a no net loss level.
Security	r,c	-Maintain security staff during all phases of development. -Avoid gentrification and alienation. -Integrate local community into the decision-making process.
Political Systems	c	-Ensure transparency in all planning and environmental processes. -Ensure consideration of all affected persons. -Ensure that public opinion is incorporated into final project design and approvals.

*a = avoidable, r = reducible, rp = repairable, o = offsetable, c = compensable

6.1.1 Impacts to terrestrial and marine life

6.1.1.1 Monitoring and Mitigation for Terrestrial Resources

The project site contains terrestrial habitats of high ecosystem service and biodiversity values, with high proportions of RTE and endemic floral species (see section 2.2.1). Any land clearance for development will result in impacts to terrestrial communities while at the same time setting a precedent for development in the vicinity of the project. Nevertheless, because of the project's ecologically sensitive approach, impacts will be largely low to moderate in intensity, and most are avoidable, reducible, or repairable.

6.1.1.1.1 Conservation and preservation of natural communities

The current site plan for the project suggests a total developed land area comprising 35% of the total project site area. A careful approach to land clearance, therefore, could preserve at least 65% of the existing natural vegetation. In addition, many of the buildings are elevated on posts, which could allow for the plant communities within those footprints to remain largely intact, although some may be impacted by reductions in available light. Some damages to existing natural flora outside building footprints are inevitable, and these will be replanted using appropriate floral species, including a large percentage of native plants.

Much of the impact associated with land clearance comes from the use of heavy equipment, which frequently results in the removal of topsoil down to bedrock. Without the native seedbanks found in local topsoil, plant communities in untrafficked areas become vulnerable to AIS and cannot restore themselves naturally. Furthermore, the use of heavy equipment often results in accidental damages to land areas not incidental to building and infrastructural footprints. Finally, by terraforming using heavy equipment, the geological conditions that serve to control flooding and recharge groundwater can be disrupted, thus impacting the sites existing regulation of flows ecosystem services. Hand removal of vegetation is therefore preferred.

This careful approach to land clearance should be mandated, allowing the significant proportion of natural vegetation to remain intact. Building footprints should be surveyed and clearly marked, and all other areas should be fenced off from any potential impact arising from construction activity. This measure will serve to avoid and reduce potential impacts to materials, viable proportions of the great majority of species, regulation of waste, regulation of flows, regulation of physical environment, cultural symbolic, cultural intellectual and experiential, RTE and endemic species, spatial/temporal concentrations of species, and RTE ecosystems.

6.1.1.1.2 - Rewilding

By retaining topsoil and the seedbanks within them, native plant communities can recover naturally and without any additional expense and considerable savings to the developer. Known as rewilding, this habitat restoration approach is rapidly becoming the global standard. By allowing all cleared areas on site to revegetate naturally, plant communities selectively regrow in the areas they are best suited to, thus reducing any need for irrigation or maintenance. Furthermore, once established, these areas become meccas for native wildlife species, including invertebrates, reptiles, and birds, thus restoring habitats with only minimal human intervention to remove any AIS that may attempt to naturalize in vulnerable cleared areas. Project landscaping crews should be educated to identify AIS and native plants to ensure that native plants that rewild to the site are left in place, while AIS are removed and controlled. Rewilding at the project site will serve to repair and offset impacts to materials, cultural symbolic, and cultural intellectual and experiential ecosystem services, and RTE species, endemic species, viable proportions of the great majority of species, RTE ecosystems, and irreplaceability biodiversity values.

6.1.1.1.3 Plant rescues and reuse

All rescuable RTE, endemic, native, and culturally significant flora, including, but not limited to species in the *Encyclia, Lantana, Plumeria, Zanthoxylum, Argythamnia, Bursera,* and *Tillandsia* genera, should be rescued from areas slated for land clearance, either for use in Project landscaping applications or for donation to DECR's native plant nursery. In addition, coastal species, such as those in the *Ernodea, Coccoloba, Ambrosia, Passiflora, Reynosia, Scaevola (S. plumieri* only*),* and *Ipomoea* genera can be rescued in order to restore dune vegetation currently impacted by AIS. In order to achieve this, prior notice of land clearance should be provided to the Department of Planning and DECR. The Environment Club and private residents also occasionally perform plant rescue operations throughout TCI and could be engaged for this purpose. If the Environment Club is not available, or sufficient volunteers cannot be engaged to ensure that all rescuable species within footprints are rescued, then a private landscaping company should be contracted for this purpose. This measure will reduce and offset potential impacts to materials, RTE species, endemic species, cultural symbolic, and cultural intellectual and experiential losses. The project proponents have indicated that they will incorporate this mitigation measure.

The recorded specimen hybrid *Encyclia inaguensis x E. rufa* should be rescued and either maintained on site for reuse or donated to DECR for scientific research and propagation studies. Areas pre-cleared for parking areas and sport facilities can be used house and maintain rescued plants. (Figure 72).

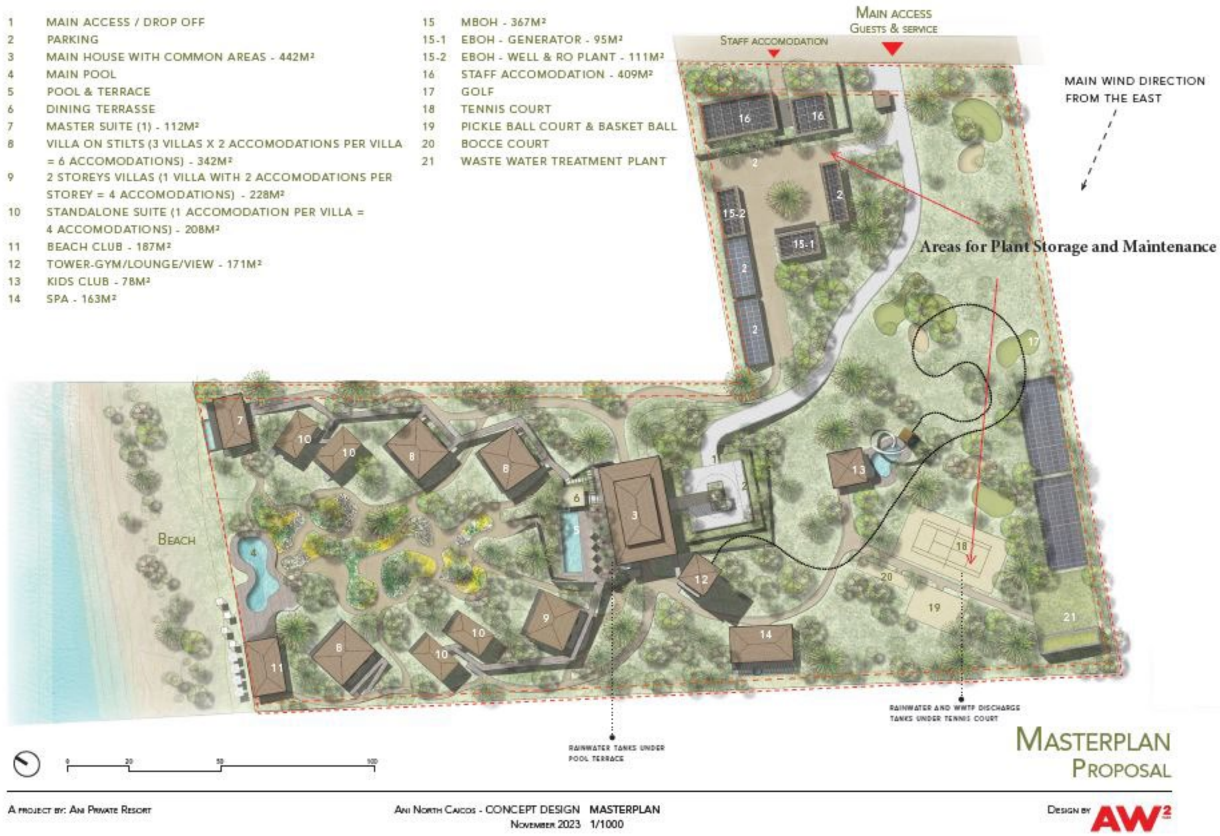

Figure 72 - Proposed location for rescued and native plant nursery

6.1.1.1.4 Propagation and use of native flora for landscaping

The use of locally grown flora from native seed for landscaping purposes is recommended best practice, with habitat restoration as the landscaping goal, wherever possible. All flora for this purpose should be species from Appendix G or other species that have been deemed appropriate by a qualified ecologist. The goal of landscaping should be to provide an as diverse as possible assemblage of native flora that emulates and enhances habitat for native fauna. This measure will repair and offset potential impacts to viable proportions of the vast number of species, materials, cultural symbolic, cultural intellectual and experiential, RTE species, endemic species, and spatial/temporal concentrations of species. Additional compensation can be made by supporting scientific research regarding RTE and endemic species and the propagation thereof.

6.1.1.1.5 Monitoring and scheduling of construction activities

Site inspection by a qualified field ecologist or knowledgeable landscaper prior to any significant construction activities, such as land clearance, should be included with pre-construction monitoring. The qualified person should examine the building footprints to determine which floral species should be rescued, inspect protective measures to ensure that natural vegetation not in development footprints is adequately protected, and rule out the presence of nesting and/or migratory birds and/or RTE fauna, such as the curly-tail lizard. This measure will help to avoid and reduce potential impacts to materials, cultural symbolic, cultural intellectual and experiential, RTE and endemic species, and spatial/temporal concentrations of species. Scheduling of construction activities during normal weekday working hours between dawn and dusk will also avoid nuisance impacts crepuscular wildlife populations and to nearby residents and beach users.

6.1.1.1.6 Vegetation buffers

Vegetation buffers across the project site within the project setbacks should be left intact throughout all phases of construction and operations. Such measures will help to avoid and reduce regulation of flow, regulation of physical environment, regulation of waste, and water quality impacts.

6.1.1.1.7 Public awareness and outreach

The development of public awareness materials, including brochures, booklets and multimedia will help to inform guests and amenity users of the various sensitive features of the site. Appropriate information should also be provided to maintenance staff, advising them of best practices. Appropriate signage should be installed at strategic locations where impacts may occur. These materials should be made available to all guests in guest rooms.

The project proponents will be responsible for bearing the cost and implementation of any and all public awareness materials and strategies. The Turks and Caicos Reef Fund (TCRF) recently launched an NGO/private partnership “Reef Keepers” initiative in which TCRF works with private sector entities to “green” their projects and promote public awareness. In exchange, Reef Keeper partners agree to add a voluntary 1% charge (or greater) to tourism products, which their guests can accept or reject. The project proponents are considering joining this initiative. This measure will compensate for myriad impacts to ecosystem services and biodiversity values, and the project proponents have indicated that they are willing to work with TCIG and TCRF to offset any damages arising to seagrass meadows as a result of creating easily accessed swimming areas for guests

6.1.1.1.8 Solid and liquid waste management

Solid waste and liquid waste management should conform to best practices. Lidded trash receptacles should be located in all public areas and emptied on an as-needed basis, but at least once daily. Trash clean-ups should be part of daily maintenance activities during all project phases. Sewage treatment facilities should be adequately sized and regularly maintained. Effluent quality should be regularly monitored to ensure treatment efficacy. These measures will help to offset waste regulation impacts, in addition to reducing threats to wildlife populations and nuisance impacts to human populations.

6.1.1.1.9 Permeable surfaces and flow regulation

Flow regulation impacts can be mitigated via the use of permeable surfaces, such as Grasscrete™ for walkways and other areas outside of building footprints. Landscaping with an aim to restore natural habitat function and rewilding are also recommended. Where impermeable surfaces are used, such as on roadways and in parking areas, adequate drainage to prevent runoff into sensitive marine habitats and/or flooding should be constructed and maintained. All surface runoff from roads and landscaped areas should be treated and/or disposed in deep wells to avoid coastal water quality contamination. These measures will help to avoid and reduce and compensate for water quality, regulation of flow, and regulation of waste impacts.

6.1.1.1.10 Best practices for landscaping

Integrated pest management (IPM) and sustainable landscaping practices will serve to avoid and reduce impacts to wildlife populations, regulation of wastes, and water quality impacts. The following IPM procedures should be followed:

- The highest percentage as possible of native floral species should be used for landscaping, with an aim towards restoring habitat and ecosystem function.
- As per the ODP conditions, treated sewage effluent is to be used to irrigate landscaping. Treated effluents have concentrations of nutrient loads and other contaminants. The presence of nutrients makes the use of additional fertilizer unnecessary, and such additional applications should be prohibited.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

- All native dune vegetation within the building setbacks should be left intact as a buffer to prevent percolation or runoff of treated effluents into the marine environment and to provide coastal defence against climate change.
- All AIS should be removed from dune areas followed by dune habitat restoration with native floral species only. These areas should be regularly maintained to control the reestablishment of AIS. Landscaping and maintenance staff should be trained to recognize and remove *Casuarina equisetifolia, Leucaena leucocephala,* and *Scaevola taccada* and also trained in effective disposal methods to avoid transference and reinfestation.
- The use of toxic chemicals as pesticides and herbicides for landscaping applications should be prohibited in all coastal areas. Plant selection for landscaping plans should focus on pest and disease-resistant species. When treatment is necessary, it should be done on an as-needed, per plant basis, rather than mass-spraying, and using compounds that have been determined to be safe for wildlife and marine organisms.
- Adoption of integrated pest management practices (IPM). IPM minimizes the use of conventional pesticide products. Examples of safer solutions for landscape pests include insecticidal soap (2 ½ tbsp. of dish soap per gallon of water); horticultural oil (add 2 ½tbsp of vegetable oil to the insecticidal soap); *Bacillus thuringiensis* (BT)-a bacterium which controls caterpillars (available at nurseries); coffee grounds and tea bags prevent mosquito larvae from hatching; shallow pans of beer help control slugs, etc.
- The least toxic alternatives for landscape and other maintenance activities should be undertaken first.
- The least toxic chemicals should be purchased first and in the smallest amount practical.
- Pesticides should not be used just before a rainfall or on a windy day.
- If used at all, insecticides should be applied only during the evening when beneficial insects are less active.
- Pesticides should never be applied near water.
- The preferred method for weed removal is by hand.
- Natural predators, such as spiders, praying mantis, dragonflies, lacewings, soldier beetles, birds, bats, frogs, lizards, and snakes should be encouraged and protected from harm.
- Public awareness materials regarding beneficial species should be made available to guests.
- Vegetated buffers should be maintained between all impervious areas and the water.

- Leaves, branches, grass trimmings, food wastes and other organic matter should be composed.
- Vegetation filters, to slow the flow of surface water runoff, stabilize shorelines, provide wildlife habitat and flood protection, and improve visual diversity should be planted and maintained.
- Instructional materials (e.g. posters in staff quarters), training for all maintenance crew in methods for clean-up of accidental spills and readily available absorbent materials, such as clay litter and saw dust should be provided to deal with spillage of toxic liquid wastes.
- Maintenance crews should be trained to recognize foul odours that may be associated with malfunctioning sewage treatment facilities and to report faults immediately.
- Daily clean-up of solid wastes, or more frequently as needed, should form a part of regular maintenance activities.
- All fuels and other hazardous materials should be stored and disposed of in accordance with manufacturer instructions. Under no circumstances should any hazardous liquid materials be poured onto the ground for disposal purposes.
- Monitoring by government authorities should be undertaken regularly to ensure that the above measures are being enforced.

6.1.1.1.11 Solar PV installation

The project will be incorporating solar PV panels to offset electrical consumption for the project (please see Section (4.8). This measure will avoid and reduce impacts to the physical environment in the form of atmospheric carbon, while taking advantage of naturally occurring energy ecosystem services.

6.1.1.2 Monitoring and mitigation for marine resources

Mitigation measures can *avoid* and *reduce* indirect impacts to the marine environment by following recommendations to mitigate terrestrial impacts to a no net loss level (See Section 6.1.1.1 above).

Direct impacts to the marine environment from activities taking place in or near the water can also be avoided and/or reduced with protective measures in place. Avoiding in water activities in the shallow seagrass meadows, frequent beach clean-ups, navigation and public safety management plans, restriction of noise and lighting, and educating guests on the rules of marine etiquette will aid in avoiding and reducing impacts. The increased use of marine resources associated with the addition of more people in the

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

area cannot be avoided, but mitigation measures can reduce, repair, offset or compensate for these impacts.

As no coastal structures are proposed for placement in the marine environment, most potential impacts could arise from land-based activities that could indirectly impact coastal and marine areas. During the construction phase, sedimentation from land clearance and construction dust, and solid wastes that can become airborne and make their way out to sea, can lead to impacts to marine life. Measures for mitigation arising from sedimentation include the use of hoarding surrounding all areas of construction, dampening of substrates during land clearance, and cessation of dust producing activities during high wind days. Sedimentation from run-off can be prevented with grading that slopes terrain away from marine areas, storm water drainage, and the maintenance of natural vegetation in all setback areas. For solid waste impacts, the use of hoarding will also be helpful. In addition, multiple waste receptacles should be provided throughout the construction site and emptied as needed but at least on a daily basis. Daily site cleanups and supervision of construction crews along with crew orientation on proper waste disposal are also recommended.

During the operational phase, the beach and surrounding waters will experience increased use. Solid wastes associated with tourism can be, especially on windy days when trash can easily scatter before it can be collected and disposed of properly. Easily accessed refuse bins with lids near all beach access points are advised as are multiple daily site checks and cleanups by designated staff. The use of single use/disposable containers should be limited or prohibited in general at the hotel, and recycling and the provision of reusable water bottles should be considered. Natural debris along beaches, such as *Sargassum spp.* and other seaweeds, should not be removed. Ideally, this "rack" should be left in situ to serve as fodder for shore and seabird populations. If operators are concerned about aesthetics, this biomass should be buried in place, rather than removed, to help retain beach sand stability.

Another marine impact during the operational phase may occur to seagrass meadows, due to the shallow depth of the water in the nearshore areas adjacent to the project site. These habitats are vulnerable to impacts from trampling, anchoring, and prop scarring from a variety of recreational uses, such as swimming, wading, water sports, and motorized vessels. Some areas in the foreshore (mainly on the eastern side) have lower seagrass densities, and a small pool 20-30m from shore could be used recreationally (see

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Habitat Map Section 2.2.2.1), but the area is not ideal for swimming or access to deeper water. Clearance of even a small portion of the seagrass meadows without explicit permission from the Governor in Cabinet in the form of a dredging license would constitute a violation of the Fisheries Protection Ordinance (2018) - Regulation 10. However, it may be desirable to develop a mitigation plan to create a swimmable area for guests with protection of as much seagrass as possible, with potential relocation and/or new propagation as part of the plan. Such a plan could potentially reduce overall impacts to seagrass meadows from guests trampling them in an effort to get to swimmable areas, thus confining impacts to a pre-selected site. Such plans will need to be subject to a separate development permissions process.

A review of satellite imagery and subsequent site inspections reveal that a path was cut through an existing the seagrass meadow, creating a large, cleared area approximately 50m to the east of the project site during the period from 2012-2013 (Figure 73). Similarly, a beach access road and path provide pedestrian and vehicular access (legality/approvals to be determined). The cleared areas have not been recolonized by the surrounding seagrasses, and this area should be promoted for recreational uses. The project masterplan does not depict beach access routes or boardwalks over sensitive dune vegetation, and these structures should be incorporated into the project design to avoid the trampling of vegetation in dune habitats as guests try to directly access the beach adjacent to the hotel property. Minimizing the number of access points and restricting amenities to suitable areas will lessen the overall impacts associated with beach recreation by localizing the impacts.

Hotel patrons are also likely to partake in other water-based activities around the island via charter opportunities, increasing pressure on marine resources beyond the immediate project area. These cumulative impacts will increase in proportion with the increase in accommodation on North Caicos. As this impact cannot be avoided, actions to reduce, repair, offset and/or compensate for the increased use are recommended. Cumulative impacts can be reduced through the promotion of education and awareness of reef and seagrass etiquette via informational media made available at the resort and training of beach staff and water sports operators. Reef safe sunscreens should also be made available, along with information as to why people should use them. Installation of vessel moorings is another way to reduce impacts to both reef and seagrass beds. Reefs can be repaired (by trained individuals) to a certain extent when damage occurs, and new corals can be propagated for in coral nurseries for restoration purposes to repair and offset resource impacts. Adding reef resources through the creation of artificial reefs is another way to offset and compensate for cumulative impacts. Both the DECR and the Turks and Caicos Reef Fund (TCRF) have staff trained in reef rescue and restoration methods and can be consulted and funded for such projects as needed. Management plans are also recommended to determine carrying capacities for beach, reef and other marine resources with monitoring to evaluate their effectiveness.

Figure 73 - Proposed designated recreational use area

Navigational safety could also be an issue where swimmers, recreational sports (sailboats, kayaks, kite boarders, windsurfers, etc.), and boating activities are all happening in the same area. Knowledge from local boat captains and residents using the beach area should inform the placement of a designated vessel access zone outside of recreational areas.

6.1.2 Mitigation for water quality impacts

Although the potential for water quality impacts to the marine environment are considered low, certain measures should still be undertaken to avoid potential impacts. Sedimentation and solid waste debris (which also impact water quality) are covered in Section 6.1.1. Additionally, toxic chemicals from heavy equipment and construction processes are also a concern. Regular maintenance of heavy equipment and proper disposal of any hazardous chemicals used in the construction process can alleviate noxious spills that could leach into the water table and ultimately end up in the marine environment.

Recommendations for terrestrial and coastal mitigation will serve to avoid, reduce, repair, offset, and compensate for water quality impacts to the marine environment. Such impacts can occur via run-off or seepage through the porous limestone and sand substratum. Effluents from sewage and wastewater, chemically treated water, herbicides, pesticides, and fertilizers used in landscaping practices, and petro-chemicals used in road surfacing and roofing practices are all hazardous if they make their way into the marine environment. Mitigation measures include use of tertiary sewage treatment systems that are well maintained and regularly monitored, provisions for chemically treated water, limiting land clearance and use of native plant species, with limited to no use of herbicides, pesticides and fertilizers. Road and foot-path path surfacing should all be permeable and if not, then curbs and contained storm water drainage systems are warranted to prevent runoff.

6.1.3 Mitigation for noise and light impacts

Noise and lighting impacts can affect both terrestrial and marine faunal species and both should be minimized as much as possible. Construction noise cannot be avoided but can be limited to daylight hours and avoiding crepuscular periods (dusk and dawn) when the foraging activities of many species peak. During the operational phase, noise impacts will not only affect wildlife but can become an issue for humans in the vicinity. Noise restrictions are advised throughout the property, restricting equipment with loudspeakers and asking patrons to use headphones instead. Live entertainment activities should be limited, including the use of fireworks and outdoor entertainment, always being mindful of volume and wind direction.

Lighting impacts are another concern for both terrestrial and marine species. Although turtle nesting has not been recorded near the project site in several decades, accommodating a potential occurrence is warranted as sea turtles are endangered species. Mitigation measures include avoiding nighttime lighting

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

on or near beach areas and incorporating lighting designs that reduce light pollution throughout all project areas. Low pressure sodium vapor lighting with monochromatic yellow colors, with downlighting on mounts close to the ground will reduce lighting impacts, as will the use of motion sensors on all outdoor lighting. This measure will also reduce energy consumption. All rooms should also be outfitted with blackout curtains. Further information regarding optimal lighting for wildlife can be found at the Florida Fish and Wildlife Conservation Commission website: https://myfwc.com/conservation/you-conserve/lighting/criteria/#:~:text=Use%20long%20wavelength%20(greater%20than,white%20or%20multi%2Dcolored%20lights.

6.1.4 Mitigation and monitoring recommendations for AIS

Alien invasive floral species are already prevalent across the project site and surrounding areas, particularly in areas already cleared for illegal sand mining operations and along the coastline. Impacts associated with floral AIS can be successfully avoided via the following mitigation measures:

1. All AIS currently extant at the project site in areas slated for building and infrastructure footprints will likely be removed as a result of land clearance activities in areas where they are prolific. Cleared vegetation from these areas should be destroyed. Removed materials should not be stockpiled or composted, as this may create an avenue for dispersal. Burning is the most-effective method for destruction.
2. In areas outside building and infrastructure footprints, such as in dune areas where *Casuarina equisetifolia* and *Scaevola taccada* have naturalized, all AIS should be slated for removal as soon as is feasible to prevent further spread. Larger Casuarina trees may need to be chopped down and have their stumps treated individually with herbicide. To reduce potential impacts associated with the use of pesticides, this can be done by drilling a series of holes in the stumps, filling the holes with herbicide, and then capping the holes with putty to prevent leakage. All removed plant materials should be treated as in bullet item #1.
3. New landscaping applications should be installed with native floral species, preferably rescued from the project site or obtained locally, rather than from an imported source, which could also contain AIS fauna and other biohazards (see Section 5.2.8).

4. If floral species are imported from abroad for landscaping purposes, they should comply with the regulations and policies of the TCI Department of Agriculture ensuring that they meet the sanitary requirements for any live imports.
5. Landscape maintenance staff should be trained to recognize AIS and should be instructed to remove any AIS specimens, whenever they are encountered during normal maintenance activities.
6. Under no circumstances should AIS, such as *Scaevola taccada,* be used for landscaping. as these species will aggressively spread and choke out native coastal floral species that help to stabilize shorelines.

6.1.5 Impacts to Resettled Wildlife

If the mitigation recommendations for predicted terrestrial impacts are followed, many wildlife species will resettle at the project site after the construction phase has completed. Although a desirable outcome of effective mitigation, such resettlement can cause conflicts between animal and human interests. For example, Gray Kingbirds and American Kestrels are fond of nesting on human-made structures and can become aggressive if humans interfere with their nests. Fortunately, such episodes are typically short-lived, ending with the fledging of young. Potential conflicts can be avoided via the following measures:

- Guests and owners can be provided with educational information regarding the life histories of the species involved and appropriate etiquette for interacting with them.
- Deterrents, such as wire housings, can be used to surround areas that might be hazardous to wildlife, such as power transformers.

Maintenance crews, guests, and owners should also be made aware of the laws governing human interactions with wildlife, as it is an offence under the Wild Birds Protection Ordinance to interfere or harm any bird, egg, or nest. Interactions with wildlife are subjective, and with appropriate education, potential conflicts can ultimately be seen as benefits of an ecologically sensitive tourism product.

6.2 Proposed Actions to Mitigate Against Noise Pollution

Actions to mitigate against noise pollution are elaborated in Sections 5.2.9 – Socioeconomic and Cultural Impact Assessment and 6.1.3 – Mitigation and monitoring for impacts of noise and light and will not be elaborated here for brevity's sake.

6.3 Storm Surge Analysis and Mitigation Plan for Sea Level Rises

Please see Section 5.2.11.4 for a comprehensive summary and analysis of potential impacts arising from climate change. Storm surge measures increased tides above normal monthly tidal ranges associated with tropical storm systems pushing water onshore. Storm surge intensity is influenced by baseline tidal cycles, global sea level rise, and storm intensity.

For more than 160 years, NOAA has tracked hurricanes, their windspeeds, and atmospheric pressures, and these data can be used to predict the vulnerability of the proposed project site to storm surge and sea level rises (see Section 5.2.11.4 where the site's vulnerability has been modelled). The Intergovernmental Panel on Climate Change (IPCC) has determined that these effects will be equivalent to the probability of a 50-year storm occurring instead every 25-30 years. IPCC (2023) further predicts sea level rises of 0.15 – 0.29 m before 2050.

Tides and topography also influence storm surge levels, and the highest tide in the lunar cycle can be used along with storm history to determine the vulnerability of the proposed project to storm surge and sea level rise. In TCI, the highest lunar tides occur at approximately 0.55 m (1.8 ft) above the mean, and the Project site has elevations varying from 6 – 11 feet (2.15 – 3.35m) above mean tide, with the highest elevations on the site being along primary and secondary dune structures (see topographical map Figure 36).

151 storms have occurred in TCI over the past 166 years (Table 29), with the average rate of a major hurricane (category three and above) occurring every 5.5 years. The Caribbean Catastrophe Risk Insurance Facility has estimated that a category five hurricane has the potential for storm surges of up to 2.6 m (8.5 ft); however, historically, the Northern shorelines of the Caicos Islands have been protected by the fringing reef during storm events, limiting storm surges to approximately 1.2 m (3.9 ft). The highest storm surge ever recorded for TCI was 12 ft from Hurricane Donna in 1960 (a 100-year event), although this maximum occurred on the Caicos Banks rather than on the north shore. Taking all these factors into consideration, the proposed development should be expected to experience some exposure to major hurricane events every 5.5 years, and potential impacts are expected to worsen over time as the effects of climate change become more pronounced. However, in the next 25-30 years, surges of more than 6.7 ft. (max surge + max tide + max sea level rise) above mean tide should not be expected. Thus, current site elevations are sufficient to protect the project from potential worst case scenario storm surges.

Table 30 - Tropical cyclones in TCI

Cyclone Category	**Wind Speed**		**Number of Events**
	(m/s)	(km/h)	
Tropical Storm	18 – 33	64 – 118	90
1	33 – 43	119 – 154	18
2	44 – 49	155 – 178	13
3	50 – 58	179 – 210	16
4	59 – 70	211 – 250	11
5	> 70	> 250	3

Nevertheless, in the interest of long-term planning, mitigation measures to protect the project shoreline should be incorporated into this and all coastal projects in TCI. Such mitigation measures include the implementation of an integrated coastal zone management plan, which includes the following components:

- Regular removal of all AIS from the coastal zone as a component of regular project maintenance. In particular *Casuarina equisetifolia* and *Scaevola taccada,* which aggressively undermine shoreline stability via overtaking native coastal vegetation, should be aggressively targeted for removal from all coastal sites. TCIG should consider implementing legislation with penalties for the use of these species in landscaping applications.
- Greater setbacks from the line of vegetation allow for the natural movement of sand and the maintenance of native coastal vegetation communities that protect shorelines. Natural coastal structures, such as primary and secondary dunes also provide coastal protection. Therefore, setback should be determined based on natural features as opposed to linear distances, as they are now established. Primary and secondary dunes should be left entirely intact, and structures should also not be built at elevations lower than 10 feet above sea level to avoid the impacts of storm surge now and into the future.
- The project site benefits from relatively high elevations along the primary and secondary dunes. In order to maintain and enhance these advantages, it is strongly recommended that the AIS currently dominating the dune structures are annihilated and continuously controlled into the future

and that native dune plant communities, dominated by sea oats *Uniola paniculata* and other species that are known to trap sand and stabilized shorelines, are restored.

In the event of a pending tropical cyclone event, emergency evacuation and response measures should be put in place (adapted from https://www.osha.gov/hurricane/preparedness) with the following components:

6.3.1 Planning

An evacuation plan will be in place throughout construction and operational phases to ensure that resort guests, residents, and workers can get to safety in case a hurricane may affect the area. The evacuation plan will include:

- Conditions that will activate the plan (e.g. storm prediction and intensities)
- Chain of command (contractor or general manager will lead, depending on project phase)
- Emergency functions and who will perform them (based on personnel qualifications at the time of the incident)
- Specific evacuation procedures, including routes and exits (to be provided in each guest room, along with fire exit information)
- Procedures for accounting for personnel and visitors (a general meeting place will be agreed for all gusts and staff members)
- Equipment for personnel

The US Federal Emergency Management Agency (FEMA) provides detailed information on evacuation plans as well as suggestions for precautions to take if you are unable to evacuate and do not have a safe room. The project's operations management team will familiarize themselves with these procedures.

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

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

The project operators have a proven track record of keeping guests safe during a tropical cyclone event and have incorporated into their operations strategies methods for receiving and following instructions from DDME to evacuate if instructed to do so.

The Saffir-Simpson Hurricane Wind Scale is a 1 to 5 rating based on a hurricane's sustained wind speed (Table 30). This scale estimates potential property damage. Hurricanes reaching Category 3 and higher are considered major hurricanes because of their potential for significant loss of life and damage. Category 1 and 2 storms are still dangerous, however, and require preparatory measures.

Table 31 - Hurricane intensities

Category	Sustained Winds	Types of Damage Due to Hurricane Winds
1	• 74-95 mph • 64-82 kt • 119-153 km/h	**Very dangerous winds will produce some damage:** Well-constructed buildings could have damage to roof, shingles, and gutters. Large branches of trees will snap and shallowly rooted trees may be toppled. Extensive damage to power lines and poles likely will result in power outages that could last a few to several days.
2	• 96-110 mph • 83-95 kt • 154-177 km/h	**Extremely dangerous winds will cause extensive damage:** Well-constructed buildings could sustain major roof damage. Many shallowly rooted trees will be snapped or uprooted and block numerous roads. Near-total power loss is expected with outages that could last from several days to weeks.
3 (major)	• 111-129 mph • 96-112 kt • 178-208 km/h	**Devastating damage will occur:** Well-built buildings may incur major damage or removal of roof decking and gable ends. Many trees will be snapped or uprooted, blocking numerous roads. Electricity and water may be unavailable for several days to weeks after the storm passes.
4 (major)	• 130-156 mph • 113-136 kt	**Catastrophic damage will occur:** Well-built buildings can sustain severe damage with loss of most of the roof structure and/or some

	• 209-251 km/h	exterior walls. Most trees will be snapped or uprooted and power poles downed. Fallen trees and power poles will isolate residential areas. Power outages will last weeks to possibly months. Most of the area will be uninhabitable for weeks or months.
5 (major)	• 157 mph or higher • 137 kt or higher • 252 km/h or higher	**Catastrophic damage will occur:** A high percentage of buildings will be destroyed, with total roof failure and wall collapse. Fallen trees and power poles will isolate residential areas. Power outages will last for weeks to possibly months. Most of the area will be uninhabitable for weeks or months.

6.3.2 Equipping

In order to respond effectively to a storm emergency, project proponents should ensure that they have adequate equipment to respond to any contingency. Emergency supply kits should be on-hand for resort guests and personnel in accordance with the following guidelines:

- Build a Kit - Basic Disaster Supplies Kit
- Emergency Response Plan - Evacuation. Ready.gov - Federal Emergency Management Agency (FEMA)
- Hurricane Preparedness – Family, Health, and Safety Preparation - Supplies. Centers for Disease Control and Prevention (CDC)

6.3.3 Training and Exercises

Any emergency mitigation plan is only as effective as people's capacity to respond and implement it; therefore:

- All workers should be trained to know what to do in case of an emergency.
- Evacuation plans should be practiced with staff on a regular basis.
- Plans and procedures should be updated and based on lessons learned from exercises.

6.3.4 Additional Resources

The following additional resources will be consulted and implemented as needed:

- *Centers for Disease Control and Prevention (CDC)*
  - Hurricane Preparedness - Make a Plan
  - National Center for Environmental Health Webinar and Power Point Presentation on preparing for 2020 Hurricane Season
  - Preparedness and Safety Messaging for Hurricanes, Flooding, and Similar Disasters
- *Federal Emergency Management Agency (FEMA)*
  - Preparedness Portal
  - Hurricanes
- National Hurricane Center. National Weather Service

6.4 Mitigation and Monitoring for Floral Species of Interest

In terms of terrestrial mitigation and monitoring, the terrestrial baseline assessment serves as a pre-construction guide to the scope of rescue operations for RTE and endemic floral species and the conservation of RTE habitats. Procedures have been outlined previously in Section 6.1.1. Features of interest identified during baseline assessment should be visibly tagged and protected with secure fencing and/or hoarding for avoidance purposes. An additional pre-construction monitoring site visit should be conducted by a qualified professional to ensure that any coastal mixed woodland and forest habitats that are not incidental to building and infrastructure are fenced off for protection from construction activities. In areas slated for development, building development footprints should be surveyed and marked out, and all rescuable floral species within building footprints should be rescued for later use during landscaping or to be donated to DECR's native plant nursery. Specifically, the potentially unique hybrid orchid *Encyclia inaguensis x E. rufa* should be rescued and cared for on site or donated to DECR for scientific research and propagation studies.

A comprehensive construction schedule should be provided to the Department of Planning and DECR, prior to any construction activities taking place. At least two weeks' notification of land clearance and other construction activity should be provided to the Department of Planning and DECR to ensure adequate time to allow for plant rescues and to assess any wildlife populations that may be adversely affected. Please see Sections 2.2.1, 5.2.1, and 6.1.1.1 for detailed descriptions of the baseline terrestrial environment, predicted impacts, and recommended mitigation measures, respectively.

6.5 Removal and continual control of invasive species

Detailed measures for the removal and control of invasive species have been previously outlined in Section 6.1.4.

6.6 Landscaping Plan and Species List

The project proponents have indicated that they will be preserving as much of the site's vegetation as possible; however, some augmentation with landscaping species will take place for aesthetic purposes and to fill in areas that may have been impacted by construction activities. A preliminary landscaping plan has been developed (see Section 4.9 and Figure 50), based on expectations regarding where landscaping species will be planted.

A landscaping species list has also been developed by the project landscape architects (please see Appendix G). The list is largely comprised of native and/or ornamental plants that are not considered invasive; however, three species *Tecoma stans, Wedelia trilobata,* and *Zoysia spp.* have become invasive in some areas of TCI and should be reconsidered. Furthermore, *Bougainvillea glabra* requires significant maintenance in TCI, including the use of pesticides and fertilizers and should therefore not be used in areas in close proximity to the coast where toxins could enter nearshore waters. If treatment is needed, it should be applied on a per-plant basis and never sprayed as a general application (See Section 6.1.1 for further mitigation recommendations regarding integrated pest management and best landscaping practices).

6.7 Proposed Mitigation and Monitoring for Light Pollution

Proposed actions to mitigate against light pollution impacts to sea turtles and migratory birds are detailed in sections 5.2.3 and 6.1.2 and will not be elaborated here to reduce redundancy.

6.8 Traffic flow and safety plan

The proposed development has only 15 bedrooms, with a maximum capacity of only 30 persons. Given that 30 persons represents double occupancy, no more than 15 vehicles will be added to North Caicos roads at any time during the project operational period; therefore, even at full capacity, the project is not expected to contribute to traffic flow in any appreciable way. Traffic and safety have been addressed in Section 5.2.11.3 and will not be elaborated upon here to avoid redundancy.

6.9 Proposed Mitigation and Monitoring for Climate Change Adaptation

The topic of climate change impacts and mitigation have been thoroughly explored in preceding sections of this report, including Section 5.2.11.4 – Climate change impacts – and Section 6.3 – Storm surge analysis and mitigation plan for sea level rise. On a national level, adaptation to climate change in TCI should be conceived and implemented cumulatively, including the adoption of guidelines and policy and implementation of public awareness campaigns. The Turks and Caicos Islands Climate Change Green Paper (TCIG, 2011) recommends national and regional vulnerability studies and cost-benefit analyses to inform tourism planning and decision making, in addition to developing best-practice guidelines, and maintaining up-to-date policies and communication channels. The Climate Change Policy of the Turks and Caicos Islands (TCIG, 2018) outlines eleven objectives to foster resilience, including:

1. Public education and awareness
2. Protection of and wise use of carbon sinks
3. Enhancing public health infrastructures
4. Maintaining a sustainable fresh water supply
5. Increasing resilience of natural and anthropogenic infrastructures
6. Achievement of objectives for TCI energy conservation and the Environment Charter
7. Implementation of technologies to reduce greenhouse gas emissions
8. Improving food security
9. Adoption of green technologies in all facets of development
10. Advocacy for sustainable tourism
11. Advocacy for sustainable development

All the above objectives require a national commitment in order to achieve them. On an individual basis for the tourism sector, the Green Paper recommends the adoption of energy and water conservation measures, avoidance of construction in vulnerable areas, adoption of green technologies, and obtaining Green Globe and Green Hotel certifications for individual operators. The proposed development recognizes the global threat posed by climate change and has therefore included the following adaptations into the project design:

- The project will install solar PV panels sufficient to support the daytime operation of the hotel.
- A voluntary increased setback from the shoreline. The Development Manual requires a 100 ft. minimum setback from the line of vegetation for two-story buildings. The proposed coastal buildings will be setback at distances greater than the mandated setbacks.
- The project will remove AIS from dune areas and restore natural dune vegetation, thereby fostering resilience to storm surge.
- The project wastewater systems will produce effluent suitable for irrigation, thus conserving water.
- High R-value, energy-saving windows will be incorporated throughout the project.
- Energy-saving lighting will be incorporated throughout the development.

Further recommendations include:

- Use of Grasscrete™ or similar permeable paving throughout the project site wherever possible to reduce flooding potentials.
- Implementation of xeriscaping for all landscaping applications to reduce water use.
- Use of motion detectors for lighting throughout the resort.
- Adoption of soil building and conservation measures, such as composting.
- Prohibition against use of all chemical treatments for landscaping applications to protect sensitive marine habitats.

6.10 and 6.11 Mitigation and Monitoring, Financial Requirements, and Financial Resources

The recommended mitigation and monitoring measures outlined in previous sections will have associated costs, and responsibilities for mitigation, monitoring, and management, which will fall to the project proponents, building contractors, and TCIG. Many recommended mitigation, monitoring, and management measures can be incorporated into the project's regular maintenance programmes, without any additional costs. Some environmentally sound practices, such as solar energy and integrative pest management, also offer economic benefits in the form of cost savings. Savings made from environmentally sound practices can then be applied to other mitigation costs. Financial and economic resources for mitigation, monitoring, and management should be accounted for in a project's cost/benefit analyses, and government may consider requiring a performance bond to ensure that required measures are carried out. If properly planned and implemented, savings can outweigh costs, so all recommended mitigation measures can be easily incorporated into development planning (Table 30).

Table 32 - Recommended mitigation and monitoring measures and funding resources and responsibilities

Recommended Mitigation and Monitoring Measures	Funding Source and Responsibilities
Environmental Terrestrial	
Rescue of floral species of interest	TCI Environment Club can conduct the removal free of charge if sufficient volunteers can be recruited; however, volunteers will expect to keep the plants they rescue. If project proponents undertake this process through a private landscaping contractor, the value of the plants harvested should outweigh the cost of rescue (e.g. native flora valued at approximately $100,000/acre). Developer responsibility.
Survey and protection of critical habitats for avoidance purposes	Survey conducted within scope of EIA. Employment of a specialist for tagging will cost $150/hour. Could be done as a public/private partnership with DECR. Developer responsibility.
Retention of natural vegetation wherever possible	No associated cost. Savings associated with reduced landscaping costs. Developer and Contractor responsibility.
Use of permeable surfaces	Permeable surfaces offer cost savings over paved surfaces. Grasscrete™ is estimated to cost $25/ sq. ft. Developer responsibility.
Waste treatment facility maintenance	Should be budgeted in project operational budget. Project management responsibility.
Storm water treatment	Should be budgeted in project construction budget. Developer and project management responsibility.

Use of native flora for landscaping purposes wherever feasible	Locally grown, native flora may have higher initial cost implications than imported, non-native flora; however, this cost should be offset by the reduced maintenance costs associated with native plants (e.g. significant savings on water and treatment chemicals). Native flora rescued from the project site can also be used for this purpose, with associated cost savings over purchased specimens. Developer and Landscaper responsibility.
Use of alternative energy	Initial upfront costs for Project proponents will be offset by significant operational savings. Developer responsibility.
Removal and control of AIS	Removal should be included within the project's construction costs and ongoing control should be included within the operational budget. Project management responsibility.
Preservation and enhancement of beach access	Included within project design and construction costs. Developer responsibility.
Sponsorship of public awareness materials	Cost of expert consultant preparation and printing. Could be done as a joint venture with DECR or TCRF to save on expert consultant fees. Costs of printing vary widely, depending on materials used. Project management responsibility.
Sponsorship of scientific research	Could be provided as in-kind contributions in the form of providing accommodation for visiting researchers. Project management responsibility.
Terrestrial habitat restoration and rewilding	Rewilding will occur naturally without additional costs with appropriate landscaping ethos. Typical landscaping costs are approximately $100,000 per acre and will be included in the Project's projected budget. Developer and Landscaper responsibility.
Avoidance of construction nuisance in affected areas during migration	No cost should be associated with this recommendation, as it is simply a scheduling matter and should be the contractual responsibility of the project Contractor.
Terrestrial monitoring compliance surveys	$150/hour for private expert service. No additional cost if conducted via public/private partnership with DECR. Developer responsibility.
Emergency spill mitigation plan	Should be included in construction and operations budget. Contractor and operator responsibility.

Environmental Marine and Water Quality	
Use of hoarding and retaining walls	Required in ODP. No additional cost. Contractor responsibility.
Runoff control measures, retaining walls, storm drainage treatment systems	Required for DDP and Building Permit. No additional cost. Developer and Contractor responsibility.
Maintenance of all equipment, use of alternative road surfacing and limit use of petrochemicals near water to avoid contamination	Alternative road surfaces, such as gravel, would provide a cost savings. Regular maintenance of equipment prolongs life and should provide a cost savings over the lifetime of equipment. No cost associated with avoidance of use of petrochemicals near water. Contractor responsibility.
Sewage treatment plant maintenance, effluent and coastal water quality testing and green landscaping practices.	Avoidance of landscape maintenance chemicals can produce a cost savings of approximately $6,000/acre/year (Wood, 2014). Effluent and coastal water quality testing can be done by Provo Water Company for approximately $150 per sample. Sewage treatment plant maintenance should be included in operational budget. Project management responsibility.
Disposal of chemically-treated water and runoff in deep well. Disposal of all noxious liquid wastes offsite.	Included in construction contract. Liquid waste disposal treatment should be included in project design. Project management responsibility.
Water quality testing	Water quality testing (methods as outlined in Section 1.6) is recommended but not mandatory on a quarterly basis and can be undertaken via NGO/Private/Public partnership with TCRF and DECR. Water quality testing to an ultra-low level costs an estimated $2,500 per sampling event.
Use of native floral species along nourished beach and other coastal areas and limit use of maintenance chemicals	No additional landscaping costs for these methods. Cost savings for integrative pest management. Project management responsibility.
Provide lidded trash receptacles, emptied as-needed but at least on a daily basis, with trash clean-up as a part of daily maintenance activities throughout construction and operations	Trash containment and clean-up should be included in regular maintenance activities throughout construction and operations and should not incur additional cost. Contractor and Project management responsibility.
Avoid use of disposable food containers	Not purchasing disposable food containers will result in a cost savings. Contractor and project management responsibility.

Beach management plan	Should be a requirement for any project that borders the coastline and therefore included in the cost of operations.
Preservation or burial of beach "rack" vegetation	No cost. Removal or burial will require the same quantity of labour. Project management responsibility.
Beach access boardwalks over dunes	Should be part of project design and construction costs. Developer responsibility.
Creation of aquatic activity zones and train staff for emergency rescue.	Aquatic zone buoys are currently installed by TCRF via partnership with DECR. An average cost is $3,500. Red Cross offers several life-saving courses, ranging in cost from $50 (Basic life-saving) to $150 per person (Advanced first aid).
Avoid night-time lighting at beach areas and incorporate lighting design to reduce light pollution	Cost savings in electricity costs. Lighting design and installation should be comparable with conventional lighting. Developer, architect, and project management responsibility.
Sunscreen awareness and alternative products	Awareness materials can be developed through public/private/NGO partnerships and will include only the cost of printing. Providing alternative products will be a profit-generating venture. Project management responsibility.
Socioeconomic and Cultural	
Public use of amenities	While the concept is to rent to a single guest exclusively and as such can't be made available to the public when rented, the hotel amenities will be made available to the public on "community days" at no charge. . Project management responsibility.
Avoid outdoor noise	No associated cost. Project management responsibility.
Implement renewable energy technologies	Upfront costs will be offset by reduced utility costs. Developer responsibility.
Incorporate local arts, crafts, and architectural values	Cost of using local artists and designers should be comparable or offer a cost savings to imported cultural values. Developer and project management responsibility.
Preserve natural habitats where possible	Cost savings due to reduced need for artificial landscaping. Developer and Contractor responsibility.
Use locally available labour and provide training, mentorship, scholarships for high-level positions.	Use of local labour provides a cost savings due to savings on work permits. Provision of training, mentorship, scholarships should be promoted by TCIG via public/private

	partnerships. Contractor and project management responsibility.
Maintain 24-hour security	The Project will maintain 24-hour security as a standard operational procedure. Contractor and project management responsibility.
Ensure public participation in the development process	The project proponents have engaged in public consultation throughout the EIA and design development process and will continue to do so. Developer and EIA team responsibility.
Enhance vehicular access to the project site.	Enhancement will be required for construction and operational phases and will therefore be part of the project costs. Developer responsibility.
Worker and affordable housing	Reconsider the inclusion of worker housing in response to public consultation. Utilizing locally available housing will increase project benefits for community while achieving a savings in construction costs. Developer responsibility.
Ensure that public opinion is incorporated into final design and project approvals.	Department of Planning responsibility.

In the case of the proposed development, the facilities will be made available to the public from time to time, as a means to build community relations, using locally available labour, rescuing and reusing native plant materials for landscaping purposes, minimizing building footprints, using permeable, rather than paved surfaces, and limiting the use of maintenance chemicals to those that are deemed safe for terrestrial and aquatic organisms.

Costs for renewable energy, use of native flora, training, and scholarship programs can be offset by eventual reduced operational and construction expenses.

Retention of natural vegetation, beach “rack” vegetation, topographical formations, and noise reduction have no associated costs and could provide savings in the form of reduced costs for artificial landscaping and beach nourishment.

Provision of public awareness materials, support for scientific research, habitat restoration and creation, water and effluent quality testing, marking and protecting of venerable and culturally significant floral specimens, and transparency in Planning procedures will incur some costs, which may be recovered or avoided via public/private/NGO partnerships.

Other measures have costs, which should be covered within project construction and operational budgets, such as storm water treatment, solid waste management, emergency spill mitigation, use of hoarding and retaining walls, equipment maintenance, light-pollution limiting design, waste treatment facility maintenance, removal and control of AIS, and upgrading of roads. These items are typically required as conditions of DDP and BP.

Ensuring that public opinion is incorporated into final project designs and development permissions represents EIA best practices and falls within the mandate of the Department of Planning, enshrined within the Physical Planning Ordinance. Project proponents can be expected to maintain environmental, socioeconomic, and cultural integrity within their individual realm of influence and on a project-by-project basis; however, the bulk of impacts associated with development, in general, are beyond the responsibility of individual developers, with the onus for responsibility for ensuring that development meets the needs and desires of the people falling on TCIG.

6.12 Public Consultation

Public consultation is crucial during environmental impact assessments (EIA) because it ensures that the decision-making process is transparent and inclusive, allowing the voices of affected communities to be heard and considered. According to Hartley and Wood (2005), involving the public helps identify potential environmental and social impacts that might not be evident to the project developers or regulators. This inclusive approach not only improves the quality and comprehensiveness of the assessment but also fosters public trust and acceptance of the project. Moreover, Fischer and Young (2007) highlight that public participation can lead to more sustainable and socially acceptable outcomes by incorporating local knowledge and addressing community concerns early in the planning process.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Additionally, public consultation during EIAs can lead to better environmental management and mitigation strategies. Cashmore et al. (2004) argue that stakeholder engagement provides critical feedback that can refine project designs and operational plans to minimize negative impacts. This collaborative effort often results in innovative solutions that are more effective and tailored to the specific context of the project area. Furthermore, Glasson and Therivel (2019) emphasize that continuous dialogue with the public helps in monitoring and managing unforeseen impacts during the implementation phase, ensuring that the environmental objectives are met and maintained throughout the project lifecycle. By facilitating a two-way communication channel, public consultation ensures that EIAs are not merely regulatory formalities but integral components of sustainable development planning.

The IAIA establishes best practices for public participation defined as follows:
"…the involvement of individuals and groups that are positively or negatively affected by a proposed intervention (e.g., a project, a program, a plan, a policy) subject to a decision-making process or are interested in it. Levels of participation in [Impact Assessment] IA vary, from passive participation or information reception (a unidirectional form of participation), to participation through consultation (such as public hearings and open-houses), to interactive participation (such as workshops, negotiation, mediation and even co-management).2 Different levels of PP may be relevant to the different phases of an IA process, from initial community analysis and notice of the proposed intervention, to approval decision making, to monitoring and follow-up"(Vanclay, Esteves et al., 2015).

A survey was designed as a data collection instrument to capture the concerns of the public and key stakeholders regarding the Ani North Caicos Development. This survey was distributed through social media platforms such as Facebook, Instagram, and WhatsApp. Flyers were also created and displayed in supermarkets, various restaurants, and governmental departments. Additionally, nine face-to-face interviews were conducted with residents in North Caicos. Each interview ranged between 20 to 30 minutes to complete, and interviewees were asked the same questions that were provided in the online survey.

6.12.1 Survey Monkey Online Questionnaire

The Survey Monkey questionnaire was designed to be unbiased and open-ended. To allow respondents to reply freely, all responses were anonymous, with controls in place to allow only one response from a single device. A total of 13 questions were asked:

1. Which of island do you reside on?
2. Which of the following groups do you identify the most with? Turks and Caicos Islander/Belonger, British Overseas Territories Citizen, Work Permit Holder, Non-working resident, Visitor, Other (please specify)
3. More specifically, do you consider yourself a member of any of the following groups? (Check all that may apply): Business Owner, Tourism Operator, Waterfront Property Owner, Community Member, Community User, Other (please specify).
4. The Ani Development will be constructed on 9.88 acres of land in Sandy Point, North Caicos. The project will feature a 15-bedroom boutique hotel, including a one (1) bedroom master suite, three (3) two-bedroom villas on stilts, one (1) two storey four (4) bedroom villa, and one four (4) bedroom standalone suite. Additionally, the hotel will include a one (1) two-storey villa, reception, administration and common area building. Proposed amenities comprise three swimming pools, a beach club with a covered bar, games area, and deck, a spa with an outdoor jacuzzi, a kids club, and a four-storey tower featuring a home theatre, gym, restroom, terrace, lounge, and bird-watching platform. Recreational facilities such as a mini golf course, tennis, basketball, pickleball, and bocce court are also planned. The development will include staff accommodations, solar panels, a well and reverse osmosis plant, and a wastewater treatment plant. In general, how would you rank your approval of the proposed project?
5. Do you have any comments regarding the proposed development?

6. The proposed development will include a 15-bedroom boutique hotel, including a one-bedroom master suite; three, two-bedroom villas on stilts; one, two-storey, four-bedroom villa, and one, four-bedroom standalone suite. The development will be situated on a total area of 9.88 acres. What is your opinion regarding the residential accommodation associated with the project? Please note that this project is compliant with Section 3.6.4 (b) of the Turks and Caicos Islands Physical Planning Ordinance Building Regulations Development Manual (Amendment) Notice 2016 which stipulates that Hotels and condominiums should have a minimum area of one acre for 50 bedrooms and 40 bedrooms respectively, or as may be decided by the Board in accordance with section 46 of the Physical Planning Ordinance.

7. Do you have any comments regarding the residential accommodation associated with the project?
8. The setback from the beach is measured from the established vegetation line or the high-water line. The proposed development will have a setback of 100 ft from the vegetation line. What is your opinion regarding the setback of the proposed development? Please note that Section 3.5.2 (iii) of the Turks and Caicos Islands Physical Planning Ordinance Building Regulations Development Manual (Amendment) Notice 2016 states that the setback for building five storeys or less measured from the vegetation line is 100 feet.
9. Proposed amenities comprise three swimming pools; a beach club with a covered bar, games area, and deck; a spa with an outdoor jacuzzi; a kids' club; and a four-storey tower featuring a home theatre, gym, restroom, terrace, lounge, and bird-watching platform. Recreational amenities such as a mini golf course, tennis court, basketball court, pickleball court, and bocce court are also planned. The amenities will be distributed across the development site. What is your opinion regarding project amenities?
10. Do you have any comments regarding project amenities?
11. The Proposed development will also feature a 409 square meter building as staff accommodations. What is your opinion regarding proposed staff accommodations?
12. Do you have a vision for North Caicos? If so, how would you like to see the island develop in the future?
13. Do you have anything else you would like to comment on? Please use the comment box below or contact SWA Environmental at tcipublic.consultation@gmail.com if you have any other comments or questions.

The participant selection for the online survey followed a stratified purposeful approach which targeted mainly residents of the Turks and Caicos Islands and key stakeholders. A total of 27 responses were received with the majority being from Providenciales (48.2%) followed by North Caicos (44.4%), South Caicos (3.7%), and Grand Turk (3.7%) (Figure 75).

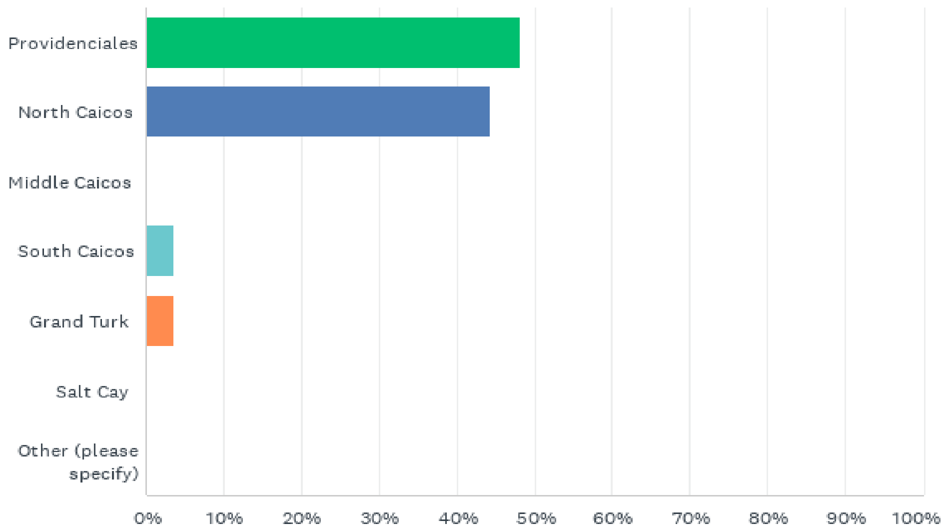

Figure 74 - Respondent islands of residency

Most survey respondents identified as Turks and Caicos Islander/Belonger (74.1%). There was a small but notable portion of respondents that identified as British Overseas Territories Citizen (11.1%) or work permit holders (7.4%). Non-working residents (3.7%) and those identifying as "Other" had minimal representation (3.7%) (Figure 75). This suggests a strong local identity among survey respondents with a minority representing expatriates or other categories.

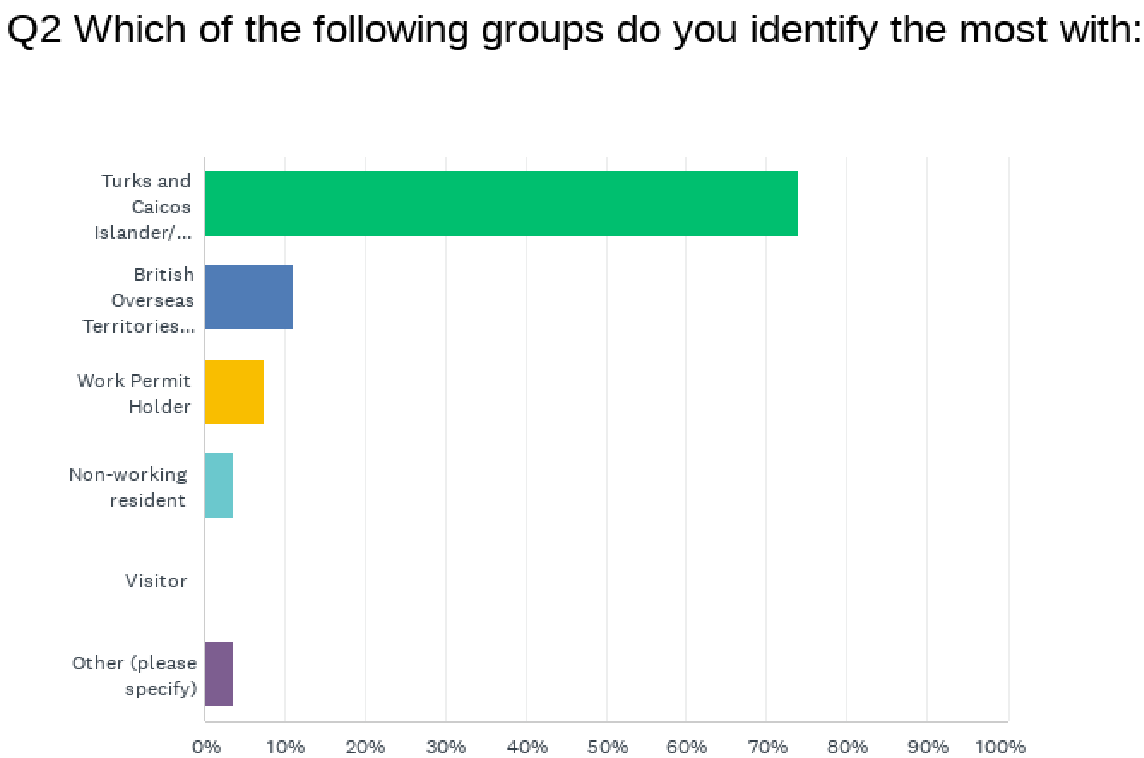

Figure 75 - Respondent demographics

The survey also highlighted the prominence of business ownership and community residency among the respondents, indicating that the surveyed population is likely involved in local business and community activities. Respondents identifying as Business owners represented 66.7% of respondents. Community members and residents were the second highest group with 51.8% of respondents, followed by waterfront property owners (20%) and tourism operators (14.8%) (Figure 77). The tourism operator category had the least representation among the specified groups, suggesting either a smaller number of tourism operators or less identification with this category among respondents.

Q3 More specifically, do you consider yourself a member of any of the following groups? (Check all that may apply)

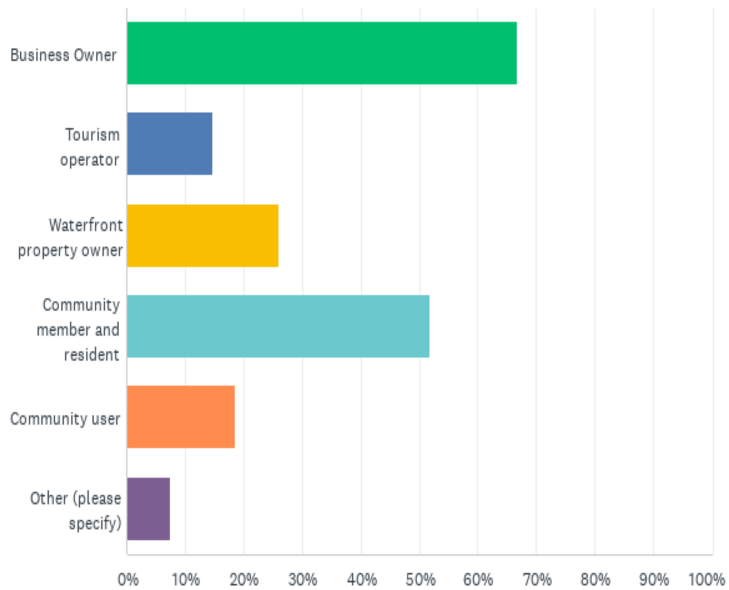

Figure 76 - Respondent identities

Q4 The Ani Development will be constructed on 9.88 acres of land in Sandy Point, North Caicos. The project will feature a 15-bedroom boutique hotel, including a one (1) bedroom master suite, three (3) two-bedroom villas on stilts, one (1) two storey four (4) bedroom villa, and one four (4) bedroom standalone suite. Additionally, the hotel will include a one (1) two-storey villa, reception, administration and common area building. Proposed amenities comprise three swimming pools, a beach club with a covered bar, games area, and deck, a spa with an outdoor jacuzzi, a kids club, and a four-storey tower featuring a home theatre, gym, restroom, terrace, lounge, and bird-watching platform. Recreational facilities such as a mini golf course, tennis, basketball, pickleball, and bocce court are also planned.The development will include staff accommodations, solar panels, a well and reverse osmosis plant, and a wastewater treatment plant.In general, how would you rank your approval of the proposed project?

Most respondents strongly support the project (76.9%), with a small percentage strongly opposing it (7.7%) and even fewer moderately supporting it or opposing it (3.9%) (Figure 78). The survey did not indicate any neutral stance on the project.

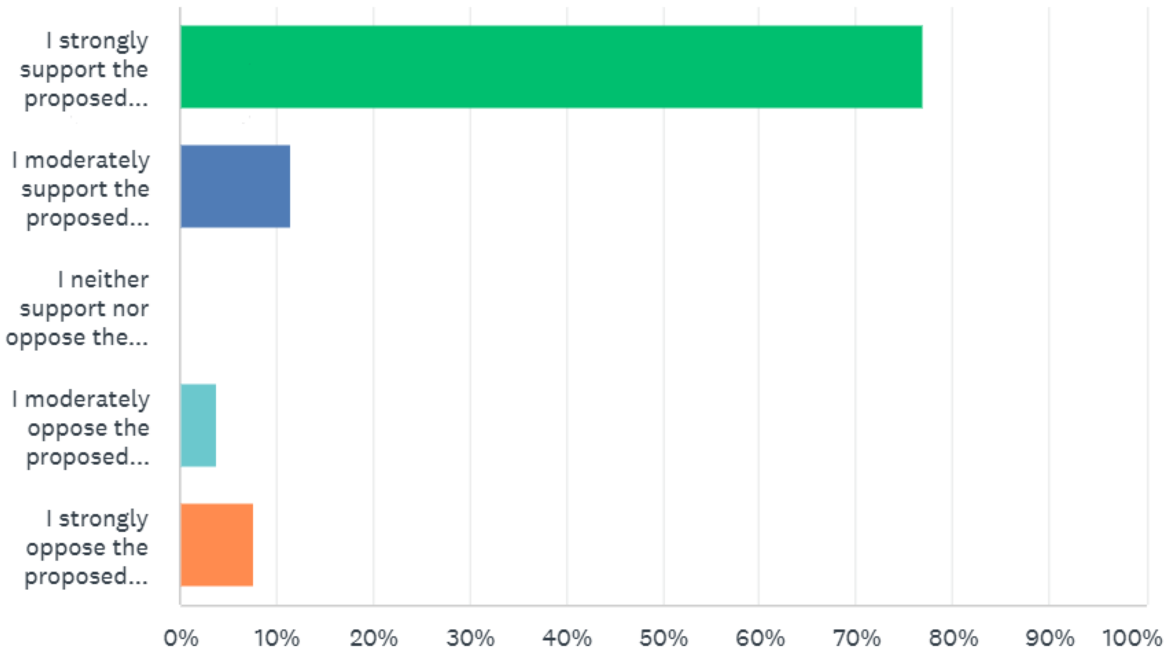

Figure 77 - Respondent support or opposition for the project

In addition to answering Question 4, respondents also provided 16 responses to the open-ended question posed for Question 5. The responses reflected several recurring themes, which are explored below.

Environmental Sensitivity and Low Density:

- Appreciation for the project's low-density and environmentally sensitive approach, which aligns with sustainable development goals for North Caicos.

Development and Economic Growth

- Support for the development as a means to enhance the local economy, bring business, and increase attention to North Caicos.

- Encouragement for developing the islands to diversify tourism and real estate offerings, particularly highlighting the need for more luxurious, low-density developments in the outer islands.

Public Access and Inclusivity

- Questions regarding the accessibility of recreational activities and facilities for the public, including the potential use of the reverse osmosis plant by the community if existing infrastructure fails.
- Encouragement for providing opportunities for local and indigenous people from North Caicos to be involved in the development.

Sustainability and Renewable Energy

- Emphasis on maximizing the use of solar power and other renewable energy sources in the project.

Concerns About Development Impact

- Concerns about the potential negative environmental impact, disadvantages to local residents, and the aesthetic impact of large developments.
- Caution against failed past developments and the risk of creating unused or rundown resorts.

Infrastructure and Community Benefits

- Hope that the project will stimulate additional infrastructure developments, such as improvements to the airport, which could benefit North and Middle Caicos.

General Support

- Overall, there is strong support for the project with a sense of optimism that it could bring positive changes to North Caicos.

These themes are highlighted in the following verbatim comments:

- *I love the fact that it is Low density & environmentally sensitive. Exactly what should be encouraged for all of north Caicos.*
- *Go ahead and build, let's develop our islands.*
- *How open will some of the recreational activities be to the public?*
- *We need to diversify our tourism and real estate product to our outer islands given the growth and popularity of the TCI. Our islands are all equally as beautiful as Providenciales which has developed to the extent it has due to the International Airport which provides convenience. I feel that the demand exists and outer islands and developments such as this provide a return to the tranquil Caribbean lifestyle many seek. Low density, intimate yet luxurious, a commodity not*

easily found in many Caribbean jurisdictions. This will also help kickstart much for both North and Middle and hopefully accelerate works to the airport.

- *Maximising solar and renewables.*
- *I think it's a great idea for North Caicos and bringing business and attention to North Caicos, I give it the green light.*
- *I support this project because it will increase bed space for longer term stays in north caicos (my home) and increase overall interest in the island. So long as it is not harmful to the environment, disadvantageous to the people of sandy point or a tall albatross, I am in full support.*
- *Development in North Caicos needs to be control and at a pace that beneficial for the local business in north to prosper, grow and succeed.*
- *All you have to do is look at Royal Reef and St Charles, then the Sandy Point Marina. They don't work. I would hate to see another shell of a rundown resort.*
- *This will hopefully be a wonderful addition to North Caicos. It looks to be a small development in line with what is needed here.*
- *Would the reverse osmosis plant but available to the public if the current plant for North and Middle is faulty (it has happened before in the last 2 years).*
- *I would encourage that this scope of work offers opportunity for local/indigenous people who are from North Caicos to be a part of this development.*
- *Bring it on.*

Q6 The proposed development will include a 15-bedroom boutique hotel, including a one-bedroom master suite; three, two-bedroom villas on stilts; one, two-storey, four-bedroom villa, and one, four-bedroom standalone suite. The development will be situated on a total area of 9.88 acres. What is your opinion regarding the residential accommodation associated with the project?Please note that this project is compliant with Section 3.6.4 (b) of the Turks and Caicos Islands Physical Planning Ordinance Building Regulations Development Manual (Amendment) Notice 2016 which stipulates that Hotels and condominiums should have a lot area of a minimum of one acre for 50 bedrooms and 40 bedrooms respectively, or as may be decided by the Board in accordance with section 46 of the Physical Planning Ordinance.

In response to Question 6 regarding residential accommodation and building densities, 70.4% of respondents strongly supported project accommodations and density, while 14.8% of respondents moderately supported the project accommodations and density. A small proportion of respondents, 7.4%, strongly opposed the project and a smaller proportion had a neutral stance (3.7%) (Figure 79).

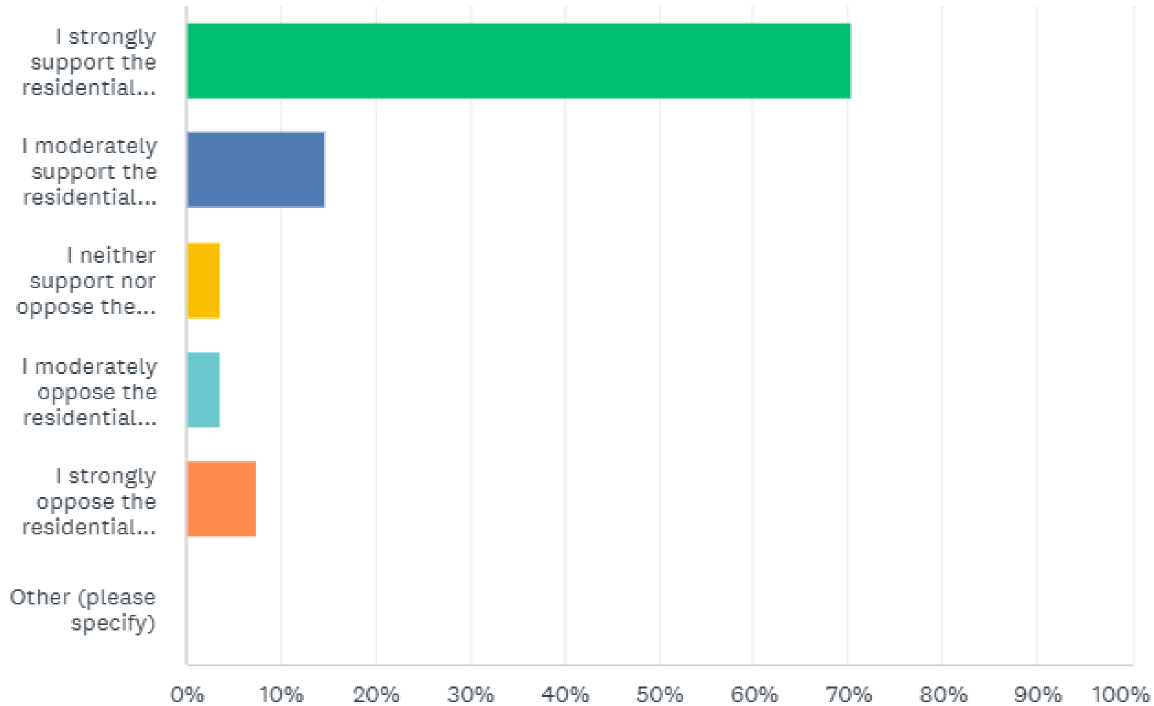

Figure 78 - Respondent support or opposition to building accommodation and densities

In addition to answering Question 6, respondents provided 12 responses to the open-ended question posed for Question 7. The responses reflected two themes, which are outlined below.

Appropriate Scale

- Emphasis on the importance of a "low scale" development, suggesting a preference for a project that does not overwhelm the area and is in keeping with the local context and capacity.

Environmental Suitability

- The development is seen as well-suited and "perfectly designed for the environment," indicating an appreciation for its compatibility with the natural surroundings.

The themes are also reflected in the following verbatim comments:

- *Perfectly designed for the environment.*
- *A development of low scale for this area is highly recommended.*

Q8 The setback from the beach is measured from the established vegetation line or the high water line. The proposed development will have a setback of 100 ft from the vegetation line. What is your opinion regarding the setback of the proposed development? Please note that Section 3.5.2 (iii) of the Turks and Caicos Islands Physical Planning Ordinance Building Regulations Development Manual (Amendment) Notice 2016 states that the setback for building five storeys or less measured from the vegetation line is 100 feet.

In response to question 8 regarding the proposed setback of the development, 65.4% of respondents strongly supported the setback, 11.5% moderately supported the setback, and 11.5% of respondents had a neutral stance. 7.7% of respondents strongly opposed the setback and a small percentage of respondents had other opinions (Figure 80).

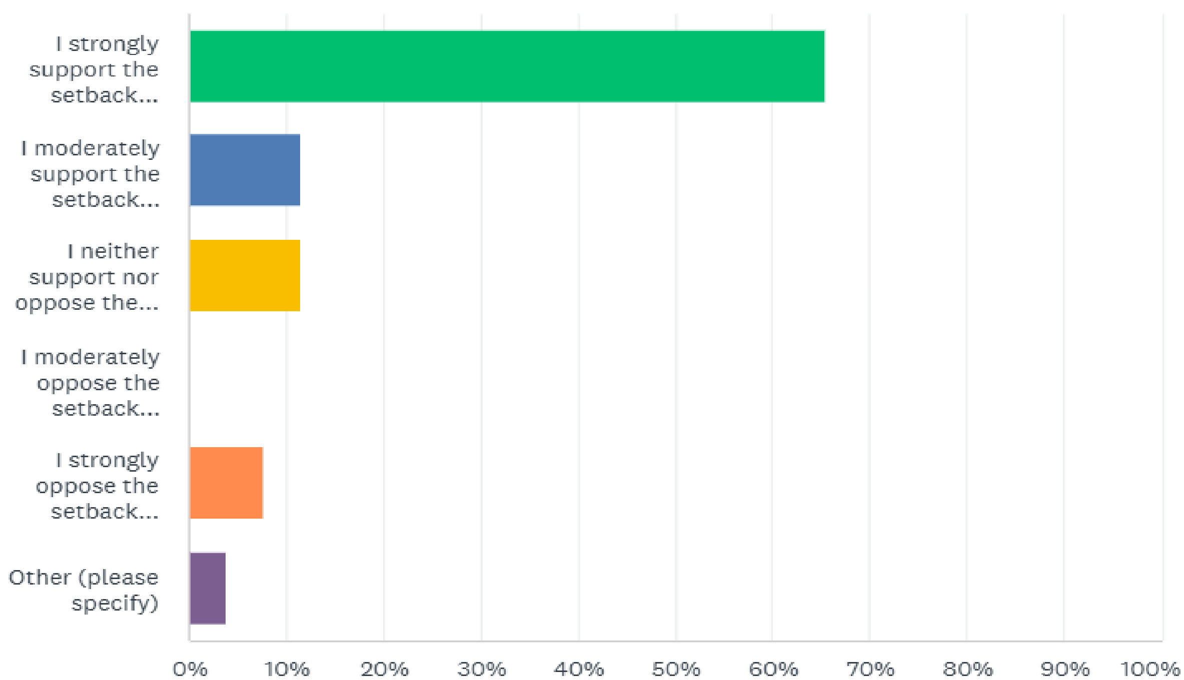

Figure 79 - Respondent support or opposition to proposed project setbacks

The concern of the respondent that had another opinion is captured in the following verbatim response:

- *I believe this needs to be revised and changes made based on the specific development.*

Q9 Proposed amenities comprise three swimming pools; a beach club with a covered bar, games area, and deck; a spa with an outdoor jacuzzi; a kids' club; and a four-storey tower featuring a home theatre, gym, restroom, terrace, lounge, and bird-watching platform. Recreational amenities such as a mini golf course, tennis court, basketball court, pickleball court, and bocce court are also planned.The amenities will be distributed across the development site. What is your opinion regarding project amenities?

In response to question 9 about the development's amenities, 81.5% of respondents expressed strong support. Additionally, 7.4% of respondents moderately supported the amenities, while another 7.4% moderately opposed them. Meanwhile, 3.7% of respondents strongly opposed the amenities, with no neutral positions recorded (Figure 81).

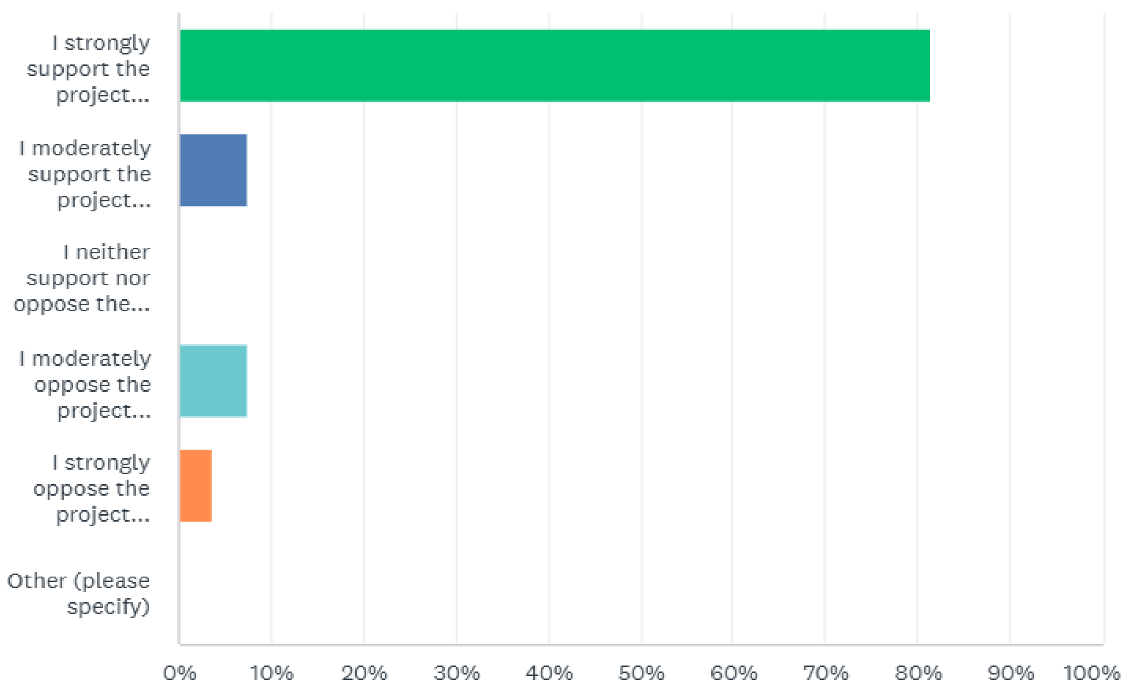

Figure 80 - Respondent support or opposition to project amenities

In response to Question 10 regarding additional comments, 10 responses were provided. The responses captured two themes which are outlined below.

Necessity of Specific Amenities

- The necessity of including a basketball court is questioned, suggesting it may not be a priority or deemed essential by some.

Public Access and Inclusivity

- There is a concern about ensuring that the amenities are accessible to the public. The suggestion emphasizes making islanders feel welcome and included in the resort's facilities, promoting a sense of community involvement and inclusivity.

The themes are also reflected in the following verbatim comments:

- *I do not think basketball is necessary.*
- *The amenities should be available to the public. Make the islanders feel as if they're welcomed to be a part of the resort*

Q11 The Proposed development will also feature a 409 square metre building as staff accommodations.What is your opinion regarding proposed staff accommodations?

In response to Question 11 regarding the development's staff accommodations, 73.1% of respondents expressed strong support, while 11.5% expressed moderate support. A small percentage of respondents moderately opposed (7.7%) and strongly opposed (7.7%) to proposed staff accommodations. There was no indication of neutrality or unspecified opinions (Figure 82).

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

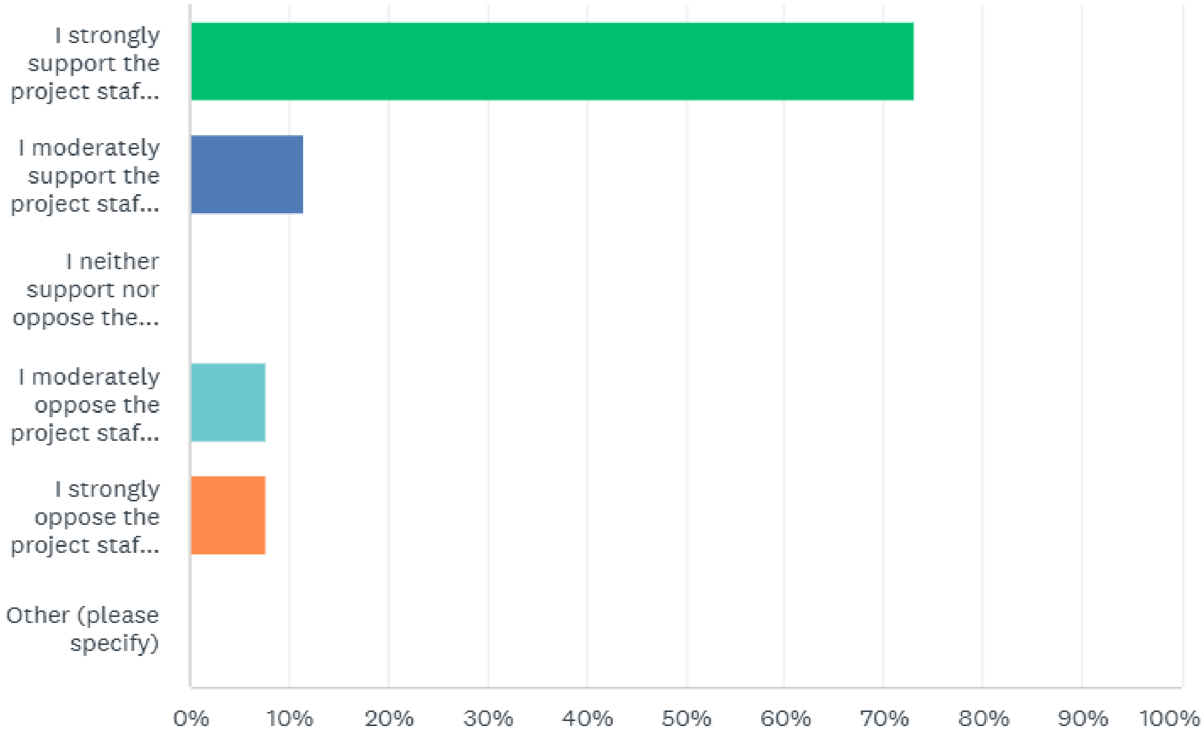

Figure 81 - Respondent opinions regarding staff accommodation

In response to the open-ended question posed in Question 12 regarding respondents' visions for North Caicos, 19 responses were received. The responses reflect several themes, which are explored below.

Low Density and Height Restrictions

- Emphasis on keeping development density low and building heights capped at 3-4 stories to maintain the island's character and avoid overdevelopment.

High Quality and Eco-Friendly Development

- A preference for high-quality projects that are environmentally friendly, sustainable, and eco-focused. There is a desire to maintain the island's peaceful and natural environment, with a focus on eco-tourism.

Local Involvement and Benefits

- The importance of providing high-quality jobs to residents and offering housing for workers. There is also a call for local partnerships in developments, ensuring locals benefit economically and socially from new projects.

Infrastructure and Sustainability

- A need for careful planning, infrastructure expansion, and sustainable development that considers environmental and ecological factors, with an emphasis on conservation, regeneration of natural spaces, and eco-friendly initiatives.

Preservation of Island Character

- A strong desire to maintain the island's peaceful atmosphere and "island feeling," avoiding large-scale, high-density projects. There is a preference for small hotels and villas rather than large, chain-style hotels.

Promotion of Agriculture and Local Economy

- Encouragement for the development of agriculture and support for local farmers as part of the island's economic development.

Tourism and Diversification

- Suggestions for creating a tourism district or cluster of developments to bring vibrancy to the island, while still maintaining a low-density, sustainable approach.

Community and Corporate Responsibility

- Emphasis on ensuring developers are held accountable for corporate responsibility and that they invest in the local communities.

Natural Habitat Preservation

- Interest in creating more trails and preserving natural habitats to enhance the experience of both residents and tourists.

The above themes are reflected in the following verbatim comments:

- *Exactly like this project. Keep the density and heights very low and the quality very high. Less need for imported labour but high-quality jobs for those who already call North Caicos home.*
- *I would like to see the island remain peaceful as that is its major draw. I support development, but done properly, the island's peace can still be maintained.*
- *Large scale agriculture development.*

- *More care and vision should be applied to the development of North and Middle than has been apparent in Provo. Infrastructure expansion, attention paid to environmental and ecological sustainability and regeneration of natural spaces through proper conservation area designations.*
- *Low Density and eco friend developments.*
- *This answer would be too long to fully explain in this Survey. However, high quality, sustainable, easily accessible (airport) low density maintaining the 'island feeling that integrates the great personalities of the island residents.*
- *Small developing.*
- *More great developments as this one.*
- *Preferably hotel building heights capped at 3-4 stories max.*
- *Development that is in harmony with the environment. I would also love to see more emphasis on eco-tourism.*
- *My wish for north Caicos is to see it develop into an exclusive, high end while being an eco-friendly destination which focused on a sustainable approach and helps increase the farming industry while support local farmers.*
- *Housing should be provided by the local in North.*
- *I like the way it is.*
- *Small hotels and villas would be ideal. No Ritz Carlton style hotels. Training should be offered to local staff so that developments will benefit our local people. Housing should be offered to workers also if possible.*
- *There needs to be a local partner. No developer should be able to undertake a development without locals. In addition, we need to hold these corporate entities accountable for corporate responsibility to ensure they are investing in the communities around them.*
- *I would like more trails to see the natural habitats.*
- *I'm an architect myself and I would love if the island would be developed in a sustainable approach by preserving the environment and ensuring that proper planning is implemented.*
- *Would love to see a tourism district or cluster of developments. Which would help to bring some vibrancy to the island. While it is ideal for low density development, diversification of the product in North is important.*

In response to Question 13 regarding additional comments, 1 additional comment was provided. The response was pertaining to the development's aesthetic appeal and harmony with the environment. The respondent showed strong support for the development. This support is reflected in the verbatim comment outlined below.

- *It's a beautiful design and vision and will fit in beautifully with the existing landscape. I support it wholeheartedly.*

6.12.2 Key Informant Interviews

On July 27, 2024, a total of nine in-person interviews were conducted in North Caicos. The interview questions mirrored the 13 questions presented in the online survey. Each interview lasted between 20 and 30 minutes. The interviewee selection followed a stratified purposeful approach and the primary criteria for selecting interviewees were: 1) their willingness to participate, and 2) their connection to North Caicos, such as being a long-standing resident, a Turks and Caicos Islander, or a business owner.

6.12.2.1 Demography

The majority of the interviewees (77%) were residents of North Caicos, with the remaining 23% residing in Providenciales. Furthermore, 89% of the participants identified as Turks and Caicos Islanders, whereas 11% identified as work permit holders. All interviewees were active community members and represented various professions, including carpenter, farmer, civil servant, maintenance manager, HVAC technician, ports officer, and restaurant manager. This diversity provides a comprehensive view of the community's composition and perspectives.

6.12.2.2 Concerns and opinions

The vast majority (67%) of interviewees strongly supported the development, while (33%) moderately supported it. There were no indications of neutrality or opposition to the development. The recurring themes and concerns reflected in the interviews were noted and are outlined in this section of the public consultation.

6.12.2.2.1 Community Engagement and Communication

- Need for clear communication from developers about how the project will support the local community, including access to amenities for locals and involvement in the development.

6.12.2.2.2 Concerns About Development Scale and Impact

- Worries about the scale of the development, the use of land, and the potential for unfinished or poorly managed projects. Specific concerns include the number of amenities, potential competition with local businesses, and ensuring that the project does not result in negative environmental or social impacts.

6.12.2.2.3 Concerns About Uniforms and Fashion

- Specific concern about the attire required for employees, indicating a desire for fashionable and culturally appropriate uniforms.

6.12.2.2.4 Cultural Sensitivity and Inclusivity

- Consideration of the developers' cultural background and their integration into the community. Interest in ensuring that local cultural practices and products, such as craft markets, are included and supported.

6.12.2.2.5 Economic Impact and Local Business

- Concerns about the potential impact of the development on local businesses and the community. Interest in ensuring that the development benefits the local economy, such as through Airbnb and other local ventures, rather than creating competition.

6.12.2.2.6 Environmental Concerns and Sustainability

- Emphasis on low-impact development, preserving nature, incorporating greenery, and utilizing clean energy sources such as solar and wind energy. Preference for saltwater pools due to water availability concerns.

6.12.2.2.7 Housing and Staff Accommodation

- Mixed opinions on the need for staff accommodations, with some seeing it as unnecessary given existing local housing options, while others emphasize the importance of providing housing for migrant workers to improve quality of life and employee retention. The project proponents are flexible on this issue.

6.12.2.2.8 Infrastructure and Accessibility

- Suggestions for practical infrastructure improvements, such as proper walking paths to the beach and addressing landscaping needs.

6.12.2.2.9 Local Involvement and Employment

- Desire for local employment and training opportunities, reducing the need for imported labour. Concerns about staff accommodations potentially indicating a reliance on workers from outside North Caicos.

6.12.2.2.10 Preservation of Island Character

- Desire to maintain the unique character of North Caicos, avoiding overdevelopment and preserving the island's peaceful and natural aesthetic. Preference for moderate development, with a focus on agricultural investment and small-scale tourism like bed and breakfasts.

6.12.2.2.11 Support for Development

- General support for the development, with strong or moderate levels of approval among interviewees.

6.12.2.2.12 Vision for North Caicos

- A vision for balanced development that includes economic growth, job creation, and investment in agriculture, while preserving the island's natural beauty and ensuring a safe, non-violent environment.

These themes highlight a complex interplay of support for development, concern for environmental sustainability, the desire for local benefits, and the need for careful planning and community engagement. The themes are also reflected in the following verbatim comments:

- *We need the business and its low impact on nature. Nature is very important.*
- *I would prefer to see more locals behind it and employed. They need to have training for locals before they open the hotel to gain experience and reduce imported labour. Training should be with pay.*
- *It's a good idea to have lots of greenery. I like the concept with the greenery.*
- *I agree with the setback.*

- *My vision for North Caicos is a property with their own farm that does farm to table. I would also like to see more farming and activities around nature.*
- *I don't want North Caicos to look like Provo, out of hand, another hotel would not be for local people. Airbnb is the way to go.*
- *Concerns regarding the number of staff that will be employed.*
- *Concerns regarding where the developer is from and their belief system, i.e. Christian, Muslim, etc.*
- *We are blessed with sun and water. Every business owner should have generators and solar panels. Invest in wind energy. More Airbnb and empower the locals so it's not like Provo.*
- *There needs to be clear and effective communication with the community on how this development is going to support the local community. Will this compete with locals for business?*
- *I have concern regarding the number of amenities on offer. Will they compete with the local businesses, and do you have plans to include the local population so that they have access to these amenities?*
- *Will locals be able to provide services, like a craft market with straw hats, baskets?*
- *I do not support the staff accommodation. It suggests that there is an import of staff. Will persons from Provo be able to stay in the accommodation?*
- *Each island has a unique experience. We need more bed and breakfasts so that guests can have the island experience.*
- *I don't think that they are properly utilizing the land as they ought to. They could add more rooms. You could put a whole community on this land.*
- *I do not support the staff accommodation. Local people have houses to rent. It should benefit locals.*
- *North Caicos is financially depressed, what are they (developers) going to give back to the community?*
- *My vision for North Caicos is for it to be moderately developed, and for us to invest in agriculture. We want all the people from Provo to move back home.*
- *I want North Caicos to be developed. Jobs need to be created. There are only two places for locals to work.*
- *Hire locals. You don't need foreigners for 15 rooms.*

- *There is adequate housing on North already.*
- *My vision for North Caicos is a safe non-violence environment with more development.*
- *Nature and the natural aesthetic should come first.*
- *Everyone on North has their own house, so the staff accommodation would only benefit people coming from Provo.*
- *My vision for North is to see development like Provo but no crime. Job creation. Currently, people only come to North for a festival.*
- *Will employees have to wear a uniform, and will it be fashionable?*
- *I like that it is low impact, and everything will be contained on the property. I like that there are solar panels and that it is spacious. Guests will appreciate that.*
- *Will the space under the villa be used?*
- *The development should have proper walking paths to the beach. We currently have an issue with landscaping, only one person on the island does landscaping.*
- *Affordable day passes should be made available to locals so that they can enjoy the amenities.*
- *Pools should be saltwater poor due to lack of water availability.*
- *If you have migrant workers, housing should be available. This will improve quality of life and help employee retention.*
- *My vision for North is to see clean energy and more development but not as much as Provo.*
- *We don't want another half-finished property.*

6.13 Environmental Management Plan (EMP)

Many of the sections required for the EMP have been previously detailed in the sections of this EIA and are not included here for brevity's sake and to reduce redundancy. In particular, the reader's attention is drawn to summary tables, which provide a quick reference for the potential impacts and recommended mitigation and monitoring procedures identified in this study.

6.13.1 Summary of potential impacts

Please refer to Section 5.1 and Table 23 for a comprehensive summary of predicted potential impacts.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

6.13.2 Description of recommended mitigation measures

Please refer to Section 6 and Table 28 for a comprehensive summary of recommended mitigation measures.

6.13.3 Statement of compliance with relevant standards

The project's compliance with relevant standards is outlined in Section 3 – Legislative and Regulative Context. Please refer to that section.

6.13.4 Allocation of resources and responsibilities for plan implementation

Please refer to Sections 6.10 and 6.11 - Mitigation and Monitoring, Financial Resources, and Financial Responsibility and Table 30.

6.13.5 Schedule of actions to be taken

Table 32 provides a schedule of actions to be taken for project monitoring and mitigation.

Table 33 - Schedule of actions to be taken

Phase	Action to be taken	Time period
Pre-construction	Setting out of construction footprint	Prior to land clearance
	Removal of flora within construction footprint	Immediately prior to establishment in nursery
	Preparation of temporary facilities for rescued flora	Prior to plant removal
	Destruction of AIS	Immediately following removal
	Hoarding of in-situ vegetation outside of construction footprints	Prior to land clearance
	Survey and delineation of rare habitat and removal of unique species specimens	Prior to land clearance
	Hoarding of rare habitat	Prior to land clearance
	Finalization of construction contract to include pre-negotiated contractor responsibilities.	Prior to any works taking place
	Hoarding of site to prevent distribution of solid wastes/dust	Prior to any works taking place
	Development of solid and hazardous waste construction phase management plan	Prior to any works taking place
	Ensure capacity to implement emergency mitigation plan	Prior to any works taking place
	Ensure optimal equipment condition	Prior to any works taking place
	Finalization of project design to reflect EIA recommendations and public consultation	Prior to granting DDP and Building Permit
Construction	Scheduling of works during working hours	Daily

	Avoidance of critical populations during migration in affected areas	As needed
	Stockpiling and control of soil and fill	To be evaluated regularly to determine need for mitigation
	Maintenance of heavy equipment	As needed
	Control of solid wastes	Daily, throughout construction
	Emergency spill mitigation plan	Throughout construction
	Avoidance of construction within dune areas	Throughout construction
Post-construction	Replanting of native flora	During landscaping installation
	Site clean-up	Daily
	Development of public awareness information	Prior to operations commencing
	Development of recycling program	Prior to operations commencing
	Development of integrated pest management landscaping plan	Prior to operations commencing
	Landscaping species selection	Prior to landscaping installation and ongoing
Operations	Solid waste management	Continuing
	Public awareness	Continuing
	Best landscaping maintenance practices	Continuing
	Control of AIS	Continuing
	Restoration of accidental damages	As needed
	Provision of coral-safe sunscreen	Continuing
	Regular maintenance of sewage treatment plant	Continuing
	Beach management, including control of rack seaweed	Continuing

6.13.6 Program for surveillance, monitoring, and auditing

The terms "surveillance, monitoring and auditing" are discrete terms, which have overlapping meanings in environmental assessment, some of which may be redundant and/or may not apply in the case of the Project.

Environmental auditing is defined as:
*A management tool comprising systematic, documented, periodic and objective evaluation of how well environmental organization, management and equipment are performing with the aim of helping to safeguard the environment by facilitating management control of practices and assessing compliance with company policies, which would include regulatory requirements and standards applicable (*International Chamber of Commerce, 1989).

Environmental monitoring is defined as:

The systematic sampling of air, water, soil, and biota in order to observe and study the environment, as well as to derive knowledge from this process (Artiola et al., 2004).

Environmental surveillance is defined as:
*A system for monitoring environmental quality in order to detect areas of pollution concentration in time for remedial measures (*Glossary of Environment Statistics, Studies in Methods, Series F, No. 67, United Nations, New York, 1997.

Given the above definitions, environmental auditing is an ongoing process that should take place during construction and operational phases of the development. Much of the responsibility for auditing falls within the remit of the various departments of TCI, particularly DECR, Environmental Health, and Planning. Auditing is typically a tool used by regulatory bodies for evaluating compliance for long-term operations, which may be harmful to the environment. In the case of the project, such operations include sewage treatment operations, beach management, landscape maintenance, and other ongoing environmentally degrading practices that are subject to regulatory standards. Governmental environmental auditing in TCI is limited, particularly on North Caicos where government offices and officials are often not located. For that reason, the project proponents may want to incorporate desirable auditing measures into their operational management plans, in order to ensure environmental integrity and a pleasant environment for guests. On a cumulative scale, government should audit the environmental effects of the tourism industry as a whole and well as its compliance with government standards.

Environmental monitoring will be a key component in ensuring that development activities, particularly those associated with land clearance and operations, are observed throughout construction and operations to ensure that potential negative impacts are minimized. Mitigation and monitoring procedures are outlined in Section 6 of this report and are therefore not elaborated upon here.

Environmental surveillance is intended to oversee specific activities that may lead to degradation. In the case of the project and most other development, the building contractor is contractually obligated to maintain certain environmental standards during operations at a site. In this case, these obligations are outlined in Table 30. In best practice, and in the case of the project, the project contract is administered and surveilled by a project architect and/or project manager to ensure the contractor's compliance with all applicable requirements and to withhold payment, as needed, to mitigate against any failures to comply.

For all projects, it is the responsibility of TCIG to oversee the various project activities to ensure compliance with applicable laws and the contents of this EMP. Government responsibilities are as follows:

1. DECR – responsible for ensuring that the monitoring and mitigation measures outlined in this EMP are adhered to and to ensure that environmental laws are not violated.
2. Planning – responsible for construction permitting and oversight to ensure compliance with conditions of building permissions and planning laws.
3. Department of Environmental Health – responsible for oversight of all solid, liquid, and hazardous waste management and disposal and for any legal infractions in this regard.
4. All departments are responsible for oversight and management of cumulative impacts to the environment.

6.13.7 Contingency plan

Contingency plans for all conceivable impacts and accidental environmental damages have been outlined within Section 6 - Mitigation. Because of the project's low density and ecologically sensitive approach, potential impacts and risks are determined to be low overall; therefore, a Performance Bond and Environmental Conservation Bond are not deemed to be necessary in this case.

The EMP should be viewed as a "living" document and modified as conditions on the ground change as the result of natural disasters or other unforeseen circumstances. Additional environmental assessment may be required to establish new baselines. The project manager and project architect should be advised of all recommendations within this EMP, in addition to any other conditions, which may be imposed, for compliance and reporting purposes.

7.0 Recommendations and Conclusions

The Ani T & C Boutique Rental Residence project (NC1246), includes a small, luxury, 15-bedroom hotel on 9.88 acres just west of the Three Mary Cays Sanctuary along North Caicos's northern shoreline. The project will be built in a single phase with an estimated budget of $30 million. Because of the project's low-density and ecologically sensitive design approach, the vast majority of environmental, socioeconomic, and cultural impacts are expected to be low. Nevertheless, positive and negative environmental, socioeconomic, and cultural impacts will result during all phases of development, and these can be mitigated to a no net loss level via avoidance, reduction, reparation, offsetting and/or compensation.

The terrestrial environment at the Project site is representative of the broader area along the north coast of North Caicos and includes rare, threatened, and endangered habitats and RTE and endemic organisms, with high ecosystem service and biodiversity values, although coastal dune areas have severely impacted by the alien invasive species *Casuarina equisetifolia* and *Scaevola taccada.* Nevertheless, through a sensitive approach to development and mitigation, the site's ecosystem and ecological values can be preserved and enhanced via the monitoring and mitigation recommendations outlined in Section 6.

Potential impacts to the terrestrial environment can be avoided, reduced, and offset by hand clearing areas within building footprints, rescuing floral species of interest from development footprints, rewilding areas that have been impacted by land clearance, using integrative pest management and a preponderance of locally grown native floral species for landscaping purposes, and other best practices for landscaping design and maintenance. By preserving as much terrestrial habitat integrity as possible, impacts to regulation of waste and flow ecosystem services can also be avoided and reduced. The developer's commitment to these initiatives, in addition to the use of Solar PV electricity will also help to offset impacts to regulation of the physical environment ecosystem services. Public awareness initiatives, public/private/NGO partnerships, and support for scientific research will compensate for impacts that cannot be avoided, reduced, or offset while simultaneously serving to enhance sociocultural relationships. Most recommended mitigation initiatives will result in cost savings or minimal costs associated with regular operational phase maintenance and can be implemented without adding to the overall cost of development and operations.

The marine environment adjacent to the Ani T&C Boutique Hotel property can be characterized as an extensive climax community seagrass meadow that has built up over many years, with roots systems

0.3m+ in depth. The area is relatively shallow (0.3m-1.5m depth MLW) extending out to 100m offshore where depths eventually increase and benthos changes to a bare sand substrate. Unfortunately, because of shallow depth and the presence of sensitive critical habitats, this area is not conducive for in-water recreational activities, as the seagrass community is easily damaged via trampling, prop scarring, anchoring and other means. Although seagrasses and algae are not harmful to humans, the community also includes other species, such as fire sponge and hydroids that can sting.

Historical satellite imagery indicates that a path through the wider seagrass community, east of the project site boundary, was cut sometime between 2012 and 2013. This excavated area has widened over the past decade and provides a more-suitable site for wading, swimming, and other water sports activities. Since seagrass removal or damage is illegal under TCI law, it is advised that hotel patrons be directed to this area for their recreational activities. By doing so, direct marine impacts of habitat loss and degradation can be avoided and reduced during the operational phase. In association with DECR and local NGOs, the project proponents may also want to develop a mitigation plan which includes a designated swimming area, with relocation and propagation of affected seagrasses. Such a project will require separate Planning permissions.

Navigation and public safety plans should also be implemented. Creating a centralized area at the existing public beach access to the east will also aid in ensuring that impacts are limited to a discrete area.

Solid wastes can also pose direct marine impacts during all phases of development, and solid waste management plans for construction and operations should be mandated as part of the construction and management contracts, respectively.

Although the hotel's capacity is limited to a maximum occupancy of 30 people at a given time, cumulative impacts resulting from increased resource use will still arise. Methods to mitigate cumulative impacts include providing environmental education and awareness materials to guests and staff and promoting support for TCI non-governmental organizations that conserve the country's marine resources. Furthermore, the increased use of resources can be compensated via the creation of artificial reef habitats and the support of the TCI coral nursery project being conducted by the Turks and Caicos Reef Fund.

Potential indirect impacts during the construction phase can be avoided or reduced through conscientious construction practices, such as use of hoarding, dampening of sediments, and avoiding high wind days to reduce sedimentation. Daily sight cleanups will also prevent solid wastes from making their way into the marine environment. In general, observing the mitigation and monitoring recommendations outlined for the terrestrial environment, impacts to the marine environment can also be avoided and mitigated. Light and noise impacts can be avoided via appropriate lighting design and light and noise restrictions. Overall, impacts to the marine environment from this development are considered minimal.

Economic impacts associated with the proposed development will be positive and negative and will result in increased revenues for government, positive economic benefits from increased spending and multiplier effects across the wider economy. Based on the project's low maximum occupancy figures, negative effects associated with increased strain on public infrastructures and any degradation to public environmental assets are expected to be low. Social and cultural impacts will also be both positive and negative. The project will set a precedent for high-end, low density tourism development in the vicinity of Sandy Point and Pumpkin Bluff on North Caicos. Public consultation suggests that the project has broad support in the local community, with most survey respondents supporting the project, citing the project's low density and ecologically sensitive design as desirable precedents for North Caicos.

Issues raised during public consultation included a desire to see Belongers trained and employed, desire to for economic benefits that accrue to the entire community, not just the developers, desire for the project to integrate well into the community, including allowing residents access to amenities, concerns about worker housing (residents prefer that workers rent from local landlords), and a desire to see upgraded infrastructures on North Caicos to support increased tourism on that island.

In terms of compliance with Planning regulations, the proposed development is within all building requirements, in addition to conditions of the ODP. As proposed, the project will also be in compliance with public health, environmental, and all other legislative requirements. To ensure the recommendations made in this EIA are complied with, DECR and Planning should consider including them as conditions for building permissions.

While it is the responsibility of government authorities to decide whether the benefits of any proposed project outweigh the risks, thereby providing the justification that should be mandated for any development permission, the EIA team concludes that the benefits of this project do appear to far outweigh the costs in terms of setting a desirable low-density, high-end, and environmentally sensitive precedent that will hopefully set the bar for future developments on North and Middle Caicos. Furthermore, and importantly, the project appears to be in keeping with the vision that North Caicos Islanders have for the future of their home. The EIA team therefore takes the rare step in this case of recommending development permission for this project. Any comments or questions regarding any of the contents of this analysis should be directed to SWA Environmental at the contact information provided in the footer of this report.

Respectfully submitted:

Kathleen McNary Wood
For and on behalf of SWA Environmental

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

8.0 Statements of Understanding from the Developer

8.1 Statement of Understanding of the Terms of the Environment Charter (2001)

ÀNI
PRIVATE RESORTS

To whom it may concern,

Re: Statement of understanding the terms of the Environment Charter (2001) – NC1246

Please be advised that SWA Environmental, our environmental impact assessment team, has provided us with a copy of the TCI Environment Charter (2001). We have reviewed the document and although the Charter refers specifically to commitments for the UK government and TCI government, we are nevertheless pleased to report that our proposed development seeks to conform with best practices as outlined in that document. Ten guiding principles form the framework for the agreement, and our commitment to protect the environment and environmental heritage reflects these principles as follows:

1. Recognizing that people need a healthy environment for their well-being and livelihoods, we are committed to making all practical efforts to enact monitoring and mitigation measures outlined in the EIA for NC1246 to mitigate potential impacts from our project with an aim for a no net loss level.
2. We are committed to using our natural resources wisely, providing jobs and training as a long-term commitment to present and future generations.
3. Throughout all phases of our development, we are committed to facilitating appropriate measures to maximize opportunities, while at the same time reducing costs and risks accordingly.
4. The production of this EIA represents our commitment to seek expert advice, and the public consultation process we have adopted represents our ongoing commitment to consult openly with all stakeholders regarding our development and management decisions.
5. By making best efforts to comply with monitoring and mitigation recommendations contained within the EIA, we are committed to find solutions that benefit our development as well as the environment.
6. We are also committed to the protection and improvement of the global environment via the incorporation of green technologies and mitigation measures to reduce our greenhouse gas footprint.
7. We are committed to the rescue and reuse of native floral species for landscaping purposes, preservation of rare, threatened, and endangered species and habitats, and ongoing removal of AIS during regular maintenance activities.
8. We will encourage activities and technologies that benefit the environment via our production of public awareness information provided to our owners and guests and our low-density design, use of wildlife-friendly lighting design, among other initiatives.
9. We will control pollution through our dedication to maintaining our sewage treatment system, including regular water quality testing, and a comprehensive solid waste management program.
10. We will celebrate TCI's natural heritage through the production of public awareness information regarding the unique ecological attributes of the project site and the surrounding critical marine habitats.

We are pleased to offer the above commitments as part of our ongoing obligation as responsible business partners in the TCI community. If you have any questions or comments regarding any of the above information, please do not hesitate to contact us.

Yours sincerely,

Ira Bloom

ÀNI T&C Ltd

ÀNI T&C Ltd.

82 Cherokee Road, P.O. Box 908

Providenciales, Turks and Caicos Islands

8.2 Statement of Understanding of the Terms of the Environment Charter (2022)

ÀNI
PRIVATE RESORTS

To whom it may concern,

Re: Statement of understanding the terms of the Environment Charter (2001) – NC1246

Please be advised that SWA Environmental, our environmental impact assessment team, has provided us with a copy of the TCI Environment Charter (2001). We have reviewed the document and although the Charter refers specifically to commitments for the UK government and TCI government, we are nevertheless pleased to report that our proposed development seeks to conform with best practices as outlined in that document. Ten guiding principles form the framework for the agreement, and our commitment to protect the environment and environmental heritage reflects these principles as follows:

1. Recognizing that people need a healthy environment for their well-being and livelihoods, we are committed to making all practical efforts to enact monitoring and mitigation measures outlined in the EIA for NC1246 to mitigate potential impacts from our project with an aim for a no net loss level.
2. We are committed to using our natural resources wisely, providing jobs and training as a long-term commitment to present and future generations.
3. Throughout all phases of our development, we are committed to facilitating appropriate measures to maximize opportunities, while at the same time reducing costs and risks accordingly.
4. The production of this EIA represents our commitment to seek expert advice, and the public consultation process we have adopted represents our ongoing commitment to consult openly with all stakeholders regarding our development and management decisions.
5. By making best efforts to comply with monitoring and mitigation recommendations contained within the EIA, we are committed to find solutions that benefit our development as well as the environment.
6. We are also committed to the protection and improvement of the global environment via the incorporation of green technologies and mitigation measures to reduce our greenhouse gas footprint.
7. We are committed to the rescue and reuse of native floral species for landscaping purposes, preservation of rare, threatened, and endangered species and habitats, and ongoing removal of AIS during regular maintenance activities.
8. We will encourage activities and technologies that benefit the environment via our production of public awareness information provided to our owners and guests and our low-density design, use of wildlife-friendly lighting design, among other initiatives.
9. We will control pollution through our dedication to maintaining our sewage treatment system, including regular water quality testing, and a comprehensive solid waste management program.
10. We will celebrate TCI's natural heritage through the production of public awareness information regarding the unique ecological attributes of the project site and the surrounding critical marine habitats.

We are pleased to offer the above commitments as part of our ongoing obligation as responsible business partners in the TCI community. If you have any questions or comments regarding any of the above information, please do not hesitate to contact us.

Yours sincerely,

Ira Bloom

ÀNI T&C Ltd

ÀNI T&C Ltd.

82 Cherokee Road, P.O. Box 908

Providenciales, Turks and Caicos Islands

8.3 Proponent's Declaration of Intent

ÀNI
PRIVATE RESORTS

To whom it may concern,

Re: Declaration of intent to follow EIA recommendations – NC1246

Please be advised that we have reviewed the draft EIA prepared by SWA Environmental for our project (NC1246), and we hereby declare our intent to follow the recommendations therein. We note the EIA team has predicted some environmental impacts that will require our commitment to mitigation and monitoring to ensure that any negative effects arising through construction and operations are mitigated with an aim towards a no net loss level. We therefore commit to the following actions:

1. We will preserve as best as practically possible all ecological features of interest at the project site, including primary dunes, floral species of interest, and rare, threatened, and endangered habitats located outside of building footprints.
2. We will use as best as practically possible native floral species as identified in the EIA for landscaping purposes and rescue specimens on site that are identified as rare, threatened, endangered, or endemic for reuse.
3. We will develop management plans for best practices for beach management, solid wastes, sewage treatment processes, control of AIS, and integrated pest management during the operational phases.
4. We will ensure that our contractor is aware of their responsibilities in terms of the mitigation and monitoring measures that fall within their scope of work during the construction period, and our project manager will ensure their compliance.
5. We have incorporated a number of green technologies into the project design and are committed to adopting more as they become economically viable.
6. Through our EIA team, we have consulted with all affected stakeholders and will provide them with access to the EIA for their additional comments and feedback.
7. We will look to mentor and train qualified and available Belonger staff with an aim of continuing to employ Belongers in high-level managerial positions.
8. We will continue to be good corporate citizens and engage in public/private/NGO partnerships that serve to conserve and enhance TCI's beautiful by nature environment.

Please feel free to contact us if you require any clarification on any of the above points.

Yours sincerely,

Ira Bloom

ÀNI T&C Ltd

ÀNI T&C Ltd.

82 Cherokee Road, P.O. Box 908

Providenciales, Turks and Caicos Islands

8.4 Statement of Understanding Regarding Seagrass Meadows

ÀNI
PRIVATE RESORTS

To whom it may concern,

Re: Declaration of understanding regarding seagrass meadows – NC1246

Please be advised that we have been advised by SWA Environmental, our EIA team, that the nearshore waters adjacent to our project site, located at Block/Parcel# 50102/103 contain critical seagrass meadow habitats. We further understand that the seagrass meadows adjacent to our project site are particularly vulnerable to impacts due to their shallow water nature. The EIA team has explained to us that these habitats are important reservoirs of biodiversity, in addition to providing habitat during critical life phases for a variety of marine organisms, including Endangered green sea turtles. They have further explained that it is a violation under TCI law to (Fisheries Protection Ordinance Regulation 10) disturb or in any way harm these habitats.

While our project does not include any design elements in nearshore seagrass meadows, we are exploring options for creating an area in front of the property where guests can practically swim without disturbing the wider meadow of seagrass. Such options may include the relocation of section of sea grass and/or propagation of additional seagrass and reef in the area. We will further be taking the following actions:

- We will be directing guests towards areas that have sand rather than seagrass benthos for swimming and other recreational activities.
- We will have a beach monitor stationed at the beach during daylight hours to advise guests on marine etiquette and to guide them toward preferred recreational areas.
- We will be providing guests with information regarding our project ethos and will be promoting reef and marine organism-safe sunscreen use.
- If any accidental damages to seagrass meadows do occur, we are committed to any mitigation measures required to restore them to a no net loss condition.

Please feel free to contact us if you require any clarification on any of the above points.

Yours sincerely

Ira Bloom

ÀNI T&C Ltd

ÀNI T&C Ltd.

82 Cherokee Road, P.O. Box 908

Providenciales, Turks and Caicos Islands

Appendix A – EIA Consultant Short CVs

Kathleen McNary Wood – Short Curriculum Vitae
kw @swa.tc

Recent Work History

January 1995 – August 2012 and August 2014 - Present: Principal SWA Environmental Providenciales, Turks and Caicos Islands
SWA Environmental provides specialist environmental consultation services, including environmental impact assessment, environmental research and design, policy consultancy, and other services.

August 2014 – Present: Research Director Turks and Caicos Reef Fund, Turks and Caicos Islands
TCRF is a non-profit organization with a stated mission of protection the environment of the Turks and Caicos Islands. The Research Director is responsible for identifying research priorities, securing funding, and designing and implementing scientific research to support the organization's conservation goals. This is a volunteer position.

January 2021 – Present: Teaching Assistant (Transdisciplinarity: Complex Thought and Pattern that Connects; Self, Society and Transformation; and Comprehensive Examination Literature Review), California Institute of Integral Studies, Transformative Studies Department
The Transformative Studies Department at the California Institute of Integral Studies employs a transdisciplinary curriculum that fosters creative, innovative, self-reflexive scholarship to prepare thought leaders from diverse disciplines for personal and societal transformation.

August 2012-August 2014: Director Department of Environment and Maritime Affairs, Turks and Caicos Islands Government
The Department of Environment and Maritime Affairs (now the Department of Environment and Coastal Resources) is the government agency responsible for the management and sustainable use of 35 protected areas, fisheries and all other natural resources in the Turks and Caicos Islands (TCI), in addition to ensuring safety at sea through internationally compliant maritime affairs. The Director is the senior manager, charged with overseeing all operations of the department.

Qualifications

Doctoral Candidate – Transformative Studies	California Institute of Integral Studies San Francisco, California
Master of Liberal Arts - Sustainability and Environmental Management in Extension Studies	Harvard University Cambridge, Massachusetts
Environmental Studies Bachelor of Science, magna cum laude	Florida International University Miami, Florida

Awards and Affiliations

- Harvard University Extension School Dean's List of Academic Achievement Award
- Harvard University's Sustainability and Environmental Management Program Class Marshall Award (2016)
- U.K. Overseas Territories Conservation Forum Council Member and Treasurer
- Award for Outstanding Achievement in Environmental Science, 1997. (Florida International University)
- Member of the United Nations IUCN Species Survival Commission
- Dialogue Matters Certified Workshop Facilitator

- Certified Master Gardener
- PADI Open Water and Nitrox Certifications
- Phi Kappa Phi Honour Society

Sample Research and Publications:

- Wood, K., Pardee, M., and Whyte, O. (2022). Pine Cay Utilities Solar Electric Project - Environmental Impact Assessment. Unpublished Report to the Government of the Turks and Caicos Islands.
- Wood, K. (2021). Toward a Truly Restorative Ecology: Cooperative research with the more-than-human world. Presentation given at Staying Connected for Conservation in a Changing World: UKOTCF's 6th conference on conservation and sustainability in UK Overseas Territories, Crown Dependencies, and other small island states.
- Wood, K., Kolijn D., & Pardee, M. (2020). Orion Marina and Mixed-use Development, Grand Turk, Turks and Caicos Islands: Environmental Impact Assessment. Unpublished report to the government of the Turks and Caicos Islands.
- Wood, K. (2019). Important Bird Areas: Turks and Caicos Islands. *British Birds,* (112).
- Wood, K. and Sealey, K. (2019). *Turks and Caicos Islands* in *World Seas: An Environmental Evaluation:* El Sevier and Academic Press.
- Wood, K., Soanes, L., & Zaluski, S. (2018). Improving small island resilience and self-sufficiency in habitat monitoring and resilience. Darwin Plus: Overseas Territories Environment and Climate Fund Round 6.
- Wood, K. M., Stark, D., & Pardee, M. G. (2017). Understanding East Caicos KBA's Corals and Coast: A Key to Safeguarding TCI's Future. European Union BEST 2.0 Swift Grant.
- Wood, K. (2016). A Multi-Criteria Evaluation Model for Rapid Assessment and GIS Mapping of Ecological Values for Informed Land Use in Small-Island Developing States. Harvard University.
- Wood, K. and Salamanca, E. (2014) Socioeconomic Monitoring of Three Protected Areas within the Turks and Caicos Islands: CERMES, NOAA, CAMPAM.
- Wood, K. and Brunnick, B. (2010). Turks and Caicos Islands Terrestrial Vegetation Classification and Habitat Mapping Project: Joint Nature Conservation Committee, UK government.
- Wood, K., Carelton, C., & Pardee, M. (2006). Review and Re-Assessment of the TCI Protected Area System: Turks and Caicos Islands Government.
- Wood, K., Pardee, M. and Slade, L. (2005). Development of National Standards and Guidelines for the Conservation and Management of the Natural Resources of the Turks :and Caicos Islands. Turks and Caicos Islands Government and Dfid UK.
- Wood, K. (2003). *The Flowers of the Bahamas and Turks and Caicos Islands:* Macmillan Caribbean.

Marsha Pardee

7/27/62
P.O. Box 275Phone/FAX: (649) 941-8001
ProvidencialesCell: (649) 231-7031
Turks and Caicos IslandsEmail : pardee@express.tc
British West Indies

Education

M. Sc., 1992. Ecology, Florida Institute of Technology. Melbourne, Florida.
B.Sc., 1983. Environmental/Aquaculture Technology, Florida Institute of Technology, Jensen Beach, Florida.

Professional Experience

Environmental / Aquaculture Consultant. 1994-Present. Employed as a marine consultant (through Marine Environmental Services) specializing in biological research, aquaculture/environmental management, education and training programs, reef restoration projects, and the development of nature trail programs.

- Based in the Turks and Caicos Islands (TCI) but have also worked throughout the Bahamas, Antigua, Dominica, Dominican Republic, Jamaica, St. Kitts, Puerto Rico, Montserrat, Australia, New Zealand, Thailand and have visited almost all of the major islands in the Caribbean.
- Produced over 85 Environmental Assessments and/or Monitoring projects
- Written a total of 15 scientific and technical publications,
- Published 25 articles on environmental related issues, and written one environmentally orientated children's book.
- Developed 40 Nature Trail or Conservation related projects and programs, including environmental education programs and curriculums; coral reef monitoring projects, artificial reef and reef restoration projects.
- Is a U.S. citizen, but with permanent residency and naturalized citizen of the Turks and Caicos Islands..
- Reefball Foundation, Board of Directors, 2004 –Ongoing

Research Associate. 1988-1994. Harbor Branch Oceanographic Institution, Inc. Tropical Aquaculture Department, Fort Pierce, Florida.

- Research and maintenance of the spiny lobster (*Panulirus argus*) from pueruli to market stage, reproduction, spawning, larviculture and fisheries related research.
- Diet/growth studies of the Queen Conch (*Strombus gigas*).
- Research development and training programs of field nursery and growout techniques for the hard clam (*Mercenaria mercenaria*).
- Contract research, teaching and consulting for various Government and private agencies.

Environmental / Aquaculture Consultant. 1986-1987. Western Australia.

- Kailis and France, PTY. Ltd. Environmental Impact Assessments of Prawn Farming;
- Australian Aquaculture Ltd., Margaret River. Assisted in preliminary research of marron (Cherax sp.);
- Austasia Aquaculture Magazine, Perth. Aquaculture correspondent for sites visited through Australia, New Zealand, Asia and Pacific areas.

Project Manager.1984-1985. Jamaica Aqua-Farms Ltd. Savanna-la-mar, Jamaica.

- Supervised hatchery and growout of *Macrobrachium rosenbergii* and *Tilapia nilotica*, and research with *Artemia salina* for hatchery nutrition.
- Managed and trained staff, monitored production, evaluated economics, and promoted sales.

OSHIN WHYTE

PROFILE

Oshin is an Environmental Scientist, who is results-driven and has ample project management experience. She also has excellent communication skills. Moreover, she works well independently and collectively, with efficient workload prioritization. If given the opportunity, she will no doubt be an asset to your organisation.

SKILLS

- Excellent attention to detail and accuracy
- Highly developed verbal and written communication skills
- Strong Leadership
- Project Management
- MS Office (Word, Excel, Power point)
- Strong organisation and prioritisation
- Public Speaking
- Scientific report writing
- First Aid, CPR and AED trained

CONTACT

oshinwhyte@yahoo.com
1 649-345 4552
+44 07392 978440

MEMBERSHIP OF PROFESSIONAL BODIES

Institute of Environmental Sciences (IES)

2018- Current

Charted Institute of Ecology and Environmental Management (CIEEM)

2018-Current

EDUCATION

University of Kent
2020 - 2021

MSc (Hons) Human Geography

Research project: Investigating the coastal cultural values of the Turks and Caicos Islands

Oxford Brookes University

2016 – 2019

BSc (Hons) Environmental Sciences

Dissertation: Investigating the economic feasibility of hydroponic systems in the Turks and Caicos Islands

WORK EXPERIENCE

Turks and Caicos Governor's Office [Environment Policy Lead]

Sept 2021- current

-Work closely with the Governor of the Turks and Caicos Islands to achieve the targets of the country's environmental plan.

-Source and secure funding for environmental work in TCI.

-Within the first 6 months of post, collaborated with the Foreign, Commonwealth, Development Office and the Department of Environment and Coastal Resource to secure $1 million dollars for environmental work in the TCI under the Blue Belt Programme.

-Organize environmental outreach on behalf of the Governor.

University of Kent/South Atlantic Environmental Research Institute [Researcher]

Sept 2020–2021

-Wrote a detailed thesis on cultural values and small island developing states.

-Organized and conducted interviews across the islands of the Turks and Caicos to ascertain the cultural significance of the coast.

-Identified relevant questions and determined best methods of data collection.

-Performed statistical, qualitative, and quantitative analysis.

[European Court of Auditors] [Consultant]

September 2018 – April 2019

-Worked closely with the European Court of Auditors to create a benchmark study on plastic packaging waste management in the EU and internationally.

-Periodically communicated via email and telephone with clients to ensure the aims of the project were met.

-Adapted to changes in the client's aims and overcame challenges encountered during the study such as the lack of accessible information.

-Governed team and ensured that all aspects of the study were completed promptly.

-Conducted a presentation on findings to ECA and other environmental consultants.

[SWA Environmental and Marine Ecology Services] [Project Assistant/Dive Coordinator]

Aug 2018

-Devised and executed dive plans for the BEST 2.0 East Caicos Project.

-Ensured the team's safety during and after dives and that protocols are followed.

-Ascertained the health and biodiversity of coral reefs at East Caicos, Turks and Caicos Islands through reef checks and water sample analysis.

-Worked efficiently as a part of a team to achieve the goals of the project in the allocated time.

COASTAL FUTURES
Solutions for Rising Challenges

KATHY FITZPATRICK, P.E.

KathyFitz@CoastalFuturesLLC.com

EDUCATION

Florida Atlantic University, Bachelor of Arts, Social Sciences
Florida Atlantic University, Bachelor of Science, Ocean Engineering
University of Florida, Master of Engineering, Environmental Engineering Science

PROFESSIONAL EXPERIENCE

Coastal Management/Climate Resilience Consultant. Coastal Futures, LLC, President 7/2023 – present

Coastal Engineer/Climate Resilience Professional – Tetra Tech, 10/23 – Present

Projects include the development of Climate Vulnerability Assessments and Resilience Adaptation Plans for:

- The City of Key West, FL (data analysis ongoing),
- The City of Hollywood, FL (draft reports submitted),
- Palm Beach County, FL (drafts are in preparation),
- St. Lucie County, FL (data collection ongoing)

Coastal Engineer/Resilience Manager Martin County, FL Board of County Commissioners 12/1998 to 12/2022

- Managed all facets of beach and inlet management programs to protect coastal structures and navigation, developing and adhering to long range budgets
- Established and managed Martin County's climate resilience program "Resilient Martin" https://www.martin.fl.us/Resilience
- Constructed marine and estuarine ecosystem restoration projects including artificial reefs, living shorelines, related hydrology management
- Partnered with the State of Florida and SE Florida counties in coral conservation activities
- Managed estuarine and marine water quality monitoring network for meteorological conditions, wave height/direction, water temp, salinity, nutrients, tides, currents and water levels
- Coordinated with the Federal Emergency Management Agency (FEMA) to assess storm damage and implement recovery projects
- Procured grant funding through a wide range of programs.
- Designed, permitted and constructed mooring fields improving boater security and estuarine protection

Appendix B – Outline Development Permission

FORM DOP 10

TURKS AND CAICOS ISLANDS
THE PHYSICAL PLANNING ORDINANCE 1989
(No. 10 of 1989)
THE PHYSICAL PLANNING (DEVELOPMENT PERMISSION)
REGULATIONS 1990

GRANT OF OUTLINE DEVELOPMENT PERMISSION
(Section 30)

APPLICATION NO: NC 1246 **BLOCK & PARCEL NO:** 50102 / 103

To: ANI T & C LTD

In pursuance of powers conferred under the above mentioned Ordinance, the Board hereby GRANTS in accordance with the terms and conditions authorised by the Ordinance, approval in principle to undertake the following development:

Boutique Hotel consisting of One Master Suite, Three (3) Villas on Stilts, Four (4) Standalone Suites, One (1) Two Storey Villa, Reception, Administration and Common Area Building, Staff Accommodation/ Swimming Pools and Decks/Basketball Court/Tennis Court/Bocce Court/Mini Golf Course/Beach Club, Dining Terrace/Kids Club/Spa/Gym/Tower/Back of House Facilities/Solar Panels/Bird Watching Platform/Ancillary Facilities

as described in your application for a grant of outline development permission dated 15/Nov/2023 and in the plans and drawings attached thereto, subject to compliance with the relevant statutory provisions and with the following conditions:

1. The submission to and approval by the Board of full details of the development.
2. See Notes 1 and 2
3. The proposed development for a low-density boutique hotel is submitted for Outline Development Permission.

4. The proposed development requires an Environmental Impact Assessment. Recommended Terms of Reference are attached to this correspondence. All baseline studies towards the EIA shall be completed prior to any groundworks on site; otherwise, the EIA may be subject to rejection.

5. The comprehensive Environmental Impact Assessment (EIA) shall be conducted by qualified, experienced and credible professionals.

6. The Environmental Impact Assessment (EIS) report shall be made available to the public (printed and digital copy) for review and scrutiny, and then be presented to the public (Public Consultation) by the developer and EIA consultancy team. Prior to the public meeting, all stakeholders should be properly notified ahead of time. The developer and EIA consultants must properly respond to all relevant questions (written representations or verbal comments made during the consultation period).

7. All development shall be sited within the confines of the parcel boundaries.

8. Building setback distances shall be strictly as per the approved site plan and there shall be no deviation whatsoever unless approved by the Director of Planning. The setback distances shall be measured from the furthest projection of the proposed building, including any roof overhang, stairway, balcony, window projection or verandah.

9. A Review consultant (A special inspector) approved by the Director of Planning must be employed to inspect the development and plans at the expense of the applicant. The special inspector must report to the Development Control Engineer, Department of Planning.
10. Access to the beach from the parcels shall be only from boardwalk(s) to prevent damage to the primary sand dune. Boardwalk(s) shall be sited as to have minimal adverse effects on the natural features of the dune.
11. Primary dunes shall not be leveled, breached, altered or undermined in any way, nor shall primary dune vegetation be disturbed or destroyed.
12. The vegetation/dune zone shall not be cleared and revegetated with non-native plant species. Any attempt to

Page 1 of 5

GRANT OF OUTLINE DEVELOPMENT PERMISSION
(Section 30)

enhance the current vegetation should use native species.

13. Site clearance shall be limited to the specific area(s) of construction. Every effort must be made to ensure retention of the existing native vegetation and all tall trees existing on the parcels. Clearance of native vegetation, mechanically or by hand must be restricted to the specific area(s) for the placement of approved infrastructure (roads, buildings, placement of AC Units and garbage storage facilities, etc). Other areas on the development site which are not approved for development must be enclosed with a fence to ensure preservation of native vegetation. The areas affected by construction must be properly revegetated and landscaped, preferably using native vegetation. The aforementioned must be implemented prior to the issuance of completion certificate.

14. The proposed entrance/exit and vehicular access area shall be maintained as per the approved site plan. Parking shall be designed in a practical manner that allows vehicles to manoeuver on the parcel and leave in a forward direction. All parking spaces shall have minimum dimensions of 8 feet in width by 16 feet in length and painted with white or yellow florescent paint. The aisle for maneuvering shall be a minimum width of 18 feet.

15. All parking and vehicular access areas shall be constructed of well-compacted fill and asphalt surfaced.

16. Lighting shall be provided and strategically located in parking areas.

17. DECR has concerns on the installation and maintenance of a golf course, in terms of land consumption, water usage, and fertilizer and pesticide influence on nearby marine and pond/ salina ecosystems.

18. Effects on bird life that utilize Three Mary Cays will be included in the Terms of Reference of the EIA.

19. A component of the Terms of Reference of the EIA will include community consultation to both adjacent landowners, nearby homeowners, and the North Caicos community as a whole (particularly Whitby, Whitby Haven, Sandy Point, and Pumpkin Bluff residential areas).

20. DECR recommends there be an effort to remediate dune vegetation by removing all Casuarina equisetifolia and engaging continual control on the site, and by restricting foot traffic to boardwalks over the dunes, and allowing native dune vegetation to recover. This will assist in coastal Protection.

21. DECR strongly recommends that the developer be made aware that removal or disturbance of seagrass shall not be permitted on the adjacent seafloor; a requirement of the EIA will be to include a statement of understanding of this requirement.

22. DECR strongly recommends that wholesale land clearance not be permitted in this area, and that as much intact native vegetation be retained as possible. Along with this, DECR recommends that all heavy equipment used on site be power-washed (particularly tyres, treads, blades, and any other parts with contact to the ground) to prevent introduction of weedy and invasive plants. DECR further recommends that in areas slated for clearance such as paths, roads, building footprints, and other open areas, prior to clearing there be conducted rescues on rare and endemic plants including epiphytes (orchids and air plants) and others as possible; these may be utilized in the landscaping of the completed resort.

23. As a community project, the developer is required to improve the roads to the site, while disturbing adjacent habitats and nearby Protected Areas (Pumpkin Bluff Pond Nature Reserve) as little as possible. The aforesaid plan shall be developed and implemented on the expense of the applicant and shall be completed prior the issuance of an Occupancy Certificate.

24. All public/ Crown roads shall remain accessible at all times

25. The developer shall institute a traffic plan to prevent accidents as these narrow roads are in frequent tourism use.

26. The proposed development is located in a low-lying coastal zone with moderate coastal flood risk. The proposed stilted building design is ideal for this location and especially in light of projected climate change impacts in relation to sea level rise.

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

GRANT OF OUTLINE DEVELOPMENT PERMISSION
(Section 30)

27. The applicant shall prepare an Emergency Response Plan specific to the development under review. This Emergency Response Plan should list a detailed procedure which would indicate the emergency actions to be carried for hazards the area is prone to or occurrence is likely. The Plan should identify all the required tasks that need to be performed at various stages and allocate roles and responsibilities of people (departments, individuals, staff or contractors) to perform those tasks. The organization and planning should be documented in the ERP and reviewed as necessary when changes occur throughout the operational life of the proposed development. It is imperative that the employer/owner/operator ensures that the emergency procedures are understood by all employees on site. Where English may not be their first language, the employer must ensure that the plans are understood, perhaps prepared in appropriate languages and, where possible, utilize pictograms to prevent confusion.

28. All staff must receive comprehensive training on the procedures for dealing with each emergency scenario stated in Plan. This training should be provided to newly recruited employees on commencement of employment and regular refresher courses provided for all other employees. The DDME can assist in testing the plan and outline gaps that may need to be amended.

29. Upon receiving building permit from the Physical Planning department, it is recommended that during the construction phase that proper practice and administrative controls be maintained by the developer/employers to ensure the greatest possible protection for employees in the workplace. Hazards exist in every workplace in many different forms: sharp edges, falling objects, flying sparks, chemicals, noise and a myriad of other potentially dangerous situations. Depending on the hazard or workplace conditions, it is recommended that the use of engineering or work practice controls to manage or eliminate hazards to the greatest extent possible. For example, building a barrier between the hazard and the employees is an engineering control; changing the way in which employees perform their work is a work practice control.

30. Employers must provide personal protective equipment (PPE) to their employees and ensure its use. Personal protective equipment is equipment worn to minimize exposure to a variety of hazards. Examples of PPE include such items as gloves, foot and eye protection, protective hearing devices (earplugs, muffs) hard hats, respirators, harnesses and full bodysuits. In general employers should regularly perform "hazard assessment" of the workplace to identify and control physical and health hazards and provide caution/warning signage where potential hazards exist. Identify and provide appropriate PPE for employees. Train employees in the use and care of the PPE. Maintain PPE, including replacing worn or damaged PPE. Periodically review, update and evaluate the effectiveness of the PPE program. In general, employees should: Properly wear PPE, attend training sessions on PPE, Care for, clean and maintain PPE.

31. Fire hydrant(s) shall be provided for the proposed development to the satisfaction of the Director of Planning and the Chief Fire Officer.

32. The concept of "green technology" in the design and operation is highly recommended.

33. The applicant shall be financially responsible for any damage on the natural or built environment, included, but not limited to sand dunes, natural sea grasses, etc., and on uses of adjacent land.

34. A license must be sought and obtained from the Crown Land Unit in respect of any proposed beach shade structures, boardwalks, decks and other similar structures, which may extend outside the confines of the applicant's parcel boundaries and onto lands, which are under the ownership of the Crown.

35. During construction, hoarding shall be erected on all parcel boundaries for safety and reduce dust nuisance.

36. During construction, measures shall be implemented to reduce dust nuisance and air pollution.

37. Provisions shall be made for on-site garbage storage in accordance with the provisions of the latest edition of the TCI Building Code. The facility must be constructed to the satisfaction of the Director of Planning; preferably a fully enclosed structure provided with a gate and of suitable height to prevent scavenging by animals.

38. The provisions for the disposal of storm water so that the effect of run-off from the parcel will not materially affect adjoining parcels shall be strictly adhered to. All asphalt surfaces shall allow for storm water to be drained safely into

GRANT OF OUTLINE DEVELOPMENT PERMISSION
(Section 30)

wells where the percolation characteristics of the ground make this possible. Consultations shall be made with the Director, EMS, TCI Government, prior to the commencement of construction of drainage facilities.

39. Adequate back up for at least three (3) days shall be provided against the possible breakdown of the primary supply. The water cistern must be of reinforced concrete construction and must be sized consistent with the provisions of Section 702.2 (b), of the latest edition of the TCI Building Code. Any opening into the water cistern must be built not less than twenty-two (22) inches above finish grade.

40. The back-up water supply shall be connected to the proposed development prior to issuance of a certificate of occupancy.

41. The areas affected by construction must be properly revegetated and landscaped, preferably using native vegetation. The aforementioned must be implemented prior to the issuance of completion certificate.

42. The proposed waste treatment system must be provided with all ancillary and necessary tertiary treatment facilities and must be adequately sized to sufficiently dispose of the wastewater.

43. The wastewater plant must have the surrounding ground surface so graded to prevent surface run-off from entering the plants. The covers should not be less than twelve (12) inches above ground level.

44. The applicant shall be responsible for ensuring adequate operation and maintenance of the wastewater plant to the satisfaction of the Chief Environmental Health Officer, TCI Government.

45. Prior to the issuance of any occupancy certificate(s), temporary or otherwise, all freight containers, plant and machinery and all other construction related articles or materials of whatever kind shall be removed from the parcel to an authorized location.

46. During operation of the development, rubble, waste, abandoned and/or derelict machinery or articles or materials of whatever of kind shall be prohibited from being stored on the parcel.

47. The construction work schedule (6-day work week Monday to Saturday commencing at 7:00 a.m. and ending at 5:00 p.m. each work day) shall be strictly adhered to.

48. No nuisances whether by noise, dust, smoke, fumes or otherwise shall be caused to the neighbors on the adjoining parcel(s).

49. The use of rubble as a mean of enclosing the property is strictly prohibited. Boundary walls or other means of enclosure shall not exceed the height of three (3) feet, six (6) inches unless approved otherwise by the Physical Planning Board in accordance with the Physical Planning Ordinance, 2021 and Regulations made thereunder.
50. All electrical, telecommunication, cable TV and other transmission lines shall be placed underground in conduit and to the standards and requirements of the relevant suppliers.

51. All exterior walls of the proposed development shall be of 8-inch concrete block or 6-inch reinforced concrete construction and built to standards laid down in the TCI Building Code, 2014.

52. Full compliance shall be demonstrated with all the conditions of this grant of detailed development permission prior to the issuance of any building permit(s), partial or otherwise.

The reason(s) for the imposition of the condition(s) specified (or attached) is/are:

One copy of the application and the accompanying plans and drawings are returned with this Grant.

GRANT OF OUTLINE DEVELOPMENT PERMISSION
(Section 30)

Dated: April 2, 2024.

Signed: Williams
DIRECTOR OF PLANNING

NOTES

1. An outline development permission means a development permission granted on the basis of an application for outline development permission, which gives approval in principle to the development the subject of the application for outline development permission, but does not of itself permit any development to be commenced. See Section 29(a) Physical Planning Ordinance.

2. An application for a detailed development permission must be submitted to the Director of Planning within one year of the date of notification of this Grant, failing which, this grant will lapse and cease to have any effect. You may however ask for an extension of that one year period, and if it is granted, this Grant will remain valid, and effective for the period of extension. See Section 37 Planning Ordinance.

All communications relating to this decision should be addressed to:

The Director of Planning
Department of Planning
Grand Turk

Appendix C – Terms of Reference

PLANNING DEPARTMENT
TURKS & CAICOS ISLANDS

MINISTRY OF PHYSICAL PLANNING AND INFRASTRUCTURE DEVELOPMENT
DEPARTMENT OF PLANNING

Terms of Reference for an Environmental Impact Assessment
Ani T&C Boutique Hotel, North Caicos
NC1246

Read carefully as requirements for submission may have updates or changes.

General: The Environmental Impact Assessment (EIA) must be conducted for this development with emphasis on the marine and terrestrial areas directly affected by the proposed project. **This requirement includes all applications for works relevant to the main project that will occur, including applications for ancillary works directly related to the main project.** All applications relevant to the project are expected to be supplied by the issuance of these Terms of Reference. If additional applications relevant to the main project are forthcoming, the applicant shall collate all applications for submission at the same time.

The cumulative impact of all projects in the area must be analysed (with new data and information). All environmental studies/data prior to this application must be re-validated, in consultation with the Department of Planning (DoP) and the Department of Environment and Coastal Resources (DECR).

Qualification: EIA process shall be carried out by fully qualified consultants in all areas of study as per these Terms of Reference.

Scientific Research Permit: All scientific field research in Turks and Caicos Islands requires a Scientific Research Permit. This includes field research towards an Environmental Impact Assessment, to be licensed with a commercial Scientific Research Permit from the Department of Environment and Coastal Resources. The EIA consultant shall apply for this permit through the Office of the Assistant Director of Environmental Research & Development in DECR using the most current application form.

Process: For an Environmental Impact Statement (EIS) to be deemed credible and acceptable, all site research work must be conducted prior to any physical works on the site that lead to degradation or change to the natural environmental conditions on the site. Environmental Impact Assessment research shall be considered void if it is carried out following site clearance, vegetation disturbance, terraforming, groundworks, or other physical works that alter the conditions of the intact habitats or affect presence of naturally-occurring flora and fauna.

Formatting Requirements: The DECR has multiple offices across the Turks and Caicos Islands and all offices have staff on the EIS review team. Therefore, all documents shall

PLANNING DEPARTMENT
TURKS & CAICOS ISLANDS

be submitted as digital files to the ***Department of Planning*** in **electronically shareable format**; that is, either **by email or reference to an online website from which the documents may be downloaded until review process is complete and by multiple reviewers** (**not read-online only, nor password-protected, nor time-bound, nor one-time download, nor limited to specific recipients**). Any variance from this format, or sending documents that do not open properly, will be cause for delay in review. Temporary and single-addressee file sharing sites are not generally acceptable.

Each document, report, and appendix shall be submitted in either consistently portrait or landscape layout throughout, with all images and sections in parallel alignment and proper, upright orientation (including tables and maps); and with all sections (including text within images) clear and readable. Maps (other than aesthetic representation figures) shall be presented with conventionally representative orientation (north-up). Currently accepted zoological and botanical names shall be used adjacent to common names throughout documents; valid synonyms are acceptable but not required. All documents must be submitted with security settings to allow both internal commenting and copying of text; the use of which will be restricted to within DECR and DoP to internally share comments and extract passages for responses. Documents not submitted within these requirements may be rejected and subject to review delay.

Perspective and Wording: The Environmental Impact Statement (EIS) should present analysed data objectively. Language stating obvious bias towards the development, particularly postulations that a pristine natural area is being "improved" or "enhanced" should be avoided. Lengthy explanations of the merits of the development are unnecessary; these can be deducted from the master plans and proposals included as appendices.

Submission: Complete Environmental Impact Statement (EIS) must be submitted to the ***Department of Planning.*** Documents may be copied to DECR with this submission but shall not be submitted directly/solely to DECR. All documents shall be submitted digitally in addition to the number of printed copies required by DoP. DoP may request additional or hard copies of documents.

Review and Response: EIS may be accepted, conditionally accepted, or rejected by DECR. For an EIS to be accepted, it will need to minimally but robustly meet the requirements for inclusion of data and analysis as set forth in the Terms of Reference. For an EIS to be accepted, the entire process must be completed (including data collection, analysis, submission, review, comments, and review of responses) **prior to any groundwork occurring on the area of impact** – including but not limited to land clearance and vegetation removal, excavation, filling, levelling or other terraforming, construction, bulldozing of survey lines or access roads, burning, or landscaping. Hand-cut survey lines and hand-cutting of access trails for research are acceptable, but no other impact shall have occurred prior to EIS process being complete for acceptance to occur. If the site is impacted from a previous permitted development, that should be clearly

PLANNING DEPARTMENT
TURKS & CAICOS ISLANDS

stated. If the site has already been impacted for works relating to the development, including overall or master plan, of which the application is part, this should be clearly stated.

EIS that are accepted may still be issued with comments that will require response from the consultant and/or proponent. EIS that are conditionally accepted may require resubmission of sections, data, components, imagery, or formatting that do not fulfil the requirements of the Terms of Reference; these resubmissions shall be resubmitted not piecemeal but as parts of a completely revised EIS. EIS that are rejected will require rewriting as specified by DoP's comments and recommendations prior to resubmission (and resubmission as a new EIS document, not piecemeal sections or responses, with revisions annotated/identified) at which point the DoP will review the EIS again.

Required Components of the EIS:

1. Introduction and Overview

1.1 Reference page with names and contact information of development proponent and EIA contractor; Department of Planning reference number; block and parcel numbers concerned; island and general location; and date completed/ submitted (revisions to include dates of revision submission following original dates).
1.2 Non-technical summary (including aims, objectives and scoping).
1.3 A brief description of the proposed development and its relationship with other development in the area; including adjacent development in the geographic area.
1.4 Aims and objectives of the assessment.
1.5 Overview of the areas/topics to be addressed in this EIA (present the results of scoping exercise).
1.6 Impact Assessment methods/analyses.

2. Baseline Studies

All baseline studies shall be supplemented with date and time metadata for when surveys were conducted.

2.1 Historical overview of the site and existing development- use historical and current aerial maps (time-series visualization) and official TCI generated map (Block/Parcel). Describe the historical ownership and land-use of the proposed development, including the surrounding areas.
2.2 Biological environmental baseline assessment:
2.2.1 Baseline terrestrial environment (including areas that are cleared, bulldozed and disturbed/damaged) – Quantitative description of any terrestrial ecological assets to be directly impacted by the project and a qualitative assessment of assets that may be indirectly impacted, to include:
2.2.1.1 Description and quantification of habitats and ecosystems present.

PLANNING DEPARTMENT
TURKS & CAICOS ISLANDS

2.2.1.2 Complete list and description of rare, threatened, and endangered species (as per IUCN Red Data List, CITES, and DECR lists)
2.2.1.3 Complete list of flora (plants) species and any identifiable fungi species present.
2.2.1.4 Complete list of bird species with annotation as to season, time of day, and duration of surveys taken; to include any instance of nesting or breeding. Bird surveys shall be taken at appropriate times (within one hour of sunrise and sunset; at intervals throughout daylight, and in over as long a period as possible to capture seasonal variation).
2.2.1.5 Complete list of all reptile and amphibian species present.
2.2.1.6 Complete list of any freshwater fish species present.
2.2.1.7 Complete list of any mammal species present.
2.2.1.8 Representative lists of invertebrates and fungi present.
2.2.1.9 In the case of presence of karst habitats, complete lists of cave biota, both terrestrial and aquatic, from qualified researchers.

All above categories 2.2.1.1 – 2.2.1.9 shall be supplemented with descriptions of dates, times, and durations when surveys were taken.

2.2.2 Baseline marine environment (including the coast, ironshore, beach and seaward) – Qualitative description of marine ecology of areas that may be indirectly impacted by the project (100 meters from shoreline, the width of the beachfront edge of the parcel), to include:
2.2.2.1 Description and quantification of marine habitats and ecosystems present. Map the marine habitats in the area directly affected by the proposed development. The map should be geo-referenced.
2.2.2.2 Complete list and description of rare, threatened, and endangered species (as per IUCN Red Data List, CITES, and DECR lists)
2.2.2.3 Complete list of all marine flora (plants including macroalgae) present.
2.2.2.4 Complete list of all coral species present, including soft corals.
2.2.2.5 Complete list of all seabird species present.
2.2.2.6 Complete list of all marine reptile species present.
2.2.2.7 Complete list of all fish species present.
2.2.2.8 Complete list of all marine mammal species present.
2.2.2.9 Representative list of marine invertebrate species (other than corals) present.
2.2.2.10 Description sargassum situation in the area.

All above categories 2.2.2.1 – 2.2.1.10 shall be supplemented with descriptions of dates, times, and durations when surveys were taken.

2.3 Physical environmental baseline assessment to include topography, soil type, structure, geotechnical study, sediments and profile:
2.3.1 Topography of the area.

PLANNING DEPARTMENT
TURKS & CAICOS ISLANDS

2.3.2 Bathymetry for site shoreline, any other underwater areas conceivably affected by the project, extending at least 100 meters from the coast.
2.3.3 Geology (check previous EIA or nearby projects, if any, validate when necessary).
2.3.4 Hydrology.
2.3.5 Sediment analyses, including grain size (beach) and testing for contaminants (if any).
2.3.6 Climate and meteorology. Meteorological parameters within the area- at least for the last 10 years.

2.4 Baseline aesthetics – this should be supported by drone/UAV imageries plus ground photography and descriptions/characterizations.

2.5 Baseline coastal processes and dynamics on adjacent coastline, including:
2.5.1 Currents and tides.
2.5.2 Sediment transport.
2.5.3 Erosion and accretion, as applicable.
2.5.4 Coastal dynamics.

2.6 Water quality from within the area to be impacted by the project (e.g. nearshore areas)– parameters to include dissolved oxygen (mg/l), temperature (°C), salinity (ppt), pH, turbidity (NTU), total dissolved solids (mg/l), ammonia (as mgN/l), nitrate/nitrite (as mnN/l), nitrite (as mgN/l), total dissolved phosphorus (mg/l), total chlorophyll (µg/l), pheophytin (µg/l), active chlorophyll (µg/l) and total Coliform. Nutrient loads are to be tested to an ultra-low level.

2.7 Social-economic:
2.6.1 Demographic.
2.6.2 Employment: labor & skills demand at construction and operation; local and foreign workers needed.
2.6.3 Safety/security concerns within the community.
2.6.4 Economic impact: short-term and long-term.
2.6.5 Others.

2.8 Other relevant parameters identified during the scoping exercise by the consultants.

3. **Legislative and Regulative Context** – To include a discussion of any **aspects of law, regulation and/or policy relevant to the project**, such as, but not limited to the legislation (including limits/ zones designated under any legislation, regulations, or policy relevant to the subject area) listed below. *This section should not be a summary of laws, but rather how the laws pertain to the project*.
3.1 TCI Development Plan/Master Plan.
3.2 TCI National Physical Development Plan 2020
3.3 Physical Planning Ordinance and subsidiary legislations.

PLANNING DEPARTMENT
TURKS & CAICOS ISLANDS

3.4 TCI Development Manual.
3.5 TCI Building Code.
3.6 National Parks Ordinance
3.7 Coast Protection Ordinance and subsidiary legislations.
3.8 Mineral (Exploration and Exploitation) Ordinance and subsidiary legislations.
3.9 Marine Pollution Ordinance and subsidiary legislations.
3.10 Fisheries Protection Ordinance and subsidiary legislations.
3.11 Wild Bird Protection Ordinance.
3.12 International treaties and conventions.
3.13 Turks and Caicos Islands Vision 2040
3.14 TCI Environment Charter 2001
3.15 TCI Climate Change Charter 2022
3.16 Other relevant laws and regulations.

This section shall point out the section of the laws that are permissible or otherwise with this proposed development.

4. Project Description and Construction and Operation and alternatives

4.1 Description of the proposed project/components.
4.2 Project Justification – socio-economic, ecological, etc.
4.3 How the proposed project will affect erosion or accretion.
4.4 Coastal/beach development and management including beach access.
4.5 Source and quality of any fill and other materials to be used for terraforming, if applicable.
4.6 Solid waste management during construction and operation.
4.7 Surface-run-off management/ Storm water runoff and treatment.
4.8 Water and electrical demand and source (construction and operations).
4.9 Landscaping (initial phase and maintenance/operation).
4.10 Construction phase activities:
4.10.1 Construction methods and program, including phasing of the development.
4.10.2 Site security and hoarding.
4.10.3 Storage of materials and equipment (including soil and excavated materials).
4.10.4 Beach traffic impact and safety.
4.10.5 Temporary sanitary facilities.
4.10.6 Access and staging.
4.10.7 Solid waste management- those generated during construction, if any.
4.10.8 Liquid waste management, including control of runoff- those generated during construction, if any.
4.10.9 Control of air, dust, water and noise pollution (generated by the project/heavy equipment).
4.10.10 Control/storage of fuels and other dangerous substances, if any.

PLANNING DEPARTMENT
TURKS & CAICOS ISLANDS

4.10.11 Emergency mitigation plan.

4.11 Social-economic:

4.11.1 Demographic.

4.11.2 Employment – labor & skills demand at construction and operation; availability of local workforce and need for foreign workers.

4.11.3 Safety/security concerns within the community (construction and operation).

4.11.4 Issues raised in the public consultation (written and verbal/oral concerns).

4.11.5 Others.

4.12 Impact to terrain including method of clearing of site and quantified description of natural vegetative cover to be removed (net loss), retention of natural vegetation cover, disposal of removed vegetation and soils, and statement of understanding of limitations of wholesale land clearance as per Development Manual and Planning legislation and regulations.

4.13 Potential Alternatives.

5. Impact Assessment.

5.1 Impact identification.

5.2 Description of impact:

5.2.1 Potential impacts to the biotic environment, including predicted direct and indirect impacts coastal, and marine assets.

5.2.2 Potential impact to coastal environment and processes.

5.2.3 Potential impact to Three Mary Cays Sanctuary/ Three Mary Cays National Park, including beach usage.

5.2.4 Potential impact of added lighting, including impacts on marine life (specifically, sea turtle nesting), bird life (especially migratory birds), and others. Note that this is a dark-sky area, and all lights should be low-impact and downward-facing, with lower lighting near the beach.

5.2.5 Potential impact to any species identified as endemic, near-endemic, rare, threatened, or endangered (by either IUCN or CITES listing), and any species uniquely dependent on the site for vital life-cycle phases (e.g. bats in caves, seabird nesting on cays [notably night-active birds such as Audubon's shearwaters], turtle nesting).

5.2.6 Potential impact to geological environment, particularly taking into consideration any karst, cavern, cave, or solution hole/ sinkhole on site.

5.2.7 Potential impacts to the aesthetic and other built environment.

5.2.8 Potential impact to ecosystem from alien invasive species that may be introduced on landscape plants sourced internationally or from Providenciales (non-native reptiles and amphibians, non-native arthropods).

5.2.9 Water quality and noise pollution (construction and operation), including heavy equipment noise disturbance to neighbours.

PLANNING DEPARTMENT
TURKS & CAICOS ISLANDS

5.2.10 Ecosystem and economic analyses (may summarize above; valuation is needed) to determine the best use of the area.

5.2.11 Socio-economic impact – Socio-economic and cultural baseline (including labor, tourism, public infrastructure, crime, etc., Predicted impacts (positive and negative- influx of population/ workers, safe & security) to the above baseline, Identification and involvement of stakeholder groups:

5.2.11.1 Public beach access – considering that the beach is public in TCI.

5.2.11.2 Potential impact to neighboring developments, businesses and residential houses; including community consultation directly with property and homeowners in Pumpkin Bluff and Whitby Haven, with broader community consultation in Whitby, Sandy Point, and North Caicos in general.

5.2.11.3 Potential impact to roadways for site access, including roadways from Pumpkin Bluff, Sandy Point, and Sandy Point Road

5.2.11.4 Potential Climate Change impacts, both locally within the Turks and Caicos Islands, and globally (including resulting global transportation changes).

5.2.11.5 Other Impacts.

5.3 Impact assessment.

5.4 Derivation of significance.

Note: Use computer modelling, as appropriate, for wind-wave prediction, wave energy dissipation, waves and currents and sediment transport and shoreline changes, etc. Particular attention should be given to sensitivity and vulnerability of important geomorphological features and processes; how these are likely to respond to particular impact, regardless of whether the effects are temporary, long-term, reversible or permanent. The potential cumulative impacts of and to other project components and nearby developments (as applicable) must be noted and addressed.

6. Mitigation and Monitoring

6.1 Proposed actions and schedule to mitigate against any environmental impact (including proposed monitoring activities), including:

6.1.1 Impacts to terrestrial and marine life (displacement).

6.1.2 Impacts to water quality.

6.1.3 Impacts of noise and light.

6.1.4 Impacts of incursion of invasive species of flora and fauna.

6.1.5 Impacts to resettled wildlife (e.g. bird nesting causing hazards to property or people).

6.2 Proposed actions to mitigate against noise pollution.

6.3 Storm surge analysis and mitigation plan for sea level rise.

6.4 Building around, or rescue and removal of rare, threatened, and endangered species of plants where possible (describe any recommendations for relocation of development components).

PLANNING DEPARTMENT
TURKS & CAICOS ISLANDS

6.5 Removal and continual control of invasive species, particularly Australian pine *Casuarina equisetifolia* and Malaysian inkberry *Scaevola taccada*.
6.6 Landscaping/ replanting plan utilizing native species (list species).
6.7 Proposed techniques and models to mitigate against light pollution, including impacts on nesting sea turtles and birds.
6.8 Traffic flow and safety plan, with special attention to:
  6.8.1 Quality and usability of roadways to access the site from Pumpkin Bluff, Sandy Point, and Sandy Point Road;
  6.8.2 Traffic control with consideration for small vehicles including those driven by tourists unfamiliar with the roads, bound for Three Mary Cays and nearby birdwatching sites;
  6.8.3 Traffic control also including consideration for noise pollution and impact to neighbourhoods through which the vehicles must travel.
6.9 Proposed Climate Change mitigation both locally within Turks and Caicos Islands and globally.
6.10 Financial resources for mitigation.
6.11 Environmental monitoring and financial requirements.
6.12 Public Consultation/social listening/monitoring.
6.13 An **Environmental Management Plan (EMP)** must be prepared with the following minimum components:
  6.13.1 Summary of the potential impacts of the proposal;
  6.13.2 Description of the recommended mitigation measures;
  6.13.3 Statement of their compliance with relevant standards;
  6.13.4 Allocation of resources and responsibilities for plan implementation;
  6.13.5 Schedule of the actions to be taken;
  6.13.6 Programme for surveillance, monitoring and auditing; and
  6.13.7 Contingency plan when impacts are greater than expected.

The EMP Environmental management plan (EMP) for pre-, during- and post-construction phases (contents may be modified, as applicable).

7. Recommendations and Conclusions

8. Statements of Understanding from Developer:

8.1 Statement of Understanding of terms of Environment Charter 2001 from proponent, with explanation of how this development approaches best practices towards the protection of biodiversity and the environment as noted in the Charter.
8.2 Statement of Understanding of terms of Climate Change Charter 2022 from proponent, with explanation of how this development approaches best practices toward mitigation, adaptation, and resilience to climate change as noted in the Charter.

PLANNING DEPARTMENT
TURKS & CAICOS ISLANDS

8.3 Proponent's Declaration of Intent to guide the development by the recommendations of the EIA consultant, with updated Declaration following response to public or TCIG commentary requesting or requiring alterations to any part of the EIA.
8.4 Statement of Understanding of prohibition on removal or disturbance of seagrass beds in adjacent seabed.

9. Appendices

9.1 The Terms of Reference (ToR) for the EIA, as issued by DoP, TCIG.
9.2 Qualifications of the EIA team of experts and the special requirements and information needed to form the team to conduct the EIA for this project. The contact information (functional phone numbers and email addresses) must be provided. Curricula vitae and résumés should be relevantly abridged to **no more than two pages for each consultant**.
9.3 Government Permits (e.g. work permit, research permit, etc., if required)
9.4 Site Plan, project plans, architectural drawing and other related documents.
9.5 Portable data format (pdf) file of the reports of independent consultants involved in the EIA.
9.6 Scientific analyses reports (pdf copy from the Laboratory that analyzed the samples, and the like), if any.
9.7 Standards or protocols and assumptions used in predicting the environmental impacts.
9.8 Public Consultative Meeting and Stakeholders meeting reports. Include evidence of advertisement for Public Consultative Meetings, the names and contact information for those who attended the meetings, issues raised and conclusions.
9.9 Photo documentations (with captions – dates, place, description of the subject of the photo).
9.10 Certification/legal document from the EIA group/company that submits the EIS, that all submitted reports/documents and etc. as part of the EIA report/EIS were first-hand information and if it taken from secondary source, the authors should be properly acknowledged or compensated.
9.11 Documentation of schedules of fieldwork; noting dates, times, duration, and purpose, to demonstrate that sufficient seasonal, cyclical, and observational considerations were made for fieldwork.

PLANNING DEPARTMENT
TURKS & CAICOS ISLANDS

Checklist of items for EIS	
Cover/ reference page as described in 1.1	
All images and sections in upright orientation, clear and readable	
Maps oriented conventionally, north-up	
Saved in manner to allow for text copying and comments to be inserted	
Files shareable by email or download transfer website, available throughout entire review process, and able to be downloaded by multiple reviewers	
All sections in ToR addressed by EIS	
All appendices attached (may be in separate files) as described in 9	

Prepared by the Department of Planning in collaboration with the Department of Environment and Coastal Resources.

February 22nd, 2024

Appendix D – Terrestrial Quantitative Analyses

Ani T & C Ltd., North Caicos											
Quantitative Analysis Total											
Terrestrial Species		To-tals	Density	Relative Density	Occurrence	Frequency	Relative Frequency	Importance Value	Proportion (pi)	ln(pi)	pi(ln_pi)
20th - 22nd May 2024		818									
#	Flora										
1	Ambrosia psilostachya	3	0.003667	0.208044	2	0.002445	0.27137	0.479415	0.00208	-6.17517	0.012847
2	Anemotrochus eggersii	9	0.011002	0.624133	7	0.008557	0.949796	1.57393	0.006241	-5.07656	0.031685
3	Argythamnia lucayana	3	0.003667	0.208044	3	0.003667	0.407056	0.6151	0.00208	-6.17517	0.012847
4	Byrsonima lucida	18	0.022005	1.248266	14	0.017115	1.899593	3.147859	0.012483	-4.38341	0.054717
5	Casasia clusiifolia	4	0.00489	0.277393	4	0.00489	0.542741	0.820133	0.002774	-5.88749	0.016331
6	Cassytha filiformis	2	0.002445	0.138696	2	0.002445	0.27137	0.410067	0.001387	-6.58064	0.009127
7	Casuarina equisetifolia	9	0.011002	0.624133	3	0.003667	0.407056	1.031189	0.006241	-5.07656	0.031685
8	Catesbaea foliosa	18	0.022005	1.248266	17	0.020782	2.306649	3.554915	0.012483	-4.38341	0.054717
9	Chamaecrista caribaea var. inaguensis	36	0.04401	2.496533	23	0.028117	3.12076	5.617292	0.024965	-3.69027	0.092129
10	Citharexylum spinosum	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
11	Coccoloba krugii	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044

12	Coccoloba uvifera	39	0.047677	2.704577	24	0.02934	3.256445	5.961022	0.027046	-3.61022	0.097641
13	Coccothrinax inaguensis	270	0.330073	18.72399	64	0.07824	8.683853	27.40785	0.18724	-1.67536	0.313695
14	Corchorus hirsutus	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
15	Crossopetalum rhacoma	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
16	Dodonaea viscosa	17	0.020782	1.178918	13	0.015892	1.763908	2.942826	0.011789	-4.44057	0.052351
17	Drypetes diversifolia	11	0.013447	0.762829	10	0.012225	1.356852	2.119682	0.007628	-4.87589	0.037195
18	Echites umbellatus	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
19	Eleusine indica	3	0.003667	0.208044	3	0.003667	0.407056	0.6151	0.00208	-6.17517	0.012847
20	Encyclia altissima	53	0.064792	3.675451	29	0.035452	3.934871	7.610322	0.036755	-3.30349	0.121418
21	Encyclia inaguensis	27	0.033007	1.872399	17	0.020782	2.306649	4.179048	0.018724	-3.97795	0.074483
22	Encyclia inaguensis x E. rufa	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
23	Encyclia rufa	10	0.012225	0.693481	8	0.00978	1.085482	1.778963	0.006935	-4.9712	0.034474
24	Erithalis fruticosa	52	0.06357	3.606103	36	0.04401	4.884668	8.49077	0.036061	-3.32254	0.119814
25	Ernodea littoralis	22	0.026895	1.525659	12	0.01467	1.628223	3.153881	0.015257	-4.18274	0.063814
26	Ernodea millspaughii	13	0.015892	0.901526	6	0.007335	0.814111	1.715637	0.009015	-4.70884	0.042451
27	Euphorbia inaguaensis	12	0.01467	0.832178	7	0.008557	0.949796	1.781974	0.008322	-4.78888	0.039852

28	Euphorbia mesembryan-themifolia	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
29	Eustachys petraea	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
30	Guapira discolor	11	0.013447	0.762829	10	0.012225	1.356852	2.119682	0.007628	-4.87589	0.037195
31	Guaiacum sanctum	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
32	Guettarda krugii	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
33	Guettarda scabra	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
34	Jacquemontia cayensis	2	0.002445	0.138696	2	0.002445	0.27137	0.410067	0.001387	-6.58064	0.009127
35	Jacquinia keyensis	19	0.023227	1.317614	18	0.022005	2.442334	3.759948	0.013176	-4.32935	0.057044
36	Krugiodendron ferreum	6	0.007335	0.416089	5	0.006112	0.678426	1.094515	0.004161	-5.48203	0.02281
37	Lantana involucrata	5	0.006112	0.346741	5	0.006112	0.678426	1.025167	0.003467	-5.66435	0.019641
38	Lepidaploa arbuscula	8	0.00978	0.554785	7	0.008557	0.949796	1.504581	0.005548	-5.19434	0.028817
39	Leucothrinax morrisii	125	0.152812	8.668516	39	0.047677	5.291723	13.96024	0.086685	-2.44547	0.211986
40	Manilkara jaimiqui emar-ginata	12	0.01467	0.832178	10	0.012225	1.356852	2.18903	0.008322	-4.78888	0.039852
41	Metopium toxiferum	29	0.035452	2.011096	19	0.023227	2.578019	4.589115	0.020111	-3.90649	0.078563
42	Morinda citrifolia	9	0.011002	0.624133	9	0.011002	1.221167	1.8453	0.006241	-5.07656	0.031685
43	Myrcianthes fragrans	125	0.152812	8.668516	54	0.066015	7.327001	15.99552	0.086685	-2.44547	0.211986

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

44	Passiflora pectinata	3	0.003667	0.208044	3	0.003667	0.407056	0.6151	0.00208	-6.17517	0.012847
45	Passiflora suberosa	2	0.002445	0.138696	1	0.001222	0.135685	0.274381	0.001387	-6.58064	0.009127
46	Pithecellobium keyense	24	0.02934	1.664355	17	0.020782	2.306649	3.971004	0.016644	-4.09573	0.068168
47	Psidium longipes	25	0.030562	1.733703	17	0.020782	2.306649	4.040352	0.017337	-4.05491	0.0703
48	Randia aculeata	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
49	Reynosia septentrionalis	33	0.040342	2.288488	23	0.028117	3.12076	5.409248	0.022885	-3.77728	0.086443
50	Rhynchospora colorata	15	0.018337	1.040222	4	0.00489	0.542741	1.582963	0.010402	-4.56574	0.047494
51	Rhynchospora floridensis	58	0.070905	4.022191	19	0.023227	2.578019	6.60021	0.040222	-3.21334	0.129247
52	Rhynchospora microcarpa	11	0.013447	0.762829	4	0.00489	0.542741	1.30557	0.007628	-4.87589	0.037195
53	Sarcomphalus taylorii	2	0.002445	0.138696	2	0.002445	0.27137	0.410067	0.001387	-6.58064	0.009127
54	Scaevola plumieri	4	0.00489	0.277393	3	0.003667	0.407056	0.684448	0.002774	-5.88749	0.016331
55	Scaevola taccada	39	0.047677	2.704577	5	0.006112	0.678426	3.383003	0.027046	-3.61022	0.097641
56	Senna ligustrina	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
57	Sideroxylon americanum	12	0.01467	0.832178	10	0.012225	1.356852	2.18903	0.008322	-4.78888	0.039852
58	Smilax auriculata	36	0.04401	2.496533	27	0.033007	3.663501	6.160033	0.024965	-3.69027	0.092129
59	Smilax havanensis	4	0.00489	0.277393	4	0.00489	0.542741	0.820133	0.002774	-5.88749	0.016331

60	Sporobolus virginicus	7	0.008557	0.485437	2	0.002445	0.27137	0.756807	0.004854	-5.32788	0.025863
61	Stenostomum lucidum	4	0.00489	0.277393	2	0.002445	0.27137	0.548763	0.002774	-5.88749	0.016331
62	Stenostomum myrtifolium	64	0.07824	4.43828	34	0.041565	4.613297	9.051577	0.044383	-3.1149	0.138248
63	Strumpfia maritima	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
64	Tabebuia bahamensis	57	0.069682	3.952843	36	0.04401	4.884668	8.837511	0.039528	-3.23074	0.127706
65	Tillandsia balbisiana	4	0.00489	0.277393	2	0.002445	0.27137	0.548763	0.002774	-5.88749	0.016331
66	Tillandsia flexuosa	1	0.001222	0.069348	1	0.001222	0.135685	0.205033	0.000693	-7.27379	0.005044
67	Uniola paniculata	12	0.01467	0.832178	2	0.002445	0.27137	1.103548	0.008322	-4.78888	0.039852
68	Vachellia acuifera	20	0.02445	1.386963	15	0.018337	2.035278	3.422241	0.01387	-4.27805	0.059335
69	Vachellia choriophylla	5	0.006112	0.346741	4	0.00489	0.542741	0.889481	0.003467	-5.66435	0.019641
70	Varronia bahamensis	2	0.002445	0.138696	2	0.002445	0.27137	0.410067	0.001387	-6.58064	0.009127
71	Zanthoxylum flavum	2	0.002445	0.138696	2	0.002445	0.27137	0.410067	0.001387	-6.58064	0.009127
Totals		1442	1.762836			0.900978				H=	3.344284
	Fauna										
1	Anolis sagraei	1									
2	Argaulis vanillae	2									
3	Argiope argentata	3									
4	Ascalapha odorata	3									
5	Cerion spp.	TNTC									
6	Coereba flaveola	2									

7	Columbina passerina	1									
8	Corvus nasicus	5									
9	Epargyreus zestos	1									
10	Ephyriades brunnea	4									
11	Eurema chamberlaini	1									
12	Eurema dina	1									
13	Leiocephalus psammodromus	2									
14	Memphis intermedia	1									
15	Mimus gundlachii	3									
16	Papilo andraemon	2									
17	Passerina cyanea	1									
18	Tyrannus dominicensis	12									
19	Vireo crassirostris	7									
20	Zenaida macroura	3									
*Nomenclature unresolved											

Ani T & C Ltd., North Caicos											
Quantitative Analysis Coastal Mixed Forest											
Terrestrial Species		Totals	Density	Relative Density	Occurrence	Frequency	Relative Frequency	Importance Value	Proportion (pi)	ln(pi)	pi(ln_pi)
20th - 22nd May 2024		75									
#	Flora										
1	Byrsonima lucida	2	0.026667	2.409639	2	0.026667	7.142857	9.552496	0.024096	-3.72569	0.089776
2	Catesbaea foliosa	2	0.026667	2.409639	1	0.013333	3.571429	5.981067	0.024096	-3.72569	0.089776
3	Coccoloba uvifera	4	0.053333	4.819277	2	0.026667	7.142857	11.96213	0.048193	-3.03255	0.146147

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

4	Coccothrinax inaguensis	30	0.4	36.14458	3	0.04	10.71429	46.85886	0.361446	-1.01764	0.367823
5	Drypetes diversifolia	3	0.04	3.614458	2	0.026667	7.142857	10.75731	0.036145	-3.32023	0.120008
6	Erithalis fruticosa	3	0.04	3.614458	2	0.026667	7.142857	10.75731	0.036145	-3.32023	0.120008
7	Ernodea millspaughii	1	0.013333	1.204819	1	0.013333	3.571429	4.776248	0.012048	-4.41884	0.053239
8	Krugiodendron ferreum	1	0.013333	1.204819	1	0.013333	3.571429	4.776248	0.012048	-4.41884	0.053239
9	Leucothrinax morrisii	13	0.173333	15.66265	2	0.026667	7.142857	22.80551	0.156627	-1.85389	0.290369
10	Metopium toxiferum	8	0.106667	9.638554	3	0.04	10.71429	20.35284	0.096386	-2.3394	0.225484
11	Myrcianthes fragrans	7	0.093333	8.433735	1	0.013333	3.571429	12.00516	0.084337	-2.47293	0.20856
12	Pithecellobium keyense	1	0.013333	1.204819	1	0.013333	3.571429	4.776248	0.012048	-4.41884	0.053239
13	Psidium longipes	1	0.013333	1.204819	1	0.013333	3.571429	4.776248	0.012048	-4.41884	0.053239
14	Smilax auriculata	2	0.026667	2.409639	2	0.026667	7.142857	9.552496	0.024096	-3.72569	0.089776
15	Stenostomum myrtifolium	1	0.013333	1.204819	1	0.013333	3.571429	4.776248	0.012048	-4.41884	0.053239
16	Tabebuia bahamensis	3	0.04	3.614458	2	0.026667	7.142857	10.75731	0.036145	-3.32023	0.120008
17	Vachellia choriophylla	1	0.013333	1.204819	1	0.013333	3.571429	4.776248	0.012048	-4.41884	0.053239
Totals		83	1.106667			0.373333				H=	2.187169
	Fauna										
1	Argiope argentata	3									
2	Ascalapha odorata	1									
3	Cerion spp.	TNTC									

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Ani T & C Ltd., North Caicos											
Quantitative Analysis Coastal Mixed Woodland											
Terrestrial Species		Totals	Density	Relative Density	Occurrence	Frequency	Relative Frequency	Importance Value	Proportion (pi)	ln(pi)	pi(ln_pi)
20th - 22nd May 2024		324									
#	Flora										
1	Anemotrochus eggersii	4	0.012346	0.700525	2	0.006173	0.651466	1.351991	0.007005	-4.96109	0.034754
2	Argythamnia lucayana	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116
3	Byrsonima lucida	10	0.030864	1.751313	7	0.021605	2.28013	4.031444	0.017513	-4.0448	0.070837
4	Casasia clusiifolia	3	0.009259	0.525394	3	0.009259	0.977199	1.502593	0.005254	-5.24878	0.027577
5	Catesbaea foliosa	6	0.018519	1.050788	6	0.018519	1.954397	3.005185	0.010508	-4.55563	0.04787
6	Chamaecrista caribaea var. inaguensis	10	0.030864	1.751313	7	0.021605	2.28013	4.031444	0.017513	-4.0448	0.070837
7	Coccoloba krugii	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116
8	Coccoloba uvifera	16	0.049383	2.802102	10	0.030864	3.257329	6.059431	0.028021	-3.5748	0.10017
9	Coccothrinax inaguensis	130	0.401235	22.76708	29	0.089506	9.446254	32.21333	0.227671	-1.47985	0.33692
10	Crossopetalum rhacoma	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116
11	Dodonaea viscosa	4	0.012346	0.700525	4	0.012346	1.302932	2.003457	0.007005	-4.96109	0.034754

12	Drypetes diversifolia	5	0.015432	0.875657	5	0.015432	1.628664	2.504321	0.008757	-4.73795	0.041488
13	Encyclia altissima	17	0.052469	2.977233	11	0.033951	3.583062	6.560295	0.029772	-3.51418	0.104625
14	Encyclia inaguensis	15	0.046296	2.62697	11	0.033951	3.583062	6.210032	0.02627	-3.63934	0.095604
15	Encyclia inaguensis x E. rufa	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116
16	Encyclia rufa	7	0.021605	1.225919	5	0.015432	1.628664	2.854584	0.012259	-4.40148	0.053959
17	Erithalis fruticosa	21	0.064815	3.677758	16	0.049383	5.211726	8.889485	0.036778	-3.30287	0.121471
18	Ernodea littoralis	4	0.012346	0.700525	2	0.006173	0.651466	1.351991	0.007005	-4.96109	0.034754
19	Ernodea millspaughii	3	0.009259	0.525394	3	0.009259	0.977199	1.502593	0.005254	-5.24878	0.027577
20	Guapira discolor	3	0.009259	0.525394	3	0.009259	0.977199	1.502593	0.005254	-5.24878	0.027577
21	Guaiacum sanctum	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116
22	Jacquemontia cayensis	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116
23	Jacquinia keyensis	8	0.024691	1.401051	8	0.024691	2.605863	4.006914	0.014011	-4.26795	0.059796
24	Krugiodendron ferreum	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116
25	Lantana involucrata	3	0.009259	0.525394	3	0.009259	0.977199	1.502593	0.005254	-5.24878	0.027577
26	Lepidaploa arbuscula	5	0.015432	0.875657	4	0.012346	1.302932	2.178588	0.008757	-4.73795	0.041488
27	Leucothrinax morrisii	65	0.200617	11.38354	22	0.067901	7.166124	18.54966	0.113835	-2.173	0.247364

28	Manilkara jaimiqui emarginata	6	0.018519	1.050788	5	0.015432	1.628664	2.679453	0.010508	-4.55563	0.04787
29	Metopium toxiferum	11	0.033951	1.926445	9	0.027778	2.931596	4.858041	0.019264	-3.94949	0.076085
30	Morinda citrifolia	6	0.018519	1.050788	6	0.018519	1.954397	3.005185	0.010508	-4.55563	0.04787
31	Myrcianthes fragrans	56	0.17284	9.807356	25	0.07716	8.143322	17.95068	0.098074	-2.32204	0.22773
32	Passiflora pectinata	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116
33	Pithecellobium keyense	13	0.040123	2.276708	9	0.027778	2.931596	5.208304	0.022767	-3.78244	0.086115
34	Psidium longipes	13	0.040123	2.276708	7	0.021605	2.28013	4.556838	0.022767	-3.78244	0.086115
35	Randia aculeata	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116
36	Reynosia septentrionalis	16	0.049383	2.802102	10	0.030864	3.257329	6.059431	0.028021	-3.5748	0.10017
37	Rhynchospora floridensis	16	0.049383	2.802102	6	0.018519	1.954397	4.756499	0.028021	-3.5748	0.10017
38	Senna ligustrina	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116
39	Sideroxylon americanum	8	0.024691	1.401051	6	0.018519	1.954397	3.355448	0.014011	-4.26795	0.059796
40	Smilax auriculata	12	0.037037	2.101576	10	0.030864	3.257329	5.358905	0.021016	-3.86248	0.081173
41	Smilax havanensis	2	0.006173	0.350263	2	0.006173	0.651466	1.001728	0.003503	-5.65424	0.019805
42	Stenostomum myrtifolium	22	0.067901	3.85289	11	0.033951	3.583062	7.435952	0.038529	-3.25635	0.125463
43	Strumpfia maritima	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116

44	Tabebuia bahamensis	28	0.08642	4.903678	19	0.058642	6.188925	11.0926	0.049037	-3.01518	0.147855
45	Tillandsia flexuosa	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116
46	Vachellia acuifera	8	0.024691	1.401051	7	0.021605	2.28013	3.681181	0.014011	-4.26795	0.059796
47	Vachellia choriophylla	2	0.006173	0.350263	1	0.003086	0.325733	0.675996	0.003503	-5.65424	0.019805
48	Varronia bahamensis	1	0.003086	0.175131	1	0.003086	0.325733	0.500864	0.001751	-6.34739	0.011116
Totals		571	1.762346			0.947531				H=	3.037328
	Fauna										
1	Argaulis vanillae	2									
2	Argiope argentata	3									
3	Ascalapha odorata	2									
4	Cerion spp.	TNTC									
5	Corvus nasicus	3									
6	Epargyreus zestos	1									
7	Ephyriades brunnea	2									
8	Eurema chamberlaini	1									
9	Leiocephalus psammodromus	1									
10	Mimus gundlachii	1									
11	Papilo andraemon	1									
12	Tyrannus dominicensis	3									
13	Vireo crassirostris	6									
14	Zenaida macroura	1									
*Nomenclature unresolved											

Ani T & C Ltd., North Caicos											
Quantitative Analysis Coastal Mixed Shrub-land											
Terrestrial Species		Totals	Density	Relative Density	Occurrence	Frequency	Relative Frequency	Importance Value	Proportion (pi)	ln(pi)	pi(ln_pi)
20th - 22nd May 2024		315									
#	Flora										
1	Anemotrochus eggersii	1	0.003175	0.15625	1	0.003175	0.295858	0.452108	0.001563	-6.46147	0.010096
2	Argythamnia lucayana	2	0.006349	0.3125	2	0.006349	0.591716	0.904216	0.003125	-5.76832	0.018026
3	Byrsonima lucida	6	0.019048	0.9375	5	0.015873	1.47929	2.41679	0.009375	-4.66971	0.043779
4	Catesbaea foliosa	10	0.031746	1.5625	10	0.031746	2.95858	4.52108	0.015625	-4.15888	0.064983
5	Chamaecrista caribaea var. inaguensis	26	0.08254	4.0625	16	0.050794	4.733728	8.796228	0.040625	-3.20337	0.130137
6	Citharexylum spinosum	1	0.003175	0.15625	1	0.003175	0.295858	0.452108	0.001563	-6.46147	0.010096
7	Coccoloba uvifera	19	0.060317	2.96875	12	0.038095	3.550296	6.519046	0.029688	-3.51703	0.104412
8	Coccothrinax inaguensis	105	0.333333	16.40625	29	0.092063	8.579882	24.98613	0.164063	-1.80751	0.296544
9	Dodonaea viscosa	13	0.04127	2.03125	9	0.028571	2.662722	4.693972	0.020313	-3.89652	0.079148
10	Drypetes diversifolia	3	0.009524	0.46875	3	0.009524	0.887574	1.356324	0.004688	-5.36286	0.025138
11	Echites umbellatus	1	0.003175	0.15625	1	0.003175	0.295858	0.452108	0.001563	-6.46147	0.010096

12	Encyclia altissima	36	0.114286	5.625	18	0.057143	5.325444	10.95044	0.05625	-2.87795	0.161885
13	Encyclia inaguensis	12	0.038095	1.875	6	0.019048	1.775148	3.650148	0.01875	-3.97656	0.074561
14	Encyclia rufa	3	0.009524	0.46875	3	0.009524	0.887574	1.356324	0.004688	-5.36286	0.025138
15	Erithalis fruticosa	24	0.07619	3.75	14	0.044444	4.142012	7.892012	0.0375	-3.28341	0.123128
16	Ernodea littoralis	4	0.012698	0.625	3	0.009524	0.887574	1.512574	0.00625	-5.07517	0.03172
17	Ernodea millspaughii	9	0.028571	1.40625	2	0.006349	0.591716	1.997966	0.014063	-4.26424	0.059966
18	Euphorbia inaguaensis	2	0.006349	0.3125	1	0.003175	0.295858	0.608358	0.003125	-5.76832	0.018026
19	Guapira discolor	8	0.025397	1.25	7	0.022222	2.071006	3.321006	0.0125	-4.38203	0.054775
20	Guettarda krugii	1	0.003175	0.15625	1	0.003175	0.295858	0.452108	0.001563	-6.46147	0.010096
21	Guettarda scabra	1	0.003175	0.15625	1	0.003175	0.295858	0.452108	0.001563	-6.46147	0.010096
22	Jacquemontia cayensis	1	0.003175	0.15625	1	0.003175	0.295858	0.452108	0.001563	-6.46147	0.010096
23	Jacquinia keyensis	11	0.034921	1.71875	10	0.031746	2.95858	4.67733	0.017188	-4.06357	0.069843
24	Krugiodendron ferreum	4	0.012698	0.625	3	0.009524	0.887574	1.512574	0.00625	-5.07517	0.03172
25	Lantana involucrata	2	0.006349	0.3125	2	0.006349	0.591716	0.904216	0.003125	-5.76832	0.018026
26	Lepidaploa arbuscula	3	0.009524	0.46875	3	0.009524	0.887574	1.356324	0.004688	-5.36286	0.025138
27	Leucothrinax morrisii	47	0.149206	7.34375	15	0.047619	4.43787	11.78162	0.073438	-2.61132	0.191769

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

28	Manilkara jaimiqui emarginata	6	0.019048	0.9375	5	0.015873	1.47929	2.41679	0.009375	-4.66971	0.043779
29	Metopium toxiferum	10	0.031746	1.5625	7	0.022222	2.071006	3.633506	0.015625	-4.15888	0.064983
30	Morinda citrifolia	3	0.009524	0.46875	3	0.009524	0.887574	1.356324	0.004688	-5.36286	0.025138
31	Myrcianthes fragrans	62	0.196825	9.6875	28	0.088889	8.284024	17.97152	0.096875	-2.33433	0.226139
32	Passiflora pectinata	1	0.003175	0.15625	1	0.003175	0.295858	0.452108	0.001563	-6.46147	0.010096
33	Passiflora suberosa	2	0.006349	0.3125	1	0.003175	0.295858	0.608358	0.003125	-5.76832	0.018026
34	Pithecellobium keyense	10	0.031746	1.5625	7	0.022222	2.071006	3.633506	0.015625	-4.15888	0.064983
35	Psidium longipes	11	0.034921	1.71875	9	0.028571	2.662722	4.381472	0.017188	-4.06357	0.069843
36	Reynosia septentrionalis	17	0.053968	2.65625	13	0.04127	3.846154	6.502404	0.026563	-3.62825	0.096376
37	Rhynchospora colorata	9	0.028571	1.40625	2	0.006349	0.591716	1.997966	0.014063	-4.26424	0.059966
38	Rhynchospora floridensis	30	0.095238	4.6875	8	0.025397	2.366864	7.054364	0.046875	-3.06027	0.14345
39	Rhynchospora microcarpa	6	0.019048	0.9375	2	0.006349	0.591716	1.529216	0.009375	-4.66971	0.043779
40	Sarcomphalus taylorii	2	0.006349	0.3125	2	0.006349	0.591716	0.904216	0.003125	-5.76832	0.018026
41	Sideroxylon americanum	4	0.012698	0.625	4	0.012698	1.183432	1.808432	0.00625	-5.07517	0.03172
42	Smilax auriculata	22	0.069841	3.4375	15	0.047619	4.43787	7.87537	0.034375	-3.37043	0.115858
43	Smilax havanensis	2	0.006349	0.3125	2	0.006349	0.591716	0.904216	0.003125	-5.76832	0.018026

44	Stenostomum lucidum	4	0.012698	0.625	2	0.006349	0.591716	1.216716	0.00625	-5.07517	0.03172
45	Stenostomum myrtifolium	40	0.126984	6.25	21	0.066667	6.213018	12.46302	0.0625	-2.77259	0.173287
46	Tabebuia bahamensis	26	0.08254	4.0625	15	0.047619	4.43787	8.50037	0.040625	-3.20337	0.130137
47	Tillandsia balbisiana	4	0.012698	0.625	2	0.006349	0.591716	1.216716	0.00625	-5.07517	0.03172
48	Vachellia acuifera	12	0.038095	1.875	8	0.025397	2.366864	4.241864	0.01875	-3.97656	0.074561
49	Zanthoxylum flavum	2	0.006349	0.3125	2	0.006349	0.591716	0.904216	0.003125	-5.76832	0.018026
Totals		640	2.031746			1.073016				H=	3.218073
	Fauna										
1	Anolis sagraei	1									
2	Argiope argentata	3									
3	Cerion spp.	TNTC									
4	Coereba flaveola	2									
5	Columbina passerina	1									
6	Corvus nasicus	2									
7	Ephyriades brunnea	2									
8	Leiocephalus psammodromus	1									
9	Memphis intermedia	1									
10	Mimus gundlachii	1									
11	Papilo andraemon	1									
12	Passerina cyanea	1									
13	Tyrannus dominicensis	5									
14	Vireo crassirostris	1									
15	Zenaida macroura	2									

Ani T & C Ltd., North Caicos											
Quantitative Analysis - Coastal Herbaceous Habitats											
Terrestrial Species		Totals	Density	Relative Density	Occurrence	Frequency	Relative Frequency	Importance Value	Proportion (pi)	ln(pi)	pi(ln_pi)
20th - 22nd May 2024		20									
#	Flora										
1	Anemotrochus eggersii	3	0.15	3.191489	3	0.15	6.122449	9.313938	0.031915	-3.44468	0.109937
2	Casasia clusiifolia	1	0.05	1.06383	1	0.05	2.040816	3.104646	0.010638	-4.54329	0.048333
3	Cassytha filiformis	2	0.1	2.12766	2	0.1	4.081633	6.209292	0.021277	-3.85015	0.081918
4	Coccothrinax inaguensis	3	0.15	3.191489	2	0.1	4.081633	7.273122	0.031915	-3.44468	0.109937
5	Corchorus hirsutus	1	0.05	1.06383	1	0.05	2.040816	3.104646	0.010638	-4.54329	0.048333
6	Eleusine indica	1	0.05	1.06383	1	0.05	2.040816	3.104646	0.010638	-4.54329	0.048333
7	Erithalis fruticosa	4	0.2	4.255319	4	0.2	8.163265	12.41858	0.042553	-3.157	0.13434
8	Ernodea littoralis	14	0.7	14.89362	7	0.35	14.28571	29.17933	0.148936	-1.90424	0.28361
9	Euphorbia inaguaensis	8	0.4	8.510638	5	0.25	10.20408	18.71472	0.085106	-2.46385	0.20969
10	Euphorbia mesembryan-themifolia	1	0.05	1.06383	1	0.05	2.040816	3.104646	0.010638	-4.54329	0.048333
11	Eustachys petraea	1	0.05	1.06383	1	0.05	2.040816	3.104646	0.010638	-4.54329	0.048333

12	Rhynchospora colorata	6	0.3	6.382979	2	0.1	4.081633	10.46461	0.06383	-2.75154	0.17563
13	Rhynchospora floridensis	12	0.6	12.76596	5	0.25	10.20408	22.97004	0.12766	-2.05839	0.262773
14	Rhynchospora microcarpa	5	0.25	5.319149	2	0.1	4.081633	9.400782	0.053191	-2.93386	0.156056
15	Scaevola plumieri	4	0.2	4.255319	3	0.15	6.122449	10.37777	0.042553	-3.157	0.13434
16	Scaevola taccada	5	0.25	5.319149	1	0.05	2.040816	7.359965	0.053191	-2.93386	0.156056
17	Sporobolus virginicus	7	0.35	7.446809	2	0.1	4.081633	11.52844	0.074468	-2.59738	0.193422
18	Stenostomum myrtifolium	1	0.05	1.06383	1	0.05	2.040816	3.104646	0.010638	-4.54329	0.048333
19	Uniola paniculata	12	0.6	12.76596	2	0.1	4.081633	16.84759	0.12766	-2.05839	0.262773
20	Vachellia choriophylla	2	0.1	2.12766	2	0.1	4.081633	6.209292	0.021277	-3.85015	0.081918
21	Varronia bahamensis	1	0.05	1.06383	1	0.05	2.040816	3.104646	0.010638	-4.54329	0.048333
Totals		94	4.7			2.45				H=	2.690731
	Fauna										
1	Cerion spp.	TNTC									
2	Eurema dina	1									
3	Mimus gundlachii	1									
4	Tyrannus dominicensis	3									

Ani T & C Ltd., North Caicos										
Quantitative Analysis - Human Altered Habitats AIS										

	Terrestrial Species	Totals	Density	Relative Density	Occurrence	Frequency	Relative Frequency	Importance Value	Proportion (pi)	ln(pi)	pi(ln_pi)
	20th - 22nd May 2024	84									
#	Flora										
1	Ambrosia psilostachya	3	0.035714	5.555556	2	0.02381	13.33333	18.88889	0.055556	-2.89037	0.160576
2	Anemotrochus eggersii	1	0.011905	1.851852	1	0.011905	6.666667	8.518519	0.018519	-3.98898	0.07387
3	Casuarina equisetifolia	9	0.107143	16.66667	3	0.035714	20	36.66667	0.166667	-1.79176	0.298627
4	Coccothrinax inaguensis	2	0.02381	3.703704	1	0.011905	6.666667	10.37037	0.037037	-3.29584	0.122068
5	Eleusine indica	2	0.02381	3.703704	2	0.02381	13.33333	17.03704	0.037037	-3.29584	0.122068
6	Euphorbia inaguaensis	2	0.02381	3.703704	1	0.011905	6.666667	10.37037	0.037037	-3.29584	0.122068
7	Passiflora pectinata	1	0.011905	1.851852	1	0.011905	6.666667	8.518519	0.018519	-3.98898	0.07387
8	Scaevola taccada	34	0.404762	62.96296	4	0.047619	26.66667	89.62963	0.62963	-0.46262	0.291281
	Totals	54	0.642857			0.178571				H=	1.264429
	Fauna										
1	Cerion spp.	TNTC									
2	Tyrannus dominicensis	1									

Appendix E – Terrestrial Species

Ani T & C Ltd., North Caicos			
Terrestrial Species			
20th - 22nd May 2024			
#	***Flora***	**Common Name**	**Comments**
1	*Ambrosia psilostachya*	Bay Tansy	
2	*Anemotrochus eggersii*	Egger's Milkweed Vine	Regional endemic
3	*Argythamnia lucayana*	Lucayan Argythamnia	Near Endemic
4	*Byrsonima lucida*	Locust Berry	
5	*Casasia clusiifolia*	Seven-year Apple	
6	*Cassytha filiformis*	Love Vine	AIS
7	*Casuarina equisetifolia*	Australian Pine	AIS
8	*Catesbaea foliosa*	Catesby's Vine	Near Endemic
9	*Chamaecrista caribaea var. inaguensis*	Inagua Senna	Regional Endemic/IUCN VU
10	*Citharexylum spinosum*	Fiddlewood	
11	*Coccoloba krugii*	Crabwood	Regional endemic
12	*Coccoloba uvifera*	Sea Grape	
13	*Coccothrinax inaguensis*	Inagua Silver Palm	Near Endemic
14	*Corchorus hirsutus*	Jack Switch	
15	*Crossopetalum rhacoma*	Poison Cherry	
16	*Dodonaea viscosa*		Near Endemic
17	*Drypetes diversifolia*	Whitewood	
18	*Echites umbellatus*	Devil's Potato	
19	*Eleusine indica*	Goose Grass	
20	*Encyclia altissima*	Tall Encyclia	Regional endemic/CITES
21	*Encyclia inaguensis*	Inagua Encyclia	Near Endemic/CITES
22	*Encyclia inaguensis x E. rufa*	Encyclia Hybrid	Endemic and Rare
23	*Encyclia rufa*	Spring Encyclia	Near Endemic/CITES
24	*Erithalis fruticosa*	Black Torch	

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

25	*Ernodea littoralis*	Golden Creeper	
26	*Ernodea millspaughii*	Millspaugh's Ernodea	Near Endemic
27	*Euphorbia inaguaensis*	Inagua Spurge	Near Endemic
28	*Euphorbia mesembryanthemifolia*	Coastal Spurge	
29	*Eustachys petraea*	Fingergrass	
30	*Guapira discolor*	Blolly	
31	*Guaiacum sanctum*	Lignum Vitae	IUCN NT
32	*Guettarda krugii*	Frogwood	Regional Endemic
33	*Guettarda scabra*	Velvet Berry	
34	*Jacquemontia cayensis*	Island Jacquemontia	Regional endemic
35	*Jacquinia keyensis*	Joewood	
36	*Krugiodendron ferreum*	Crabwood	
37	*Lantana involucrata*	Sea Sage	Near Endemic
38	*Lepidaploa arbuscula*	Vernonia	Near Endemic
39	*Leucothrinax morrisii*	Thatch Palm	
40	*Manilkara jaimiqui emarginata*	Wild Dilly	
41	*Metopium toxiferum*	Poisonwood	
42	*Morinda citrifolia*	Citrus-leaved Morinda	
43	*Myrcianthes fragrans*	Nakedwood	
44	*Passiflora pectinata*	Wild Apricot	Regional Endemic
45	*Passiflora suberosa*	Juniper Berry	
46	*Pithecellobium keyense*	Black Bead	
47	*Psidium longipes*	Bahama Stopper	
48	*Randia aculeata*	Box Briar	
49	*Reynosia septentrionalis*	Darling Plum	
50	*Rhynchospora colorata*	White-headed Rush	
51	*Rhynchospora floridensis*	White-top Sedge	
52	*Rhynchospora microcarpa*	Beak-rush	
53	*Sarcomphalus taylorii*	Bahama Jujube	Near Endemic
54	*Scaevola plumieri*	Ink Berry	
55	*Scaevola taccada*	Scaevola	AIS
56	*Senna ligustrina*	Busy Senna	
57	*Sideroxylon americanum*	Milk Berry	Regional Endemic
58	*Smilax auriculata*	China Brier	
59	*Smilax havanensis*	Green Brier	
60	*Sporobolus virginicus*	Seashore Rush Grass	

61	*Stenostomum lucidum*	Shining Antirhea	Regional Endemic
62	*Stenostomum myrtifolium*	False Myrtle	
63	*Strumpfia maritima*	Mosquito Bush	
64	*Tabebuia bahamensis*	Five-finger	Near-endemic
65	*Tillandsia balbisiana*	Cuttlefish	CITES
66	*Tillandsia flexuosa*	Twisted Wild Pine	CITES
67	*Uniola paniculata*	Sea Oats	
68	*Vachellia acuifera*	Acacia	Near Endemic
69	*Vachellia choriophylla*	Tamarindillo	Near Endemic
70	*Varronia bahamensis*	Bahama Cordia	Near Endemic
71	*Zanthoxylum flavum*	Satinwood	IUCN VU
Totals			
	Fauna	**Common Name**	**Comments**
1	*Anolis sagraei*	Anole Lizard	
2	*Argaulis vanillae*	Gulf Fritillary Butterfly	
3	*Argiope argentata*	Silver Argiope	
4	*Ascalapha odorata*	Erebus Moth	
5	*Cerion spp.*	Tree Snail	Endemic/TCI Protected Species
6	*Coereba flaveola*	Bananaquit	
7	*Columbina passerina*	Common Ground Dove	
8	*Corvus nasicus*	Cuban Crow	Near Endemic
9	*Epargyreus zestos*	Skipper Butterfly	
10	*Ephyriades brunnea*	Skipper Butterfly	
11	*Eurema chamberlaini*	Sm. Sulfur Butterfly	Near Endemic
12	*Eurema dina*	Sm. Sulfur Butterfly	
13	*Leiocephalus psammodromus*	Curly-tail Lizard	Endemic/ IUCNVU
14	*Memphis intermedia*	Dead Leaf Butterfly	Near Endemic/TCI Protected
15	*Mimus gundlachii*	Bahama Mockingbird	Near Endemic
16	*Papilo andraemon*	Swallowtail Butterfly	Near Endemic
17	*Passerina cyanea*	Indigo Bunting	Female
18	*Tyrannus dominicensis*	Gray Kingbird	
19	*Vireo crassirostris*	Thick-billed Vireo	Endemic/TCI Protected Species
20	*Zenaida macroura*	Mourning Dove	
*Nomenclature unresolved			

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Appendix F – Survey Monkey Original Questionnaires

Complete responses to the Survey Monkey questionnaires can be accessed at the following Dropbox link:

https://www.dropbox.com/scl/fi/6m825hxrv1ch039f1fc8l/Responses_All_241004.pdf?rlkey=y3jtc1i829y61fukel6o4qxzj&dl=0

SWA Environmental. Unit 301 Neptune Ct., Providenciales, Turks and Caicos Islands, Tel. 649 946 5911 kw@swa.tc

Appendix G – Landscaping List

ANI NORTH CAICOS - Preliminary Plant List		
TREES/PALMS	**Common Name**	**Function**
Adonidia merrrillii	Adonidia Palm	Vertical Palm- multi-trunk
Annona muricata	Soursop	Small tree/Fruit
Bourerria succulenta	Strongbark	Mid-story tree
Bursera simarubra	Gumbo Limbo Tree	Large Tree
Caryota mitis	Fishtail Palm	Clump palm
Clusia rosea	Autograph Tree	Canopy tree
Coccoloba diversifolia	Pigeon Plum	Mid-story Tree
Coccoloba uvifera	Seagrape Tree	Canopy Tree or shrub
Coccothrinax spp	Thatch Palm	Vertical Palm- thin trunk
Coconut Palm 'Green Malayan'	Coconut Palm	Canopy Palm
Conocarpus erectus	Green Buttonwood	Mid-story tree
Guiacum officinale	lignum vitae	Small tree
Jaquinia keyensis	Joewood Tree	Mid-size tree
Malphigia punicifolia	Barbados Cherry	Small tree/Fruit
Phoenix sylvestrus	Common Date Palm	Vertical Palm- fat trunk
Plumeria obtusa	Plumeria	Small tree
Plumeria pudica	Ramo de Novia	Small tree/hedge
Pseudophoenix sargentii	Buccaneer Palm	Vertical Palm- fat trunk
Psidium guava	Guava	Small tree/Fruit
Sabal palmetto	Sabal Palm	Vertical Palm- fat trunk
Serenoa repens	Saw Palmetto	Clump palm
Swetienia mahoganii	Mahogany	Canopy tree
Tabebuia bahamensis	Five Fingers	Small Tree/flower
Tabebuia heterophylla	White Cedar	Mid-story tree
Tamarindus indicus	Tamarind Tree	Canopy tree
Tecoma stans	Ginger Thomas	Small tree/hedge
Thrinax spp	Thatch Palm	Vertical Palm- thin trunk
Veitchii johannis	Montegomery Palm	Vertical Palm- thin trunk
Veithcii merillii	Christmas Palm	Small Palm
SHRUBS/GROUNDCOVER	**Common Name**	**Function**
Agave spp	Century Plant	Cactus like
Argusia gnaphalodes	Sea Lavendar	Low shrub
Asparagus densiflorus	Asparagus Fern	Groundcover
Barleria repens	Coral Flower	Groundcover
Bougainvillea glabra	Purple Bougainvillea	Color
Bromeliad "Red Flame"	Boladora Bromeliad	Groundcover

Capparis cyanophallophora	Jamaican Caper	Mass/hedge
Carissa grandiflora	Emerald Carpet	Groundcover
Casasia diversifolia	Seven Year Apple	Shrub
Chrysobalanus 'horizontails'	Prostrate Cocoplum	Low Mass
Chrysobalanus icaco	Cocoplum	Shrub
Clerodendron splendens	Bleeding Heart	Climbing Vine
Conocarpus erectus	Green Buttonwood	Mass/hedge
Cordyline fruticosa	Ti Plant	Color
Crinum asiaticum	Green Crinum Lilly	Accent
Ernodia littoralis	Beach Creeper	Groundcover
Eugenia foetida	Spanish Stopper	Mass/hedge
Ficus pumila	Creeping Fig	Clinging
Gardenia 'Taiwanese'	Gardenia	Fragrance
Gardenia 'Vietnamese'	Gardenia	Fragrance
Hamelia patens	Firebush	Accent
Helianthus debilis	Sea Sunflower	groundcover
Hymenocallis caribea	Beach Lilly	Groundcover
Hymenocallus caribea	Beach Lily	groundcover
Ipomea pes-carpae	Railroad Vine	groundcover
Ipomoea pes-caprae	Railroad Vine	Groundcover
Ixora spp.	Ixora	Color
Limonium bahamensis	Heather	Low shrub/gc
Melocactus intortus	Turks Cap Cactus	Cactus
Microscorum scolopendrium	Wort Fern	Groundcover
Monstera deliciosa	Elephant Eat	Accent
Musa spp.	Banana	Fruit/Mass
Myrcianthes fragrans	Simpsons Stopper	Mass/hedge
Opuntia spp	Pear Cactus	Cactus
Petrea volubilis	Queens Wreath	Climbing Vine
Philodendron 'Burle Marx'	Burle Marx Philodendron	Groundcover
Russelia equisetiformis	Firecracker Plant	Groundcover
Scaevolea plumerii	Native Scaevolea	Low Mass
Suriana maritima	Bay Cedar	Shrub
Tabermontana divaricata	Pinwheel Jasmine	Color
Tripsacum dactyloides Dwf.	Dwarf Fakahatchee Grass	Accent/Mass
Uniola paniculata	Sea Oats	Beach Grass
Wedelia trilobata	Wedelia	groundcover
Wedelia trilobata	Wedelia	Groundcover
Zoysia 'manila'	Turf	Grass

References

Albuquerque, K., & McElroy, J. (1992). Caribbean small-island tourism styles and sustainable strategies. *Environmental Management*, *16*(5), 619-632. https://doi.org/10.1007/bf02589017

Allee, R. J., Dethier, M., Brown, D., Deegan, L., Ford, R. G., Hourigan, T. F., Maragos, J., Schoch, C., Sealey, K., & Twilley, R. (2000). Marine and estuarine ecosystem and habitat classification.

Areces-Mallea, A. E., Weakley, A. S., Li, X., Sayre, R. G., Parrish, J. D., Tipton, C. V., & Boucher, T. (1999). *A Guide to Caribbean Vegeation Types: Preliminary Classification System and Description*.

Artiola, J., Pepper, I. L., & Brusseau, M. L. (2004). *Environmental monitoring and characterization*. Elsevier.

Barnett, D. P. (2017). *National Skills Audit - Final Report*. P. B. A. L. Dunn. https://drive.google.com/file/d/1c2jRw0ih9vuBCul4wzRlncB38JeQSswn/view

Beekhuis, J. V. (1981). Tourism in the Caribbean: Impacts on the Economic, Social and Natural Environments. *Ambio*, *10*(6), 325-331. https://doi.org/10.2307/4312729

Brough, G., & Sartori, A. (2015). *National Tourism Policy and Strategic Implementation Plan for the Turks and Caicos Islands*. KPMG.

Causton, D. (2012). *An introduction to vegetation analysis: principles, practice and interpretation*. Springer Science & Business Media.

Correll, D., & Correll, H. (1982). *The Flora of the Bahama Archipelago Including the Turks and Caicos Islands*. A.R.G. Gantner.

Dawson, J., Oppel, S., Cuthbert, R. J., Holmes, N., Bird, J. P., Butchart, S. H., Spatz, D. R., & Tershy, B. (2015). Prioritizing islands for the eradication of invasive vertebrates in the United Kingdom overseas territories. *Conservation Biology*, *29*(1), 143-153.

De Booy, T. (1918). The Turks and Caicos Islands, British West Indies. *Geographical Review*, *6*(1), 37-51.

Doran Jr, E. (1955). Land forms of the southeast Bahamas.

Douglas, C. H. (2006). Small island states and territories: sustainable development issues and strategies – challenges for changing islands in a changing world. *Sustainable Development*, *14*(2), 75-80. https://doi.org/10.1002/sd.297

EDSA. (2020). *National Physical Development Plan*. Turks and Caicos Islands: The Government of the Turks and Caicos Islands

Erickson, K., Wood, K., & Perkinson, C. (2019). *Sandy Point and Bellefield Landing Port Renovation*. U. R. t. t. g. o. t. T. a. C. Islands.

Freid, E., Francisco-Ortega, J., & Jestrow, B. (2014). Endemic Seed Plants in the Bahamian Archipelago. *Botanical Review of the New York Botanical Garden*, *80*, 204-230.

Harrison, L. C., Jayawardena, C., & Clayton, A. (2003). Sustainable Tourism Development in the Caribbean: Practical Challenges. *International Journal of Contemporary Hospitality Management*, *15*(5), 294-298.

IFC. (2012). Performance Standards on Environmental and Social Sustainability. *International Finance Corporation - World Bank Group*. Retrieved 22 July 2015, from http://www.ifc.org/wps/wcm/connect/115482804a0255db96fbffd1a5d13d27/PS_English_2012_Full-Document.pdf?MOD=AJPERES

Iverson, J. B. (1978). The impact of feral cats and dogs on populations of the West Indian rock iguana, Cyclura carinata. *Biological Conservation*, *14*(1), 63-73. https://doi.org/10.1016/0006-3207(78)90006-x

Janzen, D. H. (1988). Tropical dry forests. *The Most Endangered Major Tropical Ecosystem, Pp en: EO Wilson, Biodiversity*.

Kirwan, G., Levesque, A., Oberle, M., & Sharp, C. (2019). *Birds of the West Indies*. Lynx.

Kuyer, J. (2018). *Turks and Caicos Islands Natural Capital Accounting - Initial Review*. J. N. C. Committee.

Lee, S., & Jamal, T. (2008). Environmental Justice and Environmental Equity in Tourism: Missing Links to Sustainability. *Journal of Ecotourism*, *7*(1), 44-67. https://doi.org/10.2167/joe191.0

Loft, P. (2022). *Crime in the Turks and Caicos Islands 2022*. H. o. C. Library. https://researchbriefings.files.parliament.uk/documents/CBP-9694/CBP-9694.pdf

Mather, J. (1971). Investigation of Groundwater Resources of the Turks and Caicos Islands. *Institution of Geological Sciences, London*.

Mather, J. (1975). Development of the groundwater resources of small limestone islands. *Quarterly Journal of Engineering Geology and Hydrogeology*, *8*(2), 141-150.

Mather, J. (1988). The influence of geology and karst development on the formation of freshwater lenses on small limestone islands. *Karst Hydrogeology and Karst Environment Protection*, *1*, 423-428.

Raffaele, H., Wiley, J., Garrido, O., Keith, A., & Raffaele, J. (2003). *Birds of the West Indies*. Princeton University Press.

Sayre, R., Roca, E., Sedaghatkish, G., Young, B., Keel, S., Roca, R., & Sheppard, S. (2000). *Nature in Focus: Rapid Ecological Assessment* (T. N. Conservancy, Ed.). Island Press.

Schwartz, A. (1991). *Amphibians and reptiles of the West Indies : descriptions, distributions, and natural history*. University of Florida Press.

Schwartz, A., & Henderson, R. W. (1991). *Amphibians and Reptiles of the West Indies*. University of Florida Press.

Senecal, P., Goldsmith, B., Conover, S., Sadler, B., & Brown, K. (1999). *Principles of Environmental Impact Assessment Best Practice*. I. A. f. I. Assessment & I. o. E. Assessment. http://www.iaia.org/uploads/pdf/principlesEA_1.pdf

Smith, D. S., Miller, L. D., & Miller, J. Y. (1994). *The Butterflies of the West Indies and South Florida* (First ed.). Oxford University Press.

Sullivan-Sealey, K., Brunnick, B., Harzen, S., Lutton, C., Nero, V., & Flowers, L. (2002). *An Ecoregional Plan for the Bahamian Archipelago*. T. O. Foundation.

TCIG. (2011). *Turks and Caicos Islands Climate Change Green Paper*. T. a. C. I. Government. http://www.caribbeanelections.com/eDocs/strategy/tc_strategy/tc_Climate_Change_Green_Paper.pdf

TCIG. (2012). *2012 Population and Housing Census - Preliminary Report*. T. a. C. I. Government.

TCIG. (2018). *Climate Change Policy of the Turks and Caicos Islands*. T. a. C. I. Government.

UNESCO. (1986). *First Workshop on the Hydrogeological Atlas of the Caribbean Islands*. UNESCO. http://unesdoc.unesco.org/images/0007/000719/071923EB.pdf

Vanclay, F., Esteves, A. M., Aucamp, I., & Franks, D. (2015). *Social Impact Assessment: Guidance for assessing and managing the social impacts of projects*. IAIA. https://www.iaia.org/uploads/pdf/SIA_Guidance_Document_IAIA.pdf

Williams, O., Wood, K., & Pardee, M. (2003). *Moore's Hall - Strategic Environmental Assessment*.

Wood, K. (2003). *The Flowers of the Bahamas and Turks and Caicos Islands*. Macmillan Caribbean.

Wood, K. (2014). *Romanza Condominium Project, Kaitlin Corporation - Tourism Procurement Analysis*.

Wood, K., & Brunnick, B. (2010). *National Standardized Vegetation Classification for the Turks and Caicos Islands*. EDSA.

Wood, K., Brunnick, B., Kissinger, P., & Weinberg, P. (2010). *Turks and Caicos Islands National Vegetation and Mapping Project*. U. r. t. t. g. o. t. T. a. C. Islands.

Wood, K. M. (2015). *Thompson Cove Conservatin Area Vegetation Replacement Cost*. U. Report.

Zappino, V. (2005). Caribbean Tourism and development: An overview. *European Centre for Development Policy Management Discussion Paper*(65).