ST. REGIS

RESORT & RESIDENCES

PR-16177

ENVIRONMENTAL IMPACT ASSESSMENT

September 2023

Prepared for:

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Grace Bay, Providenciales
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Table of Contents

Table of Figures

Table of Tables

1 Introduction

1.1 Executive Summary

The overall development plan for The St. Regis Development (Figure 1-1) is to create a luxury resort development inclusive of a beachfront access to world renowned Grace Bay, Residences and Vacation Condominiums, amenities and associated infrastructure development and the incorporation of green space.

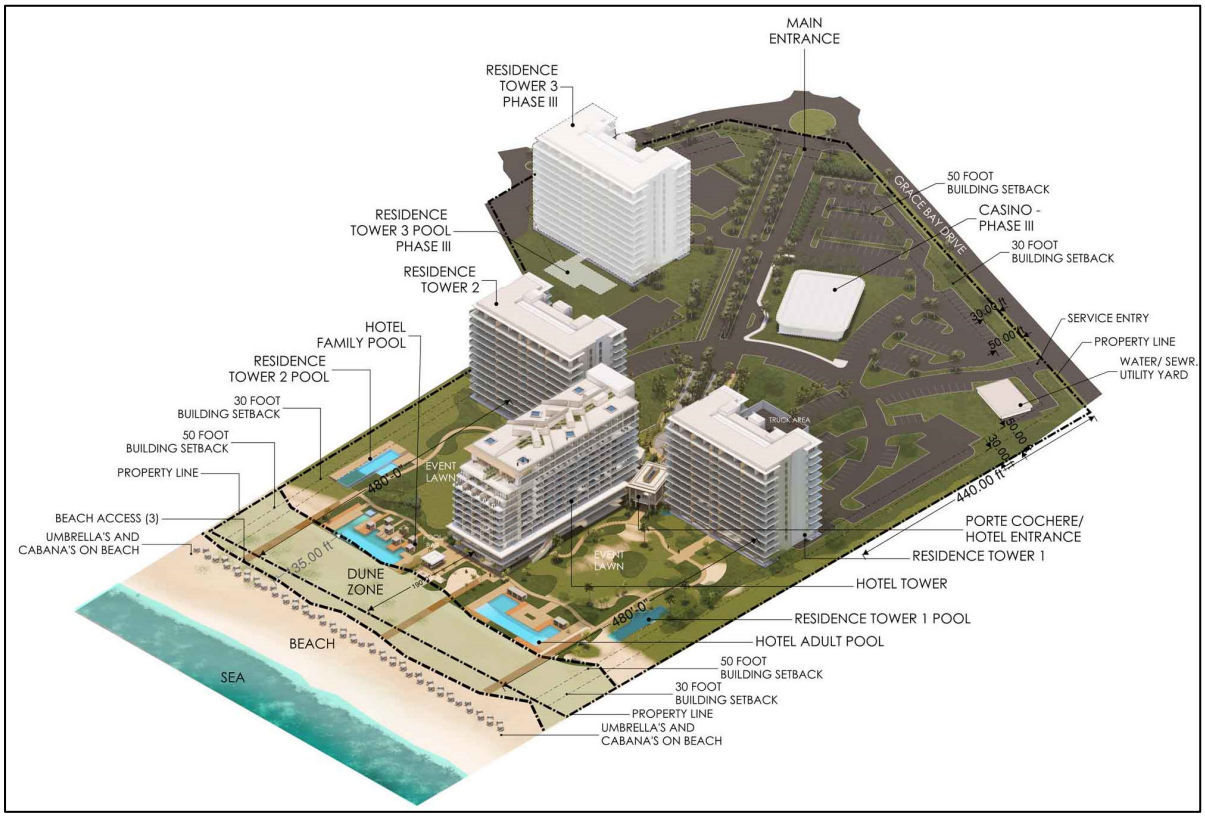


Figure 1-1 Conceptual Development Layout

The Project, as described herein, provides for the infrastructure components (site grading, road entrance and parking, stormwater, potable water, wastewater, power and generators and dune revegetation/restoration) and the resort and residential buildings, hardscaping, and support facilities including pools, restaurant, spa and casino). These facilities and development of this parcel are integrated into and enhanced by green space areas incorporating coastal and native species that are drought resist and sustainable.

Table 1-1. Summary of Potential Impacts and Avoidance, Minimization and Mitigation Measures

Positive Impacts		
Temporary Impacts	Permanent Impacts	Impact Classification
Social, Cultural and Economic Impacts		
	Increased Land Values	Hpd$^{(+)}$
	Increased Revenue Stream to Government (stamp duties for subject property, material import duties)	Hpd$^{(+)}$
	Grace Bay Roundabout Enhancements (landscaping and hardscape, etc)	Hpd(+)
Increase in disposable income for TCI workers (construction phase)		Lti$^{(+)}$
	Increase in disposable income for TCI workers (operations phase)	Lpi$^{(+)}$
Increased Revenues to Government for Business Licensing, company returns, work permits, NHIP, etc) (construction phase)		Lti$^{(+)}$
	Increased Revenues to Government for Business Licensing, company returns, work permits, NHIP, etc) (operations phase)	Lpi$^{(+)}$
	Improved Infrastructure in Grace Bay Developments	Mpd$^{(+)}$
	Increased Reliance on Local Utilities (energy, water, telecommunications, etc)	Mpi$^{(+)}$
	Injection of new private investments into TCI – Contribution to National Economy	Hpd$^{(+)}$

Impact Classification Legend:

H=High Impact, M=Medium Impact, L=Low Impact

p=permanent impact,

t=temporary/reversible impact

d = direct impact

i = indirect impact

(+)=beneficial impact

(-)=adverse impact

(n)=neutral impact

NI=No Impact

	Changes in Demographics Due to Increased Land Values	$Lpi^{(+)}$	
	Increased revenue to neighboring developments due to stream of benefits	$Hpi^{(+)}$	
Negative Impacts			
Temporary Impacts	Permanent Impacts	Impact Classification	Avoidance, Minimization & Mitigation
Physical and Environmental			
	Changes in Topography	$Lpd^{(n)}$	
	Displacement of wildlife	$Mpd^{(-)}/M$	Notice provided to DECR two weeks prior to clearing for relocation of species
	Site Clearing (Terrestrial)	$Hpd^{(-)}/M$	Minimize area for site clearing to building envelopes and canal; landscaping enhancement with native vegetation; removal of invasive species; relocation of protected species where practical.
Potential for air, water and/or land pollution resulting from construction activities		$Ltd^{(-)}$	Construction monitoring and oversight; maintain machinery in good working order; provide for collection of solid wastes, etc; maintain Disaster Management Plan
Temporary Impacts	Permanent Impacts	Impact Classification	Avoidance, Minimization & Mitigation
Economic and Social			
Visual/Aesthetic Impacts During Construction		$Mtd^{(-)}$	Maintain work areas in a neat and orderly condition
	Visual/Aesthetic Impacts During Operation	$Mtd^{(+)}$	Maintain landscaped and resort areas in a neat and orderly condition
Noise Pollution During Construction		$Ltd^{(-)}$	Enforce noise thresholds; construction signaling kept to safe minimum; maintain machinery in good working order
Temporary Impacts	Permanent Impacts	Impact Classification	Avoidance, Minimization & Mitigation

Economic and Social			
	Watersports Operators During Dune-Based Construction	$Lti^{(+)}$	Water sports operators and industry receive increased demand; increased revenue stream
Increased Traffic Flows During Construction		$Lti^{(-)}$	Public notices and signs and controls
Increased workload of TCIG technical Staff		$Lti^{(-)}$	Remittance of permit fees; use of knowledgeable and experienced engineers, contractors and consultants; TCIG receives increased revenue from duties and fees
	Changes in Demographics Due to Increased Land Values	$Lpi^{(-)}$	
No Impact		Impact Classification	
Sedimentation		NI	
Public Access and Recreational Use		NI	
Site Drainage and Flooding		NI	

Impact Classification Legend:

H=High Impact, M=Medium Impact, L=Low Impact; p=permanent impact, t=temporary/reversible impact; d = direct impact, i = indirect impact

(+)=beneficial impact, (-)=adverse impact; M = mitigatable; NI=No Impact, (n)=neutral impact

1.2 Brief Description of the Proposed Development

The Master Coastal Development Plan, as described herein, has been designed for Desarrollos Hotelco Wa, Ltd. for the St. Regis resort and supporting infrastructure inclusive of a casino, hereafter referred to as the Project. The components of the St. Regis include: Resort, Residences, Restaurant, Pool, Bar, Recreational Facilities, Roundabout improvements and Parking (Figure 1-1). The purpose of this Environmental Impact Assessment (EIA) Report is to outline the development concept and provide justification for approval to the Detailed and Outline Development Application(s) submitted for this Project.

1.3 Aims & Objectives

The St. Regis aims to provide a high-quality resort and residence experience only found on Grace Bay. The continued expansion of these luxury developments will incorporate both publicly accessible facilities through the Hotel and Casino and privately with the Residential Towers.

1.4 Key Scoping Issues

The EIA follows with the government's issued TOR (Appendix A) and topics outlined accordingly as: description of existing environment (i.e. baseline conditions); description of the proposed development; legislative and regulative context; assessment of potential environmental impacts of the proposed development including physical, environmental, economic and social impacts; and development of monitoring and mitigation programs to minimize and mitigate for potential impacts. Finally, conclusions are provided to summarize the findings of the EIA.

1.5 Methods of Research

Field investigations were conducted by experts including those listed below with resumes of key contributors provided in Appendix B, to supplement available scientific data and information necessary to formulate the Project design and evaluate potential environmental impacts. Available historic data along with newly collected data presented herein is sufficient to assess physical, environmental, economic (cost and benefits) and social merits of the Project. Field investigations conducted to supplement existing data resources included:

- Topographic Survey (Owner/Benchmark Survey Associates, July 2023 and 2013)
- Terrestrial Vegetation Survey (CDE/Dial Cordy, May 2023)
- Geologic Survey (Pietro Marinaro, M. Sc.)
- Water Quality Testing (CDE, June 2023)
- Coastal Environment Imaging and Site Investigations (CDE,June 2023)

CDE has conducted additional field investigations and EIA's outside of the immediate Project in the near vicinity to support of other developments. These include:

- Ritz Carlton
- Windsong Phase II
- Andaz
- The Mansions
- Emerald Point and Beach Restoration
- The Strand at Cooper Jack
- East Grace Bay Beach Restoration

This information was combined with current and historic aerial photography to supplement and assess the historic and existing baseline conditions.

1.6 Analysis and Methods

The EIA consists of a systematic analysis of the proposed development in relation to existing environmental conditions. This method of analysis involves a five-step process: (1) identification of potential impacts; (2) qualitative and/or quantitative estimation of impacts, as appropriate; (3) assessment of design and construction alternatives to minimize adverse impacts; (4) development of mitigation to remediate for any unavoidable adverse impacts; and (5) development of a monitoring program to assess the long-term impacts on the environment. The approach outlined herein integrates engineering design, mitigation, and monitoring into a comprehensive environmental assessment framework.

2 Baseline Assessment of Site & Development

2.1 Overview of Existing Development & Infrastructure

The Project Area within the Grace Bay geographic and coastal environment is moderate to low in density and population as compared to the surrounding properties on Grace Bay. Sibonne and The Palms developments are located to the west and to the east, respectively. Adjoin the two (2) lots that comprise the proposed development property as one development.

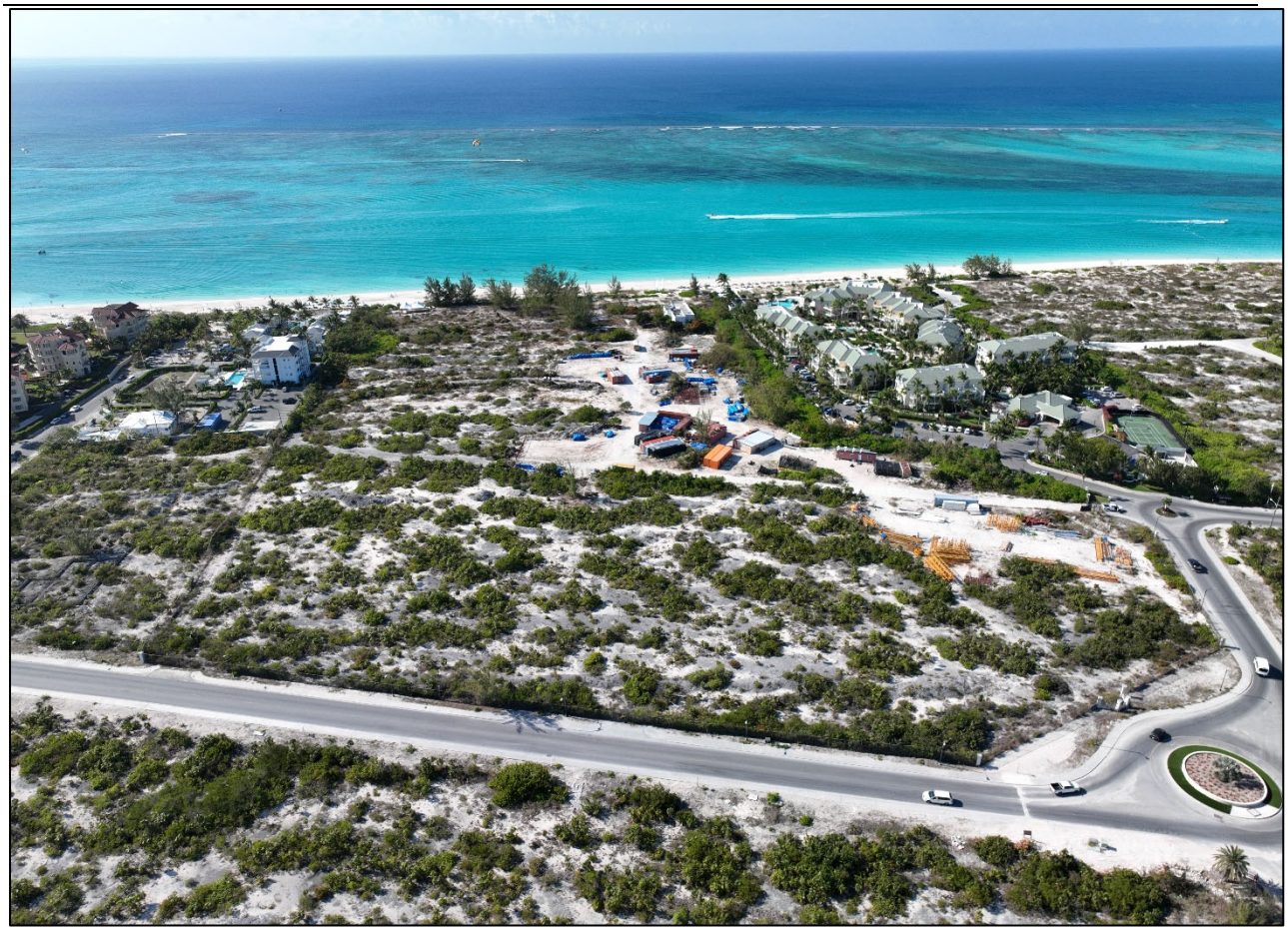


Figure 2-1 Existing Development and Site Conditions (March 2023)

2.2 Physical Surveys

2.2.1 Topography & Bathymetry

Upland topography was surveyed by Benchmark Surveying in 2023 including the ground surface elevations range from sea level along the Atlantic fronting boundary increasing at the dune to +11 ft, and coastal scrub area generally at +12 ft to + 14 ft (MSL), Figure 2-2 extending landward to the property lines.

The survey confirms that the beaches are wide and vary between 95 ft and 140 ft from mean sea level (0.0 ft) to the seaward edge of dune vegation. Landward of the Grace Bay beach is a zone of coastal dune habitat mixed with invasive species and "local landscaping" that borders the site at the west limit and the east limits, mixed with bare sand, exposed rock and coastal scrub habitat. The site is relatively flat and uniform in elevation ranging from +10 ft to 12 ft (MSL) with mildly sloped ridges and mounds at +13 to +14 ft.

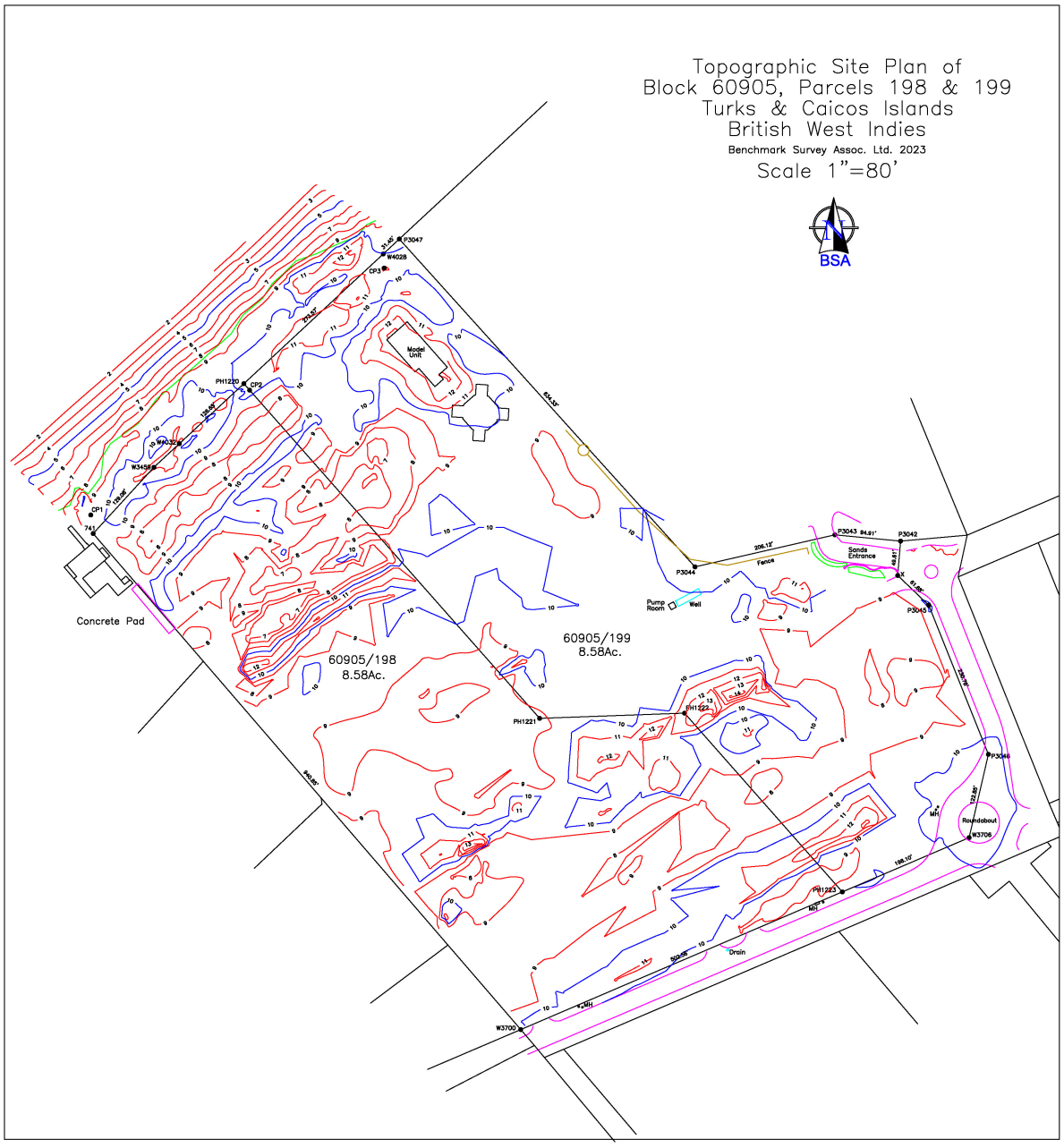


Figure 2-2 Existing Topographic and Boundary Survey

2.3 Geologic Survey

The islands of the TCI lie at the southern extent of the Bahamas Archipelago, with Pleistocene carbonates, namely limestone (i.e. aeolinate rock), providing a foundation for Holocene sediments (e.g. coralgal framestones, rudstones and oolitic grains). The Caicos Banks forms a carbonate platform that rises 3,000 to 7,000 feet above the sea floor. The elevation and rolling terrain are indicative of the wind-blown (eoliantic) depositional environment of this upland coastal terrace peaks and valleys. In response to the request made by Desarrollos Hotelco TCI, to evaluate the conditions and characteristics of the soil in the study area, field work has been carried out that includes the execution of nine (9) geotechnical perforations with depths that vary between 59 ft and90 ft, fourth (4) pits or exploratory trenches with a maximum depth of 5.25 ft, as well as the execution of laboratory geotechnical tests on the samples recovered from the exploratory wells and the preparation of this geotechnical report.

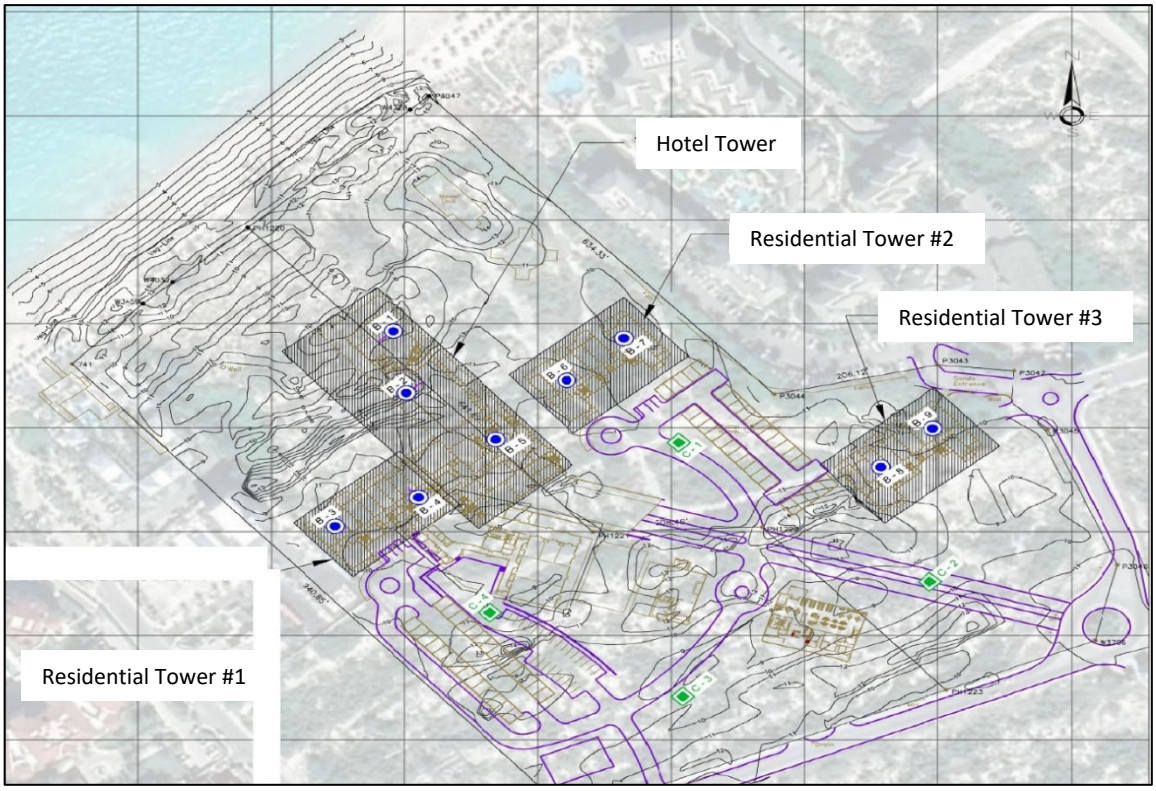


Figure 2-3 Geologic Survey

The field and laboratory activities were carried out with the purpose of characterizing the area, allowing the generation of lithological profiles, establishing the static parameters of the soil, and

evaluating and determining the general recommendations for the conformation of the soils and the required type of foundation.

Table 2-1. Geologic Investigation Locations

LOCATION	Coordinates		
	Northing (ft)	Easting (ft)	Elevation (ft)
B-1	7915178.67	2593982.11	8.75
B-2	7915081.22	2593997.88	9.43
B-3	7914870.11	2593910.78	10.43
B-4	7914916.18	2594013.97	10.44
B-5	7915007.71	2594108.65	10.06
B-6	7915100.75	2594196.01	11.14
B-7	7915167.25	2594265.67	9.69
B-8	7914966.69	2594579.87	10.56
B-9	7915022.50	2594649.66	10.06
C-1	7914998.60	2594326.56	10.94
C- 2	7914782.45	2594643.46	9.37
C- 3	7914601.06	2594339.52	9.84
C-4	7914734.37	2594100.56	9.09

2.3.1 Existing Conditions

The Turks and Caicos Islands were formed from the pieces of continental crust that resulted from the separation of North America from West Africa, during the Triassic period, 200 million years ago, when the planet's land mass, Pangea, broke apart to form the presently known continents.

The continental crust is covered with thousands of meters of limestone rock or coral limestone, which has been formed by the decomposition of remains of marine organisms (fossils, algae, corals, crustaceans) and the precipitation of calcium carbonate material, which under specific conditions, are deposited to form small particles that cement and form the rock.

During the Pleistocene, when glaciation occurred, the sea level dropped more than 300 feet, forming the banks which are flat plateaus composed of aeolian (sand and silt) and developing dunes, resting on coralline limestone, previously formed.

Shallow depressions in the coral limestone form lagoons whose waters evaporate, and brine sediments made up of gypsum, calcium carbonate and halite are deposited. These salt pans promoted salt production in the 17th century, extending until the mid-20th century.

The area where the "St. Regis Hotel & Residences", is located fronts Grace Bay beach, the subsoil formed in the first meters are characterized as fine to medium sand, with isolated layers that are fine to silty. With the presence of remains of shells and snails, whose relative density varies from very dense to medium dense as a function of increasing depth, with underlying layer of calcareous concretions in a sandy silt matrix, of medium to solid compactness, above a rock or coralline limestone located at depths between 38 ft and 44 ft below existing elevation of the ground and terrain. (Figure 2-4).

Figure 2-4 Existing Ground Conditions

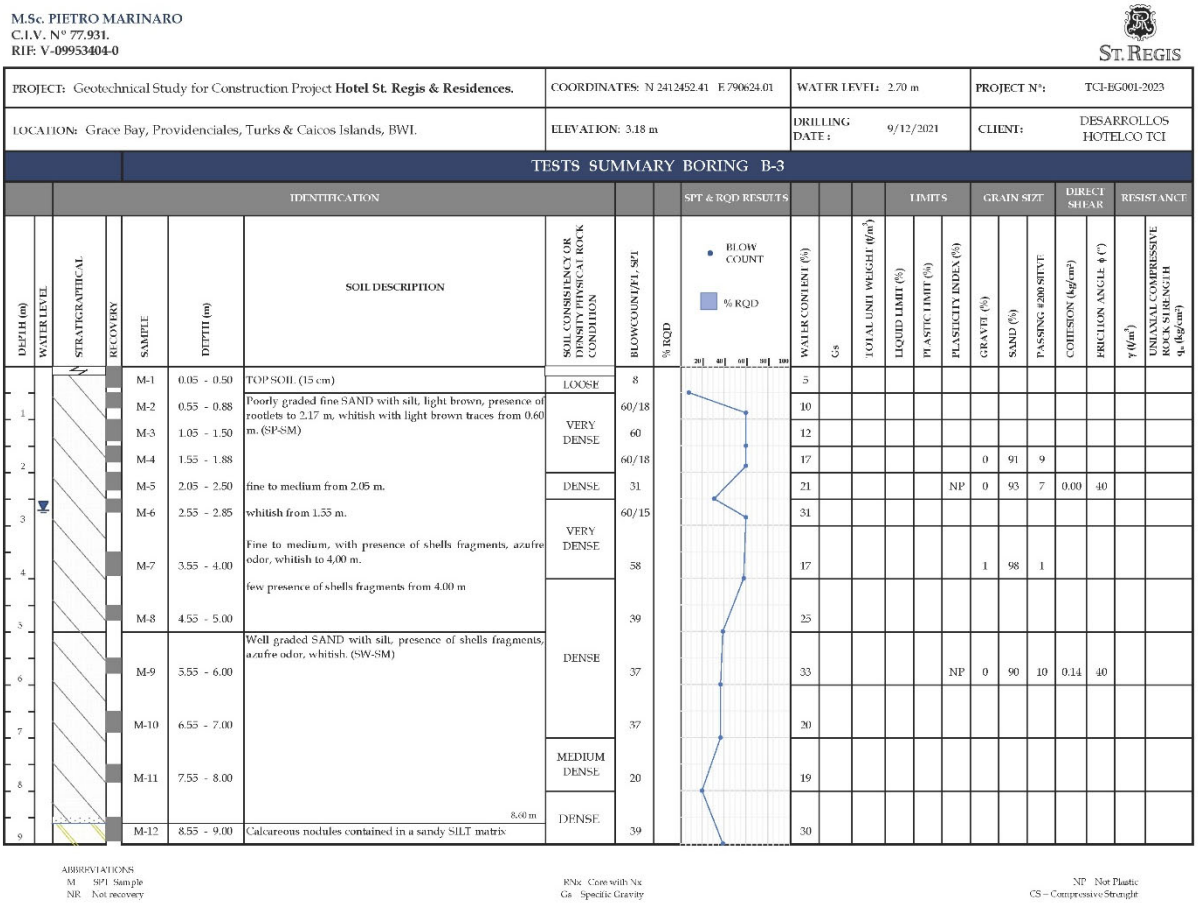
2.3.2 Drilling Methodology

The perforations were carried out using conventional techniques and procedures for geotechnical investigations on dry upland. The execution of the soundings was carried out with one (1) skid drilling equipment, model Diedrich D25, with mast and hydraulic tower, and a 27 HP Kohler 2-cylinder gasoline engine.

The drilling method used to obtain disturbed soil samples was percussion for continuous sampling (every1.6 ft) over the first 9.8 ft and a combination of percussion and advance with washing, for sampling at intervals of 3.28 ft starting at a depth of 9.8 ft and continuing until reaching the top of coral rock or limestone, where in most cases the advance by rotation was carried out at an interval of 4.9 ft, to the final depth of each core drill test site. Appendix 7 provides the depth at which the rock top was reached and the total depth of each perforation executed, with respect to the current ground level.

Simultaneous to the sampling of disturbed soils, the standard penetration test (SPT) was performed, which uses a thick-walled sampling tube or split spoon of 2 inches in external diameter (2 in) and a minimum length of 2 ft driven into the subsoils utilizing the energy provided by the blows of a(140 lb hammer with a free fall of 2.5 ft. The number of blows necessary to drive the sampler tube the last 1 ft into the ground for a total penetration of 1.5 ft, is what is known as soil resistance to penetration (NSPT), establishing the relative density for granular soils, and consistency in cohesive soils (ASTM D-1586).

Rejection in the SPT test was defined as greater than 60 blows per foot, which was measured and recorded, as shown in the Geotechnical Survey (Appendix E) and Figure 2-5. Disturbed soil samples were placed in plastic jars with hermetically sealed lids and identified for the project by drilling number, date, sample number and depth, recovery length and resistance to normal penetration (NSPT) and stored and transported to the laboratory for analysis.



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RIF: V-09953404-0

ST. REGIS

PROJECT: Geotechnical Study for Construction Project **Hotel St. Regis & Residences.**	COORDINATES: N 2412452.41 E 790624.01	WATER LEVEL: 2.70 m	PROJECT N°: TCI-EG001-2023
LOCATION: Grace Bay, Providenciales, Turks & Caicos Islands, BWI.	ELEVATION: 3.18 m	DRILLING DATE : 9/12/2021	CLIENT: DESARROLLOS HOTELCO TCI

TESTS SUMMARY BORING B-3

DEPTH (m)	WATER LEVEL	STRATIGRAPHICAL	RECOVERY	SAMPLE	DEPTH (m)	SOIL DESCRIPTION	SOIL CONSISTENCY OR DENSITY PHYSICAL ROCK CONDITION	BLOWCOUNT/FT, SPT	% RQD	WATER CONTENT (%)	Gs	TOTAL UNIT WEIGHT (t/m³)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX (%)	GRAVEL (%)	SAND (%)	PASSING #200 SIEVE	COHESION (kg/cm²)	FRICTION ANGLE ϕ (°)	γ (t/m³)	UNIAXIAL COMPRESSIVE ROCK STRENGTH qu (kg/cm²)
				M-1	0.05 - 0.50	TOP SOIL (15 cm)	LOOSE	8		5												
1				M-2	0.55 - 0.88	Poorly graded fine SAND with silt, light brown, presence of rootlets to 2.17 m, whitish with light brown traces from 0.60 m. (SP-SM)	VERY DENSE	60/18		10												
				M-3	1.05 - 1.50			60		12												
2				M-4	1.55 - 1.88			60/18		17						0	91	9				
				M-5	2.05 - 2.50	fine to medium from 2.05 m.	DENSE	31		21					NP	0	93	7	0.00	40		
3				M-6	2.55 - 2.85	whitish from 1.55 m.	VERY DENSE	60/15		31												
4				M-7	3.55 - 4.00	Fine to medium, with presence of shells fragments, azufre odor, whitish to 4,00 m. few presence of shells fragments from 4.00 m		58		17						1	98	1				
5				M-8	4.55 - 5.00			39		25												
6				M-9	5.55 - 6.00	Well graded SAND with silt, presence of shells fragments, azufre odor, whitish. (SW-SM)	DENSE	37		33					NP	0	90	10	0.14	40		
7				M-10	6.55 - 7.00			37		20												
8				M-11	7.55 - 8.00		MEDIUM DENSE	20		19												
9				M-12	8.55 - 9.00	8.60 m Calcareous nodules contained in a sandy SILT matrix	DENSE	39		30												

ABBREVIATIONS
M SPT Sample
NR Not recovery
RNx Core with Nx
Gs Specific Gravity
NP Not Plastic
CS – Compressive Strenght

Figure 2-5 Test Site B-3 Core Log

The drilling method used to obtain rock samples was the advance by rotation, with the use of the double tube sampler with designation Nx (external diameter 0.25 ft) and Nx drill bit with internal diameter 2,15 inch, equipped with a conduit for internal water discharge. The rock cores, in lengths of nominally 5 ft with the percentage of recovery of cores generally exceeding 4 inches in length of each length for the rock drilling to obtain the rock quality index (RQD, Rock Quality Designation).

2.3.3 Seismic Activity

The Turks and Caicos Islands are located about 124 miles north of the active fault system where the North American and Caribbean plates converge. The identification of epicenters of focal mechanisms of earthquakes are shown in Figure 2-6 that were extracted from a study of measurements of deformation or displacement of the earth's crust in the Dominican Republic (Canape Project) and Google Earth, respectively.

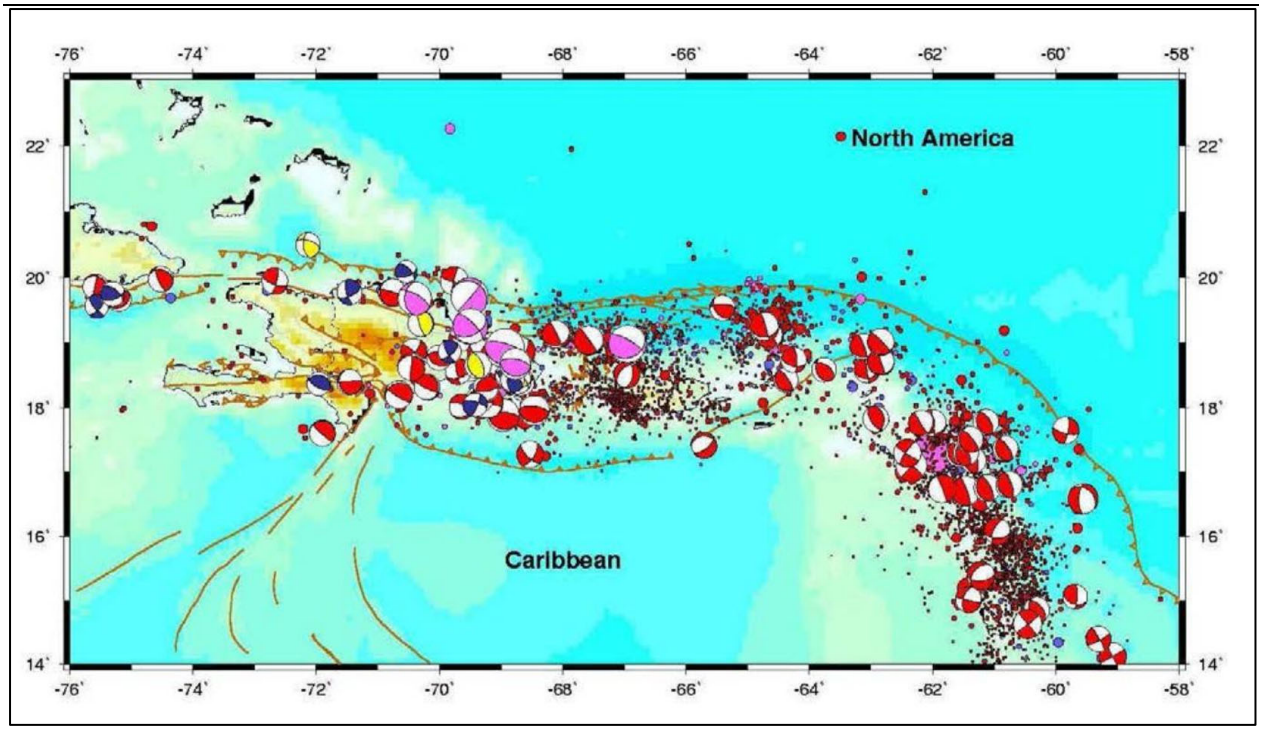


Figure 2-6 Regional Geologic Conditions

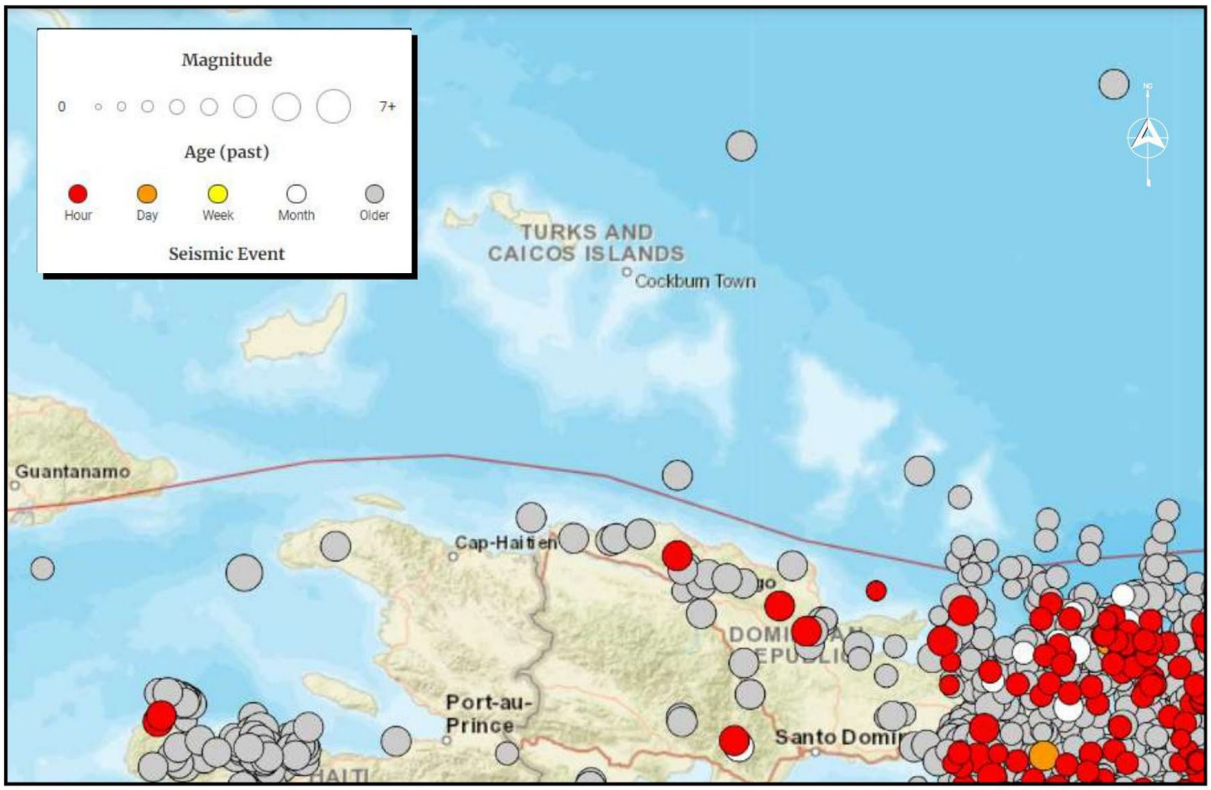


Figure 2-7 Turks & Caicos Islands Seismic Activity

2.3.4 Seismic Impacts

Based upon the field investigations and the results of the laboratory tests, the main geotechnical concern in designing the foundation of the building structures could be the potential for liquefaction due to the sandy-silty or saturated sandy-silty soils. In addition, at test sites B -3 and B-4 where the Residential Tower # 1 will be located, at a depths of at 36 ft and 26 ft and at test sites B-6 and B-7 where the Residential Tower # 2 will be located, and at test sites B-8 and B-9 at 39 and 33 ft depths where the Residential Tower # 3 will be located.

The liquefaction phenomenon is a physical process that occurs during some earthquakes and produces ground failure. In the case of liquefaction of soils without clays, composed mainly of sands and silts (particles smaller than sand), they temporarily lose resistance, behaving as viscous fluids and not as solids. This happens when a transverse seismic wave passes through them. saturated granular soils, altering the granular structure of the soil and collapsing the void spaces between the grains.

As a consequence, during the passage of the seismic wave through the ground, the charge generated by it is no longer sustained by the contacts of the grains, but is transferred to the water between the grains. This increases the water pressure in the soil, forcing the water to drain

(drain) out of the soil. If soil drainage is not possible, then the water pressure within the soil will continue to increase until it equals the weight of the soil itself. It is at this moment that the granular soil behaves like a liquid, allowing deformations that, under normal conditions, would not be possible.

Liquefaction only occurs in environments that have certain geological and hydrological characteristics; mostly where sands and silts have been deposited in the last 10,000 years and where the groundwater table is 9 meters or less from the surface.

The "younger" the soil, and the closer the water table is to the surface, the greater the risk that liquefaction may occur in the ground.

Liquefaction generates three (3) types of ground failure: lateral cracking, flow, and loss of bearing capacity (this causes a building to sag and lean). It can also generate sand eruptions, which are sources of water and sediment generated by the pressure drainage of water in the liquefaction zone. Sand eruptions can flood the immediate areas with a mixture of water and sand.

The soil liquefaction analysis in the study areas was performed taking into account:

- On-site soil conditions based on SPT field test results obtained from geotechnical drilling and laboratory classification tests (particle size and unit weight).
- Depth of the water table.
- The estimate of the magnitude of the earthquake at 7.5 and the maximum acceleration of the terrain (amax) equal to 0.10 g, as presented in section 5.3 of this report.

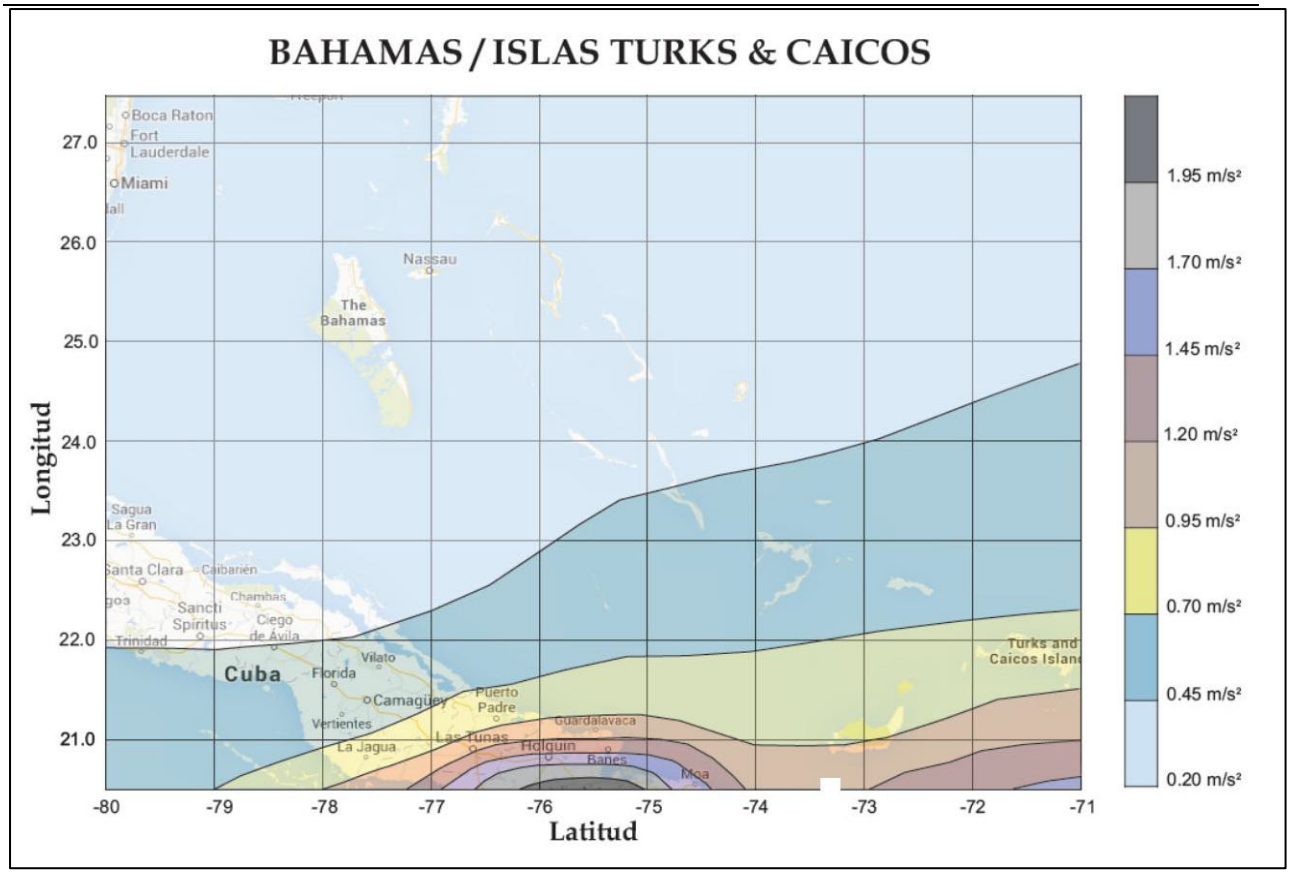


Figure 2-8 Turks and Caicos Seismicity

The profiles traced in the study area were generated in an idealized way through the punctual information obtained from the perforations, in situ tests and laboratory tests. From the analysis of the specific information obtained from the perforations and taking into account the locations of the proposed buildings , it can be deduced that the study area is represented by four (4) stratigraphic profiles, denoted as: Profile 1 - Hotel Tower represented by test sites B-1, B-2 and B-5; Profile 2 - Residential Tower # 1, represented by test sites B-3, B-4; Profile 3 - Residential Tower # 2, represented by test sites B-6 and B-7; and Profile 4 - Residential Tower # 3, represented by test sites B-8 and B-9.

In general, the soil strata displayed in each column are of the same nature, however, the variation in lithology is due to changes in depth and thickness, detected for each stratum. In the entire area evaluated, a vegetal layer with variable thickness between 0 and 8 inches was detected on the surface and a filling of 37 inches (B-7) and 9 inches (B-9).

2.3.5 Karst Features

No caves, caverns, or chimney features typical of mature upland karst geology were found onsite.

2.4 Meteorology

2.4.1 Temperatures

Primarily local temperatures, over the course of the year in the Turks and Caicos Islands (TCI), the temperature varies from 70° F to 86° F. The warmest months are from June through September with an average daily high temperature above 87° F. The cooler months are from October through May with an average daily high temperature below 81° F . Providenciales International Airport maximum daily temperature data indicates that temperatures have been rising over the last decade (Figure 2-9).

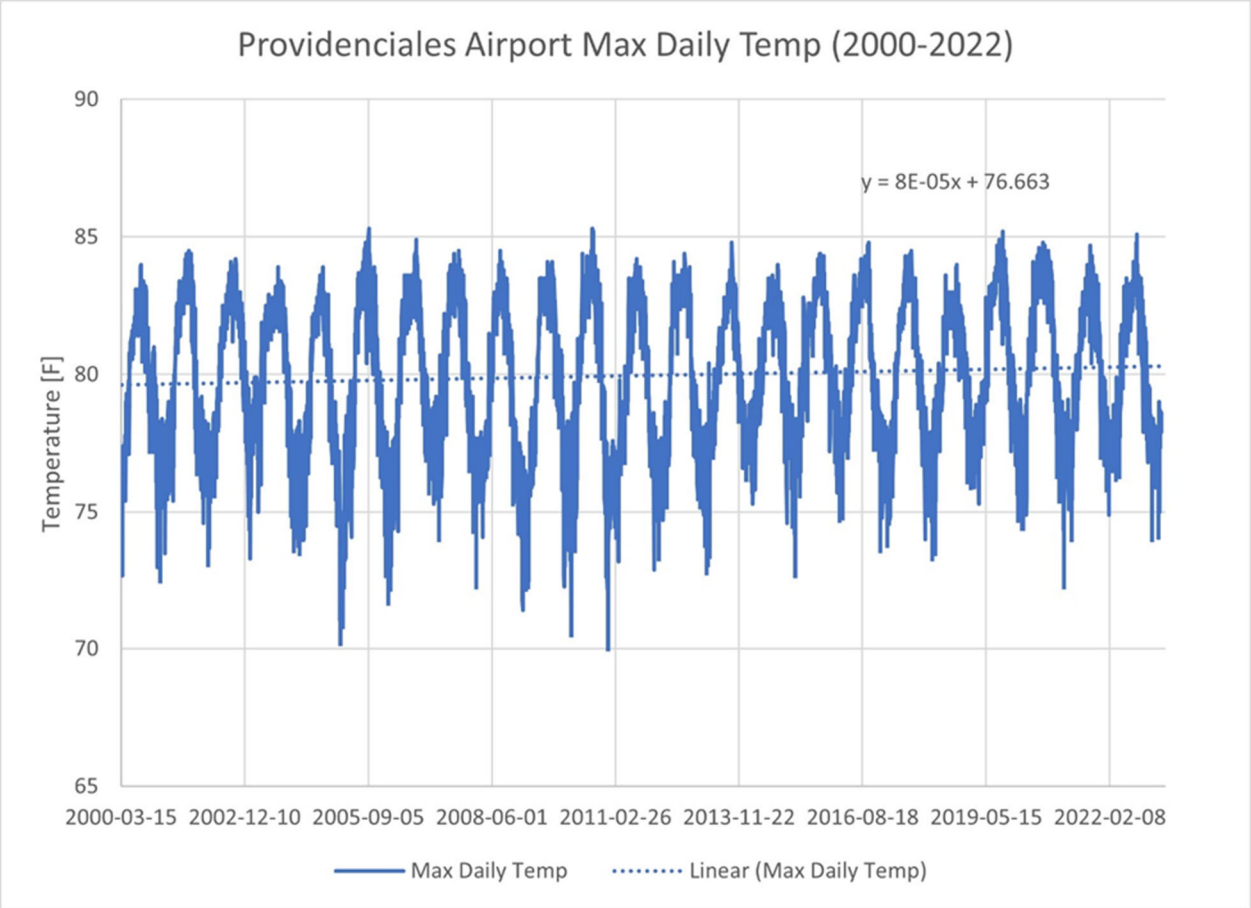


Figure 2-9 Providenciales Airport Maximum Daily Temperatures (Open-Meteo, 2023)

2.5 Heat Index

Heat index is a function of air temperature and relative humidity to quantify what the temperature feels like including humidity (Figure 2-10). Relative humidity in the Turks and Caicos is typically between 60% and 90%. The driest month of the year is typically March (humidity below 63%) with the most humid month is typically July (above 88%). With temperatures of

nearly 90°F in July with humidity above 85%, the heat index will approach or exceed 110°F (Figure 2-10) .

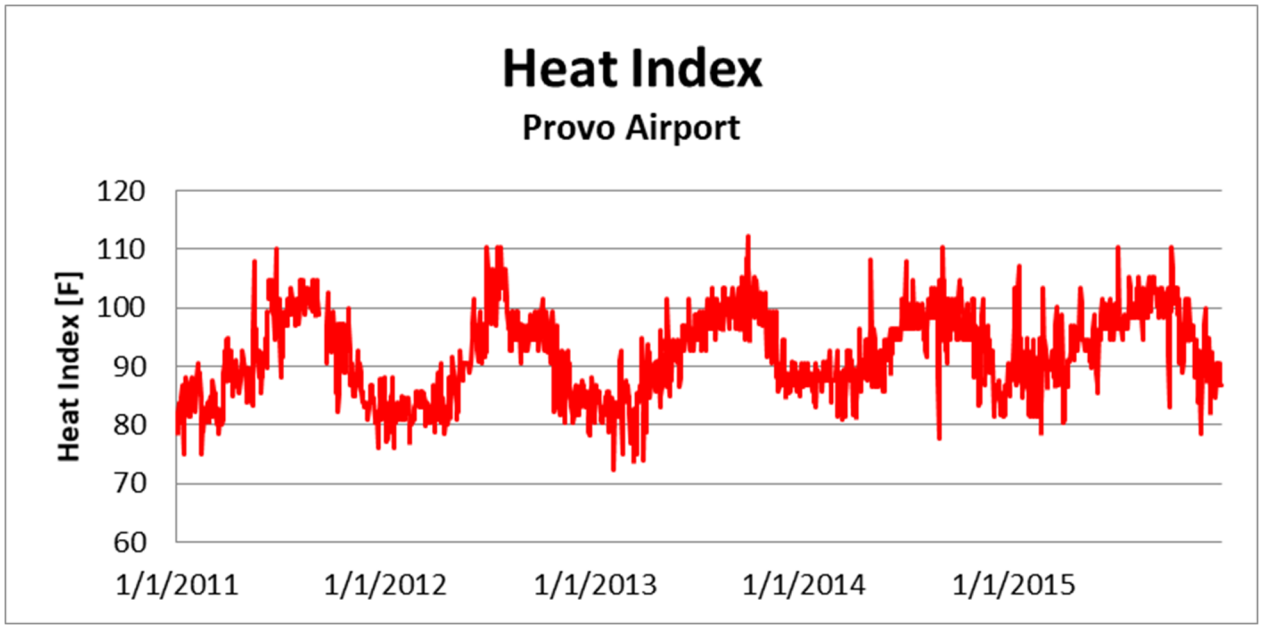


Figure 2-10 Turks and Caicos Heat Index (2011-2015)

2.6 Rainfall Trends & Patterns

Localized episodic rainfall events, typically caused by tropical systems, exceeds an inch of rainfall per hour (intensity) causing high rates of stormwater runoff and flooding. Local topography and soil permeability are the most important parameters in assessing the potential impacts of high intensity rainfall events and require planning and design specific to the site for the development to reduce, minimize and control stormwater runoff effects on the site and surrounding environment.

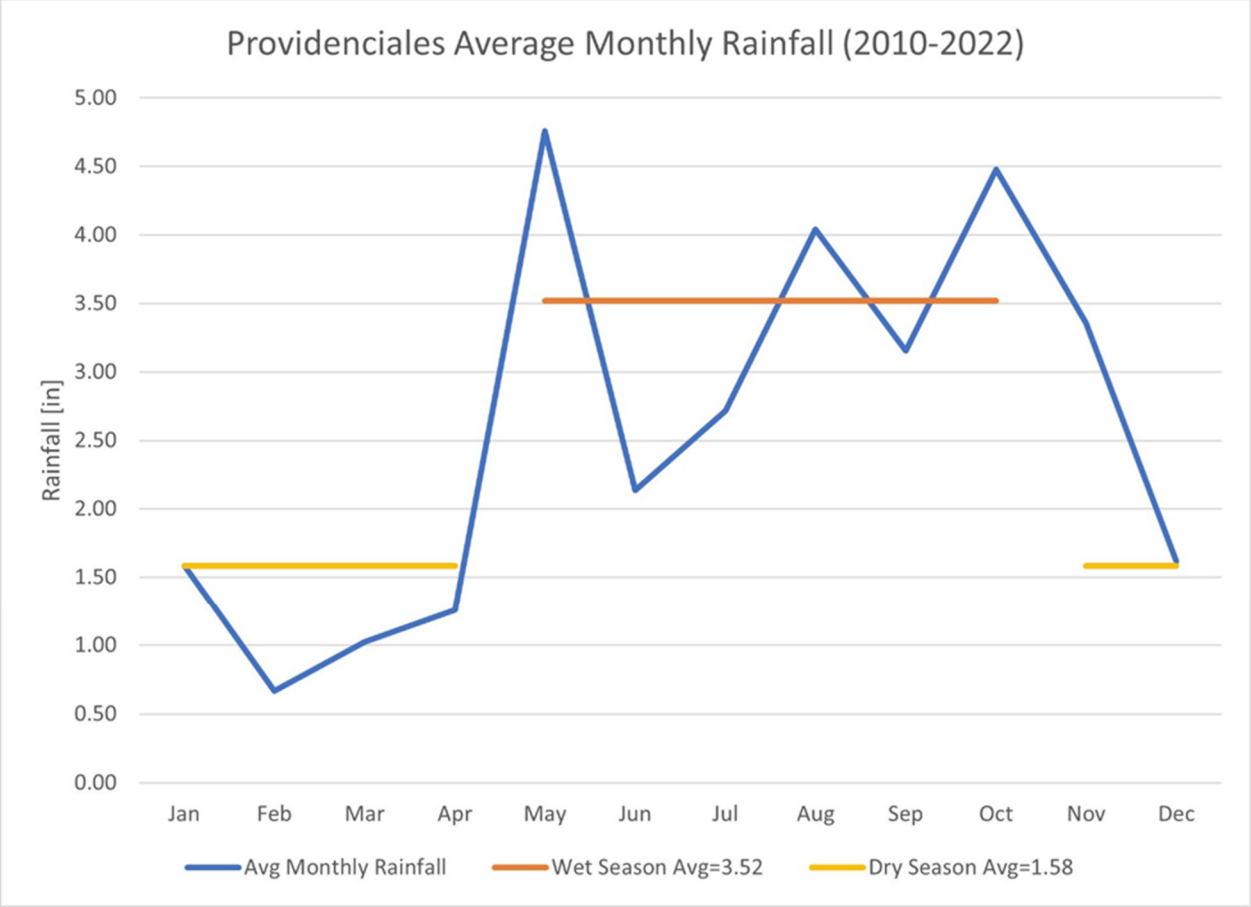


Figure 2-11 Average Monthly Rainfall 2010-2022 (Sunshine Nursery, 2023)

To update the prior studies, CDE reviewed rainfall data for the Island of Providenciales from 2009 to 2023 from several different sources. Sources for the collected rainfall data include the Providenciales Airport (PLS), FortisTCI plant facility and Sunshine Nursery rain gauge (Figure 2-13) located on Providenciales in Grace bay over this 13 year period. The rainfall measurements have an estimated accuracy of +/- 2% for rainfall intensities up to 1 in/hr.

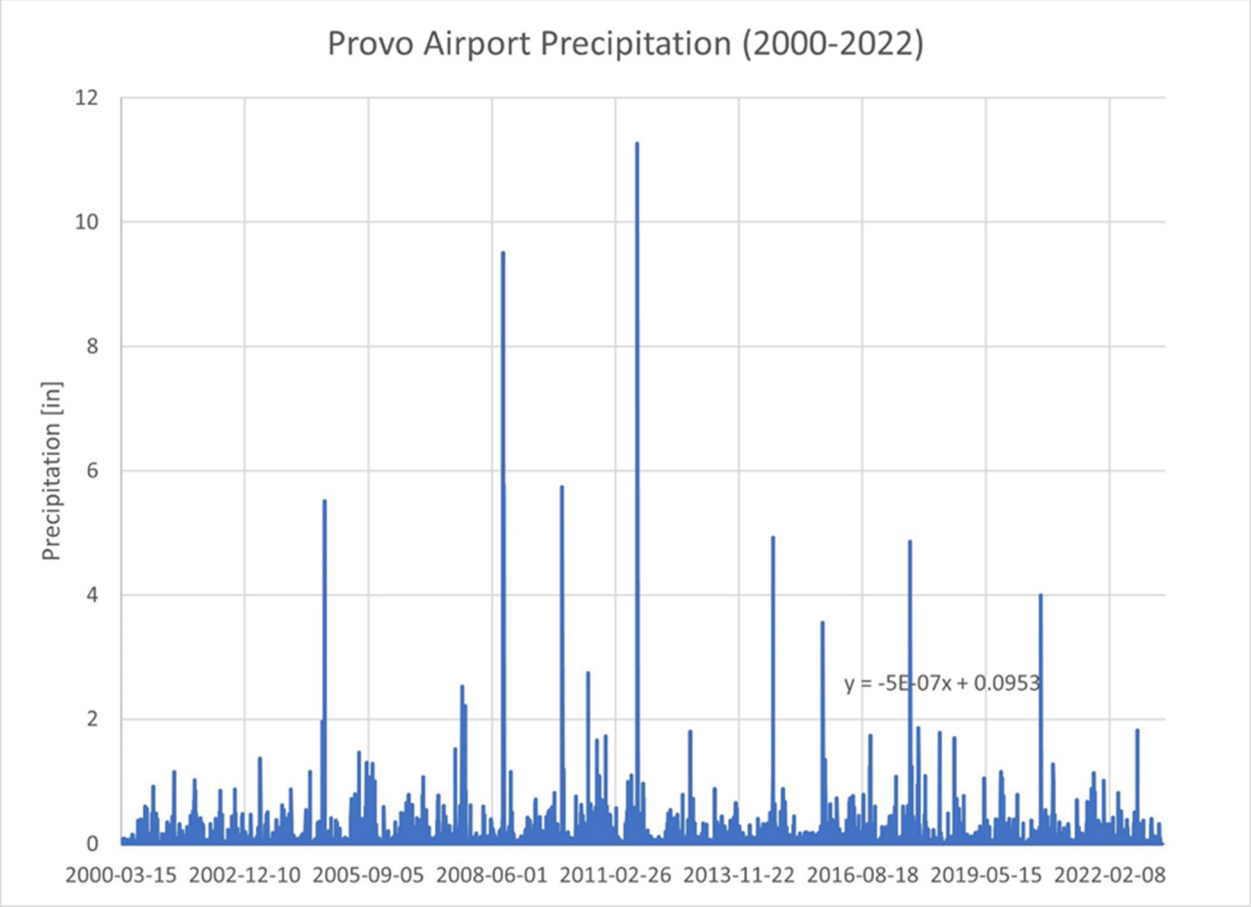


Figure 2-12 Providenciales Airport Precipitation (Open-Meteo, 2023)

The Sunshine Nursery gauge is located on the Sunshine Nursery property in Grace Bay. This gauge is read and cleared manually by nursery staff and recorded in inches on a daily basis. Error for this gauge is dependent on the reader and the consistency of time of day that the measurements are taken. The marginal decrease in monthly average rainfall over the last decade (Figure 2-13) may be due to the consistency of these manual recordings of daily rainfall, and also during the 2020 period when the COVID 19 lock downs and reduced workday hours may have affected recordings, resulting in less reliable data.

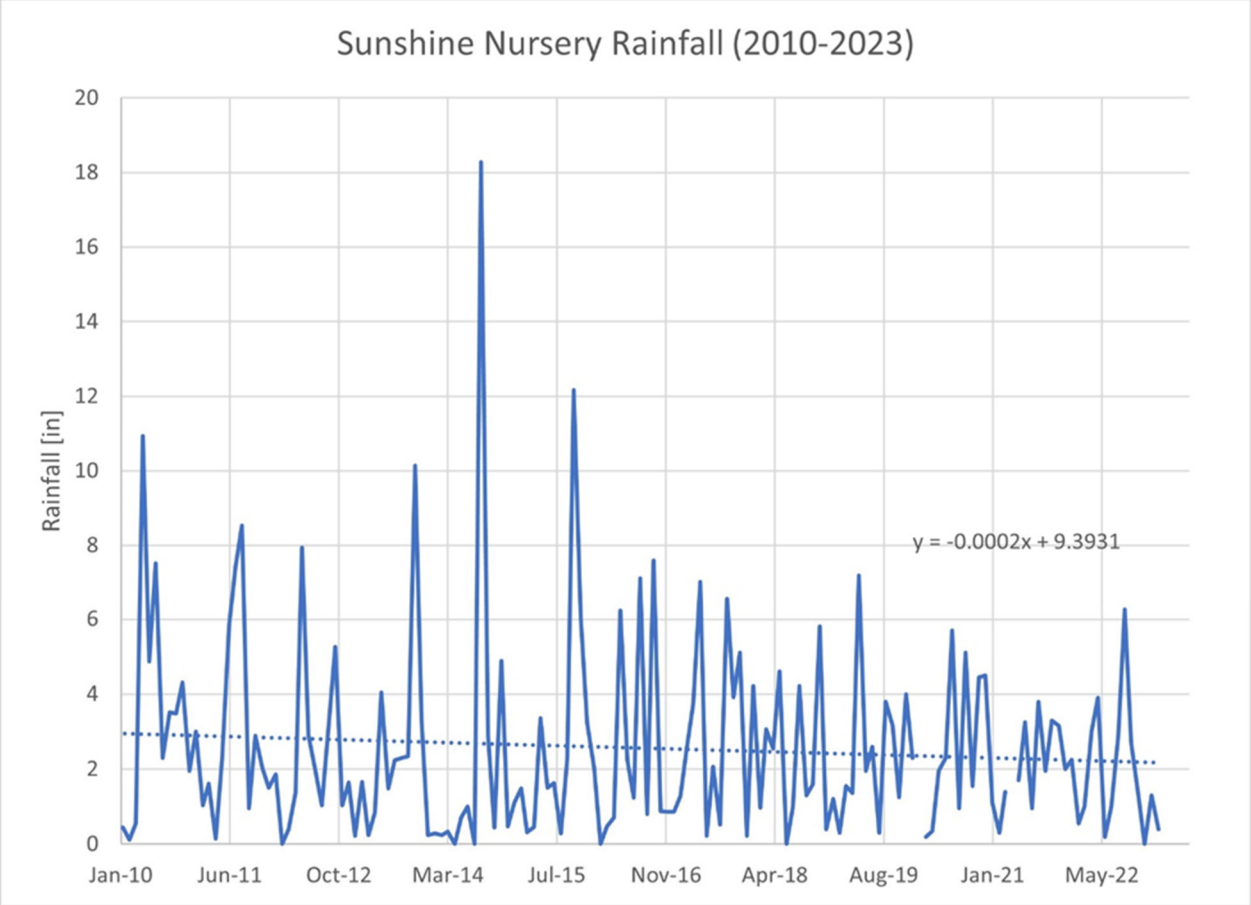


Figure 2-13 Rainfall Data for Sunshine Nursery 2010-2019 (Analysis by CDE, 2023)

In summary, Providenciales rainfall data is characterized by:

- Annual rainfall for Providenciales ranging from less than 20-inches (50.8 cm) to greater than 50 inches (127 cm), and an annual average of 30 inches.
- Average minimum and maximum monthly rainfall for Providenciales ranging from one (1) inch (2.5 cm) in March and 4.5 inches (11.4 cm) in November.

Table 2-2 Sunshine Nursery Rainfall Data

Providenciales Rainfall Data

Sunshine Nursery
2010 through 2020

Month	2010 (in)	2011 (in)	2012 (in)	2013 (in)	2014 (in)	2015 (in)	2016 (in)	2017 (in)	2018 (in)	2019 (in)	2020 (in)	Avg (in)
Jan	0.43	3.00	1.86	0.22	0.28	1.10	2.04	0.86	4.22	1.20	2.30	1.15
Feb	0.44	1.04	0.00	1.66	0.24	1.49	0.00	1.28	0.98	0.30	0.00	0.81
Mar	0.11	1.61	0.40	0.24	0.34	0.32	0.48	2.58	3.06	1.55	0.20	0.50
Apr	0.55	0.14	1.38	0.84	0.00	0.46	0.70	3.74	2.54	1.36	0.35	0.56
May	10.93	2.28	7.94	4.04	0.70	3.36	6.23	7.02	4.60	7.20	1.95	4.88
Jun	4.87	5.84	2.90	1.48	1.00	1.50	2.23	0.22	0.00	1.95	2.30	2.93
Jul	7.52	7.43	1.96	2.24	0.00	1.62	1.24	2.06	1.00	2.60	5.70	3.46
Aug	2.30	8.54	1.04	2.29	18.27	0.28	7.11	0.52	4.21	0.30	0.95	5.45
Sept	3.52	0.95	3.22	2.34	2.90	2.29	0.80	6.57	1.30	3.80	5.10	2.59
Octo	3.49	2.89	5.26	10.14	0.44	12.17	7.60	3.92	1.60	3.15	1.55	4.44
Nov	4.31	2.04	1.04	3.31	4.88	6.05	0.88	5.11	5.80	1.25	4.45	3.12
Dec	1.96	1.50	1.65	0.24	0.48	3.24	0.86	0.22	0.40	4.00	4.50	1.17
TOTAL	**40.43**	**37.26**	**28.65**	**29.04**	**29.53**	**33.88**	**30.17**	**34.10**	**29.71**	**28.66**	**29.35**	**31.06**

Low Frequency Rainfall Events

Rainfall data recorded for each day of the year from each source were collected, compared and analyzed. Based on the local rainfall data collected, CDE derived a table of low frequency rainfall intensities for storm events, deemed local legacy events at Providenciales, and the associated return period interval estimate estimates as shown below in Table 2-3. The left column identifies which return period event corresponds with rainfall intensity.

Table 2-3 Rainfall Events – Providenciales, TCI (CDE & NOAA, 2023)

Event	Providenciales (in)	Similar Events
1-Yr/24-Hr	2.0	
2-Yr/24-Hr	3.0	Ike (9/2008), Thomas (11/2010)
5-Yr/24-Hr	6.0	Hanna (9/2008), Kate (11/2015)
10-Yr/24-Hr	7.0	Irma (9/2017)
25-Yr/24-Hr	8.0	Irene (8/2011)
50-Yr/24-Hr	9.0	Bertha (8/2014)
100-Yr/24-Hr	10.0	Cristobal (8/2014)

2.7 Local Wind Data

Coupled wind velocity data, from a verified and calibrated gauge, is limited in overall availability for Providenciales Figure 2-14, however these directional and wind speed data sets are consistent with long term directional data provided by the US Air Force data collected at their station on Grand Turk between 1960-1980 (approximately).

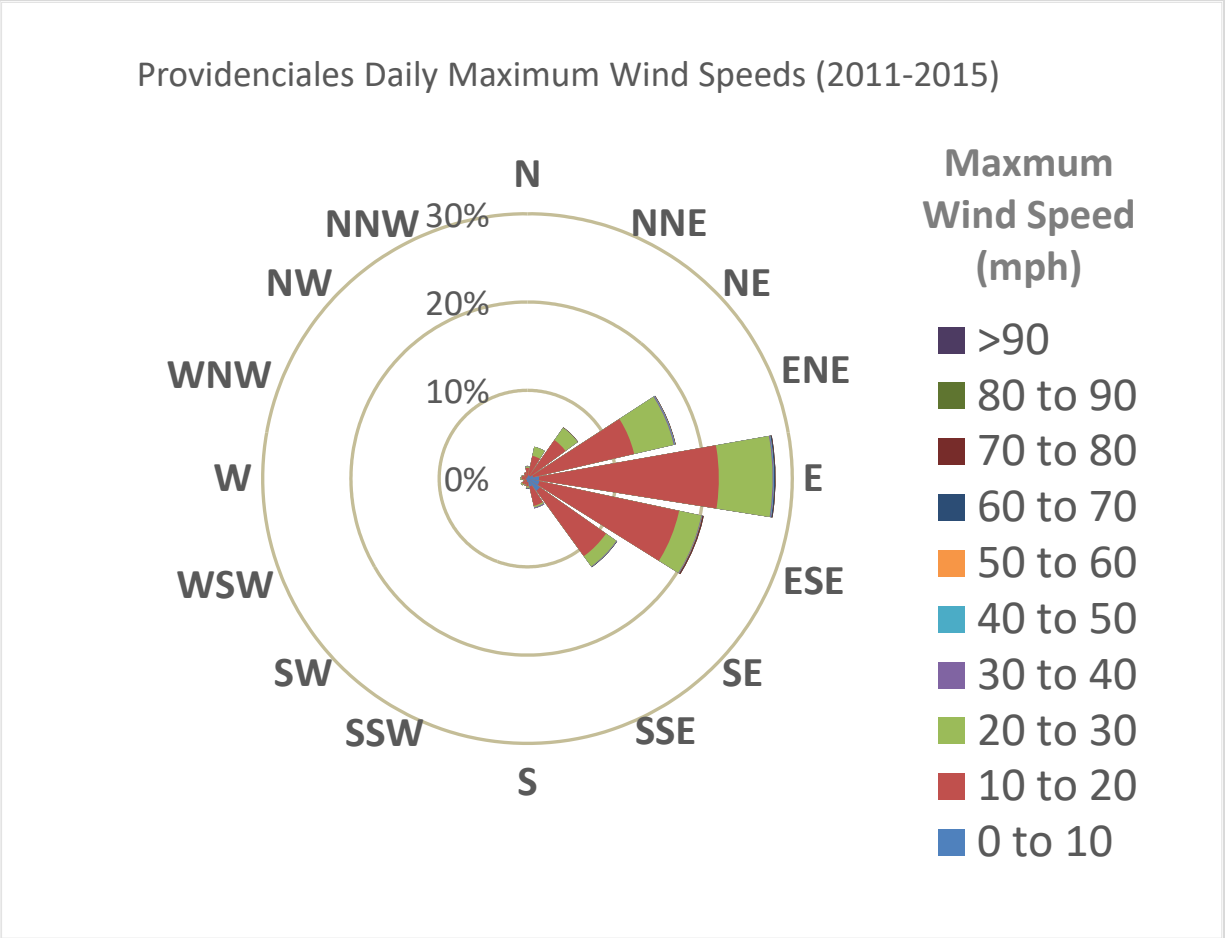


Figure 2-14 Minimum and Maximum Wind Speeds for Providenciales (2011-2015)

2.7.1.1 *Waves*

Significant wave heights (H_s) are the average of the third highest waves in the wave sector measured from crest to trough. Northerly and easterly Atlantic swells break on the fringe reef before approaching the beaches on the north shore of Providenciales. The wave heights presented in Table 2-3 and Figure 2-15 below are offshore wave heights. Due to the north facing coastline location at the St. Regis Grace Bay, these offshore waves have a dominant effect. Given

the complex nature of wave refraction and diffraction associated with the multiple openings in the nearshore reef offshore of this area, waves approach from several angles which complicates the wave angles of approach but, as with all wave trains, as they approach the shoreline, the waves refract such that the angle of approach rotates to be perpendicular to the depth contours and shoreline.

Table 2-4 Monthly and Annual Non-Exceedance Offshore Wave Heights

Significant Wave Height (ft)													
Month	**1%**	**10%**	**20%**	**50%**	**60%**	**70%**	**80%**	**90%**	**93%**	**95%**	**96%**	**98%**	**99%**
Jan	2.1	2.9	3.4	4.6	5.0	5.4	6.0	6.9	7.3	7.7	8.0	8.9	10.0
Feb	2.2	3.0	3.4	4.4	4.8	5.3	5.9	6.8	7.2	7.5	7.7	8.4	9.1
Mar	1.9	2.7	3.1	4.1	4.5	4.9	5.5	6.5	7.0	7.4	7.7	8.5	9.4
Apr	1.8	2.4	2.8	3.6	4.0	4.4	4.9	5.6	6.0	6.3	6.5	7.3	8.3
May	1.6	2.1	2.4	3.1	3.4	3.7	4.1	4.8	5.2	5.4	5.6	6.1	6.5
Jun	1.5	2.1	2.4	3.0	3.2	3.4	3.6	3.9	4.1	4.2	4.3	4.5	4.7
Jul	1.9	2.4	2.6	3.1	3.3	3.5	3.8	4.2	4.4	4.5	4.6	5.0	5.3
Aug	1.8	2.4	2.6	3.1	3.3	3.5	3.7	4.2	4.4	4.7	5.0	5.5	6.7
Sep	1.8	2.4	2.7	3.3	3.6	3.8	4.2	4.9	5.3	5.8	6.5	8.7	9.9
Oct	1.9	2.5	2.9	3.6	3.9	4.2	4.6	5.4	5.8	6.1	6.3	7.2	8.1
Nov	2.1	3.0	3.4	4.5	4.9	5.3	5.9	7.0	7.5	8.1	8.3	9.0	10.1
Dec	2.3	3.0	3.5	4.6	5.0	5.4	6.0	6.9	7.4	7.8	8.1	8.8	9.6
All	1.8	2.5	2.8	3.6	4.0	4.4	5.0	5.9	6.4	6.9	7.2	8.1	8.9

(Ocean Weather Inc., 2015)

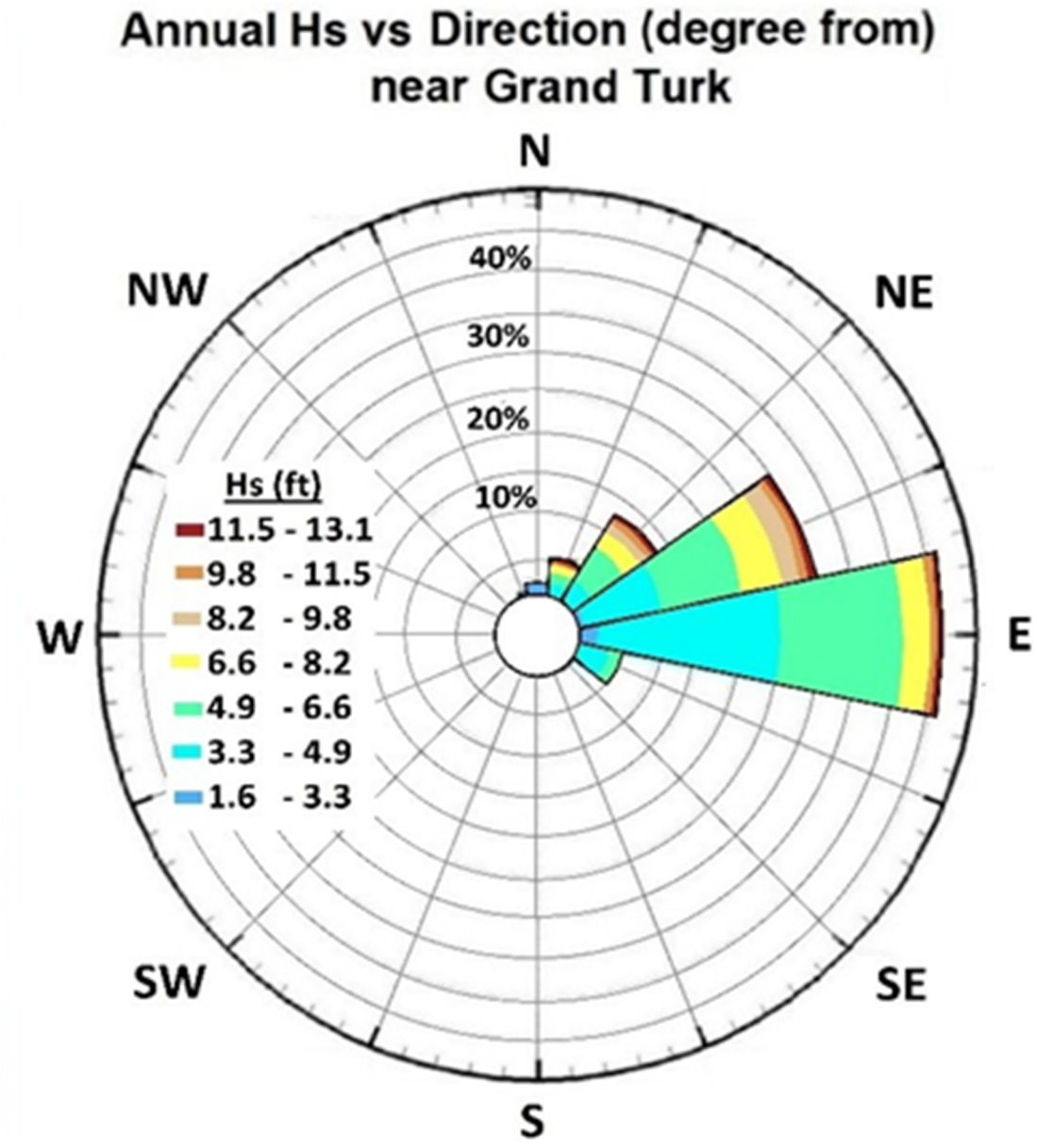


Figure 2-15 Annual Significant Wave Height vs. Direction for TCI

The wave rose in Figure 2-15 presents annual significant wave heights as a function of directional percent occurrence. Waves predominately are from the east with a lower fraction occurring from the northeast and southeast sectors. Larger waves from the northeast are typical of winter storms on the TCI with smaller waves from the southeast during the summer months. The recessed shoreline of the Project site shields the site from easterly and northeasterly wind waves, reducing the wave energy impacting the Project Site. Less frequently however during summer to

early fall, tropical low pressure systems and passing hurricanes may generate large swells from the north to southeast sector exposing this coastal site.

Given the project site is protected from nearly all occurrences of offshore wave energy, it is largely influenced by locally generated wind waves. In predicting shallow water waves, in areas along the Caicos bank, the fetch area is long enough for seas to achieve fully developed strengths given enough wind duration. As waves tend to break when approaching 78% of the water depth, consistent 6-7ft nearshore water depths limit most waves to 4.5-5.5ft nearshore wave heights without storm surge.

2.7.1.2 *Tides*

Water levels in the project area are primarily affected by tidal fluctuations of the Atlantic Ocean. The tides in the TCI are semi-diurnal (i.e. there are generally two high tides and two low tides per day). The project area is also subject to storm surges due to hurricanes, tropical storms and extratropical storms. The closest published NOS tidal benchmark data is located in Grand Turk (Hawks Nest Anchorage). The published mean tide range is 2.1ft with a spring tide range of 2.6ft. CDE has conducted many short-term tidal studies in the islands which generally agree with these ranges. Tidal datums are provided in Table 2-5.

Table 2-5 Tidal Datums

Tidal Datum	FT MSL
MHHW	+1.6
MHW	+1.1
MSL	0
MLW	-1.0
MLLW	-1.8

2.7.1.3 *Storms*

Since 1950, thirty named storms have passed within 80 miles of Providenciales as cataloged by NOAA. They are presented in Table 2-4 with storms causing significant surge distinguished with an asterisk. Primarily the strongest hurricanes and tropical storms approach the Turks and Caicos from the East due to the destructive nature of high mountain ranges of Hispaniola and the Eastern tip of Cuba on the organization of convection circulating around the low-pressure centers of these systems (Figure 2-16).

Table 2-6 Named Storms within 80 miles of Providenciales

Year	Name	Local (Provo) Wind Speed (kts)
2017	IRMA	145
2017	MARIA	110
2014	BERTHA	40
2014	CRISTOBAL	30
2011	IRENE	105
2010	TOMAS	60
2008	HANNA	75
2008	IKE	115
2005	RITA	45
2004	FRANCES	125
2004	JEANNE	45
2003	MINDY	35
1999	DENNIS	40
1996	BERTHA	90
1996	HORTENSE	100

Year	Name	Local (Provo) Wind Speed (kts)
1995	ERIN	45
1990	KLAUS	45
1987	EMILY	40
1985	ISABEL	45
1985	KATE	80
1981	GERT	40
1963	EDITH	35
1963	FLORA	75
1960	DONNA	110
1960	FLORENCE	40
1959	GRACIE	55
1956	BETSY	100
1954	EDNA	60
1954	HAZEL	85
1952	CHARLIE	35

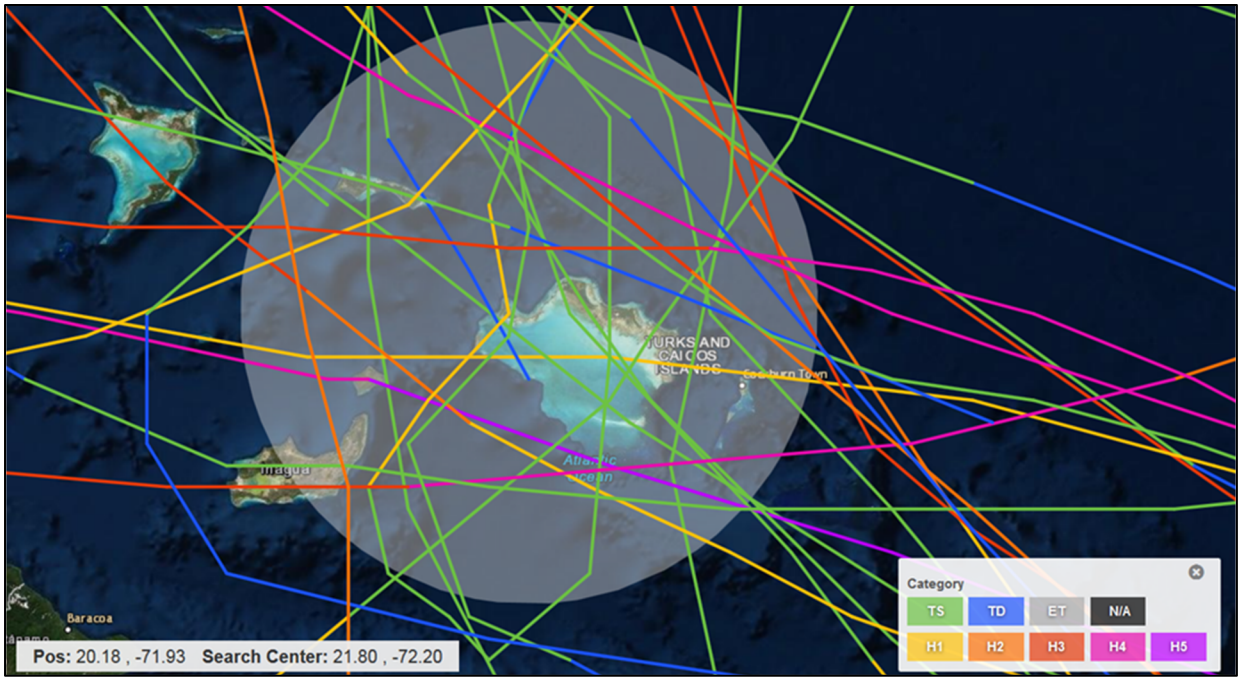


Figure 2-16 Storm Tracks within 80 Miles of Providenciales (NOAA, 2020)

Hurricane Irma, the largest recent hurricane to impact Providenciales directly, caused sustained winds of approximately 145 knots from the East and Northeast in the Grace Bay area. Although this wind was extreme in magnitude, the speed of the storm track and direction minimized impacts during the peak of the storm.

Typically, fast-moving storms will cause water to "pile-up" on one side of the island, but as the eye passes over the island, the rotation of the storm reverses the direction of incoming winds, shifting the localized surge impacts significantly. As such, when winds were southerly, water levels increased. This combined with the significant stormwater outflow from the watershed and canals of Discovery Bay, water levels in parts of the Grace bay area were approximately +4 to +6ft (MSL). By definition, surge height is the storm-induced rise in sea level and does not include wave set up or tidal variation. Additionally, the sustained wind speed is defined as the 1-minute average wind speed at a 32.8ft elevation (NOAA, 2020).

2.7.1.4 *Storm Surge and Sea Level Rise Analysis and Mitigation Plan*

The Project Area is located within the Caicos Islands archipelago and within the tropics zone that predisposes the site to the forces of occasional moderate to strong tropical storms and hurricanes. During the passage of storms, the low lying islands may be subject to storm surge, waves and flooding. Furthermore, the small, low lying islands of the TCI are also vulnerable to global climate change. Observed trends for global climate change include an increased frequency to extreme storm events (e.g. hurricanes) and sea level rise. The effects of tropical storms, hurricanes and sea level rise were evaluated and considered in the design of the Project.

Local bathymetry and topography are the most important parameters in assessing the impacts of these storm related forces, and in this case, reducing the effects of storm surge. Existing grades are characterized by elevations of +10ft to +15ft MSL which is above the anticipated effects of typical storm surge and development will be built above the seasonal high water line of +4.25ft MSL. Physical evidence of extreme events can be found in the form of wrack lines, areas where water has collected debris, as well as rocks, in linear patterns parallel to the coastline.

Storm surge, while likely to occur, has a limited intensity. Depending on the angle of approach for a Category 5 hurricane passing directly over the site, a storm surge of approximately 6 to 8ft is possible (Figure 2-17) in highly localized areas. This does not include wave set up, which can increase the water level by nearly 20% of the significant wave height, or tides which can exacerbate or dampen the effects of storm surge. The closest NOAA station with long duration (1955 to present) sea level data is.

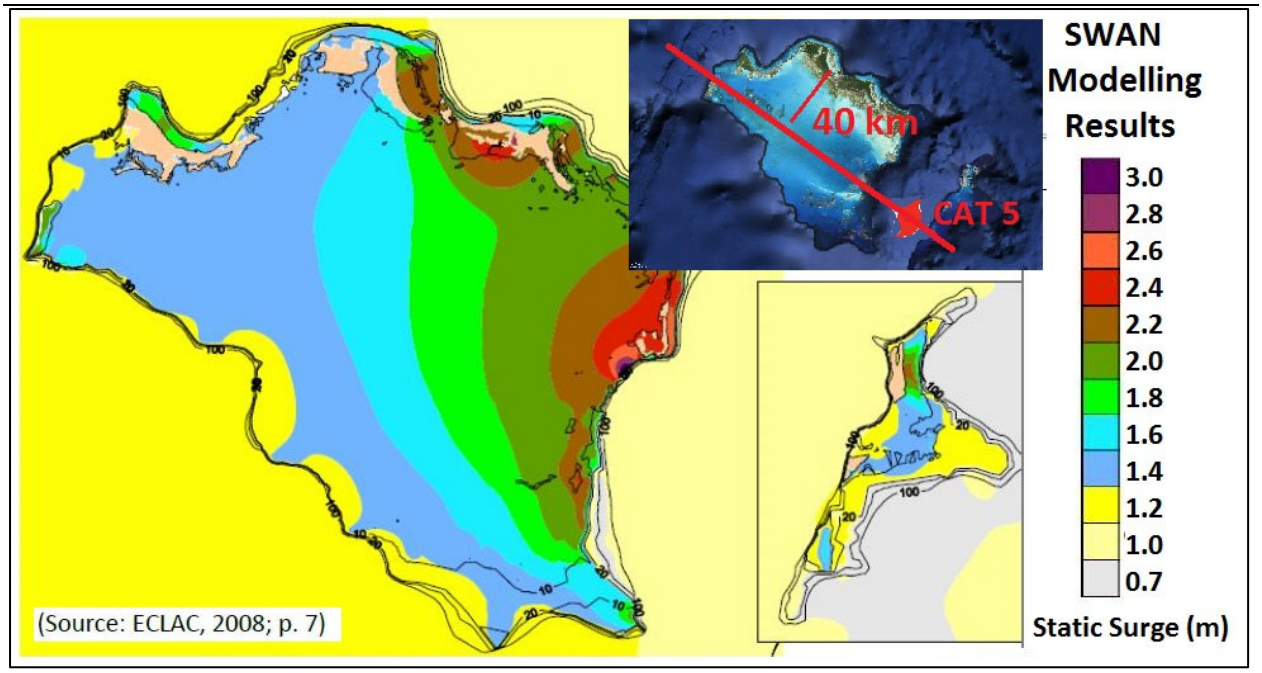


Figure 2-17 Category 5 Hurricane Storm Surge (Carribean Catastrophe Risk Insurance Facility, 2013)

For habitable structures, global climate change and sea level rise is considered as it relates to rising groundwater levels and tides. The groundwater level on these coastal environments is tidally influenced with the groundwater level at approximately Mean Sea Level. With the re-grading of the development, the elevation of the development is between +14 ft to +17ft (MSL) which is outside of the influence for anticipated sea level rise over the next 80 years.

2.8 Sediment Transport

Sediment transport within the Bight to Grace Bay is east to west resulting from the prevailing wind/wave driven transport. The proposed development is expected to provide significant strengthening of the dune providing storm protection during elevated water levels and high winds associated with severe storm conditions where surge and/or wave run-up exceeds the seasonal high water line. The Project's proposed dune plantings will consist of native beach and dune vegetation with root systems recognized resistant and highly resilient to the erosive forces during these events. Although the plantings are commonly impacted or perish during such storm events, their root structure provides a matrix through which erosion is resisted and persists to regenerate. Furthermore the use of a sandy dune buffer seaward of the upland unconsolidated sandy beach and underlying strata of semi-consolidated limestone will not result in reflected waves that are known to exacerbate erosion both longshore and cross-shore during extreme events.

2.9 Terrestrial Biology

This environment is primarily undeveloped but does have recent disturbance from clearing activities related to storage of equipment and material. The landward edge of the dwarf coastal brush and upland coastal brush communities were located using Differential Global Positioning Satellites (DGPS) by Dial Cordy with assistance from CDE and Benchmark. Limits of other community types were photo-interpreted and ground truthed (Appendix D). A total of 8 temporary transects were surveyed in the upland habitat. Transects oriented perpendicular to each other and approximately 45° to the shoreline to cross the typically shore parallel terrestrial biologic habitat zones. A rapid ecological assessment method was used to assess general diversity, dominant species, habitat type, and vegetative structure.

Figure 2-18 Terrestrial Biologic Communities

Vegetative transition zones, changes in topography, and unique landforms were recorded on Project specific field forms and coordinates (X,Y) were collected. Vegetative transition zones were primarily identified by changes in growth forms and dominant species, recording the relative start and end points as observed in the field. Percent cover of the dominant species was

recorded along each transect to determine habitat types. Connectivity of mapped habitats was supported by aerial imagery. Digital images of plants and habitats were also collected. This sites' upland habitat is heavily influenced by drought, wind, salt spray and wave action and due to the impacts of invasives such as casuarina and scaevola. The results of the terrestrial flora survey are shown graphically in Figure 2-18 (2023). These results show ten primary habitat types occurring throughout the nominal 20 acres of surveyed area. The following provides a summary of each habitat type and ecological zone.

2.9.1 Beach and Dune Vegetation

Beach and dune habitat is limited to the east end of the survey area, in the vicinity of BT-11. Locals frequent this area for recreation and as a result, trash is evident. The vegetative community does proliferate and is dominated by Strumpfia maritima (mosquito bush) and Ipomoea pes-capre (railroad vine) (Figure 2-20).

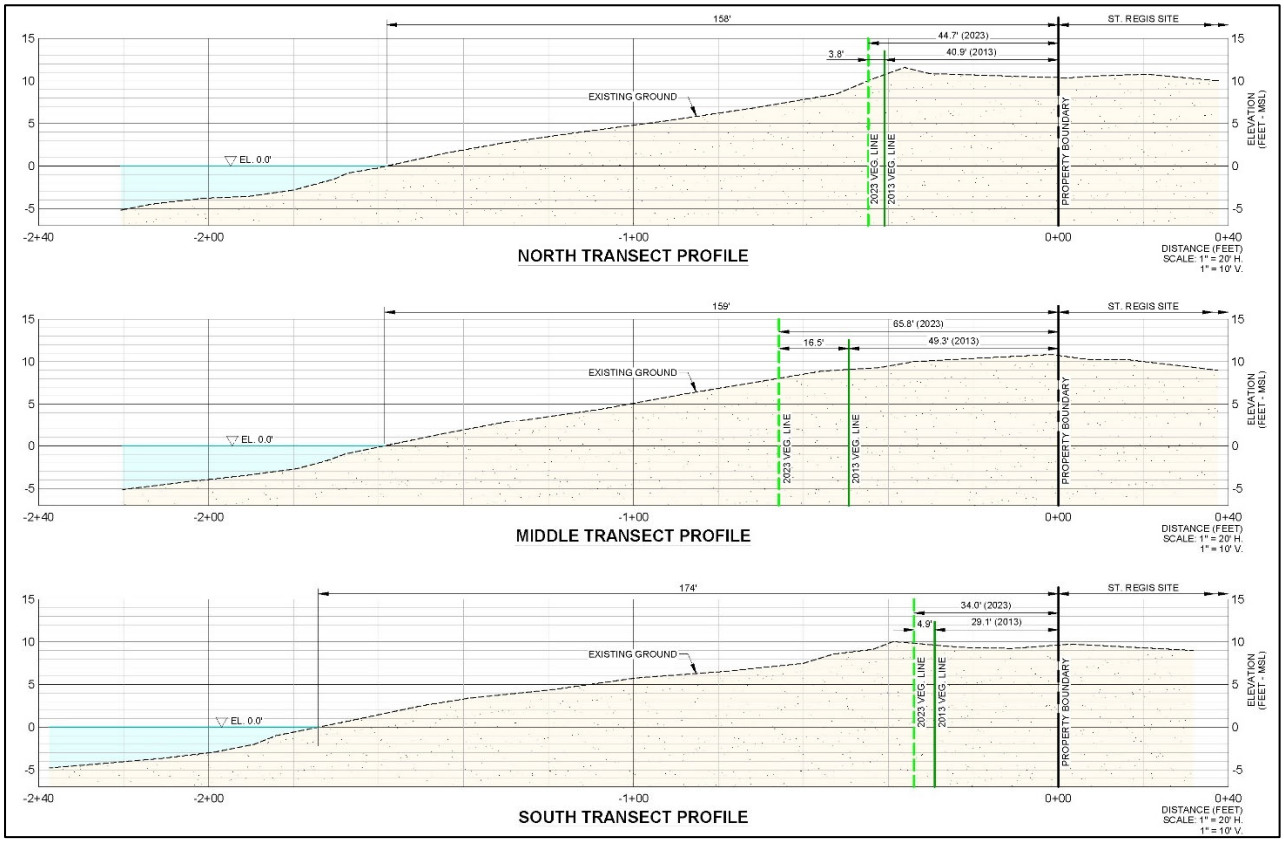


Figure 2-19 Existing Beach and Dune Profiles (July 2023)

Figure 2-20 Beach and Dune Habitat

2.9.2 Native Coastal Mixed Scrubland

This community primarily comprises the backdune and is heavily influenced by drought and wind conditions. The vegetation is sparse, but where established is low growing anchored in the karst substrate. Progressing inland from the shoreline, the habitat shifts to primarily a mix of coastal scrub pioneer species that persist because of sporadic rainfall. This vegetative habitat occurs in shore parallel strips reflective of the underlying karst limestone geology. This community is

characterized by a variety of shrubs that occur throughout this habitat, Metopium toxiferum (poisonwood), Pilosocereus royenii (dildo cactus), and Jacquinia keyensis (joewood).

Figure 2-21 Coastal Mixed Shrubland

Shifting landward the site is characterized by a more protected area partially shielded from salt spray and wind throughout the interior extents of the property. Here the habitat transitions to a mix of tree canopy with understory growth of shrubs, grasses, and floral species. While influenced by wind and drought, there is sufficient soil deposition and tree growth. Vegetation observed in this community include Casasia clusiifolia (seven-year apple), Plumeria obtuse (Frangipani), and the only noted DECR identified rare species of silver palm (coccothrinax argentata) and caicos orchid clusters (Encylia caicensis, E. gracilis) (Figure 2-22) and (Table 2-7).

Figure 2-22 Orchid Cluster in Coastal Mixed Woodlands

Table 2-7 Coastal Mixed Shrubland Plant Species List

Coastal Mixed Shrubland Plant Species
silver buttonwood (Conocarpus erectus)
sea grape (Coccoloba uvifera)
cocoplum (Chrysobalanus icaco)
wild yellow allamanda (Mandavilla dipladenia)
seven-year apple (Casasia clusifolia)
laurel dodder (Cassytha filiformis)
limestone sandmat (Euphorbia biodgettii)
Bahama Mimosa tree (Mimosa bahamensis)
cane grass (Lasiacis divaricata)
soldier bush (Tourmefortia volubilis)
prickly saw brier (Smifax havanensis)
Havana cluster vine (Jaquemontia havenensis)

2.9.3 Human Impacted Landscape

Human Altered Habitat

The 19.42 acre site was significantly impacted by full scale site clearing for a prior development. Throughout the site, barren areas devoid of vegetation are interspersed with vegetated areas.

Native plants found on the vegetated portions of the site include silver buttonwood (Conocarpus erectus), sea grape (Coccoloba uvifera), cocoplum (Chrysobalanus icaco), wild yellow allamanda (Mandavilla dipladenia), seven-year apple (Casasia clusifolia), laurel dodder (Cassytha filiformis), and the limestone sandmat (Euphorbia biodgettii). Most of the vegetation types found across the St. Regis site, however, are currently located on "Herbaceous Groundcover on the Previously Cleared Lands." This community type includes areas that were previously cleared and are now being re-populated with a variety of low-lying herbaceous plants, small trees, grasses, and vines including some non-native species, (Table 2-8).

Table 2-8 Human Impacted Plant Species List

Human Impacted Areas Plant Species
silver buttonwood (*Conocarpus erectus*)
sea grape (*Coccoloba uvifera*)
cocoplum (*Chrysobalanus icaco*)
wild yellow allamanda (*Mandavilla dipladenia*)
seven-year apple (*Casasia clusifolia*)
laurel dodder (*Cassytha filiformis*)
limestone sandmat (*Euphorbia biodgettii*)
Bahama Mimosa tree (*Mimosa bahamensis*)
cane grass (*Lasiacis divaricata*)
soldier bush (*Tourmefortia volubilis*)
Australian Pine tree (*Casuarina equisetifolia)*

Plants found in these disturbed habitats include small individuals of the Bahama Mimosa tree (Mimosa bahamensis), the marsh fleabane/cattle tongue (Pluchea odorata). There are also numerous grasses, small groundcover species and vines including cane grass (Lasiacis divaricata),

soldier bush (Tourmefortia volubilis), prickly saw brier (Smifax havanensis), and the Havana cluster vine (Jaquemontia havenensis).

The most common tree found on the St. Regis site, and includes as many as one-hundred individuals, is the Silver Palm (Coccothrinax argentata). The Silver Palm is a DECR recognized rare native palm tree in the Turks and Caicos Islands where its natural habitat is rocky, calcareous soil in coastal scrubland and hammock communities. It is a small (6–18 ft tall), slow-growing fan palm with leaves that are dark blue green above and silver-colored below. Flowers are white and small on light orange branches. The fruits are globose and about a half an inch in diameter.

The invasive Australian Pine tree, Casuarina equisetifolia which are originally from the south Pacific are now invasive throughout much of the Turks Caicos Islands. Casuarinas are typically found in coastal areas, and particularly on windward beaches as seen at the St. Regis site (Figure 2-23). There are approximately a dozen large, mature Casuarina trees on the subject property and some smaller seedlings. These trees are the largest and most conspicuous plants found on the property, many exceeding 60 feet in height. The trees are highly tolerant of salt and can essentially grow in environments directly exposed to ocean water and salt spray. All Australian Pines will be removed at the end of construction to provide natural visual cover from the beach and ocean perspectives.

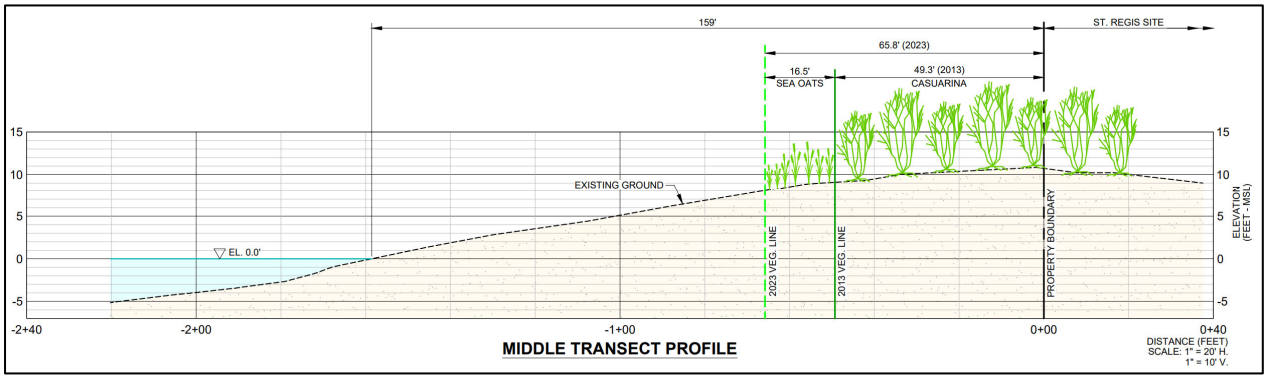


Figure 2-23 Beach and Dune Conditions Fronting the Property and Vegetation (with Exotics)

2.10 Bird Species

There is one currently unoccupied osprey nest on the western boundary of the project site and will not be removed or otherwise impacted during or after construction and no other nesting sites noted, although it must be noted, the survey was not during typical nesting season for most bird species. The bird species noted were the Mourning Dove (Zenaida macroura), Northern Mockingbird (Mimus polyglottos), Bananaquit (coereba flaveola), and laughing gull (leucophaeus atricilla), all of which are quite common throughout the Turks and Caicos Islands.

2.11 Reptile & Amphibian Species

No reptile or amphibian species, nor any evidence of tracks or burrows were noted onsite.

2.12 Freshwater Fish Species

No freshwater fish species or evidence of their presence were noted onsite.

2.13 Mammal Species

Only evidence of stray dogs and cats was present while onsite, no evidence of any other mammal species was present onsite.

2.14 Invertebrate & Fungi Species

The only invertebrate species noted onsite were free flying Sulphur and Queen Butterflies. Both of which are common throughout the Turks and Caicos Islands. No fungi were noted onsite during the survey.

2.15 Karst Habitats

No caves, caverns, or chimney features were found onsite, and consequently no associated species were found.

2.16 Marine Habitats

No impacts will occur to the marine environment as all proposed construction is within the existing upland property boundaries, and at a distance of 150 to 175 ft to the shoreline. The nearshore seabed extending from the shoreline a distance exceeding 300 ft is bare sand. The nearshore zone is a high energy zone characterized by shifting sand due to the Atlantic Ocean facing exposure to storms.

2.17 Sargassum Seaweed

As a northwestern facing shoreline, no significant accumulations of sargassum are typically present during normal weather conditions and typical seasonal sargassum occurrences.

2.18 Sunlight Shadow Study

The sunlight shadow study used a combination of a 3D model, Geo Location, Site/Day/Time specific shadow casting software and Sun Path diagrams. The 3D model simulations were drawn at a 1:1 scale, providing an accurate height of each vertical structure/building. Once the model was built it was then Geo Located onto a map with North up. After the model was geo located it was then applied for the shadow study: using a software tool to determine the time of day, and day of the year giving the projected shadows for a building at the site's longitude and latitude throughout the year. This model shows the two extremes of the summer solstice and the winter solstice shadows. The sun path diagrams were overlaid for clarity, with all modeled simulations as shown in Appendix E.

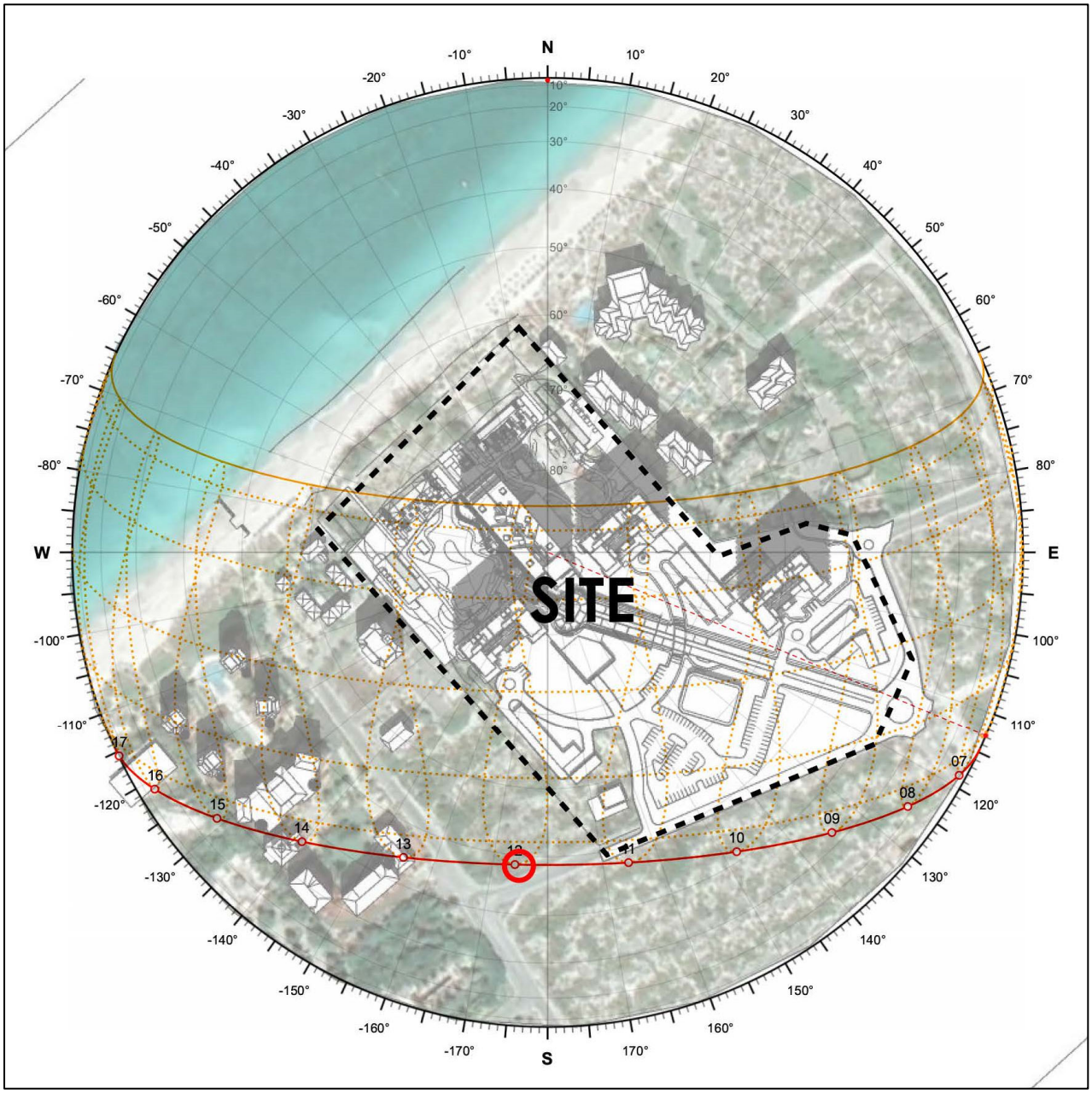


Figure 2-24 Sunlight Shadow Study for Noon at the Winter Solstice (Refer to Appendix E for Shadow Analysis).

2.19 Coastal Water Quality

Groundwater occurrence was encountered only at an existing well onsite, at near sea level elevations. Generally, groundwater strikes occurred at +1 ft (MSL), consistent with CDE

experience throughout the Turks and Caicos Islands. Natural water systems in the TCI are primarily influenced by geology of the land. Generally, calcium carbonate platform islands, such as the TCI, comprise a tri-layered freshwater lens. The first lens is a very thin potable top layer derived entirely from rainfall and is referred to as the freshwater lens. The attenuated nature of this layer is directly attributed to the high rate of evapotranspiration. The second layer is a transition zone and the third a saline layer. Rain causes water to percolate vertically through the porous limestone. Upon reaching the water table it slowly flows downwards to mix with the saline water. The groundwater level on these coastal sites is tidally influenced with the groundwater level at approximately mean sea level (0.0 MSL). Identified vulnerability of groundwater to pollutants in the TCI (Perez, 2000) include:

- Soils unable to attenuate contaminants, therefore pollutants leach into the water;
- Porous limestone with significant openings and channels leading to the coast causing saltwater intrusion;
- Natural recharge of the lens is very low due to the depth to water table; and
- Thin freshwater lenses in equilibrium with seawater.

There is little to no freshwater lens along the coast in the Project Area due to the constant fluctuation of sea water with the changing tides through the porous bedrock from Perez, 2000.

The testing for this Project will establish appropriate water quality baseline control data for key coastal water quality parameters which will be compared to post Project water quality improvements. Baseline data was obtained prior to the commencement of construction and includes dissolved oxygen, pH, salinity, temperature, and turbidity. The relationship between these parameters is summarized below in Figure 2-25.

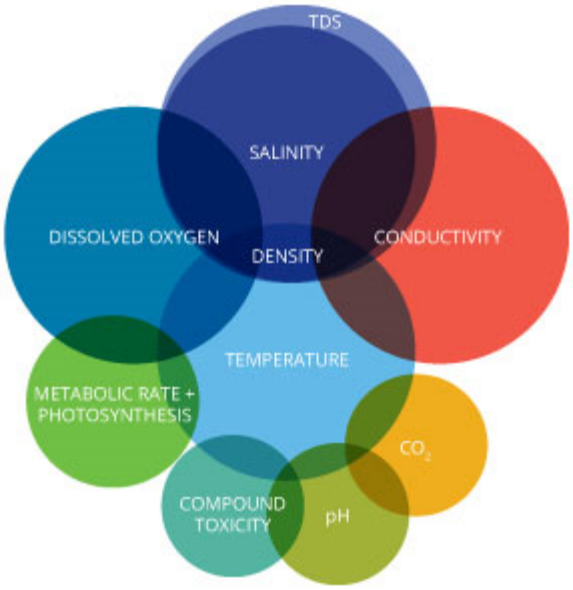


Figure 2-25. Relationships of Water Quality Parameters (Fundamentals of Environmental Measures, 2015)

2.19.1 Dissolved Oxygen (DO)

Dissolved oxygen is one of the major parameters for assessment of the health of a body of water. DO concentration of 4 mg/L is generally accepted as the minimum level required to support most animal life (EPA, 1988) (State of Florida Class III Recreational Waters). Dissolved oxygen concentration in the Turks and Caicos typically varies between 6.0 and 8.0 mg/L.

2.19.2 Turbidity

CDE has collected baseline "natural" turbidity measurements over the course of several projects in the area, as well as Project related turbidity measurements (dredging and hydraulic beach sand placement) along the Emerald Point, Leeward Channel entrance, and the Bellefield Channel, among others, since 2003. Natural baseline turbidity readings can range from less than 5 NTUs (Nephelometric Turbidity Units) for calm, summer conditions to 15-20 NTUs during winter swell conditions, and potentially extremely high (300+ NTU) during typical of hurricanes and tropical depressions under high current conditions.

2.19.3 Temperature

In the TCI, water temperature is typically between 23-26^{o}C in the winter and 28-29^{o}C in the summer. Water temperature affects the metabolic rates and activity levels of organisms and solubility of certain compounds (Fundamentals of Environmental Measures, 2015).

2.19.4 pH

It is important to maintain natural pH levels to ensure that environmental stresses do not reduce marine hatching or survival rates (Fundamentals of Environmental Measures, 2015). Recent pH measurements of waters in the area vary between 8.01 and 8.22 and are therefore slightly basic and consistent with seawater. This relatively basic environment is common and likely in this geology due to the presence of the limestone carbonate platform. Corals require a minimum pH of 7.6 to flourish. Additionally, the pH affects the solubility of phosphorous and other nutrients which in turn affects benthic growth (Fundamentals of Environmental Measures, 2015).

Coastal water quality was sampled and assessed per the Terms of Reference (TOR) on September 1, 2022 at the location shown in Figure 2-26. Dissolved oxygen, temperature and turbidity were assessed in-situ for each location using an ExTech Dissolved Oxygen Meter and an HF Scientific Micro TPW Handheld. Provo Water was employed for pH and Total Dissolved Solids testing. The results of the analysis are shown below in Table 2-9 The laboratory reports are provided as Appendix F.

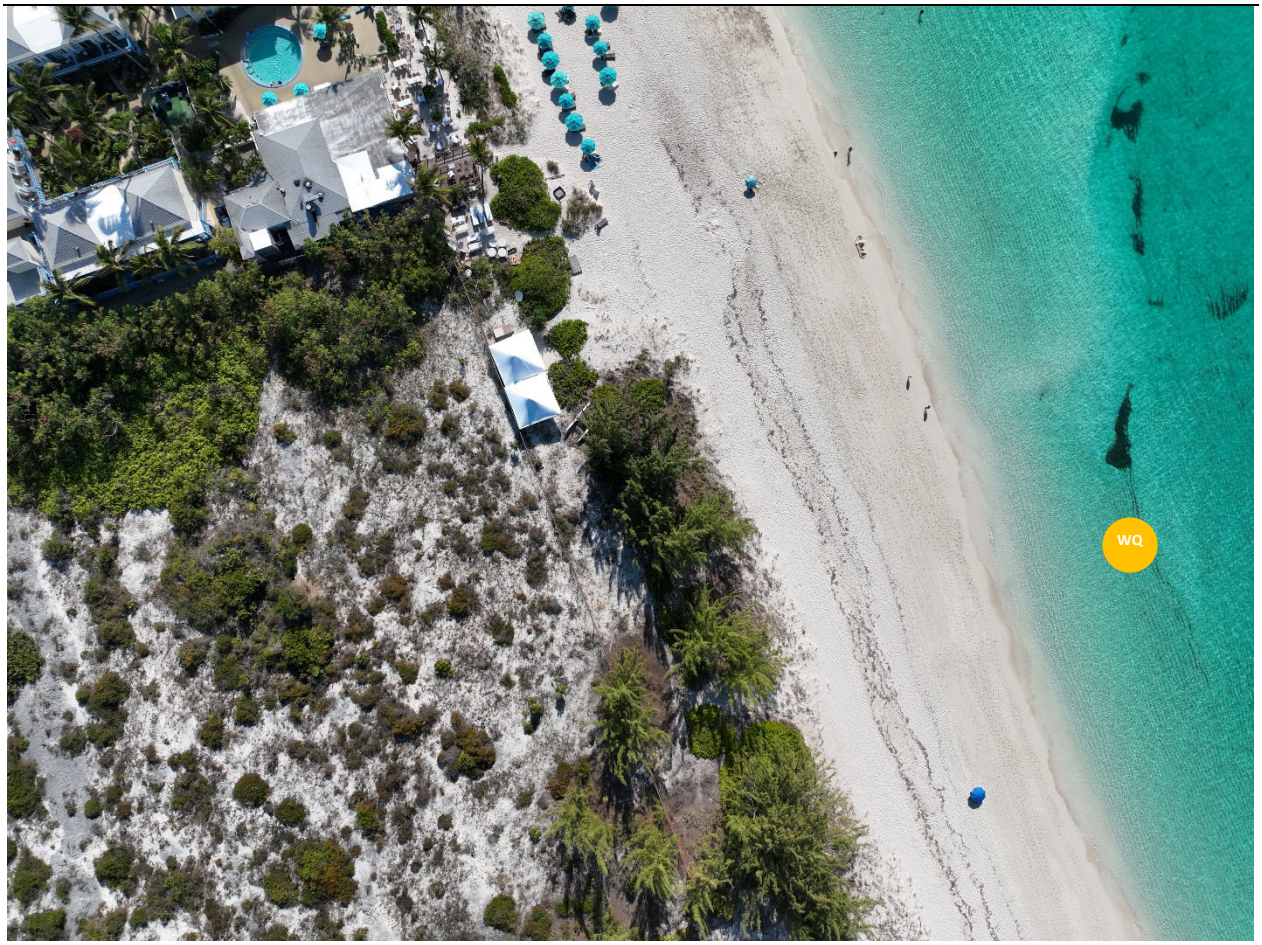


Figure 2-26 Water Quality Sampling Location

Table 2-9 Water Quality Results (Sampling Date: July 17, 2023)

Parameter	Measurement	Marine Env. Limit[1]
Temperature	26.7 °C	
pH	8.01	6.5-8.5[3]
Dissolved Oxygen	6.5 mg/L	≥5.0 mg/L[2]
Turbidity (3 readings averaged)	2.10 NTU	3 NTUs > background[1]
Total Dissolved Solids	38,700 mg/L	

1. TCI Water Quality suggested limiting levels for marine environment (open waters). (DEMA, 2015)
2. Florida Department of Environmental Protection – Surface Water Quality Standards (62-302-530) (FDEP, 2010)
3. National Recommended Salt Water Quality Criteria published by EPA for Aquatic Life. (EPA, 2015a)
4. Florida Development of Numeric Criteria for Nitrogen and Phosphorus Pollution (EPA) (EPA, 2015b)

Limiting levels for the marine environment are defined in DECR's Draft Water Quality Standards Sections 2.7.1 to 2.7.8. For parameters where DECR has not recommended standards, EPA standards were used. EPA defines the limiting levels from the Florida Department of Environmental Protection's (FDEP) Surface Water Quality Standards and National Recommended Salt Water Quality Criteria for Aquatic Life

No permanent impacts to coastal water quality are anticipated as a result of the Project. Temporary, direct adverse impacts to water quality include the potential for turbidity in marine waters due to construction activities. The potential adverse impacts due to turbidity can be avoided and minimized through careful planning and monitoring.

2.20 Conservation and Preservation Zones

No conservation or preservation zones are located in the vicinity of the Project site; although the Princess Alexandra National Park extends from the fringe reef to the shoreline or mean high waterline.

2.21 Social – Economic

Employment Demand and Plan

Employment demand during construction including the installation of all equipment and furnishings for construction of the Hotel, Residences and Civil Works was evaluated and developed based on an anticipated 3 year construction schedule for all employment trades and specialty work. Table 2-10 details the number of expected workers based on the developers' prior local experience and the construction management team as provided below.

Table 2-10 Hotel and Residences Man Power Plan

St Regis Hotel And Residences Man Power Plan			
	Year 1	***Year 2***	***Year 3***
Total Management Team	***7***	***12***	***13***
Construction Team	***Year 1***	***Year 2***	***Year 3***
Earth Work	**4**	**0**	**0**
Structure	**45**	**50**	**9**
Equipment Operators	**6**	**6**	**5**
Electrical	**11**	**16**	**23**
Plumbing & Fire Ext.	**11**	**13**	**15**
Drywall and Finishing	**10**	**109**	**159**
Floors & Stones	**0**	**13**	**17**
Sanitary Equipment	**0**	**0**	**16**
Mechanical Equipment	**0**	**6**	**6**
Duct Work	**0**	**6**	**12**
Fire Detection	**0**	**7**	**7**
Data (Low Voltage)	**0**	**5**	**9**
Elevators	**0**	**2**	**4**
Frames, Doors and Hardware	**0**	**8**	**8**
Aluminum Windows and Doors	**0**	**3**	**12**
Railing	**0**	**3**	**6**
Millwork	**0**	**7**	**20**
Water Proofing	**0**	**12**	**4**
Exterior Caulking	**0**	**2**	**4**
Facade	**0**	**43**	**43**
Signals	**0**	**0**	**2**
Cleaning	**5**	**7**	**13**
Magazine & Ware House	**3**	**3**	**6**
Security, Life Safety	**2**	**4**	**8**
Hardscaping	**0**	**16**	**26**
Landscaping	**0**	**2**	**8**
Irrigation	**0**	**2**	**6**
Pools	**0**	**9**	**13**
Snag list and Touch Up	**0**	**0**	**20**
Total Construction Team	***97***	***354***	***481***

St Regis Man-Power Plan (cont'd)			
Equipment and Furnishing Team	***Year 1***	***Year 2***	***Year 3***
FF&E	**0**	**0**	**26**
PMS & POS Certify Specialist	**0**	**0**	**2**
Electronics Smith Lock Factory Installers	**0**	**0**	**3**
Safe Box	**0**	**0**	**1**
Kitchen &Laundry Factory Installers	**0**	**4**	**6**
Spa Equipment Factory Installers	**0**	**0**	**3**
Telephone Systems Factory Installers	**0**	**4**	**6**
Active Equipment Systems Factory Installers	**0**	**0**	**3**
Micros, Hardware Certified Specialist	**0**	**0**	**3**
Hotel Video & Alarm System Certified Specialist	**0**	**2**	**2**
Total Equipment and Furnishing Team	***0***	***10***	***128***
Pre-Opening NOT INCLUDED.	***0***	***0***	***0***
TOTAL GENERAL	***104***	***376***	***622***

Safety and Security

Access to the construction areas will be controlled using one gated entrance and exit point with security personnel trained to ensure authorized companies and workers are allowed into the work site. A security officer for industrial personnel and facilities will be responsible for the implementation of the site security and safety program. Safety gear will be required for all workers based upon the type of work to be performed. CCTV will be utilized to ensure the safety of guests and personnel on the site after opening.

3 Detailed Description of Proposed Development

3.1 Uses & Activities

The primary use of the development is Hotel & Residences with associated facilities. The Casino is a development element positioned at the entrance to the Hotel for completion during the end of the initial construction phasing as envisioned for the development.

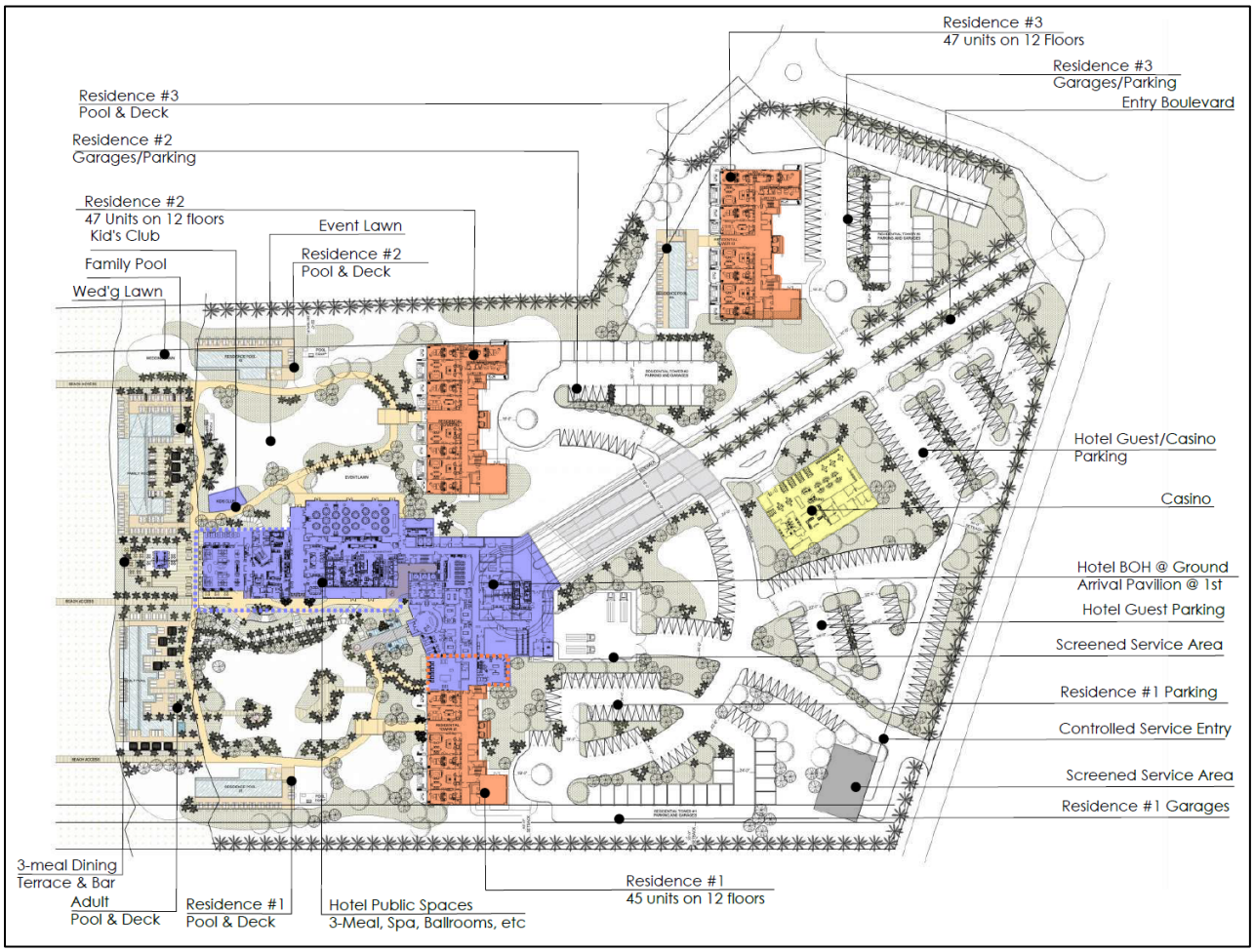


Figure 3-1 Overall Site Development Plan

3.2 Land Use, Zoning, Density & Public Beach Access

Given the property is zoned for commercial tourism development, no change is requested. All structures meet or exceed the allowable lot size for low density developments. No change to the existing public beaches accesses is proposed.

3.3 Setbacks

Required setbacks for the property lines, Road and Beach will be implemented for the property lines, building dune and beach setbacks.

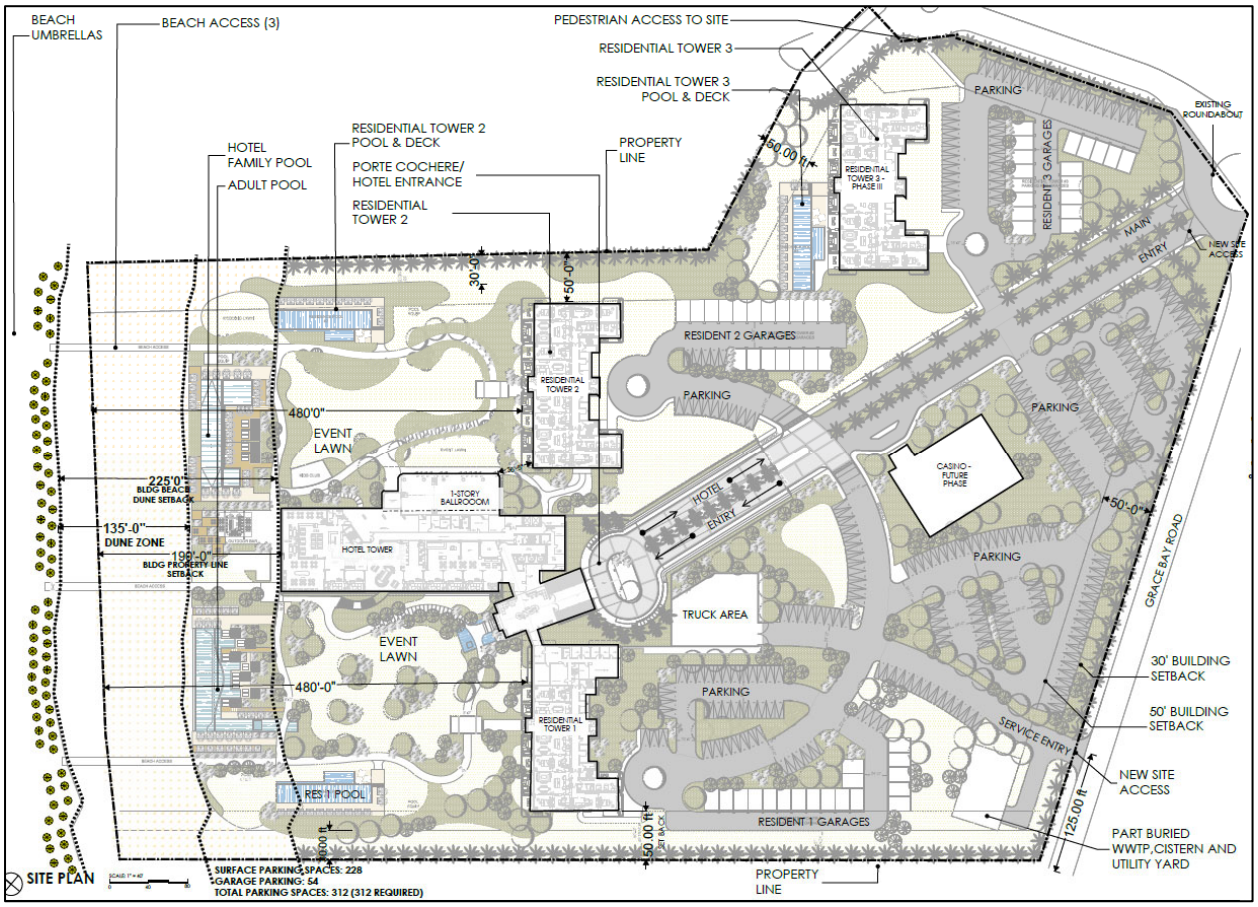


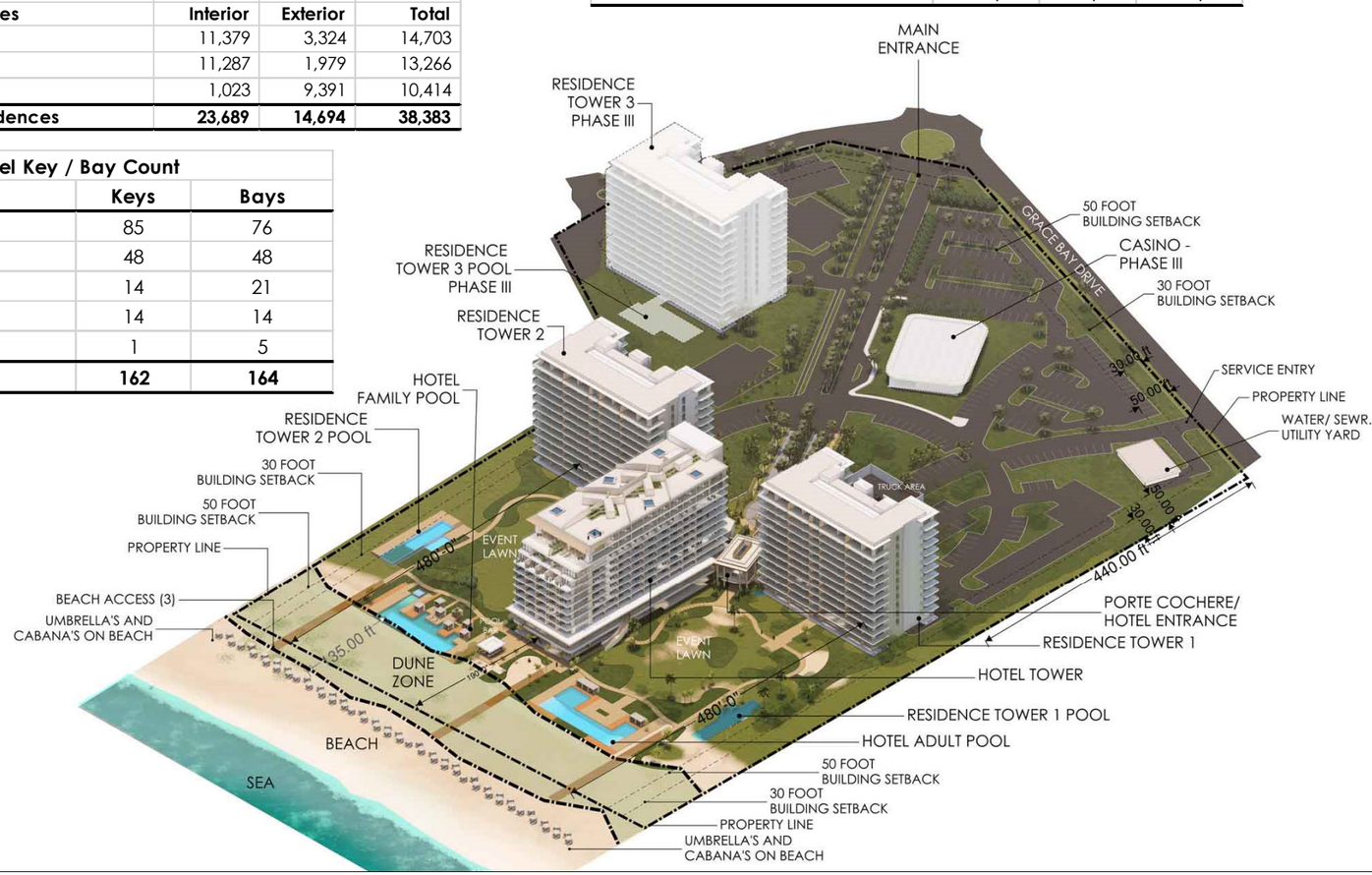
Figure 3-2 Setbacks from the Property Lines

Table 3-1 Building Specification Summary

Hotel	Interior	Exterior	Total
Ground Floor	35,467	15,152	50,619
1st floor	14,515	14,334	28,849
2nd	17,215	5,446	22,661
3rd	17,215	5,446	22,661
4th	17,215	5,446	22,661
5th	17,215	5,446	22,661
6th	17,215	5,446	22,661
7th	17,215	5,446	22,661
8th	17,215	5,446	22,661
9th	16,878	5,783	22,661
Total Hotel	**187,365**	**73,391**	**260,756**
Penthouse Residences	**Interior**	**Exterior**	**Total**
10th floor	11,379	3,324	14,703
11th Floor	11,287	1,979	13,266
12th Floor/Roof	1,023	9,391	10,414
Total Penthouse residences	**23,689**	**14,694**	**38,383**

Hotel Key / Bay Count		
Type	**Keys**	**Bays**
King	85	76
Queen/Queen	48	48
Jr. Suite	14	21
Deluxe Suite	14	14
St.Regis Suite	1	5
Total Hotel	**162**	**164**

Residence #1	Interior	Exterior	Total
Ground Floor	7,874	426	8,300
1st Floor	8,030	1,455	9,485
2nd	11,218	2,072	13,290
3rd	11,218	2,072	13,290
4th	11,218	2,072	13,290
5th	11,218	2,072	13,290
6th	11,218	2,072	13,290
7th	11,218	2,072	13,290
8th	11,218	2,072	13,290
9th	11,218	2,072	13,290
10th	11,218	2,072	13,290
11th	11,218	2,072	13,290
12th/Roof	1,550	6,583	8,133
Total Residence #1	**129,634**	**29,184**	**158,818**



Residence #2	Interior	Exterior	Total
Ground Floor	11,658	764	12,422
1st Floor	11,218	2,072	13,290
2nd	11,218	2,072	13,290
3rd	11,218	2,072	13,290
4th	11,218	2,072	13,290
5th	11,218	2,072	13,290
6th	11,218	2,072	13,290
7th	11,218	2,072	13,290
8th	11,218	2,072	13,290
9th	11,218	2,072	13,290
10th	11,218	2,072	13,290
11th	11,218	2,072	13,290
12th/Roof	1,550	6,583	8,133
Total Residence #2	**136,606**	**30,139**	**166,745**
Residence #3	**Interior**	**Exterior**	**Total**
Ground Floor	11,658	764	12,422
1st Floor	11,218	2,072	13,290
2nd	11,218	2,072	13,290
3rd	11,218	2,072	13,290
4th	11,218	2,072	13,290
5th	11,218	2,072	13,290
6th	11,218	2,072	13,290
7th	11,218	2,072	13,290
8th	11,218	2,072	13,290
9th	11,218	2,072	13,290
10th	11,218	2,072	13,290
11th	11,218	2,072	13,290
12th/Roof	1,550	6,583	8,133
Total Residence #3	**136,606**	**30,139**	**166,745**
	Interior	**Exterior**	**Total**
Casino	**10,850**		**22,661**
	Interior	**Exterior**	**Total**
Utility Building	**5,000**		**22,661**

Area Summary	Interior	Exterior	Total
Hotel	187,365	73,391	260,756
Penthouse Residences	23,689	14,694	38,383
Residence 1	129,634	29,184	158,818
Residence 2	136,606	30,139	166,745
Residence 3	136,606	30,139	166,745
Casino	10,850		10,850
Utility Building	5,000		5,000
Total Project Area	**629,750**	**177,547**	**807,297**

3.3.1 Resort Buildings

The St. Regis Development, Figure 3-3, consists of a Hotel, three Residence Towers, a Casino and associated utility facilities and will provide direct water access to Grace Bay. The Project site is currently undeveloped with no existing habitable structures onsite. This Project site is situated on Block 60905 and includes two (2) lots 198 and 199. Each lot is 8.58 acres for a total of 17.16 acres. The overall property development master plan provides for approximately 50% open and green space and amenities that include a fitness center, pools, spa, restaurant, parking, and all required logistics and maintenance facilities.

Figure 3-3 Residences

3.3.1.1 *Restaurant and Bar*

The Restaurant and Bar will provide food and beverage service to the Hotel and Residences, Pool areas. It will have a rustic feel and utilize high quality materials and elegant fixtures to provide an accessible yet upscale experience. Multilevel decking will provide intimate dining opportunities with expansive views of the Caicos bank and access to both the pier and beach. Typical wind directions will provide onshore breezes to create a comfortable open-air atmosphere. There will be an additional bar and dining on the first floor. The St Regis bar will provide beverages and small bites while the specialty dining will provide high-end culinary experiences in the evening.

The bar will be situated between the Restaurant and Pool areas to provide service to individual areas and afford a visually distinct area to compliment the intimate, yet inviting, settings for both.

This will minimize cross traffic between these two areas, safely reducing the possibility for wet patrons from tracking water into the main dining areas.

3.3.1.2 *Swimming Pool*

A single pool is proposed to be located adjacent to the restaurant and bar. The central location will provide access to the beach and, with several partitions, will create separated lounge areas. Just as with the restaurant, prevailing winds will provide a spectacular poolside experience (Figure 3-4). The property will provide a total of five pools with additional spas. Two pools, one each for families and adults, will serve primarily hotel guests, while each residential building will have a dedicated pool with deck and spa areas.

Figure 3-4 Hotel and Residences Pool and Beach Access

3.3.1.3 *Parking*

Parking is provided roadside along landward extent of the property. These facilities will provide quick access to both hotel, casino and residences. The parking that is required is 257 spaces, 291 are provided and are divided into 237 surface spaces and 54 garage spaces. The required spaces is based upon the number of residences, hotel rooms and the restaurant area(s) open to the public, (Figure 3-5).

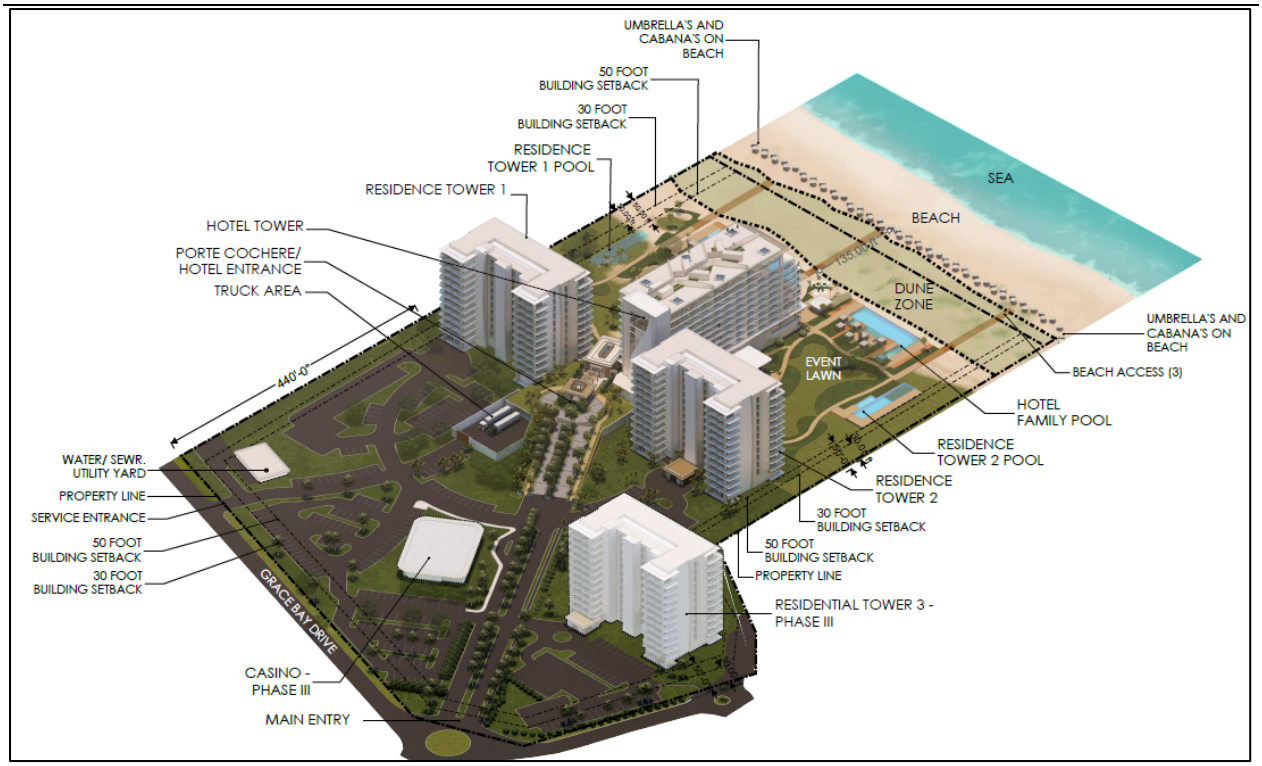


Figure 3-5 Parking Areas

3.3.1.4 *Shipping, Receiving, and Storage*

A shipping and receiving facility will be located adjacent to the central entrance and parking area and will also be sized and designed to allow for efficient and quick access to the solid waste disposal receptacles and the short-term storage of material and equipment.

3.4 Infrastructure

Improvements to infrastructure necessary to facilitate the operational phase of the Project are in discussion with companies supplying services to the development. Service upgrades will be provided as necessary. These elements will provide St. Regis with a vacation and residential experience consistent with, or exceeding, luxury, high end properties on Providenciales, (Figure 3-6).

Figure 3-6 Typical Road and Parking Design Infrastructure

3.4.1 Power Supply Diversification

Power currently reaching the development site is three phase power, and appropriate step-down transformers will be specified in coordination with Fortis TCI to provide electricity to the development site. The resort electrical system will have three Operating Modes:

- Normal Conditions: All of the Hotel's load will be fed by the Main Power Source (Utility)

- Contingency Conditions: This scenario considers the loss of the Main Power Source due to an external fault, is defined as a Backup Operational System and includes all subsystems and loads not classified as emergency or life safety concern. This system will provide for those loads that are required to maintain the safety and security of the property. Such loads may include food preparation, food refrigeration, sump pumps, emergency lighting, etc. For this condition, the loss of power doesn't represent any risk to the guests and hotel's personnel.

• Emergency Conditions: This scenario considers the presence of an event which may present a risk to the lives of the guests and hotel's personnel such as a fire. In this case, defined as an Emergency System, all systems and loads as defined and required by codes and governing authorities including but not limited to egress and stairwell lighting, fire protection, elevator, and public address communications systems will be supplied with power from the diesel generators.

In order to achieve this system and meet the required demands, the configuration the Electrical System of the Hotel will be connected to a Main Switchboard where is connected to two (2) Automatic Transfer Switches (one for the Emergency System and one for the Backup Operational System). Also, the transfer switches will provide connections to five (5) Backup Power Generators (diesel), one (1) for the Hotel, one (1) for the Casino and three (3) for the Residences.

For the Residential Towers, the power supply considers two (2) operating scenarios including: the Normal Operational conditions fed by the Resort's primary power supply and an Emergency Operational Condition. For emergency operations, each of the 3 Residential Towers will be supplied by a separate diesel generator.

Energy efficient HVAC equipment (including AC systems with high SEER ratings) and fixtures will be utilized throughout the development. Where practicable, lighting will utilize LED fixtures throughout. Diversifying energy sources via solar will help minimize power demands by both lowering and offsetting typical power requirements.

St. Regis Turk and Caicos is looking to partner with Fortis TCI to connect rooftop solar panels to the St. Regis development. The Developer believes solar energy not only makes financial sense for the buyers (owners) and that it is an environmentally responsible decision. Power in the Turks and Caicos Islands is derived from a diesel power plant on island and costs approximately $0.43 per kwh. In contrast, the cost to provide power through solar will be approximately $0.13 per kwh.

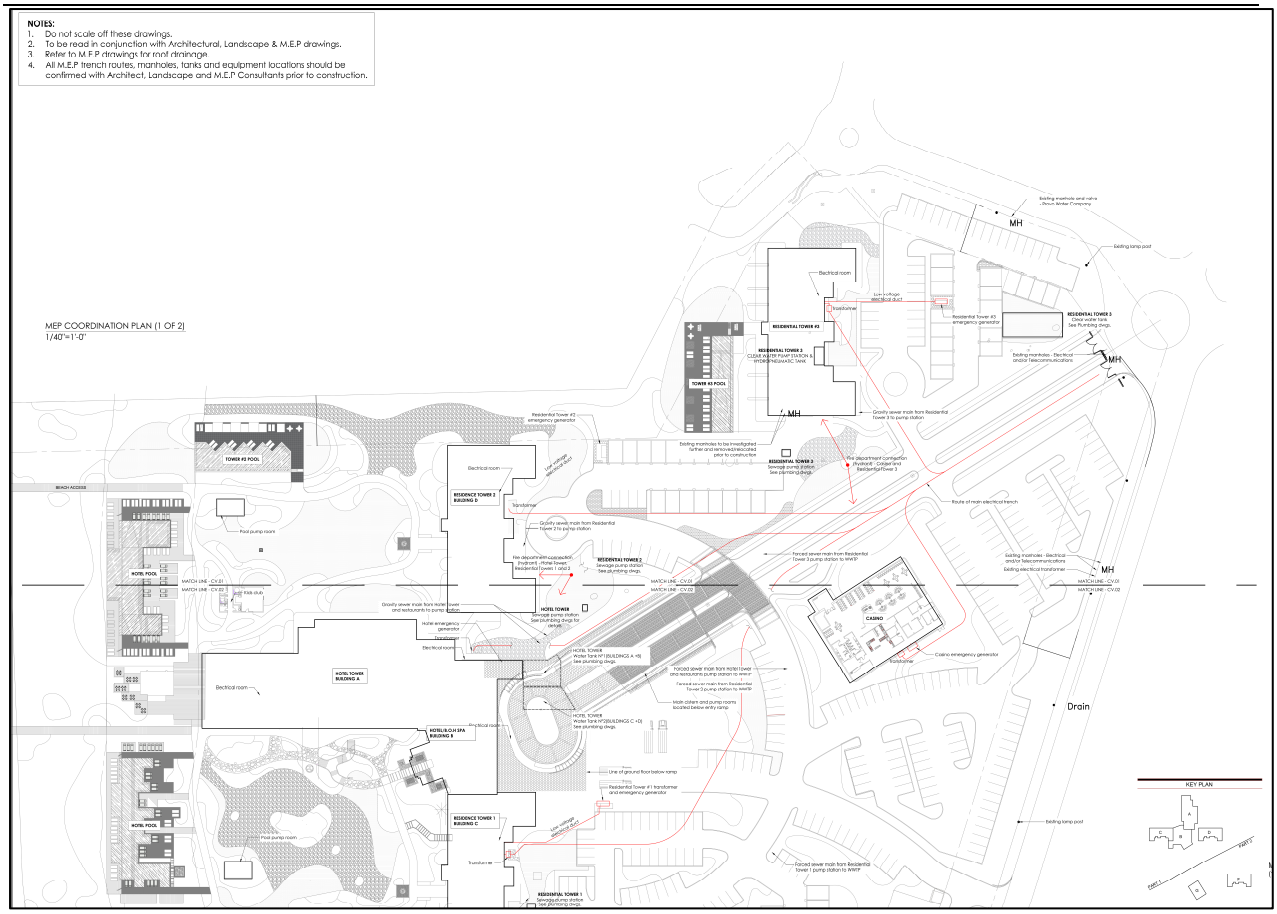


Figure 3-7 Power Distribution System Design

3.4.2 Water Supply

Provo Water has an existing 8" water line to connect this development, which is to be confirmed by Provo Water. The previous estimate from Provo Water is 46,650 gallons per day (GPD) at 60psi. Low flow fixtures and EPA Water-Sense appliances will be utilized where reasonable for the hotel and residences. Although significantly variable given the seasonality of the occupancy of the St. Regis development, the anticipated daily water consumption for each of the buildings are summarized below to represent the typical consumption. The TCIG standard water use per day to be supplied from the utility (Provo Water) is given below in Table 3-2 and ranges from 100 to 300 gallons per day depending upon the number of bedrooms.

Table 3-2 Daily Potable Water Consumption by Development Area

CALCULATION OF THE WATER ASSIGNMENT IN GAL/DAY - HOTEL TOWER					
161	1 BEDROOM HOTEL ROOMS	150	Gal/day/room	24,150	Gal/day
1	2 BEDROOM HOTEL ROOMS	200	Gal/day/room	200	Gal/day
6	3 BEDROOM APARTMENTS	300	Gal/day/room	1,800	Gal/day
		TOTAL WATER ASSIGNMENT:		**26,150**	**Gal/day**
WATER TANK # 1 - HOTEL TOWER A + B					
TOTAL WATER ASSIGNMENT:		26,150	Gal/day		
RESERVE DAYS:		3	Days		
CAPACITY FOR DOMESTIC WATER:		78,450	Gal		
FIRE RESERVE:		47,550	Gal		
MINIMUM CAPACITY:		**126,000**	**Gal**		
WATER TANK AREA (T1):		1,142	ft^2		
AIR CHAMBER:		12	in		
WATER HEIGHT:		14.75	ft		
WATER CAPACITY (T1):		**126,010**	**Gal**		
CALCULATION OF THE WATER ASSIGNMENT IN GAL/DAY - RESIDENCES C					
12	1 BEDROOM APARTMENTS	100	Gal/day/room	1,200	Gal/day
12	2 BEDROOM APARTMENTS	200	Gal/day/room	2,400	Gal/day
21	3 BEDROOM APARTMENTS	300	Gal/day/room	6,300	Gal/day
		TOTAL WATER ASSIGNMENT:		**9,900**	**Gal/day**
CALCULATION OF THE WATER ASSIGNMENT IN GAL/DAY - RESIDENCES D					
11	1 BEDROOM APARTMENTS	100	Gal/day/room	1,100	Gal/day
13	2 BEDROOM APARTMENTS	200	Gal/day/room	2,600	Gal/day
23	3 BEDROOM APARTMENTS	300	Gal/day/room	6,900	Gal/day
		TOTAL WATER ASSIGNMENT:		**10,600**	**Gal/day**
WATER TANK # 2 - RESIDENCES C + D					
TOTAL WATER ASSIGNMENT:		20,500	Gal/day		
RESERVE DAYS:		3	Days		
CAPACITY FOR DOMESTIC WATER:		61,500	Gal		
FIRE RESERVE:		47,550	Gal		
MINIMUM CAPACITY:		**109,050**	**Gal**		
WATER TANK AREA (T2):		988	ft^2		
AIR CHAMBER:		12	in		
WATER HEIGHT:		14.75	ft		
WATER CAPACITY (T2):		**109,105**	**Gal**		
CALCULATION OF THE WATER ASSIGNMENT IN GAL/DAY - RESIDENCES F					
11	1 BEDROOM APARTMENTS	100	Gal/day/room	1.100	Gal/day
13	2 BEDROOM APARTMENTS	200	Gal/day/room	2.600	Gal/day
23	3 BEDROOM APARTMENTS	300	Gal/day/room	6.900	Gal/day
		TOTAL WATER ASSIGNMENT:		**10.600**	**Gal/day**
WATER TANK # 3 - RESIDENCES F					
TOTAL WATER ASSIGNMENT:		10,600	Gal/day		
RESERVE DAYS:		3	Days		
CAPACITY FOR DOMESTIC WATER:		**31,800**	**Gal**		
WATER TANK AREA (T3):		432	ft^2		
AIR CHAMBER:		12	in		
WATER HEIGHT:		9.67	ft		
WATER CAPACITY (T3):		**31,800**	**Gal**		
TOTAL MINIMUM CAPACITY (Hotel, T1, T2, & T3):		**266,850**	**Gal**		
TOTAL WATER CAPACITY (Hotel, T1, T2, &T3):		**266,915**	**Gal**		

Three (3) storage tanks totaling 266,915 gal, above the required 266,850 gallons required, will be constructed. Tank 1 services the Hotel with attached Residence Towers A&B, Tank 2 is for Residencial Towers C & D, and Tank 3 services Residential Tower F. The fire reserve is divided by inlets and outlets to maintain a constant volume of 47,550 gal for the required fire reserve capacity and above which the reserve water storage of over 78,450 gallons will be available in Tank 1. The fire reserve is preserved by dividing the outlet of the domestic water reserve capacity above the inlet for the fire reserve the capacity the required volume can never go below the required fire reserve capacity unless drawn from the emergency fire water outlet at the absolute bottom of the tank and is only used for fire suppression. This backup resource for supply disruptions that will meet expected demands for potable water and other essential uses and seamlessly provide all existing domestic water capacity for ready use in fire suppression efforts. Such disruptions include temporary supply outages and longer-term outages due to natural disasters (hurricanes), all while always maintaining a fire reserve capacity. Furthermore, the storage tank system supplies will be connected to the potable water supply and re-filled to maintain water levels.

3.4.3 Solid Waste

The Planning Department requirements dictate that all solid waste be disposed of in a land fill-based waste disposal system, and the amount of waste brought off-site to landfill sites needs to be minimized. The design basis of the solid waste collection and disposal strategy are based on British Standard (BS) 5906: 1980 Storage and on-Site Treatment of Solid Waste from Buildings. The waste strategy will be based on utilizing a central waste treatment area adjacent to a consolidation center. The waste will be processed and treated/disposed of as follows:

- Cans, steel, and glass will be removed to an approved facility offsite to be recycled. Future expansion of recycled materials processing including plastics and oils will be incorporated and directed to these facilities when they become available.
- Compost and Green waste will be disposed offsite of St. Regis at a government approved waste facility.

3.4.4 Emergency Services

The primary medical care facilities and fire department on the island are within an 8-mile distance from the development site. This proximity provides a significantly lower response time than for many other developments on Providenciales and, in part, yields a relatively advantageous location for emergency services to access the site. A final walk-through including locations of the primary fire suppression and water main connections including the appropriate signage type and location will be scheduled in consultation with the local fire and other emergency services.

3.4.5 Wastewater & Sewage

The most efficient, technically, and economically viable option is the use of a single Wastewater Treatment Plant (WWTP) facility (propriety design) for the St. Regis Development (Figure 3-8). This has the advantage of being managed and controlled centrally, and has the least potential impact on the environment, and will produce significant enough volumes of effluent that will be treated and used as water for irrigation. A maximum of approximately 15,000 Gallons per Day (GPD) of grey water is anticipated to be available for irrigation purposes at full occupancy.

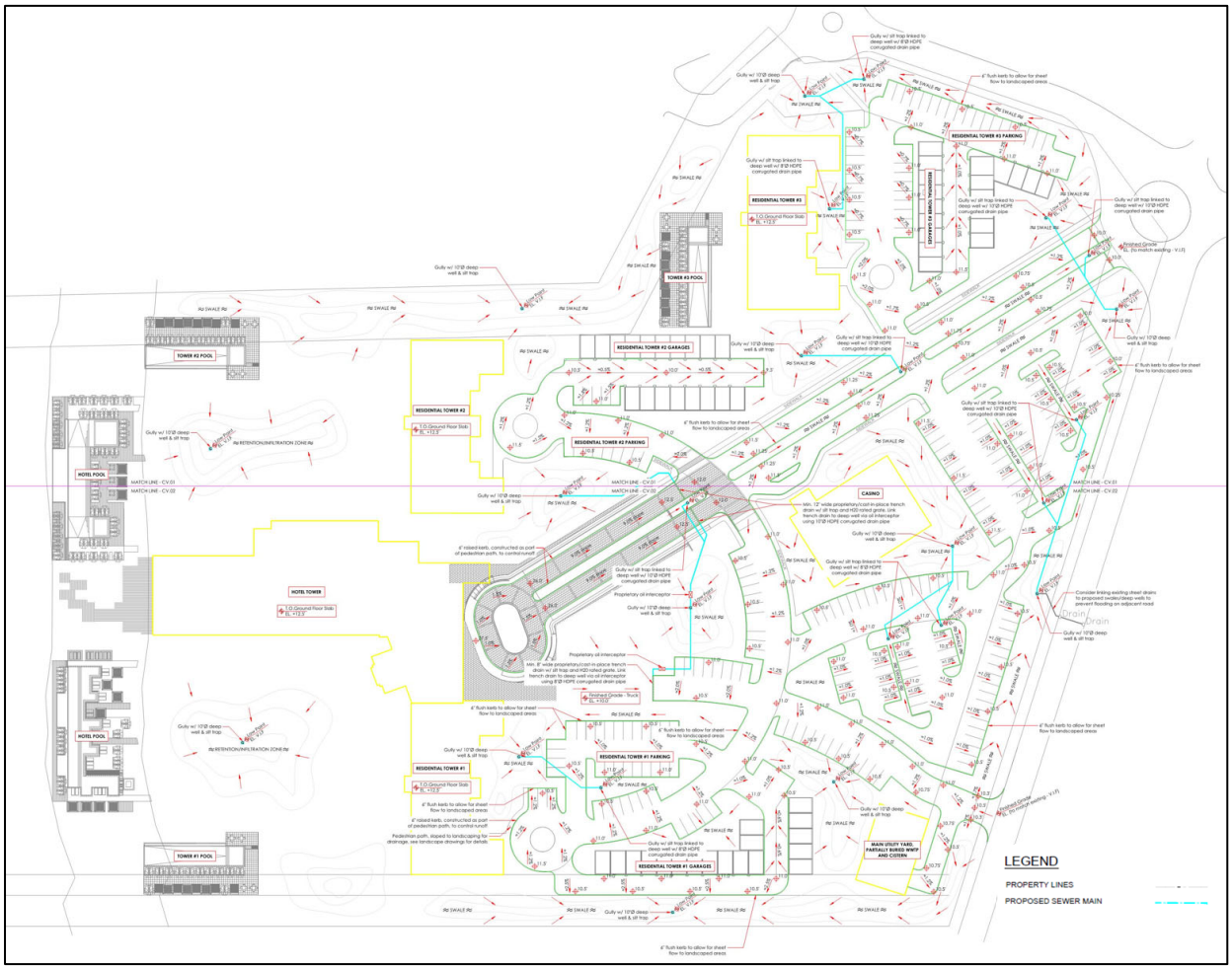


Figure 3-8 Wastewater Treatment and Collection System Design

3.5 Earthworks

3.5.1 Site Grading

The existing site will be graded and sloped to control and divert runoff away from the beach and coastal dunes and towards swales and vegetated areas and low lying shallow landscaped features for percolation and stormwater management. The system will direct and control the rate and

quality of stormwater runoff to allow staging and infiltration before entering the soakaway and well systems.

After de- grubbing, site grading and preparation for the building site is needed to raise these areas by approximately one foot to meet compaction requirements, which will require imported material that is estimated at 2800 to 3000 cubic yards. No piles are required for the foundation

3.6 Stormwater Drainage

The surface water drainage system will be designed considering the following:

- National Pollution Discharge Elimination (NPDES) Requirements
- Stormwater Best Management Practice (BMP's)
- Sustainable Drainage Systems with sediment and oil water separators

Several methods will be utilized to handle stormwater drainage. Cisterns will collect the initial volume of water until filled (from building rooftops and other discrete areas without the potential for petroleum contaminants). Wells will be constructed with sediment pretreatment through LID's, utilizing percolation and soakaways will be located near impervious surfaces and recharge swales with well type structures, and integrated into landscaping where possible. Soakaways are also be constructed within the project area to manage and attenuate Stormwater (Figure 3-9).

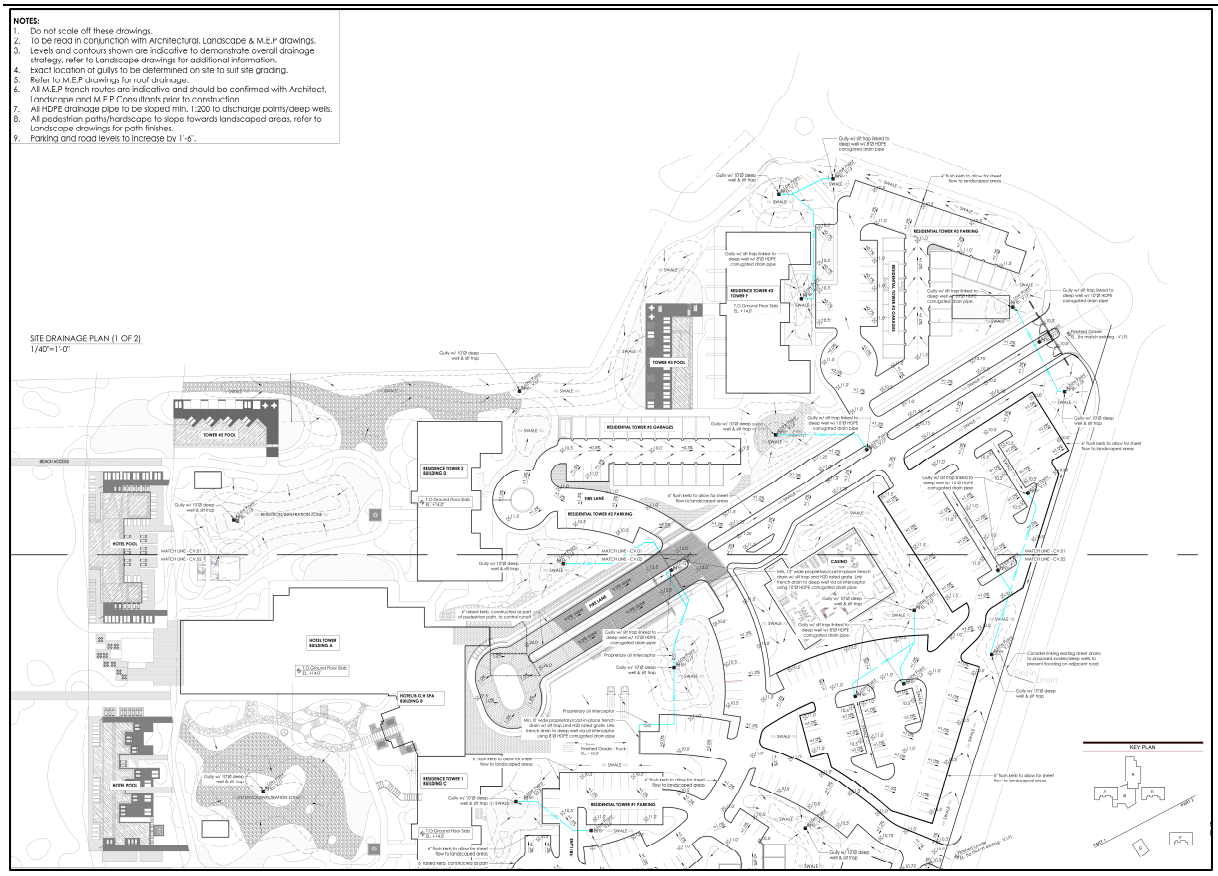


Figure 3-9 Stormwater Collection System Design

Deep well systems and trench soakaways will capture staged runoff routed from the infrastructure including road entrance, parking, and corridors sloped to convey water from hardscaped areas and impervious surfaces to the associated landscaped areas. The infrastructure corridors, structures, and the parcel areas adjacent to the structures (Figure 3-10) are sloped and graded to capture the 4.5 inch mean annual maximum 24-hr rainfall as required in the building code. In the event of a severe hurricane event, interconnections of these systems will facilitate flood water drainage from the Site.

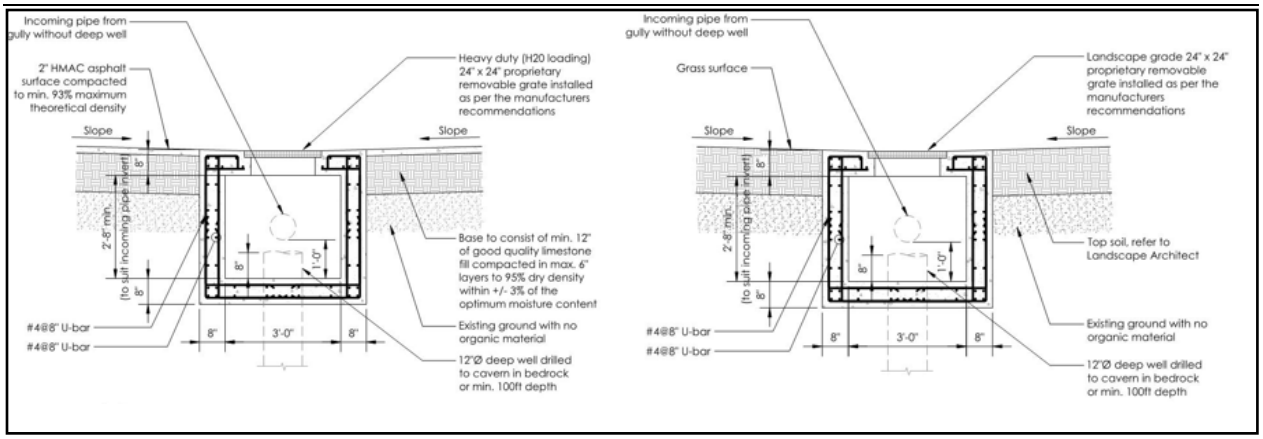


Figure 3-10 Well Design

The key elements and details associated with the surface water drainage system are summarized as follows:

- Wells with Oil/Water Separators and Sediment Catch Systems;
- Trench soakaways on both sides of the infrastructure corridor embankment;
- Inspection and maintenance hatches will be installed for access to silt traps in the proposed well drainage system.

The Operation and Maintenance requirements should include:

- Periodic (once every six months) inspection of the surface of the soakaway trench and clearance of debris;
- Periodic (once every six months) inspection of well system (before and after the hurricane season), emptying of silt traps and jet washing of drainage;
- Annual clearance (before hurricane season) of any debris from soakaways.

3.7 Landscape

3.7.1 Landscape Philosophy

The TCI Physical Planning Ordinance states that “the complex interrelationships between plant and animal life and their physical environment are of prime consideration in planning and development in the Turks and Caicos where all islands are environmentally fragile.” The landscape philosophy for St. Regis was designed with this in mind. The most effective approach to ensuring key natural features in St. Regis is an integrated strategy of development and conservation that combines intelligent planning techniques, sound science and the use of proven technology and practices. The St. Regis Landscape Master Plan has been developed to integrate into the environment and the existing ecosystems. Key objectives of the Landscape Master Plan include the desire to create a development able to co-exist with the existing environment in a

manner that is mutually beneficial. Grace Bay is a unique world renowned in both aesthetic and leisure potential (Figure 3-11).

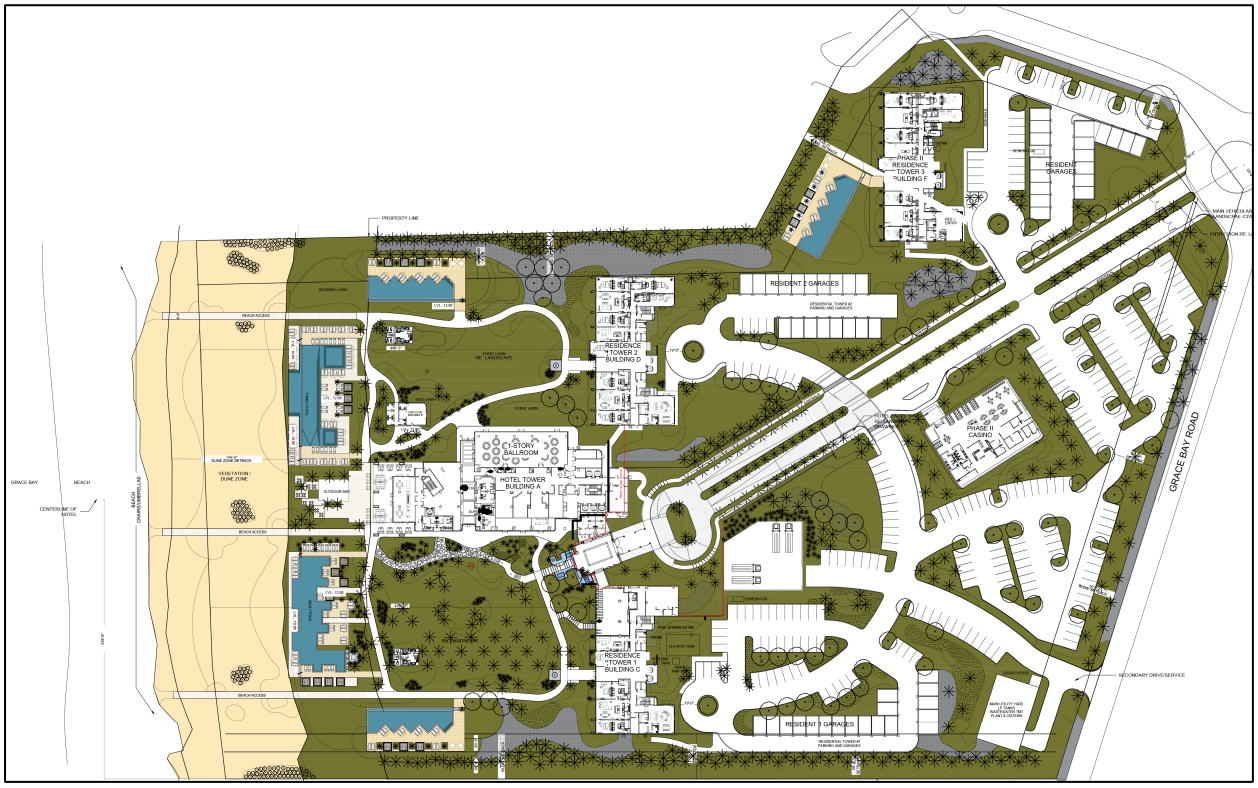


Figure 3-11 Overall Landscape Plan

Taking into consideration the current demand for low-impact destinations in the Caribbean, the landscape philosophy of St. Regis places the ecological and social integrity of the region as a top priority. All landscape areas will be planned and developed in a responsible manner, at a scale that is appropriate for the local ecological situation. The landscape vision is to emphasize the unique circumstances of the site and existing vegetation while giving natural aesthetic to the development as a whole. It also recognizes that the site's natural potential and understanding of its ecological dynamics are fundamental to the design of a sustainable landscape.

3.7.2 Landscape Design

For prestigious and up-scale developments like St. Regis, the design of the landscape is important to the overall guest experience. High quality landscaping can create a significant competitive advantage. The project approach to landscape design is to be simple yet at the same time be complex in its diversity. We are proposing a subtle approach that preserves much of the existing native vegetation species types that will be replanted while at the same time introducing vegetation and materials that provide a visually stimulating island atmosphere (Figure 3-12).

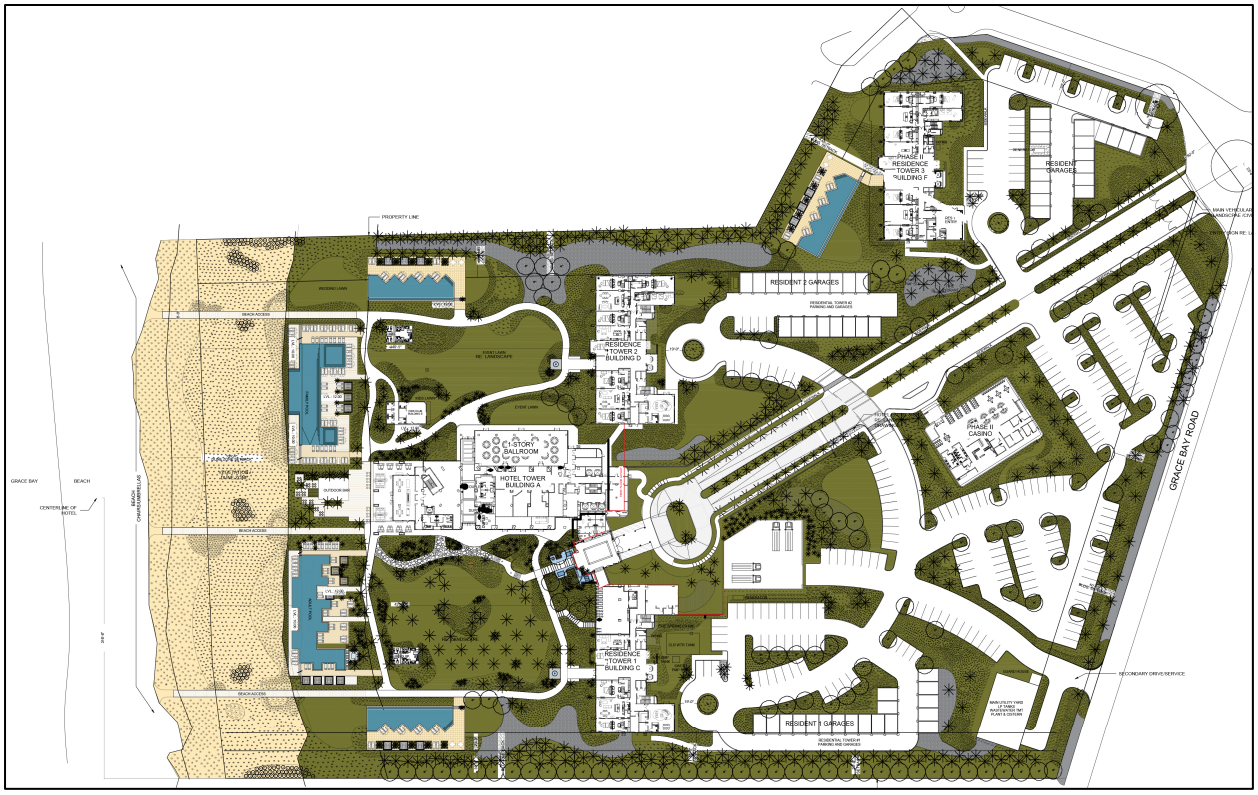


Figure 3-12 Landscape Design Concept

Due to the climatic conditions (rainfall, hurricanes etc.) on the site, conserving and enhancing the natural vegetation is crucial to making the development meet the residents' and guests' expectations. The landscape will focus on attaining a balanced relationship between the existing ecology and new landscaping. One of the main concepts is to ensure that the landscape design adapts to the existing habitat conditions and enhances the biodiversity on the site. To ensure this diversity, the landscape concept program consists of natural green space areas and planting zones that consider different habitat types that will ensure multiple and diverse experiences and utilizes native species alongside common aesthetically pleasing landscaping species.

Table 3-3 Landscape Planting List

St. Regis Plant List		
No.	**Scientific name**	**Common name**
GROUNDCOVERS / SMALL SHRUBS		
139	Asystasia gangetica	Ganges Primrose
211	Wedelia trilobata	Wedelia
230	Liriope	Monkey grass
268	Neomarica	Iris Lousiana Blue
235	Nephrolepis Biserrata	Giant Sword Fern (macho fern)
154	Hymenocallis caribae	Sacred Lily of incas
178	Aloe vera	Aloe Barbadensis
206	Trimezia martinicensis	Iris-Yellow Walking
216	Aerva sanguinolenta	
245	Philodendron Burle Marx	
426	Spartina patens	Saltmeandow Cordgrass
421	Ficus microcarpa	Ficus green island
443	Ernodea littoralis	Golden Beach Creeper
533	Croton linearis	Pineland croton
MEDIUM SHRUBS / ACCENTS		
44	Philodendron selloum	Split-leaf Philodendron
194	Costus spiralis	
227	Alcantarea imperialis	Bromeliad Imperialis
240	Alocasia Odora	Elephant Ear
84	Bougainvillea spectabilis	
84h	Bougainvillea Helen Johnson	
396	Tripsacum dactyloides	Eastem Gamagrass
259	Crinum officinale	
459	Galphimia gracilis	Thryallis Glauca
LARGE SHRUBS		
18	Nicolaia elatior	Torch Ginger
261	Coccoloba uvifera	Seagrape
452	Chrysobalanus icaco	Cocoplum
488	Bambusa Textilis Gracilis	Graceful Bamboo
552	Trachelospermum jasminoides	Confederate jasmine
528	Galphimia glauca	Golden shower
83	Alpinea zerumbet	Shell Ginger
402	Conocarpus erectus	Green Buttonwood
529	Bambusa malingensis	Breeze bamboo

COASTAL / DUNE		
443	Ernodea littoralis	Golden Beach Creeper
428	Suriana maritima	Bay Cedar
525	Uniola paniculata	Sea oats
261	Coccoloba uvifera	Seagrape
565	Helianthus debilis	Beach sunflower
426	Spartina patens	Saltmeandow Cordgrass
PALMS		
26	Adonidia merrillii	Christmas palm
42	Caryota mitis multicaule	Fish tail palm
97	Bismarckia nobilis	Bismarck Palm
98	Latania loddigesii	Blue Latan Palm
162	Phoenix datylifera	Date Palm
163	Cocos nucifera	Coconut Palm
138	Wodyetia bifurcata	Foxtail Palm
180	Ptychosperma macarthurii	Macarthur Palm
244	Chamaedorea cataractarum	Cat palm
441	Coccothrinax argentata	Florida Silver Palm
TREES		
86	Delonix regia	Royal Poinciana
124	Bucida buceras	Black Olive
284	Bursera simaruba	Gumbo limbo
446	Quercus virginiana	Live oak

Figure 3-13 Proposed Site Coverage

3.7.2.1 *Revegetation*

The development will be revegetated in consultation with DECR. Due to existing exotic and invasive species that are present along the beachfront and adjacent north and south boundaries of the site, these exotics will be removed. There is little to no native species to retain or move given the transplant trauma and expectation that all revegetation plantings will be brought onsite. Species will be placed that are conducive to both slope stability and revegetation root growth to best mimic natural conditions following the curvature of the grades onsite where possible. Species such as sea oats and ox eye sunflower and beach creeper will be planted on the frontal dune areas and bay cedar and seagrape on the back beach landward of the frontal dune.

3.7.3 Landscape Irrigation

Since there is low annual rainfall – 30 inches a year – to reduce the use of freshwater of the landscaping improvements, treated effluent and rainwater harvesting will be used for irrigation.

The amount of water needed for plants will vary from when they are first planted and becoming established to the typical maintenance and quantities needed to support them once established.

Landscape architects have performed some initial analysis of areas that require irrigation either due to planting design or construction disturbance. This takes account of the road corridors, public open spaces, and typical envelope of planting around each building unit, and sports/activity areas. The design proposals seek to keep the areas of irrigated landscape to a minimum in congruence with the overall concept of leaving the site as natural as possible.

Use of herbicides, pesticides and fertilizers in landscaping practices are another potential threat to the terrestrial and marine environments and should be minimized and avoided where possible and near the coastal dune habitats and environment. The use of native vegetation will further help in limiting the need for these practices.

4 LEGISLATIVE AND REGULATIVE CONTEXT

The purpose of this section is to assess the acceptability and merit of the development with respect to aspects of laws and regulations of the Turks and Caicos Islands.

4.1 Development Master Plan

The approved master plan to develop 5 structures, 3 residence towers, a hotel tower, and casino. The development is consistent with the TCI's goals of facilitating private sector investment aimed at long-term growth and development and is consistent with the surrounding properties. This private sector led investment and growth creates jobs, taxes, and other public revenues required to continue and expand public services infrastructure as well as repay debt (TCIG, 2012).

4.2 Coast Protection Ordinance

The project does not propose any changes below +6ft MSL above the seasonal mean high water line (+4.25ft MSL), above, the seabed and/or controlled waters. As such, the Coastal Protection Ordinance does not apply.

4.3 Public and Environmental Health Requirements

The Project will be undertaken in compliance with the Public and Environmental Health Ordinance (PHEO) (TCIG, 2009c). Construction phase activities associated with the Project, which are governed by the PEHO include:

- Sections 1-6: control of rodents.

- Sections 20-21: public nuisances which may include unsafe and/or untidy premises, accumulation of solid and/or liquid wastes, and emission of pollutants (e.g. fumes)).

- Sections 37-38: regulations for latrine accommodations during construction.
- Sections 48-50: requires provisions for appropriate solid waste collection and disposal.
- Sections 56-57: requires minimum potable water standards, International Guidelines for Drinking Water Quality of 1983.
- Section 32 (regulations to keep the property and access clean and free of debris).

The Development will comply with all of the regulations described above and will be available for regular inspection by the Environmental Health Department. The measures for compliance are discussed specifically in Section 7 of this EIA.

4.4 Planning and Building Requirements

The Development is designed to comply with all Planning and Building requirements as described in the Physical Planning Ordinance (PPO) (TCIG, 2019), the TCI Development Manual (TCIG, 2014b), and the TCI Building Code. To date, the development has stringently followed Planning procedures, in accordance with Part V of the Physical Planning Ordinance and the TCI Development Manual.

4.4.1 Physical Planning Ordinance

An application for Outlined Development Permission (ODP) was provided to the Department of Planning on December 1, 2022 (PR-16177). This EIA is developed to support the Applicant's request for Detailed Development Permission (DDP) for development of the Project, which is required prior to commencing construction (Sections 29(b), 32(1)(b) and 62(1)).

4.4.2 Public Noticing

At the time of publication of this EIA, the Applicant has completed the process of the Public Noticing for PR-16177 planning applications as required by Section 30(2) of the Ordinance. The Project was advertised in two issues of the TCI Weekly News Newspaper and the TCI Gazette commencing August 12, 2022 and concluding on September 10, 2022.

4.4.3 Involvement of Key Stakeholders

Project stakeholders include TCI entities which govern development (e.g. Planning Department, DECR, etc), property owners within and immediately adjacent of the Project and the TCI community at large (e.g. developers, watersports operators, visitors, etc). Collaboration with the TCI Government on the Project has continued throughout the permitting process.

With respect to individual land owners, developers and the community at large, the Applicant completed the public noticing as stipulated by Section 30(2) of the Physical Planning Notice. This included written notices to landowners within 200 ft of the proposed development as well as advertisement in the TCI Sun Newspaper and the TCI Gazette for a 28-day advertising period followed by a 28-day public comment period.

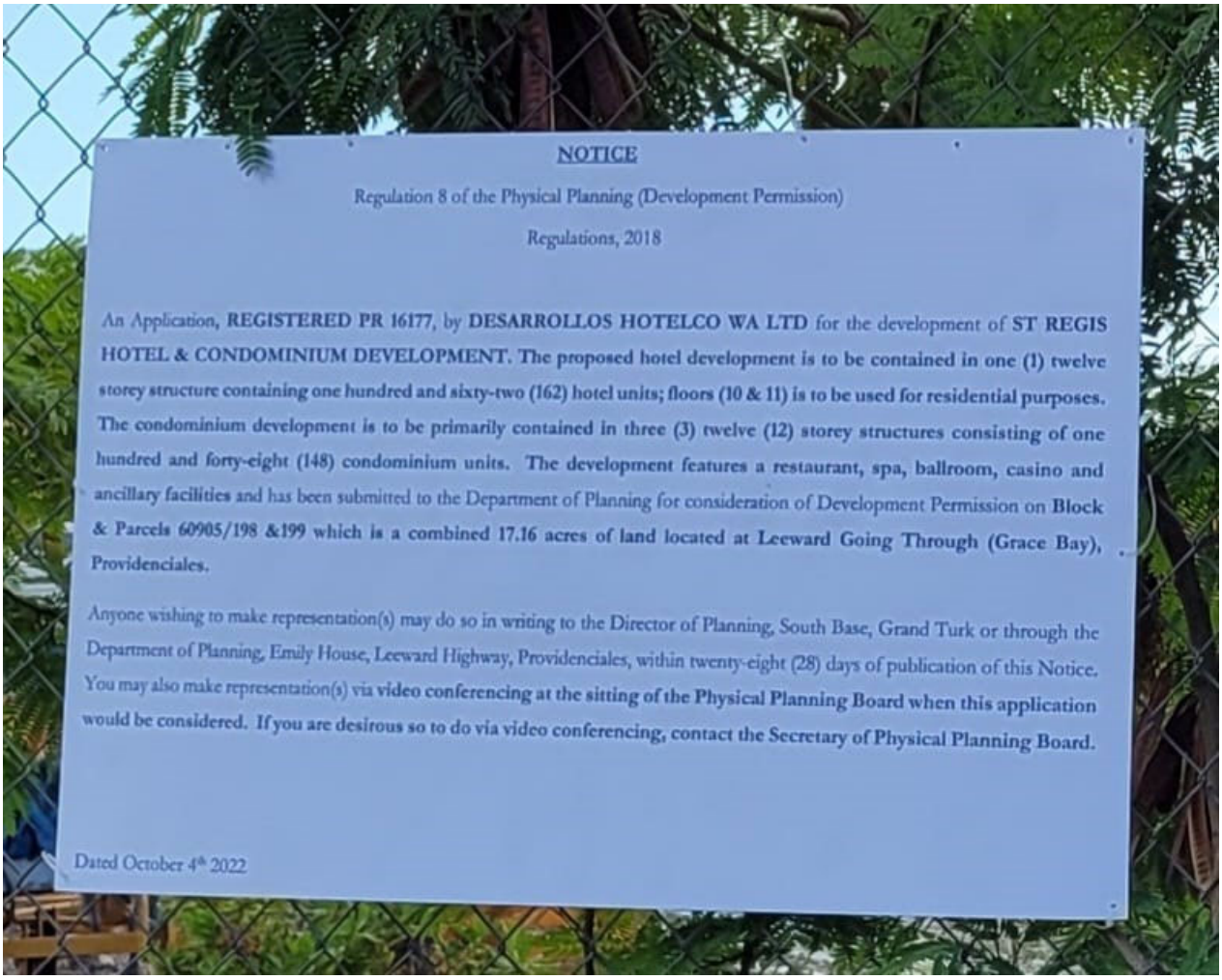


Figure 4-1 Public Notice Signage posted onsite (October 4, 2022).

No comments or concerns were received from the public. Since the formal public noticing period, the Applicant and CDE have continued communications with private landowners to update them on the Project, documentation of these notices can be found in Appendix 8.

4.4.4 Development Manual

The development complies with the TCI Development Manual (TCIG, 2014b), with key requirements including:

- The development of the proposed residences has 145 Residences (308 keys) bedrooms on a total lot size of 17.2 acres, yielding a density of 7.96 bedrooms per acre and is less than a third of the maximum allowable density of 25 bedrooms per acre (Chapter 3, Section 3.6.4 (b) and Section 34 of the PPO).

4.4.5 Building Code

The development complies with the TCI Development Manual (TCIG, 2014a):

- Car parking spaces for the development total 291 of the required 257 and thereby meets the minimum. (Chapter 3, Table 3-2).
- The slopes proposed are at or less than 1:2 (V:H) (Section 603(e)). Storage of materials onsite, will comply with Section 605.
- The project proposes the use of materials that are satisfactory for the purpose intended and maintain the quality, strength, effectiveness, fire resistance rating, durability and safety (Section 402.1).
- Adequate toilet facilities will be provided onsite during construction (Sections 9 & 620).

4.5 National Parks Ordinance and Subsidiary Legislation

The project is not within any conservation or preservation zones. Location of the Princess Alexandra Land and Sea National Park in the National Parks Ordinance is delineated as existing up to "the high water mark" and as the dune restoration is above this boundary elevation vertically and landward of this boundary horizontally, the Project is not located within a National Park (TCIG, 2016). The seaward extent of the development occurs above the seasonal high waterline of +4.25ft MSL placing the work upland of the adjacent Princess Alexandra National Park.

4.6 Marine Pollution Ordinance

The Marine Pollution Ordinance (MPO) speaks to negligent and intentional discharges of unnatural substances and related marine pollutants into the marine area. The scope of this Project does not envisage the use of or any dealings with the substances which are addressed in the MPO (TCIG, 2010). These include substances such as ballast water, waste from toilets, urinals, and medical sinks, grey water, oil, and other hydrocarbons. Best Management Practices (BMP's) will be employed throughout construction and during the operational phase. The Contractor's Disaster Mitigation and Emergency Plan will provide measures to minimize risks and remediate accidental spills (see Section 7).

4.7 Covenants

There are no restrictive agreements governing the Project Area.

4.8 Parking Spaces

The total proposed parking spaces is for 237 surface parking spaces and 54 garage parking spaces, for a total of 291 parking spaces, meeting the minimum required of 257 (Figure 4-2).

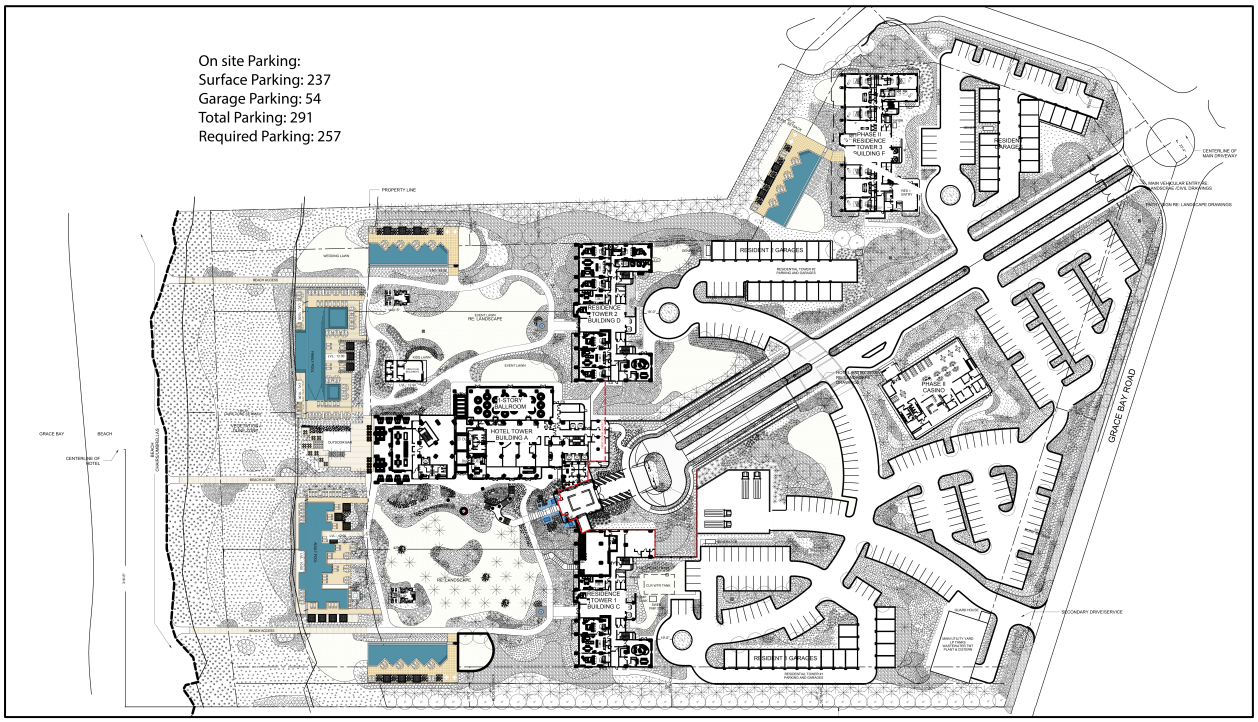


Figure 4-2 Parking Spaces Servicing hotel, residence, and casino guests

4.9 Beach Access

Furthermore, no change to the existing public beach accesses is proposed.

4.10 Land Use and Zoning Requirements

Currently the subject site is zoned T01 for Hotels, Condominiums, or Vacation Homes. No change in land use is proposed for the development and will be consistent with the zoning and land use requirements for upland development.

5 Summary of Environmental Impacts and Benefits

This section identifies potential impacts, both positive and negative, of the proposed Project on the environment. Once identified, potential impacts are further classified as temporary (reversible) or permanent, direct or indirect, and positive (beneficial) or negative (adverse). Potential adverse impacts are first avoided where possible, minimized where total avoidance isn't practical, and mitigated for unavoidable, adverse impacts. A summary of the impact classes assessed is provided in Table 5-1.

Table 5-1 Summary of Environmental Impacts

Impact Category	Impact Classification
Biotic	
Terrestrial & Coastal	$Mpd^{(+)}$/M
Wildlife	$Lti^{(-)}$
Physical	$pd^{(+)}$
Public Access and Recreational Use	$Hpd^{(+)}$
Social Impacts	NI
Economic Impacts	$Hpd^{(+)}$
Site Drainage and Flooding	$Lpd^{(-)}$
Aesthetics	$Mpd^{(+)}$; $Mtd^{(-)}$
Other Impacts (Construction Activities)	$Ltd^{(-)}$

Impact Classification Legend:

H=High Impact, M=Moderate Impact, L=Low Impact

p=permanent impact, t=temporary/reversible impact

d=direct impact, i=indirect impact

(+)=beneficial impact, (-)=adverse impact, (n)=neutral impact

NI=No Impact

/M = mitigatable

5.1 Biotic Environments

On this site the biotic environments can be separated into two distinct areas: coastal dune and upland terrestrial coastal scrub environments. Although closely linked by their proximity to each other, the impacts to these distinct biologic communities varies significantly. The following describes the both the direct and indirect potential impacts to these distinct terrestrial habitats during the construction and operational phases of the Project.

5.1.1 Terrestrial Environment

5.1.1.1 *Direct Impacts to Terrestrial Ecology*

The direct displacement of the existing upland species with the structures and landscaping will change the terrestrial ecology within the footprint of the development work. Additionally, land-based activities can also affect the marine environment. As a result, there are environmental impacts for the terrestrial environment imposed by The St. Regis development. Many of the structures and parking areas will cause habitat loss and reduced species populations through direct displacement. The upland structures will reduce the pervious natural surface, with effects from sedimentation and other water quality related issues. A total of 17.2 acres of upland habitat will be directly impacted by this project of which 11.12 acres is native vegetation, rock and sand mix. The set aside green spaces in the development is proposed at 50% of the development acreage, or 8.55 acres of the total 17.16 acre site is proposed for green spaces.

5.1.1.2 *Indirect Impacts to Terrestrial Ecology*

The increase in impervious surfaces by upland development increases stormwater runoff. Although land-based rainfall flows will seep into surrounding waters largely via run-off during high intensity events, seepage through the soil can also occur. The predominant concern is for changes in water quality that can be affected by a number of factors. Water quality can be altered by sewage and gray water effluents, hazardous wastes such as chlorine and heavy metals, oil and petroleum hydrocarbons, herbicides and pesticides, and excessive sedimentation. Significant care has been taken to limit these constituents' occurrence through oil/water and sediment separation systems included in wells and soakaways where these contaminants are likely to occur. BMP's (best management practices) will be followed during the construction phase of the development to prevent adverse impacts to the adjacent environment and utilize silt fencing where appropriate and effective. Solid construction wastes will always be under strict control during the construction phase of development with regular periodic cleanups.

Table 5-2 Impacts to Terrestrial Environment

Positive Impacts			
Temporary Impacts		Permanent Impacts	
Direct	Indirect	Direct	Indirect
		Removal of Casurina and revegetated dune with native species	Improve visual aesthetic currently Casuarina dominated dune system
		Reduced erosion from improved road surfaces and grading to swales and recharge and landscaped areas	
		Relocated animals/fauna, and vegetation successfully relocated	
Negative Impacts			
Temporary Impacts		Permanent Impacts	
Direct	Indirect	Direct	Indirect
		Vegetation and animals, fauna unable to be relocated	
	Potential for runoff prior to completion of Stormwater system		

5.1.2 Coastal Water Quality, Circulation and Flushing (Lti(-))

No impacts to coastal water quality are anticipated as a result of the Project.

5.1.3 Wildlife ($Lti^{(-)}$)

Wildlife within the Project area is typical of the species associated with the TCI (lizards, birds, etc.). Impacts to wildlife are both permanent (loss of habitat) and temporary (disturbances

during construction) although these impacts are considered minor to moderate. To ensure that no critical wildlife species are impacted, the Applicant will provide the Department of Planning and DECR two weeks' notice in advance of land clearing activities to allow the assessment of wildlife populations and relocation, as needed.

5.1.4 Physical Environment (Mpd$^{(+)}$)

Permanent, direct impacts to the physical environment include conversion of habitat types, from raw land to fully developed resort development product. No significant long term adverse impacts to the physical environment at the Project Site are anticipated as a result of the Project as the underlying nearshore system will be preserved. The physical impacts are considered low impact and are considered neutral.

5.1.5 Public Access and Recreational Use (Hpd$^{(+)}$)

There will be no change in public access to grace bay from the existing condition for the proposed project.

6 Social and Economic Impacts

6.1 Social and Cultural Impacts (NI)

Social impacts examine the changes that the development could have on the lives, culture or tradition of local residents, as well as the potential impacts on the structure and cohesion of the community as a whole. As the Project will maintain much of the natural character of the island to the area, relative to the current use and inadequate upkeep, no negative social impacts are anticipated.

The TCI National Socio-economic Development Strategy (TCIG, 2012) aims to create an environment for long-term growth through private sector led investments with a focus on protecting the natural environment. Low-density developments are critical to maintain the character and balance of the island.

For the purpose of the socio-economic and cultural assessment, the study area comprises the Grace Bay development areas. For the TCI as a country, a comparison of the 1970 to 2020 Census shows that the population increased by 38,000 people over 50 years and grew at an average annual rate of approximately seven percent (7.2%) (Figure 6-1 Turks and Caicos Population Growth). If the population were to continue to grow at this rate, it would double in size by the year 2030. The 2012 Population Census recorded Providenciales as having a population of approximately 23,769 persons over 47 sq mi, representing 75.6% of the total population of the Turks and Caicos Islands (TCIG, 2013). The population of Providenciales has exhibited an increase on average annual basis by 6.25% since 2001. The 2012 Census report concludes that the

population grown on Providenciales is in line with the Government's expectations considering the level of development.

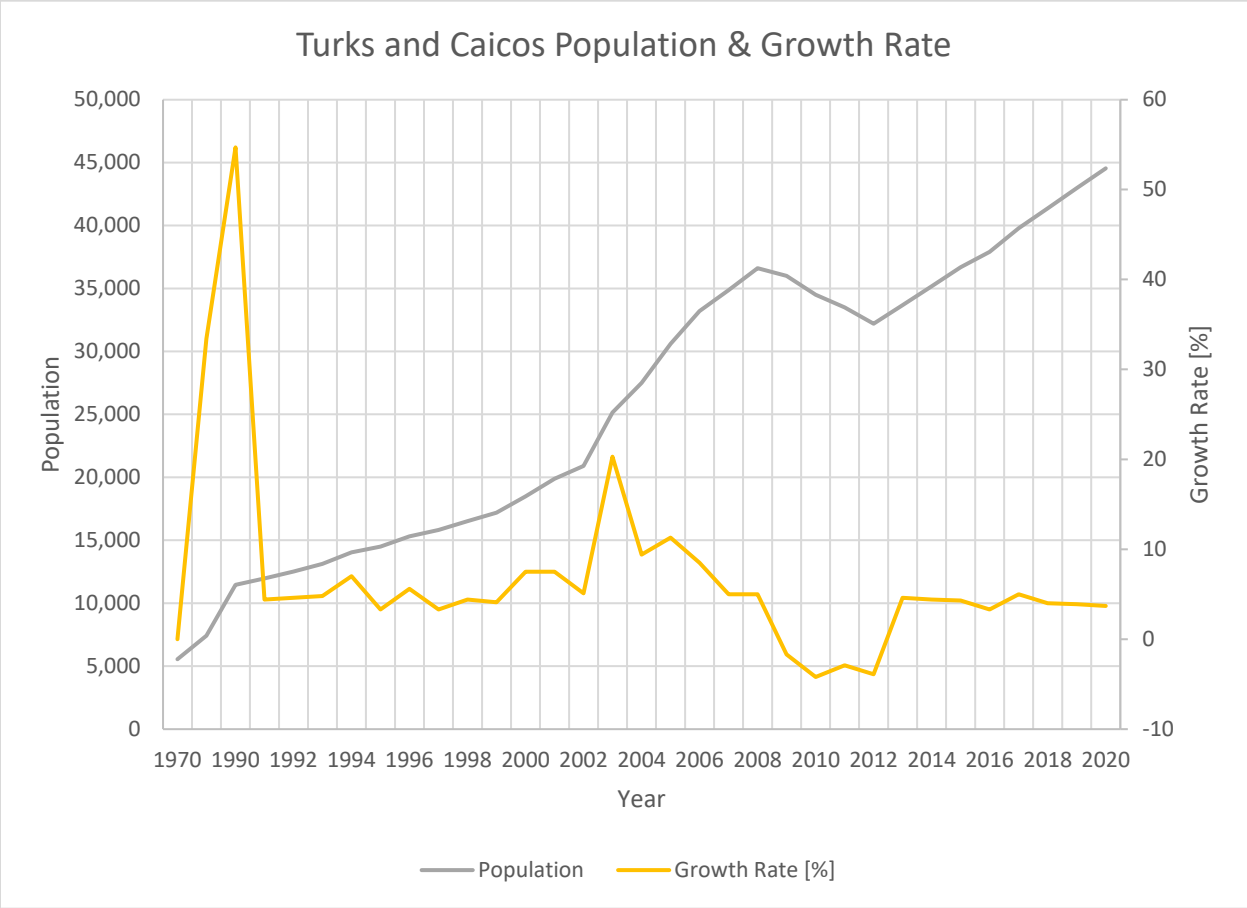


Figure 6-1 Turks and Caicos Population Growth

In respect of socio-economic and cultural impacts, the Project will have no permanent negative impacts. As described in Section 6.1, while some temporary impacts during construction are anticipated, overall long term direct and indirect impacts are positive. The Project and development will generate construction activity and investor interest thereby stimulating the local economy, increasing property values and government revenue, while creating jobs and other indirect economic impacts.

Table 6-1 Socioeconomic and Cultural Impacts

Positive Impacts			
Temporary Impacts		Permanent Impacts	
Direct	Indirect	Direct	Indirect
		Value Added to Subject Property	Value Added to Neighboring Properties
		$390 M less Casino estimated in Sale of Residences	10% Stamp Duty on Future Sale of Neighboring Lots – Revenue to TCIG
Increase in disposable income for skilled & unskilled TCI workers (construction phase)		Increase in disposable income for skilled & unskilled TCI workers (operations phase)	
Increase Revenues to TCI for business licensing, company returns, work permits, NHIP, etc. (construction phase)		Increase Revenues to TCI for business licensing, company returns, work permits, NHIP, etc. (operations phase)	
		Improved infrastructure	
		Reduced reliance on local power utilities through use of solar panels	Increased Reliance on Local Utilities (energy, water, telecom, etc.)
		Injection of new private investments into to TCI-Contribution to national economy	
Negative Impacts			
Temporary Impacts		Permanent Impacts	
Direct	Indirect	Direct	Indirect
Visual/Aesthetic Impacts During Construction			
Noise Pollution from equipment			
			Change in demographics due to increased land values

6.2 Economic Impacts ($Hpd^{(+)}$; $Hpi^{(+)}$)

The social and economic impacts of any development need to be considered in terms of the affected communities, geophysical region, and terrestrial environmental mitigation costs and regional culture. The proposed development is expected to bring significant direct economic benefits to the Island and to the TCI in the form of:

- Tax revenue from import duties during construction and during the operational phase of the development.
- Employment benefits will accrue to Turks and Caicos residents, and by extension the general Turks and Caicos economy during construction and during the operational phase of the development. There are recognizable secondary benefits which are more difficult to accurately quantify. The guest demographic will be affluent with significant disposable income. Guests will likely contribute significantly to the TCI economy through the purchase of goods and services, and especially to dive and fishing charters, sightseeing tours, excursion trips to the other islands and to Providenciales.

The determination of economic impacts and benefits to the island can be sub-divided into two time frames, during construction and during operation.

6.3 Construction Phase

The development construction will not be phased, the complete development will be constructed in one construction event anticipated to occur over 3 years to completion.

During implementation of the development, it has been assessed that the bulk of the materials required for construction will need to be imported as is typical for these projects and will be temporarily stored onsite. Finished building components like ceiling tiles, luminaries, electrical fittings, plant, plumbing fixtures, etc. are expected to be delivered and stored in containers onsite during construction, with containers removed prior to requesting an occupancy certificate.

6.4 Operation Phase

During operation the St. Regis will require typical services as related to the maintenance of the structures, landscaping, and driveways/roadways. Materials will be needed to service, maintain, and replace equipment as necessary to maintain the amenities and facilities.

6.4.1 Direct Fiscal Impacts

Direct expenditures (i.e. cost layout) and unit sale values are direct impacts of the development (Table 6-2).

Table 6-2 Direct Expenditures by Applicant

Description	Cost
Land Purchase	$ 16,000,000
Planning Permit Fees	$ 2,000,000
Design, Engineering, Architecture, EIA	$ 2,000,000
Sales and Marketing	$ 2,500,000
Upland Infrastructure (utilities, drainage, road paving, landscaping)	$ 1,500,000
Vertical Development/Buildings	$ 280,000,000
Duties on Furnishings	$ 700,000
Stamp Duties (initial land purchase)	$ 1,600,000
Stamp Duties (on sales apartment units)	$ 30,000,000
Total	**$ 336,300,000**

Table 6-3 Direct Benefits to Applicant (Added Value)

Description	Value
Sale of Apartment Units	$ 300,000,000
Hotel (confidential)	
Total	$ 300,000,000

The value added by the "improved" amenities associated with hotel and hotel residential units is estimated to exceed $300,000,000. The development contributes directly to the TCI Government's revenue stream including Permit fees, duties on construction materials and home furnishings, the 10% stamp duties on the initial land purchase and on the sales of the apartment units, as detailed in Table 6-4.

Table 6-4. Direct Impact to TCI Government's Revenue Stream

Description	Cost
TCI Planning Permit Fees	$ 2,000,000
Duties on imported home furnishings	$ 700,000
Duties on imported construction materials	$ 3,000,000
10% Stamp Duties (initial land purchase)	$ 1,600,000
10% Stamp Duties (sale of apartment units)	$ 30,000,000
12% Tourism Tax on Hotel (Annual Value)	$ 8,000,000
Total	**$ 45,300,000**

6.4.2 Indirect and Induced Fiscal Impacts

Indirect and induced economic impacts are those impacts that affect the level of activity in the local economy. Indirect and direct impacts may include:

- Creation of jobs (construction and operations);
- Creation of jobs in turn contributes annual income to the Government for business licensing, company returns, work permits, National Insurance, National Health Insurance, etc.;
- Real estate commissions;
- Increased reliance of local services (energy, water, telecommunications, etc);
- Economic effects when employees and suppliers re-spend their wages on local consumer purchases (entertainment, dining, etc).

6.5 Aesthetics ($Hpd^{(+)}$and $Mpd^{(+)}/Mtd^{(-)}$)

The TCI Development Manual typically classifies land clearing and upland development as having a moderate impact on aesthetics. To maximize the positive aesthetic impacts of the infrastructure components of this Project will conceal these elements from visual sightlines with structures and vegetation.

Construction activities may be considered a moderate, temporary, negative impact to aesthetics. The Project's Monitoring (Section 7) addresses the minimization and avoidance of temporary construction related disturbances to the community including temporary visual impacts by leaving the existing Casuarinas (Australian Pines) until the end of construction to provide visual cover from the beach and tourist areas nearshore.

Once the Project is complete, there is a permanent, moderate visual impact to the addition of the upland development. While some residents could consider this a negative visual impact, many will see it as a positive improvement. The construction palette is tone, wood, and plaster, and native sand and stone, giving a feeling of being "from the land."

The Applicant's development plan calls for high quality development, while enhancing the development with a significant portion of the natural vegetation currently found onsite, in keeping with the overall "Beautiful by Nature" concept and vision of the Turks and Caicos community. As such, the net impact to aesthetics is deemed positive.

6.6 Other Impacts ($Lti^{(-)}$)

Other impacts include potential, temporary, indirect impacts are from construction activities such as noise, air and land pollution. These impacts are avoided and minimized through the

Project's Monitoring and Mitigation Plan which details the provisions by which these temporary impacts are monitored and controlled during construction.

No permanent, adverse impacts to neighboring developments and businesses are expected as a result of the Project. Temporary adverse impacts may result during construction as minor disturbances due to the execution of work. These impacts may include noise, dust, increased traffic on local roads, aesthetics, etc. These temporary impacts are avoided and minimized through work hour limitations, noise restrictions, and compliance with applicable TCI laws and ordinances as further described in Section 4.

The net impacts to neighboring developments and businesses are beneficial as recreational beach aesthetics are well known to enhance property values, increase sales and rental income. The planned beach restoration helps enhance a high-value, water-front development which is expected to increase the value of adjacent properties within the Project Area. The anticipated net increase to the surrounding land and property values is estimated at 20+% based on the observed values seen on similar recent development projects.

7 Monitoring

The purpose of this section describes the monitoring of the project to avoid any potential negative impacts during construction activities. To measure short and long-term changes to natural resources in the Project Area because of the Project, CDE will conduct pre-construction, construction, and post-construction monitoring as described in the following sections. Pre-construction monitoring will be performed to establish the terrestrial and marine flora and fauna as well as water quality baseline conditions existing immediately prior to construction. Construction monitoring will be performed to ensure that the Project is constructed in accordance with this EIA, permits and design specifications. Post-construction monitoring will document the long-term beneficial and/or adverse impacts of the Project on the coastal environment.

7.1 Terrestrial Environment

7.1.1 Pre-Construction

Pre-construction terrestrial flora and fauna surveys were conducted as described in Section 2 to document the baseline conditions. Approximately 30 days prior to the commencement of construction, the Applicant will notify DECR to flag protected species which are a candidate for successful relocation (onsite or to a nursery) as required. In addition, to ensure that no critical wildlife species are impacted, the Applicant will provide the Department of Planning and DECR two weeks' notice in advance of land clearing activities to allow the assessment of wildlife

populations and relocation, if needed. Prior to site clearing the limits of the building envelopes and vegetation to be protected will be staked in the field.

7.1.2 Construction

The purpose of construction monitoring is to ensure that terrestrial resources lying outside of the work limits, and approved staging areas, are protected during the execution of work. This will be achieved by the installation of silt fencing and other BMPs in addition to routine monitoring. Protected species will be marked and accounted for throughout the construction process to ensure all specimens are provided with the appropriate care and conditions for growth.

All oil and solvents will be stored off-site and managed through a local contractor (JCB) for equipment and machinery maintenance and servicing minimizing any potential for environmental impacts. Controls and BMP's will be located along the perimeter of the site, currently fenced, and at the entrance to the site to control dust during construction. Use of watering to reduce dust at the site and a rock bed at the gated entrance will be utilized to control debris and dirt to prevent debris and particulate impacts to the public roadway and adjacent properties.

7.1.3 Post-Construction

Post-construction surveys shall be conducted the first year following construction to document and assess the response of the landscaped, preserved and/or relocated plants and determine if changes are necessary.

7.1.4 Topography

An as-built topographic survey will be performed one year following the opening of the Hotel and Residences to document the post-construction condition. The survey will be provided to Planning and DECR in the one year report.

7.1.5 Construction Photographic Documentation

The Owner's Representative will be responsible for maintaining photographic documentation of all construction activities using a camera with geo-reference capabilities. Sufficient photos will be taken to document the stages of work. The construction photos shall be organized by date and maintained in electronic format following construction and available upon request by TCIG.

7.1.6 Noise, Dust and Other Pollutants

The contractor shall be required to comply with all applicable laws, ordinances and permits with respect to the protection of air, land and environmental resources. As part of the Disaster Emergency and Mitigation Plan, the contractor shall be required to designate a qualified individual responsible for full-time monitoring and control of these resources.

7.2 Construction Oversight

During the first two weeks of construction, specifically the period including site clearing and survey and stakeout, the Owner's Representative will maintain a daily presence onsite to ensure the Project is constructed in accordance with this EIA, the permits and the environmental specifications contained therein. In addition, the Owner's Representative will maintain a daily presence onsite during construction of the upland portions of the ancillary site grading, the Owner's Representative will make periodic site visits as needed. The Owner's Representative will be available to make additional site visits with Planning and/or DECR staff on request.

7.3 Field Team for Monitoring

The TCI Planning Department and DECR pre-approved the Project Team responsible for the preparation of this EIA document as well as future physical and biological monitoring. The field team consists of professional engineers and scientists under the direction of CDE. As the Applicant's agent and assigned representative, CDE will be directly responsible for the Project's adherence to the Environmental Assessment and the environmental monitoring as described herein. The Owner may assign an alternate representative for construction and post-construction monitoring in consultation with the Planning Department. The qualifications of the field team are provided in Appendix B.

In addition, the contractor will be required to provide a full time quality control officer to observe all phases of the Project. The quality control officer employed by the contractor will have the authority to act on all environmental concerns presented by the Owner's Representative and the TCIG. The quality control officer will have total "STOP WORK AUTHORITY" over the entire Project and will be trained in turbidity control, environmental containment, and best management practices.

7.4 Government Oversight

To provide assurance at all levels of Government that the Project is completed in an environmentally sound manner, it is anticipated that many individuals from various areas of Government will be involved with reviewing reports and data submitted by the monitoring team. These individuals may include, among others, representatives from the Department of Planning, DECR and the Department of Environmental Health. A meeting will be held at the project site or local office for the purpose of reviewing work progress and answering questions from the Oversight Committee as requested by the Government.

8 Mitigation & Public Consultation Process

The potential environmental impacts of the Project to both the terrestrial and coastal environments include:

- Moderate Impact, permanent, direct positive impacts to terrestrial species due to site clearing. Removal of exotic vegetation results increases carrying capacities and habitat of rare, threatened and endemic species ($Mpd^{(+)}$/M);
- Low, direct adverse impacts to wildlife that may arise due to noise and human presence associated with construction activities ($Ltd^{(-)}$);
- Low impact, temporary, indirect impacts to land and air resources as a result of construction activities *($Lti^{(-)}$)*.

In addition to environmental impacts, potential social and economic impacts include:

- Low impact, temporary, indirect impacts to neighboring residences, developments and businesses, as a result of the potential for minor disturbances during construction *($Lti^{(-)}$)*;
- Moderate, temporary, indirect impacts to aesthetics due to the presence of construction equipment which could reduce the value of experience for visitors and residents *($Mti^{(-)}$)*;
- Increase in land values at the Project Site and neighboring properties *($Hpd^{(+)}$)*.

8.1 Description of Irreversible Impacts

Measures to avoid and minimize the potential for adverse impacts to terrestrial or coastal resources (e.g. protected plants) include:

- The site clearing is primarily limited to the specific areas for construction and will be revegetated;
- Invasive, exotic species currently existing onsite will be removed;
- A landscape design primarily incorporating native vegetation and quality landscape species and;
- BMPs to cordon off and protect the public beach users during construction and revegetation.

Measures to avoid and minimize the potential for adverse impacts to terrestrial resources include:

- Procedures for terrestrial surveys to monitor resources before, during and after construction; and
- Restoration of native species on the dune areas and removal of derelict structures.

Measures to avoid and minimize the potential for other impacts to the physical environment:

- Construction monitoring and oversight;
- Maintain machinery in good working order;
- Provide for collection of solid wastes, etc.;

- Maintain a Disaster Management Plan.

Measures to avoid and minimize potential adverse social, cultural and economic impacts include:

- Monitoring protocols to avoid and minimize the potential for noise, air and/or land pollution as a result of construction activities;
- Use of public notices, signs and other forms of informational communications;
- Incorporate sustainable renewable energy sources to the developed areas;
- Coordination with local stakeholders;
- Maintain work areas in a neat and orderly condition.

8.1.1 Terrestrial

Preservation of existing vegetation where practicable will help minimize the impacts on the terrestrial environment. Reintroduction of native species is central to incorporate the design of the development within the landscaped habitat that promotes the propagation of Turks and Caicos Islands native species for the landscaping of the common areas, thus provide a positive impact and promote sustainable resource protection. Revegetation of the bare limestone areas will improve the terrestrial ecology, create new habitats, and help limit wind erosion. Significant native species will be utilized in revegetation efforts (e.g. Silver palms, Caicos orchids, & Sea Oats)

The total property area of 17.16 acres will have 8.55 acres of greenspace, resulting in 49.8% of the property returned to a natural state through revegetation of native species. Initially the property only contained 11.12 acres of native species, of which only 63% of that area was vegetated, resulting in an impacted area of native vegetation of 7 acres. Thus, the net increase in native vegetation within the property boundary is 1.55 acres of improved natively vegetated spaces.

8.1.2 Dune

The area between the property line and the seaward vegetation line amounts to approximately 2.26 acres. The existing 0.37 acres of native dune species will be preserved, the 0.53 acres of Casuarina and landscape species will be removed and replanted with native dune species resulting in 0.9 acres of natively vegetated dune space, an increase of 58.9%.

8.2 Summary of Financial and Economic Resources for Mitigation Methods

Economic value assessment is a method used to define and measure value based on individual preferences of the community. The economic value of a particular resource is based upon a balance of tradeoffs and choices. For example, an economic value may be realized as how much is an individual or society is willing to pay to preserve or enhance a particular resource. Economic

values associated with the loss of natural resources can be classified into Use Values and Non-Use Values (King, 2000). Use Values are further classified as direct or indirect values. Use values may in include direct values (e.g. consumption), and indirect values such as option values (value that people place on having the option to use the resource in the future), and bequest values (the value placed on knowing the resource will be available for future generations). Non-use values relate to the value that society places on the mere existence of resources. The total economic value of a resource is thereby the sum of the individual use and non-use values.

Environmental resource economic valuation is a subjective and challenging task as it is difficult to measure the value of resources to individuals. King and Mazzotta (King, 2000) establish techniques for measuring economic value of resources including circumstantial evidence (e.g. replacement costs, damage avoidance costs, and substitute costs), contingent valuation (surveys), travel costs, and hedonic valuation. The economic values for mitigation methods for the Project are identified in Table 8-1.

Table 8-1 Financial and Economic Values for the Development

Economic Value	Mitigation Method	Estimated Cost of Mitigation
Improvements to Terrestrial Habitat	Habitat and Landscaping with Native Vegetation (Primary) Removal of Invasive Species (Primary)	Standard Inclusion in Construction Contract, No Additional Costs
Temporary Construction Disturbances (disruptions to watersports industry, etc.)	Public Notices and Signs; Stakeholder Notification	Standard Inclusion in Construction Contract, No Additional Costs
Additional Government Resources/Technical Staff Hours	Remittance of Permit Fees; Use and Knowledge of Experienced Engineers, Contractors and Consultants	Standard Inclusion in Construction Contract, No Additional Costs
Potential Water, Land and Air Pollution During Construction	Construction Monitoring and Oversight; Disaster Management	Standard Inclusion in Construction Contract, No Additional Costs
Visual/Aesthetic Impacts During Construction	Maintain Work Areas in Neat and Orderly Condition	Standard Inclusion in Construction Contract, No Additional Costs
Noise Pollution from Construction Equipment	Enforce Noise Thresholds; Maintain Machinery in Good Working Order	Standard Inclusion in Construction Contract, No Additional Costs

8.3 Involvement of Key Stakeholders in Public Consultation Process

Project stakeholders include TCI entities which govern development (e.g. Planning Department, DECR, etc.), property owners adjacent to the Project and the local TCI community at large.

Noticing began the public engagement process and in collaboration with the TCI Government. The involvement of key stakeholders on the Project has continued throughout the permitting process through the filing of ODP applications (PR-16177) in support of this development Project and through the creation of this EIA.

With respect to individual landowners, developers, and the community at large, the Applicant has completed public noticing as stipulated by Section 30(2) of the Physical Planning Notice for the development construction. In addition, the Applicant has notified all landowners within 200ft of the Project of the project site upon application for the ODP permit (PR-16177) for the project as described herein. Further, per the TOR, residents of and stakeholders will be contacted for public comment at a meeting place and time within 30-60 days of the filing of the EIA. At the time of formal publication of this EIA, the comments or concerns received from the local community or the public will be incorporated into this document where applicable.

9 CONCLUSIONS

The Applicant proposes to create a luxury development (PR-16177) to continue the tradition of exceptional beachfront developments emblematic of the Turks and Caicos Islands. The most significant permanent impact of the Project is direct impacts to terrestrial habitats due to site clearing and de-grubbing. These impacts are minimized and mitigated by removal of invasive species, and landscape enhancements with native vegetation and through a landscape management plan. The economic and social impacts associated with the Project are significant and positive and will result in increased land values, increased government revenues and overall stimulus of the local economy.

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Appendix

A. Terms of Reference
B. Qualifications of EIA Team
C. Government Permits (Research, ODP)
D. Project Drawings
E. Subconsultant and Environmental Reports (Biologic, Geotechnical, Geologic, Survey)
F. Lab Reports (Water Quality Testing Report)
G. EIA Protocols
H. Stakeholder & Public Consultative Meeting Reports
I. Report, Terrestrial Vegetation and Site Condition Photos
J. EIA Certification
K. Fieldwork schedule