speseas.org
info@speseas.org
868-689-SEAS(7327)

January 2, 2026

Corporate Secretary
Environmental Management Authority
#8 Elizabeth Street
St. Clair, Port-of-Spain
Trinidad and Tobago
(submitted via email to CorpSec@ema.co.tt)

RE: EIA Review: CEC6451/2022 – Superior Hotels of Trinidad and Tobago Limited c/o International Projects Initiatives Limited (IPIL)

Dear Sir/ Madam,

We are pleased to share with you our commentary on the Superior Hotels of Trinidad and Tobago Limited c/o International Projects Initiatives Limited (IPIL) (CEC6451/2022), which was made available for public viewing on the EMA's website.

SpeSeas is a non-profit, non-governmental organisation promoting positive change and sustainable use of our ocean resources using science, advocacy, and outreach. Our objectives are to:

- Undertake research on coastal and marine ecosystems that informs and guides management, aids in understanding the relevant human impacts, and directs the development of innovative solutions.
- Improve stakeholders' understanding of their relationships with coastal and marine ecosystems.
- Advocate for integrated management, effective governance, and stewardship of coastal and marine ecosystems and the resources they provide to all sectors of society.

Consent is granted for sharing the opinions expressed.

Sincerely,

Dr. Diva Amon
Co-Director and Secretary, SpeSeas

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

SECTION A: GENERAL COMMENTS

Through our work in marine scientific research and conservation, SpeSeas is well informed on the marine matters in Tobago, including the current state of the marine environment, existing limitations in marine management and the ongoing threat of climate change to the marine system and those dependent on it. It is within this context that we provide relevant comments to show that the current Environmental Impact Assessment is inadequate in mitigating the severe environmental impact associated with the construction of a large-scale tourism and residential development on 12 hectares at Rocky Point, Tobago; a very sensitive and ecologically important site.

This section provides an overview of the major deficiencies we have noted, but please refer to Section B for more detailed specific comments.

Major deficiencies in the existing development plan and environmental impact assessment

A. INADEQUATE WATER QUALITY AND SEDIMENTATION/SILTATION MITIGATION

- **a. Application of a 1:25 year storm design which is insufficient**
- **b. Essential modelling absent**
- **c. Ineffective mitigation**
- **d. Inappropriate water quality standards considering the proximity of the sensitive reef**

Removal of coastal vegetation and extensive earthworks to prepare the site will expose large areas of soil. Considering the sloping topography of the site and the likelihood of heavy rainfall, there is potential for significant sedimentation of the near-shore reef. The reef is vulnerable and already facing significant acute threats of climate change and chronic issues of pollution and fisheries management. The current EIA proposes a 1:25 year storm surge standard which is inappropriate for a hotel with a 50+ year lifespan, the coastal environment it is being developed in, and ignores predicted climate change. International best practice for sensitive habitat requires a 1:100-year design at minimum giving a 1% chance of occurring in any single year or a 26% chance over 30 years (ASCE 24 / FEMA P-55).

The EIA presents a few mitigation measures, such as silt traps and fences, and suspension of work during heavy rain, and suggests that the impact is reduced as a result in the absence of the necessary hydrodynamic modelling/ sediment plume modelling and rainfall/ surface models to estimate sediment loads, its route of travel along the site slopes, and spatial and temporal impact to the marine environment. (refer to Appendix H Preliminary Hydrological and Hydraulic Report and Appendix U Sediment and Erosion Management Plan as well as relevant sections of Chapter 8). Silt traps and fences are normally meant to handle relatively small volumes but cannot handle sediments and waters from the entire watershed of the construction site, during the construction phase. All mitigation strategies proposed are generic and do not consider the environmental sensitivities of the marine area. Hydrodynamic modelling/ sediment plume modelling and rainfall/

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

surface models are essential – and should be mandatory – to map impacts and guide effective mitigation in this location.

Silt traps and fences are normally meant to handle relatively small volumes but cannot handle sediments and waters from the entire watershed of the construction site, during the construction phase. On top of this, most mitigation strategies are designed to address the symptoms and not the sources of issues. There is no reconsideration of hotel design, only band-aid solutions. According to industry standards for areas proximate to sensitive ecosystems, the standard silt traps are largely ineffective even with regular clearance. Adaptive scheduling and proactive maintenance are absent from the EIA. Given the severe consequences of a single influx event of silt/ sediment on to the coral reef to coral survival, current mitigations are superficial and ineffective to protect the coral reef.

There is a critical failure to apply more stringent water quality standards suitable for sensitive coral reef ecosystems in the water quality management plan. The applicant focuses on water quality compliance rather than any real mitigation of water quality to protect the coral reefs and sensitive nesting habitats. The applicant has assigned an arbitrary dilution factor for the discharge of stormwater at the shoreline which is not based on scientific standards or the real-world conditions. Modelling is necessary to determine the likely dilution with some level of confidence. The applicant misuses the Water Pollution Rules for ambient water quality standards for the protection of aquatic life and aquatic systems in the marine environment and assumes immediate dilution on discharge to the sea to meet the standard after discharge, without proper assessment of the ambient conditions, seasonal variations, circulation patterns or even acknowledging that marine life occurs at the point of the proposed outfall. Water quality assessments conducted in the EIA, and in previous studies for the area, show that the reef is chronically stressed by poor water quality, yet the applicant fails to consider the lethal thresholds for corals established and available in relevant literature.

B. THE PROPOSED DEVELOPMENT IS INCONSISTENT WITH NATIONAL POLICY AND RATIFIED CONVENTIONS

a. Integrated Coastal Zone Management Framework

b. Water Pollution Rules/ Cartagena Convention – LBS Protocol

c. Environmental Sensitive Species Rules/ Cartagena Convention – SPAW Protocol

The ICZM policy, which was approved by cabinet in 2023, promotes an integrated and sustainable approach to managing the coastal and marine resources to balance development and conservation while improving the quality of life for citizens. Link to policy here: https://www.iczm.gov.tt/policy/draft-policy-document/. Objective 2 of the ICZM policy states: *Control the siting of infrastructure in the coastal zone and determine adequate setback and buffer zones along the coast; Encourage appropriate forms of coastal development, economic activities, settlement, and building.* The ICZM policy goes into further detail in describing three zones (out of four) of the coastal zone that should be considered: Zone 1 – the coast which is the area of direct concern defined by 5 m from the low tide water mark to the 5 m contour, Zone 2- Area of

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

influence, defined by 5 – 90m contour and Zone 3 – seaward area of immediate and direct impact, that extends up to three nautical miles off the coast. As the current development falls within these zones there should be special alignment to ICZM in the development design and management.

However, it is unclear that the development considers the ICZM policy at all, given that the footprint of the construction plan comes within metres of the coast, ranging from 25 m along the east to as close as 3.5 m on the western end of the development, (Figure 4-10 width of expect natural buffer) along the low-lying areas adjacent to the reef. This is insufficient to provide meaningful protection from hotel development impacts. The national ICZM policy recommends adequate setback and buffer zones to protect ecosystems and mitigate coastal hazards. Internationally, many countries have regulated and enforced setbacks ranging from 30 – 100 m, or setbacks which consider the impact zone of a 100-year storm surge. However, the current development or EIA considers neither. Several other objectives of the ICZM policy are not addressed in the EIA:

- *Objective 3 – To plan and manage development in the coastal zone so as to avoid increasing exposure of people, property and economic activities to significant risk from natural and anthropogenic impacts including climate change (eg. coastal flooding, salinization)* - The EIA fails to manage significant risk to the marine environment and risk of climate changes (e.g. 1:25 year storm design etc.)
- *Obj 4 - To maintain the diversity, health and productivity of coastal and marine processes and ecosystems for the benefit of current and future generations* – The EIA fails to maintain ecosystem integrity by only mitigating for compliance rather than considering the actual sensitivities of the marine ecosystem, as well as not considering the synergistic stressors and ecosystem function
- *Obj 6 - To promote and enhance pollution control and waste management activities to ensure that they have minimal adverse impact on human health, and on coastal ecosystems and their ability to support beneficial human uses* – The EIA shows inadequate consideration of pollution impacts e.g. arbitrary water quality dilution factor of 5, and fails to consider strategies suited for managing coastal and marine ecosystem health.
- *Obj 8 - To conduct planning and management activities in the coastal zone in a manner that promotes learning through continuous research, monitoring, review and adaptation* – The EIA lack scientifically backed methods for guiding mitigation shown by the lack of use of hydrodynamic/ sediment plume models/ rainfall models and validating construction design.

Several toxic chemicals mentioned under the WPR, Trinidad and Tobago, and the Land Based Sources of Pollution Protocol (LBS protocol) are not accounted for in this EIA or cannot be effectively assessed given the vague project description on the building designs and materials used for construction and maintenance e.g. treated wood, scrap metals, biocides, detergents, microplastics from PVC cuttings. In addition to the pollutants of concern under the LBS Protocol, factors that should be considered include – persistence, toxicity, bioaccumulation, eutrophication potential, and negative impact to marine life. Under the Convention, coral reefs are considered

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

Class I waters owing to their inherent sensitivities, ecological importance, and the presence of SPAW protected wildlife. While discharge recommendations are given for Class I waters, the LBS protocol asks the contracting parties to consider the characteristics of the discharge site, and receiving marine environment, by assessing hydrographic, topographic, meteorological conditions, dispersion characteristics and ecological state, assimilative capacity and cumulative impacts, to determine whether more stringent source controls and management is necessary. This has not been done in the EIA.

Trinidad and Tobago is party to the Cartagena Convention, Specially Protected Areas and Wildlife (SPAW) Protocol that lists species requiring protection. Annexes I and II establish the list of flora and fauna species which require the highest level of protection, and Annex III lists the ones for which exploitation is authorized but regulated to ensure and maintain at an optimal level. Several species listed reside on or frequently visit the marine environments around Rocky Point. However, many are not accounted for with respect to the mitigation strategies and requires inclusion, for example, only the brown pelican and the marine turtles were specially mentioned under the mitigation for artificial lighting. While SPAW list corals and benthic organisms are not given special consideration based on their biology and ecology.

Annex II – Staghorn coral (*Acropora cervicornis*), elkhorn coral (*Acropora palmata*) - large stand of elkhorn found in the surf zone of Mt Irvine Reef, adjacent to the beach, boulder star coral (*Orbicella annularis*), mountainous star coral (*Orbicella faveolata*), Green sea turtle (*Chelonia mydas*) - nesting on Back Bay and residents on Mt Irvine Reef, Hawksbill turtle (*Eretmochelys imbricata*) - nesting at Back Bay and resident on Mt Irvine Reef, Leatherback sea turtle (*Dermochelys coriacea*), giant manta ray *(Mobula birostris*) a frequent visitor to Mt Irvine Reef, rough toothed dolphins (*Steno bredanensis*) frequently visit Mt Irvine Reef.

Annex III – All fire coral species (*Millepora spp*.), all soft corals *(Alcyonidae spp.*). queen conch (*Strombus gigas*), Caribbean spiny lobster (*Panulirus argus*), all species of parrotfish, Nassau Grouper (*Epinephelus striatus*), reef manta rays (*Mobula alfredi*), also frequent visitor to Mt. Irvine Reef.

C. RECKLESS SEWAGE MANAGEMENT STRATEGY

- **a. CEC splitting of hotel development and waste disposal and treatment**
- **b. Lack of proof of permission and capacity by WASA**
- **c. Downstream nutrient loading into MPA**

The EIA states that all sewage and greywater will be pumped to the Samaan Grove Waste Stabilization Ponds. This plan is concerning for the following reasons:
The transfer of the waste to Samaan Grove requires the installation of new sewerage and requires an additional CEC from the EMA for the establishment of water distribution systems. This activity should be included in the current CEC but was not. Project splitting creates a legal and environmental risk, as a hotel CEC cannot be approved without a proven and permitted waste treatment, and potentially forces regulators to approve a sub-standard solution later.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

Official permitting by WASA has not been approved, and there was no official confirmation or proof that the Samaan Grove Facility can handle the additional waste produced by the development. Furthermore, the EIA does not state whether the current discharge from the facility complies with the Water Pollution Rules standards. Samaan Grove facility discharges into the vicinity of the Buccoo Reef Marine Park, a marine protected area with sensitive marine ecosystems (mangrove, coral reefs, and seagrass beds). The area has a long history of marine pollution and Samaan Grove Facility only implements primary treatment of waste using settlement ponds but does not conduct advanced treatment for inorganic compounds, nutrient pollutants and pathogens. Nutrient pollution is a critical threat to the marine park, and diverting the significant volume of sewage produced at the proposed Rocky Pt development to Samaan Grove, would result in serious downstream pollution impacts from the current development plan. A detailed sewage treatment plan must be included in the EIA for it to be considered complete.

D. INCOMPLETE GEOTECHNICAL REPORTING WITH HIGH-RISK CONSEQUENCES

a. Unverified stability of sloping areas

b. Incomplete mitigation solutions for slope instability, erosion etc.

There is a fundamental engineering gap in the EIA because of the absence of test pit sampling in the sloping and low-lying areas adjacent to Mt Irvine Beach, despite having significant roadworks, building construction, retention ponds and sewage station planned for the area. There may be considerable hazards including unsuitable sediments or high groundwater table that poses considerable risk to construction and the surrounding area. The lack of testing as well as little information on building, sump and pond designs (dimensions, footprint, load etc) means the mitigations for erosion, siltation, slope instability, and earthworks cannot be sufficiently assessed in this EIA. Given the proximity to the reef area there are additional risks to consider, for example additional activities, such as chronic seepage into the marine areas or the need for dewatering (pumping of groundwater) before construction can negatively impact the adjacent reef and needs to be mitigated for. Without sufficient geotechnical surveys in all areas of development, this EIA can be considered incomplete.

E. CUMULATIVE IMPACTS NOT CONSIDERED

a. Synergists stressors

b. Existing state of resilience and assimilative capacity of marine ecosystems

Under the analysis of impacts and mitigation measures chapter, the applicant failed to assess synergistic stressors on the marine environment nor apply mitigation strategies to avoid severe stress events. Combined impacts of sedimentation, chemical runoff and nutrient loading with minimal mitigated individual impacts can still have an acute or even lethal combined effect on corals and other benthic communities.

Furthermore, while the current reef community composition was assessed, lacking in the EIA, is the current state of resilience of Mt Irvine Reef and its assimilative capacity to deal with additional stressors, directly from the hotel development while considering a future of climate change. The baseline health of Mt Irvine reef is severely compromised from historical bleaching and disease disturbances on top of chronic state of poor marine management for water pollution and

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

overexploitation. A Cumulative Effects Assessment is essential to this EIA, in order to adequately derive mitigation strategies for stressors and sensitive areas that temporally and/ or spatially overlap. Examples of temporally overlaps that are critical to coral reefs and turtle nesting sites are periods of turtle nesting/ hatching and coral spawning/ reproduction overlapping with the rainy season, major earthworks and construction. An example of significant spatial overlapping is the proposed construction of a large building, plus retention ponds, and sewage sumps station all along sloping and low-lying areas closest to the reef and where is the narrowest proposed natural buffer. In the same area, there is the highest risk of mitigation failures given major earthworks require along the slope and a high likelihood of runoff into the adjacent reed based on the topography if the site, and not to mention no geotechnical data for this area. Without addressing such cumulative effects, the EIA is incomplete.

F. ABSENT/ UNADDRESSED ITEMS

a. Absent from TOR/ Incomplete project description

b. Poor/ incorrect referencing

During the commentary period on the Draft TOR, SpeSeas suggested specific items to be added to the ToR given the environmental sensitivity of the location of development. Most of the information requested are critical for a thorough understanding the proposed development plan and essential to assess the EIA. We ask EMA/ the applicant why they were not included:

1. Applicable Standards and Guidelines
    a. Inter-American Convention for the Protection and Conservation of Sea turtles (while T&T have not yet acceded to this convention, steps are being taken in this direction - a Draft Cabinet note has been submitted to the Minister of Planning and Development for approval and submission to Cabinet).
2. Maps illustrating the topography of the site and the location and extent of any clearing, grading or filling works should be required.
3. Maps illustrating the position of native vegetation across the site, especially along the coastal edge, and indicating which vegetation is earmarked for removal and which vegetation will be left intact should be required.
4. Operation and Maintenance:
    a. Details of landscaping such as the proposed species and locations should be provided, due to the potential impact on habitat quality, especially along the coastal edge of the site.
    b. A description of any proposed beach maintenance procedures (such as cleaning) should be required.
    c. An estimate of the number of beach goers should be required, to inform the assessment of their impact on the beach.
    d. Description of the anticipated sources of light from the proposed project should specify the number and location of lights, and characteristics of each such as wattage and wavelength, height, any shielding etc.

Coastal Processes:

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

We recommend more specifics should be required such as:An assessment of the annual variation of wave and current characteristics as they relate to the potential to impact the project's activities, including constraints on recreational use of the beach, and impacts to safety of beach users. This should also address the potential for extreme events such as Tropical Storms/Hurricanes and seasonal events such as swells.

1. Natural hazards and/or climatic conditions that may impact the safety of beach users and impose constraints to recreational use

Finally, the EIA has poor documentation of references and contradictory statements that need to be corrected. A couple examples are as follows:

- All tables for standards should be cited with suitable references.
- Suitable scientific citations should be used, also international standards or reputable agencies, such as EPA should be referenced over commercial establishments e.g. Pharmaceutical Supply Chain Initiative n.d (Section 8.3.1.6.1 Dilution / Dispersion of Water-borne Contaminants)
- Many cases of incorrect or inappropriate citations, such as Kanhai 2022 (derived from the ecological report. This study is not suitable for assessing benthic communities on a coral reef habitat when the study was done in a seagrass lagoon habitat.
- Please include suitable references such as STRAP (2010), Cazabon-Mannette (2016), Cazabon-Mannette et al (2016), Walker et al (2015), Eckert and Eckert (2019), SOS reports, Northwest Atlantic Leatherback Working Group (2018). Some statements are not referenced at all under Sea Turtles section, and other relevant studies to coral reefs. Please see reference section at the end of this document.

Areas of critical concerns:

Mt Irvine fringing coral reef health incompatible with hotel development
The Mt Irvine fringing reef extends from the Mt Irvine beach bar along the lee of Rocky Point. It is one of the few remaining reefs in southwest Tobago with relatively high coral abundance and diversity, supporting a wide range of marine life, including resident juvenile hawksbill and green sea turtles, a nursery to many juvenile fish species, and a site for visiting pelagic fauna, including the rough toothed dolphins and manta rays that frequent the site. The reef contains 13 critically endangered coral species, including the largest known stand of critically endangered elkhorn corals in Tobago occurring within the surf zone adjacent to the shore. The elkhorn corals support marine biodiversity by providing habitat for numerous species, while buffering wave action and helping protect the coastline from erosion. Preserving this unique reef system is essential for the resilience of Tobago's coastal ecosystems.

Mt Irvine reef supports local fisheries and recreational activities, such as snorkelling, surfing and SCUBA diving. The reef has been well studied by the Institute of Marine Affairs, particularly the reproductive patterns of local coral species. The seasonal timing of coral spawning of specific reef building coral species have been mapped (MARIN Tobago Restoration Guide). Furthermore, larval connectivity models show that Mt Irvine Reef is not strongly connected to nearby reefs

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

(Ishmael-Lalla et al 2025). The means that successful spawning activity on this site is critical, as the corals rely heavily on self-seeding to maintain coral populations on the reef. Significant coral mortality or changes to the reef condition would, in turn, severely limit natural regeneration.

However, Mt Irvine Reef faces increasing threats. It has a long history of coral bleaching impacts, in 2005 and 2010 (Mallela et al 2010, Alemu I and Clement, 2014), and most recently experienced consecutive bleaching in 2023 and 2024 that resulted in severe bleaching of many coral species on Mt Irvine Reef (Lochan and Ganase 2024, Ganase 2024). The reef has suffered historical outbreaks of black-band and yellow-band disease that target specific coral species (Mallela et al 2010), and continue to be at risk of disease outbreaks, such as stony coral tissue loss disease (SCTLD), which targets boulder and brain coral species that make up a large portion of the reef. The high abundance and diversity of coral species on Mt Irvine reef, has made it resilient and prevented full decimation of the reef, but chronic pressures from pollution, fishing and coastal development (historical and present) continue to affect natural recovery. Despite these impacts, Mt Irvine reef is one of the relatively healthier reefs in south-west Tobago, comparable to some areas within the Buccoo Reef Marine Park. This is largely due to the intact vegetation at Rocky Point, which acts to reduce land-based pollution. Overall, the current state and the threats Mt Irvine Reef experiences highlight the need for strong implementation of the integrated coastal zone and marine management policy, as well as the need for additional marine protective legislations, currently lacking.

Land clearing for coastal development, and the impact of sedimentation is one of the biggest contributors to historical reef degradation in Tobago and throughout the Caribbean. Sediment smothers corals, and impairs biological functions, including feeding, coral spawning and recruitment. Sediment also blocks sunlight needed for corals to harness energy from sunlight. In the last forty years we have lost 50% of our coral cover as a result of the combined impacts of acute disturbance events, hurricanes and coral bleaching that result in mass coral death, to chronic issues of land clearing, sedimentation, land-based sources of pollution, coastal development, and unmanaged human activities (Ganase et al 2020). Large-scale coastal developments such as this, are incompatible with healthy coral reefs and this has been extensively proven throughout the Caribbean (Nystrom et al 2000). The current proposed large-scale design at Rocky Point where the Environmental Impact Assessment (EIA) severely underestimates the sensitivity of the adjacent coral reef ecosystem to disturbances in the adjacent terrestrial environment. It also does not consider the baseline condition of the reef, its existing threats, including the projected impact of climate change, the existing state of marine management, the reef's (limited) assimilative capacity or the cumulative impact of construction and operational activities.

The drainage design presented in the EIA indicates two designated stormwater discharge points for the development. One on the eastern end of Back Bay and one that discharges directly over the coral reef (and elkhorn coral stand) at Mt Irvine Bay. This combined with the introduction of hard surfaces (roads, buildings, drains) together with the loss of significant natural vegetation, especially in the low-lying areas adjacent to the reef, and the major construction mere metres away from the reef, guarantee a significant increase in the volume of storm-water discharge,

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

sedimentation and accompanying land-based pollutants (including nutrients and chemicals from grey water, pesticides, fertilisers, oils, plastics, household chemicals etc.).
A pulse disturbance will almost certainly occur during the construction phase of the project, that will most certainly make permanent modifications to the marine environment of the reefs and adjacent coastal area resulting in mass coral mortality and a regime shift likely towards algae dominance. The operational phase of the hotel will maintain chronic stressed conditions that will make natural recovery of corals impossible (i.e. loss of resilience). The future of coral reefs under climate change is uncertain, but the science is clear that local protection and management to eliminate chronic stressors and disturbances is the primary strategy for facilitating natural recovery after climate-induced coral bleaching events (Hughes et al 2003, Carilli et al 2009, Anthony et al 2015). The introduction of new stressors – from sedimentation to nutrient loading and chemical pollution – from this development will certainly undermine its resilience and capacity to survive climate change.

A. Hotel Development Threatens Back Bay - Important Nesting Site for Threatened Sea Turtles (ESS)

Back Bay is one of Tobago's most important nesting beaches for leatherback and hawksbill turtles. Despite its small size of just 440m, it hosts a high density of nests each year (annual average of 78 nests recorded by SOS Tobago; equivalent to approximately 177 per km). Its undeveloped nature provides a rare refuge, free from the impacts of artificial lighting, beach structures, noise, and high visitor traffic.

The intact vegetation protects the coast from erosion and offers shade that helps regulate sand temperatures - crucial for hatchling success. Leatherbacks and hawksbills are globally threatened and recognised as Environmentally Sensitive Species (ESS) in Trinidad and Tobago, making Back Bay's protection essential.
Coastal development typically impacts sea turtle nesting negatively through a combination of artificial lights, which disorient turtles, and hard structures, which obstruct turtles. Activities on the beach such as noise, fires, vehicles, use of umbrellas, and even building sandcastles, can also impact sea turtle nesting and the incubation of eggs. Shade from coastal vegetation is increasingly important in light of climate change to keep the sand cool and enhance hatchling success. Back Bay is ideal nesting habitat which so far has escaped the negative impacts associated with coastal development that SOS records annually at the adjacent beaches of Grafton and Turtle Beach, including the impacts of artificial lights, erosion, high sand temperatures, hard structures along the backshore, use of the beach for large-scale events, and issues related to drainage that result in nests being washed out to sea.

The EIA has proposed several best management practices to mitigate such impacts of the hotel on sea turtle nesting, including turtle-friendly lighting, no beach furniture, and restricted beach access at night. The EIA also indicates that much of the coastal vegetation will remain intact between the hotel and the beach at Back Bay, which will help mitigate any lighting impacts. These measures will reduce most of the potential impacts but will not eliminate them.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

Inadequate information has been provided to assess the potential lighting impact – please provide more details. Key questions include specifics on the vegetation that will remain in place and act to shield lights, the height of the structures and distance of lights from the beach, as well as the number, location and specifications of any lights used around walkways etc. Information on the wide beach access stairway (103m) is also critical. Will vegetation be removed? Will there be lights on the stairway? Hawksbills have been known to climb stairs. Artificial lighting from Turtle Safe lighting can still add up and have impacts if at a high enough intensity along the shoreline. A 3D schematic or model would be ideal to examine the potential for lights to impact the nesting beach.

Currently beach use at Back Bay is relatively low, with small numbers of visitors throughout the year. SOS have not noted significant impacts from the current level of activity. At full occupancy, the hotel and associated residential structures can host close to 1000 persons combined. This has the potential to significantly increase the level of foot traffic and other activities on the beach which can cause significant pressure. The current development plan proposed is not compatible with high density nesting sites, even with the mitigation proposed. Recommendations in literature for high density nesting sites (>60 nests per km) include low impact development (single floors, low occupancy densities, and restricted access to the beach during nesting season) with large setbacks (> 100 m) (Lopez et al. 2015).

Given the importance of Back Bay for sea turtles, their threatened status and ESS designation as well as the government's obligations to protect these species under the SPAW protocol, we do not think the scale of the current development plan is appropriate for the site. The risk of adverse impacts is too high and cannot be adequately mitigated to an acceptable level for such a sensitive habitat and species. We call for more meaningful consultation with all stakeholders (including developers, eTeck, Tobago House of Assembly and relevant Divisions and Departments, and Tobago Tourism Agency Limited) to examine possible alternatives that will be more environmentally acceptable.

B. Significant loss of coastal vegetation buffering land-based sources of pollution, mitigating coastal erosion and providing shade for turtle nests

Rocky Point's coastal vegetation plays a vital role in protecting both land and sea. It filters runoff, reduces land-based pollution, stabilises soils, and mitigates coastal erosion. For sea turtles, this vegetation provides essential shade for nests, helping regulate sand temperatures in the face of rising heat driven by climate change. These natural defences are critical to maintaining Rocky Point's ecological integrity.

The proposed development will remove most of the natural coastal vegetation along Rocky Point and in the low-lying forested areas adjacent to Mt Irvine Reef. This vegetation naturally buffers, aids in nutrient and pollution filtration, entraps particulates and slows any land run off. Its replacement with hard, impervious infrastructure along with an increase in human activities puts

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

the reef at considerable risk. The loss of coastal vegetation will contribute to chronic impacts during operation.

The use of fertilisers, pesticides and any other garden chemicals used by the development, along with oils leaking from vehicles will leach into the storm water. The EIA does not consider this impact nor suggest any mitigation strategies to counter this. The EIA only states that the drainage, settlement ponds and discharge points are designed to effectively direct all run off to sea. Proposed retention ponds may address sedimentation during operation but do not address chemical pollution.

C. Change of aesthetics and beach character; crowding and user conflicts

Back Bay is one of the few undeveloped beaches in southwest Tobago. It's a unique, picturesque spot valued by many visitors for its raw beauty. It provides a quiet secluded alternative for those who desire that, among the busy neighbouring beaches of southwest Tobago such as Store Bay, Pigeon Point, Mt Irvine and Stonehaven. Less than 200 m from the busy Shirvan Road, visitors have a quiet escape into nature. Activities at Back Bay and the adjacent point and reef include bathing at the beach, fishing, surfing, snorkelling and scuba diving – locals and visitors alike. The proposed development will mean a significant change to the aesthetics of the site, as well as a significant increase in beach users, considering that close to 1,000 persons can be housed at full occupancy. While the EIA includes plans to maintain public beach access, the aesthetics and character of the beach will be forever changed and members of the public who choose to visit will now have to share the beach with large numbers of guests from the development. This is a negative impact that cannot be mitigated. Do the relevant stakeholders accept this impact? Does the EMA find this impact acceptable?

D. Popular Surf Destination

Mt Irvine Bay at Rocky Point is one of Tobago's premier surfing spots, attracting both local and international surfers. The natural reef break provides consistent waves, supporting a vibrant surf community and contributing to tourism. Surfing sustains surf schools, equipment rentals, and beachside vendors, as well as national athletes representing T&T at international competitions, making the activity culturally and economically important.

Corals, known as ecosystem engineering, can alter the wave conditions through growth and expansion of its populations. It is the source of favourable wave action found on Mt Irvine Reef. Unfortunately, reef structure is closely linked to the health of corals. Coral mortality from sedimentation, eutrophication, chemical pollution and habitat destruction can result in degradation to reef structure and coastal stability, which could directly affect wave conditions and the livelihoods that depend on them.

Given the extensive list of existing critical threats to the marine habitat along Rocky Pt, along with the current proposed design and the extensive impacts revealed through the current environmental impact assessment report, and further impacts not considered or

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

underestimated in this assessment, the persistence of sensitive coral reefs and healthy turtle nesting is not compatible with the proposed development plan.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

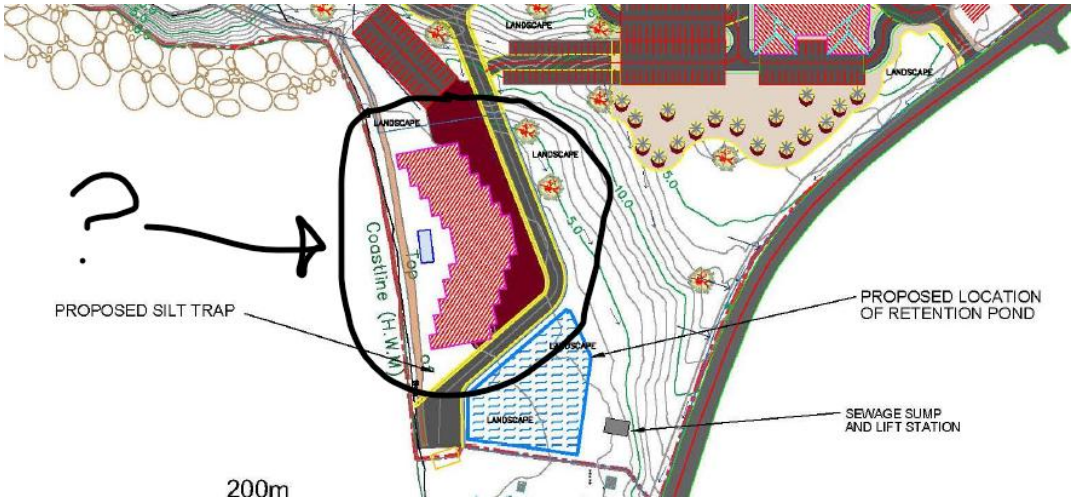
SECTION B: ITEMIZED COMMENTS

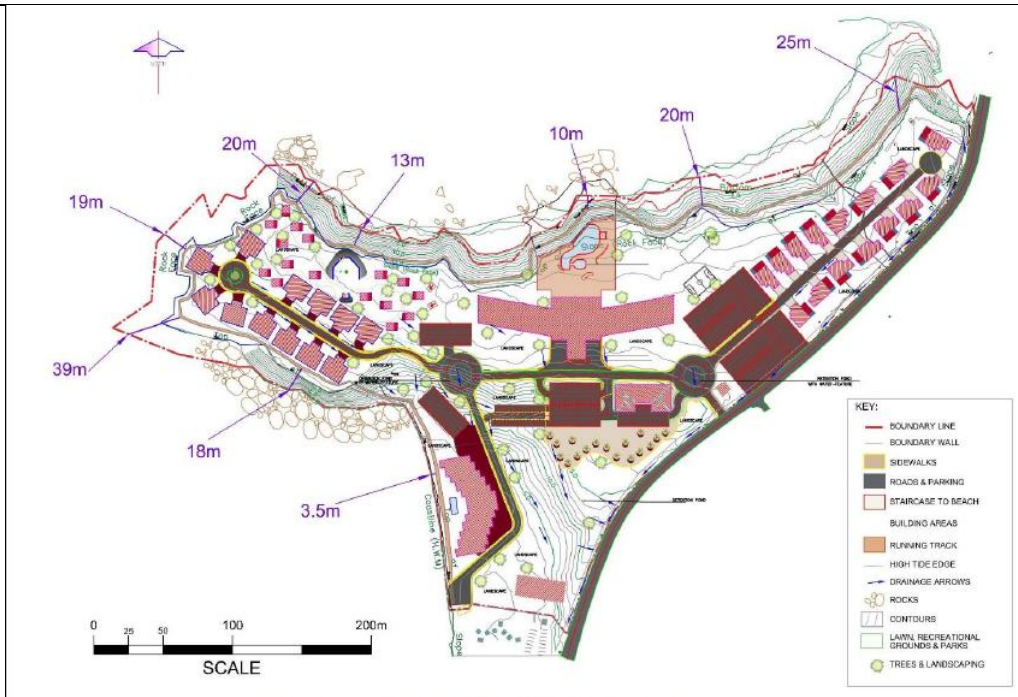
Section	Comment
Chapter 1/ 1.4 Exceptions to Final ToR, 1.4.1 Wastewater treatment	The applicant has stated that wastewater treatment is not included in the current EIA, as the treatment would be conducted offsite at Samaan Grove Wastewater Facility. SpeSeas argues all activities and impacts related to the wastewater treatment should be included in the EIA for the following reasons: 1. Project splitting creates a legal and environmental risk, as it potentially forces regulators to approve a sub-standard solution later. The sewage produced by the development has potential for major downstream impacts and must be fully assessed as part of the project. 2. Under CEC designated activity 40: "establishment of water distribution systems" This activity requires CEC clearance and given the integral nature to the design and the operation of the hotel and residential home, it is only responsible to include this in the same CEC application and EIA. 3. While the proposed plan doesn't require the construction of a new treatment plant, no evidence has been provided to show that the use of the facility at Samaan Grove is an environmentally responsible option, given the following: a. No official approval by WASA was given b. No evidence from WASA that Samaan Grove can handle the additional volumes of waste. c. No evidence that Samaan Grove is complying with the Water Pollution Rules discharge thresholds 4. Please note that Samaan Grove discharges within a marine protected area, the Buccoo Reef Marine Park, a sensitive marine ecosystem with existing and historical nutrient and land-based pollution chronically impacting on the health of the system. 5. Also note that the Samaan Grove wastewater facility does not do advanced wastewater treatment, so nutrient loading and chemical pollutants continue to be an issue in the area. 6. Transport of wastewater offsite, still requires on-site infrastructure, such as a collection point, pumping station and piping, with suitable mitigation strategies. Until permitting from WASA is officially approved, the responsible action would be to assess environmental impacts and mitigation for the proposed transfer of sewage to Samaan Grove inclusive of new infrastructure and discharge from this facility, and at least one viable alternative scenario and include within the current EIA.
1.4.2 Oceanographic modelling	Applicant stated that oceanographic modelling was not needed as there was no significant construction of seaward structures, the headland served as a natural breakwater to protect the development, and there is no anticipated shoreline erosion or sediment discharge, and any runoff from the site is well understood. SpeSeas disagrees with the argument provided by the Applicant for the following reasons:

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	1. There is significant coastal construction in the low-lying area of the property adjacent to the Mt Irvine beach, as close as 3.5 m to the adjacent marine space (see Figure 4-10). Coastal construction has known impact to adjacent marine habitat during both construction and operational phases and storm surge during hurricanes and other events have the potential to also put the proposed structures at risk. 2. A rainfall runoff model will show the changes in the runoff quantities and composition from the natural vegetation to the proposed construction and a sediment plume model can predict the dispersion of the runoff into the nearshore marine area to better assess the impacts to the adjacent coral reef habitat, and to guide the drainage design. 3. In this section it is stated that "It is not anticipated that shoreline erosion nor sediment discharges will generate a well-defined sediment plume". It is suggested that "there are no proposed earthworks or structures along the shoreline" – yet the proposed structure adjacent to the reef is only 3.5m from the high tide mark. It is also stated that "measures will be implemented to intercept this sediment prior to discharge", however there is no certainty that these measures will be effective and there are scenarios where these measures may fail, so they should be fully examined. It is also suggested that "the entrainment and transport of sediment in stormwater is well-understood", however we disagree with this assessment since there are many factors that contribute to this and no rainfall runoff model has been used to understand this. Without the use of rainfall runoff and hydrodynamic/ sediment plume models, the Applicant fails to provide evidence for the compatibility of a large hotel development with the survival of Mt Irvine Reef.
Chapter 4 4.3.2. Drainage Systems, pg 45	Recommend using 1:100-year storm calculations (including wave modelling for 1: 100 year storm surge, given the site of construction) here and elsewhere in the EIA as 1:25 is inadequate for modern construction and significantly understates the actual risk to life, property, and especially the surrounding marine environment over the typical lifespan of a structure, especially when considering the effects of climate change. Climate change impacts result from the cumulative impacts of sea-level rise, increase likelihood of severe storms, greater storm surge, and increase rainfall.
4.2.3 Clearing and Earthworks	The description of the clearing and earthworks in extremely vague and does not provide any spatial understanding of the types of excavation and earthworks that will be undertaken in relation to the design of the hotel and the topography of the land. This is essential to understand the potential impacts of erosion and the mitigation in Chapter 8. Please include spatial and quantitative details. The Table 4-1 shows the estimated areas of clearing but these are not illustrated spatially on the map. The EIA indicates cut and fill drawings will be developed at the final design stage, however the impact cannot be accurately assessed and mitigation effectively planned without these important details. The biggest concern is the construction on the low-lying area and slope behind Mt Irvine Bay. We noted no test pit sampled in that area from the geotechnical report, yet in the proposed development design,

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	there is a large building being constructed adjacent to the settlement ponds and the sewage pump station. Please advise the size of this building, its elevation, and function for a complete EIA. Given its proximity to the reef, there are serious concerns related to land clearing, sedimentation, erosion and run off and operations in the area. Most of the mitigation does not discuss construction in such close proximity to the reef (3.5 m according to your proposed natural buffer, which is also inadequate). Please also clarify what operations will be undertaken in this building, if there will be shops and bars in these buildings then these operations need to be discussed in detail with measures for removal of commercial waste, and nighttime light pollution. Corals and their timing for spawning are also sensitive to light pollution. Figure 4-14 named this building as townhouses but this is not confirmed elsewhere. There is no explanation on the design of the building, number of stories, building material. 

4.4.2 Buffers	 FIGURE 4-10: WIDTH OF EXPECTED NATURAL BUFFER | Date: 31-07-2025 1. There is virtually no natural buffer along the western face of Rocky Point and along the beach of Mt Irvine Reef area. 3.5 m is not an effective buffer zone, especially adjacent to a road and large townhouse development. 2. Natural buffer zones along the tip of Rocky Point – 39 m and 19 m – should not include the rocky intertidal area of rocky point, which is a marine sensitive intertidal space. It consists of rock pools, that house corals, and marine invertebrate that will be impacted directly by the construction along the tip 3. International best practice recommendations for coastal areas, and area in close proximity to sensitive marine ecosystems not considered 4. ICZM recommendations not considered Both recommendations are ignored in this EIA, but the Applicant has a duty of care to minimise impact to the coral reef. .
14.5 Building and Structures	Lacking is the understanding of the heights of the buildings - hotel, bungalows, villas and townhouses, family homes, and even the shopping centre and bars. How many floors are proposed? This section, like many other sections in the Project Description provide very little information that make the EIA, as well as the review of it, incomplete. Building height is important for assessing for example, altered microclimates and air flow patterns (sea breeze), shadowing of adjacent infrastructure and habitat, visual aesthetics, especially along the coast, contribution to light pollution (aka sky glow) and disturbance of bird flight paths and roosting habitats. For example, glass construction and high building heights lead to greater bird strikes. Not to mention the structural integrity of the building construction on site and what this means of mitigation strategies.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	Building material is critical for understanding its chemical composition, maintenance needs and potential impacts to the environment. These specifications must be included along with the consideration around mitigation, for this EIA to be considered complete.
5.2.2.4 Wind Speed and Direction	While it is understandable to have general wind patterns and long term trends assessed from Crown Point, for the mitigation of air pollution, and a better understanding of downstream impacts, the EIA should have conducted some local, comparative assessment of wind direction and speeds to downstream areas to understand the potential area/ extent of air pollution and used this to investigate risk and mitigation in section: 8.3.1.7 Impaired Air Quality.
5.3 The Biological Environment - 5.3.2.2. Marine Flora – 5.3.2.6.4 Summary Finding And Appendix O – Ecology Report	While the applicant conducted marine surveys to understand the marine communities present in the area (coral cover, diversity and IUCN status), they failed to comprehensively describe the ecological status of the reef within the context of historical, current and projected vulnerabilities (related to climate change), as well as its current state of management and existing disturbances. Based on the TOR, the following was not addressed in the description of the marine environment, specifically the coral reef: 1. *Identify areas of spawning grounds and nurseries* – Absent is an understanding of the seasonal mapping of the mass coral spawning patterns that have been identified by the IMA through the MARIN pilot project (Guide is available online: https://www.ima.gov.tt/wp-content/uploads/2023/09/IMA_RestorationGuide_Tobago-MARIN_Sept13.pdf, supplementary scientific reports as available from IMA library), which typically occurs in the beginning of the rainy season from June to November. This is an important consideration for mitigation strategies. 2. *Describing ecosystems vulnerable to natural hazard or climate change impacts -* Both Chapter 5 and the Appendix O do not relate climate impacts to coral reefs, despite consecutive major bleaching events locally in 2023 and 2024. Please see publication that includes an assessment at Mt Irvine: https://ttfnc.org/livingworld/index.php/lwj/article/view/guesteditorial/editorial. Publications on previous coral bleaching events in Tobago include Alemu I and Clement 2014, Buglass et al 2016, and Ganase et al 2020 (IMA technical report). Another climate related issue is the increasing threat of coral diseases that occur in the aftermath of bleaching events. There is extensive regional literature on the impact of disease on Caribbean reefs that apply to Tobago. See specifically the threat of Stony coral Tissue Loss Disease that is anticipated to hit Tobago soon and infect namely boulder and brain coral species that make up a large component of Tobago's reefs. The disease results in 30 – 40% mortality. More information here: https://www.ima.gov.tt/stony-coral-tissue-loss-disease/ 3. *The sensitive habitats should be mapped in relation to the proposed study area -* While community composition and species diversity at varying depths are assessed, a map should be included to showcase the full spatial extent of the living reef area, as well as the representative survey area. There are two main ecological zones: the reef flat area (the surf zone with as subtidal

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	counterpart) and the forereef slope with the reef crest delineating the two zones. 4. *Information on the ecological relations, ecosystem services, biological productivity, sensitivity and vulnerability of flora and faunal species within the area using local and international studies. Emphasis placed on the species affected by the project* Not mentioned in the ecological report are the other vulnerabilities of the coral reef related to existing land-based sources of pollution (e.g. the drainage outflow from the beach facility), and non-existent marine management in the form of marine pollution and fisheries regulations. Relevant species include the reef building coral species, but also reef dependent organisms, marine sponges, octocorals, fish, turtles and invertebrates. See Reefs at Risk in the Caribbean (2004, https://www.wri.org/research/reefs-risk-caribbean) for the comparative assessment of Tobago reef health in the context of the wider Caribbean along with implications to socio-economy and ecosystem services 5. *Scientific correlation between the health of ecological communities described and the various sediment and water quality parameters observed should be identified and discussed.* While this is challenging to observe for a rapid assessment, the literature on the impacts of sediment and water quality on coral reef health is extensive. The EIA should include this at least based on previous literature. Relevant local literature includes, Lapointe et al. 2010 - Land-based nutrient enrichment of the Buccoo Reef Complex and fringing coral reefs of Tobago, West Indies (Lapointe has other regional relevant studies); Buglass et al 2016 - A study on the recovery of Tobago's coral reefs following the 2010 mass bleaching event. In this paper they look at how sedimentation impacts on natural coral recovery post bleaching.
5.3.5 Sea Turtles	This section is littered with many inaccurate and misleading statements and also fails to mention some key information. Please revise this section to present the key information available from SOS Tobago and other sources. Please refer to relevant literature including the STRAP (2010), Cazabon-Mannette (2016), Cazabon-Mannette et al (2016), Walker et al (2015), Eckert and Eckert (2019), SOS reports, Northwest Atlantic Leatherback Working Group (2018). For example, All 5 sea turtle species designated as ESS have been recorded nesting in both islands and have been recorded in coastal waters. Juvenile green and hawksbills are present year round. These represent a genetically mixed aggregation drawn from nesting beaches across the wider Caribbean. Sea turtles nesting and hatching on Tobago's beaches spend the majority of their lives scattered across the wider Caribbean. This is important context to understand the regional impacts from local actions. Approximately 200-300 leatherback nests per year and between 8-38 hawksbill nests per year have been recorded by SOS within Courland Bay (Turtle beach, Grafton and Back Bay combined) over the period 2008-2019 between the months of March and September, with an average of 78 nests per year at Back Bay. SOS' survey period doesn't capture the full hawksbill nesting season so these hawksbill nest numbers are incomplete.

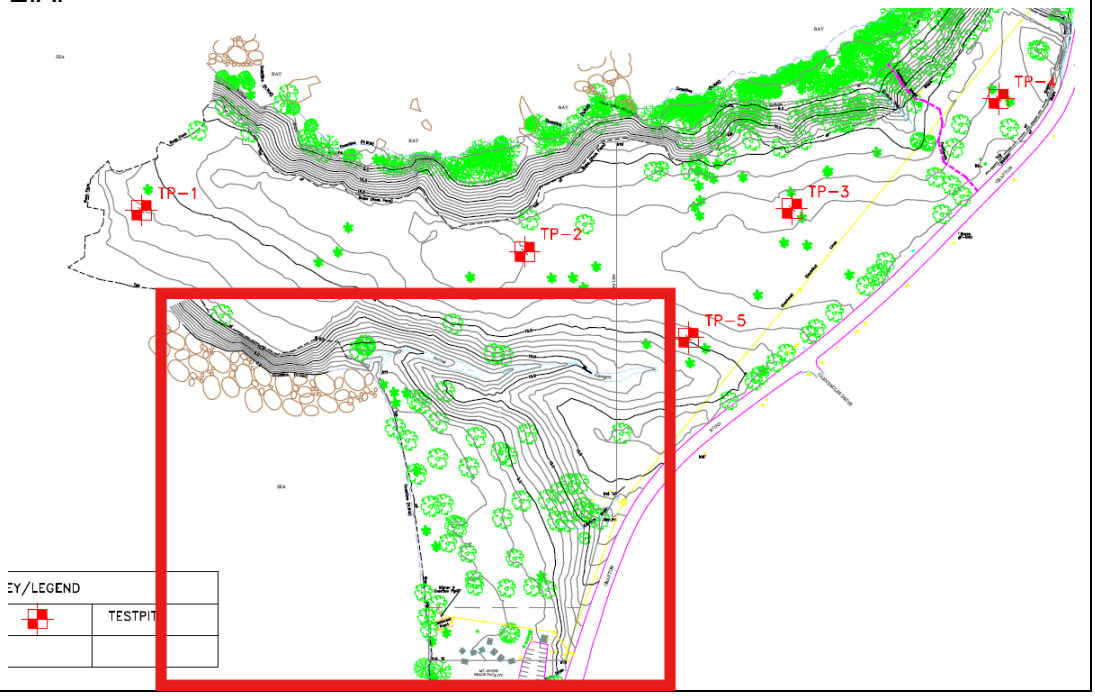
https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

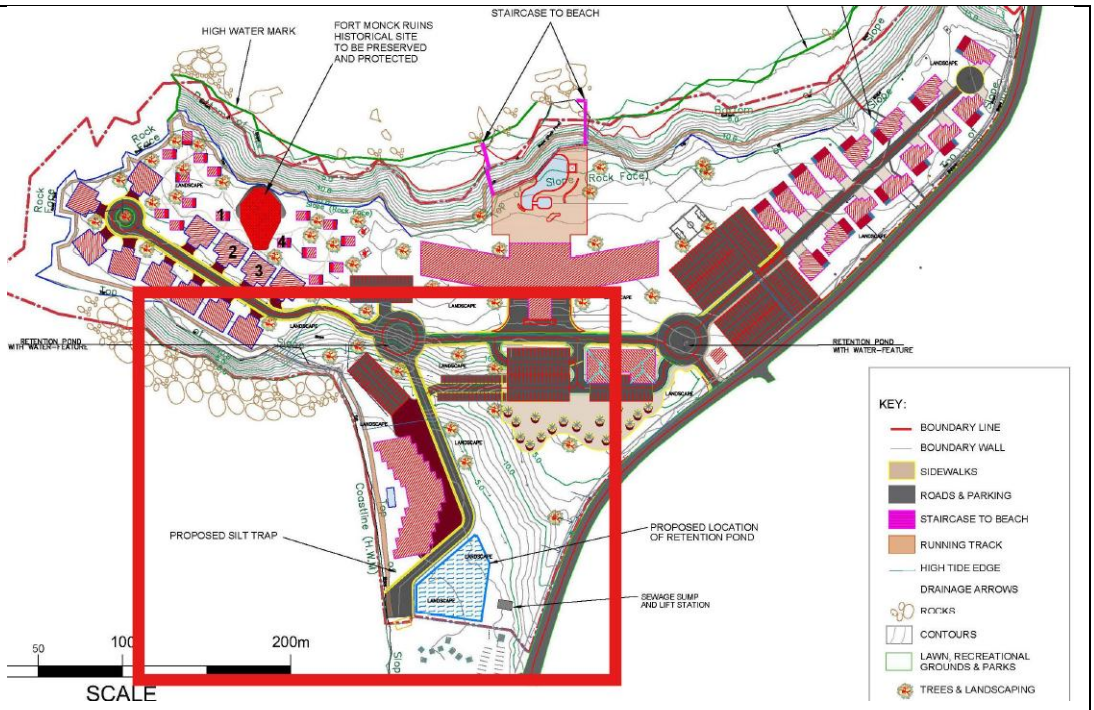
	The highest density for hawksbills among these 3 beaches is at Back Bay (hosts 49% of hawksbills in Grand Courland Bay although only 14% of beach by length) and Back Bay also hosts higher density leatherback nesting than Grafton given the length of the beaches. The leatherback nesting season is 1st March to 31st August, with peak nesting in May/June, and hatching extending to end of October. Some nesting and hatching can even occur outside of these months. The nesting period for hawksbill turtles is primarily April to November, with hatching extending to January. Therefore, while peak nesting activity takes place within a fairly predictable window, some level of nesting and hatching occurs almost year round and eggs can be present almost year round. Some discussion of the local and global threats facing these species and the key conditions required for successful nesting and hatching should be added.
Section 5.4 Socio-Economic Environment	Please provide more specifics on the use of the area including numbers of visitors, specific activities, income generated etc. This is important context to evaluate the impact of the proposed development on these users.
Chapter 6 Analysis of Alternatives	Please examine a smaller eco-tourism development as an alternative, which could significantly reduce the environmental impact and be more acceptable to most stakeholders. Please discuss the pros and cons for the different sewage treatment options and identify the preferred alternative for sewage treatment. Please expand the analysis of alternatives to examine other specific alternatives in line with the TOR (related to alternate methodologies, alternate siting, conceptual design, scale/scope, types of equipment etc)
Chapter 8	A major critique of this section is that is does not consider the following: 1. *Synergistic stressors:* Given the chronic state of disturbance that most of Tobago's marine ecosystem experiences, the mitigation of individual impacts alone is not sufficient, as simultaneous stressors puts the resilience (The ability of the reef to survive multiple simultaneous stressors) of the marine ecosystem at risk of collapse. For e.g simultaneous impacts of 10% sedimentation, 2% chemical runoff, xx% nutrient pollution, xx % increase in turbidity can be considered a severe acute disturbance event on a coral reef recovering from bleaching, spawning, or suffering from disease. 2. *Existing marine baselines and variable thresholds:* Additional stressors reduce the ecosystems assimilative capacity to buffer disturbances without suffering negative impacts to ecological function. What should be included in this EIA: 1. *Cumulative Effects Assessment* - Quantitative modelling using total loading of pollutants/ impacts with spatial and temporal variation of these loadings, to understand how overlapping construction activities during certain times of year and considering sensitivities of the marine environment (valued ecosystem components) etc may cross critical resilience thresholds. 2. A thorough understanding of the resilience threshold for Mt Irvine Reef and the sandy shores of Back Bay 3. Mitigate "time-crowded impacts" and "space crowded impacts" based on the model outcomes.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

8.3.1.1 Altered Topography	Topographical changes for before and after construction are not detailed in the project description, therefore it is difficult to assess. Please add more details in project description for a better understanding.
8.3.1.2 Impaired Site Drainage	8.3.1.2.1 Nature of Concern – The current state of natural vegetation serving as a critical natural filter and buffer, as well as little human activity is the reason why the coral reefs are not severely impacted by land-based pollution and run off. Given the sensitivity of the surrounding marine area and the current drainage design and hydrology management, the pre-mitigation impact would extend beyond the site to the nearby marine environment, with potential to have severe intensities during the rainy season. A rainfall/ surface runoff model should be used to guide the choice of suitable mechanisms for entrapping loose dirt and sediment based on the intensity and volumes of excavation, and the topography of the land. Current mitigation methods are inadequate for the large-scale land clearing and excavation for construction. 1. This is one of many examples seen in the EIA, that show that the applicants do not recognise the sensitivity of the coral reef that runs along the western face of the property from the tip of Rocky Point all the way to the Beach Bar and a few feet from the sand. Construction will most certainly result in a significant concentration of sediment run off to the low-lying coastal area. 2. Impacts to coral reef: a. Construction activity physically destroys coral habitats indirectly by damaging vital buffer ecosystems like coastal/ back beach vegetation that typically filter pollutants and stabilize sediment before it reaches the reef. b. Sediment (fine dirt and debris) runs off into the ocean, smothering corals and blocking the sunlight they need for their symbiotic algae (zooxanthellae) to photosynthesize. This can lead to coral death and impaired biological functions – reproduction, growth, metabolism, and makes them more vulnerable to disease. 8.3.1.2.3 Mitigation Measures The absence of rainfall models means that the impact and the effectiveness of mitigation methods cannot be fully assessed when considering the topography of the site and its proximity to a sensitive marine ecosystem. Furthermore, mitigation measures proposed do not consider the impacts on the marine environment, and the stormwater management plan is also inadequate (see comments for Appendix H), therefore the impact cannot be effectively reduced. The EIA needs to realistically assess this impact with real data.
8.3.1.3 Increased Peak Run-off	Table 8-1 pre and post development flow rates are not very informative on their own. Volumes of water discharged in the marine environment could better inform on changes in salinity and the area of impact in the nearshore marine environment, especially given that there are several sensitive coral species near the outfall and potential freshwater inundation of turtle nests by freshwater discharge.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

8.3.1.4 Erosion	Given the vague description of earthworks and land clearing it is difficult to assess the risk of erosion from excavation etc. Furthermore, it is unclear what the depth of the foundation for the proposed design of the hotel will be (geotechnical report assumes depth of foundation as 1.5 metres, but this is not confirmed in the project description). Specific on-site erosion not mentioned here but of concern is the construction of the building and roads in the sloping area adjacent to the Mt Irvine Reef. The construction on this side and given the lack of geotechnical information (soil type, groundwater, engineering properties etc) means that the impact and effectiveness of the mitigation cannot be properly assessed. Below figure shows area not investigated in the geotechnical report highlighted by a red box, and the image below this, shows the construction occurring within the red box. Given that the diagram shows construction along the sloping section and low-lying areas not assessed by the geotechnical report there is considerable erosional and slope instability risk that is not being addressed or mitigated in this EIA. 

	 Mitigation measures proposed in the EIA are inadequate: 1. "Schedule major earthworks in the dry season" – given that the phase 1 and 2 construction timeline spans 50 months, it is impractical to suggest such mitigation knowing very well that construction is likely to continue throughout the year. 2. According to the EIA, the excavation of the staircase to the beach is the only area of earthworks proposed within the natural vegetation between the hotel and Back Bay (within the proposed buffer zone), however the buffer zone for the Mt Irvine beach area is less than 5 m, which cannot be considered an effective buffer zone. International best practice buffer zones can be as large as 100 m (zone of no construction, Barcelona Convention ICZM Protocol) to a calculated risk-based set back using erosional rates (for example 30-year multiplier x (Annual Erosion Rate) + 15 m (Florida Administrative Code, Rule 62B-33.024 (Thirty-Year Erosion Projection Procedures)). 3. Mitigation measures seem overly generalised and reactive. We disagree that the intensity is minor in the sloping and low-lying area adjacent to Mt Irvine reef, and that the threat will extend off site into the marine area. We do not think the mitigation measures will be effective to reduce classification of this impact to low. We further highlight the inadequacy of the geotechnical report to sufficiently advise on the construction in the vicinity of Mt Irvine Reef and therefore the lack of relevant data to inform mitigation and assess its effectiveness.
8.3.1.5 Slope Instability	Same comments as above (for 8.3.1.4. Erosion). Again, Appendix G does not test slope instability in the sloping and low-lying area adjacent to Mt Irvine Reef and according to the design, there will be considerable

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	removal of vegetation and construction along this slope. Such an oversight means that slope instability in the area has not been assessed, and as such the mitigation measures are insufficient. We disagree with pre-mitigation extent being on site and the intensity being medium, given that the clearing of the slope and construction may result in erosion of sediment, rock, construction material etc into the nearby low-lying marine area of Mt Irvine Reef, beyond the site. Also, given the sensitivity of the marine area, and the potential severity of a single sediment influx event which can result in mass smothering and potential die off of corals and other benthic organisms, the pre-mitigation intensity should be considered Extreme. Mitigation measures, once again, are vague and reactive, especially knowing that no testing of the critical sloping area was done: 1. "Compliance with Geotechnical Report" – This point is moot especially given that the sloping area with the greatest risk to erosion was not assessed. 2. "Ensure that slopes are cut at a safe angle based on geotechnical conditions" – What does this mean? State what the "safe angles based on the geotechnical assessment and reference recommendation 3. "Avoid the removal/ disturbance/ destruction of vegetation along the cliff." - This is at odds with the proposed designs which has roadways, parking lots, building and retention pond, along with drainage infrastructure all being constructed above, below and on the sloping area.
8.3.1.6 Impaired Water Quality	8.3.1.6.1 Dilution / Dispersion of Water-borne Contaminants This section is vague and poorly cited. One reference (Pharmaceutical Supply Chain Initiative n.d.) indicates that for a small river discharge into a shallow marine area, initial dilution is likely to be a factor of approximately 3:1; that is, the concentration of water-borne contaminants after initial mixing will be one-third of the discharge concentration)." 1. Can "pharmaceutical supply chain initiative n.d.", really be a suitable reference for dilution standards? 2. We imagine the factor of 3:1 of a small river into a shallow marine area, is highly dependent on the river flow rate, and nearshore hydrodynamics. What is the point of these statements? "However, the bathymetry survey that was undertaken as part of this EIA (see Appendix E) indicates that coral patches exist relatively close (less than 50 m) to the drainage discharge location at Mount Irvine Bay. Therefore, it may be conservatively estimated that dilution of the concentration of water-borne contaminants discharged from this site into the sea will not be more than a factor of 5." - What is the dilution factor based on? Please reference the specific calculations, sources, conditions needed to justify the dilution factor.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	While water quality standards give generic legal limits for discharge, it does not consider the actual sensitivities of coral reef ecosystems. We believe that there is a lot of flawed logic here for the following reasons: 1. Dilution factor of 5 is arbitrary and not justified for this scenario, especially given that there was no hydrodynamic modelling to understand how current, wave and the reef itself will affect TSS dilution or even cause TSS concentration in the nearshore marine area, across seasons and accumulatively with other pollution sources. Reefs are known to be “sticky” to suspended matter as they encourage settling out of suspended matter (Hubbard, D. K. (1986). "Sedimentation as a control of reef development: St. Croix, U.S. Virgin Islands." Coral Reefs, 5(3), 117-125., Storlazzi, C. D., et al. (2009). "Sedimentation processes in a coral reef embayment: Hanalei Bay, Kauai." Marine Geology, 264(3-4), 140-151). 2. Corals require clear water and low nutrient conditions to function. Corals and coral larvae are highly sensitive to suspended particulates, and chronic exposure to suspended-sediment concentrations > 10 mg/l of TSS is associated with coral stress and biological impairment depending on coral species. This means that Mt Irvine Reef is already being heavily impacted by TSS based on the baseline water quality (Appendix J - 27.4 mg/l at W1 closest to the reef and at an existing discharge point). (See Rogers, C. S. (1990). "Responses of coral reefs and reef organisms to sedimentation." Marine Ecology Progress Series, 62, 185-202; And Erftemeijer, P. L., et al. (2012). "Environmental impacts of dredging and other sediment disturbances on corals: A review." Marine Pollution Bulletin, 64(9), 1737-1765). 3. Additional TSS input is likely to be devastating to coral and result in the formation of a dead zone, or regime shift to algal dominance. The fact that corals are already chronically stressed means they are not likely to assimilate additional stressors without their resilience being impaired. 4. It is suggested, therefore that TSS at the point of discharge should be closer to <5 mg/l cumulative TSS exposure (Erftemeijer et al 2012; GBRMPA 2010). The WPR suggestion of <25 mg/l is 5 times higher than the tolerable range for corals, and the discharge concentrations suggested in the EIA are <125 - <150,mg/l, therefore violating the WPR by 5 or 6 times, and 25 – 60 times the tolerable range for corals, especially given that the discharge point is directly on to the reef. 5. The same considerations should be applied to the TOG. Corals are highly sensitive to TOG, resulting in bleaching, disruption of their lipid membranes and metabolic impairment. Furthermore, coral larvae are even more sensitive to hydrocarbons and Mt Irvine is a known coral spawning site during the rainy season (June and September). Studies show concentrations even as low as 100um/l impairing corals (Negri, A. P., et al. (2016). "Acute ecotoxicology of natural oil and gas condensate to coral reef larvae." Scientific Reports, 6, 21153). 6. Again, Appendix J already shows TOG higher than 1 mg/l in both the dry and wet season highlighting the chronic stress that exists for the reef and therefore additional stressors are likely to further degrade the reef. 7. WPR suggest a limit of <1 mg/l and the EIA propose <5 mg/l, but both these limits are likely to contribute to coral health degradation. There should be zero tolerance when it comes to the TOG.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	8. Even with significantly reduced discharged concentrations, the EIA does not consider the combined effects of TSS, TOG and other discharge chemicals and nutrients.
8.3.1.6.2 Siltation	Given the above considerations (previous comment), we disagree with the pre-mitigation impact of siltation intensity being Medium and suggest it should be considered Extreme Issues with mitigation measures: 1. The reality is the effectiveness of retention ponds and silt traps is largely dependent on the settlement rate of fine silt, and the detention rate of the pond before discharge. The effectiveness of trapping fine silt using this method can be as low as 20 % according to US EPA (1976 – Methods to control fine grain sediment resulting from construction activity), and additional mechanisms or modifications to standard sediment and erosion controls are necessary. There are many modifications that can be made to the ponds including using multiple ponds, altering length to width ratio, installation of baffles, coagulation methods, alteration of outflows. Such mechanisms need to be included in this EIA and with special consideration to the sensitive marine environment. 2. According to US EPA and IOWA State-wide Urban Design and Specifications (Chapter 7 Erosion and Sediment Control): a. Sediment traps for construction are generally not recommended for large areas above 5 acres (site of development is ~12 Ha or 29 acres) as they do not last long (less than 2 years) and especially close to sensitive marine areas. b. Trap efficiency for sediment traps is lower for finer sediment (clay and silt) in comparison to larger particulates as the typical retention time is too short. c. Over time, captured sediment will accumulate in a sediment trap and interfere with its ability to effectively treat incoming stormwater. d. Overall functional efficiency is only 50 – 70%. 3. While longer and deeper pools can be more effective with greater opportunity for settlement, the EIA provides too little information on the sediment traps or anticipated sediment loads in runoff to assess efficiency. 4. Given the high maintenance of clearing sediment traps and the heavy rainfall events known in Tobago, rainy season is likely to result in the flushing of the sediment from the traps and ponds directly into the marine sensitive area 5. Retention ponds form nutrient loading systems that concentrate nutrients, algae and pathogens. A single rainfall event will result in an acute influx of nutrient rich water, that can result in algal blooms, disease flare up and overall degradation. The current mechanism for siltation management and mitigation is fundamentally flawed.
8.3.1.6.3 Hydrocarbon Spills and Leaks	Please see relevant comments in “8.3.1.6 Impaired Water Quality” for TOG. To reiterate, corals and other marine organisms are extremely sensitive to hydrocarbon toxins. Given this environment already has a baseline disturbance both from land based run off and marine pollution from existing activities, the EIA

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	really needs to consider this threat as a cumulative impact. There should be a zero tolerance approach to hydrocarbons entering the marine environment. 8.3.1.6.3.2 Pre-mitigated Impact While the intensity may be minor during the dry season, during the wet season, the intensity can be as high as moderate given the increased risk of hydrocarbon run off coupled with the coral spawning, reproduction and larvae formation, which occurs on the surface of the water, and where hydrocarbons occur. 8.3.1.6.3.3 Mitigation Measures • "Refuelling of vehicles should take place at the designated area to the extent practical." - More details are needed. What are the criteria for the designated area to ensure it will reduce risk?
8.3.1.6.4 Improper Sewage Disposal	Incomplete given that there is no description of the sewage disposal in the EIA. The risk and mitigation associated with the sewage sump and pipe placement and recommended construction to avoid leaks should also be included.
8.3.1.6.5 Concrete Washings	8.3.1.6.5.3 Mitigation Measures Mitigations are vague: "After evaporation of the water, the hardened material should be regularly removed and transported to an approved facility/landfill for disposal." At what point should the material be regularly removed?
8.3.1.6.6 Paints/Solvents Washings	8.3.1.6.6.3 Mitigation Measures "Wipe out brushes containing oil paint before cleaning in a thinner or solvent." - How are the excess paints and solvents disposed?
8.3.1.7 Impaired Air Quality	The EIA does not consider the impacts of air pollution to the surrounding marine environment. The atmospheric deposition of air pollutants – construction dust (silica, metals and organic matter), asphalt fumes (mix of volatile organic compounds, Polycyclic Aromatic Hydrocarbons etc), exhaust emissions (made up of harmful pollutants including carbon monoxide, nitrogen oxide, sulphur oxide, hydrocarbons and particulates) into the sea significant impact the marine environment and marine life, especially at the surface of the water (air/water interface) contributing to increased turbidity, influx of nutrients and toxic chemicals (PAHS, hydrocarbon, NO, SO) by dissolving in seawater. Therefore, the extent of the impact goes beyond the localized area as it can be directly absorbed into the ocean or washed down into the drains as suggested in the mitigation. Given chronic exposure to air pollution over multiple years and seasons given the extensive construction period, it's inappropriate to state the intensity as very small and duration of impact as short. Please reassess to understand the full impact of air pollution by itself (atmospheric loading) and cumulatively with other impacts e.g. sedimentation, water pollution etc. Also not discussed in this section are aerosols, such as spray paints or sealants, that often contain biocides against mould. These chemicals can also drift and impact the adjacent marine area.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

8.3.1.11 Artificial Light	8.3.1.11.1 Nature of Concern Artificial lighting also impacts the circadian cycle of corals, which is especially important during the reproductive period between June and November for most coral species. Light pollution is known to obstruct the moonlight cues used to synchronise coral spawning (Davies et al 2023). Such considerations should be made for both the construction phases and the operational phase, where the back beach and slope vegetation will be completely replaced with buildings and lighting. Artificial lighting also obstructs nocturnal feeding and gives advantages to certain predators while disadvantaging prey organisms. 8.3.1.11.3 Mitigation Measures Absent in the mitigation measures are the considerations for coral reef. 1. While red spectrum lights also have a lower impact to corals and turtles, there is still some impact. Especially during the coral spawning period, there should be total blackout periods after sunset to avoid adding artificial light pollution to the reef. 2. With respect to the buffer zones, the mitigation measures are at odds with the construction design with no adequate buffer zone and pathway right along the beach and between the construction occurring along the cliff, slope and low-lying areas adjacent to the reef.
8.3.1.12 Improper Disposal of Solid Waste	Types of solid waste not discussed with impacts to the marine environment: 1. Microplastics from packing materials that can be engulfed by marine organisms. 2. Textile fibres often used in siltation fences that can cause entanglement without proper maintenance and disposal How often will the solid waste be removed from the site?
8.3.1.13 Improper Disposal of Vegetative Debris	8.3.1.13.3 Mitigation Measures “-Consider composting on site. Suitable areas can be set aside for this activity, -Designate a suitable, temporary storage area, away from coastal areas, prior to transportation off-site,” Special consideration for this need to be made to avoid leaching of nutrient rich organic matter into the nearby reef. Please amend by providing more specific strategy or remove.
8.3.1.14 Improper Disposal of Surplus Excavated Material/ Cleared Top Soil	8.3.1.14.2 Pre-mitigated Impact Given the extent of impact of sedimentation beyond the site to the adjacent sensitive marine area, the extent is beyond localised and given the severe impact to coral in the form of sedimentation, reduced water quality, toxicity and nutrient loading, the impact should also be given extreme.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	Comments made in the erosion and sedimentation apply here as well. Current mitigation measures are inadequate and vague: 1. Vague description of storage away from coastal area, since more of the site is on the coast, and occurs in an elevated location, that can easily result in erosion to the low lying coastal and marine space. This temporary storage area needs to come with specifications. 2. There is no description of the storage of the excess topsoil. Will this container be sealed? What will be done to prevent the erosion of the stockpile? Will there be lining or fencing?
8.3.2 The Biological Environment	8.3.2.2 Loss of Terrestrial Habitat 8.3.2.2.3 Mitigation Measures All mitigation measures are superficial gardening strategies rather than giving any real thought to actual terrestrial ecology. Natural habitats are much more complex than garden-scapes that consist of a canopy, and an understory with fallen branches, leaf litter etc, all of which contribute natural habitat to fauna. What is of interest are the generalist vs specialist fauna occurring in the space where specialists would be more impacted by the loss of habitat. This needs to be discerned in the ecological study. The applicant needs to go into more detail to consider actual ecology and consideration of whether some terrestrial space needs to be kept wholly intact. Areas of vulnerability to consider is how the back beach vegetation will be impacted by the loss of canopy located above in the constructed area. Furthermore, the type of plant species and vegetation being selected given the fact that native/ coastal species have a broader role in providing food, homes etc for local wildlife (insects, birds, lizards etc) needs to be considered. The mitigation measure for the detention pond plants seems unsuitable, given there was no watering hole occurring on the natural landscape previously. The lack of land-based water source is the reason why the reef thrives near the coast. The introduction of ponds to collect pollutants, sediment and organic matter, and to support plant life seems contradictory, as it is more likely to house algae. The pond will concentrate nutrients, bacteria and pathogens, which as stated before, will result in a pulse injection of polluted water that would result in marine degradation during periods of heavy rainfall or scenarios of excessive runoff. Applicant needs to reassess to provide more details.
8.3.2.3 Impacts on Benthic Communities 8.3.2.4 Impacts on Corals	The nature of concern for all relevant marine organisms - benthic communities, corals and reef fish are problematic for several reasons and owing to this the threat and nature of concerns are severely underestimated, and the mitigations are inadequate. 1. Failure to understand ecosystem functionality. The reef communities need to be understood holistically, since each community (benthic, coral, fish) will not exist without the other. The coral reef ecosystem is not just a population of different species but interdependent communities of organisms that live within specific environmental conditions interacting with each other. Corals, in particular, are known as ecosystem engineers, meaning their community

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

8.3.2.5 Impacts on Reef Fish	growth alters the habitats around them, permitting other organisms to reside on reefs. Their structure is also capable of altering the coastal environment as well. The reef structure has resulted in coastal protection of Mt Irvine Beach as surf waves break off the beach, rather on the reef itself. 2. Absence of a vulnerability baseline - The baseline state of health for the coral reefs and its inhabitants are not covered in the ecological reports, only what is present at the time of survey. The survey is not discussed within the context of the existing state of management, long-term chronic stressors, its history of disturbance, and projected state of health with respect to climate change. Mt Irvine Reef, like many reefs around Tobago, has suffered from the unprecedented threat of climate change in the form of coral bleaching and disease outbreaks. It has a long history of chronic stress from land-based pollution, historically from the development in the vicinity including the Mt Irvine Beach Hotel and golf course, but also the presence of the beach facility. 3. No Management context – Despite many of the coral species being listed as critically endangered, and many listed for protection under the SPAW Protocol (which T&T is party to), local legislation and management continue to lag. The lack of any fisheries management on coral reefs means that these reefs have lost much of their predator and herbivore populations, which are essential for assisting in natural recovery by preventing overpopulation of corallivores and the overgrowth of algae. Furthermore, the lack of LBS protocol implementation also means that the reefs, and many nearshore marine ecosystems continue to be plagued by land-based sources of pollution. This puts the reef at an incredibly high vulnerability to additional stressors that would further degrade reef health and resistance against population collapse. While local legislation may lag, the developer is not exempt from the Precautionary Principle or the Duty of Care to protect critically endangered species. Therefore, the introduction of additional, unmitigated construction stressors into a system already stripped of its natural recovery mechanisms is a violation of international Best Management Practices (BMPs) and represents a reckless disregard for an island-critical asset. 4. The impact of synergistic threats - The EIA fails to model how simultaneous stressors—sedimentation, light pollution, chemical runoff, and noise—interact and will impact on the reef state. While the developer classifies each post mitigation threat as "Minor, or very small" the synergistic effect of these impacts occurring at once can be lethal. 5. These comments made before also apply: a. No sewage management plan b. Inadequate mitigations for individual threats: sedimentation, erosion, water/ air quality etc c. Lacking in slope and geotechnical integrity 8.3.2.3 Impacts on Benthic Communities 8.3.2.3.2 Pre-mitigated Impact *“The density of benthic organisms recorded within the nearshore marine environment adjacent to the project site was considered low in comparison to a survey undertaken in 2022 by Kanhai just east of the project site at the soft bottom Bon Accord Lagoon.”*

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	The soft bottom Bon Accord Lagoon is a distinct benthic habitat from the hard bottom Mt Irvine Reef, and therefore they are not comparable. Instead of trying to assess infauna present in the non-existent soft substrate, the applicants should assess the epifauna that live attached to the reef. Please reassess. 8.3.2.4 Impacts on Corals Pre-mitigation intensity should be considered Extreme and given that the corals will be severely impacted by the hotel given the permanently altered state of the coast, the mitigation strategies are inadequate and will not reduce the threat. 8.3.2.5 Impacts on Reef Fish 8.3.2.5.1 Nature of Concern *"However, being motile, fish may be able to move away from contaminated areas making them less susceptible to the pollutants. They may also search for alternative sources of food and protection and may return to the area once the pollutants dissipate."* This statement is false. The ability of fish to swim does not mean they can simply swim away. Reef fish and motile invertebrates have high site fidelity, meaning that they are attached to their site which is their home, and source of food. If motile organisms must evade, they will flee into other territories where they risk predation and competition and loss of their own territory (Sale et al 1991, Wenger et al 2011). Furthermore, juveniles and larvae fish are only capable of swimming short distances and can easily be inundated by the pollutants in many ways because of toxicity, and sensory impairment. *"8.3.2.5.3 Mitigation Measures - Given that impacts to corals can arise from the entry of silt, hydrocarbons, sewage, concrete washings and paints/ solvents into the nearshore marine environment, the mitigation measures listed to reduce these impacts are also applicable here (see Sections 8.3.1.6.1.3, 8.3.1.6.2.3, 8.3.1.6.3, 8.3.1.6.4.3 and 8.3.1.6.5.3).* *With the effective implementation of recommended mitigation measures, the intensity of this impact is expected to reduce the intensity of this impact. Therefore, the post-mitigation classification is as follows:"* This section seems to be copied and pasted from the previous coral section. Mitigation for fish and other marine species are not adequate and therefore the intensity before and after mitigation can be considered as Extreme. These impacts should be reassessed.
8.3.2.6.2 Artificial Light	8.3.2.6.2.1 Nature of Concern Artificial lighting also impacts corals and marine life, especially during the timing of coral spawning when the corals are reliant on the moon light. This occurs during the months of June to November. Currently, Mt. Irvine corals are known to

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	predictably spawn in sync with the Southern Caribbean calendar, making the site preferred for gamete collection for coral restoration activities. Artificial lighting in addition to other synergistic impacts from the development construction is likely to impair synchronised coral spawning and successful reproduction. Furthermore, coral species and benthic invertebrates common to Mt Irvine are also listed under SPAW protocol have not been included with special consideration (given their own sections under the Mitigation Chapter like the Brown Pelicans and the sea turtles). Please include where they are relevant at risk: Annex II – Staghorn coral (*Acropora cervicornis*), elkhorn coral (*Acropora palmata*) - large stand of elkhorn found in the surf zone of Mt Irvine Reef, adjacent to the beach, boulder star coral (*Orbicella annularis*), mountainous star coral (*Orbicella faveolata*), giant manta ray (M*obula birostris*) a frequent visitor to Mt Irvine Reef, rough toothed dolphins (*Steno bredanensis*) frequently visit Mt Irvine Reef. Annex III – All fire coral species (*Millepora spp.*), all soft corals (*Alcyonidae spp.*). queen conch (*Strombus gigas*), Caribbean spiny lobster (*Panulirus argus*), all species of parrotfish, Nassau Grouper (*Epinephelus striatus*), reef manta rays (*Mobula alfred*i), frequent visitor to Mt. Irvine Reef. The Annexes I and II establish the list of flora and fauna species which require the highest level of protection. Annex III are the species for which exploitation is authorized but regulated so as to ensure and maintain populations at an optimal level.
8.3.2.7 Impacts to Environmentally Sensitive Species – Turtles	Most of the mitigation proposed for impacts to sea turtles is in line with best practice recommendations, however, considering the high density of sea turtle nesting at this site, we would like to see: • Further more detailed analysis of each impact informed by more specific design details such as lighting, and the wide stairway to the beach • An assessment of carrying capacity of the beach and how the intensive use of the beach by the potentially 1000 occupants can impact on the beach and nesting and hatching turtles • An examination of the cumulative impact of the various stressors on sea turtles • The application of even more stringent mitigation measures
8.4 Potential Adverse Impacts: Site Preparation & Construction and Hotel Operation	All comments applied to Section 8.3, also apply to this section as many of the impacts overlap.
8.5 Potential Adverse Impacts: Phase 3 (Full Occupancy)	While the construction phase of the development will result in the most severe/ acute impacts to the marine ecosystems, the permanent hardening of the Rocky Point landscape and the introduction of a permanent 'Urban Sea' environment—characterized by chronic nutrient loading, artificial lighting, altered hydrology—will

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	chronically erode the Resilience of the Mt. Irvine Reef. This chronic state of disturbance prohibits the natural recovery cycles essential for coral survival (Nyström et al., 2000), likely resulting in a permanent regime shift from a coral-dominated to an algal-dominated ecosystem as the project moves into Phase 3. Furthermore, local larval connectivity models conducted for Tobago, revealed the Mt Irvine Reef, and many reefs along the Caribbean coast are poorly connected to adjacent reefs, and therefore largely rely on self-seeding for recovery, which is unlikely to occur after severe disturbances shift the ecosystem state (Ishmael et al 2024). Therefore, the impacts and mitigations found in these sections, for the marine ecosystems, again are severely underestimated, as the operational mitigations do not consider the significant impacts the ecosystem has previously experience during the construction phase. The EIA lacks a basic understanding in ecology to understand the short, medium and long-term impacts of the hotel development.
Appendix H Storm water management plan	5.1 Preliminary Drainage plan is insufficient for safeguarding the sensitive marine environment of Mt. Irvine Reef and Bay and the adjacent areas of Little Back Bay. Please reassess. While the inclusion of retention ponds/silt traps is a positive step, the plan suffers from critical weaknesses related to both the quantity standard (1:25 year storm) which does not consider climate change and the long-term quality of the discharged water. We recommend a higher standard of 1:100-year storm. 1. Given the structure is intended on having a 50-year life span, the current plan places the infrastructure at high risk of experiencing a storm greater than the existing design. 2. Coral reefs are already stressed from current climate change impacts, and these impacts are very likely to be exacerbated by additional stressors in the future, such as increased storm activities and high rainfall events. A design that does not consider these more extreme scenarios puts the reef at risk of combined threats from climate change and the consequential impacts of the development (eg. Excess land-based pollution and runoff). Use of retention ponds/silt traps only partly controls sediment during the operational phase, but it does not address the full spectrum of threats during the construction phase. Sedimentation Management: 1. Sediment trapping ineffectiveness - Silt traps are designed to reduce the velocity of runoff, allowing coarse sediment (silt) to settle out. However, silt traps are generally less effective at capturing the very fine suspended particles (clay and fine silt). These fine sediments can remain suspended in the water column for long periods, creating a turbid plume This is an issue because sedimentation is a primary stressor for corals, leading to smothering, shading (reducing light for photosynthesis) over large areas, and inhibition of coral recruitment and is toxic to corals. 2. Silt trap maintenance: The effectiveness of silt traps is entirely dependent on routine cleaning and maintenance. If they are not emptied regularly, their

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

capacity is lost, and they become vectors for pollutant transport during the next rainfall event.

The Nutrient/Chemical Problem absent:

1. The plan mentions mitigation for silt, but makes no mention of mitigating nutrients, chemicals, or pathogens, which are the other major threats from hotel operations (leached pesticides, fertilizers, oil/grease, untreated greywater, and non-point source pollution).
2. Eutrophication risk from excess nutrients (nitrogen and phosphorus) from fertilisers used on hotel landscaping will cause macroalgae to bloom and overgrow the corals, accelerating reef decline. The proposed retention ponds/silt traps are not designed to remove dissolved nutrients effectively.

Outfall Location Concerns (Little Back Bay and Mt. Irvine Bay):
The proposed outfall locations are adjacent to highly sensitive areas:

1. Little Back Bay: This area is a known critical nesting site for threatened sea turtles (Leatherback and Hawksbill), which are highly sensitive to coastal disturbance, erosion, and lighting. The increased runoff and erosion from the outfall will destabilize the beach, reduce sand depth, and compromise nesting habitat.
2. Mt. Irvine Bay/Rocky Point: This is the location of the famous Mt. Irvine surf break formed by a living reef structure. The outfall here discharges directly on to the threatened reef system and surf break. Any excessive silt or pollutant runoff could permanently damage the reef by killing the corals and eroding structure

Much of the management plan does not actually consider the realities and sensitivities of the surrounding marine environment and therefore needs to be seriously reconsidered. With the current extensive hotel design, it is unlikely that these plans would be able to mitigate impacts effectively.

8.0 Monitoring and intervention strategy for hydrology and drainage

Again, this strategy seems to be insufficient for a development near a sensitive marine ecosystem for the following reasons, and requires reassessment:

Inadequate monitoring during wet season:

1. The wet season rainfall patterns result in multiple high rainfall events within the two-week period. It is common knowledge that a single rainfall event easily results in an overwhelmed drainage and silt traps. Therefore, a two-week cycle of clearing means that the system would already become overwhelmed with unfiltered sediment and pollutants flowing directly into the marine environment
2. Cleaning after storm event needs to be better defined. Is it within 24 hours after a defined amount of rainfall? Does this depend on the intensity of the rainfall? What is your metric?
3. Cleaning of silt traps at the end of the wet season or when necessary is a reactive measure. There needs to be more proactive management. For example, when the traps are 50 - 75% to full capacity.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	Strategy does not consider vulnerable periods of marine life cycles, especially considering the construction period occurs over multiple years, overlapping with several wet seasons 1. Turtle nesting and hatching extends to November of the wet season. 2. Coral spawning occurs around the full moon from June to November Currently, there are no changes to the monitoring strategies related to the sensitive periods, and high discharge of freshwater can drown turtle nests that are close to the discharge point, as well as prevent fertilisation of coral sperm and egg on the water's surface because of freshwater influx. As previously stated, the fine sediment also smothers recruiting corals preventing coral settlement and survival. Although not required by law, given the discharge into marine sensitive areas, a form of mitigation would be to conduct water quality monitoring to assess the level of pollutants collected within the settlement ponds and being discharged. Critical measures would include turbidity, nutrients, biological oxygen demand, heavy metals all of which would then govern activities, such as the suspension of earthworks or repair of a leaking pipe etc. This is especially important when considering the reuse of silt in greening, if there are pollutants that may pollute other areas. The current management plan is not effective in preventing the degradation of coral reefs and turtle nesting sites as it inappropriately applies generic industry standard to a highly ecological sensitive site. The EIA fails to understand the site-specific thresholds with respect to biological health. The solutions for proper mitigation of impacts require nature–based solutions and low impact development that implement mechanisms such as natural filtration.
Appendix J	4.1.1 Temperature - “Temperatures recorded at all four locations were compliant with the WPR 2019 standard of ≤32 C, for both recreation and for the protection of aquatic life and ecosystems (see Table 5).” While the WPR states this, it does not consider the bleaching threshold of corals, which is 29 C, and sustained temperatures, 1- 2 C above 29C will result in coral bleaching. This should be considered in any mitigation considerations for discharged water given the close proximity of corals. Please note the salinity physical changes to water quality – neither temperature nor salinity change is not considered in the mitigation plan. The collection and concentration all stormwater to a point source of discharge will shock the adjacent corals. Coral live within a narrow range of temperatures (25 – 29C) and salinity (32-35 ppt) and any acute discharge will impact nearby corals present along the reef flat (namely elkhorn corals), especially during the rainy season where there will be large fluctuations in salinity.
Appendix W: Water quality management plan	Pg W-49 first paragraph Aside from the WPR, Trinidad and Tobago is signed to the Cartagena Convention and the Land Based Sources of Pollution Protocol (LBS protocol). Under this protocol, additional pollutants of concern that may be relevant given their toxicity to the marine environment include: 1. Organo-halogen compounds and substances which could result in the formation of these compounds in the marine environment;

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

	2. Organotin compounds and substances which could result in the formation of these compounds in the marine environment; 3. Heavy metals (not mentioned in plan) 4. Polycyclic aromatic hydrocarbon 5. Biocides and their derivatives 6. Detergents and other non-biodegradable surface tension substances; 7. Pathogenic micro-organisms 8. Persistent synthetic and other materials, including garbage, that float, flow or remain in suspension or settle to the bottom and affect marine life and hamper the uses of the sea; 9. Compounds with hormone-like effects; Main sources of many of these pollutants include building, gardening and construction materials. Some of these pollutants are also present in the WPR (2019) Currently, construction activities, building design and materials being used are too vague to inform the assessment of the impact of these possible pollutants. However, they should be addressed to assess water quality impacts and inform on the water quality management plan.
	5.1 Project Description and Layout Absent from here and other places within the EIA are the facilities to support restaurants, bars and shops and their proposed locations. Restaurants come with their own issues of solid waste management (single-use plastics, grease and oils disposal, and food scraps) because of larger quantities. This needs to be addressed specifically in the EIA.
	5.2.6.2 Retention and Detention Ponds and FIGURE 5-2: PROPOSED DRAINAGE LAYOUT Unclear on the process of construction and the designation of the retention ponds for construction and operation. 1. Are the retention ponds shown in the design the location of the retention ponds during construction and operation? The capacity, load requirements, and location of the ponds during construction would differ from the operational phase. 2. Furthermore, silt trap placement will also be different between final design and the construction phase. 3. During construction, the drainage spatial design, the placement of traps and the order of entrapment is not clearly outlined in Chapter 4 or in Appendix W. 4. Is there no retention pond for the discharge point on the eastern end of Back Bay? Only a silt trap will be used as mitigation.
5.2.7 Sewage Treatment System	Location of the sump is adjacent to the retention pond. There is no description of the sump dimensions (area/ depth), lining, pump capacity, etc. This is the same area that was not tested as part of the geotechnical survey to assess soil type, ground water level (it is in a low-lying area), and other areas of concern including shifting of soil/ substrate. Poor construction of this sump will have detrimental impacts to the surrounding area. More details are required.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

References:

Alemu I, Jahson Berhane, and Ysharda Clement. "Mass coral bleaching in 2010 in the southern Caribbean." PLoS one 9.1 (2014): e83829.

Anthony, K. R. N., et al. (2015). "Operationalizing resilience for adaptive management of coral reefs under global environmental change." Global Change Biology, 21(1), 48-61.

Carilli, J. E., et al. (2009). "Local Stressors Reduce Coral Resilience to Bleaching." PLoS ONE, 4(7), e6324.

Cazabon-Mannette, Michelle. 2016. Ecology and Use of Nearshore Foraging Sea Turtle Populations Around Tobago with an Emphasis on Hawksbills. PhD Thesis, The University of the West Indies, St Augustine.

Cazabon-Mannette, M., Browne, D., Austin, N., Hailey, A., & Horrocks, J. (2016). Genetic structure of the hawksbill turtle rookery and foraging aggregation in Tobago, West Indies. *Journal of Experimental Marine Biology and Ecology*, *485*, 94-101.

Eckert, Karen L. and Adam E. Eckert. 2019. An Atlas of Sea Turtle Nesting Habitat for the Wider Caribbean Region. Revised Edition. WIDECAST Technical Report No. 19. Godfrey, Illinois. 232 pages, plus electronic Appendices.

FEMA P-55, Coastal Construction Manual Principles and Practices of Planning, Siting, Designing, Constructing, and Maintaining Residential Buildings in Coastal Areas (Fourth Edition) / Volume I / August 2011

Ganase et al, (2020) Benthic compositions of coral reefs of Tobago in 2019 and summary report 2010-2019, Technical Report, Institute of Marine Affairs, Chaguaramas, Trinidad. DOI: 10.13140/RG.2.2.21566.61766

Ganase, A. "Guest Editorial-2024 Mass Coral Bleaching: Tipping Point for Tobago's Reefs?." Living World, Journal of the Trinidad and Tobago Field Naturalists' Club (2024).

Hughes, T. P., et al. (2003). "Climate Change, Human Impacts, and the Resilience of Coral Reefs." Science, 301(5635), 929-933.

Ishmael-Lalla, Medina, et al. "A Numerical Modelling Approach to Coral Restoration and Management: Understanding Tobago's Hydrodynamics and Reef Connectivity." Journal of Coastal Research 113.SI (2025): 644-648.

Lochan, H. and Ganase, A. (2024). Coral Bleaching Observations in Tobago, 2023, Preliminary Results, Technical Report, Institute of Marine Affairs, Chaguaramas, Trinidad, September 2024.

Lopez, Gustave G., Eduardo de C. Saliés, Paulo H. Lara, Frederico Tognin, Maria A. Marcovaldi, Thiago Z. Serafini. 2015. “Coastal development at sea turtles nesting ground: Efforts to establish a tool for supporting conservation and coastal management in northeastern Brazil” Ocean & Coastal Management 116:270-276. https://doi.org/10.1016/j.ocecoaman.2015.07.027

Mallela, Jennie, Richard Parkinson, and Owen Day. "An assessment of coral reefs in Tobago." Caribbean Journal of Science 46.1 (2010): 83-87.

Northwest Atlantic Leatherback Working Group. 2018. Northwest Atlantic Leatherback Turtle (*Dermochelys coriacea*) Status Assessment (Bryan Wallace and Karen Eckert, Compilers and Editors). Conservation Science Partners and WIDECAST. WIDECAST Technical Report No. 16. Godfrey, Illinois. 36 pp.

https://speseas.org
info@speseas.org
(868) 689-SEAS(7327)

Northwest Atlantic Leatherback Working Group. 2019. *Dermochelys coriacea* (Northwest Atlantic Ocean subpopulation). The IUCN Red List of Threatened Species 2019: e.T46967827A83327767.

Nyström, Magnus, Carl Folke, and Fredrik Moberg. "Coral reef disturbance and resilience in a human-dominated environment." Trends in ecology & evolution 15.10 (2000): 413-417.

Walker, Grant & Gibson, Keith. (2015). First Documented Evidence of a Rookery of the Critically Endangered Hawksbill Sea Turtle (*Eretmochelys imbricata*) in North East Tobago. *Chelonian Conservation and Biology.* 14. 10.2744/ccab-14-01-95-99.1.

Walker, Grant. Ben Cawley, Heather Pepe, Amy Robb, Suzanne Livingstone, and Roger Downie (2015). The Creation of a Map of Hawksbill Turtle (*Eretmochelys imbricata*) Nesting in Tobago, West Indies. *Marine Turtle Newsletter*. 144. 3-9.