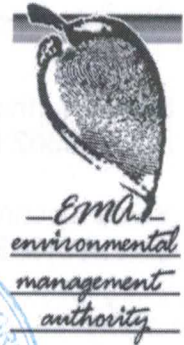


Our ref: CEC5345/2017

September 30, 2020

The Ministry of Works and Transport  
c/o Ms. Esther Farmer  
President  
National Infrastructure Development Company Limited  
The Atrium  
Don Miguel Road Extension  
**SAN JUAN**



Dear Ms. Farmer,

**APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL CLEARANCE (CEC5345/2017) - THE ESTABLISHMENT OF A MODERN, MULTIPURPOSE PORT FACILITY ON 19.9 HECTARES OF LAND, ALONG WITH ASSOCIATED DREDGING, RECLAMATION, OTHER EARTHWORKS AND INFRASTRUCTURAL WORKS AT GRANDE ANSE BAY, TOCO NORTH COAST OF TRINIDAD**

The Environmental Management Authority (EMA) has conducted a review of the Environmental Impact Assessment (EIA) Report submitted in support of the application for a Certificate of Environmental Clearance (CEC) by the National Infrastructure Development Company Limited (NIDCO), and its Consultant, ERM West Incorporated, on behalf of the Ministry of Works and Transport (MoWT) for the captioned project. The review process included participation from various State Agencies (Annex I).

The review of the EIA Report identified deficiencies, which must be addressed to enable informed, objective and fair decision-making with respect to making a determination on the CEC Application. Please be guided by the findings of the attached Review and Assessment Report.

Ten (10) hard copies and five (5) electronic copies of your response must be submitted to the EMA to aid in the review process. For the electronic copy, please ensure that the response is submitted in both pdf and Microsoft Word formats.

Pursuant to Rule 6 (2) of the CEC Rules, the EMA hereby notifies you that we are unable to make a determination of your application and can only do so when the issues highlighted in the attached Review and Assessment Report are adequately addressed. Please be guided accordingly.

8 Elizabeth Street, St. Clair, Port of Spain, Trinidad & Tobago, West Indies.  
Tel: (868) 226-4EMA(4362) Fax: (868) 628-9123; E-Mail: [ema@ema.co.tt](mailto:ema@ema.co.tt)



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Our Ref. CEC5345/2017

Should further information be required, please contact the Manager, Technical Services at 226-4362 Ext. 12251 or at [CEC@ema.co.tt](mailto:CEC@ema.co.tt).

Yours sincerely,

**ENVIRONMENTAL MANAGEMENT AUTHORITY**



Hayden Romano  
**MANAGING DIRECTOR**



NG/sl



## REVIEW AND ASSESSMENT REPORT

### ENVIRONMENTAL IMPACT ASSESSMENT IN SUPPORT OF AN APPLICATION FOR A CERTIFICATE OF ENVIRONMENTAL CLEARANCE (CEC5345/2017) FOR THE ESTABLISHMENT OF A MODERN, MULTIPURPOSE PORT FACILITY ON 19.9 HECTARES OF LAND, ALONG WITH ASSOCIATED DREDGING, RECLAMATION, OTHER EARTHWORKS AND INFRASTRUCTURAL WORKS AT GRANDE L' ANSE BAY, TOCO NORTH COAST OF TRINIDAD

This Review and Assessment Report (RAR) has been compiled following a review of the Environmental Impact Assessment (EIA) Report prepared by the National Infrastructure Development Company Limited (NIDCO), and its Consultant, ERM West Incorporated, on behalf of the Ministry of Works and Transport (MoWT) for the establishment of a modern, multipurpose port facility on 19.9 hectares of land, along with associated dredging, reclamation, other earthworks and infrastructural works at the Grande L'Anse Bay, Toco North Coast of Trinidad.

This Report is derived from a review of the EIA document against the Terms of Reference (TOR) prepared by the Environmental Management Authority (EMA) and issued on June 21, 2018. Various State Agencies (Annex 1) and the general public also participated through independent review.

This RAR provides an overview of the EIA Report, a statement of deficiencies and general comments gathered from the review process. It should be used as a guide by the Applicant to facilitate any corrections, alterations or additions that may be required to fulfil the EMA's TOR, and enable presentation of the EIA Report in accordance with the principles of good EIA practice.

The Report has been subdivided into the following sections:

1. Overview
2. Assessment
  - 2.1 Deficiencies
  - 2.2 General Comments

## 1 OVERVIEW

The overall structure and layout of the EIA Report was understandable. While a fair attempt was made to satisfy the requirements of the issued ToR, the Report did not address the specific requirements of the Final ToR in many instances. Deficiencies, which require clarification, were identified and are critical to making a determination of the application. These deficient areas as well as the general comments that require clarification or re-assessment will be expanded in the following sections.



## 2 ASSESSMENT

This section outlines aspects of the TOR not addressed, or only partially addressed, and issues that arose from the information presented within the submitted EIA Report. These aspects are considered critical for the assessment and the decision-making process of the EMA, and are regarded as deficiencies to be addressed within the EIA Report. The General Comments section also contains clarifications that must be addressed for completion of the EIA Report as well as comments for the benefit of the Applicant to note from the Review Team.

NIDCO/MOWT and its designated representative(s) must address all the deficiencies and clarifications in writing to the satisfaction of the EMA. This is necessary to facilitate the EMA's ability to make informed decisions on the relevant impacts of the proposed project on the human and natural environments.

### 2.1 Deficiencies

The issues outlined below must be satisfactorily resolved to inform the determination of the CEC Application for the proposed project.

#### EXECUTIVE SUMMARY

1. At Page ES-1, Section E.S. 1.1 Project Location and Background, the first sentence of the last paragraph of this section, "The Project is in its preliminary design phase, and will be fully developed upon completion of this EIA and the issuance of the Certificate of Environmental Clearance..." gives the reader/reviewer the impression that the design elements outlined in this assessment are incomplete. Furthermore, a preliminary/incomplete design may affect the comprehensiveness of the assessment of potential impacts associated with the proposed project. As such, please confirm the validity of this statement and amend if necessary. Please also clarify whether the scope of works, provided in Section 3 of the EIA Report are complete or whether major modifications to the information presented are anticipated in at the final design stage. If major modifications are anticipated, these should be adequately described and assessed within the EIA Report.
2. At Page ES-5, Section ES 1.3.1, it states that "several larger (50-70 m) vessels or pleasure yachts can be accommodated". Please revise to include specific information as it relates to the capacity of the proposed 'Inter-Island High-speed Ferry Terminal Facility' in terms of numbers of each category of vessel.
3. At Page ES-7, Section ES.1.5 Environmental and Social Baseline gave a brief overview of the baseline studies. However, a summary of the outcomes/conclusion of the studies were not provided. Please address.

4. Page ES-7, Section ES 1.4.4.2 Parking Lot, states that the parking lot will be utilised for the hosting of Carnival events. Please indicate whether this use of the site was considered in the impacts assessment summarised in Table ES 1.6-1 Summary of Initial and Residual Impacts and if such use is restricted to the Carnival season only. Impacts from the hosting of Carnival season, and possibly throughout the year for other events, will impact sensitive persons and fauna, such as elevated noise levels, coupled with the ongoing port operations.

#### CHAPTER 1 INTRODUCTION

1. Section 2.0 at Page 20 to 21 of the Final ToR required a definition of the study area which was determined by the extent of direct and indirect interactions between the proposed project and the physical, biological and socio-cultural environments. The rationale used for delineation of the study area was also required. Review of the EIA Report revealed the following:
  - a. The study area was initially described at Chapter 1: Introduction, Section 1.2 – Study area at Page 1-3 of the EIA Report. The components of the study area were defined as the Direct Study Area (DSA) which is affected by the direct footprint of the project, and the Indirect Study Areas (ISA) which is the broader area affected by the development and the port. This was illustrated on Fig 1.2-1 – EIA Study Area including Direct and Indirect Study Area at Page 1-4 of the EIA Report. Based on this Figure, the DSA comprises both terrestrial and marine components, while the ISA comprises primarily terrestrial components in both Trinidad and Tobago. The limits of the DSA and the ISA were however not clearly defined within the EIA Report, nor was the rationale used for delineation of the study area explicitly described.
  - b. Further, the definition of the study area also fails to include any mention of dredge spoil disposal sites and marine vessel routes, as well as marine and terrestrial protected areas and Environmentally Sensitive Areas (ESAs) which were stipulated in the requirements of the Final ToR. This underestimation of the marine extent of the study area is considered to be a serious shortcoming of the EIA as it will prevent an accurate assessment of potential impacts in an area where environmentally sensitive species (ESSs) are known to reside and migrate to annually.

As such, the Applicant is advised that the study area should be determined by the anticipated area of impact/zone of influence that the project may have on its receiving environment (in accordance with the stipulations of Section 2 of the Final ToR). This includes a clear and technically sound rationale for the delineation of the study area – direct and indirect study area, with their respective marine and terrestrial limits. In this regard, please re-assess the process for determining the extent of the study area to ensure that the delineation of the area is in accordance with the stipulations of the Final ToR, and revise the extent of the study area accordingly. The boundaries of the study area should also be clearly delineated in any drawings/maps provided. The rationale used for the revised delineation of the study area must also be explicitly described.

Please ensure that the study area (i.e. immediate and wider) is properly delineated and referenced in relation to the Universal Transverse Mercator (UTM) coordinate system (Zone 20 N) within the World Geodetic System 84 (WGS84) datum and is be described with accompanying photographs, aerial photographs and geological maps and/or topographical maps and any other diagrams at easily understood scales to illustrate the spatial extent of the project and the potentially impacted areas and sensitive receptors.

## CHAPTER 2 LEGISLATIVE, POLICY AND INSTITUTIONAL FRAMEWORK

Annex 2, Applicable Standards and Guidelines, (Pages 11-12) of the Final ToR, required the Applicant to identify pertinent local and international legislation, policies, guidelines and conventions that may be relevant to the proposed project and to consider these in terms of project development and compliance. Some examples were provided in the ToR, however, it was noted that there were errors in some of the cited legislation and several pieces of applicable guidelines and conventions, etc. were omitted. As such, please review the deficiencies below and amend accordingly, or provide justifications for omissions, where applicable:

1. Figure 1.2.1 – 'EIA Study area including Direct and Indirect Study Areas' (Page 1.4) illustrates the route to Tobago and Scarborough Port as being a part of the direct study area. It is also noted that aggregate will be sourced from Tobago during the construction phase of the project. However, consideration of Tobago's governance structure as well, as the relevant Divisions, Secretaries and the associated legislation and Institutional Framework such as the Tobago House of Assembly Act 40 of 1996 were not included in the discussion on relevant legislation. Please address.

2. At Page 2-5, Section 2.3.3 Planning and Development, it was stated that the "Town and Country Planning Act was repealed by the Planning and Facilitation of Development (PAFD) Act in 2014". However, the PAFD Act is still awaiting proclamation, and as such, the Town and Country Planning Act (TCP Act) remains relevant. In this regard, please include the TCP Act, Chapter 35:01 in the analysis of relevant legislation. The PAFD (Amendment) Act, 2019 should also be included in the list of legislation. Additionally, these two forms of legislation must also be included in Table 2.3-1 Project Legal Framework.
3. Page 2-6: Please ensure that the most recent version of the Harbours Act is quoted in all areas of the EIA Report.
4. Page 2-7, Section 2.3.6, Oil and Gas Management: The Petroleum Act has been revised since 1969. Please include and quote the most recent version of the legislation in all areas of the EIA Report (i.e. Petroleum Act, Chapter 62:01).
5. With respect to Table 2.3-1: Project Legal Framework which spans from Page 2-8 to 2-18, please note the following and amended accordingly:
  - (i) At Page 2-8 reference is made to "Certificate of Environmental Compliance (Designated Activities) Order, 2001" and "Certificate of Environmental Compliance Rules, 2001." However, the name of legislation quoted is incorrect. The references should be amended to "Certificate of Environmental Clearance (Designated Activities) Order, (as amended)" and "Certificate of Environmental Clearance Rules, 2001."
  - (ii) At Page 2-10, please note that the Water Pollution Rules (WPR), 2001 was repealed and replaced with the Water Pollution Rules, 2019. Please amend in the table and any other section(s) that makes reference to the WPR within the EIA Report.
  - (iii) At Page 2-11, within Table 2.3-1, under the Fisheries Act, 1975, please note the following and amend accordingly:
    - The citation Fisheries Act 1975 is incorrect as amendments to the initial Act were issued in 1975 and later years. The correct citation is Fisheries Act, 1916 or Fisheries Act Chapter 67:51;
    - The description includes Fisheries (Control of Demersal Trawling) Regulations, 2002. Please note that this regulation is not relevant as this fishing method is prohibited on the east coast of Trinidad and on all coasts around Tobago. The more relevant fisheries regulations to the northeast coast of Trinidad would be those related to the gillnet fisheries.

- Given that this project will contain fishing facilities more details are needed on additional fisheries legislation which contributes to the governance framework, which include, but are not limited to the following:
  - Fisheries Management Bill, 2018;
  - Archipelagic Waters and Exclusive Economic Zone Act;
  - Territorial Sea Act;
  - Food and Drugs Act – Fish and Fish Products Regulations;
  - Fishing Industry (Assistance) Act;
  - Value-Added Tax Act;
  - Caribbean Fisheries Training and Development Institute Act;
  - Customs Act;
  - The Marking of Ships Act;
  - The Port Authority Act;
  - Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere;
  - Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

(iv) At Page 2-14, under the applicability column of State Lands Act, 2014, it states “Not directly relevant to the construction of the Project as no State Lands will be used; however, potentially relevant for future development associated directly or indirectly with the Project”. Please note this is incorrect as the Act grants rights and liberties over the foreshore or lands under territorial waters, or for reclaiming of lands from the sea; among other matters related to coastal management. Please address.

(v) It was noted that in Section 6.2.3 Waste Management Plan, reference was made to the following:

- Draft Waste Management Rules, 2008;
- Draft Waste Management (Hazardous Waste) Rules, 2014;
- Draft Solid Waste (Non-hazardous) Management Rules, 2014.

Please note the most recent Draft Waste Management (Registration and Permitting) Rules, 2018, was published for public comment from January to February 2019, and should be included in Table 2.3-1. Please update the Table to reflect the most recent version of the Draft Rules.

6. At Page 2-19, National and Regional Policy, the National Wildlife Policy (2013) and the Integrated Coastal Zone Management Policy Framework were not considered. These are directly relevant to the proposed project given the potential impacts on wildlife and the receiving coastal environment. Please address.





7. At Page 2-21, Section 2.4.1.6 National Protected Areas System Plan for Trinidad and Tobago, 2018, the last line of the first paragraph states "The proposed PNAs nearest the Project site are Grande Riviere and Galera Point." However, St. David Forest Reserve, which forms part of the Matura National Park Environmentally Sensitive Area, was not identified. Please amend.
8. At Page 2-25, Table 2.6-1 International Conventions and Treaties, it was noted that the Ballast Water Management Convention (International Convention for the Control and Management of Ships' Ballast Water and Sediments), 2017 was not included in the table. This convention was adopted in on February 13, 2004 and entry into force was September 08, 2017. Please include or provide a justification for exclusion.
9. At Page 2-27, Section 2.6 International Conventions and Treaties, Table 2.6-1 it was stated that the table outlines the international conventions and agreements to which Trinidad and Tobago is a party. However, only one (1) biodiversity/protected area agreement/convention was mentioned; i.e. the Convention on Biological Diversity. There are a number of other key multilateral environmental agreements which have been omitted. Please amend the section to include all the relevant international conventions and agreements to which Trinidad and Tobago is a party, or justify exclusions of same. Some examples are listed below:
  - International Convention for the Conservation of Atlantic Tunas (ICCAT) (1999);
  - UN Conference on Straddling Fish Stocks (SFS) and Highly Migratory Fish Stocks (HMS) 2006;
  - The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
  - The Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartegena Convention) – in particular the Protocol Concerning Specially Protected Areas and Wildlife (SPAW Protocol);
  - International Convention on Oil Spill Preparedness, Response and Co-operation 1990 (OPRC Convention);
  - International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage;
  - The United Nations Sustainable Development Goals (SDGs).

### CHAPTER 3 PROJECT DESCRIPTION

1. At Page 3-1 Section 3.1 an overview of the project was provided. However, the following requires clarification based on deficiencies in the information provided:



- Page 3-2 Section 3.1.1 makes reference to berthing capacity for two (2) additional 100 m ships in the lee of the breakwater and alongside berthing of additional, relatively smaller 50-75 m ships. The purpose of these additional berths is unclear. As such, please clarify the type of vessels and/or shipping activities that these berths are proposed to support;
  - At Page 3-2, a boat repair and maintenance workshop was identified as a proposed facility. As such, please provide the scope of services proposed for the boat repair shop and/or ship repair (e.g. dry-docking facilities). This should also include a description of activities involving use, storage and handling of chemicals for the proposed project as it relates to painting, hull cleaning and other maintenance activities. Please also confirm whether the proposed facilities will include storage facilities such as lockers, net, engine and equipment storage for fishermen.
2. At Page 3-5, Figure 3.2.1-1 titled "Project Location in Grande L'Anse Bay" illustrates an overview of the proposed port layout with the identification of the proposed location of the following features:
- The proposed interisland ferry terminal;
  - The proposed breakwater;
  - The proposed cargo vessel port;
  - The proposed marina;
  - The proposed Coast Guard facility;
  - The proposed Fisheries Complex;
  - The proposed port entry bridge; and
  - The existing Paria Main Road.

However, other key features mentioned within Chapter 3 were not illustrated on the site plan. In order to have a comprehensive understanding of the proposed project in its entirety, please provide a revised site plan or plans showing the conceptual layout in relation to the surrounding environment. The revised site plan(s) should include the components listed above, which have already been provided as well as those that were not provided but are critical to understanding the overall development plan. The revised plans/maps should include a north arrow and be accompanied by a legend which clearly identifies the features that are illustrated and include the location and layout of the following components of the development, where applicable:

- Proposed police post;
- The proposed boat repair and maintenance shop;
- The proposed storage area for fishermen;
- The proposed bunkering facilities;
- The proposed fuel storage and centralized services complex;
- All proposed areas for parking, including numbers of parking spots;
- The proposed wastewater treatment plant;



- All existing and proposed recreational areas;
  - All existing fishing and residential activities;
  - All existing and proposed shipping lanes and other exclusion zones;
  - Existing and proposed access roads, bridges, internal roadways within the proposed port, etc.;
  - All existing and proposed utilities, cables and pipelines (e.g. submarine high-voltage cables).
3. While the question above requests a revised site plan(s) illustrating the conceptual layout of the proposed port during operation, details on the construction aspect of the proposed project have not been included. As such, please provide a site plan depicting the construction layout/plan, including, but not limited to the following, in order to understand and adequately assess all phases of the project:
- Delineation of the total area allocated for construction facilities, in square metres (m<sup>2</sup>) or hectares;
  - Workers accommodation – washroom facilities, changing areas, showers, etc.;
  - Site office and guard booths;
  - Car park area for workers/staff members;
  - Equipment storage areas;
  - Areas for stockpiling of material;
  - Fuel storage for vehicles and equipment;
  - Garage or maintenance area(s);
  - Wash bay(s) for vehicles leaving the site;
  - Temporary access roads; and
  - Temporary drainage.

Please ensure the site plan includes a north arrow and is accompanied by a legend which clearly identifies the features that are illustrated.

4. At Page 3-9 Section 3.3. – ‘Physical Constraints Influencing the Toco Bay’ states “The reef is very sparsely populated with corals and is effectively devoid of resident marine life” and “The entire area is influenced by a mix of wave action, and the seawaters carry a turbid sediment load for most of the year, hence inhibiting coral growth with its marine life.” However, these statements appear to contradict the literature presented in Chapter 4 of the EIA Report where existing research for the project area identifies significant marine life and ecosystem services from which the surrounding communities and researchers benefit. Additionally, according to the Institute of Marine Affairs (IMA), a research article on a survey conducted by Belford et al (2019) of the biodiversity of coral and associated reef organisms for the Salybia and Grand L’Anse reefs, reported “Surveys conducted used the line and point intercept and quadrat techniques to gather data. If unidentified and incompletely identified specimens are not included, this study found 257 species belonging to 134 families, 23 classes and 11 phyla.” As such, please provide a justification for the statements made or amend accordingly.



5. Section 1.4(b) of the Final ToR required a description of the criteria used for the location of the port facility, including identification on natural hazard and climate change elements that may affect the development of the project. Page 3-9 of the EIA Report, Section 3.3 provided information on the physical constraints influencing Toco Bay. However, no consideration of natural hazards and climate change elements were included in the discussion. Please address.
6. At Page 3-9, Section 3.4 Site Preparation and Construction did not address the decommissioning of the existing Toco Fishing Facility and Market as well as the construction of the temporary fishing complex at Salybia. The description of both these activities, assessment of potential impacts and proposed mitigation measures must be included in the EIA Report. Please address.
7. The section presented for dredging, Section 3.4.1 at Page 3-9 only discusses the activity within the site preparation and construction phase. In accordance with the Annex 3A sub section 'Operation and Maintenance' at Page 18 of the Final ToR, a description of the maintenance dredge requirement for the proposed approach channel and turning basin must be provided. This description shall also include the anticipated siltation rate, frequency with which dredging may be required and proposed areas for disposal of the dredged material. This should also include information on the institutional arrangements for maintenance dredging. Please provide.
8. At Page 3-10, Section 3.4.1 Dredging, it is stated that the EIA was conducted assuming no explosives will be necessary to clear the dredging channel. The EIA should attempt to assess all potential activities that may be included in the scope of work as well as probable alternatives. In this regard, please indicate whether the risk and impacts associated with the use of explosives to clear the dredging channel was considered. If not, please include this option in the analysis of alternatives for the proposed project (i.e. alternative methodology).
9. At Page 3-19 Section 3.4.5 Establishment and Upgrade of Access Roads provided a general overview of proposed roadwork. Please provide a detailed description of the nature and extent of proposed roadworks (i.e. expansion of existing roadways, inclusive of dimensions), and any associated work such as, cutting, grading and backfilling works.
10. At Page 3-20, Section 3.5.1 Breakwater, please address the following:
  - State whether climate change was considered in modelling hurricane wave predictions, noting the likelihood of stronger / more intense hurricanes entering the region.
  - Given the high energy environment within which the breakwater and other coastal structures will be functioning, please provide additional details on the design life of the structure, the frequency and type of maintenance works under the description of Section 3.5.1.



11. At Page 3-23, Section 3.5.4 Landside Facilities lists several landside facilities, including police and coast guard facilities, but does not include any provision for fire services. Given the nature of the proposed project, please provide a justification as to why facilities for fire services were not included in the proposal.
12. At Page 3-24, Section 3.5.5 Parking Lot, it states "the grounds will include parking lots that hold approximately 150 vehicles". It was also stated that during peak Carnival Season a function may generate traffic of 400 vehicles that will be accommodated. Given that the proposed port will include landside facilities that include a Coast Guard post, a police post, a fishing facility, a hotel, restaurant and bar and a ferry terminal, please provide the following information:
  - (i) Clarify whether the 150-vehicle parking lot will be utilised to accommodate both visitors and staff at the proposed port;
  - (ii) Please confirm whether the parking facilities for the proposed port is adequate to accommodate both staff, users and visitors (for example, compared to the capacity of vessels such as the ferry);
  - (iii) Provide additional details on how an additional 400 vehicles will be accommodated during special events.
13. At Page 3-24 Section 3.5.6 Stream Discharge Channel and at Page 3-26 Section 3.5.10 - Drainage, reference is made to a channel which will be utilised for drainage of the site and will provide sufficient capacity to cater for the inputs from the facility network drainage during peak flows. It also states water that may overtop the port facility during a major storm event will also drain into the northern leg of the channel. In order to support these claims that the proposed stormwater management system is adequate for the facility, the following information as outlined at Page 16 of the Final ToR must be provided:
  - (i) Site plan(s) illustrating the proposed channel, the drainage network within the proposed facility, all existing watercourses, any modified watercourses, detention/retention ponds (if applicable) and all associated discharge points into the receiving environment;
  - (ii) Details of the proposed temporary and permanent drainage plans/mechanisms to manage runoff during the site preparation, construction and operational phases;
  - (iii) Drainage calculations to demonstrate that the proposed drainage system is appropriately sized to accommodate the post-development runoff flow rate;



- (iv) A Flood Risk Assessment to demonstrate that the site is not at an unacceptable risk from flooding and that the proposal will not give rise to an increased flood risk elsewhere. The assessment must identify the potential flood depths across the site for a 1:100 year storm event and demonstrate how allowances for climate change impact were considered.
14. At Page 3-25 Section 3.5.9 Waste and Wastewater Treatment, several deficiencies require the following clarification:
- Page 3-25 states that a wastewater treatment plant (WWTP) would be installed and it would be designed to treat 113,562 litres per day of a combination of domestic grade wastewater from the users of the facility and 61,000 litres per day of wastewater from fish processing. It is unclear how these figures were derived. The narrative also did not provide detailed specifications of the WWTP nor did it demonstrate that the plant can effectively treat and discharge effluent in compliance with Schedule II of the WPR, 2019. As such please provide the following information:
    - (i) A map illustrating the proposed location of the wastewater treatment system and its associated discharge location(s);
    - (ii) A process flow diagram which clearly illustrates each component of the selected WWTP. This should be accompanied by a description of how each component of the system would function;
    - (iii) The design capacity of the proposed WWTP (cubic metres/day) and demonstrate that it is adequately sized for the estimated volume of wastewater that would be produced by the proposed development. The anticipated number of users for each component of the port that the WWTP will be facilitating and estimated volume of wastewater generated per user type;
    - (iv) The categories of the types of waste that the proposed plant would be expected to treat;
    - (v) Demonstration of the ability of the WWTP to meet the relevant parameters of Schedule II of the WPR, 2019. A scoping exercise should be conducted to identify all possible parameters of concern that should be included within the list of applicable parameters;
    - (vi) Monitoring regime for the final effluent to ensure compliance with Schedule II of the WPR, 2019;
    - (vii) Maintenance regime for the WWTP to ensure its proper operation for the lifetime of the facility. This should include information on the institutional arrangements for monitoring and maintenance of the facility.



15. Further to the above, Section 3.5.9 at Page 3-25, speaks to "Waste and Wastewater Treatment". However, the section fails to identify or provide a description of all categories (hazardous and non-hazardous) of potential waste (both solid and liquid) streams during each phase of the project (site preparation, construction and operation), the volume of anticipated waste for each category and the collection, treatment and disposal for each identified waste stream. Please provide.
16. Section 1.0 at Pages 13 to 14 of the Final ToR required a description of the purpose and need for the project, including a justification for its conceptualisation and implementation. In addition, the criteria used for the location of the proposed port facility was to be provided. This aspect of the ToR was not adequately addressed. As such, please provide a revised description of the purpose, need and justification for the proposed project and selected site, as required by the Final ToR.
17. Further to the above, Section 5.0, Pages 31 to 32 of the Final ToR required the Applicant to benchmark the preferred alternative against alternate designs or case studies of similar projects and describe reasonable alternatives to the proposed project and operations involved that would achieve similar objectives. Various project alternatives, process alternatives, as well as the 'no action' alternative were to be considered. Review of the EIA Report revealed that there was a failure to assess project alternatives, as had been stipulated by the Final ToR. This is glaring omission of the EIA Report. An attempt was made in Section 3.0 – Project Description at Page 3-1 of the EIA Report, to discuss alternative locations. It was stated that Toco was one of three sites that were the subject of an initial study [Institute of Marine Affairs (IMA) 1988] to identify the best location for the port. It was further stated that "Toco was selected as the most suitable option because it provided the greatest opportunity for economic development in the northeast region of Trinidad, had the least current recreational value of the three sites, and would be the least potentially disruptive to the surrounding environment."

The rationale for the location of the Toco port facility was based on two documents; an IMA 1988 study and the Lee Young and Partners 1990 report, both of which were written over 30 years ago. These are very dated documents. Over this period, there would have been significant changes to the existing environment, for example changes to biodiversity, potential rising sea level, increased wave action, and the length of time for ferry rides between Trinidad and Tobago, all of which may have an influence on the initial positioning of the port facility. Detailed biodiversity studies for example, were only conducted within the past 15 years and thus would not have been part of the decision-making process in 1988/1990 for the determination of the location of the port facility.

Additionally, it was noted that there are apparent errors in the information presented within the EIA Report on these sites. Some of these are as follows:

- Page 3-35 describes Balandra Bay as being on the western side of Trinidad;
- Page 3-36 states that Toco Bay is situated further from Salybia Reef than Balandra Bay;
- Page 3-36 states "Upon examination of geological and oceanographic conditions, Toco Bay was indicated as the most suitable location of the three (IMA 1988)". However, the last paragraph of Page 1 of the Executive Summary of the study states "...if what is desired is a multi-purpose port, then Grande Riviere would appear to be the best option". The study did not make an outright statement that the Toco Bay is the most suitable as many disadvantages were outlined for that site.

In this regard, please provide the following:

- A justification demonstrating how the feasibility study is still relevant 30 years later;
  - An analysis of alternatives, as detailed in the Final ToR. This discussion should include details on the potential adverse impact and beneficial effects for each alternative presented, the basis for determination of the types of facilities included in the proposed port as well as the capacities identified, in terms of ranges/types and sizes of vessels to be accommodated at the proposed port. The 'No Action alternative' should also be considered in the analysis;
  - The impacts of significant delay or abandonment of the project before all of the proposed phases are completed was not considered in the EIA Report. This must also be addressed by the Applicant.
18. Section 1.4(c) (Page 18) of the ToR required detailed information on the operation and maintenance of the proposed port. However, details on this aspect of the project were not included in the EIA Report (some of which were highlighted in the previous points). Please address based on the requirements of the Final ToR.
19. Details on the proposed facilities for fuel storage, inclusive of Liquefied Petroleum Gas storage (for restaurants, etc.) should be provided, including, but not limited to the storage methods, leak detection systems, requirements for fire detection and response equipment, etc. Any associated power generating facilities that may be proposed should also be described and assessed within the EIA Report. Please address.





**CHAPTER 4 PHYSICAL, ENVIRONMENTAL AND SOCIAL BASELINE**

1. Pages 4-4 to 4-56 Section 4.1.1: National Context, includes a large volume of information that is not directly relevant to the proposed project and, as such, adds little weight or context to the Chapter and the Project. Please revise to ensure that relevant information, which may assist in understanding and analysing the proposed project is included in the EIA. Where relevant information is included, please ensure that the information presented is the most recent/available information; (e.g. Figure 4.1.1.4-9 at Page 4-23 is dated 2009). Notwithstanding, the following deficiencies are noted in the Section on the National Context. Please address:
  - (i) At Page 4-25, the last line states the number of artisanal vessels was derived from a 2015 census. However, at Page 4-26 the pie chart for the artisanal vessels states the source as Fisheries Division 2016. Please clarify the correct source and date of the data presented. Please also ensure that all annotations are included in its entirety (e.g. the word 'Northwest' is not complete).
  - (ii) At Page 4-27, a section titled Sargassum was listed as a challenge faced by the marine fisheries sector. However, this issue is not only limited to fisheries but it challenges activities associated with coastal living, recreation as well as the operation of ports. Consideration should be made for elaboration of details on the impacts and control measures that will be adopted to treat with the large volume of Sargassum as it relates to the potential impact on the project as well as management/monitoring arrangements. Please address in the appropriate sections of the EIA Report.
  - (iii) At Page 4-30: The Tourism Section fails to mention the considerable eco-tourism industry in Trinidad, including in the northeast region of Trinidad.
  - (iv) At Page 4-31: The inter-island ferry is described as "the main connection between the two islands" but this statement fails to recognise the equally-important significance of the domestic air bridge between Piarco, Trinidad and Crown Point, Tobago via Caribbean Airlines.
2. Section 4.1.2: Study Area-Sangre Grande, Pages 4-56 to 4-130 present a description of the socio-cultural environment. It is stated throughout the section that the information was gathered from literature reviews, desktop studies and limited in field surveys. While general information is provided for the wider study area (i.e. at the Municipality level), the section fails to adequately characterise and map the direct study area as it relates to the project's probable area of influence (i.e. description of the immediate receptors that may be potentially affected by the project and mapping of these in relation to areas of potential impact). Please revise to provide a detailed description of the direct study area, in accordance with Section 3.5.3 of the Final ToR.



The revised description should also consider the following specific deficiencies that were identified in the section, which are as follows:

- (i) At Page 4-61: CSO data are presented from 2011, but in the same section, reference is made to an increased population size in 2016 from an uncited CSO report, and a 0.3 % population growth rate in 2017 (World Bank 2018). References are also made to CSO 2017 (Tourism Section) and CSO 2018 (Figure 4.1.1.4-5, 4-6, 4-7 and 4-8). The most recent CSO data should have been used to describe race, religion, and ethnicity at Pages 4-62 to 4-66. Please update these data accordingly.
- (ii) At Page 4-66 Section 4.1.2.4 Economy and Development, there are deficiencies in the information provided as follows:
  - It states, "The town centre of Sangre Grande has been targeted for economic growth, which some residents of the Toco area say has led to funnelling of resources away from their communities (ERM Personal Communication 18, 2019)." This reference is from a focus group of women from Toco that has been cited on multiple occasions throughout the document. The overview of the economy of this area should not be drawn from a single focus group exercise. In the absence of scientific data, experts in the field of economic growth should be consulted or more data collection exercises conducted, including surveys across multiple groups to allow for a more representative and reliable conclusion;
  - The statements describing the economic decline and related issues in the Sangre Grande region lack references. Please clarify whether these statements are opinions or provide the appropriate references to support the conclusions drawn.
- (iii) Sub-section 3.5.3 - Socio-cultural Environment at Page 28 of 55 of the Final ToR requested the provision of a Fisheries Survey which would entail an in-depth description of the fishing industry in this area. Review of the EIA Report revealed that the data required in Bullet (e) ii, was not provided – i.e. such as but not limited to, numbers of fishermen, whether they own their vessels or are employed on vessels, types/size/age of vessels, target species (including bait species), yields, prices, operating costs, income, characteristics of gear utilised, landing, fuel consumption rates and sources, seasonal changes in target species or fishing ground, etc. Please address this omission in the description of the baseline socio-cultural environment.
- (iv) Further to the above, at Pages 4-67 to 4-71, information on fisheries related to the north-east coast and Toco is presented. However, the northeast coast of Trinidad is utilised by artisanal fishers from Toco and several other landing sites (e.g. those mentioned on Page 4-67). In addition to artisanal fishers, the northeast coast is utilised by Trinidad's oceanic longline fleet and a multi-gear industrial fleet.



The semi-industrial and industrial vessels are not based on the north-east coast but in the north western peninsula, Port-of-Spain and Scarborough, Tobago. In addition, many of their support services are also found within or adjacent to the respective fish landing sites. Furthermore, interviews with stakeholders presented in the Stakeholder Engagement Report (Appendix C, Pages C-5-8-9) indicated that the association has 56 members (80 % are from Toco), implying that the others were from outside of the direct study area. It was also noted that the data on fishing vessels and fish catch statistics were limited to one year, which does not present an acceptable temporal description of the activities within the project area. As such, please revise the artisanal fisheries assessment to ensure that a more comprehensive description of the industry is presented (spatially and temporally). This should include revised figures/charts. In addition, please clarify whether data presented is the most updated source of information through proper referencing (e.g. from the Fisheries Division). Any gaps in available data should also be identified an attempt made to address same.

- (v) At Pages 4-72 to 4-75 some detail is provided about the tourism industry in the region, but it appears that only the views of the tourism operators were elicited. More research on the tourists who engage in activities in northeast Trinidad should be undertaken to understand their reasons for visiting the area and to gather their opinions on the proposed port development. This will shed light on how the port development might impact tourism in the region. Please revise this section accordingly.
- (vi) At Page 4-85, Section 4.1.2.6 Community Health and Safety, Sub-section Natural Hazards, specific areas within the study area that are prone to coastal erosion should be included in this section. A map should be provided illustrating the identified areas. Please provide.
- (vii) At Page 4-99 Section 4.1.2.8 Land and Resource Use, sub-section Protected Areas, stated "Approximately 40 % of Sangre Grande's land area is protected by law. This includes 18 forest reserves and the Matura National Park Environmentally Sensitive Area (ESA)". However, Figure 4.1.2.8-2 National Projected Areas Relative to the Port Site does not depict all legally designated protected areas. Please amend the map to show all 18 forest reserves and the Matura National Park in relation to the project area.
- (viii) At Page 4-103 Section 4.1.2.8 Land and Resource Use, sub-section Ecosystem Services states that only those ecosystem services considered as priority services are discussed in the section. However, it is unclear how a determination was made on priority versus non-priority ecosystem services. Please describe the methodology used to rank the ecosystem services based on priority and any supporting documentation. In addition, Cultural Heritage is also an ecosystem service and should also be included.



- (ix) At Page 4-134 CSO data for Tobago is missing from Table 4.1.1.2-1. Please address.
3. For Section 4.2 Environmental Baseline, the boundary of the areas affected by the port activities should be clearly outlined within this section. Please address.
4. At Page 4-138, sub-section Tobago Region Port and Harbours, reports that in the timeframe of one month a total of 154 vessels arrived at or departed from the Port of Scarborough with an average of five (5) arrivals or departures daily. The detail of the berthing capacity at Scarborough is not articulated. This undermines consideration of slot time use and capacity at the proposed ferry port in Toco. In the section that follows, the discussions made regarding the impacts of activities, identifies ships may embark from Toco but does not indicate the capacity to receive the vessels in Tobago at the particular times. This proposed project transcends two sites, Toco Bay, Trinidad and Scarborough, Tobago, as was identified in the definition of the study area. It is therefore imperative that the operations at both sites be considered in the proposed design as it pertains to the evaluation of impacts and consideration of control measures. Please provide more details based on the above deficiencies for this section.
5. At Page 4-144 of Section 4.2.1.1 Climate and Meteorology states that "In-house numerical simulations with the Weather Research and Forecast (WRF) model for the period 2015-2017 showed that at the exact location of the proposed project the prevailing winds were east-northeast". Please provide details on the inputs, data sources or references and any assumptions used in the model to run the stimulations.
6. At Page 4-152, Section 4.2.1.1 Climate and Meteorology describes wind and storm conditions. However, the potential for an adverse event and potential impacts on the proposed project were not discussed. Additionally an analysis of the future meteorological conditions of the study area using professional judgement, computer modelling and desktop analysis, were not provided, as outlined as required as per Section 7 of the Final ToR. A more through baseline and assessment of future tropical storms/hurricane impacts within the framework of a warmer and changing local climate must be performed. The EIA must baseline tropical storms/hurricanes as well as future projections on tropical storms/hurricanes. Please address.
- Any extrapolated data must be justified and references provided, where applicable (e.g. source of data and metadata for use in modelling exercises, where actual sampling was not conducted).
7. Review of Pages 4-153 to 4-157, Section 4.2.1.2 Air Quality and Noise, sub-section Toco Port Air Quality Monitoring, revealed the following:

- Short-term ambient air quality was performed at a single location, downwind of the site, over the period of June to October 2019. The disadvantage of relying on a single location can include instrument failure or invalidation based on failed quality checks, which were identified as issues faced in this monitoring exercise;
- Page 4-157, states that the ambient monitoring data collected by the EMA for the Chaguanas area was used for insight into the long term ambient air quality. Please provide a justification for the conclusion that the ambient air quality of Chaguanas can be interpreted as being representative of the conditions at the proposed site;
- At Page 4-157, Sulphur dioxide and nitrogen dioxide sensors were deployed during the monitoring program but did not generate valid data due to quality control issues. However, at Page F-25: Appendix F, Table 4 (Summary of the Evaluation of the Quality Assurance and Quality Control Measures for Air Monitoring within the Onshore Areas in Proximity to the Proposed Toco Port Facility Project Area) states the data collected were deemed valid for the sample period of July – October 2019 from the Cairsens Caitub. Please confirm the validity of the sampled data collected. If invalid, please also provide baseline ambient air quality data for sulphur dioxide and nitrogen dioxide;
- At Page 4-158, Table 4.2.1.2-5 Baseline Concentration, presents the average concentration and maximum concentration over the monitoring period for each air pollutant and compares the averaging concentration to the maximum permissible levels of the Air Pollution Rules, 2014. The concentration presented as the baseline concentration is the maximum concentration provided in Table 4.2.1.2-3 Toco Port Air Monitoring Results Summary at Page 4-157. Please provide a justification why the maximum results were used to represent the baseline conditions of the proposed project location;
- At Page 4-158, Table 4.2.1.2-5 Baseline Concentration, the comments column for parameters particulate matter  $PM_{2.5}$  and  $PM_{10}$  annual concentration states "Toco measurement; averaging time adjustment factor". Please clarify what adjustment to the averaging time was applied for the  $PM_{2.5}$  and  $PM_{10}$  annual concentration;
- At Page 4-158, Table 4.2.1.2-5 Baseline Concentration, the values presented as the sulphur dioxide and nitrogen dioxide concentrations were identified as Typical Caribbean background concentrations. Please provide a justification for the use of the typical Caribbean as background concentrations instead of the data presented in Appendix F. Additionally please identify and present the sources of the concentrations presented as typical Caribbean background.



Please note that Section 3.2 of the Final ToR states "The data presented shall be representative of the study area. The term representative defines the extent to which a set of measurements taken at a collection site spatially and temporally reflects the actual conditions within the study area".

As such, please provide a detailed justification on the applicability and validity of the baseline air quality presented in the EIA Report. Alternatively, please revise the baseline description for this component, to include a more representative data collection exercise, in accordance with the stipulations of the issued Final ToR. It is recommended that a minimum of two locations, upwind and downwind of the proposed site be included. All deficiencies identified above must be addressed in the revised description.

8. Page 4-158 to 4-152 presents a baseline description of the receiving environment as it relates to noise. The following deficiencies are noted:

- Table 4.2.1.2-6 on Page 4-159 references the 'Trinidad and Tobago Noise Pollution Control Rules, 2000'. Please note the proper reference is the Noise Pollution Control Rules, 2001 (NPCR);
- Page 4-159 failed to consider other sensitive receptors such as terrestrial and aquatic wildlife and as such the sampling stations were limited to two (2) locations in proximity to 'inhabited areas'.

Please provide a revised description of this component of the baseline environment to ensure that it is representative of the study area, as identified in the EIA Report, and is in compliance with Section 3.2 of the Final ToR.

9. Pages 4-172 to 4-190 presents an overview on the receiving baseline coastal environment. However, the information does not represent an adequate assessment of the baseline oceanographic and coastal processes at the site. This assessment should be accompanied by measured data. Please revise this component to ensure that a detailed, site specific description is presented, which should be supported with measured data. The revised description should consider the following deficiencies that have been identified in the information presented:



- (i) Page 4-172 lists numerous bathymetric data sources, however, most of these data sets relate to topographic data which is not relevant to the oceanographic conditions at the site. The Smith & Warner nearshore survey covers an appropriate extent, but it appears the data was only available at a resolution of ~ 2 m contours. This is considered quite coarse. The bathymetric data presented in Figure 4.2.1.4-1, appears better resolved than this, therefore, it is unclear why this was not used. The GEBCO 08 data is the only other bathymetric data set presented and this is very coarse. The LiDAR 1 m resolution data could also be of use for mapping the intertidal / upper shoreline, but details of this data are not presented. No beach profile data is presented for the site and wider area as requested by the Final ToR. Such data should extend seawards to tie in/overlap with the bathymetric data. The bathymetric information is therefore of limited quality. The beach profile data should also be provided seasonally. Please address.
- (ii) For the wider coastal process assessments, it is also important to tie the bathymetric features into the seafloor characteristics, including bed/substrate types. This is also a requirement of the Final ToR. This has not been done and only a very limited number of sediment samples have been taken. Grading information is presented within subsequent sections of Chapter 4. Section 3.4.1 of the EIA Report states a number of cores have been taken as well as completion of a geophysical survey. It is unclear why this information is not presented. No suitable information has been provided to map the seafloor characteristics.
- (iii) The baseline information presented on the sediment transport regime is extremely limited. Very limited information is provided on the distribution of sediment at the site and there is no real discussion on the transport mechanisms at the site and key driving forces that affect the transport regime.
- (iv) At Page 4-179, Section 4.2.1.4 Oceanography, sub-section Sediment Transport Regime, illustrates the sediment sampling points on Figures 4.2.1.4-8 and 4.2.1.4-9 by Smith Warner International and Environmental Services Limited (ESL), respectively. While it is noted that sample data was collected on April 30, 2019, it is uncertain when the sediment samples were taken by Smith Warner. Please provide the timeframe at which these samples were obtained. Additionally, Figure 4.2.1.4-9 illustrates actual and proposed marine sediment sampling locations. Please clarify what the proposed sediment sampling represents as a discussion on this location was not provided.

Further, the contributions of the Orinoco and Amazon Rivers were provided but the local sources of sediment that affect the study area were not discussed.



- (v) At Pages 4-179 to 4-185, grain size data is presented from independent studies by Smith Warner International (SWI) and Environmental Services Limited (ESL). The SWI sediment samples show that sediments become finer further from shore in deeper waters. However, the opposite is seen in the ESL data where the C\_NF sample closer to shore consists of silt and the C\_FF sample further from shore consists of sand. This discrepancy was not addressed in the discussion. Therefore more sediment samples should have been collected to give a better representation of baseline sediment distribution throughout the entire study area. Please address.
- (vi) At Page 4-185, the EIA Report shows a narrow snapshot (1 week) of water levels. Further, no discussion is provided on other factors that affect water levels including storm surges and climate changes. Please address in accordance with the issued Final ToR.
- (vii) At Page 4-186, the rationale for the time frame for the average current speed reported was not provided. Please address.
- (viii) At Pages 4-186 to 4-190, the information in this sub-section on Currents is not referenced or validated with measured data. Confidence cannot be placed in the model results without knowledge of the environment through the measuring of currents. It was mentioned that conditions were observed in 2018; this data should be presented if it was measured. It is strongly recommended that offshore and nearshore currents be measured during the wet and dry season to properly show that the "model was set up to represent a typical wet and dry season". The measured data should be displayed as time series or rose plots in order to easily show conditions within the study area.
- (ix) Page 4-190 (and repeated at Page D-108 of the Coastal Dynamics Modelling Report) states, "It should be noted that the coastal processes do not vary significantly from one year to the other, but the freshwater flows entering the coastal waters may experience increasingly high and low conditions such as a drought year." This statement should be revised to properly define which coastal processes do not vary significantly from one year to the other. Waves certainly change from year to year. Also please explain what is meant by "high and low conditions such as a drought year."





10. At Page 4-192, sub-section Water Quality, it states "salinity ranges from 15 % in the wet season and 34 % in the dry season (Water Resources Agency National Report, 2001)". While this reference was not listed in Chapter 8, a copy of the National Report on Integrating the Management of Watersheds and Coastal Areas in Trinidad and Tobago, prepared by the Water Resources Agency for The Ministry of the Environment, March 2001, was acquired. At Page 95, Section Data Collection of the report states "...wind direction, salinity and temperature data are also available from the Meteorological Office and from the IMA. Observations from data collected in 1961 indicate that average sea surface temperature ranges from 26.5 °C in the dry season to 28 °C in the wet season. Salinity ranges from 15 % in the wet season to 34 % in the dry season". Given that water quality sampling was conducted at the Grand L'Anse Bay, please provide an explanation why in situ measurements of salinity was not taken to give up to date representation of the study area and reliance was placed on data almost 60 years old.
11. At Page 4-193, Section 4.2.1.4 Oceanography, sub-section 'Water Quality' it states that the sampling regime for the study was under taken during the period April 30, 2019 and June 11, 2019 to demonstrate seasonal variation (wet and dry season variability). However, the Final ToR, Bullet (e) of Section 3.5.1.2 Oceanography, Coastal Processes and Surface Water Quality stipulates that wet season and dry season samples analysis shall be conducted at least 4-6 months apart. Please provide an explanation as to why the timeframe of the samples were not in compliance with the requirements of the Final ToR. Additionally, given the non-compliance of the sample timeframe, please provide supporting evidence (historical or otherwise) that these samples represent seasonal variation. Alternatively, please revise the baseline description for this component in compliance with the Final ToR.
12. Further to the above question, Bullet (e) of Section 3.5.1.2 of the Final ToR also itemises the water quality parameters to be analysed for freshwater, estuarine and marine environments. From Pages 4-193 to 4-198, the following deficiencies were identified and require clarification or addressing:
  - (i) No data was provided for dissolved oxygen, pH, ammoniacal nitrogen, chemical oxygen demand and chlorophyll 'a', which were a requirement of the aforementioned section of the ToR;
  - (ii) Freshwater samples were not collected and analysed from the study area;
  - (iii) There was little or no data interpretation on the water quality;
  - (iv) The text on Page 4-197 lists chromium, lead and mercury as being above the detectable limits, however, Table 4.2.1.4-3 on Page 4-198 shows chromium, arsenic and mercury as being above the detectable limit;
  - (v) No rationale was provided for inclusion of 'proposed sampling stations' in Figure 4.2.1.4-20 on Page 4-195.

Please provide an explanation of why the requirements of the Final ToR were not met. In accordance with the Final ToR, an exhaustive list of all the parameters sampled must be provided and the results compared to relevant local (the WPR, 2019) or international standards (e.g. USEPA, CCME) with an assessment provided if there were any exceedances. Additionally the discussion must compare the wet to the dry season baseline sample data and provide an explanation of the analysis. Please provide.

13. At Page 4-197, Section 4.2.1.4 Oceanography, sub-section 'Water Quality' it states "the analysis tested 40 parameters, of which 33 were determined to be below detectable limits during the wet and dry seasons." Please provide the information for the 33 parameters below detectable limits along with a list of test equipment and their detectable limits.
14. At Pages 4-198 to 4-203 measured wave data within the study area was not provided, specifically in the offshore and the nearshore areas. The natural transformation of the waves from offshore to nearshore should be properly represented and illustrated through time series or rose plots. Further, measured data within the study area is important to represent the natural environment and validate the models used. Please address.
15. At Page 4-199, it states that the wave heights as a result of tropical storms and hurricanes passing within 300, 400, 500 km of the site show no significant difference and therefore impacts. However, tropical storms and hurricanes have passed ~50 km away (Hurricane Flora, Figure 4.2.1.4-22) and as such, deserve a separate assessment. In addition, four (4) tropical storms and hurricanes have passed within 100 km of Toco in the last twenty (20) years (NOAA National Hurricane Centre). In this regard, the impact of storms 200 km, 100 km or 50 km from the development should be included. Please address.
16. At Page 4-222 states that a flood susceptibility map was generated using Multi-Factor Modelling. Please clarify whether the model considered the cumulative impacts of tides (extreme high and low and storm surge).



17. Pages 4-227 to 4-229, under Section 4.2.1.7 Climate Change, makes reference to climate change data, projections and scenarios in a general and academic manner. The section states "the future climate change variables projected for the Republic of Trinidad and Tobago are summarised and a qualitative assessment is made of climate change impacts to the project site and surrounding area". However, it fails to provide any information on projected rainfall (precipitation) for Trinidad and Tobago; as well as any information on hurricanes and storm surges, or likely potential impacts in the Toco area from these. The opening paragraph of this section states Trinidad and Tobago is a Small Island Developing State (SIDS) and is particularly vulnerable to the consequences to climate change. The proposed project is to be situated in an area that is already exposed to indicators of climate change impacts and the climate stressor, sea-level rise. However, the EIA Report does not suggest any detailed sustainable and suitable climate adaptation responses to reduce the impacts from very likely increases in tropical storms/hurricane and associated storm surge, sea level rise, and high winds and flooding associated with extreme weather events.
18. Given the location of the proposed port on a coastal zone and the need for coastal protection structures, it would be counterproductive not to address climate change in a more detailed and thorough approach. Additionally, areas within the project area that stand to be affected by impending climate change impacts should be illustrated on a map. As such, please address.
19. At Section 4.3.1 – Biological Assessment: Marine (Pages 4-230 to 4-275), it is noted that sampling has been limited to the footprint of the port. Most of the biodiversity assessments were done in the intertidal and littoral zones/surf zone, while large sections of the bay were under explored. This is in stark contrast to the area over which the terrestrial surveys were conducted, as was illustrated in Figure 4.3.1-1: Locations of the Marine Biological Field Survey Transects and drop Camera Locations in Grande l'Anse Bay at Page 4-231, and Figure 4.3.4.1-1 – Area of Influence for Terrestrial Biodiversity at Page 4-277. Given the sightings of some significant species nearby such as but not limited to, finger coral, fire coral, star coral, and zoanthid, including the presence of sea turtle nests – a migratory species, the limited extent of the marine survey is considered to be a serious shortcoming of the EIA as it will prevent an accurate assessment of possible impacts in an area where environmentally sensitive species (ESSs) reside and migrate to annually. It does not acknowledge the movement of vessels in and out the area and animals such as sea turtles and fishes that move throughout the wider area.



The study area should be defined in similar detail to the terrestrial environment and should encompass all areas that may be impacted by proposed activities. As a specific example of the discrepancy in treatment between the marine survey and the terrestrial survey, the EIA Report focused more than 30 pages on bird species results. While documenting the birds to that extent is important for the avifauna, it highlights the fact that other important migratory ESS and other valuable marine species did not enjoy that level of investigation and may therefore have been missed in the surveys. Further, the spatiotemporal coverage of these surveys is not considered sufficiently rigorous for the purposes of providing representative baseline information in support of the assessment. The areas that could be impacted further offshore or in the dredge areas should be surveyed (i.e. wider study area). Additionally, the underlying data and sampling regime is not sufficiently robust for the purposes of supporting this assessment. A more comprehensive sampling regime should be designed by the Applicant to fill in the gaps and the statistical analyses re-run.

In this regard, the Applicant is reminded that the biological environment, in particular the biological marine environment, shall include any migratory species and endangered/protected species (e.g. marine turtles), highlighting the dependence of the species identified on the marine and/or coastal environments. In addition, please provide a revised description of the marine biological environment to include the nearshore coastal vegetation (e.g. mangroves and seagrass beds), areas of spawning grounds/nurseries, fish habitats or feeding grounds, turtle nesting sites, foraging grounds and inter-nesting habitats, staging and high tide roost sites for resident and migratory avian species, as well as coral and octocoral communities and species or ecosystems vulnerable to natural hazard or climate change impacts, as was stipulated in the Final ToR. The location of environmentally sensitive species and areas and/or sensitive habitats must also be mapped in relation to the proposed study area. The revised characterisation of this component should take into account the following specific deficiencies and amend where such information will be utilised in the revised assessment:

- (i) Page 4-230 Section 4.3 states, "...the waters surrounding the island are influenced by freshwater from the Amazon and Orinoco rivers. This discharge creates imperfect conditions for coral reef growth and habitat (Belford and Phillip 2011)" (4.3.1) is improperly cited. The proper citation is from Mallela and Harrod 2008, which states that freshwater causes seasonal fluctuations of salinity and turbidity.
- (ii) At Page 4-233 the marine-ecology survey methodologies used in the EIA are limited to the intertidal zone and shallow margins of the surf zone. Therefore, the studies are insufficient to describe the benthic communities. Please revise the methodologies to include the full depth range of the bay and surrounding areas that may be impacted by the development. Please address.



- (iii) Page 4-234 Section 4.1.3 entitled *Marine Bird Survey* states that, "Marine bird surveys were performed three mornings during the April field survey period, to correspond with the terrestrial bird surveys occurring at the same time. September field survey period, marine bird surveys were performed on two of the mornings during the same time period." Please explain the difference in sampling periods for April and September.
- (iv) At Page 4-235 Section 4.3.2.2, reference is made to Belford and Phillip (2011), but there are other studies which provide more specific details on species distribution and biodiversity at Grande L'Anse and Salybia Bay Reefs. Please note that the study by Belford et al. 2019 highlights the Line and Point method using a 50-meter polyvinyl measuring tape with benthic records taken at 0.5-meter intervals, which provides a more detailed survey. As such please review the following and revise accordingly:
- Belford SG. 2020. Spatial abundance and colour morphotype densities of the rock boring sea urchin (*Echinometra lucunter*) at two different habitats. *Thalassas: An international Journal of Marine Sciences* 36: 157-164;
  - Belford SG, Phillip DAT, Rutherford MG, Schmidt RS, Duncan EJ. 2019. Biodiversity of coral reef communities in marginal environments along the north-eastern coast of Trinidad, southern Caribbean. *Progress in Aqua Farming and Marine Biology* 2(1): 180017;
  - Belford SG, Phillip DAT. 2012. Intertidal distribution patterns of zoanths compared to their scleractinian counterparts in the southern Caribbean. *International Journal of Oceanography and Marine Ecological System* 1 3: 67-75;
  - Belford SG. 2007. Analysis of coral distribution and coral symbionts in a patch reef and fringing reef in the southern Caribbean. M.Sc. Thesis, Murfreesboro (TN): Middle Tennessee State University. 57 pages.
- (v) Page 4-235, Section 4.3.2. Previous Studies, lists the Sea Bridge Team 1990 as a previous study which did not conduct any environmental studies but relied on the 1988 study conducted by the IMA. Within the IMA Report (1988) it states that there were limitations on the studies due to the short timeframe of two weeks and two site visits to the proposed sites. As such, to mention these studies under this section and to state that their conclusion is that the Grande L'Anse Bay does not possess critical marine habitat is misleading to the reader. Additional literature on the importance of coral reef and benthic communities is required to demonstrate their ecological function (i.e. habitat provider and ecosystem services).



- (vi) Page 4-236 Section 4.3.2 entitled "Previous Studies" includes previous studies from 1988, 2011, 2017. Section 4.3.2.4 stated "the Trinidad and Tobago Field Naturalists' Club (TTFNC) held a bioblitz event on May 11, 2011, in which amateur naturalists go into the field and count all the species observed. This event occurred at Salybia Beach, approximately 2 km east of Grande l'Anse Bay and the Project location. Generally, the surveys were opportunistic, involving walking or snorkeling along the reef and recording the species observed." Please justify how these rapid assessment studies are representative of the existing study area.

In addition, the TTFNC Toco Bioblitz was conducted in November 2018. The Bioblitz included surveys conducted at various locations, including Grand L'Anse Bay. The data referenced in this EIA Report, Table 4.3.2.4-1 is not from the 2018 Bioblitz but is from a 2011 field trip (not a Bioblitz event). Please revise the citation to reflect the correct sampling date.

- (vii) Page 4-239, Table 4.3.2.5-1, states Blue spotted angelfish (*Chaetodontoplus caeruleopunctatus*). This species is indigenous to the Western Pacific Ocean. As such, please clarify whether the identification is accurate and provide supporting evidence.
- (viii) At Page 4-239, the survey recorded a "high species richness in the Phylum Porifera" which comprises sponge species. However, the same study only reported four sponge species which is not considered a particularly high species richness. It appears that this is an error and reference to Table 4.3.2.7-1 on Page 4-240 suggests that the high species richness is in the Phylum Cnidaria. Please clarify.
- (ix) At Page 4-242, the EIA Report comments on the absence of IUCN endangered species (*Montastrea annularis* and *Montastrea faveolata*, which are important reef builders) in previous literature (Belford et al., 2019). However, most of the previous biodiversity surveys were only carried out along the reef flat and intertidal zones where *Montastrea* species do not naturally occur (*M. annularis* more commonly occurs between 8-20 m). Furthermore, IMA (1988) does mention the presence of *M. annularis* at 8 m. Please include the above-mentioned and a broader and deeper (to a minimum 20 m depth) exploration of the bay and eastern rocky margins.
- (x) At Page 4-244 Table 4.3.3.1-1 lists the Blacktip Reef Shark (*Carcharhinus melanopterus*) which is indigenous to the Indian and Pacific Oceans only. Please clarify whether the species identification is accurate and provide supporting evidence.
- (xi) At Page 4-242, Section 4.3.3.1 Benthic Community, the benthic ecology section and the sampling conducted are inadequate. Please explain why only 37 benthic invertebrates were described, with only one polychaete species belong to the Amphinomididae family and no amphipods.



The sampling methodology of using quadrats and drop camera is inadequate as this will only sample benthic epifauna and not infauna, which is reflected in the results in Table 4.3.3.1-1 titled "Benthic algae, invertebrate, fish and reptiles observed species from Grande L'Anse Bay, by field season" at Page 4-242. To appropriately sample benthic infauna and given the sediment composition of the Toco area, it would have been more appropriate to use benthic cores or grabs for the sandy and soft bottom areas, depending on the depths. As for the hard bottom reef areas, Artificial Substrate Units described by Gobin (2010) would have been appropriate.

As it has been presented, this section does not sufficiently and adequately describe the benthic environment. Please address.

- (xii) First paragraph at Page 4-244 of Section 4.3.3.1 Benthic Community, an analysis of the results for the survey of the benthic community in the dry season, with respect to species groups, was provided. However, the raw data to support this analysis was not provided. Please provide the raw data, inclusive of species groups, for the benthic community survey, per sample station (dry season) and a description of the statistical analyses, which was not conducted.
- (xiii) The second paragraph at Page 4-244 of Section 4.3.3.1 Benthic Community, states that the "highest average percent cover across the transects in the April (dry season) baseline study was bare rock or sand." However, the remaining substrate composition (e.g. mud, sand/mud, sand/rock, etc.) remains unclear. Please provide the substrate raw data for the dry season transects and the supporting analysis.
- (xiv) At Page 4-249, Section 4.3.3.1 sub-section Wet Season – September 2019, the second paragraph states, "A total of 25 benthic invertebrate species were identified..." However, the table only lists 22 species. Please clarify the number of species identified during the wet season sampling and provide the supporting raw data.
- (xv) At the same Page and section mentioned above (Section 4.3.3.1), in the third paragraph, an analysis of the results for the survey of the benthic community during the wet season, with respect to species groups, was provided. However, the raw data to support the analysis was not provided. Please provide the raw data, including species groups, for the benthic community survey, per sample station (wet season) and a description of the statistical analyses which was conducted.



- (xvi) At Page 4-249 and Section 4.3.3.1 sub-section Wet Season – September 2019, paragraph 4, it states “The highest average percent cover across the transects in the September (wet season) baseline study was bare rock or sand, followed by white encrusting zooanthid and great star coral (Figure 4.3.3.1-3).” However, the remaining substrate composition (e.g. mud, sand/mud, sand/rock) remains unclear. Additionally, Figure 4.3.3.1-3 depicts the “distance from shore” data which does not correlate. As such please provide the substrate raw data for the wet season transects and the supporting analysis as well as amend Figure 4.3.3.1-3 to depict seasonal data.
- (xvii) At Page 4-249, paragraph 5, it states “At 20-50 m from shore, crustose coralline algae and coral rubble were the next most commonly observed species, respectively.” However, the figure illustrates that the White encrusting zooanthid, not the coral rubble, is the 3rd most common. Please revise the analysis accordingly.
- (xviii) At Page 4-251, Table 4.3.3.1-3 indicates that 19 species were observed in the dry season and 21 species were observed when both seasons were combined. However, Figure 4.3.3.1-1 illustrates that 16 species were observed in the dry season and 18 species observed when combined (wet and dry season). Please confirm the number of species observed in the dry season and combined. The raw data to support the analyses must also be provided.
- (xix) At Page 4-251, the statistical analyses conducted for evenness and Shannon-Weiner Index cannot be validated in the absence of raw data (i.e. species, number of individuals observed, per species, etc.). Please provide the raw data for the wet and dry season surveys.

In addition, it should be definitively stated that the species diversity and evenness included represent only the shallow benthic habitat (<3 m depth) of the bay.

- (xx) At Pages 4-252 to 4-256, insufficient sampling for ichthyofauna was conducted. The following were noted:
- This section does not describe the species abundance or composition of fish assemblages in the area;
  - Fish surveys were not conducted due to environmental challenges;
  - Attempts to draw conclusions from the sparse literature was inadequate;
  - The possible function of the study site as a fish nursery area was not examined.

In this regards, please provide a revised assessment.





- (xxi) Page 4-252 states that the diversity and composition of the fish assemblage at Grande L'Anse Bay would be similar to Trinidad as a whole. However, the study area is a very specific reef environment which is uncharacteristic of Trinidad. One would expect the fish composition to be different from the other habitat types around Trinidad e.g., the muddy substrate found in the Gulf of Paria or the rocky substrate along parts of the east coast. Therefore the paragraphs on Sciaenidae, Serranidae, and Gobiidae do not provide an accurate description of fish assemblages in Grande L'Anse Bay. As such, please provide more thorough surveys and revise the assessment accordingly.
- (xxii) At Page 4-252, Section 4.3.3.3 Fish, it states, "gobies are likely the most abundant family in the Grande L'Anse Bay". However, without the raw data from the surveys, the statement cannot be validated. Please provide the raw data for the wet and dry season.
- (xxiii) At Page 4-253, Section 4.3.3.3, sub-section Serranidae, the third paragraph states, "No fish in this family were observed during the April or September 2019 baseline field observations." However, Paragraph 2 of the subsection entitled "Dry Season – April 2019" indicates that one (1) individual from the family Serranidae was observed. Please clarify the information.
- (xxiv) At Page 4-254 states "*However, of those listed as vulnerable, endangered or critically endangered, none were observed in field efforts in Grande L'Anse Bay in April or September*". However, fish surveys were not conducted and as many of these species are not benthic, it is unlikely they would have been observed during benthic surveys. Additionally, due to issues with visibility during the benthic surveys, it is clear that there is little knowledge of what fish species inhabit the area and therefore which may be most impacted by this development. In this regard please revise the assessment.
- (xxv) At Page 4-255 states that "*Other small fish were observed in the water, but were unable to be observed due to poor visibility*". Very often, hard-bottom substrates and inshore coral reefs serve as a nursery area for fish, especially commercially-exploited species. This ecosystem service is mentioned on Page 4-106. However, no attempt was made to investigate this possible function of the area. As such please provide further detail about the afore-mentioned ecosystem, service.
- (xxvi) Pages 4-256 to 4-257, under section 4.3.3.4 Sea Turtles, migratory patterns, and not just the nesting sites, of sea turtles should be provided in relation to the proposed port location and activities. It is noted that more details are provided in later sections, but it should also be highlighted within this section. Please address.



- (xxvii) At Page 4-260, Table 4.3.3.4-1 titled "Turtle nests and locations (coordinates) for Site 1, Mission Beach" identifies 11 locations. However, on Page 4-262, Figure 4.3.3.4-1 labelled "Sea turtle nest locations in Mission Beach" only illustrates 10 locations. Please clarify.
- (xxviii) At Pages 4-256 to 4-264, the information on sea turtles is deficient. It fails to make use of important and relevant literature and overall presents an inaccurate assessment of sea turtles around Trinidad and Tobago and in the vicinity of Grande L'Anse Bay in particular. Some recommended literature that should be referenced includes Eckert, 2006; Eckert and Eckert, 2019; Northwest Atlantic Leatherback Working Group, 2018; Northwest Atlantic Leatherback Working Group, 2019. Please address.
- (xxix) Pages 4-264 to 4-268 suggests that three marine-mammal species are the only species recorded within five (5) kilometres of the proposed project site, based on a reference to <https://ibat-alliance.org/>. This is not a reliable resource and should not be used to narrow focus to these three species and take attention away from the many more species that may be found in the area. Please address.
- (xxx) At Page 4-270, Section 4.3.3.6 Seabirds, it states "...there are two Important Bird Areas (IBA) for seabirds located on the north coast of Tobago..." However, there is also a terrestrial IBA (Main Ridge), which is closer to the project site than the coastal IBA's. Further, there are four (4) IBA's in Trinidad, one (1) of whose boundaries lies close to the project site, the Northern Range. The description should be revised to ensure that the most appropriate IBA's are referenced.
- (xxxii) Page 4-270 Section 4.3.3.6 Seabirds, sub-section Dry Season – April 2019 provides an analysis of the survey data. However, the information cannot be validated without the raw data. Please provide the dry season raw data for this survey data.
- (xxxiii) Page 4-272 Section 4.3.3.6 Seabirds, sub-section Wet Season – September 2019 provides an analysis of the survey data. However, the information cannot be validated without the raw data. Please provide the wet season raw data for this survey data.
- (xxxiiii) Page 4-275 Section 4.3.3.8 Marine Environment Conclusions states that Grande L'Anse Bay has "imperfect conditions for coral reef growth and habitat (Belford and Phillip 2011)." However, this statement was not made in the cited reference document. As such, please remove this citation

