



# TRINIDAD AND TOBAGO: TT-L1055: NATIONAL WATER SECTOR TRANSFORMATION PROGRAM

## **ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

Date: October 4, 2022

Prepared by:

Environmental Solutions Ltd.  
7 Hillview Avenue  
Kingston 10



Prepared for:

Nicolas Bujak  
Inter-American Development Bank  
1300 New York Avenue,  
N.W. Washington, D.C.  
20577, USA

**PROPRIETARY RESTRICTION NOTICE**

This document contains information proprietary to Environmental Solutions Ltd. and shall not be reproduced or transferred to other documents, or disclosed to others, or used for any purpose other than that for which it is furnished without the prior written permission of Environmental Solutions Limited.

All rights reserved. Environmental Solutions Ltd. ©

## ACKNOWLEDGEMENTS

This document is an output from the Inter-American Development Bank's (IDB) funded Trinidad And Tobago: TT-L1055: National Water Sector Transformation Program Program. It represents the *Environmental and Social Management Plan for Trinidad and Tobago*.

Environmental Solutions Limited would like to thank the project team who worked in conducting this assessment. In particular, special thanks to Dr. Theresa Rodriguez-Moodie, Team Leader and Environmental Management Specialist; Mrs. Annmarie Goulbourne, Project Manager and Environmental and Social Specialist; Mr. Ian Gage, Water and Sanitation Engineer; Dr. Fredericka Deare, Social and Gender Specialist; Mrs. Marilyn Crichlow, Water Resources Specialist; and Mr. Richard Coutou, Geologist.

Environmental Solutions Limited would also like to thank all the persons who contributed to the preparation of this assessment in various ways. In particular special thanks to the Ministry of Public Utilities and the Water and Sewerage Authority who were particularly helpful.

## TABLE OF CONTENTS

<b>ACKNOWLEDGEMENTS .....</b>	<b>3</b>
<b>LIST OF FIGURES.....</b>	<b>8</b>
<b>LIST OF TABLES .....</b>	<b>8</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>10</b>
<b>1 INTRODUCTION .....</b>	<b>14</b>
1.1 PURPOSE .....	14
1.2 PROJECT DESCRIPTION .....	15
1.3 THE CONSULTANT'S MANDATE .....	18
1.4 THE STUDY AREA .....	20
1.5 ANALYSIS OF ALTERNATIVES .....	23
1.5.1 <i>The No Project/ No Action Alternative</i> .....	23
1.5.2 <i>Alternative Project</i> .....	23
1.6 LIMITATIONS .....	23
1.7 ORGANIZATION OF THE REPORT .....	24
<b>ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN.....</b>	<b>26</b>
<b>SECTION 1.....</b>	<b>26</b>
<b>2 POLICY, LEGAL AND REGULATORY FRAMEWORK.....</b>	<b>27</b>
2.1 REVIEW OF RELEVANT LEGISLATION, REGULATION AND POLICY .....	27
2.1.1 <i>Policy and Plans</i> .....	27
2.1.2 <i>Legislation and Regulations</i> .....	29
2.1.3 <i>International Treaties and Protocols</i> .....	31
2.2 RELEVANT IDB ENVIRONMENTAL AND SOCIAL SAFEGUARDS .....	31
<b>3 IDENTIFICATION OF MITIGATION MEASURES AND THE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN.....</b>	<b>34</b>
3.1 KEY ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION .....	34
3.1.1 <i>Construction Phase</i> .....	34
3.1.2 <i>Operations Phase</i> .....	35
<b>4 ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT PLAN.....</b>	<b>36</b>
4.1 AIR QUALITY MANAGEMENT.....	36
4.1.1 <i>Monitoring Standards</i> .....	36
4.1.2 <i>Monitoring Equipment and Stations</i> .....	37
4.1.3 <i>Monitoring Frequency</i> .....	37
4.1.4 <i>Management and Mitigation Measures</i> .....	37
4.1.5 <i>Key Performance Indicators</i> .....	38
4.1.6 <i>Roles and Responsibilities</i> .....	39
4.1.7 <i>Data Analysis and Reporting</i> .....	39
4.2 NOISE MANAGEMENT .....	39
4.2.1 <i>Monitoring Standards</i> .....	39
4.2.2 <i>Monitoring Equipment and Stations</i> .....	41
4.2.3 <i>Monitoring Frequency</i> .....	41
4.2.4 <i>Management and Mitigation Measures</i> .....	41
4.2.5 <i>Key Performance Indicators</i> .....	41
4.2.6 <i>Roles and Responsibilities</i> .....	42

4.2.7	Data Analysis and Reporting.....	42
4.3	WASTE MANAGEMENT .....	42
4.3.1	Monitoring Frequency.....	43
4.3.2	Management and Mitigation Measures .....	43
4.3.3	Key Performance Indicators .....	44
4.3.4	Roles and Responsibilities .....	45
4.3.5	Data Analysis and Reporting.....	45
4.4	TRAFFIC MANAGEMENT .....	45
4.4.1	Monitoring Standards.....	45
4.4.2	Monitoring Frequency.....	45
4.4.3	Management and Mitigation Measures .....	45
4.4.4	Key Performance Indicators .....	46
4.4.5	Roles and Responsibilities .....	46
4.4.6	Data Analysis and Reporting.....	46
4.5	WORKER HEALTH AND SAFETY MANAGEMENT.....	46
4.5.1	Monitoring Frequency.....	46
4.5.2	Management and Mitigation Measures .....	46
4.5.3	Key Performance Indicators .....	48
4.5.4	Roles and Responsibilities .....	48
4.5.5	Data Analysis and Reporting.....	48
4.6	COMMUNITY HEALTH AND SAFETY MANAGEMENT .....	48
4.6.1	Monitoring Frequency.....	48
4.6.2	Management and Mitigation Measures .....	48
4.6.3	Key Performance Indicators .....	49
4.6.4	Roles and Responsibilities .....	50
4.6.5	Data Analysis and Reporting.....	50
4.7	WATER QUALITY MANAGEMENT - LANDSLIDE AND EROSION CONTROL .....	51
4.7.1	Monitoring Standards.....	51
4.7.2	Monitoring Frequency.....	52
4.7.3	Management and Mitigation Measures .....	52
4.7.4	Key Performance Indicators .....	53
4.7.5	Roles and Responsibilities .....	53
4.7.6	Data Analysis and Reporting.....	53
4.8	MANAGEMENT OF ACCESS TO COMMUNITIES .....	53
4.8.1	Monitoring Standards.....	53
4.8.2	Monitoring Frequency.....	53
4.8.3	Management and Mitigation Measures .....	53
4.8.4	Key Performance Indicators .....	54
4.8.5	Roles and Responsibilities .....	54
4.8.6	Data Analysis and Reporting.....	54
4.9	EMERGENCY RESPONSE MANAGEMENT .....	54
4.9.1	Monitoring Standards.....	54
4.9.2	Monitoring Frequency.....	54
4.9.3	Management and Mitigation Measures .....	54
4.9.4	Key Performance Indicators .....	55
4.9.5	Roles and Responsibilities .....	56
4.9.6	Data Analysis and Reporting.....	56
4.10	FLORA AND FAUNAL MANAGEMENT .....	56
4.10.1	Monitoring Standards.....	56
4.10.2	Monitoring Frequency .....	56
4.10.3	Management and Mitigation Measures .....	56
4.10.4	Key Performance Indicators.....	57
4.10.5	Roles and Responsibilities.....	57

4.10.6	<i>Data Analysis and Reporting</i> .....	58
<b>5</b>	<b>SOCIAL MANAGEMENT PLAN</b> .....	<b>59</b>
5.1	SOCIAL CONFLICT MANAGEMENT .....	59
5.1.1	<i>Monitoring Standards</i> .....	59
5.1.2	<i>Monitoring Frequency</i> .....	59
5.1.3	<i>Management and Mitigation Measures</i> .....	59
5.1.4	<i>Key Performance Indicators</i> .....	59
5.1.5	<i>Roles and Responsibilities</i> .....	59
5.1.6	<i>Data Analysis and Reporting</i> .....	59
5.2	MANAGEMENT OF INSTALLATION OF HOUSEHOLD METERING STATIONS .....	59
5.2.1	<i>Monitoring Standards</i> .....	59
5.2.2	<i>Monitoring Frequency</i> .....	59
5.2.3	<i>Management and Mitigation Measures</i> .....	60
5.2.4	<i>Key Performance Indicators</i> .....	60
5.2.5	<i>Roles and Responsibilities</i> .....	60
5.2.6	<i>Data Analysis and Reporting</i> .....	60
5.3	UNDER-REPRESENTATION OF WOMEN IN THE PROJECT WORKFORCE .....	61
5.3.1	<i>Monitoring Standards</i> .....	61
5.3.2	<i>Monitoring Frequency</i> .....	61
5.3.3	<i>Management and Mitigation Measures</i> .....	61
5.3.4	<i>Key Performance Indicators</i> .....	61
5.3.5	<i>Roles and Responsibilities</i> .....	62
5.3.6	<i>Data Analysis and Reporting</i> .....	62
5.4	INSTITUTIONAL CONFLICT MANAGEMENT .....	62
5.4.1	<i>Monitoring Standards</i> .....	62
5.4.2	<i>Monitoring Frequency</i> .....	62
5.4.3	<i>Management and Mitigation Measures</i> .....	62
5.4.4	<i>Key Performance Indicators</i> .....	62
5.4.5	<i>Roles and Responsibilities</i> .....	62
5.4.6	<i>Data Analysis and Reporting</i> .....	62
5.5	WATER SUPPLY MANAGEMENT .....	63
5.5.1	<i>Monitoring Standards</i> .....	63
5.5.2	<i>Monitoring Frequency</i> .....	63
5.5.3	<i>Management and Mitigation Measures</i> .....	63
5.5.4	<i>Key Performance Indicators</i> .....	63
5.5.5	<i>Roles and Responsibilities</i> .....	63
5.5.6	<i>Data Analysis and Reporting</i> .....	63
5.6	DAMAGE TO PROPERTY MANAGEMENT .....	63
5.6.1	<i>Monitoring Standards</i> .....	63
5.6.2	<i>Monitoring Frequency</i> .....	63
5.6.3	<i>Management and Mitigation Measures</i> .....	64
5.6.4	<i>Key Performance Indicators</i> .....	64
5.6.5	<i>Roles and Responsibilities</i> .....	64
5.6.6	<i>Data Analysis and Reporting</i> .....	64
<b>6</b>	<b>SECURITY MANAGEMENT PLAN</b> .....	<b>64</b>
6.1	MONITORING STANDARDS .....	64
6.2	MONITORING FREQUENCY .....	64
6.3	MANAGEMENT AND MITIGATION MEASURES .....	65
6.4	KEY PERFORMANCE INDICATORS .....	65
6.5	ROLES AND RESPONSIBILITIES .....	65
6.6	DATA ANALYSIS AND REPORTING .....	66

<b>7</b>	<b>CONTRACTOR MANAGEMENT PLAN .....</b>	<b>66</b>
7.1	MONITORING STANDARDS .....	66
7.2	MONITORING FREQUENCY .....	66
7.3	MANAGEMENT AND MITIGATION MEASURES .....	66
7.3.1	<i>Key Performance Indicators</i> .....	67
7.3.2	<i>Roles and Responsibilities</i> .....	68
7.3.3	<i>Data Analysis and Reporting</i> .....	68
<b>8</b>	<b>LIVELIHOOD PROTECTION PLAN .....</b>	<b>68</b>
8.1	MONITORING STANDARDS .....	68
8.2	MONITORING FREQUENCY .....	68
8.3	MANAGEMENT AND MITIGATION MEASURES .....	68
8.3.1	<i>Key Performance Indicators</i> .....	68
8.3.2	<i>Roles and Responsibilities</i> .....	69
8.3.3	<i>Data Analysis and Reporting</i> .....	69
<b>9</b>	<b>SUMMARY OF MONITORING FREQUENCY .....</b>	<b>70</b>
<b>SECTION 2 .....</b>		<b>71</b>
<b>CONSULTATION AND PARTICIPATORY STRATEGY AND GRIEVANCE MECHANISM .....</b>		<b>71</b>
<b>10</b>	<b>CONSULTATION AND PARTICIPATORY STRATEGY .....</b>	<b>72</b>
10.1	STAKEHOLDER IDENTIFICATION, MAPPING AND ENGAGEMENT STRATEGY .....	72
10.1.1	<i>Stakeholder Identification</i> .....	72
10.1.2	<i>Stakeholder Analysis and Engagement Strategies</i> .....	74
10.2	CONSULTATION SCHEDULE AND METHOD OF COMMUNICATION .....	79
10.2.1	<i>Pre-Construction Phase</i> .....	79
10.2.2	<i>Construction</i> .....	80
10.2.3	<i>Operation Phase</i> .....	81
10.2.4	<i>Reporting</i> .....	81
<b>11</b>	<b>GRIEVANCE MECHANISM .....</b>	<b>82</b>
11.1.1	<i>Grievance Collection Form</i> .....	84
11.1.2	<i>Grievance Monitoring Form</i> .....	86



## List of Figures

Figure 1-1: The Study Area -Trinidad and Tobago (Data Source: ESRI Living Atlas) .....	21
Figure 1-2: The project area and population densities across Trinidad and Tobago (modified from Trinidad and Tobago 2011 population and Housing Census Demographic Report) (CSO, 2012).....	22
Figure 4-1: Ambient Water Quality Standards Extracted from the Water Pollution Rules, 2019 .....	51
Figure 10-1: Stakeholder Priority Mapping.....	73
Figure 10-2: Stakeholder Mapping Results and Strategy for Engagement.....	75
Table 10.3: Stakeholder Consultations during any construction phase under the Project. ....	80

## List of Tables

Table 1-1: Description of the Phases in the Action Plan .....	<b>Error! Bookmark not defined.</b>
Table 1-2: Programme Components and Budget - Phase 1.....	16
Table 1-3: Population change from 2000 – 2011 of the municipalities and parishes in the project area (modified from Trinidad and Tobago 2011 population and Housing Census Demographic Report)(CSO, 2012). ....	22
Table 2-1: Relevant Policies and Plans.....	27
Table 2-2: Relevant legislation and regulations.....	29
Table 2-3: IDB Operational Policies.....	32
Table 4-1: Air Quality Standards Extracted from the Air Pollution Rules, 2014 .....	37
Table 4-2: Key performance Indicators for Air Quality Management .....	38
Table 4-3: Noise Standards Extracted from the Air Pollution Rules, 2014 .....	39
Table 4-4: Key Performance Indicators for Noise Management .....	41
Table 4-5: Key Performance Indicators for Waste Management .....	44
Table 4-6: Key Performance Indicators for Traffic Management .....	46
Table 4-7: Key Performance Indicators for Worker Health and Safety .....	48
Table 4-8: Key Performance Indicators for Worker Health and Safety .....	50
Table 4-9: Key Performance Indicators for Water Quality Management.....	53
Table 4-10: Key Performance Indicators for Management of Access to Communities.....	54
Table 4-11: Key Performance Indicators for Management of Emergency Response .....	55
Table 4-12: Key Performance Indicators for Management of Flora and Fauna .....	57
Table 5-1: Key Performance Indicators for Management of Social Conflict.....	59
Table 5-2: Key Performance Indicators for Management of Installation of Household Metering Stations .....	60
Table 5-3: Key Performance Indicators for Management of Under-representation of Women in Project Works .....	61
Table 5-4: Key Performance Indicators for Management of Institutional Conflict .....	62
Table 5-5: Key Performance Indicators for Management of Disruption in Water Supply.....	63
Table 5-6: Key Performance Indicators for Management of Property Damage .....	64
Table 6-1: Key Performance Indicators for Security Management.....	65
Table 7-1: Key Performance Indicators for Management of Contractors .....	67
Table 8-1: Key Performance Indicators for Management of Access to Communities.....	69
Table 10-1: Stakeholder Listing and Mapping .....	76
Table 10-2: Proposed Pre-Construction Consultation Schedule.....	79
Table 11-1: Methods for Grievance Receipt, from Least to most formal.....	82





## EXECUTIVE SUMMARY

The purpose of the National Water Sector Transformation Program TT-L1055 in Trinidad and Tobago is to improve the efficiency and quality of potable water and services in Trinidad and Tobago. The GoRTT has sought funding from the Inter-American Development Bank through a Conditional Credit Line for Investment Project (CCLIP) to fund the program. The CCLIP will be implemented in various operations and the first operation which has three components implemented in several sections of Trinidad and Tobago (T&T). In compliance with the Bank's safeguards policy, the Consultants have been required to prepare the following:

1. Environmental and Social Assessment with framework approach
2. Environment and Social Management Plan (including a Stakeholder Engagement Plan and a Grievance Management Mechanism) with framework approach
3. Strategic Environmental and Social Assessment
4. Environmental and Social Management Framework.

This Environmental and Social Management Plan accompanies the Environmental and Social Assessment which is for the first operation that has three components:

- **Component 1. Water Stabilization and Improvement: (US\$44 Million).** This component will finance the development of a comprehensive program to urgently stabilize water supply services to prevent further service decline throughout the country and to ensure access to water, sanitation and hygiene to unserved and underserved households. The activities to be financed include: (i) Construction of new water treatment infrastructure in six locations at Ravine Sable, Sangre Grande, Santa Cruz-Green Meadows, Goldsborough River, Blue Basin and Mayaro, inclusive of intakes; (ii) Refurbishment & upgrading water treatment infrastructure for nine WTPs at Freeport, Caroni, North Oropouche, Guanapo, Maraval, Navet, Hillsborough, Chatam and Courland; (iii) Drilling and equipping of three new wells at Freeport; (iv) Rehabilitation of El Socorro high lift and booster station (v) Drilling and equipping new wells at Penal, Chatam/Palo Seco, and Tucker Valley.
- **Component 2. Support for Water Sector Transformation Plan: (US\$2.74 Million).** The Bank's AquaRating International Standard will be used to characterize the performance of WASA and establish a baseline for the restructuring efforts. The results of the assessment will inform the effort to restructure and transform WASA, including addressing issues such as (i) gender equality, diversity and inclusion at the company level; (ii) Resilience to Climate Change, Natural Disasters and Risk management and promulgation throughout WASA; and (iii) Improvement of the Ministry of Public Utilities' (MPU) technical oversight capacity for coordination of water sector transformation and stabilization. In addition, institutional strengthening could be considered to separate the functions of water resources management from WASA and to implement Integrated Water Resources Management (IWRM) supported by a HydroBID based information system.
- **Component 3. Network Optimization: (US\$31 Million).** Consideration will be given to execute these works through a Co-Management Performance Based Contract which would involve

WASA and the contractor working together as a single Project Team to deliver the results of the project. This would allow for the seamless transfer of know-how and expertise to WASA that is crucial to the long-term sustainability and success of the project. Under this component, water loss reduction and monitoring will be achieved through (i) the replacement of aged and fragile transmission and distribution network to reduce water loss and high leakages in Petit Valley, La Cuesta, Freeport, Wallerfield and Pt. Fortin; Mt. Lambert, North West; Nelson Street, POS; Laventille; Valsayn South; Freeport Todd and La cuesta (ii) Installation of two hundred and fifty-six (256) bulk meters and loggers to monitor production for various production facilities (water treatment plants, wells and booster stations) throughout T&T, and; (iii) Implementation of remote monitoring and control SCADA automation for real-time analysis of the most critical areas around T&T.

- **Project management and other costs:(US\$2.26 Million).** This component will finance administrative expenses including, support for project execution (PEU) dedicated staff, audits, monitoring and evaluation, communication, and supervision and implementation of an Environmental and Social Management Plan (ESMP).

The project area extends across several operational zones in Trinidad and Tobago encompassing the following municipalities:

1. Diego Martin (including the islands of (Gaspar Grande, Monos)
2. San Juan/Laventille
3. Port of Spain
4. Borough of Arima
5. Tunapuna/Piarco
6. Couva/Tabaquite/Talparo
7. Siparia
8. Mayaro/Rio Claro
9. Princes Town

The ESMP with framework approach accompanies the Environmental and Social Assessment (ESA) and presents the mitigation, management and monitoring plans to avoid, minimize, and or compensate for adverse environmental and social impact for the typologies of projects being considered. They have been prepared according to the IDB Environmental and Social Safeguards and other applicable Operational Policies.

The mitigation measures proposed for the Construction Phase primarily surround the following risks:

- Soil erosion
- Soil contamination
- Land pollution
- Water pollution
- Air pollution
- Noise and vibration pollution
- Flooding

- Landslides
- Disruption of biological communities
- Social Conflict
- Institutional conflict
- Under-representation of Women in the Project Workforce
- Community Road Safety
- Temporary loss of livelihoods

It is not anticipated that the operating phase of the project will create serious negative impacts. Once the construction phase of the project is complete the results are expected to be largely positive.

Several plans have been prepared for the identified environmental aspects and risks to the project. These include:

1. Environmental and Social Management Plan (ESMP)
  - a) Air Quality Management
  - b) Noise Management
  - c) Traffic Management
  - d) Worker Health and Safety Management
  - e) Community Health and Safety Management
  - f) Water Quality Management – Landslide and Erosion Control
  - g) Access to the Community Management
  - h) Emergency Response Management
  - i) Flora and Faunal Management
2. Social Management Plan
  - a. Social Conflict Management
  - b. Management of Installation of Household Metering Stations
  - c. Under-Representation of Women in the Project Workforce
  - d. Institutional Conflict Management
  - e. Water Supply Management
  - f. Damage to Property Management
3. Security Management Plan
4. Contractor Management Plan
5. Communication Strategy
6. Livelihood Protection Plan

A Consultation and Participatory Strategy and Grievance Mechanism has also been prepared and it presents measures to be used for community engagement, dissemination of project information and grievance management and will be utilised as a key element in all the proposed management, monitoring and mitigation measures. This plan would be the responsibility of the Implementing Agency, WASA, but also be supported by the Diego Martin Regional Corporation, Port-of-Spain City Corporation, San Juan/Laventille Regional Corporation and Tunapuna/Piarco Regional Corporation.

Based on the possible impacts for the proposed activities it is not anticipated that there will be any need to relocate persons and as such the development of a Relocation Plan was not deemed necessary.



# 1 INTRODUCTION

## 1.1 PURPOSE

This Environmental and Social Management Plan (ESMP) with framework approach has been prepared in accordance with the Terms of Reference received from the Inter-American Development Bank (IDB) for **the National Water Sector Transformation Program TT-L1055 in Trinidad and Tobago**. The purpose of the program is to improve the efficiency and quality of potable water and services in Trinidad and Tobago. This ESMP accompanies the Environmental and Social Assessment (ESA) and presents the mitigation, management and monitoring plans to avoid, minimize, and or compensate for adverse environmental and social impact for the typologies of projects being considered. It will be updated to incorporate the results of the public consultation to be held in the coming weeks.

Currently, potable water is not supplied to all households in Trinidad and Tobago on a 24/7 basis; only 53% of customers receive water on a 24/7 basis in the wet season and 31% in the dry season (Water and Sanitation Division of the IDB, 2020). The other customers receive water on a scheduled basis. Most of the domestic customers pay a flat fee per month or per quarter and 100% of industrial customers are metered and pay for water by volume used.

*The purpose of the National Water Sector Transformation Program TT-L1055 in Trinidad and Tobago is to improve the efficiency and quality of potable water and services in Trinidad and*

There is a high percentage of non-revenue water (NRW) lost through leaks, metering and billing issues. NRW is as high as 40-50% and in some cases estimated at 60% of total water produced. Demand and consumption on the islands are very high compared to the rest of the Caribbean. Water usage/demand is estimated at 364 litres of water per day per capita. Despite this, it is understood that there is no intention to increase water rates due to significant issues with reliability of the water supply (Water and Sanitation Division of the IDB, 2020). Other issues and challenges include:

- Poor governance and implementation arrangements: there has not been a consistent focus on WASA's accountability for the resources allocated and WASA's management structure.
- WASA is dependent on subventions from the Government of the Republic of Trinidad and Tobago GoRTT of TT\$1.8 billion to TT\$2 billion without defined performance targets to account for its use of the resources and in the absence of these subventions
- Water tariffs charged on domestic customers, average US\$0.23 per cubic meter, is the lowest in the Caribbean and have not been adjusted since 1993. Revenues are insufficient to meet operating costs.
- There is an inability to take advantage of abundant water resources to meet dry season demand due to WASA's lack of storage capacity.
- The aging infrastructure and bottlenecks in the network that inhibits the transmission of water from water rich areas to water scarce areas.

Considering these issues, the Government of the Republic of Trinidad and Tobago (GoRTT) has targeted construction of new water treatment plants, rehabilitation of WTPs, drilling of wells and reduction in non-revenue water in order to increase the reliability and resilience of water supply to customers. These infrastructure works are expected to work synergistically with WASA's

transformation and re-organization to achieve a more efficient, lean, technology driven, financially sustainable and customer centric organization. The GoRTT has sought funding from the Inter-American Development Bank through a Conditional Credit Line for Investment Project (CCLIP). This overall CCLIP is for US\$315 million credit line to address water supply issues across the entire country. to be determined.

## **1.2 PROJECT DESCRIPTION**

In August 2022, the Government of Trinidad and Tobago (GoRTT) announced that it will carry out its mandate to transform the water sector. Significant investments will be required to achieve wider water sector transformation and undertake long-term infrastructural improvements to improve water supply, increase water security, protect watersheds, and water resources, strengthen sector institutions, and support the sector in its planning capacity and execution. The Bank is therefore proposing to provide financing for water sector support through the CCLIP instrument. The CCLIP will allow the GoRTT to access financing through several phased loan operations that are smaller tranches of commitment and provide greater flexibility to define the individual loan operations. In addition, the CCLIP will allow the Bank to support the development of water and sanitation services in the medium and long-term.

The CCLIP is proposed with Bank financing for an amount up to US\$315 million from Ordinary Capital resources to be implemented through three individual loan operations over a ten-year period. The first operation is designed as a specific investment loan for a total amount of US\$80 million with disbursement period of 4 years to allow sufficient time to procure and implement a 3-year co-management contract. To support the preparation of the project, a non-reimbursable Technical Cooperation in the amount of US\$800,000 has been approved (ATN/OC-18337-TT), which will finance field work to conduct a water audit.

Table 1-1 below shows the proposed cost estimates of the Infrastructure Rehabilitation and Institutional components of the First Loan Operation. Planning and costing of subsequent loan operations will be done at an agreed time between the GoRTT and the Bank. See Appendix 1 for a description of actions under each component.



**Table 1-1: Programme Components and Budget - First Loan Operation**

Preliminary Budget for First Loan Operation	Estimated Cost (US\$ million)
<b>Component 1: Water Stabilization and Improvement: for the development of a comprehensive program to urgently stabilize water supply services to prevent further service decline throughout the country and to ensure access to water, sanitation, and hygiene to unserved and underserved households.</b>	44
<b>Component 2. Support for Water Sector Transformation Plan.</b>	2.74
<b>Component 3. Network Optimization. This component will finance priority works to optimize network performance and reduce non-revenue water.</b>	31
<b>Project management and other costs. This component will finance administrative expenses including, support for project execution (PEU) dedicated staff, audits, monitoring and evaluation, communication, and supervision and implementation of an Environmental and Social Management Plan (ESMP).</b>	2.26
<b>TOTAL</b>	<b>80</b>

The CCLIP will be implemented in various operations. The first operation has three components which are outlined below as extracted from the Terms of Reference. This first operation will focus across Trinidad and Tobago.

- **Component 1 Water Stabilization and Improvement: (US\$44Million).** This component will finance the development of a comprehensive program to urgently stabilize water supply services to prevent further service decline throughout the country and to ensure access to water, sanitation and hygiene to unserved and underserved households. The activities to be financed include: (i) Construction of new water treatment infrastructure in six locations at Ravine Sable, Sangre Grande, Santa Cruz-Green Meadows, Goldsborough River, Blue Basin and Mayaro, inclusive of intakes; (ii) Refurbishment & upgrading water treatment infrastructure for nine WTPs at Freeport, Caroni, North Oropouche, Guanapo, Maraval, Navet, Hillsborough, Chatam and Courland; (iii) Drilling and equipping of three new wells at Freeport; (iv) Rehabilitation of El Socorro high lift and booster station (v) Drilling and equipping new wells at Penal, Chatam/Palo Seco, and Tucker Valley.
- **Component 2. Support for Water Sector Transformation Plan: (US\$2.74 Million).** The Bank's AquaRating International Standard will be used to characterize the performance of WASA and

establish a baseline for the restructuring efforts. The results of the assessment will inform the effort to restructure and transform WASA, including addressing issues such as (i) gender equality, diversity and inclusion at the company level; (ii) Resilience to Climate Change, Natural Disasters and Risk management and promulgation throughout WASA; and (iii) Improvement of the Ministry of Public Utilities' (MPU) technical oversight capacity for coordination of water sector transformation and stabilization. In addition, institutional strengthening could be considered to separate the functions of water resources management from WASA and to implement Integrated Water Resources Management (IWRM) supported by a HydroBID based information system.

- **Component 3. Network Optimization: (US\$31 Million).** This component will finance priority works to optimize network performance and reduce non-revenue water. These works will be executed through a Co-Management Performance Based Contract with a specialized consulting firm (CF) which would involve WASA and the CF working together as a single Project Team to deliver the targeted results. This would allow for the seamless transfer of know-how and expertise to WASA that is crucial to the long-term sustainability and success of the program. The CF will be required to prepare and implement a Non-Revenue Water Reduction Strategy and Program for the country. The water audit under TT-T1108 will provide production and transmission flows and pressure data as well as hydraulic models to inform the NRW program. Reduction of commercial and physical losses as part of the NRW Reduction program will be implemented. The CF will also provide strategic advice and technical support to the Executive Team of WASA in the transformation of WASA. Under this component, flow and pressure monitoring and water loss reduction will be achieved through (i) the replacement of aged and fragile transmission and distribution network to reduce water loss and high leakages in Petit Valley, La Cuesta, Freeport, Wallerfield and Pt. Fortin; Mt. Lambert, North West; Nelson Street, POS; Laventille; Valsayn South; Freeport Todd and La Cuesta (ii) Installation of two hundred and fifty-six (256) bulk meters and loggers to monitor via telemetry systems production and flows for various facilities (water treatment plants, wells and booster stations) throughout T&T, (iii) selective implementation of DMAs/PMAs, targeted leak detection and repair, smart water infrastructure tools (SWIT), and management information systems; (iv) Implementation of remote monitoring and control SCADA automation for real-time analysis of the most critical areas around T&T; and (v) training and capacity building of WASA personnel in water loss management and SWIT.
- **Project management and other costs:(US\$2.26 Million).** This component will finance administrative expenses including, support for project execution (PEU) dedicated staff, audits, monitoring and evaluation, communication, and supervision and implementation of an Environmental and Social Management Plan (ESMP). .

### 1.3 THE CONSULTANT'S MANDATE

The Consultants have been mandated to review and examine the project activities under *the National Water Sector Transformation Program TT-L1055 in Trinidad and Tobago* for the first Operation of the CCLIP as well as the overall CCLIP. In compliance with the Bank's safeguards policy, the Consultants have been required to prepare the following:

5. Environmental and Social Assessment with framework approach
6. Environment and Social Management Plan (including a Stakeholder Engagement Plan and a Grievance Management Mechanism) with framework approach
7. Strategic Environmental and Social Assessment
8. Environmental and Social Management Framework.

The purpose of the Environmental and Social Assessment (ESA) is to identify the nature and significance of the potential impacts of the components in the first operation of the CCLIP. Additionally, a compliant Environmental and Social Management Plan (ESMP) is also required to manage all the impacts identified in the ESA. These risks and impacts were assessed using a framework approach, given their geographic dispersion and the fact that most sub-project do not have a final design yet. As such, their proposed mitigation measures will follow the alike principles.

*This document presents the Environmental and Social Management Plan which is to accompany the Environmental and Social Assessment.*

The TOR requires that a Strategic Environmental and Social Assessment (SESA) be conducted of the overall CCLIP, assessing the possible impacts of the future phases of the program, and an Environmental and Social Management Framework (ESMF) to be developed. The SESA and ESMF are separate documents and have been developed in accordance with the requirements established in the IDB Environment and Safeguards Compliance Policy and Guidelines<sup>1</sup>. The documents focus on issues of potentially significant impact including:

- **Social impacts:** i) possible physical resettlement and/or temporary/permanent loss of livelihoods; ii) potential negative impacts linked to gender; iii) risk of social exclusion; iv) risk of indirectly inducing poverty (for payment of services for instance); v) governance or social conflicts that might affect project implementation. Sub-projects with physical displacement and permanent economic displacement will not be eligible under this operation.
- **Environmental impacts:** during construction and operation: in the general environment in the project's area of influence and to the biodiversity in particular. Additionally, natural disaster risks, cultural heritage impacts and any potential negative impacts to the long-term sustainability of the area should be identified. Also, current environmental liabilities at the site and existing infrastructure to be repaired/substituted should be identified.

---

<sup>1</sup> IDB Safeguard Policies and Guidelines are available at [www.iadb.org/sustainability](http://www.iadb.org/sustainability)

More specifically, the **Environmental and Social Assessment (ESA)** has been conducted for the following activities:

- An information review of all the available documentation including ESAs of previous program, if any;
- Site reconnaissance the project site in selected locations in Trinidad, including visual observation of the relevant areas directly and indirectly affected by the operation; describe the reasoning drivers behind selected sites.
- Collect information to build the Environmental and Social baseline data and necessary for assessing possible impacts associated with each project/intervention. This diagnosis comprised:
  - a. Environment conditions: i) main environmental conditions (geomorphology, geology; ii) weather and natural conditions; iii) identification of water resources and its conditions and potential contamination and previous liabilities; iv) air quality and possible sources of contamination; v) natural conditions and biodiversity (protected areas, natural habitats etc.; v) soil use and general conditions and potential project's impacts; vi) zoning and regulations; vii) existing environment liabilities and/or conflicting interest regarding the projects; viii) public services linked to environment conditions (sewage, solid waste, drainage, etc.); ix) cultural sites within the project's areas of influence; x) traffic and associated impacts.
  - b. Natural hazard conditions that might be enhanced by the project of the first operation;
  - c. Social situation: i) socioeconomic characterization of population in the area of influence; ii) housing conditions and services; iii) main sources of income of population involved in the projects; iv) identification of vulnerable groups; v) identification of local organizations and their potential role in the projects; vi) identification of participation and civic engagement projects in the project's area of influence, (vii) identification of governance aspects or social conflicts that might affect project implementation
  - d. Health and safety, and labour impacts and risks associated with the operation during all its phases (construction and operation);
  - e. Evaluate the legal and regulatory framework applicable to the projects/interventions including IDB policies and requirements.

The focus of this report is the **Environmental and Social Management Plan (ESMP)** which is to accompany the ESA. This document has been prepared based on the results of the ESA elaborated above, and involved the following activities:

- Assessment of possible impacts and risks associated with the project of the first operation during construction and operation including: resettlement (OP 710), environmental matters (as defined in OP 703); gender equality issues (OP 761); health and safety during construction and operation; community relationships plans); natural disasters risks;
- Development of mitigation, management and monitoring plans require to avoid, minimize, and or compensate for adverse environmental and social impacts; In the specific cases in

which executive plans need to be developed by the contractor at a later stage, provide both a justification and guidelines with reasonable and justifiable levels of detail which could serve as parameters for the development of said executive plans.

- If applicable, development of a livelihood restoration plan **(to be included in the final version of the document)**;

The **Stakeholder Engagement Plan and Grievance Management Mechanism** was developed and includes:

- A consultation methodology, list of stakeholders to be consulted and the method of consultation. A summary of the main findings of the consultation activities are included in the ESA;
- Meaningful consultation with affected stakeholders for the north west region following the completion of the documents. The Program, the site selection process, the main impacts and risks will be presented. The purpose of the consultation is to seek feedback from the public on the ESA, the Program and the proposed ESMP, which will be incorporated into the finalisation of the ESA and ESMP documents.
- The final reporting of the consultations in the final ESAs to demonstrate and document the meaningfulness of the consultation, and especially how the suggestions and concerns of stakeholders have been considered/answered/incorporated into the project and ESAs/ESMPs, RPs if preparation of these was necessary.

#### 1.4 THE STUDY AREA

The project area for this Consultancy covers all areas of Trinidad and Tobago (**Error! Reference source not found.**). However, the first and third component focuses on the North-West, North-East, Central, South regions of Trinidad and operational zones in Tobago which includes the following municipalities:

- Diego Martin (including the islands of (Gaspar Grande, Monos)
- San Juan/Laventille
- Port of Spain
- Tunapuna/Piarco
- Couva/Tabaquite/Talparo
- Siparia
- Mayaro/Rio Claro
- Princess Town
- Borough of Arima

The project is spread over the entire island of Tobago, while Trinidad represents an estimated area of 3,551 km<sup>2</sup>, which consists of almost 77% of the island's population (CSO, 2012). The project area covers several municipalities with varying population densities. **Error! Reference source not found.** shows that sections of the project area have some of the highest population densities across Trinidad and Tobago. The majority of the municipalities in Trinidad and parishes in Tobago have experienced growth in population between 2000 and 2011 excluding Port of Spain, Diego Martin, San

Juan/Laventille and the parish of St. John which experienced a decline in populations (Table 1-2) (CSO, 2012).



**Figure 1-1: The Study Area -Trinidad and Tobago (Data Source: ESRI Living Atlas)**

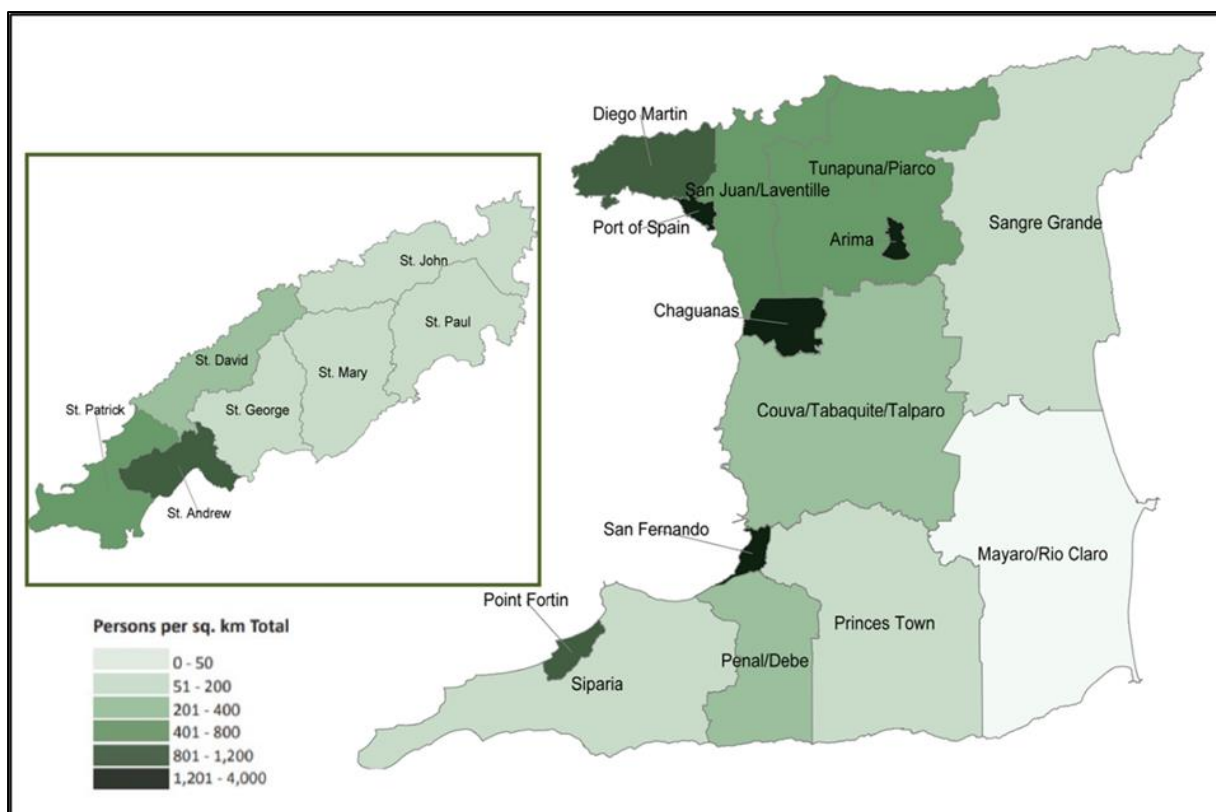


Figure 1-2: The project area and population densities across Trinidad and Tobago (modified from Trinidad and Tobago 2011 population and Housing Census Demographic Report) (CSO, 2012).

Table 1-2: Population change from 2000 – 2011 of the municipalities and parishes in the project area (modified from Trinidad and Tobago 2011 population and Housing Census Demographic Report)(CSO, 2012).

Island	Municipality/Parish	% Population Change from 2000 - 2011
<b>Trinidad</b>	Borough of Arima	0.4
	City of San Fernando	-1.1
	Couva/Tabaquite/Talparo	0.9
	Port of Spain	24.3
	Diego Martin	-0.2
	Penal/Debe	0.6
	Point Fortin	0.6
	Princes Town	1.0
	Sangre Grande	1.4
	Siparia	0.6
	San/Juan-Laventille	-1.0
	Tunapuna/Piarco	0.5
<b>Tobago</b>	St. Andrew	1.0
	St. David	1.4%
	St. George	2.3%
	St. John	-0.6%
	St. Mary	1.0%



Island	Municipality/Parish	% Population Change from 2000 - 2011
	St. Patrick	1.0%
	St. Mary	1.0%

The area of influence is defined by the immediate and wider project area. The immediate project area includes Trinidad's northwest, northeast, central and southern zones. The population that will benefit from project interventions reside in the 10 municipalities of Couva/Tabaquite/Talparo, Diego Martin, Penal/Debe, Princes Town, Sangre Grande, Siparia, and Tunapuna/Piarco, and the boroughs of Arima and Point Fortin. One of the communities in the project area also falls within the city of San Fernando. The immediate project area is among the most populous in Trinidad and Tobago. According to the latest Population and Housing Census Report for Trinidad and Tobago, the population of this area stood at 247,034 persons in 2011, accounting for almost one-fifth of the national population.

## 1.5 ANALYSIS OF ALTERNATIVES

### 1.5.1 The No Project/ No Action Alternative

If the project is not implemented the issues related to disruptions and scheduling of water supply, large percentage of NRW will continue to plague the project areas and country, and the corresponding issues of unreliable 24/7 water supply will also continue. The projected impacts of climate change are expected to result in overall lower rainfall amounts and increased temperatures (increased evaporation) and thus reduced aquifer recharge. If this is coupled with continued over-pumping it can result in deleterious effects on the country's water resource in the long run.

### 1.5.2 Alternative Project

An alternative could be to increase the amount of water being pumped from the aquifers currently since it is estimated that Trinidad and Tobago has more than enough water resources available at this time to be accessed.

However, pumping more water to account for the over 46% of the existing non-revenue losses can be considered a very short-sighted approach, which can result in deleterious effects on the water resources being exploited. There is great risk in losing environmental balance which is critical to assess before taking any decisions on increased pumping. Additionally, without addressing the various inefficiencies of the system, this will only result in more wastage.

It would be best to implement the project holistically as was designed based on the challenges that were identified in the supply and management of water sources. Leaving out components would yield only short-term solutions and reduce the resilience of the sector, which is not sustainable considering the climate change risk faced by the island. Further, the benefit to be received from a better demand analyses and control and accountability for water supply due to metering, as well as address major losses due to non-revenue water inclusive of aged infrastructure would not be accrued.

Increasing pumping would also not address the significant institutional challenges that currently affect the operations of WASA that would have been addressed under the institutional strengthening component of the project.

## 1.6 LIMITATIONS

It is important that the following limitations are noted and understood prior to the review of the report:

- The timeframe for carrying out the assignment was very short and so this limited the ability for extensive field verification activities. As such a heavy reliance was placed on the use of secondary data that is already available for the study area, referenced documentation, review of satellite imagery and maps, and the conduct of key informant interviews.
- The project took place during the Corona Virus (COVID-19) pandemic. The Covid-19 pandemic has led to Trinidad and Tobago, like other nations worldwide, imposing a range of protocols and strategies to stymie the spread of the disease. Measures such as physical distancing, the closure of schools as well as stay-at-home orders for non-essential activities, have restricted the movement of the population with many citizens having to work from home. Trinidad and Tobago has started reopening the economy, however the Central Statistical Office and other Ministry Offices where some data is available remain close at the time this Assessment is being conducted. However, access to statistical data from the last Population and Housing Census can be obtained online. It should be noted that the Census is dated, having being conducted in 2011.
- Under normal circumstances, the level of stakeholder engagement for an ESA will include developing and implementing a system for engaging stakeholders in the data gathering and assessment process. The current Covid-19 environment poses an ethical dilemma for professionals interacting with local communities and other stakeholders because such interactions may increase the risk of spread of infection. The short-term project frame, physical distancing restrictions and the stay-at-home order limited the amount of primary data collected and the level of stakeholder engagement usually undertaken in an ESA.
- COVID-19 also affected the availability of key stakeholders as well as the nature of the consultations. There was heavy reliance on virtual meetings and consultations. Although, this may be skewed to persons having internet access or access to telephone, this mechanism is still believed to have the potential to capture a wide audience especially since the project area is so large. The nature of the public consultation to be held to present the findings of the reports are likely to be affected. The approach will be agreed upon following further discussions with the IDB and the GoRTT prior to the completion and submission of the Final ESA and ESMP.

## **1.7 ORGANIZATION OF THE REPORT**

The report is organized into two (2) main sections with several chapters:

- Chapter 1- Presents an overview of the project and the main activities being executed under this Consultancy

### **SECTION 1-ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN**

- Chapter 2- Presents the policy, legal and regulatory framework
- Chapter 3- Presents the identified impacts and mitigation measures
- Chapter 4- Presents the environmental health and safety plan
- Chapter 5- Presents the social management plan
- Chapter 6- Presents the security management plan

- Chapter 7- Presents the contractor management plan
- Chapter 8- Presents the communication strategy
- Chapter 9- Presents the livelihood protection plan
- Chapter 10- Presents the summary of the monitoring frequency

## SECTION 2- CONSULTATION AND PARTICIPATORY STRATEGY AND GRIEVANCE MECHANISM

- Chapter 11- Presents the Consultation and Participatory Strategy
- Chapter 12- Presents the Grievance Mechanism

# SECTION 1



# ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

## 2 POLICY, LEGAL AND REGULATORY FRAMEWORK

In Trinidad and Tobago, there are several statutes that have direct or indirect jurisdiction over matters of the environment. These range from public health to physical planning and land use. The statutes are rationalised by the Environmental Management Act of 1995, which later became the Environmental Management Act Chapter 35:05 (EM Act 35:05), which is the legal underpinning for environmental management in Trinidad and Tobago.

The preamble of the Act recognizes the diversity of governmental entities involved in the environmental sector. The Act establishes the Environmental Management Authority (EMA) to co-ordinate, facilitate and oversee the execution of the national environmental strategy and programmes, to promote public awareness of environmental concerns and to establish an effective regulatory regime which can conserve and enhance the environment.

The following legislation, policies and plans were deemed most relevant to the water supply improvement project, which includes not just those governing the environment but also those governing the Water and Sewerage Authority. The aim of the project is to improve the country-wide efficiency and quality of potable water and services and is well aligned with the goals and outcomes set forth in the National Development Strategy of Trinidad and Tobago – Vision 2030.

### 2.1 REVIEW OF RELEVANT LEGISLATION, REGULATION AND POLICY

#### 2.1.1 Policy and Plans

Table 2-1 presents several policies and plans relevant to the Water Supply Improvement Project.

**Table 2-1: Relevant Policies and Plans**

POLICY/PLAN	RELEVANCE TO THE PROJECT
<b>National Development Strategy of Trinidad and Tobago – Vision 2030</b>	<p>This long-term National Development Strategy aims to put the country in a position to achieve developed country status by 2030.</p> <p>Under Theme III - Improving Productivity through Quality Infrastructure and Transportation, Goal 2 states: “Our public utility system will be better managed with improved access for all Public Utility Systems play a strategic role for human civilization, essential in economic and social development, whether they relate to water supply, sewerage treatment, electricity and public lighting systems, or telecommunication services. In order to achieve our National Vision, Trinidad and Tobago needs efficient, cost-effective and reliable water and wastewater services, electricity, and telecommunication services as these are key enablers which determine the quality of life.”</p> <p>This is aligned with Goal 6 of the Sustainable Development Goals: Ensure availability and Sustainable management of water and sanitation for all.</p>
<b>National Integrated Water Resources Management Policy 2005</b>	<p>The national goal for the water sector is to support the socio-economic development of Trinidad and Tobago through the integrated management of the water resources and the water environment (land, air, flora and fauna), satisfying and managing the growing demands for all water users in a sustainable, efficient and effective manner, while maintaining and/or enhancing the quality of the environment and the integrity of ecosystems,</p>



POLICY/PLAN	RELEVANCE TO THE PROJECT
	<p>and minimizing losses to life and damage to property due to water related disasters.</p> <p>One of the principles upon which this policy operates is <i>“Potable water of such quality and quantity as to sustain life should be available to all citizens, irrespective of the citizen’s ability to pay. This minimum service is a requirement for reasons of public health and environmental condition.”</i> This is integral to the project being assessed.</p>
<b>National Environmental Policy, 2006</b>	<p>Environmental Management Policy, 2006, was prepared by the Environmental Management Authority in accordance with the requirements of the Environmental Management Act, 2000. The goal of the policy is to facilitate and encourage environmentally sustainable development so that there is a balance between economic and environmentally sound practices to enhance the quality of life and meet the needs of the present and future generations. The roll out of the project activities would therefore need to take place so as not to result in pollution of the environment, result in ecological losses and not negatively impact the health and the well-being of humans.</p>
<b>National Climate Change Policy (NCCP) 2011</b>	<p>The goal of the National Climate Change Policy (NCCP) is <i>“... to provide policy guidance for the development of an appropriate administrative and legislative framework... for the pursuance of a low-carbon development path for Trinidad and Tobago”</i>.</p> <p>Trinidad and Tobago is particularly vulnerable to the adverse impacts of climate change such as those related to temperature increases, changes in precipitation and sea level rise”, all of which will impact the water resources sector and as such climate change considerations are crucial to the activities planned under the Water Supply Improvement Project.</p>
<b>Draft National Policy on Gender and Development 2009</b>	<p>The National Policy on Gender and Development provides a framework for including gender perspectives in all activities of government and civil society, thereby promoting the full and equal participation of men and women in the development process. Therefore, the activities of WASA as the project is rolled out should be gender sensitive, accounting fully for and integrating the needs and interests of women and men into project activities.</p>
<b>National Protected Areas Policy, 2011</b>	<p>This objective of the National Protected Areas Policy is to provide guidelines for the selection, designation and management of all Protected Areas (PAs) established for the conservation of natural heritage in Trinidad and Tobago.</p> <p>The administrative framework for the management of PAs is complex. Several agencies and multi-sectoral committees have some responsibility for PAs management. The Caroni Swamp Forest Reserve, which falls within the project area and is protected by this policy and legislation elaborated in Section 2.1.2.</p> <p>The Northern Range is a sensitive ecosystem which also falls within the project area</p>

POLICY/PLAN	RELEVANCE TO THE PROJECT
<b>National Wildlife Policy, 2013</b>	Conservation and management of Wildlife in protected areas are elaborated in this policy. These strategies have been employed in the Caroni Bird Sanctuary which occurs within the demarcated project area.
<b>National Forest Policy, 2011</b>	<p>The objective of this policy is to conserve, manage and develop its forests and forest resources. This is pursued through three mutually reinforcing objectives:</p> <ol style="list-style-type: none"> <li>1. To optimise the contribution of forest resources to livelihoods; cultural and spiritual/religious use, while ensuring sustainable use of forests, including extraction of timber and wildlife</li> <li>2. To protect native genetic, species and ecosystem diversity</li> <li>3. To maintain and enhance the natural productivity of forest ecosystems and ecological processes (watershed functions, etc.) to provide important ecosystem services</li> </ol> <p>The management and protection of the Caroni Swamp Forest Reserve and its assets which is located within the study area is also governed by this policy.</p>

#### Legislation and Regulations

Table 2-2 outlines several legislations and regulations relevant to the Water Supply Improvement Project.

**Table 2-2: Relevant legislation and regulations**

LEGISLATION/REGULATIONS	RELEVANCE TO THE PROJECT
<b>Water and Sewerage Authority Act of 1965</b>	<p>Under section 3(2) of the Statutory Authorities Act (Chapter 24:01), the Water and Sewerage Authority has been declared a statutory authority subject to the provisions of that Act.</p> <p><i>“The Act provides for the development and control of water supply and sewerage facilities in Trinidad and Tobago and matters of sanitation incidental thereto; the promotion of the conservation and proper use of water resources; and for the establishment of an Authority to administer the several purposes aforesaid and matters connected therewith.”</i></p>
<b>The Environmental Management Act, 2000</b>	<p>This Act establishes an Environmental Management Authority (EMA) to execute the objectives of the Act. Functions of the EMA related to the project related to this project are to develop and establish national environmental standards and criteria, monitor compliance with the standards criteria and programmes relating to the environment and take all appropriate action for the prevention and control of pollution and conservation of the environment.</p> <p>The EMA has put in place a National Environmental Policy, 2001 and the Certification of Environmental Clearance Rules, 2001 to facilitate enforcement and compliance. The Act speaks to the requirement that</p>



LEGISLATION/REGULATIONS	RELEVANCE TO THE PROJECT
	persons must comply with the procedures and standards with respect to permits or licences required for any person to install or operate any process or source from which pollutants will be or may continue to be released into the environment.
<b>Certificate of Environmental Clearance Rules, 2001</b>	The Certificate of Environmental Clearance Rules, 2001 state that an application must be submitted to TCPD in respect of a designated activity constituting a development requiring express grant of permission under the Town and Country Planning Act.
<b>Noise Pollution Rules 2001</b>	<p>The Noise Pollution Rules, 2001 indicate that subject to any variation, no person shall emit or cause to be emitted any sound that causes the sound pressure levels to be greater than the prescribed standards.</p> <p>Construction activity when conducted on a construction site between the hours of 7.00 a.m. and 7.00 p.m. of the same day are exempt from the prescribed standards.</p>
<b>Environmentally Sensitive Species Rules, 2001</b>	<p>Environmentally Sensitive Species Rules, 2001 speak to the following objectives:</p> <ul style="list-style-type: none"> <li>a) <i>“maintenance of species abundance and diversity</i></li> <li>b) <i>preservation of the integrity of species’ populations to ensure genetic viability and to sustain their intangible and direct material benefits</i></li> <li>c) <i>maintenance of its importance of significance to the ecosystem (s) of the immediate locality or to wider areas</i></li> <li>d) <i>regulation of species which are or may pose a health or ecological liability</i></li> <li>e) <i>provision of valuable educational and non-destructive scientific research opportunities</i></li> <li>f) <i>demonstration of the benefits of wise use and the pitfalls of indiscriminate use of particular species”</i></li> </ul> <p>The Consultants will make a note of any endangered/sensitive species identified within the study areas.</p>
<b>Environmentally Sensitive Areas Rules, 2001</b>	The Environmentally Sensitive Areas Rules, 2001, outlines in its objectives the protection, preservation, management or rehabilitation of an area that is fragile, threatened or degraded and the regulation of the use of the natural resources contained within the area. The study area includes the the Caroni Swamp, which is considered a sensitive area. This area has been declared a Forest Reserve and a Bird Sanctuary.
<b>Forest Act #42 of 1915 Chapter 66:01 amended 1955, 1999</b>	The Caroni Swamp Forest Reserve (4,000 ha.) is protected under the Forests Act (Legal Notice # 141 of 1987). The northern section of which occurs within the study area of this project.

LEGISLATION/REGULATIONS	RELEVANCE TO THE PROJECT
<b>Occupational Safety and Health Act of Trinidad and Tobago, 2004</b>	This act speaks to the responsibility of the employer to ensure, so far as is reasonably practicable, the safety, health and welfare of its workers.
<b>Air Pollution Rules 2014 and associated Regulations</b>	This document provides monitoring standards for ambient air quality that should be adhered to during development activities.
<b>Water Pollution Rules 2019</b>	This document provides monitoring standards for ambient water quality that should be adhered to during development activities.

### 2.1.2 International Treaties and Protocols

- **Convention on Biological Diversity** – The Convention on Biological Diversity (CBD), adopted in 1992, is the foremost international convention obliging its contracting parties to take action on invasive alien species.
- **The 2030 Agenda** – The 2030 Agenda is a Global Pact unanimously agreed to by the 193 Member States of the United Nations to take bold and transformative steps to shift the world on to a sustainable and resilient path, while leaving no one behind. The 17 Sustainable Development Goals (SDGs) and 169 targets of this Agenda, which is the successor to the Millennium Development Goals (MDGs), build on existing global agreements.
- **United Nations Framework Convention on Climate Change (UNFCCC) Gender Action Plan** - The integration of gender into environmental initiatives has become a development priority globally and in the Caribbean. Subsidiary Body for the Implementation (SBI) of the Framework Convention on Climate Change (FCCC) at the 24th Conference of the Parties to the UNFCCC (COP 24) recommended that countries should begin review of the areas of progress, areas for improvement and further work to be undertaken under the Lima work programme on gender and its gender action plan. COP 24 called upon countries, constituted bodies and observers to intensify consultations in 2019, with the support of the secretariat, in order to advance the gender action plan. The National Determined Contributions (NDC) Partnership seeks to support its members in sharing and applying successful models for integrating gender equity into NDC planning and implementation. Member countries are already developing valuable approaches that provide useful learning opportunities for others. State Parties need gender expertise and resources that can be drawn upon through the SBI to support countries as they apply and scale-up gender-responsive climate policy and practices and develop nationally specific Gender Action Plans.

## 2.2 RELEVANT IDB ENVIRONMENTAL AND SOCIAL SAFEGUARDS

The IDB has several social and environmental safeguards that are applicable to all Bank-Financed Projects. They serve as a guide for the identification of potential social and environmental impacts of Bank-Financed Projects and how consultation should take place.

The principal Relevant Operational Policies are outlined in the table below. A brief description is provided along with it is relationship of each policy to the project.

**Table 2-3: IDB Operational Policies**

NAME	CONTENT	RELATIONSHIP TO THE PROJECT
<b>OP-102: Access to Information Policy (April 2010)</b>	This policy sets out the principles which guide disclosure of information and the transparent use of public funds in order to enhance the Bank's accountability and development effectiveness.	The report will be required to be made available to the public and Project teams must comply with the Information Disclosure Policy.
<b>OP-703: Operational Policy on Environment and Safeguards Compliance (January 2006) and Guidelines (May 2007)</b>	This policy guides the environmental quality of the Bank's operations and its support to environmental projects in the Latin American and Caribbean region. Contained within are the policy directives related to both environmental mainstreaming and safeguards. The environmental safeguards establish procedures and standards to ensure quality and the environmental sustainability of both public and private sector operations.	<p>The Bank requires that Category A and B operations be subject to Environmental Assessments (EA). This project is a Category B project which has required the need for an Environmental and Social Assessment and an Environmental and Social Management Plan (ESMP).</p> <p>A Strategic Environmental and Social Assessment (SESA) and an Environmental and Social Management Framework (ESMF) is also required.</p>
<b>OP-704: Operational Policy on Natural Disaster Risk Management (February 2007) and Guidelines (March 2008)</b>	<p>The purpose of the Bank's disaster risk management policy is to guide its efforts to assist borrowers in reducing risks emanating from natural hazards and in managing disasters, in order to support the attainment of their social and economic development goals.</p> <p>The Bank will not finance projects that, according to its analysis, would increase the threat of loss of human life, significant human injuries, severe economic disruption or significant property damage related to natural hazards.</p>	<p>This project is required to consider the necessary measures to reduce disaster risk to acceptable levels as determined by the Bank on the basis of generally accepted standards and practices.</p> <p>A Strategic Disaster Risk Assessment is being prepared as part of this project.</p>
<b>OP-708: Public Utilities Policy (November 2013)</b>	This Policy's objective is to guide the Bank's actions to promote universal access to and increase the efficiency and quality of public utilities service delivery under conditions that are affordable and environmentally and	This project is a public utilities project (water and sanitation) and aligns with the general Policy Principles of access, good governance, efficiency,

NAME	CONTENT	RELATIONSHIP TO THE PROJECT
	<p>socially sustainable, so they contribute to the process of socially inclusive economic development.</p> <p>This Policy covers the following public utilities: water and sanitation, electricity, natural gas, solid waste, and telecommunications services.</p>	innovation and environmental sustainability
<b>OP-710: Operational Policy on Involuntary Resettlement (July 1998) and Guidelines (November 1999)</b>	The objective of the policy is to minimize the disruption of the livelihood of people living in a project's area of influence, by avoiding or minimizing the need for physical displacement, ensuring that when people must be displaced they are treated equitably and, where feasible, can share in the benefits of the project that requires their resettlement.	<p>This project is likely to cause temporary economic displacement (loss of livelihoods). If applicable, a LRP will be prepared and included in the final versions of the documents.</p> <p>A grievance mechanism/management plan will also be prepared as part of the project.</p>
<b>OP-761: Operational Policy on Gender Equality in Development (November 2010) and Guidelines (September 2013)</b>	This policy seeks to ensure that gender issues are addressed in the design of projects supporting infrastructure, economic opportunities and competitiveness, and institutional capacity of the State; and that gender elements are included in the execution and evaluation of projects	This project actively promotes gender equality and the empowerment of women and introduces safeguards to prevent or mitigate adverse impacts on women or men. A Stakeholder Engagement Plan will also be prepared. The ESMP will also consider any of these issues.
<b>OP-765: Operational Policy on Indigenous Peoples (July 2006) and Guidelines (October 2006)</b>	This policy directs the Bank to use its best efforts prevent or minimize exclusion and adverse impacts that Bank operations might generate with respect to indigenous peoples and their rights.	This project is not expected to impact any Indigenous groups in Trinidad.

### 3 IDENTIFICATION OF MITIGATION MEASURES AND THE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

#### 3.1 KEY ENVIRONMENTAL AND SOCIAL IMPACTS AND MITIGATION

##### 3.1.1 Construction Phase

The mitigation measures proposed for the Construction Phase primarily surround the following risks:

- Soil erosion
- Soil contamination
- Land pollution
- Water pollution
- Air pollution
- Noise and vibration pollution
- Flooding
- Landslides
- Disruption of biological communities
- Social Conflict
- Institutional conflict
- Under-representation of Women in the Project Workforce
- Community Road Safety
- Temporary loss of livelihoods

The ESMP for the construction phase includes the following plans to guide compliance with standards and policies as discussed above. It should be noted that these apply not for specific sub-projects but for typologies of sub-projects.

- **Environmental Health and Safety Management Plan** - This plan is an overarching plan that meets IDB Policy Directive B5, 10 and 11. It also meets the 2004 Occupational Safety and Health Act of Trinidad and Tobago. It pays particular attention to pollution prevention, resource efficiency and environmental and worker health and safety guidelines. It includes all requirements necessary to monitor the effectiveness of the mitigative measures implemented to reduce adverse impacts from the activities carried out under the construction phase. The plan will extend across all components of the project. This plan describes procedures for the compliant management of construction waste including any liquid and hazardous wastes. It will be the responsibility of the Contractor in respect to its scope of works but for the Implementing Agency to ensure that the Contractor is in compliance with the plan.
- **Social Management Plan**- This plan is intended to manage social conflict that may occur as a result of the projects. It meets IDB policy OP-703 and OP-761.
- **Security Management Plan**- This plan is intended to manage security during construction and operation. It meets IDB policy OP-703 and OP-761.

- **Contractor Management Plan-** This plan is intended to guide how contracts are administered and managed. It meets IDB policy OP-703.
- **Livelihood Protection Plan-** This plan is intended to manage impact on livelihoods while construction and maintenance works are carried out.
- **Consultation and Participatory Strategy and Grievance Mechanism** - This is outlined in Chapters 11 and 12 of this document and presents measures to be used for community engagement, dissemination of project information and grievance management and will be utilised as a key element in all the proposed management, monitoring and mitigation measures. This plan would be the responsibility of the Implementing Agency, WASA, but also be supported by the Diego Martin Regional Corporation, Port-of-Spain City Corporation, San Juan/Laventille Regional Corporation and Tunapuna/Piarco Regional Corporation.

### 3.1.2 Operations Phase

It is not anticipated that the operating phase of the project will create serious negative impacts. Once the construction phase of the project is complete the results are expected to be largely positive:

- **Component 1 and 3** – Priority Investments and Emergency Response to COVID-19 respectively. The positive impacts are likely to be increased access to potable water supply, a more reliable water supply as a result of the reduction in losses from non-revenue water. improved access. A maintenance program for water supply infrastructure will need to be created, responsible agencies engaged, and funding allocated.
- **Component 2** – Institutional strengthening. The positive impacts are likely to be efficiency of the WASA institution, improved customer satisfaction and relations. This will result in improved management of the water resources in the study area.

Despite these positive impacts there is still the potential for negative impacts which largely relate to maintenance activities in components 1 and 3.

The ESMP for the operations phase of the project includes the Environmental Health and Safety Management Plan, the Consultation and Participatory Strategy and Grievance Mechanism which had been previously discussed in the Construction Phase of the project.

## 4 ENVIRONMENTAL HEALTH AND SAFETY MANAGEMENT PLAN

Chapters 4 to 10 present the Environmental and Social Management Plan (ESMP), which follows on the identification of the potential environmental and social impacts and proposed mitigation actions outlined in Chapter 3 above and as detailed in the ESA. Specific Environmental Management Plans (EMPs) have been developed to be utilised by Contractors and the Water and Sewerage Authority.

The following plans have been prepared for the identified environmental aspects and risks to the project:

7. Environmental and Social Management Plan (ESMP)
  - a) Air Quality Management
  - b) Noise Management
  - c) Traffic Management
  - d) Worker Health and Safety Management
  - e) Community Health and Safety Management
  - f) Water Quality Management – Landslide and Erosion Control
  - g) Access to the Community Management
  - h) Emergency Response Management
  - i) Flora and Faunal Management
8. Social Management Plan
  - a. Social Conflict Management
  - b. Management of Installation of Household Metering Stations
  - c. Under-Representation of Women in the Project Workforce
  - d. Institutional Conflict Management
  - e. Water Supply Management
  - f. Damage to Property Management
9. Security Management Plan
10. Contractor Management Plan
11. Communication Strategy
12. Livelihood Protection Plan

Based on the possible impacts for the proposed activities it is not anticipated that there will be any need to relocate persons and as such the development of a Resettlement Plan was not deemed necessary.

### 4.1 AIR QUALITY MANAGEMENT

#### 4.1.1 Monitoring Standards

Ambient air quality monitoring will be in accordance with the relevant EMA standards as outlined in the extract from the Air Pollutions Rules (2014) below.



Table 4-1: Air Quality Standards Extracted from the Air Pollution Rules, 2014

No.	Substance	Short-term Maximum Permissible Levels		Long-term Maximum Permissible Levels	
		Maximum Permissible Levels	Averaging Time	Maximum Permissible Levels	Averaging Time
PARTICULATES					
1	Total suspended particles (TSP)	150µg/m³	24 hours		
2	Particulate Matter PM <sub>10</sub>	75µg/m³	24 hours	50µg/m³	1 year
3	Particulate Matter PM <sub>2.5</sub>	65µg/m³	24 hours	15µg/m³	1 year

#### 4.1.2 Monitoring Equipment and Stations

##### Particulate Matter

Samples for particulate matter should be collected using calibrated pumps. The pumps should be placed at the approximate respiratory height of the individual(s) for a 24-hour period. The data obtained from the analyses of the filter should be expressed as the exposure levels of particulate matter (PM<sub>10</sub>) using a Time Weighted Average (TWA). The results at the end of the sampling period will be compared to the EMA standards.

##### Stations

The Monitoring stations will be changed as the activities progress. The monitoring stations established will be based on the prevailing winds and most sensitive human receptors.

#### 4.1.3 Monitoring Frequency

Prior to the construction, a monitoring baseline will be established for both particulate matter and noise. This will involve continuous monitoring for a 24-hour period along the length of the proposed site.

During construction, monitoring will be carried out randomly twice per month during the first month or as stipulated by the EMA only along the sections that are under construction at the time. After the first month, once per month is recommended until the end of construction or maintenance activities.

#### 4.1.4 Management and Mitigation Measures

In addition to the monitoring procedures, the Contractor will ensure that these measures are followed:

##### General measures

- Effective implementation, monitoring and enforcement of National Environmental Policy, and the National Pollution Rules, action by the Environmental Authority
- Record complaints and relevant responses

##### Fugitive dust control measures

- Cover haulage vehicles transporting aggregate, soil and cement

- Cover and/or wet onsite stockpiles of aggregate, soil etc., especially during windy and dry conditions
- Locate sources of dust away from sensitive receptors
- Ensure proper stock piling/storage and disposal of solid waste
- Wet cleared land areas regularly
- Wet dust suppression methods on unsealed roads must be implemented to prevent generation of nuisance dust.
- Provide workers with the necessary PPE e.g. dust masks, and ensure that they are worn correctly
- There must be strict speed limits on dust roads to prevent dust entrainment into the atmosphere.
- Restrict the dropping of material from height during loading and unloading
- Revegetate cleared areas immediately following construction to prevent loose soil from being blown away.

#### Emissions control measures

- Operate well maintained vehicles and equipment
- All earth moving vehicles and equipment must be regularly maintained to ensure their integrity and reliability.
- Construction vehicles and machinery shall not be left to idle when not in use.
- Maintain all generators, vehicles, and other equipment in good working order to minimise exhaust fumes.
- Limit use of roads in populated areas.

#### 4.1.5 Key Performance Indicators

The following KPIs have been selected in order to evaluate the effectiveness of the air quality monitoring system.

**Table 4-2: Key performance Indicators for Air Quality Management**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Equipment maintenance log and schedule	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Notices to stakeholders	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
3	Air quality parameters within EMA standards	Results certificates	Contractor. Results to be presented to the Implementing Agency
4	Log of wetting frequency	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
5	Use of personal equipment gear	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

#### 4.1.6 Roles and Responsibilities

It is the responsibility of the Contractor to ensure that all mitigation measures are carried out and that monitoring reports are prepared. The Contractor should ensure that an Environmental Health and Safety (EHS) Manager is employed to oversee the specific requirements of this plan.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

#### 4.1.7 Data Analysis and Reporting

The sampled data will be compared to the EMA's standard for air quality and included in the environmental monitoring report prepared and submitted to EMA. If there are any exceedances, this will be reported immediately to the EHS Manager to allow for the implementation of corrective measures or adjustment in management strategies based on the results and where practicable to the operations.

### 4.2 NOISE MANAGEMENT

The EMA's Noise Standards are presented in Table 4-3. The EMA's certificate of environmental clearance permit to carry out the slated activities will stipulate the frequency with which monitoring should take place. Noise level readings, wind direction and any unusual local noise sources will be recorded. Measurements will be taken using approved and calibrated sound level meters. The frequency spectrum of the noise will be measured.

The results at the end of the sampling period will be compared with EMA standards.

#### 4.2.1 Monitoring Standards

Noise monitoring for construction activities will be in accordance with the relevant EMA standards approved methods for sampling as outlined in Table 4-3 below.

**Table 4-3: Noise Standards Extracted from the Air Pollution Rules, 2014**

TYPE OF ZONES WHERE THE SOUND ORIGINATES	MAXIMUM PERMISSIBLE SOUND PRESSURE LEVELS <b>Note: All sound pressure levels shall be measured in accordance with the Second Schedule</b>	
ZONE I— Industrial areas	Anytime	The sound pressure level shall not exceed the following: (a) equivalent continuous sound pressure level of 75 dBA; (b) instantaneous unweighted peak sound pressure level of 130 dB (peak).
ZONE II— Environmentally sensitive areas	Daytime Limits	On Mondays to Sundays of every week from 8.00 a.m. to 8.00 p.m. on each day (a) the sound pressure level when measured as the equivalent continuous sound pressure level shall not be more than 3 dBA above the background sound pressure level; and

TYPE OF ZONES WHERE THE SOUND ORIGINATES	MAXIMUM PERMISSIBLE SOUND PRESSURE LEVELS <b>Note: All sound pressure levels shall be measured in accordance with the Second Schedule</b>	
		<p>(b) the sound pressure level when measured as instantaneous unweighted peak sound pressure level shall not exceed 120 dB (peak). Notwithstanding the above, no person shall emit or cause to be emitted any sound that causes the sound pressure level when measured as the equivalent continuous sound pressure level to exceed 60 dBA.</p>
	Night-time Limits	<p>On Mondays to Sundays of every week from 8.00 p.m. to 8.00 a.m. on each day— (a) the sound pressure level when measured as the equivalent continuous sound pressure level shall not be more than 3 dBA above the background sound pressure level; and (b) the sound pressure level when measured as instantaneous unweighted peak sound pressure level shall not exceed 115 dB (peak). Notwithstanding the above, no person shall emit or cause to be emitted any sound that causes the sound pressure level when measured as the equivalent continuous sound pressure level to exceed 60 dBA.</p>
ZONE III— General Area	Daytime Limits	<p>On Mondays to Sundays of every week from 8.00 a.m. to 8.00 p.m. on each day— (a) the sound pressure level when measured as equivalent continuous sound pressure level shall not be more than 5 dBA above the background sound pressure level; and (b) the sound pressure level when measured as instantaneous unweighted peak sound pressure level shall not exceed 120 dB (peak). Notwithstanding the above, no person shall emit or cause to be emitted any sound that causes the sound pressure level when measured as the equivalent continuous sound pressure level to exceed 80 dBA.</p>
	Night-time Limits	<p>On Mondays to Sundays of every week from 8.00 p.m. to 8.00 a.m. on each day— (a) the sound pressure level when measured as equivalent continuous sound pressure level shall not be more than 5 dBA above the background sound pressure level; and (b) the sound pressure level when measured as instantaneous unweighted peak sound pressure level shall not exceed 115 dB (peak). Notwithstanding the above, no person shall emit or cause to be emitted any sound that causes the sound pressure level when measured as the equivalent continuous sound pressure level to exceed 65 dBA.</p>

#### 4.2.2 Monitoring Equipment and Stations

Ambient noise measurements will be conducted simultaneously, at the same stations sampled for air quality during construction. A calibrated sound level meter will be used to measure noise. The model of the equipment will be clearly stated, and the meter will be calibrated before each survey.

Monitors will be located approximately 1.5 m above the ground and no closer than 3m to any reflecting surface (e.g., wall). In general, the noise level limit is represented by the background or ambient noise levels that would be present in the absence of the facility or noise source(s) under investigation. In addition, before and after the survey, the instrument will be checked with a calibrator, which is factory calibrated.

#### 4.2.3 Monitoring Frequency

The noise level readings will be taken over a period of 2-3 minutes and the average (geometric mean) noise level recorded in decibels (dBA). These readings will be taken at the same time as the air samples during the construction period or period of maintenance activities.

#### 4.2.4 Management and Mitigation Measures

In addition to the monitoring procedures, The Contractor will ensure the following noise reduction options are implemented where necessary.

- Provide workers with the necessary PPE e.g. hearing protection and ensure that they are worn
- Sensitize residents in the area to the types of activities that will take place ahead of the works and assign a liaison person with whom the residents can relate
- Ensure project activities are scheduled during working hours of 8:00 a.m. to 8:00 p.m.
- Maintain all equipment in proper working order to avoid excessive noise generation
- If complaints regarding noise are received from residents, consider installing partial screening around the noisiest activities and/or mufflers on noisy equipment
- Limit implementation of noisy works simultaneously and time intervals
- Frequent change of personnel that are employed for noisy works
- In case of complaints, they should be recorded, and appropriate action should be taken.
- Effective implementation, monitoring and enforcement of National Environmental Policy, and the National Pollution Rules, action by the Environmental Management Authority.

#### 4.2.5 Key Performance Indicators

The following KPIs in Table 4-4 have been selected in order to evaluate the effectiveness of the noise monitoring system.

**Table 4-4: Key Performance Indicators for Noise Management**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Equipment maintenance log and schedule	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Notices to stakeholders	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
3	Noise parameters within EMA standards	Results certificates	Contractor. Results to be presented to the Implementing Agency
4	Log of complaints	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
5	Use of personal equipment gear	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

#### 4.2.6 Roles and Responsibilities

It is the responsibility of the Contractor to ensure that all mitigation measures are carried out and that monitoring reports are prepared. The Contractor should ensure that an EHS Manager is employed to oversee the specific requirements of this plan.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

#### 4.2.7 Data Analysis and Reporting

The results from the sampling exercise will be compared to the EMA's noise pollution standards and included in the environmental monitoring report prepared and submitted to the EMA. If there are any exceedances, this will be reported immediately to the EHS Manager to allow for management strategies to be changed according to the results.

### 4.3 WASTE MANAGEMENT

The administration and oversight of solid waste management is primarily to be carried out by the Contractor or Maintenance Manager. Below are the definitions used in the management of solid waste:

#### **Solid (Non-Hazardous) Waste**

The International Finance Corporation's (IFC) General Environment, Health and Safety (EHS) Guidelines define solid (non-hazardous) waste as generally any garbage refuse including domestic trash; inert construction/demolition materials; refuse such as scrap metal; and empty containers. Solid waste that is likely to be generated in this project will primarily be inorganic waste.

#### **Hazardous Material/Waste**

The International Finance Corporation's (IFC) General Environment, Health and Safety (EHS) Guidelines define hazardous waste as substances that possess at least one of four characteristics: ignitability, corrosivity, reactivity, or toxicity – or appear on special lists.

The International Finance Corporation's (IFC) General Environment, Health and Safety (EHS) Guidelines define hazardous material as materials that represent a risk to human health, property, or the environment due to their physical or chemical characteristics. They can be classified according to the hazard as explosives; compressed gases, including toxic or flammable gases; flammable liquids; flammable solids; oxidising substances; toxic materials; radioactive material; and corrosive substances. These may include waste oils and oil contaminated material, waste chemicals, fluorescent

light bulbs, waste electrical and electronic equipment, used lead-acid batteries, asbestos and spent catalysts.

#### **4.3.1 Monitoring Frequency**

At most locations, waste collection is conducted on a weekly basis and so monitoring of waste should be done weekly to ensure that all measures are being implemented and followed.

#### **4.3.2 Management and Mitigation Measures**

So as to reduce the possible negative impacts of improper waste disposal and management, the Contractor or Maintenance Manager will ensure that during construction or operations, every effort is made to adhere to the following mitigation measures:

##### **General solid waste management**

- Contain garbage and construction debris onsite until disposal at the approved municipal disposal site
- Prohibit burning of solid waste on project sites
- Create green areas and/or plant trees around the perimeter of the site to act as a visual screen.
- Develop and implement waste management plan during construction phase
- Effective implementation, monitoring and enforcement of National Environmental Policy, and the National Pollution Rules, action by the Environmental Authority.

##### **Spill Prevention and Hazardous waste management**

- Environmental conditions must be included in any construction contracts, thereby making contractors accountable for preventing accidental spillages
- Effective implementation, monitoring and enforcement of National Environmental Policy, and the National Pollution Rules and action by the Environmental Authority
- Conduct preventive maintenance for vehicles and machinery to ensure integrity and reliability and reduce/avoid leaks
- Conduct any on site repairs on impervious surfaces.
- Ensure proper handling, use and storage of all chemical and hazardous waste according to best practices
  - Provide spill containment and cleanup equipment on site
  - Personnel handling chemicals and hazardous substances must be trained in the use of spill prevention measures
  - Personnel handling chemicals and hazardous substances must be trained in the correct use of the appropriate Personal Protective Equipment (PPE)
  - Utilise the proper dispensing equipment
  - Storage areas must be well marked with appropriate signage.
  - All hazardous substances must be stored on an impervious surface in a designated bunded area, able to contain 110 % of the total volume of materials stored at any given time.
  - Store fuel, chemicals, and hazardous substances with secondary (spill) containment infrastructure. Use spill prevention measures such as drip trays during refuelling, bunds around storage tanks, etc. to capture spills and contain any leaks
  - Clean up any spills (including existing spills) immediately, through containment and removal of product and appropriate rehabilitation or disposal of contaminated soils
  - All hazardous waste must be disposed of at a registered hazardous waste disposal facility, which is under the Trinidad and Tobago Solid Waste Management Company Limited



- (SWMCOL) or stored in designated, lined and bunded areas as approved by the Environmental Management Authority
- Handling and disposal of hazardous waste is only conducted by trained personnel wearing the correct PPE
- Any spilling incidents must be reported as soon as possible
- Ensure proper handling and disposal of asbestos material:
  - Asbestos material, such as can be found in old pipelines, is a deadly carcinogen that should only be handled by licensed asbestos abatement professionals.
  - When handling asbestos trained personnel must seal off the work area with plastic sheeting to prevent contamination outside. Surfaces that do not need abating must be covered in plastic sheeting.
  - Warning signs must be posted to alert others that an asbestos project is underway.
  - Wear Personal Protective Equipment such as an N-100 or P-100 respirator and protective clothing to prevent asbestos exposure.
  - Asbestos-containing materials should be wetted prior to any removal efforts. Once removed it should be double bagged in 6-millimeter plastic bags and enclosed in a plastic, leak-tight container with a lid and proper labelling. It can only be disposed of in an appropriate way at the designated landfill as advised by SWMCOL.
  - Decontamination enclosure areas must be provided to allow workers to remove contaminated clothing, shoes and tools.

#### 4.3.3 Key Performance Indicators

The following Key Performance Indicators (KPIs) in Table 4-5 have been selected in order to evaluate the effectiveness of the solid waste management system.

**Table 4-5: Key Performance Indicators for Waste Management**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	No construction waste deposited on the roadways or in nearby rivers or drains	Location of a temporary storage site away from roads, drains, rivers, and walkways	Contractor. Results to be presented to the Implementing Agency
2	No leakages or spills	Monitor possible spills Inspection of site by Contractor	Contractor. Results to be presented to the Implementing Agency
3	Limited sediment-laden run-off during heavy rain	Monitor nearby/downstream wells and water bodies for significant sediment deposits	Contractor. Results to be presented to the Implementing Agency
4	Approved Contractors	Inspection of licences and documentation	Contractor Results to be presented to the Implementing Agency
5	Reuse of Construction waste where possible	Less construction waste being delivered to the dump	Contractor. Results to be presented to the Implementing Agency

KPIs will be reviewed occasionally to determine areas for improvement. Specific KPIs will need to be developed for the Solid Waste Management aspect of Component 1.

#### **4.3.4 Roles and Responsibilities**

It is the responsibility of the Contractor to ensure that all mitigation measures are carried out and that monitoring reports are prepared. The Contractor should ensure that an EHS Manager is employed to oversee the specific requirements of this plan.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

#### **4.3.5 Data Analysis and Reporting**

If there are any exceedances, this will be reported immediately to the EHS Manager to allow for management strategies to be changed according to the results.

### **4.4 TRAFFIC MANAGEMENT**

The Traffic Management Branch at the Ministry of Works and Transport requires that authorization be sought for any temporary changes in traffic. Recommendations from the Traffic Management Branch should be taken into consideration before works begin.

#### **4.4.1 Monitoring Standards**

Recommendations received from the Traffic Management Branch upon authorisation will serve as the standards to be adhered to during activities that will impact the normal flow of traffic.

#### **4.4.2 Monitoring Frequency**

Monitoring will be carried out by the Traffic Management Branch according to the frequency that is stipulated in their authorisation.

#### **4.4.3 Management and Mitigation Measures**

The Contractor will ensure that the following measures are put in place to manage potential traffic disruptions

- Work should only be carried out in sections.
- “Work Ahead” / “Detour” Signs should be used ahead of potential traffic disruptions.
- No work should be allowed in peak traffic times during weekdays:
  - 6-8am
  - 5-7pm
- Advertisements should be placed in the media before the roadworks will take place
- Avoid blocking entrances to businesses.
- Cuts in the road should be filled as soon as works in the area is completed so as to avoid disruptions in movement of traffic and erosion in case of heavy rains.
- Dirt/ debris should not be stored on sidewalks or roadways.
- Wherever works are taking place pedestrian and vehicular traffic must not be completely obstructed. The use of flag men will be required.
- Before the start of construction works, develop and distribute an initial project information packet to business owners and community leaders.
- Alert businesses about local construction works two weeks in advance (or a stipulated time frame as agreed between local businesses and the Contractor) and of any changes in the initial scheduling.

- Promote the use of the Grievance Mechanism
- Implement the use of proper signage; construction vehicle speed limits; training of drivers; maintenance of construction vehicles, and use of traffic wardens.
- Establish procedures for the transport of equipment and heavy loads, a protocol for reporting vehicle accidents and a log for traffic related incidents.
- Establish a Project community road safety awareness for residents living close to the road and for workers and a monitoring mechanism to ensure effective implementation of the plan.

#### 4.4.4 Key Performance Indicators

The following KPIs have been selected in order to evaluate the effectiveness of the traffic management system.

**Table 4-6: Key Performance Indicators for Traffic Management**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Detour signs	Inspection of the site	Contractor. Results to be presented to the Implementing Agency
2	Advertisements in the media	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
3	Log of Complaints	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
4	Flag Men	Inspection of the site	Contractor. Results to be presented to the Implementing Agency

#### 4.4.5 Roles and Responsibilities

It is the responsibility of the Contractor to ensure that all management and mitigation measures are carried out and that monitoring reports are prepared.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

#### 4.4.6 Data Analysis and Reporting

If there are any violations, this will be reported immediately to the EHS Manager to allow for management strategies to be changed according to the results.

### 4.5 WORKER HEALTH AND SAFETY MANAGEMENT

#### 4.5.1 Monitoring Frequency

Monitoring will be carried out by the Contractor daily to minimize possible incidents.

#### 4.5.2 Management and Mitigation Measures

The Contractor will ensure that the following mitigation measures are followed during construction and operational activities:

- The contractor must have a health and safety policy that is known and understood by all workers. It must be visible to the workers on site.
- All workers must observe the relevant COVID-19 protocols which include physical distancing, wearing of masks, washing and sanitizing of hands and work spaces.
- Provide fair compensation and treatment of workers for work done
- Provide equitable and ethical terms and conditions of employment for workers
- Provide safe and acceptable working conditions, including securing worker health and safety.
- Inform the employees of the occupational risks and preventative measures that must be taken to address these risks.
- Inform workers of their legal rights and obligations and provide them with the necessary training on Project occupational health and safety.
- Ensure all workers have the required personal protective equipment required of them to work on the Project and to regularly monitor to ensure compliance.
- Perform routine checks of health and safety equipment to ensure that they proper functioning.
- Assign an officer with responsibility for worker health and safety.
- Construction areas should be clearly demarcated with safety signs and barriers to prevent possible incidents.
- Workers should be properly trained in the proper use of construction equipment.
- All workers must be trained in the proper use of all health and safety equipment.
- All workers must be trained in the proper handling and management/ disposal of all types of waste.
- The contractor EHS Manager/ Officer shall maintain a register of all EHS related incidents that have occurred as a result of the activities associated with the contract. EHS incidents that should be recorded include fires, accidents, spills of hazardous materials that contaminate soil or water resources, stop-order notices issued by any Regional Corporation or any other relevant agency, non- compliance with this ESMP.
- Each EHS related incident will be investigated by the client's EHS officer and an incident report forwarded to the contractor. An incident report will be presented within five working days;
- EHS incident reports will include as a minimum, a description of the incident, actions taken to contain any damage to the environment, personnel or the public, and the corrective actions to repair/remediate any damage;
- All construction plant and equipment, tanks and machinery shall be maintained in a good state of repair throughout the construction period
- Equipment maintenance will be carried out on an impermeable surface
- Leakage from equipment will be prevented by regular inspection and repair
- Areas under construction should be clearly demarcated.
- Emergency medical supplies must be available and easily accessible in the case of an incident.
- In the event that the onsite medical supplies are not adequate, the incident needs to be escalated to the hospital.
- In the event that a worker is exposed to hazardous material they should immediately be taken for medical attention.

### 4.5.3 Key Performance Indicators

The following KPIs have been selected in order to evaluate the effectiveness of the health and safety management system.

**Table 4-7: Key Performance Indicators for Worker Health and Safety**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Health and Safety Policy	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Health and Safety Signs	Inspection of the site	Contractor. Results to be presented to the Implementing Agency
3	Training log and schedule	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
4	Register of all EHS related incidents	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
5	Equipment maintenance log and schedule	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
6	Emergency Kit	Inspection of site office	Contractor. Results to be presented to the Implementing Agency

### 4.5.4 Roles and Responsibilities

It is the responsibility of the Contractor to ensure that the health and safety management policy is clearly understood by all workers and that all mitigation measures are carried out and that monitoring reports are prepared.

It is the responsibility of the workers to ensure that they understand the health and safety requirements and that they abide by them.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

### 4.5.5 Data Analysis and Reporting

If there are any violations, this will be reported immediately to the EHS Manager to allow for management strategies to be changed according to the results.

## 4.6 COMMUNITY HEALTH AND SAFETY MANAGEMENT

### 4.6.1 Monitoring Frequency

Monitoring will be carried out by the Contractor daily to minimize possible incidents.

### 4.6.2 Management and Mitigation Measures

The Contractor will ensure that the following mitigation measures are followed during construction and operational activities:

- Perform routine checks of health and safety equipment to ensure that they are properly functioning to prevent accidents that can negatively impact the public.
- All persons associated with the project must observe the relevant COVID-19 protocols which include physical distancing, wearing of masks, washing and sanitizing of hands and work spaces.
- Assign an officer with responsibility for community health and safety.
- Construction areas should be clearly demarcated with safety signs and barriers to prevent possible incidents.
- The contractor EHS Manager/ Officer shall ensure that they utilize the consultation plan to inform community members of planned activities and safety protocols that must be adhered to. This should take place before the start of construction or maintenance works. The community should be informed of the grievance mechanism that is to be utilized if there are any issues or complaints.
- The contractor EHS Manager/ Officer shall maintain a register of all EHS related incidents that have occurred as a result of the activities associated with the contract. EHS incidents that should be recorded include fires, accidents, spills of hazardous materials that contaminate soil or water resources, stop-order notices issued by any Regional Corporation or any other relevant agency, non-compliance with this ESMP.
- Each EHS related incident will be investigated by the client's EHS officer and an incident report forwarded to the contractor. An incident report will be presented within five working days;
- EHS incident reports will include as a minimum, a description of the incident, actions taken to contain any damage to the environment, personnel or the public, and the corrective actions to repair/remediate any damage;
- All construction plant and equipment, tanks and machinery shall be maintained in a good state of repair throughout the construction period.
- Equipment maintenance will be carried out on an impermeable surface
- Leakage from equipment will be prevented by regular inspection and repair
- Areas under construction should be clearly demarcated and restricted access to members of the community.
- Emergency medical supplies must be available and easily accessible in the case of an incident.
- In the event that the onsite medical supplies are not adequate, the incident needs to be escalated to the hospital.
- In the event that a community member is exposed to hazardous material they should immediately be taken for medical attention.

#### **4.6.3 Key Performance Indicators**

The following KPIs have been selected in order to evaluate the effectiveness of the health and safety management system.

**Table 4-8: Key Performance Indicators for Worker Health and Safety**

<b>No.</b>	<b>Key Performance Indicators</b>	<b>How will it be monitored and measured</b>	<b>Responsibility</b>
1	Health and Safety Policy	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Health and Safety Signs	Inspection of the site	Contractor. Results to be presented to the Implementing Agency
3	Log of Complaints	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
4	Register of all EHS related incidents	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
5	Equipment maintenance log and schedule	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
6	Emergency Kit	Inspection of site office	Contractor. Results to be presented to the Implementing Agency

#### **4.6.4 Roles and Responsibilities**

It is the responsibility of the Contractor to ensure that the community is aware of planned activities and the health and safety protocols that they need to abide by for their protection and safety. It is important that all mitigation measures are carried out and that monitoring reports are prepared.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

#### **4.6.5 Data Analysis and Reporting**

If there are any violations, this will be reported immediately to the EHS Manager to allow for management strategies to be changed according to the results.



## 4.7 WATER QUALITY MANAGEMENT - LANDSLIDE AND EROSION CONTROL

### 4.7.1 Monitoring Standards

The works will be monitored by the Contractor based on adherence to the EMA certificate of environmental clearance. Water Pollutions Rules (2019) as seen in the figure below are the most recent water quality standards that would need to be followed.

732

Water Pollution Rules, 2019

SCHEDULE II

(Rule 4)

PERMISSIBLE LEVELS

	Water Pollutants	Receiving Environment			
No.	Parameters or Substances	Inland Surface Water	Coastal Nearshore	Marine Offshore	Environmentally Sensitive Areas and/or Groundwater
Levels or Conditions					
1.	Temperature	35	40	45	NIAA
2.	Dissolved Oxygen	>4	>4	>4	>4
3.	Hydrogen ion (pH)	6-9	6-9	6-9	6-9
4.	Five day Biological Oxygen Demand (BOD <sub>5</sub> at 20°C)	30	50	100	10
5.	Chemical Oxygen Demand (COD)	250	250	250	60
6.	Total Suspended Solids (TSS)	50	150	200	15
7.	Total Oil and Grease (TO&G) or n-Hexane Extractable Material (HEM)	10	15	100	No release
8.	Ammoniacal Nitrogen (as NH <sub>3</sub> -N)	10	10	10	0.1
9.	Total Phosphorous (as P)	5	5	5	0.1
10.	Sulphide (as H <sub>2</sub> S)	1	1	1	0.2
11.	Chloride (as Cl <sup>-</sup> )	250	NIAA	NIAA	NIAA
12.	Total Residual Chloride (as Cl <sub>2</sub> )	1	1	2	0.2
13.	Dissolved Hexavalent Chromium (Cr <sup>6+</sup> )	0.1	0.1	0.1	0.01
14.	Total Chromium (Cr)	0.5	0.5	0.5	0.1
15.	Dissolved Iron (Fe)	3.5	3.5	3.5	1.0
16.	Total Petroleum Hydrocarbons (TPH)	25	40	80	No release
17.	Total Nickel (Ni)	0.5	0.5	0.5	0.5
18.	Total Copper (Cu)	0.5	0.5	0.5	0.01
19.	Total Zinc (Zn)	2	2	2	0.1
20.	Total Arsenic (As)	0.1	0.1	0.1	0.01
21.	Total Cadmium (Cd)	0.1	0.1	0.1	0.01
22.	Total Mercury (Hg)	0.01	0.01	0.01	0.005
23.	Total Lead (Pb)	0.1	0.1	0.1	0.05
24.	Total Cyanide (as CN <sup>-</sup> )	0.1	0.1	0.1	0.01
25.	Phenolic Compounds (as phenol)	0.5	0.5	0.5	0.1
26.	Radioactivity	NIAA	NIAA	NIAA	NIAA
Levels or Conditions					
27.	Toxicity	NATE	NATE	NATE	NATE
28.	Faecal Coliforms	400	400	400	100

Figure 4-1: Ambient Water Quality Standards Extracted from the Water Pollution Rules, 2019

#### **4.7.2 Monitoring Frequency**

Monitoring will be carried out by the Contractor (via a qualified environmental specialist) according to the frequency that is stipulated in the EMA's CEC for the activity being performed.

#### **4.7.3 Management and Mitigation Measures**

The following management actions and mitigation measures should be adhered to:

##### **Erosion Control**

- Only clear topsoil from areas to be used
- Place berms around stockpiles of topsoil and aggregate (sand, gravel, etc.)
- Avoid steep cuts and where there are steep cuts, they must be shored
- Utilise sediment traps to minimise sediment runoff
- Replant trees in affected areas of the project site or other areas
- Construction vehicles must be restricted to designated paths and must not be allowed to drive all over the cleared site.
- Compacted soils should be routinely ripped during construction until they are revegetated after construction is complete.
- Proper implementation and/or enforcement of the National Physical development Plan (1984) and the National Spatial development Strategy for T & T (2014); the National Forests Policy (2011), the National Protected Areas Policy (2011) and the Upper Watersheds Management Plans; the National Environmental Act and The National Environmental Policy; the Waterworks and Water Conservation Act (2016).

##### **Landslides**

- An emergency preparedness and response plan must be in place to cover man-made and natural hazards. Workers must be trained in the requirements of the emergency preparedness and response plan.
- Proper implementation and/or enforcement of the National Physical development Plan (1984) and the National Spatial development Strategy for T & T (2014); the National Forests Policy (2011), the National Protected Areas Policy (2011) and the Upper Watersheds Management Plans; the National Environmental Act and The National Environmental Policy;
- Implement Construction Best Practices.
- Revegetate cleared areas immediately following construction.
- Comply with National forests Policy (2011) and Watershed management Plans.

##### **Water Pollution Prevention**

- Environmental conditions must be included in any construction contracts, thereby making contractors accountable for preventing accidental spillages.
- Effective implementation, monitoring and enforcement of the Water Conservation Act, effective implementation, monitoring and enforcement of the Public Health Ordinance, enforcement of the National Water Pollution Rules.

- Spill prevention mechanism outlined in Section 4.3 above entitled Waste Management should be adhered to prevent accidental spills which can contaminate rivers and nearby habitats with ecologically sensitive species.

#### Sewage

- Implement the management of contaminated wastewater generated from construction sites.

#### 4.7.4 Key Performance Indicators

The following KPIs have been selected in order to evaluate the effectiveness of the water quality management program.

**Table 4-9: Key Performance Indicators for Water Quality Management**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Sediment traps	Site Inspection	Contractor. Results to be presented to the Implementing Agency
2	Logs indicating when work was halted	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
3	Turbidity Results from a certified lab.	Review and inspection of documentation- certificate results	Contractor. Results to be presented to the Implementing Agency

#### 4.7.5 Roles and Responsibilities

It is the responsibility of the Contractor to ensure that the management and mitigation measures for water quality are clearly understood by all workers and that they are carried out and relevant monitoring reports are prepared.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

#### 4.7.6 Data Analysis and Reporting

If there are any violations, this will be reported immediately to the EHS Manager to allow for management strategies to be changed according to the results.

Additionally, as part of the final version of this document, mitigation measures for the potential risk of over abstraction of surface water and groundwater will be included for the Operational Phase.

### 4.8 MANAGEMENT OF ACCESS TO COMMUNITIES

#### 4.8.1 Monitoring Standards

The works will be monitored by the Contractor.

#### 4.8.2 Monitoring Frequency

Monitoring will be carried out by the Contractor as work progresses in the Community.

#### 4.8.3 Management and Mitigation Measures

The Contractor will ensure that the following measures are put in place to manage access into the community and not disrupt the community from their normal daily routines:

- Prior to the start of works proper signage and safety guidelines with respect to site access and community access should be provided to the community in areas where works are planned, in accordance with the consultation plan.
- Appropriate location points should be identified and properly marked for the transfer and storage of construction material.
- The community should be given prior notice if access will be restricted

#### 4.8.4 Key Performance Indicators

The following KPIs in Table 4-10 have been selected in order to evaluate the effectiveness of the community access.

**Table 4-10: Key Performance Indicators for Management of Access to Communities**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Inspection Log and notes	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Signage	Inspection of the site	Contractor. Results to be presented to the Implementing Agency
3	Notices	Review and inspection	Contractor. Results to be presented to the Implementing Agency

#### 4.8.5 Roles and Responsibilities

It is the responsibility of the Contractor to ensure that access to communities is not disrupted. If there is a potential challenge with access due to planned works, the contractor must ensure that all workers and community members are adequately aware and the alternative location points are clearly marked.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

#### 4.8.6 Data Analysis and Reporting

If there are any violations, this will be reported immediately to the EHS Manager and any incidents logged.

### 4.9 EMERGENCY RESPONSE MANAGEMENT

#### 4.9.1 Monitoring Standards

The works will be monitored by the Contractor based on adherence to the EMA's CEC.

#### 4.9.2 Monitoring Frequency

Monitoring will be carried out by the Contractor monthly.

#### 4.9.3 Management and Mitigation Measures

The Contractor will ensure that the following measures are put in place for effective emergency response:

## **Fire**

- In the event of a fire- there should be sufficient, available and well-maintained firefighting equipment.
- If the fire is too large, the fire brigade shall be called to extinguish it.

## **Heavy rainfall and Flood Prevention**

- As much as possible work should not be done during the rainy season.
- In the event of pending heavy rainfall, all equipment should be removed from near drains and rivers where it could be washed away.
- See also section 4.5
- Workers must be trained in the requirements of the emergency preparedness and response plan.
- Proper implementation and/or enforcement of the National Physical development Plan (1984) and the National Spatial development Strategy for T & T (2014); the National Forests Policy (2011), the National Protected Areas Policy (2011); the National Environmental Act and The National Environmental Policy;

## **Earthquakes**

- Use of flexible pipe joints and penetrations into tanks to prevent breakage from earthquake movements.
- All works should be done to local and international building codes and standards where possible.
- An emergency preparedness and response plan must be in place to cover man-made and natural hazards. Workers must be trained in the requirements of the emergency.

### **4.9.4 Key Performance Indicators**

The following KPIs in Table 4-11 have been selected in order to evaluate the effectiveness of the emergency response measures.

**Table 4-11: Key Performance Indicators for Management of Emergency Response**

<b>No.</b>	<b>Key Performance Indicators</b>	<b>How will it be monitored and measured</b>	<b>Responsibility</b>
1	Maintenance Log	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Incident Log	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

#### **4.9.5 Roles and Responsibilities**

It is the responsibility of the Contractor to ensure that the emergency response measures are clearly understood by all workers and that all management and mitigation measures are carried out and that monitoring reports are prepared.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

#### **4.9.6 Data Analysis and Reporting**

If there are any violations, this will be reported immediately to the EHS Manager to allow for management strategies to be changed according to the results.

### **4.10 FLORA AND FAUNAL MANAGEMENT**

#### **4.10.1 Monitoring Standards**

The works will be monitored by the Contractor based on adherence to the EMA's CEC.

#### **4.10.2 Monitoring Frequency**

Monitoring will be carried out by the Contractor (via a qualified environmental specialist) according to the frequency that is stipulated in the EMA's CEC.

#### **4.10.3 Management and Mitigation Measures**

The Contractor will ensure that the following measures are put in place to manage the flora and fauna in the construction area:

##### **General**

- Clearing of vegetation shall be kept to the minimum required and where possible, shall be avoided and areas for construction related activities shall be located where the natural habitat has been transformed;
- All construction sites should be clearly demarcated;
- Areas where priority plant species are growing must be demarcated as no-go zones;
- Access tracks should avoid sensitive areas, especially steep gradients;
- No clearing of vegetation, storage of materials or other construction related activities shall be permitted outside the demarcated construction area.
- Effective implementation, monitoring and enforcement of National Environmental Policy, and the National Pollution Rules, the National Biodiversity Policy, action by the Environmental Authority
- Effective implementation, monitoring and enforcement of the Water Conservation Act, effective implementation, monitoring and enforcement of the Public Health Ordinance, enforcement of the National Protected Areas Policy.

##### **Erosion prevention and protection of sensitive flora and fauna**

- Replant trees in the same area of the project site or other areas. Exotic vegetation managed and affected sites should be replanted or rehabilitated with indigenous grass species.
- Avoid indiscriminate habitat destruction and localise the proposed development as much as possible (including support areas and services).

- Control erosion through the utilization of silt traps, silt fencing, Gabions, etc. This is especially pertinent within areas of steeper gradients.

#### Contamination Prevention and protection of sensitive flora and fauna

- Ensure that proper handling, use and storage of all chemicals are done according to best practices
- Have spill containment and clean-up equipment on site and dispose of waste in accordance with best practices
- Do not store fuel and chemicals near or at watercourses or waterbodies
- Report and clean accidental spills immediately
- Contaminated soils must be removed and disposed of at a registered disposal site.
- Properly maintain and service equipment
- Refuelling should not be done within the riparian zones

#### Noise pollution prevention and protection of sensitive fauna

- Limit animal disruptive activities to short time frames

Additionally, as part of the final versions of this document, and with a more clear definitions of the scope and design of the proposed works, specific mitigation measures will be included for any indirect and non-significant impact on protected areas, key biodiversity areas, and other critical habitats as considered by IDB's OP-703, Directive B.9.

#### 4.10.4 Key Performance Indicators

The following KPIs in Table 4-12 have been selected in order to evaluate the effectiveness of the community access.

**Table 4-12: Key Performance Indicators for Management of Flora and Fauna**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	No major losses of priority species	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Signage	Inspection of the site	Contractor. Results to be presented to the Implementing Agency

#### 4.10.5 Roles and Responsibilities

It is the responsibility of the Contractor to ensure all workers are made aware of the importance of following the management and mitigation and that monitoring reports are prepared.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.



#### **4.10.6 Data Analysis and Reporting**

If there are any violations, this will be reported immediately to the EHS Manager to allow for management strategies to be changed according to the results.

## 5 SOCIAL MANAGEMENT PLAN

### 5.1 Social Conflict Management

#### 5.1.1 Monitoring Standards

The works will be monitored by the Contractor.

#### 5.1.2 Monitoring Frequency

Monitoring will be carried out by the Contractor as work progresses in the Community.

#### 5.1.3 Management and Mitigation Measures

The Contractor will ensure that the following measures are put in place to manage social conflicts in the community and on site:

- Establish a fair and impartial mechanism that is accessible to all for addressing Project-related complaints and issues by affected community residents
- Establish a stakeholder engagement process and channels of communication from the onset of the project to continuously inform the affected communities and the public about the project (especially the Metering Component) and project works.

#### 5.1.4 Key Performance Indicators

The following KPIs in Table 5-1 have been selected in order to evaluate the effectiveness of the social conflict management plan.

**Table 5-1: Key Performance Indicators for Management of Social Conflict**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Log of Complaints	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

#### 5.1.5 Roles and Responsibilities

It is the responsibility of the Contractor to manage social conflicts. The contractor must ensure that all workers and community members are adequately aware of the grievance mechanism to log complaints that need to be addressed.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

#### 5.1.6 Data Analysis and Reporting

If there are any violations, this will be reported immediately to the EHS Manager and any complaints logged.

### 5.2 Management of Installation of Household Metering Stations

#### 5.2.1 Monitoring Standards

The works will be monitored by the Contractor and the Implementing Agency.

#### 5.2.2 Monitoring Frequency

Monitoring will be carried out by the Contractor as installation progresses in the various communities.

### 5.2.3 Management and Mitigation Measures

The Contractor will ensure that the following measures are put in place to manage the installation of household metering in the project area:

- Conduct community sensitization sessions on the plans and process of installing household metres before beginning any work in any community. Take note of any feedback or suggestions provided by residents during these sessions and address if possible.
- Inform community residents of subsidies and grants that exist to alleviate pressure on the poor and vulnerable population. Inform those in need on the process of how these can be applied to residents that are in need.
- Inform community on the channels of communication and the grievance mechanism in place.

### 5.2.4 Key Performance Indicators

The following KPIs in Table 5-2 have been selected in order to evaluate the effectiveness of the social conflict management plan.

**Table 5-2: Key Performance Indicators for Management of Installation of Household Metering Stations**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Community Meeting Schedule and Notes	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Log of Complaints	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

### 5.2.5 Roles and Responsibilities

It is the responsibility of the Contractor to manage the installation of household metering stations. The contractor must ensure that all householders are properly sensitised before the installation process begins and that they are adequately aware of the grievance mechanism to log complaints that need to be addressed.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

### 5.2.6 Data Analysis and Reporting

If there are any violations, this will be reported immediately to the EHS Manager and any complaints logged.

### 5.3 Under-Representation of Women in the Project Workforce

#### 5.3.1 Monitoring Standards

The works will be monitored by the Contractor.

#### 5.3.2 Monitoring Frequency

Monitoring will be carried out by the Contractor as work progresses in the Community.

#### 5.3.3 Management and Mitigation Measures

The Contractor will ensure that the following measures are put in place to ensure there is adequate representation of women in the project workforce:

- As part of the Implementing 's agency contractual arrangements with the construction contractor, encourage the construction contractor to maximise local employment opportunities and to work with the local communities (and their leaders) in establishing a fair and transparent system for local worker recruitment.
- Inform the Division of Community Development, the Institute of Technology (MIC) – Multi-Sector Skills Training Programme (MuST), and the Regional Corporations of the types of job opportunities that will be available through the Project to influence the types of semi-skilled training programmes offered in the Project area during pre-construction and construction phases.
- Emphasis should be placed on training women as well as men to improve their recruitment perspectives for semi-skilled positions.
- Take steps to ensure that qualified women are afforded equal access to job opportunities from the Project (linked to the first mitigation measure).
- All applications will be made aware of the grievance mechanism to report any complaints associated with gender-biased or unfair treatment.

#### 5.3.4 Key Performance Indicators

The following KPIs in Table 5-3 have been selected in order to evaluate the effectiveness the plan to minimize the under-representation of women in project works.

**Table 5-3: Key Performance Indicators for Management of Under-representation of Women in Project Works**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Local worker recruitment Policy	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Training log and schedule	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
3	Register of all workers employed	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
4	Log of Complaints	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

### 5.3.5 Roles and Responsibilities

It is the responsibility of the Contractor to manage social conflicts. The contractor must adhere to the local worker recruitment policy to be free from gender biases. The contractor must also ensure that all workers and community members are adequately aware of the grievance mechanism to log complaints that need to be addressed.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

### 5.3.6 Data Analysis and Reporting

If there are any violations, this will be reported immediately to the EHS Manager and any complaints logged.

## 5.4 Institutional Conflict Management

### 5.4.1 Monitoring Standards

The works will be monitored by the Implementing Agency.

### 5.4.2 Monitoring Frequency

Monitoring will be carried out by the Implementing Agency as project activities are being implemented.

### 5.4.3 Management and Mitigation Measures

The Contractor will ensure that the following measures are put in place to manage institutional conflicts associated with the implementation of the project activities:

- Establish a formal system to inform, coordinate and reduce conflicts that may arise in conducting project works and planned municipal activities.

### 5.4.4 Key Performance Indicators

The following KPIs in Table 5-4 have been selected in order to evaluate the effectiveness the plan to manage institutional conflicts.

**Table 5-4: Key Performance Indicators for Management of Institutional Conflict**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Log of Complaints	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

### 5.4.5 Roles and Responsibilities

It is the responsibility of the Implementing. Internal grievance mechanism to log complaints should be in place. The Implementing Agency is responsible for monitoring and undertaking mitigation measures.

### 5.4.6 Data Analysis and Reporting

If there are any violations, this will be reported immediately to the EHS Manager and any complaints logged.

## 5.5 Water Supply Management

### 5.5.1 Monitoring Standards

The works will be monitored by the Contractor.

### 5.5.2 Monitoring Frequency

Monitoring will be carried out by the Contractor as work progresses in the Community.

### 5.5.3 Management and Mitigation Measures

The Contractor will ensure that the following measures are put in place to mitigate against water supply disruptions that could occur during project execution:

- Notify impacted communities of the possible disruption of services starting two weeks in advance of construction works.
- Provision of truck-borne water supply to sensitive receptors, as needed.
- Inform customers of grievance mechanism

### 5.5.4 Key Performance Indicators

The following KPIs in Table 5-5 have been selected in order to evaluate the effectiveness the plan to manage disruptions in water supply.

**Table 5-5: Key Performance Indicators for Management of Disruption in Water Supply**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Log of Complaints	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Notices for disruption in services	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
3	Delivery Schedule for water trucking service	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

### 5.5.5 Roles and Responsibilities

It is the responsibility of the Implementing. Internal grievance mechanism to log complaints should be in place. The Implementing Agency is responsible for monitoring and undertaking mitigation measures.

### 5.5.6 Data Analysis and Reporting

If there are any violations, this will be reported immediately to the EHS Manager and any complaints logged.

## 5.6 Damage to Property Management

### 5.6.1 Monitoring Standards

The works will be monitored by the Contractor.

### 5.6.2 Monitoring Frequency

Monitoring will be carried out by the Contractor as work progresses in the Community.

### 5.6.3 Management and Mitigation Measures

The Contractor will ensure that the following measures are put in place to prevent or mitigate against damage to property that could occur during project execution:

- Provide compensation for loss of assets (property – land and structures) to private landowners (persons with legal rights to land or recognisable claims under Trinidad and Tobago law, such as letters of comfort) and persons occupying property
- Promote the use of the grievance redress mechanism to address project related complaints and issues
- Promptly repair any damage to vital infrastructure and services in consultation with, or by the service provider.

### 5.6.4 Key Performance Indicators

The following KPIs in Table 5-6 have been selected in order to evaluate the effectiveness the plan to manage property damage.

**Table 5-6: Key Performance Indicators for Management of Property Damage**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Log of Complaints	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Assessment of cost of damage	Review and inspection of documentation	Implementing Agency
3	Preparation of compensation package	Review and inspection of documentation	Implementing Agency

### 5.6.5 Roles and Responsibilities

It is the responsibility of the Implementing. Internal grievance mechanism to log complaints should be in place. The Implementing Agency is responsible for monitoring and undertaking mitigation measures.

### 5.6.6 Data Analysis and Reporting

If there are any violations, this will be reported immediately to the EHS Manager and any complaints logged.

## 6 SECURITY MANAGEMENT PLAN

### 6.1 Monitoring Standards

The safety and security of the workers and equipment would be the responsibility of the Contractors and WASA (WASA Police). They should coordinate with the Trinidad and Tobago police services when operating in areas with high risk to ensure the safety of equipment and all stakeholders.

### 6.2 Monitoring Frequency

Monitoring for safety and security should be carried out throughout all phases of the project by WASA.



### 6.3 Management and Mitigation Measures

The Contractor and WASA will be responsible for the following measures to ensure the safety and security of personnel and equipment during all phases of the project. The risk level and impact to the site(s) will have to be assessed and the appropriate mitigation measures devised. Some mitigation measures include: -

- Creation of site-specific security plan based on an assessment of the security risk.
- Liaise and communicate with the Trinidad and Tobago Police Service to assess the risk associated with each site for every stage of the project, The WASA Police should also be consulted and involved in this process.
- Contact the TTPS for the area to advise of areas where work will be conducted prior to commencement of work.
- Ensure that key assets and property are secured or removed to a secure location when not in use.
- Where possible ensure perimeter of areas has appropriate security fencing and areas are well illuminated.
- Control site access by ensuring limited access points and controlled entry.
- Engage with community members and encourage them to report suspicious activities to the TTPS or to WASA.
- Encourage security awareness among employees and ensure security supervisor is always at the site.
- Maintain a security risk register and periodically review the security risk plan to update the security mitigation measures.
- Contract licensed security services to guard and patrol sites where necessary. Security personnel should be unarmed and properly trained in de-escalation techniques.
- Consider the use of technology, such as tagging, GPS tracking and video surveillance to detect and alert for any security issues or treats.

### 6.4 Key Performance Indicators

The following KPIs in Table 6-1 have been select in order to evaluate the effectiveness of the plan to mitigate against treats to security.

**Table 6-1: Key Performance Indicators for Security Management**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Security Risk Register	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Incident Log	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

### 6.5 Roles and Responsibilities

It is the responsibility of the Implementing Agency to log security related incidents into the register. The Implementing Agency is responsible for monitoring and undertaking mitigation measures.

## 6.6 Data Analysis and Reporting

If there are any security incidents, these are to be reported to the Implementing Agency and the TTPS. The implementing agency will be required to ensure the appropriate mitigation measures are implemented and the TTPS along with WASA (WASA Police) will be responsible for investigating the incident.

## 7 CONTRACTOR MANAGEMENT PLAN

### 7.1 Monitoring Standards

The works will be monitored by the Implementing Agency.

### 7.2 Monitoring Frequency

Weekly monitoring will be carried out by the Implementing Agency during both construction and operational phases.

### 7.3 Management and Mitigation Measures

The Implementing Agency will ensure that the following measures are put in place to manage all contractors throughout the project:

- The Implementing Agency will provide the Contractors Management Plan with attributes for all parts, requirements to Contractors and also a Work Statement for the various phases of work including models for standard documents.
- The Contractor is expected to abide by this Contractors Management Plan.
- The Contractors will enter into a business partnership with the Implementing Agency after completing a successful tender process following the government procurement guidelines.
- Each contractor will have a legally binding, written contract that defines specific terms and conditions.
- The Contractor will provide the integrated solution for execution of the work phases, including the economic, environmental and social approach.
- The Contractor will abide by the management actions and mitigations measures provided in the Environmental and Social Management Plan associated with the project.
- The Contractors will present to the Implementing Agency, all the information for all subcontractors and the procedures for verification and validation services.
- Each Contractor will have a single point of contact to the Implementing Agency for contractual matters. The contact points, for each site, will monitor the activities.
- The Point of Contact will ensure compliance of the Project against the General Commitments Register. Weekly they will report about achievements and problems and the current situation to the Implementing Agency.
- Each Contractor/Subcontractor will identify the responsibilities and authorities of the Project staff. This information will be published in a project contact sheet and approved by the Implementing Agency.
- Each Contractor will have requirements for quality assurance clearly identified within the Statement of Work, including the requirement to allow independent quality inspections of materials and work processes;

- All products and services provided by the subcontractor (partners of Contractor) will be subject to the acceptance of the Implementing Agency;
- Each subcontract will contain appropriate terms and conditions;
- Adequate facilities will be provided to meet the needs of the Contractors, and the Contractors will support subcontractors in processing invoices and payments via standards and templates set by the Implementing Agency;
- The Contractor is responsible for project management, for control and monitoring activities regarding constructors' actions and has overall responsibility for environmental, social, health and safety, and cultural heritage aspects of the project.
- The Contractors will prepare work plans in compliance with the project's requirements and submit to the Implementing Agency for their Approval. These workplans should include site specific method statements for work in protected areas and sensitive habitats.
- Contractors must nominate the following employees:
  - representative for site coordination;
  - representatives for EHS responsibilities;
  - representatives for technical execution, budget, Project phases;
  - first aid competent person;
  - representative for waste management;
  - team for guarding the site; and
  - team responsible for intervention on accidental pollution events.
- Any changes in execution of work will be approved by the Implementing Agency.
- All Contractors are also required to comply with all relevant national regulatory requirements.
- Each week, the Contractors will prepare and deliver to the Implementing Agency a weekly progress report for each aspect of the work.
- Each week, the Contractors will prepare and deliver to the Implementing Agency weekly progress reports on environmental, social and health and safety performance including reports on the KPIs presented in the Environmental and Social Management Plan.

### 7.3.1 Key Performance Indicators

The following KPIs in Table 7-1 have been selected in order to evaluate the effectiveness of the contractor management process.

**Table 7-1: Key Performance Indicators for Management of Contractors**

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
1	Weekly Report on achievements and problems	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Project contact sheet	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
3	Reports on quality inspections	Quality inspections of materials and work processes	Contractor. Results to be presented to the Implementing Agency

No.	Key Performance Indicators	How will it be monitored and measured	Responsibility
4	Work plan	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
5	Weekly progress reports on each aspect of the work	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
6	Weekly progress reports on environmental, social and health and safety performance	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

### 7.3.2 Roles and Responsibilities

It is the responsibility of the Implementing Agency to ensure that there are no issues when contracting services. The Implementing Agency is monitoring the Contractor and ensuring that they undertake all the requisite management and mitigation measures.

### 7.3.3 Data Analysis and Reporting

If there are any violations, this will be reported immediately to the Implementing Agency.

## 8 LIVELIHOOD PROTECTION PLAN

### 8.1 Monitoring Standards

The works will be monitored by the Contractor.

### 8.2 Monitoring Frequency

Weekly monitoring will be carried out by the Contractor as work progresses in the Community until the end of activities.

### 8.3 Management and Mitigation Measures

The Contractor will ensure that the following measures are put in place to manage access into communities and not disrupt the community's livelihood activities from their normal daily routines:

- Before the start of construction works, develop and distribute an initial project information packet to business owners and community leaders.
- Alert businesses about local construction works two weeks in advance (or a stipulated time frame as agreed between local businesses and the Contractor) and of any changes in the initial scheduling.
- Promote the use of the Community Grievance Mechanism.

#### 8.3.1 Key Performance Indicators

The following KPIs in Table 4-10 have been selected in order to evaluate the effectiveness of the community access.

**Table 8-1: Key Performance Indicators for Management of Access to Communities**

<b>No.</b>	<b>Key Performance Indicators</b>	<b>How will it be monitored and measured</b>	<b>Responsibility</b>
1	Inspection Log and notes	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency
2	Signage	Inspection of the site	Contractor. Results to be presented to the Implementing Agency
3	Complaints logged	Review and inspection of documentation	Contractor. Results to be presented to the Implementing Agency

### **8.3.2 Roles and Responsibilities**

It is the responsibility of the Contractor to ensure that there are no disruptions in livelihood activities and as a result no negative social repercussions. If there is a potential challenge due to planned works, the contractor must ensure that all workers and community members are adequately aware and the alternatives are clearly expressed to minimize social impacts.

The Implementing Agency is responsible for monitoring the contractor to ensure that monitoring is being undertaken and mitigation measures are being enforced.

### **8.3.3 Data Analysis and Reporting**

If there are any violations, this will be reported immediately to the EHS Manager and any incidents logged.

## 9 SUMMARY OF MONITORING FREQUENCY

The following table summarises the monitoring frequency required for each area described previously:

PARAMETER	FREQUENCY
Air Quality	Twice per month or as stipulated by the EMA
Noise	Twice per month or as stipulated by the EMA
Waste Management	Twice per month
Traffic Management	As stipulated by Traffic Management Branch
Worker Health and Safety Management	Daily
Community Health and Safety Management	Daily
Water Quality	Monthly or as stipulated by the EMA
Access to the community	Weekly
Emergency Response	Monthly
Flora and Fauna	Weekly
Social Management	Weekly
Security Management	Daily
Contractor Management	Weekly
Livelihood Protection	Weekly

## SECTION 2



## CONSULTATION AND PARTICIPATORY STRATEGY AND GRIEVANCE MECHANISM

## 10 CONSULTATION AND PARTICIPATORY STRATEGY

### 10.1 Stakeholder Identification, Mapping and Engagement Strategy

#### 10.1.1 Stakeholder Identification

The main objective of a stakeholder analysis exercise is to identify and map stakeholders who may be affected by, or contribute to the implementation of the Trinidad and Tobago National Water Sector Transformation Program. Stakeholders are mapped with a view to assessing the importance of each stakeholder to the success of the project and their power or influence over the project.

For the purpose of the analysis, stakeholders are grouped within the following broad categories:

1. Affected communities including community members living adjacent to the construction works – families, individuals and social structures and networks including formal or informal community organisations;
2. Sensitive human receptors in the vicinity of the construction works, including schools, health facilities (hospitals), nurseries and early childhood care and educational facilities, care facilities for older adults, persons who at home during the day, etc.;
3. Local businesses and their representative organisations;
4. Local persons seeking employment;
5. WASA customers;
6. Local Government – the Diego Martin Regional Corporation, Port-of-Spain City Corporation, San Juan/Laventille Regional Corporation and Tunapuna/Piarco Regional Corporation;
7. Politicians (Local Government Councillors, Members of Parliament and Representatives of the Opposition);
8. Residents of the affected municipalities;
9. Project contractors and sub-contractors;
10. Central government agencies (including regulatory agencies);
11. National civil societies (e.g. environmental NGOs);
12. The media; and
13. The general public.



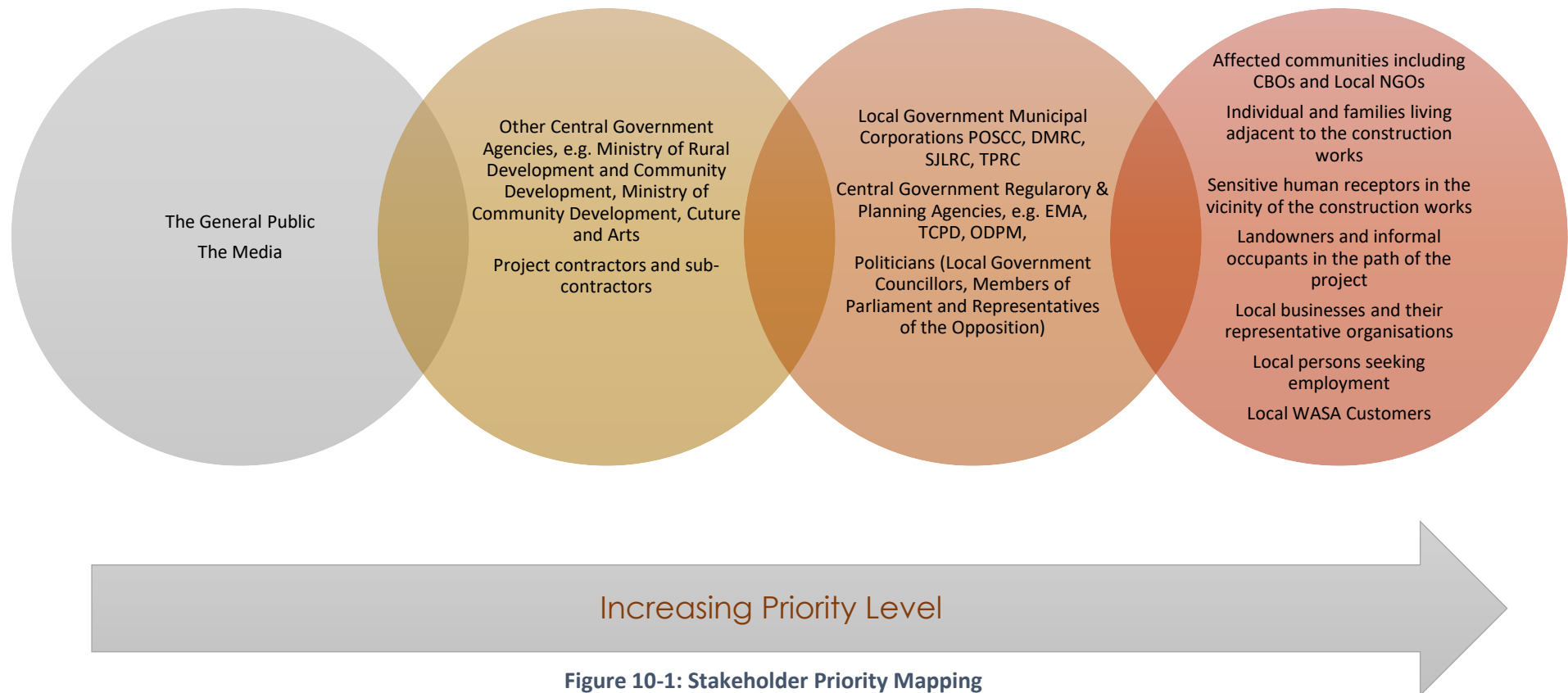


Figure 10-1: Stakeholder Priority Mapping

### 10.1.2 Stakeholder Analysis and Engagement Strategies

Figure 10-1 ranks stakeholders based primarily on their level of importance (those who may be directly or indirectly affected by project activities) and their level of concern with regard to the outcome of the project. Individuals/families owning or using physical and productive assets in the footprint of the highway. The key local stakeholders (high priority stakeholders), those whose participation in the project is critical to achieving the project objectives, are the following:

- Affected communities including CBOs and local NGOs;
- Individual and families living adjacent to the construction works;
- Sensitive human receptors in the vicinity of the construction works;
- Landowners and informal occupants in the footprint of the project;
- Local businesses and their representative organisations;
- Local persons seeking employment; and
- Local WASA customers.

A second figure also maps stakeholders against their level of influence and their degree of interest in the project (Figure 10-2). This second figure also presents the recommended communication/engagement strategy as the project rolls-out. The level of interest is defined as the degree to which a stakeholder is concerned about the outcomes of the Trinidad and Tobago National Water Sector Transformation Plan. A key question here is, “Will stakeholders be positively or negatively affected?” The level of influence looks at the degree to which a stakeholder can make or break the project, for example, through the provision of funding, their cooperation, protest action, or through legal means, etc. Six stakeholder groups fall within the high influence and high interest category who should be managed thoroughly (engaged and consulted) throughout the project. Among them are the first six stakeholder groups listed above. The list of stakeholders at the community and institutional level with whom the project should engage and consult throughout the project is provided in Table 10-1.

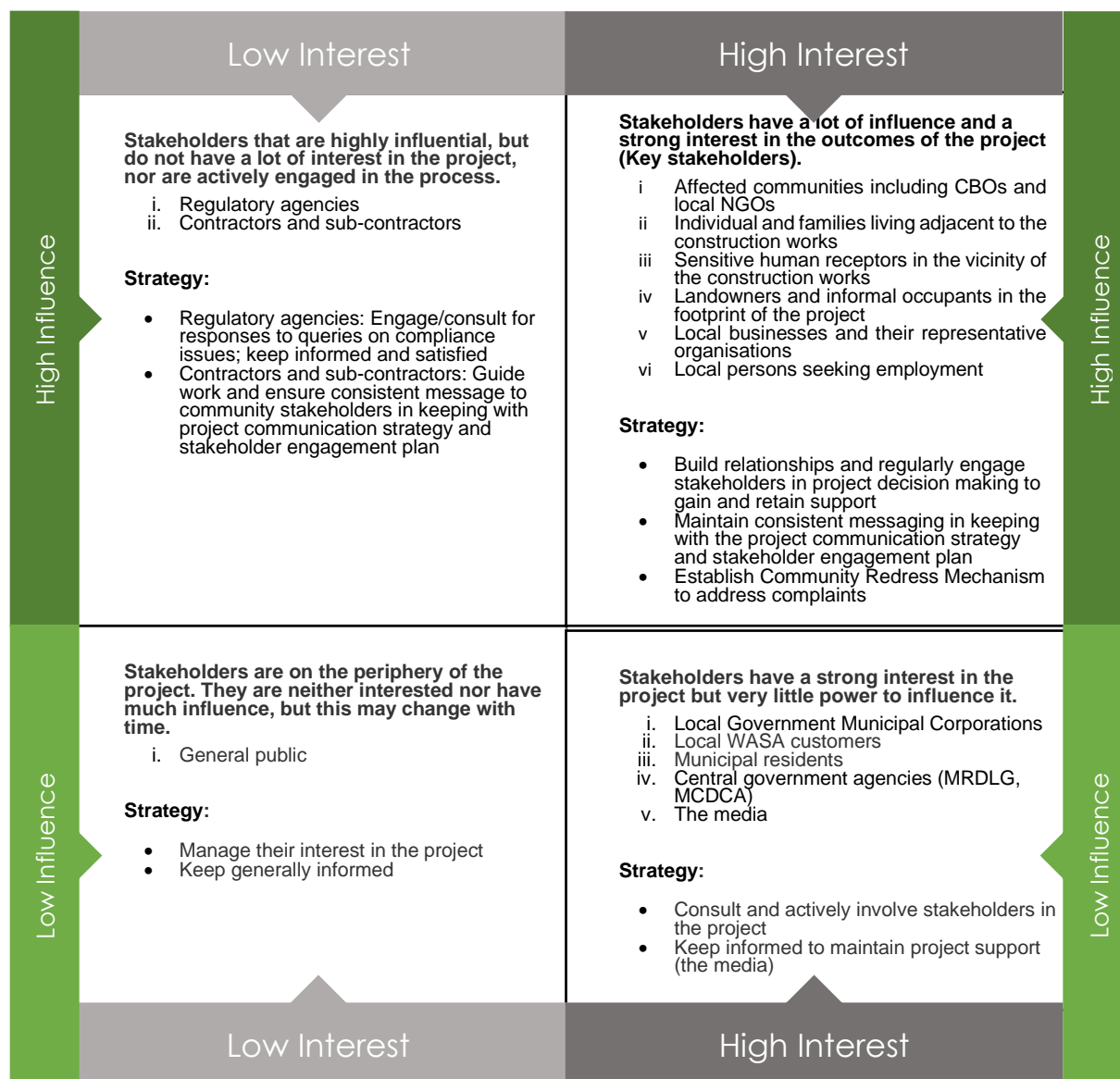


Figure 10-2: Stakeholder Mapping Results and Strategy for Engagement

**Table 10-1: Stakeholder Listing and Mapping**

Stakeholders that have a Participatory Role in the Projects planned implementation	Participatory Role	Current Interest Focus	Current Interest Rating
Occupational Safety and Health Agency	Facilitating	Occupational Health and Safety Management	STAKEHOLDERS WITH SOME INTEREST
Ministry of Housing and Urban Development	Facilitating	Formulation and execution of Government's policy in the Housing and Urban Development sector.	
Lands and Surveys Division	Facilitating	Approvals for Lands surveys	
Central Statistical Office	Facilitating	Provision of statistical data	
Ministry of Health	Facilitating & Regulatory	Protection of the population's health	
Ministry of Agriculture – Forestry Division, Land and Water Division, Agricultural Land and Administration	Facilitating	Conservation of biodiversity, forestry/watershed management and sustainable development of food and food systems	
Ministry of Energy and Energy Industries	Facilitating (May have lines interfering with works)	Overall management of the oil, gas and minerals sectors in Trinidad and Tobago.	
Solid Waste Management Company	Facilitating	Protection and enhancement of the environment and sustainable waste collection, treatment, disposal, and resource recovery.	
Office of Disaster Preparedness and Management in the Ministry of National Security	Facilitating	Building the national Disaster Risk Management and Climate Change Adaptation capabilities, coordinate response and recovery operations and ensure a disaster resilient nation.	
Trinidad and Tobago Meteorological Service	Facilitating (Provide data)	Meteorological information and advice consistent with international standards.	
Ministry of Community Development, Culture and the Arts	Facilitating	Community Development	
National Infrastructure Development Company (NIDCO)	Facilitating & Regulatory	Project management and procurement for national	

Stakeholders that have a Participatory Role in the Projects planned implementation	Participatory Role	Current Interest Focus	Current Interest Rating
		infrastructure development projects.	
Trinidad and Tobago Electricity Company is the company	Facilitating (May have lines interfering with works)	Responsible for the supply of electricity.	
National Gas Company	Facilitating (May have lines interfering with works)	Create exceptional value from natural gas and related energy businesses through our people and strategic partnerships.	
Subcontractors	Facilitating & Procurement	The details of the involvement of these subcontractors is yet to be worked out. They will perform contracted functions such as engineering, construction, suppliers, environmental health and safety, as well as other functions to be determined.	
Contract workers	Facilitating	These will likely comprise the workforce of the subcontractors.	
Equipment suppliers	Procurement	As likely determined by Subcontractors	
Contract service providers	Procurement and Facilitating	As likely determined by Subcontractors and Client	
Environmental Management Authority	Regulatory	Environmental Management	STAKEHOLDERS WITH AN IMPORTANT INTEREST
Ministry of Rural Development and Local Government	Regulatory	Coordinate Municipal Corporations and Special Purpose Enterprises to assist communities in Infrastructure Development, Disaster Management, Public Health and Sanitation and implementing rural development policies and strategies.	
Regional Corporations For Municipalities of Diego Martin, City of Port-of-Spain, San Juan/	Facilitation, Planning, Regulatory	Development controls and approval and disaster management in the corporation	

Stakeholders that have a Participatory Role in the Projects planned implementation	Participatory Role	Current Interest Focus	Current Interest Rating
Laventille, and Tunapuna/Piarco.			
Ministry of Works and Transport - Drainage Division	Facilitating & Regulatory	Improvements and maintenance of the major drainage system, monitoring river activities and responding to riverine flooding and erosion.	
Ministry of Works and Transport – Traffic Management Branch	Regulatory	Traffic Management	
Water and Sewerage Authority	Implementing Agency	Overarching State enterprise responsible for the delivery of water and wastewater services	CRITICAL STAKEHOLDERS
Ministry of Public Utilities	Facilitation & Planning	Responsible for the delivery of Public utilities including the organization which the Water and Sewerage Authority and the Water Resources Agency report	
Water Resources Agency	Facilitating	Effective and sustainable management of the water resources	
Regulated Industries Commission	Regulatory	Regulation of the Utilities including the Water & Sewerage Authority	
Ministry of Planning and Development Town and Country Planning Division	Facilitating	Planning and development in the country and the provision of approvals for land development	
<b>Affected Stakeholders</b>			
Communities	Affected Community	Impacts negative or positive	
Community Based Organizations	Affected Community	Interest in community development	
<b>Stakeholders that can influence a project</b>			
Member of Parliament	Facilitating	Responsible for the development of various areas in the study area.	

## 10.2 Consultation Schedule and Method of Communication

A schedule has been developed for the consultations intended to facilitate disclosure of information on the project. It is anticipated that engagement will help to build and maintain over time a constructive relationship with all stakeholders.

### 10.2.1 Pre-Construction Phase

The Table below illustrates the project consultation schedule presented for the pre-construction phase of the project and shows the various types of communication strategies recommended for each type of stakeholder identified.

**Table 10-2: Proposed Pre-Construction Consultation Schedule**

PROJECT PHASE	STAKEHOLDER	TIMING	METHOD OF COMMUNICATION
ESA Phase	Residents and businesses	During the ESA project before the Draft report	Rapid telephone interviews with select informants to gain understanding of the main issues and to introduce them to the project.
	Government stakeholders/Local NGOs, private sector/CBOs	During the ESA before the Draft Report	Key informant interviews to gather data determine interfaces with existing government programmes.
	Residents from within communities  Key implementing Agencies and other interested stakeholders	After submission of the ESA and ESMP	Virtual Meeting to present the project, and its components, the findings of the assessments, to gain feedback and solicit buy-in.
Post Project Assessment Phase	Key institutions may need to be consulted prior to construction to determine approval needs: <ul style="list-style-type: none"> <li>• WASA</li> <li>• Ministry of Public Utilities</li> </ul>	Upon completion of the project and approval for Construction to begin	Meetings and decision-making

## 10.2.2 Construction

The table below shows the details for communication required during the construction stage. It outlines the communication needs, timing and method for the stakeholders relevant for each management plan.

**Table 10.3: Stakeholder Consultations during any construction phase under the Project.**

#	Plan	Communication Needs	Timing	Method
1	Worker Health and Safety Plan	Training of employees about health and safety procedures and personal protective gear that need to be worn during construction activities.	Before and periodically during the Works	Training and sensitisation sessions with contract workers on site.  Bulletins on the notice board on site as reminders, safety signs.
2	Community Health and Safety Plan	Consultation with community about health and safety precautions and protocols that need to be adhered to during construction activities.	Before and periodically during the Works	Meetings and sensitisation sessions with community members.  Bulletins on the community notice board and signage at site boundaries as reminders, safety signs.
3	Traffic Management Plan	Consultation with community about health and safety precautions and protocols that need to be adhered to during construction activities.	Before and periodically during the Works	Meetings and sensitisation sessions with community members.  Bulletins on the community notice board and signage at site boundaries as reminders, safety signs.
4	Management of Access to Communities	Consultation with community about temporary alternative routes or restrictions to access during construction activities.	Before and periodically during the Works	Meetings and sensitisation sessions with community members.  Bulletins on the community notice board and signage at site boundaries as reminders, safety signs.
5	Solid Waste Management Plan	Communication to solid waste collectors to receive and remove solid and hazardous waste offsite to appropriate off-site disposal.  Communication to workers about the procedures for	Prior to the start of construction	Collectors to be advised via letter and telephone conversation.  Worker sensitisation sessions



#	Plan	Communication Needs	Timing	Method
		handling and disposing of solid and hazardous waste material.		
6	Plan to Avoid Social Impact on livelihoods	Consultation with community about nature of works and how this would impact livelihood operations in the area and alternative available to community members.	Before and periodically during the Works	Meetings and sensitisation sessions with community members.  Bulletins on the community notice board and signage at site boundaries as reminders, safety signs.
7	Social Management Plan	Communication to all potentially affected stakeholders	Throughout the project	Direct engagement at the individual level
8	Security Management Plan	Communication to all security contractors and subcontractors during project activities as well as workers regarding proper security protocols.	Throughout the project	Direct engagement at the individual level
9	Contractor Management Plan	Communication to all contractors and subcontractors during project activities	Throughout the project	Direct engagement at the individual level

### 10.2.3 Operation Phase

There may still be the need to communicate with key stakeholders once the construction phase has been completed, such as during maintenance activities and to deal with general customer complaints during the operational phase. There may be need for continued intervention related to the social management plan to allow for social and institutional conflict management and to ensure persons who may have experienced damage to their property were properly compensated.

### 10.2.4 Reporting

A Consultation Report should be completed in each phase and an Annex attached to the consultation report, the results of engagement activities conducted throughout the project must be presented. At the end of each phase/major milestone, the subsequent results can be appended. Engagement activity summaries should include the following information:

1. Stakeholder engaged (name and contact details)
2. Date and location of meeting (photo if possible)
3. Topic of meeting
4. Feedback received from stakeholder
5. Answers from Implementing Agency (WASA)
6. If the Implementing Agency, WASA, commits to something, the commitment should be recorded as part of a commitment register identifying a responsible entities/person, and a deadline as appropriate.

## 11 GRIEVANCE MECHANISM

A grievance mechanism will have to be in place prior to the start of construction and operational activities in Trinidad and Tobago. This mechanism will allow for concerns/ complaints to be received and to facilitate resolutions of the affected individuals. It will require the project proponent and/or the Contractor to respond within a specified time. This mechanism offers WASA and affected communities/ stakeholders an alternative to external dispute resolution processes.

It will be the responsibility of the Implementing Agency, WASA, to update and modify this procedure or complaint mechanism as the full contours of the final project are known and agreed.

The grievance process outlined below covers both the construction and operation phase. WASA will receive complaints and facilitate resolution of the affected communities' or individual members concerns and grievances about the environmental and/or social performance. The grievance mechanism is scaled to the risks and adverse potential impacts of the project. It facilitates the prompt address of concerns using an understandable and transparent process that is appropriate based on the Trinidad and Tobago scenario and readily accessible to all segments of the affected communities.

The mechanism is at no cost and is without retribution. The mechanism will not impede access to judicial or administrative remedies. The Implementing Agency, WASA will inform the affected communities about the mechanism during its community engagement process and as appropriate to safeguard the interests of the Project.

The recommended approach below is specific to internal stakeholders and external stakeholders. Both internal and external stakeholders will place any complaint through the mechanism proposed.

### Step 1

The process of accepting grievances is the first step which can take on varying levels of formality as outlined in Table 11-1 below. The following section outlines the Grievance Collection Form that complainants will first need to complete. Grievances can be recorded at the temporary facility. Grievances can also be logged anonymously based on the nature of the problem.

**Table 11-1: Methods for Grievance Receipt, from Least to most formal**

Level of Formalization	Examples
<b>Least formal:</b> Oral complaints received face to face	Staff charged with collection of grievances writes down complaints at group or individual meetings, during field visits, or at designated locations.
<b>Somewhat formalised:</b> Oral complaints received through remote-access methods	Staff accepts grievances through a designated telephone line.
<b>More formalised:</b> Written complaints received face-to-face	Staff accepts written submissions from an individual or a group at groups or individual meetings, during site visits, or at designated locations.

Level of Formalization	Examples
<b>Most formalised:</b> Written complaints received through remote access methods	<p>Complaints come in via regular mail, internet, or grievance collection boxes (consider having multiple locations).</p> <p>Complainants submit written grievances to third parties (to be forwarded to the local Contractor or the third party designated to administer the grievance redress mechanism).</p>

While oral complaints are accepted from both internal and external stakeholders, a grievance collection form provided in the following section should be completed by the stakeholder following oral face to face or remote communication. This form will be made available at WASA's office.

## Step 2

The logging and addressing of complaints rests with the local Contractor or Project Coordinator. Following the logging of a complaint, the grievance will be addressed at this level. A response must be prepared for the grievant. Appropriate attention should be given to gender-based grievances.

Should the grievant not be satisfied with the response provided, then move on to step 3.

## Step 3

Grievances that cannot be handled in Step 2 will be taken to the designated authority within or assigned by the Implementing Agency, WASA. A further root cause analysis should be done to identify another appropriate corrective action and complete the Grievance Monitoring Form in the following section.

The complainant will then be informed in writing of the decision to correct the action within a forty (40) working day period.

## Step 4

If the complainant does not feel that the grievance has been adequately addressed, they would go to court if the complainant so desires. Local Non-governmental organisations (NGOs) also provide support for victims and persons affected by gender-based violence and can be accessed by the complainant.

### 11.1.1 Grievance Collection Form

(Used by Stakeholder)

Case No. \_\_\_\_\_

Applicant's Name \_\_\_\_\_

Sex: [Male] [Female]

Age: \_\_\_\_\_

☐ I wish to submit complaint anonymously

☐ I demand that my personal details not be disclosed without my consent

Address: \_\_\_\_\_  
\_\_\_\_\_

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_

Description of Comment/Complaint: *(Subject of case, when did it occur, location, who is involved, effects of situation)*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Date of Incident: \_\_\_\_\_

☐ One-time incident/complaint (date \_\_\_\_\_)

☐ Happened more than once (indicate how many times: \_\_\_\_\_)

☐ Ongoing (a currently existing problem)

According to the applicant, what measures would provide solution to the problem?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Note: Please forward this form to: Project Office - Implementing Agency

Water and Sewerage Authority

Head Office: Farm Road, St. Joseph

Trinidad and Tobago

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_

### 11.1.2 Grievance Monitoring Form

(Used by Grievance Manager)

This Form is the responsibility of the Grievance Officer.

Case No. \_\_\_\_\_

Applicant's Name \_\_\_\_\_

Sex: [Male] [Female]

Age: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Telephone: \_\_\_\_\_

Email: \_\_\_\_\_

#### Complaint

---

---

---

---

---

---

#### Root Cause Analysis

- List all the possible contributing factors
- Identify most probable reason

---

---

---

---

---

#### Corrective Action

---

---

---

---

---

Preventative Action if problem can re-occur

---

---

---

---

---