

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

STAKEHOLDER CONSULTATION REPORT



-November 2022-



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List of Abbreviations

CBO	Community -Based Organization
CEO	Chef Executive Officer
CTTRC	Couva Tabaquite Talparo Regional Corporation
EMA's CEC	Environmental Management Agency certificate of Environmental Clearance
ESA	Environmental and Social Assessment
ESL	Environmental Solutions Limited
ESMP	Environmental and Social Management Plan
GoRTT	Government of Trinidad and Tobago
IDB	InterAmerican Development Bank
NGO	Non-government Organization
NRW	Non-revenue Water
WASA	The Water and Sewerage Authority
WHO	World Health Organization
WTP	Water Treatment Plant

1 Introduction

1.1 Purpose

This document presents the proceedings of the stakeholder consultation held for the Environmental and Social Assessment conducted for the Trinidad and Tobago National Water Sector Transformation Programme. To ensure that the stakeholder consultation captured views and perceptions of a variety of people who may be affected or have an interest in the proposed development, the consultation was conducted as a hybrid event (in-person meeting and virtual platforms i.e., Zoom). The in-person meeting was held at the Government Plaza Auditorium in Port of Spain, Trinidad and Tobago on November 2, 2022. This meeting was organized to sensitize stakeholders about the proposed Programme, present the findings and recommendations of the environmental and social assessment carried out, as well as to gain feedback from key stakeholders involved.

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 Conditional Credit Line for Investment Project (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.

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

- **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).** 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).

2 Stakeholder Identification and Analysis

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 Officials, Members of Parliament, and Representatives of the Political Parties).
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.
13. The general public.

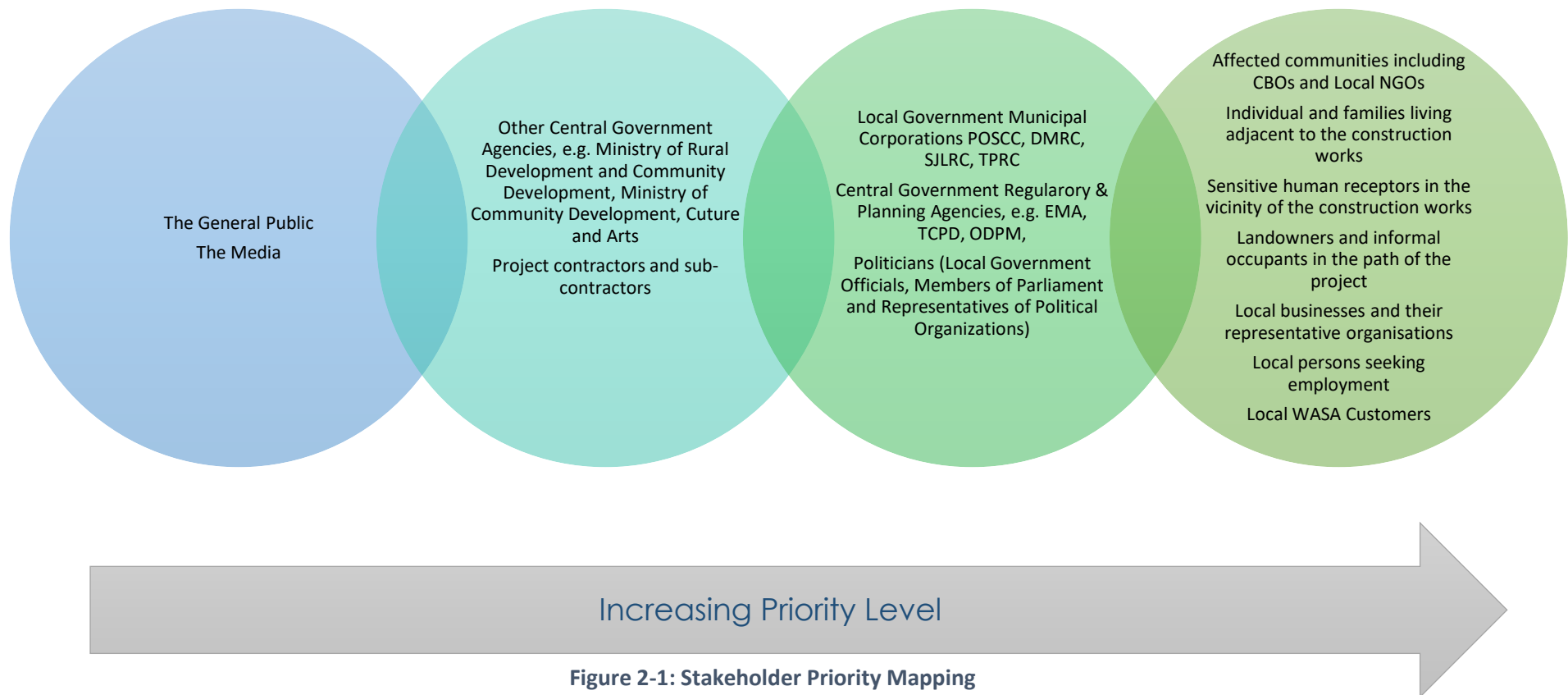


Figure 2-1: Stakeholder Priority Mapping

2.1 Stakeholder Analysis and Engagement Strategies

Figure 2-1 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.
- Local WASA customers.

Table 2-1: Stakeholder Identification

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	

Stakeholders that have a Participatory Role in the Projects planned implementation	Participatory Role	Current Interest Focus	Current Interest Rating
Ministry of Energy and 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 infrastructure development projects.	
Trinidad and Tobago Electricity 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	

Stakeholders that have a Participatory Role in the Projects planned implementation	Participatory Role	Current Interest Focus	Current Interest Rating
		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 all Municipalities	Facilitation, Planning, Regulatory	Development controls and approval and disaster management in the corporation	
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

Stakeholders that have a Participatory Role in the Projects planned implementation	Participatory Role	Current Interest Focus	Current Interest Rating
Ministry of Public Utilities	Facilitation & Planning	Responsible for the delivery of Public utilities including the organization to which the Water and Sewerage Authority reports	
Water Resources Agency	Facilitating	Effective and sustainable management of the water resources. Responsibility for allocation of the water resources to the various users as part of its mandate for sustainable management of the finite water resources for its various uses and users.	
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	
Affected Stakeholders			
Communities	Affected Community	Impacts negative or positive	
Community Based Organizations	Affected Community	Interest in community development	
Stakeholders that can influence a project			
Member of Parliament	Facilitating	Responsible for the development of various areas in the study area.	

Table 2-2 also maps stakeholders against their level of influence and their degree of interest in the project. This table 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 2-1.

Table 2-2 Stakeholder Mapping Results and Strategy for Engagement

Stakeholder		Influence	Interest	Engagement Plan/ Strategy
Stakeholders that are highly influential, but do not have a lot of interest in the project, nor are actively engaged in the process	Regulatory agencies	High	Low	Engage/consult for responses to queries on compliance issues; keep informed and satisfied. Early engagement, agreement on collaboration.
	Contractors and sub-contractors			Discussions with firms; bidding procedures; inclusion of environmental and social requirements. Guide work and ensure consistent message to community stakeholders in keeping with project communication strategy and stakeholder engagement plan.
Stakeholders have a lot of influence and a strong interest in the outcomes of the project (Key stakeholders).	Affected communities including CBOs and local NGOs	High	High	Build relationships and regularly engage stakeholders in project decision making to gain and retain support
	Individual and families living adjacent to the construction works			Maintain consistent messaging in keeping with the project communication strategy and stakeholder engagement plan
	Sensitive human receptors in the vicinity of the construction works			Establish Community Redress Mechanism to address complaints
	Landowners and informal occupants in the footprint of the project			Meetings with key stakeholder groups; sample interviews with specific communities and businesses.
	Local businesses and their representative organisations			

Stakeholder		Influence	Interest	Engagement Plan/ Strategy
	Local persons seeking employment			Focus group meetings in addition to interviews can also be used to engage stakeholders.
Stakeholders are on the periphery of the project. They are neither interested nor have much influence, but this may change with time.	General public	Low	Low	Manage their interest in the project. Keep generally informed with information dissemination and disclosure; e.g. through web pages, local postings of information, newspapers and radio
Stakeholders have a strong interest in the project but very little power to influence it.	Local Government Municipal Corporations	High	Low	Consult and actively involve stakeholders in the project
	Local WASA customers			Keep informed to maintain project support (the media).
	Municipal residents			
	Central government agencies (MRDLG, MCDCA)			
	The media			

3 Consultation Planning

The planning and facilitation of the public consultant process was in accordance with the *IDB Meaningful Stakeholder Consultation Report*¹ and *Operational Policy OP-703, Directive B.6 on Consultations*². This allowed for the provision of information and recommendations to avoid and mitigate potential adverse impacts for the proposed development. The consultation was advertised ten (10) days prior to the meeting date (Appendix 7.1) with a registration link to ensure all stakeholders could participate physically or via Zoom. The event was advertised on the MPU's and WASA's websites and social media pages as well as via radio on multiple occasions throughout the 10-day period (Appendix I presents a sample of the advertisement). Invitation Letters from the Permanent Secretary, MPU s were also sent via email inviting approximately 150 stakeholders (inclusive of heads of community groups and Regional Corporations who were requested to circulate to their membership/councils) and follow-up phone calls and emails were done.

¹ Kvam, Reidar. 2017. Meaningful Consultation. Available: <https://publications.iadb.org/en/meaningful-stakeholder-consultation>

² <https://www.iadb.org/en/mici/operational-policies>

The main aim of the consultation team was to enable stakeholders to convey their views and concerns, and for those views to be given serious consideration prior to implementation of the programme. The following Table 3-1 presents the report on the stakeholder plan to facilitate disclosure of information on the project and its execution. The engagement helped to build and maintain over time a constructive relationship with all stakeholders.

Table 3-1: Consultation Plan

STAKEHOLDER CONSULTATION		
COMPONENTS	DETAILS	EXPECTED OUTCOMES
VENUE	Government Campus Plaza Auditorium, Port of Spain	Central location utilised that is easily accessible by all stakeholders.
DATE	Wednesday November 02, 2022	Stakeholders engaged where they were provided notice ahead of time.
TIME	5:30 pm to 7:30 pm	Stakeholder engaged at a time when they are available.
INVITEES	See Appendix 1.1	All critical stakeholders are invited. A total of 120 stakeholders attended.
MEANS OF INVITING	Invitation Letters, social media, emails and direct phone call	Invitations sent and calls made
PURPOSE OF MEETING	<ul style="list-style-type: none"> • To sensitize stakeholders about the proposed development Trinidad and Tobago Water Sector Transformation Programme • Present the findings and recommendations of the environmental and social assessment carried out • Gain feedback from key stakeholders involved 	<ul style="list-style-type: none"> • Stakeholders sensitized • Presentation of findings and recommendations made • Feedback gained and elaborated in Section 4

4 Review of the Stakeholder Consultation – November 2, 2022

A total of 120 persons attended with 84 online participants of which 56% of them were female and 44% male. Attendees represented private citizens (24) and both private and public sector. In person representation amounted to 36 persons, 13 were males and 26 were females. Section 4.1 to 4.6 below recaps the proceedings of the consultation.

4.1 Opening Remarks

The stakeholder consultation began at 5:30pm on November 2, 2022. The meeting was chaired by Mr Jason Williams, Master of Ceremonies, and welcomed everyone to the public consultation. Nicolette

Duke, the Permanent Secretary of the Ministry of Public Utilities gave the opening remarks (Plate 4-1). Ms. Duke, highlighted the Ministry's mandate to provide strategic leadership and governance to the public utilities sector and understand how critical the services provided by our agencies are to members of society. The Water Sector Transformation Programme will improve the efficiency of delivery and quality of potable water services while ensuring water security throughout Trinidad and Tobago.



Plate 4-1: Ms. Nicolette Duke, the Permanent Secretary of the Ministry of Public Utilities

Ms. Duke further outline that 'Delivering good governance and service excellence', a theme from the Government's National Strategy 2030 mentions 'water' is no less than eighty times in that document which is indicative of the high priority that the Government is placing on the transformation of the water sector.

The InterAmerican Development Bank (IDB) is a long-time ally in the thrust towards national development and has extended a line of credit to the Government of Trinidad and Tobago called 'the CCLIP' which will be implemented in several regions of the country. Assessments and evaluations in keeping with international best practices have been completed and the findings are going to be shared with stakeholders at this consultation to be able to garner questions or concerns directly related to the issue at hand. Thereafter, Mr. Jason Williams then introduced the presenters for the WASA Project Team.

4.2 Presentation of Project: WASA Project Team

The Project Team from WASA provided an overview of the National Water Transformation Programme (Appendix V). This was presented by Alisha Romano - Management Consultant, Jason Cropper - Programme Manager and Shawn Salandy - Head of Water Projects (Plates 4-2 to 4-4).

The presenters outlined the general objectives of the programme which is to improve the efficiency, quality, sustainability and resilience of the potable water supply service and water security for the underserved communities of Trinidad and Tobago.

As MPU and WASA is aware of the water issues faced by the country on a day to day basis and assured that the priority is the customers. Communities that receive water less than 3 days a week were deemed as underserved and 42% of the population fall into that category.



Plate 4-2: Alisha Romano, Management Consultant WASA

Solutions and strategies to be implemented are as follows:

1. Urgent and Effective upgrading and management of production, transmission and distribution of water
2. Reduction of water losses
3. Introduction and utilisation of innovative technology - digital transformation and data driven management systems

Strategies:

- Increase the production of potable water, have more equitable transmission of this water across the country and have a more reliable distribution of water to the customers.
- Increase the quantity of local production sources through construction of 6 new production sources: Blue Basin - Diego Martin, Santa Cruz, Sangre Grande, Ravine Sable, Ortoire - Mayaro, Goldsborough - Tobago.
- Upgrade existing production facilities to ensure they are reliable and supply water to customers in the areas of North Oropouche, Caroni and Navet Water Treatment Plants in Trinidad and Hillsborough and Courland Water Treatment Plants in Tobago.
- Increase quantum of wells available in the areas of Freeport, Penal, Chatham, Palo Seco and Tucker Valley.



Plate 4-3: Shawn Salandy, Head of Water Projects WASA

Benefits:

Upgrade of plants and increased production will have ripple effects on other areas as well as the targeted areas which affects millions of beneficiaries.

Programmes and Projects:

- Network optimization by implementing programmes and projects to measure and monitor and upgrade network performance.
- Main Replacement Programme to enable reduction of water loss and improve water supply
- Installation of meters and data loggers at all production facilities to ensure smooth transfer of data to enable equitable supply to customers



Plate 4-4: Jason Cropper, Programme Manager WASA

- Non Revenue Water Reduction Programme to reduce water loss and distribute this to customers
- Training of WASA personnel by Consultants
- Scadar Automation Project to enable remote management of major plants to make real-time decisions for distribution of water to customers

The overall aim of the programme is to improve the reliability of supply to customers.

4.3 Question and Answer Feedback Session 1

This session was geared towards receiving questions, suggestions, clarification based on the presentation which was given. Panelists for this session were:

1. Mr. Kelvin Romain, Chief Executive Officer, WASA
2. Ms. Shaira Ali, Director, Operations, WASA
3. Ms. Natasha Andrews, Director, Customer Care, WASA
4. Ms. Alisha Romano, Management Consultant, WASA
5. Mr. Jason Cropper, Programme Manager, SCADA/Metering, WASA
6. Mr. Shawn Salandy, Head, Water Projects, WASA.

Valerie Kelsick: What is the projected increase in operating expenses associated with the expansion of the new WTP? How will these increased costs be financed without an increase in rates or improved collection of payments?

Response: The new Water Treatment Plants are packaged plants that are manufactured with a very high level of efficiency. The operating and maintenance costs are expected to be low because the Plants are not like the traditional plants. The existing plants have been maintained and refurbished so operating costs are expected to be low there as well, thus reducing the overall expenditure to the Authority.

Jason Williams (Question from Valerie Kelsick): What about the improved collection of payments?

Response: Seven electronic kiosks have been implemented to assist with payments. New collection efforts like the Amnesty would be continued. The billing system and collection system is also being improved.

Jason Williams: And this pertains to residential and commercial customers?

Response: It is across the board.

Tameka Deare: Are the NRW losses more physical or commercial?

Kelvin Romain: A recent study from November 2021 indicated that physical losses accounted for sixty percent of the non revenue losses experienced in the Authority. Physical losses are usually attributed to leaking transmission and distribution mains and service connections.

Tameka Deare: Assuming that the current extreme climate conditions continue, how does this impact the project implementation? Has this been accounted for?

Response: Climate conditions and change are always taken into consideration. New water treatment plants have been used to take advantage of the extreme rainfall in terms of collection. New service reservoirs would be constructed during the dry season as well to assist in collection.

Hillan Morean: Noting the severe challenges impacting Port-of-Spain sites, particularly east Port-of-Spain sites which depend on gravity, how will these changes ensure more efficient supply? Port-of-

Spain has lobbied for more supply to Port-of-Spain, and while one notes new projects in some areas, will any sites in Port-of-Spain be developed for water harvesting? Finally, what will be done about accountability, where slow response to these scheduled residents in East Port-of-Spain sites is normally quite debilitating?

Response: A pressure management program would be implemented so that there would be equitable distribution of the water supply, which would improve network optimisation and efficiency ensuring an acceptable supply throughout the distribution system.

In terms of accountability, the system would allow for measurements in real time and to trend data and account for level of service.

Renee Jackson: Will the new and replacement pipelines be independent of the roadways? New routing should be considered to minimize inconvenience to the public.

Response: The aim is to reduce negative impact. Discussions with independent contractors have taken place to discuss micro tunnelling and to use existing pipelines to run new mains through. The negative impact is reducing capacity; however, ways to avoid negative impact to new infrastructure are being examined.

Anonymous Attendee: Good Day I would like to find out how these projects will help improve the water quality produced?

Shaira Ali: Projects were chosen to ensure that they improve the quality, the resilience, the reliance and the quality in all aspects of the operation. In looking into several critical treatment plants, works have been identified that need to be incorporated into the project with the aim of improving the treatment processes. Water quality would be improved on completion of the projects.

Anonymous Attendee: Will the new facilities be constructed simultaneously or in phases?

Alisha Romano: All projects would be done simultaneously with the aim of meeting the needs of the customers as fast as possible. After procurement, the implementation schedule would expect to see new water treatment plants within twelve to eighteen months.

The water quality is not only affected by the plants but also by the pipeline infrastructure. With the redesign of the distribution system the water would be looped instead of having ends to have continuous flow. Discoloration of water would also be a thing of the past as wash-out regimes would be implemented.

4.4 Presentation on Environmental and Social Considerations: ESL Project Team

This session involved a detailed presentation of the environmental and social assessment (ESA) shared by Project Manager, Mrs. Annmarie Goulbourne from Environmental Solutions Limited (ESL) (Appendix VI). Environmental Solutions Limited (ESL) was contracted by IDB to execute the ESA associated with the Trinidad and Tobago National Water Sector Transformation Programme.

The Government is in the process of sourcing funding from the IDB to improve the efficiency and quality of potable water services and security in Trinidad and Tobago. Mrs. Goulbourne indicated that consultations would be taking place in localized communities due to the vast nature of this project which encompasses the entire country. Significant investments are required to achieve the wider water sector transformation and to undertake long term water infrastructure improvements to improve water supply, increase water security, protect watersheds, strengthen the sector institutions, support the sector in its planning capacity and execution.

Extensive research went into what exists and what is the state of what exists. Stakeholder consultations were done with several agencies, communities and individuals before any project implementation. Legal policies were reviewed to ensure protection of consumers and the environment and ensure that guidelines are adhered to.

All projects have risks and there are several mitigation measures that can be implemented to ensure the smooth running as seen below:

Risks:

Soil erosion, groundwater contamination, land pollution, water pollution, air pollution, flooding, conflict of agencies, traffic, damage to private property, deforestation

Mitigation Measures:

No mass soil clearing, adherence to spill minimisation, appropriate storage for hazardous materials, protect health and safety of surroundings, proper solid waste disposal, making contractors accountable for spillages, ensure use of PPE, minimize accidents and losses, community engagement, feedback and communication, clear drainage, protected areas to reduce risks to wildlife, agency communication for smooth progress of projects, hiring of locals so communities can benefit from projects, timeframe and awareness of projects, grievance mechanism, use of traffic wardens to ensure road safety, compensation for loss of assets, replanting activities.

Benefits:

Reduction of loss in non-revenue water, better assessment of demand due to metering customers which would lead to improvement in the water quantity and increased reliability of the water supply, improved institutional efficiency. These are all positive things expected from improving the water supply under these projects.

4.5 Feedback Session 2

This session was geared towards receiving questions, suggestions, clarification based on the environmental and social impact assessment presentation which was given. Panelists for this session from the Environmental Solutions Limited's Project Team were:

1. Ms. Annmarie Goulbourne – Environmental and Social Specialist and Project Manager
2. Dr. Frederica Deare - Social and Gender Specialist
3. Mrs. Marilyn Crichlow - Hydrologist

The question that was raised and answered in this session was for the WASA Team. The following indicates the question and the response provided.

D. Banjoo of the IMA: Is there a plan for compensation for affected person such as Farmers with private lands who may be impacted by development works in the water sector for increased distribution? Is the Water Sector exempted from the EMA's CEC process?

Kelvin Romano: The Water Sector is not exempted from the EMA's CEC process. Secondly, compensation for affected persons would be taken under consideration.

4.6 Closing Remarks

The closing remarks was given by Mr. Kelvin Romain, CEO of WASA The Water and Sewerage Authority as the executive arm of all water sector policies must always be in contact with stakeholders. Thanks

were given to the Ministry of Public Utilities and The Honourable Minister Marvin Gonzales for facilitating and creating a forum for the citizens of Trinidad and Tobago to be heard.

Thanks were also given to Ms. Nicolette Duke, Permanent Secretary, Ministry of Public Utilities, Mr. Ravindra Nanga, Chairman of the board of WASA and other Commissioners. Special thanks were given to Commissioner Beverly Khan. Continued thanks were given to the Water and Sewerage Authority Project team and the Trinidad and Tobago National Water Sector Transformation Program for giving a clear view of the transformation process.

As the Authority continues to improve and expand, the various programs will be at the forefront of the initiatives by WASA. Gratitude is expressed to ESL for keeping WASA informed on the environmental and social considerations to move forward.

Thank you to the IDB for attending. Thank you to those who attended and contributed. All contributions would be factored into the mandate of improving the water supply and improving the sector. Lastly, thanks was given to the host, Jason Williams.

4.7 Other Questions

All the questions from the public consultation (those answered and unanswered) along with their respective responses will be posted on the Ministry of Public Utilities and WASA's social media pages by November 15, 2022, following the public consultation event. This will facilitate the preparation of the proper responses from key project personnel. Emails will also be sent out to the invited stakeholders to alert them to the posting of the responses to questions.

Valerie Kelsick: What is the Total project cost? You provided information only on the IDB loan financing component? What is the contribution from WASA? Or other lines of co-financing?

Marvin Gonzales: Can we have a timeline and a cost of these new WTPs?

Renee Jackson: What are the major challenges that you anticipate in this project?

Usef Aziz: Does WASA have any plans to utilize recycled water in times where water shortages in the dams exist?

Renee Jackson: In terms of repairing leaks, what is the relationship between WASA and the Tunapuna/Piarco Regional Corporation? As we speak, there are thousands of gallons of water running down the drain in front of my development in D'Abadie...this has been ongoing since April of this year... WASA came, dug up the road and covered it up and said it was the responsibility of the Tunapuna/ Piarco Regional Corporation to fix the leak...this was 3 months ago

Justin Ram: The Impact Assessment states there are 5 water sector entities, will one be the primary overseer for compliance issues, e.g the Environmental Management Authority.

Hinni Maraj: Hinni Maraj Ag. CEO of the Couva Tabaquite Talparo Regional Corporation CTTRC. The CTTRC has a population of over 178000. In some of our more rural communities there is currently a water supply every 7-9 days. Quantitatively how do you expect that the planned works would benefit these areas and which planned works would benefit the Couva region?

Ricardo Ramdin: In your water winning, did you consider using harnessing flood waters for water supply. As an example, the proposed Mamoral dam?

Anonymous Attendee: Are our water quality parameters mirroring WHO or another regulatory authority?

Renee Jackson What is the Authority doing concerning its workers operating in hotspot zones?

Renee Jackson: Does the project have an element of capacity building for laboratories to test for carcinogenic pollutants such as polycyclic aromatic hydrocarbons, BTEX and other chemical pollutants considering that T & T is highly industrialized.?

Valerie Kelsick: Will the KPIs established for The EHS plan be published -for public review - benchmark measurements as well as the routine monitoring - as required by the Contractors?

Vivian Joseph: With respect to water pollution, did the assessment consider land uses that generate non-point sources of water pollution. Non-point source water pollution tends to be a ubiquitous concern.

Hillan Morean: As a local government Councillor, allow me to applaud this significant step by WASA and the MPU. Noting the impact of crime etc on critical infrastructure maintenance eg Clifton Reservoir in East Port-of-Spain, what social interventions are envisioned?

Renee Jackson: Thanks for your clear presentation. My question is how involved will the NGOs and Community Organisations be in this project? They have knowledge of the Communities. Also with regard to Artefacts, there should be no loss, and in fact new ones may be discovered. Environmental awareness is also very commendable in this project.

Valerie Kelsick: Will there be responses to all the unanswered questions? Posted on the WASA website?

Renee Jackson: 1. Will the undertaking also undertake the mapping of the POS drains? 2. Grey water harvesting can be a consideration.



Plate 4-5: TT Water Supply Transformation Programme - Public Consultation

5 Conclusion

The Water Sector Transformation Program was communicated to the public on November 2, 2022. The project description, risks, impacts and mitigation measures were clearly outlined, and the forum facilitated feedback from the participants in keeping with the Stakeholder engagement requirements.

Most of the stakeholders' questions were focused on the project description and infrastructure upgrades rather than the potential risks and impacts of the program. For examples: cost of the program, increased operational expense associated with the program, lines for co-financing, recycling of water, improved collection of payments, non-revenue water, water pressure management, impact on road network, water supply to rural communities, involvement of civil society and community organisation in this program, water quality improvement, and capacity building for water quality testing. The main concerns were addressed during the consultation.

6 Next Steps



All the questions from the public consultation (those answered and unanswered) along with their respective responses will be posted on the Ministry of Public Utilities and WASA's Websites and social media pages by November 15, 2022, following the public consultation event. This will facilitate the preparation of the proper responses from key project personnel. Emails will be sent out to the invited stakeholders to alert them to the posting of the responses to questions. .

The following are additional recommended next steps:

1. A dedicated location on MPU or WASA's website housing information related to the Water Sector Transformation Program.
2. Engaging Municipal Corporations, communities, civil society, private sector, and public sector through traditional and social media mechanisms prior to the undertaking of local projects and infrastructure works.
3. Establishing and Communicating the Grievance Mechanism for the overall program.
4. For the individual projects, it is possible that WASA may be subjected to obtaining Certificate of Environmental Clearance (CEC) from the Environmental Management Authority. The CEC process provides a robust stakeholder engagement process that applicants must adhere to if Environmental Impact Assessments are to be conducted.

7 Appendices

7.1 Appendix I – Invitation to Stakeholder Consultation



NOTIFICATION OF PUBLIC CONSULTATION

The Ministry of Public Utilities invites you to the public consultation on the Environmental and Social Assessment for the


TRINIDAD AND TOBAGO NATIONAL WATER SECTOR TRANSFORMATION PROGRAMME

NOVEMBER 2, 2022
from 5:30pm – 8:00pm

Join Us at the Government Plaza Auditorium
or via our Zoom Link

**THE PUBLIC IS INVITED TO PARTICIPATE IN THIS
CONSULTATION BY ASKING QUESTIONS RELATED TO
THE PROPOSED PROJECT**

Access the Environmental and Social Assessment, Environmental and Social Management Plan, the Additional Study Programmatic Environmental and Social Evaluation documents and Register for Public Consultation by clicking the links provided below:



**CLICK HERE
AND REGISTER TO
PARTICIPATE ONLINE**

**Limited Hard Copies of the Assessment
will be available during working hours
at:**

- **Ministry of Public Utilities One**
Alexandra Place, 1 Alexandra Street,
St Clair, NEWTOWN, 190129,
Trinidad and Tobago
- **Water and Sewerage Authority**
of Trinidad and Tobago
Farm Road, St. Joseph.

For further information
www.mpu.gov.tt or
call 628-9500 Exts. 5300 - 5307

Register For Public Consultation Webinar Here



DOWNLOAD: Environmental and Social Assessment



DOWNLOAD: Environmental and Social Management Plan



**DOWNLOAD:
Additional Study Programmatic Environmental & Social Evaluation**



DOWNLOAD Public Consultation Programme/Agenda Here



7.2 Appendix II – List of Invitees

No.	First Name	Last Name	Organization	Country/Region Name
1.	Brett	Chan	Company	United States
2.	Ambika	Mallian	Ministry of Energy and Energy Industries	Trinidad and Tobago
3.	Dion	Philip	Private citizen	Trinidad and Tobago
4.	Patricia	McGaw	Council of Presidents of the Environment	Trinidad and Tobago
5.	Roshan	Pragg	Private citizen	Trinidad and Tobago
6.	Krishna	Persadsingh	PDRC	Trinidad and Tobago
7.	Halsen	Ramnath	Heidro Lodge Hydrological Consultancy Services Ltd	United States Minor Outlying Islands
8.	Kivern	Clarke	Private citizen	Trinidad and Tobago
9.	Zia	Severin	Private citizen	Trinidad and Tobago
10.	Daisy Andrea	Kelsick	Private citizen	Trinidad and Tobago
11.	Carlly	Benjamin	Private citizen	Trinidad and Tobago
12.	Sara-Jade	Govia	Inter-American Development Bank	Trinidad and Tobago
13.	Renee	Jackson	Ministry of Public Utilities (MPU)	Trinidad and Tobago
14.	Anisha	Cephas	Ministry of Public Utilities (MPU)	Trinidad and Tobago
15.	Seon	Barrow	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
16.	Valerie	Kelsick	Private citizen	Trinidad and Tobago
17.	Crystal	John	CAAJ PLUMBING SERVICES	United States
18.	Cheryl-Ann	Simmons	David Simmins & Associates	Trinidad and Tobago
19.	Candice	Gray	Private citizen	United Arab Emirates
20.	Rakesh	Seepersad	The Water and Sewerage Authority (WASA)	Trinidad and Tobago

No.	First Name	Last Name	Organization	Country/Region Name
21.	Timothy	Augustus	SWMCOL	United States
22.	Andreah	Baksh	Ministry of Planning and Development	Trinidad and Tobago
23.	Everis	Gonzales	Wasa Trinidad	Trinidad and Tobago
24.	Prandeo	Sitahal	Private citizen	Trinidad and Tobago
25.	Clive	Deokie	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
26.	Himalaya	Boodoosingh	The National Gas Company of Trinidad and Tobago Limited (NGC)	Trinidad and Tobago
27.	brendon	John	Ministry of Public Utilities (MPU)	Trinidad and Tobago
28.	Brenda	Mills	Private citizen	Trinidad and Tobago
29.	Arlene	Joseph-Josiah	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
30.	Daniel	Josiah	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
31.	Asha	Mutota	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
32.	Dain	Maharaj	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
33.	Kwasi	James	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
34.	Vintee	Ramdath	Em	Trinidad and Tobago
35.	K	Alexander	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
36.	Mandisa	Frederick	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
37.	Jared	Harris	Private citizen	Trinidad and Tobago
38.	Lauren	James	Ministry of Finance	Trinidad and Tobago
39.	Alicia	Hamil	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
40.	Wendell	Etienne	Encore Productions	Trinidad and Tobago
41.	Meera	Ramesar	Ministry of Planning and Development	Trinidad and Tobago

No.	First Name	Last Name	Organization	Country/Region Name
42.	Gabriel	Williams	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
43.	Michael	Pacheco	Las Lomas Development Ltd	Trinidad and Tobago
44.	CB	WM	Private citizen	Trinidad and Tobago
45.	Simone	Browne	Green Fund Executing Unit, Ministry of Planning and Development	Trinidad and Tobago
46.	Nathan	Spears	Ministry of Public Utilities (MPU)	Trinidad and Tobago
47.	Peter	Mitchell	Ministry of Finance	Trinidad and Tobago
48.	Navita	Lyman-Mohan	NIDCO	Trinidad and Tobago
49.	Winston	Mohammed	The National Gas Company of Trinidad and Tobago Limited (NGC)	Trinidad and Tobago
50.	Ronnie	Kantasingh	The National Gas Company of Trinidad and Tobago Limited	Trinidad and Tobago
51.	Natasha	Howard-Hernandez	San Fernando City Corporation	Trinidad and Tobago
52.	Usef	Aziz	Ministry of Energy & Energy Industries	Trinidad and Tobago
53.	Derek	Jones	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
54.	Tameka	Deare	Kairi Consultants Ltd.	Canada
55.	Aisha	Donaldson	Ministry of Planning and Development	Trinidad and Tobago
56.	David	Samm	Private Citizen	Trinidad and Tobago
57.	David	Samm		Trinidad and Tobago
58.	Julia	Warner	Private citizen	Trinidad and Tobago
59.	Ricardo	Ramdin	Private citizen	Trinidad and Tobago
60.	Osawai	John	National Housing Corporation Barbados	Barbados
61.	Luz-Marina	Roberts	Town and Country Division, Ministry of Planning	Trinidad and Tobago
62.	Jade	Lakhan	Town and Country Division, Ministry of Planning and Development	Trinidad and Tobago

No.	First Name	Last Name	Organization	Country/Region Name
63.	Wayne	Clement	AARP	Trinidad and Tobago
64.	Charmaine	Joseph-Campbell	Tobago House of Assembly	Trinidad and Tobago
65.	Khadija	Robert	Ministry of Public Utilities	Trinidad and Tobago
66.	kgirindra	kovoor	Tunapuna/Piarco Regional Corporation	Trinidad and Tobago
67.	Joseph	Douglas	Ministry of Planning and Development	Trinidad and Tobago
68.	Nathan	Spears	Ministry of Public Utilities (MPU)	Trinidad and Tobago
69.	Justin	Ram	Trinidad and Tobago Chamber of Industry and Commerce	Trinidad and Tobago
70.	Amaya	Romano	Private citizen	Trinidad and Tobago
71.	Gordon	McAlpin	St Helena village council	Trinidad and Tobago
72.	Natalie	Floyd	Ministry of Public Administration	Trinidad and Tobago
73.	Merate	Phillip	Ministry of Public Utilities	Trinidad and Tobago
74.	Hillan	Morean	Port-of-Spain City Council	Trinidad and Tobago
75.	Varsha	Ramharrack	ContourGlobal Trinity Power Limited	Trinidad and Tobago
76.	Hinni	Maraj	Couva Tabaquite Talparo Regional Corporation	Trinidad and Tobago
77.	Marvin	Pierre	Environmental management Authority	Trinidad and Tobago
78.	Alicia	Abraham	Ministry of Housing and Urban Development	Trinidad and Tobago
79.	Vivian	Joseph	Environmental Management Authority	Trinidad and Tobago
80.	Marvin	Gonzales	Ministry of Public Utilities (MPU)	Trinidad and Tobago
81.	Bianca	S	Private citizen	Trinidad and Tobago
82.	Carlene	Boodoo	Surveys and Mapping Division	United States
83.	Petra	Rambarran-Boodoo	The Stretch Togetherness Community group	Trinidad and Tobago

No.	First Name	Last Name	Organization	Country/Region Name
84.	Natasha	Johnson	Tprc	Trinidad and Tobago
85.	Vernice	Alleyne	Ministry of Planning and Development	Trinidad and Tobago
86.	Gloria	Coombs	Marabella Woman's Action Enterprise Ltd	Trinidad and Tobago
87.	Rishi	Roopchand	Ministry of Works and Transport	Trinidad and Tobago
88.	Pamela	Montague	Private citizen	Trinidad and Tobago
89.	FKJ	Consultancy	FKJ	Trinidad and Tobago
90.	Roddy	Beharry MYDNS	Ministry of Youth Development and National Service	Trinidad and Tobago
91.	Arlene	Collis	MPU	Trinidad and Tobago
92.	Kyon	St Clair	National Energy Corporation Trinidad and Tobago	Trinidad and Tobago
93.	GILROY	LEWIS	IDB	Trinidad and Tobago
94.	Ruth	Osman	Ministry of Public Utilities (MPU)	Trinidad and Tobago
95.	Dionne	Cross	FKJackie consultancy	Trinidad and Tobago
96.	Mallini	Samsoondar	The National Gas Company of Trinidad and Tobago Limited	United States
97.	Claudelle	Mc Kellar	Ministry of Public Administration	Trinidad and Tobago
98.	Jasmine	Seaforth	Ministry of Public Utilities (MPU)	Trinidad and Tobago
99.	Genevieve	Bernard	TTAVCC	Trinidad and Tobago
100.	richard		Private citizen	Trinidad and Tobago
101.	Anthony	Bartholomew	Ministry of Public Utilities (MPU)	Trinidad and Tobago
102.	Vindhar	Suraj	Caribbean Lifestyle Communications	Trinidad and Tobago
103.	Kerry	Pariag	Ministry of Planning and Development	Trinidad and Tobago
104.	Ryan	Mahadeo	Private citizen	Trinidad and Tobago

No.	First Name	Last Name	Organization	Country/Region Name
105	Patti-Ann	Williams	Ministry of Health	Trinidad and Tobago
106	Simone	Gayadeen	Ministry of Public Utilities (MPU)	Trinidad and Tobago
107	B	B	Private citizen	Trinidad and Tobago
108	C	J		Trinidad and Tobago
109	Jason	Maule	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
110	Mel	Juan	Private citizen	Trinidad and Tobago
111	Carina	Cockburn	IDB	Trinidad and Tobago
112	Kennis	Thomas	Private citizen	Trinidad and Tobago
113	Earl	Williams	BD Kelly & Company	Trinidad and Tobago
114	Cheryl-Ann	Solomon	Ministry of Youth Development and National Service	Trinidad and Tobago
115	Glenn	Watkins	Wows	Trinidad and Tobago
116	Hewitt	Arthelle	S	Trinidad and Tobago
117	Ayinde	Frederick	Smith Robertson	Trinidad and Tobago
118	Andre	Bruno	Private citizen	Trinidad and Tobago

7.3 Appendix III -Agenda

**Public Consultation on the Proposed Development:
Trinidad and Tobago Water Sector Transformation Programme**

November 2, 2022

5:30pm

Government Campus Plaza Auditorium, Port of Spain

AGENDA

1. Welcome and Opening Remarks: Mr. Jason Williams, Host of the Consultation
2. Prayer: Volunteer
3. Opening Remarks: Ms. Nicolette Duke, Permanent Secretary, Ministry of Public Utilities (10 minutes)
4. Powerpoint Presentation of Project: *National Water Sector Transformation Programme* – Water and Sewerage Authority (WASA) Project Team (20 minutes)

Ms. Alisha Romano, Management Consultant

Mr. Jason Cropper, Programme Manager, SCADA/Metering

Mr. Shawn Salandy, Head, Water Projects

5. Question and Answer Segment (20 minutes)

Panel to Respond to Questions/Comments:

Mr. Kelvin Romain, Chief Executive Officer, WASA

Ms. Shaira Ali, Director, Operations, WASA

Ms. Natasha Andrews, Director, Customer Care, WASA

Ms. Alisha Romano, Management Consultant, WASA

Mr. Jason Cropper, Programme Manager, SCADA/Metering, WASA

Mr. Shawn Salandy, Head, Water Projects, WASA

6. PowerPoint Presentation on Environmental and Social Considerations: Environmental Solutions Ltd. (ESL) Project Team (20 minutes)

Ms. Annmarie Goulbourne Manager, Environmental Management Services Via **Zoom Link**

7. Question and Answer Segment (30 minutes)

Panel to Respond to Questions and Comments:

Ms. Annmarie Goulbourne - ESL

Dr. Frederica Deare – ESL

8. Closing Remarks – Mr. Kelvin Romain, Chief Executive Officer (CEO), WASA (5 minutes)

7.4 Appendix IV– Register of Attendees at the Stakeholder Consultation

Online Registration Form Completed

No.	First Name	Last Name	Organization	Country/Region Name
1	Carlly	Benjamin	Private citizen	Trinidad and Tobago
2	Sara-Jade	Govia	Inter-American Development Bank	Trinidad and Tobago
3	Renee	Jackson	Ministry of Public Utilities (MPU)	Trinidad and Tobago
4	Valerie	Kelsick	NA	Trinidad and Tobago
5	Andrea	Baksh	Ministry of Planning and Development	Trinidad and Tobago
6	Prandeo	Sitahal	Private citizen	Trinidad and Tobago
7	Clive	Deokie	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
8	Himalaya	Boodoosingh	The National Gas Company of Trinidad and Tobago Limited (NGC)	Trinidad and Tobago
9	brendon	John	Ministry of Public Utilities (MPU)	Trinidad and Tobago
1	Brenda	Mills		Trinidad and Tobago
1	Arlene	Joseph-Josiah	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
1	Asha	Mutota	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
1	Mandisa	Frederick	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
1	Jared	Harris	Private citizen	Trinidad and Tobago
1	Alicia	Hamil	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
1	Wendell	Etienne	Encore Productions	Trinidad and Tobago
1	Gabriel	Williams	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
1	Michael	Pacheco	Las Lomas Development Ltd	Trinidad and Tobago

No.	First Name	Last Name	Organization	Country/Region Name
1	CB	WM	Private citizen	Trinidad and Tobago
2	Simone	Browne	Green Fund Executing Unit, Ministry of Planning and Development	Trinidad and Tobago
2	Navita	Lyman-Mohan	NIDCO	Trinidad and Tobago
2	Ronnie	Kantasingh	The National Gas Company of Trinidad and Tobago Limited	Trinidad and Tobago
2	Natasha	Howard-Hernandez	San Fernando City Corporation	Trinidad and Tobago
2	Usef	Aziz	Ministry of Energy & Energy Industries	Trinidad and Tobago
2	Derek	Jones	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
2	Tameka	Deare	Kairi Consultants Ltd.	Canada
2	Aisha	Donaldson	Ministry of Planning and Development	Trinidad and Tobago
2	David	Samm	Private Citizen	Trinidad and Tobago
2	Julia	Warner	Private citizen	Trinidad and Tobago
3	Ricardo	Ramdin	Private citizen	Trinidad and Tobago
3	Osawai	John	National Housing Corporation Barbados	Barbados
3	Luz-Marina	Roberts	Town and Country Division, Ministry of Planning	Trinidad and Tobago
3	Jade	Lakhan	Town and Country Division, Ministry of Planning and Development	Trinidad and Tobago
3	Charmaine	Joseph-Campbell	Tobago House of Assembly	Trinidad and Tobago
3	Khadija	Robert	Ministry of Public Utilities (MPU)	Trinidad and Tobago
3	kgirindra	kovoor	Tunapuna/piarc Reagionalcorporation	Trinidad and Tobago
3	Joseph	Douglas	Ministry of Public Utilities (MPU)	Trinidad and Tobago
3	Nathan	Spears	Ministry of Public Utilities (MPU)	Trinidad and Tobago
3	Justin	Ram	Trinidad and Tobago Chamber of Industry and Commerce	Trinidad and Tobago

No.	First Name	Last Name	Organization	Country/Region Name
4	Amaya	Romano	Private citizen	Trinidad and Tobago
4	Natalie	Floyd	Ministry of Public Administration	Trinidad and Tobago
4	Hillan	Morean	Port-of-Spain City Council	Trinidad and Tobago
4	Hinni	Maraj	Couva Tabaquite Talparo Regional Corporation	Trinidad and Tobago
4	Marvin	Pierre	Environmental management Authority	Trinidad and Tobago
4	Alicia	Abraham	Ministry of Housing and Urban Development	Trinidad and Tobago
4	Vivian	Joseph	Environmental Management Authority	Trinidad and Tobago
4	Marvin	Gonzales	Ministry of Public Utilities	Trinidad and Tobago
4	Bianca	S	Private citizen	Trinidad and Tobago
4	Carlene	Boodoo	Surveys and Mapping Division	United States
5	Petra	Rambarran-Boodoo	The Stretch Togetherness Community group	Trinidad and Tobago
5	Natasha	Johnson	Tprc	Trinidad and Tobago
5	Vernice	Alleyne	Ministry of Planning and Development	Trinidad and Tobago
5	Gloria	Coombs	Marabella Woman's Action Enterprise Ltd	Trinidad and Tobago
5	Rishi	Roopchand	Ministry of Works and Transport	Trinidad and Tobago
5	Pamela	Montague	Private citizen	Trinidad and Tobago
5	FKJ	Consultancy	FKJ	Trinidad and Tobago
5	Arlene	Collis	Ministry of Public Utilities (MPU)	Trinidad and Tobago
5	Kyon	St Clair	National Energy Corporation Trinidad and Tobago	Trinidad and Tobago
5	GILROY	LEWIS	IDB	Trinidad and Tobago
6	Ruth	Osman	Ministry of Public Utilities (MPU)	Trinidad and Tobago

No.	First Name	Last Name	Organization	Country/Region Name
6	Dionne	Cross	FKJackie consultancy	Trinidad and Tobago
6	Mallini	Samsoondar	The National Gas Company of Trinidad and Tobago Limited	United States
6	Claudelle	Mc Kellar	Ministry of Public Administration	Trinidad and Tobago
6	Jasmine	Seaforth	Ministry of Public Utilities (MPU)	Trinidad and Tobago
6	Genevieve	Bernard	TTAVCC	Trinidad and Tobago
6	richard		Private citizen	Trinidad and Tobago
6	Anthony	Bartholomew	Ministry of Public Utilities (MPU)	Trinidad and Tobago
6	Vindhar	Suraj	Caribbean Lifestyle Communications	Trinidad and Tobago
6	Kerry	Pariag	MPD	Trinidad and Tobago
7	Ryan	Mahadeo	Private citizen	Trinidad and Tobago
7	Patti-Ann	Williams	Ministry of Health	Trinidad and Tobago
7	Simone	Gayadeen	Ministry of Public Utilities (MPU)	Trinidad and Tobago
7	B	B	Private citizen	Trinidad and Tobago
7	C	J	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
7	Jason	Maule	The Water and Sewerage Authority (WASA)	Trinidad and Tobago
7	Mel	Juan	Private citizen	Trinidad and Tobago
7	Carina	Cockburn	IDB	Trinidad and Tobago
7	Kennis	Thomas	Private citizen	Trinidad and Tobago
7	Earl	Williams	BD Kelly & Company	Trinidad and Tobago
8	Cheryl-Ann	Solomon	Ministry of Youth Development and National Service	Trinidad and Tobago
8	Glenn	Watkins	Wows	Trinidad and Tobago

No.	First Name	Last Name	Organization	Country/Region Name
8	Hewitt	Arthelle	Private citizen	Trinidad and Tobago
8	Ayinde	Frederick	Smith Robertson	Trinidad and Tobago
8	Andre	Bruno	Private citizen	Trinidad and Tobago

In Person Registration Form Completed

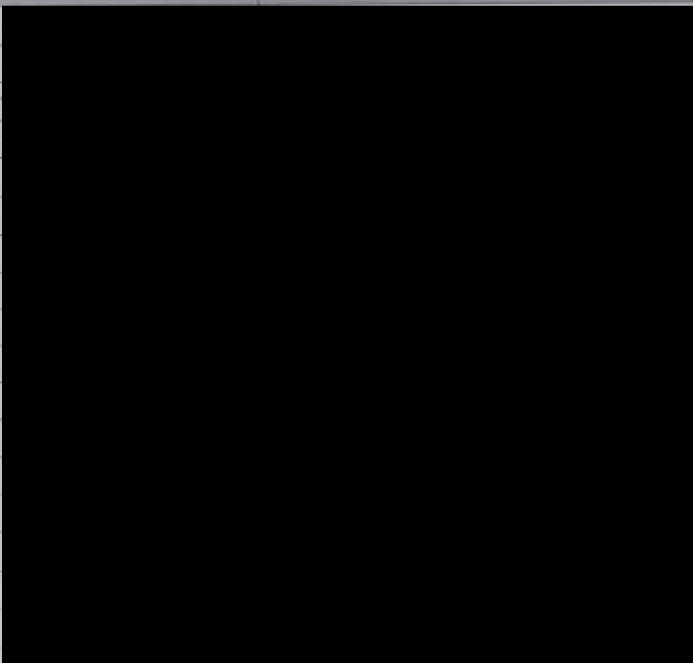
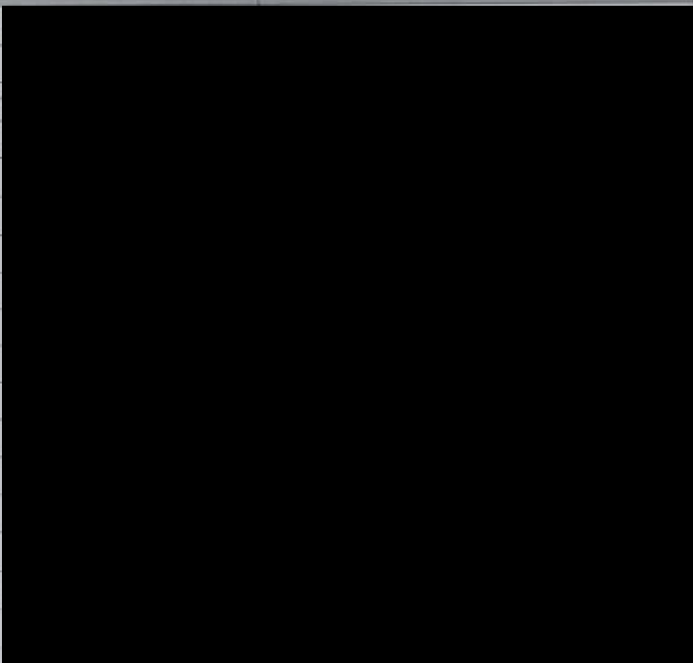
Public consultation on the Environmental and Social Assessment Report for the Trinidad and Tobago National Water Sector Transformation Programme (Wednesday 2nd November 2022 – Government Campus Plaza Auditorium)

REGISTRATION FORM

NAME	CONTACT	EMAIL ADDRESS	ORGANIZATION
ATTIBA SEFIN			WASA
ALEXIS ESTEBEZ			IAB
KELVIN ROSSAIGN			WASA
FREDERICKA BEARE			ESL
Mikel Sankar			ESL
C. Singh			MAPU
E. SAMUEL HOWE			CL COMMUNICATION
Andrea Murray			IT - LTD
Quincy Gooker			WASA
NATASHA ANDREWS			WASA
JASON CLOPPER			SWMCO
Denicia Copoul			
ANDRE HINSON			WASA
SHARICA ALI			WASA
SHALVIN SALANDY			TST
VIRGINIA NARAYAN			1066Kas
BRANDON BENJOL			MPM
MIKELLA HOSEIN			-
Aisha Chappell			

Public consultation on the Environmental and Social Assessment Report for the Trinidad and Tobago National Water Sector Transformation Programme (Wednesday 2nd November 2022 – Government Campus Plaza Auditorium)

REGISTRATION FORM

NAME	CONTACT	EMAIL ADDRESS	ORGANIZATION
SHALON A. ARCHIE			WASA / WPP
ALISHA ROMANO			WASA
ADGEA RAMPEKSAUD			WASA
DORRI AGOSTINI			JDS
MARILYN CRICKHOW			ESL
TRACY RAMPEKSAUD			MPU
Berchi, Chau			MPU
CASANDRA LA FLEUR			
SHERRI DUMAS-HARVEY			Harvey Consultancy
Diane Cross			MPU
Ray Davis			MPU
NJERE EDWARDS			
KHADJA ROBERT			MPU
NICOLETTE DUKE			Chairman, WASA
Ravindra Nanga			Information Division
* Ivan D'Oliveira			
LEIGH-FRANCIS ARWILL			

Ministry of
Public Utilities



Water &
Sewerage
Authority



T&T National Water Sector Transformation Programme

The National Water Stabilization & Improvement Programme Component of this Programme of Works.



Opening Remarks

Water & Sewerage Authority | Water Sector Transformation Programme

Introduction

The general objective of this Programme is to **improve** the efficiency, quality, sustainability and resilience of the potable water supply service and water security, for the **underserved** Communities in Trinidad & Tobago.



Water & Sewerage Authority | Water Sector Transformation Programme

What's the problem?



Water & Sewerage Authority | Water Sector Transformation Programme



Underserved Communities



Underserved communities are those that receive water less than 3 days a week.

Approximately 605,955 persons or 42% of the population presently falls into category.

That is, they receive less than a 24/3 level of service.

Water & Sewerage Authority | Water Sector Transformation Programme

What's the solution?





Strategic Solutions:

(1) Urgent and effective upgrading and management of our:

- a) Production
- b) Transmission
- c) Distribution of water

(2) Reduction of water losses

(3) Introduction and utilization of innovative technology:

- a) Digital transformation
- b) Data-driven Management systems

How do we achieve this?



Water & Sewerage Authority | Water Sector Transformation Programme

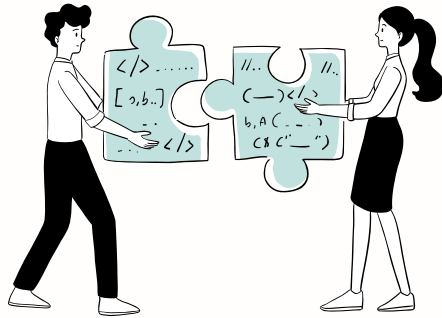
An illustration showing two people, a man and a woman, placing puzzle pieces into a larger puzzle. The man is on the left, holding a puzzle piece with the code snippet: `</>.....`, `[a,b-]`, `</>`, and `.....</>`. The woman is on the right, holding a puzzle piece with the code snippet: `..`, `(-)</>`, `b.A(-..)`, and `cs(-')`. The puzzle pieces are light blue and have interlocking edges. The background is white.

- (A)** Increased production of potable water
- (B)** Equitable transmission of this water across the Country
- (C)** Reliable distribution of water to you, our customers

**What does this
mean?**

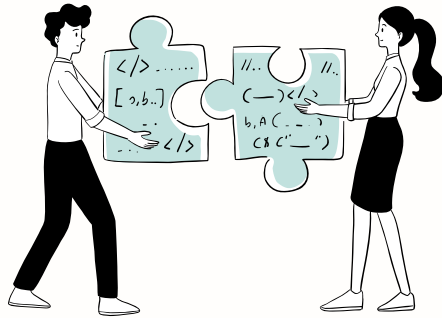


Solution (1):



- **Increase in the quantity of local production sources:** Construction of 6 new production sources; bringing the water closer to the customers in need.
- **Upgrade the existing facilities:** Ensure the existing production facilities are reliable and able to continue to supply potable water to the customer they serve.

Solution (1) A & B:

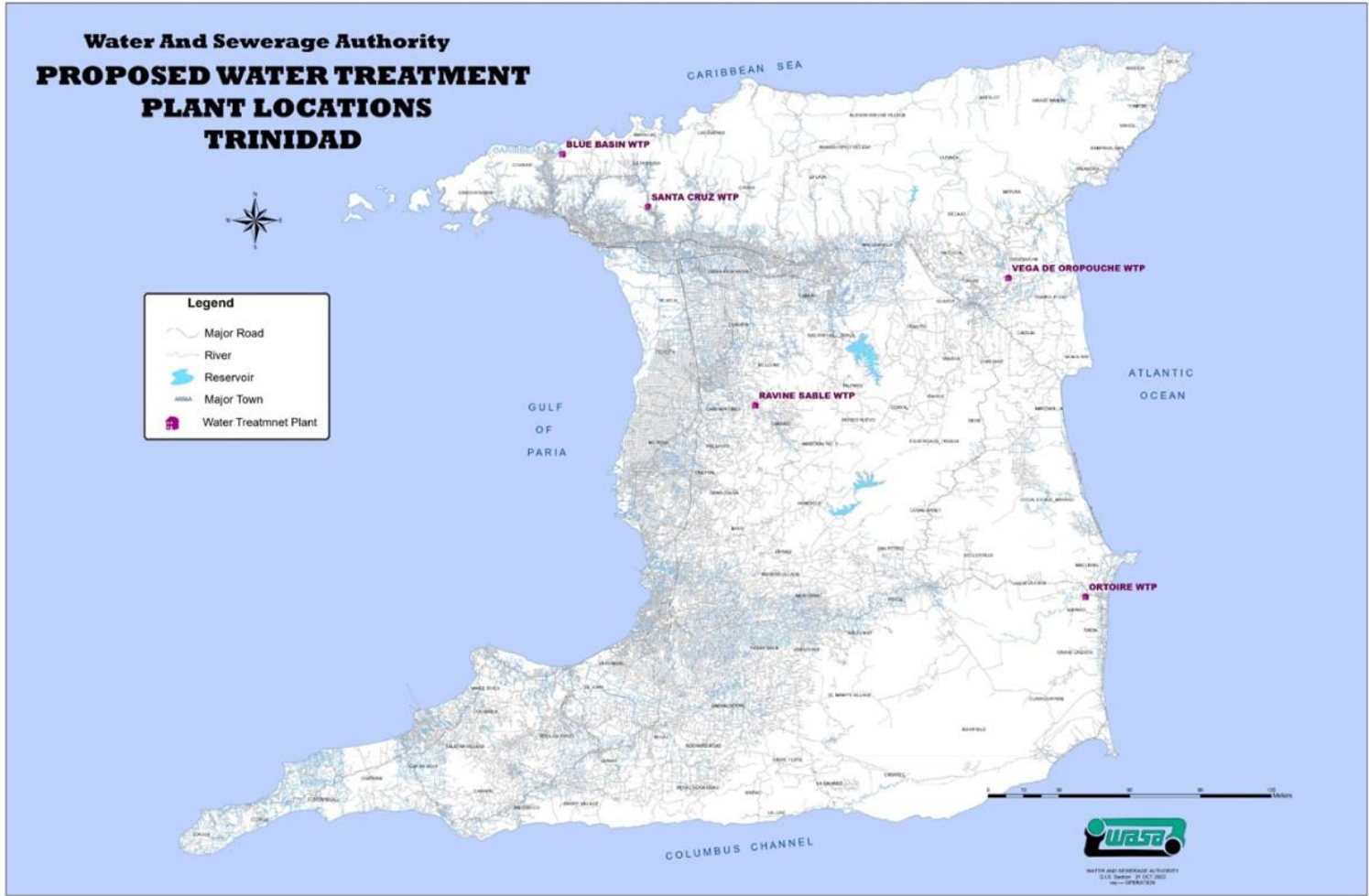


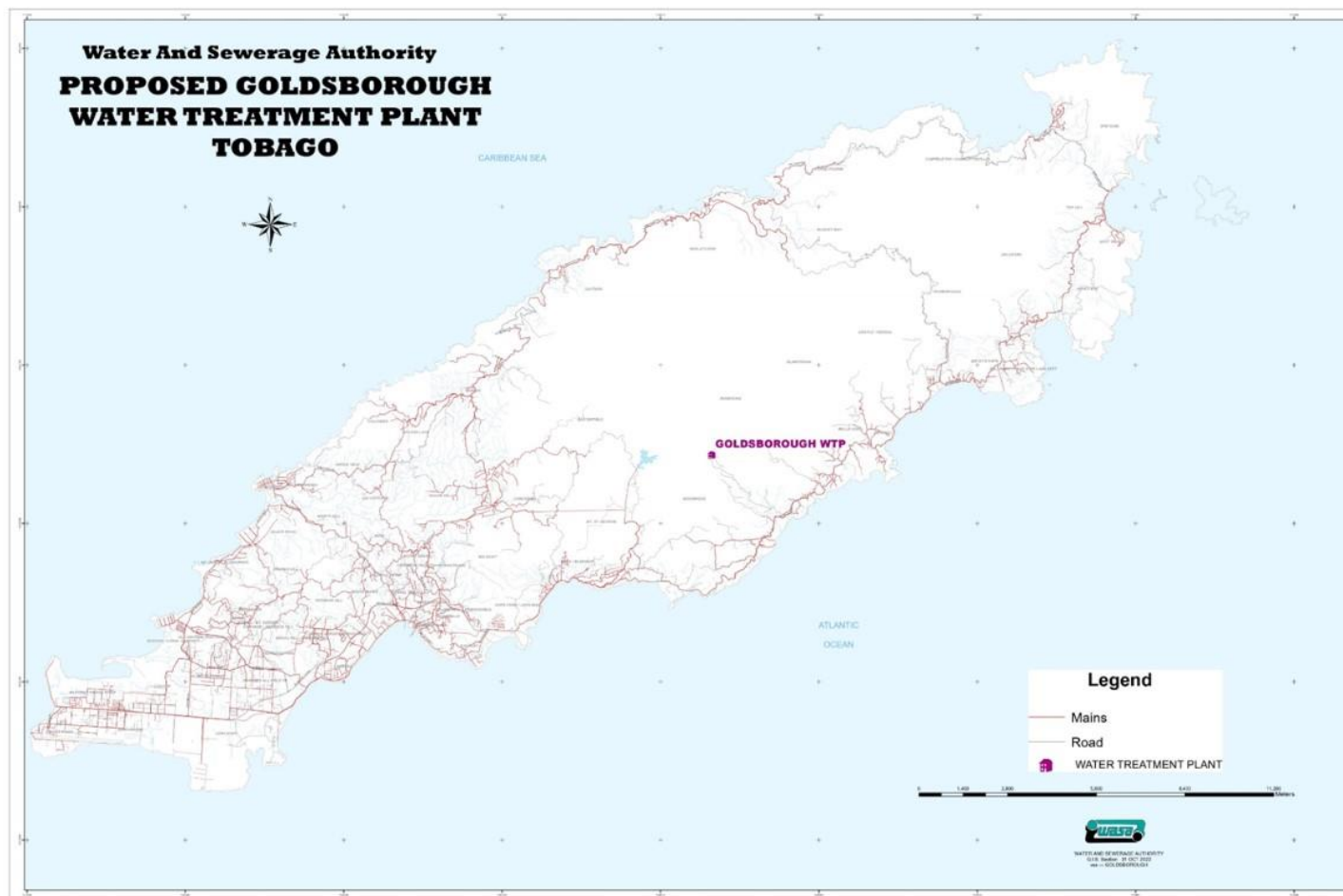
- **New Production Facilities:**

- Blue Basin, Diego Martin
- Santa Cruz
- Sangre Grande
- Ravine Sable
- Ortoire, Mayaro
- Goldsborough, Tobago

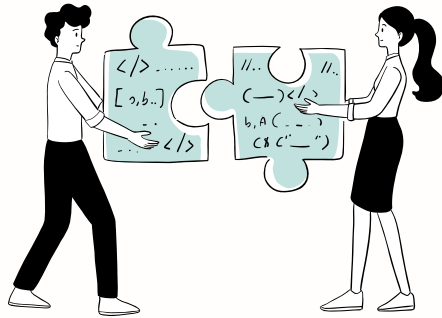
- **New Well Development:**

- Freeport
- Penal
- Chatham/Palo Seco
- Tucker Valley





Solution (1) C:



- **Refurbishment and Upgrade of Water Production & Distribution**

Facilities :

- Hillsborough Dam WTP
- Courland WTP
- North Oropouche WTP
- Caroni WTP
- Navet WTP
- Guanapo WTP
- Maraval WTP
- Freeport WTP
- Chatham WTP

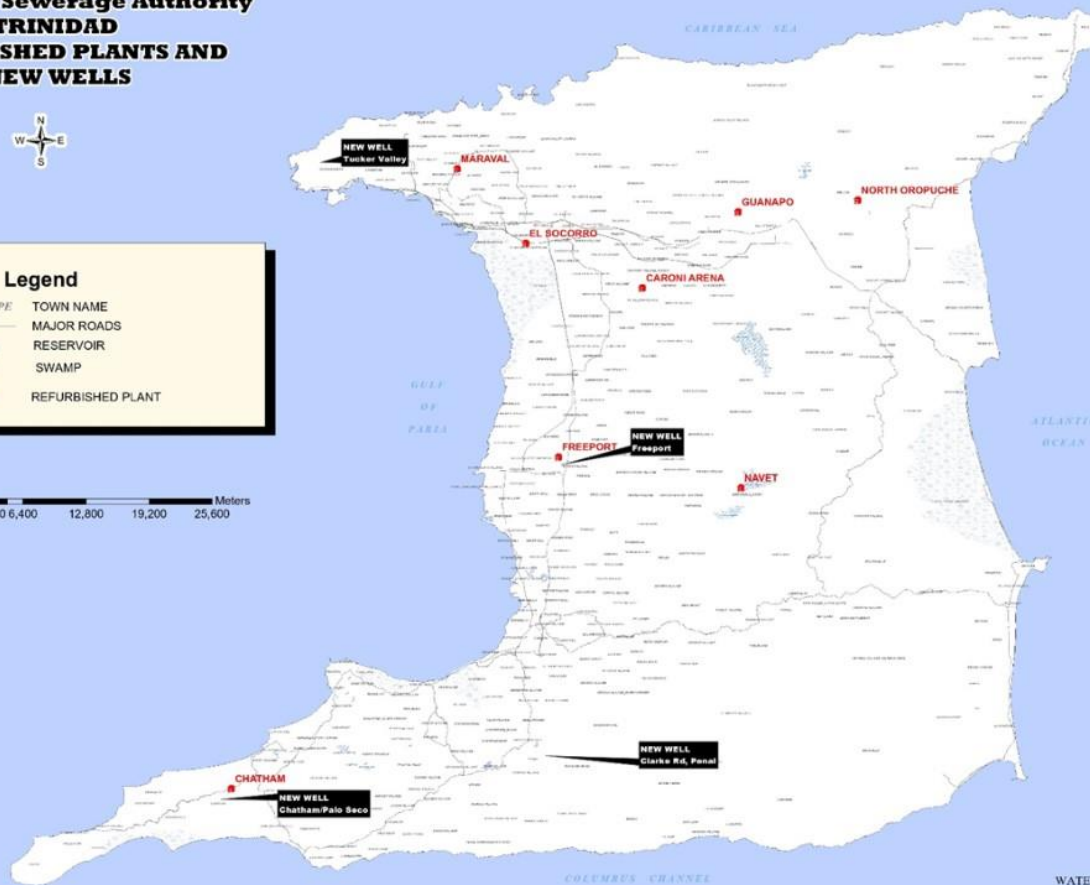
**Water And Sewerage Authority
TRINIDAD
REFURBISHED PLANTS AND
NEW WELLS**



Legend

	TOWN NAME
	MAJOR ROADS
	RESERVOIR
	SWAMP
	REFURBISHED PLANT

0 3,200 6,400 12,800 19,200 25,600 Meters



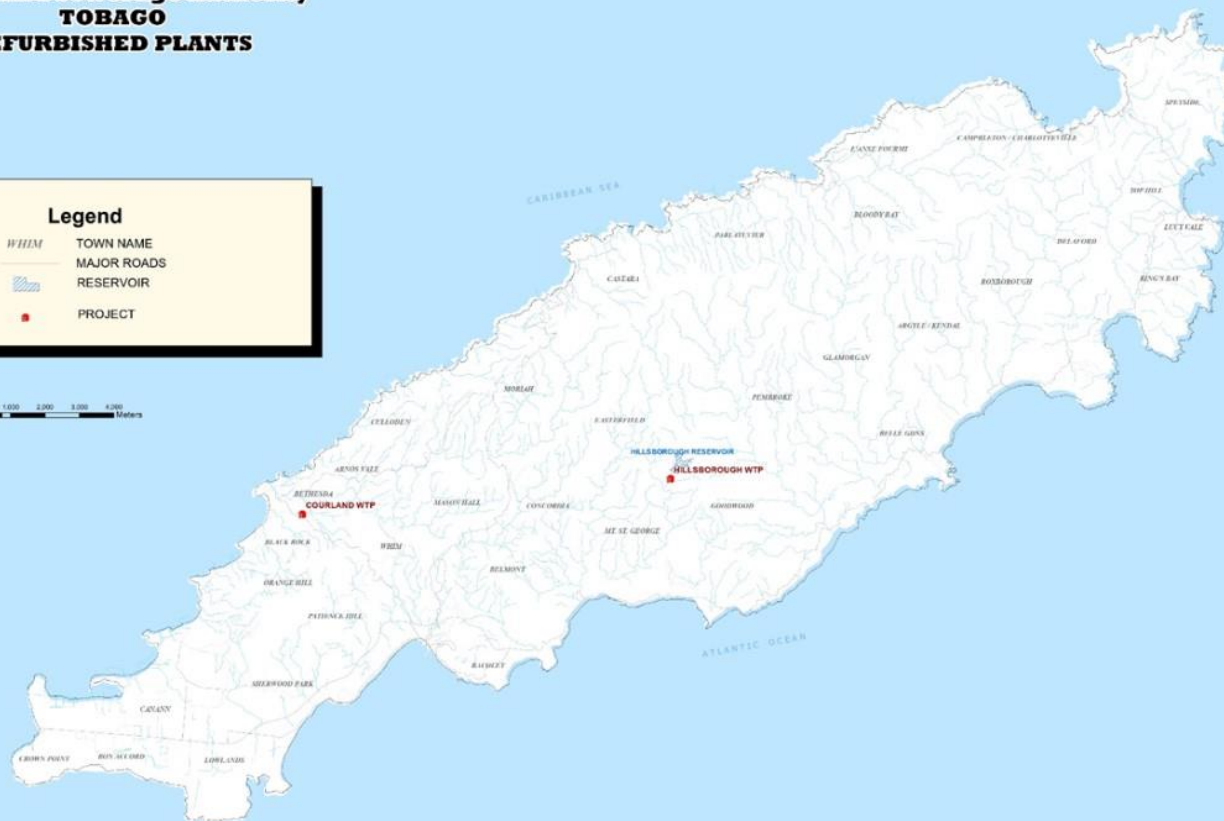
WATER AND SEWERAGE AUTHORITY
G.I.S. Section/v/REFURBISH
2 NOV 2022

**Water And Sewerage Authority
TOBAGO
REFURBISHED PLANTS**

Legend

W/H/M	TOWN NAME
—	MAJOR ROADS
▨	RESERVOIR
■	PROJECT

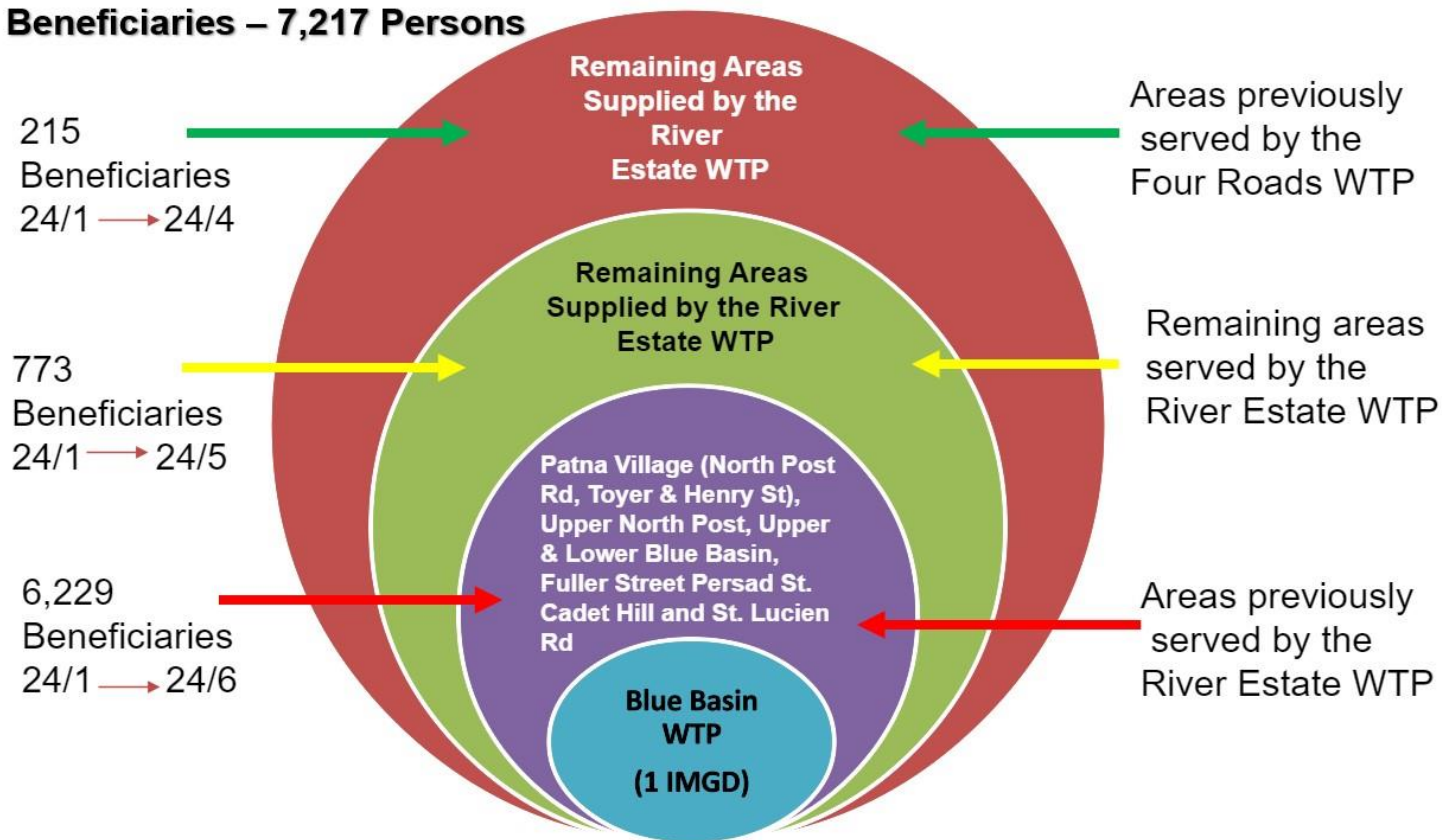
0 100 1000 2000 3000 4000
Meters



Who will benefit?



Beneficiaries – 7,217 Persons



Blue Basin WTP

Water & Sewerage Authority | Water Sector Transformation Programme

Components	Completed by	Target Beneficiaries	Surrounding Beneficiaries	Total Beneficiaries
		Persons (4 per household)	Persons (4 per household)	
National Water Stabilization and Improvement Program				
Component I. Water Stabilization and Improvement				
New Water Treatment Plants				
Ravine Sable WTP	Dec 2024	20,421	8,390	28,810
Sangre Grande WTP	Dec 2023	46,571	48,355	94,926
Santa Cruz-Green Meadows WTP	Oct 2023	44,122	18,632	62,755
Goldsborough River WTP	Dec 2024	8,343	4,783	13,126
Blue Basin WTP	Dec 2023	6,229	988	7,217
Mayaro WTP	Mar 2024	27,734	3,809	31,543
SUBTOTAL		153,420	84,957	238,377

Beneficiaries

Water & Sewerage Authority | Water Sector Transformation Programme

Components	Completed by	Target Beneficiaries	Surrounding Beneficiaries	Total Beneficiaries
		Persons (4 per household)	Persons (4 per household)	
Water Treatment Infrastructure Rehabilitated & Upgraded				
Freeport WTP rehabilitated & upgraded Plus New Well development	Oct 2023	16,809	19,946	36,755
Caroni WTP rehabilitated & upgraded	Jan 2024	473,624	N/A	473,624
North Oropouche WTP rehabilitated & upgraded	Aug 2023	94,926	42,268	137,194
Guanapo WTP rehabilitated & upgraded	Oct 2023	14,042	10,999	25,041
Maraval WTP rehabilitated	Oct 2023	5,881	21,069	26,950
Navet WTP rehabilitated	Sep 2024	162,625	38,579	201,204
Hillsborough WTP rehabilitated and upgraded	Jun 2023	13,971	18,226	32,197
Chatham WTP rehabilitated Plus New Well Development	Jul 2023	12,914	8,832	21,746
Courland WTP rehabilitated	Dec 2023	6,784	15,506	22,290
SUBTOTAL		801,575	175,424	977,000

Beneficiaries

Water & Sewerage Authority | Water Sector Transformation Programme

Components	Completed by	Target Beneficiaries	Surrounding Beneficiaries	Total Beneficiaries
		Persons (4 per household)	Persons (4 per household)	
Water Wells Constructed				
Three (3) new Freeport wells drilled and equipped (Part 2)	Aug 2023	Accounted for in the beneficiaries for plant refurbishment	N/A	N/A
Penal Wells	Jan2023	2,315	N/A	2,315
Chatam/Palo Seco: Conversion of Erin A and 2D	Apr2023	Accounted for in the beneficiaries for plant refurbishment	N/A	N/A
Tucker Valley Wells	Aug2023	13,281	N/A	13,280.54
		15,595	0	15,595
Booster Station Rehabilitated				
El Socorro High-lift & Booster Pumping Station rehabilitated	May 2023	8,028	N/A	8,028
		8,028	0	8,028
TOTAL Beneficiaries		978,618	260,382	1,239,000

Beneficiaries

Water & Sewerage Authority | Water Sector Transformation Programme

Solution (2):



Mains Replacement Programme

Objective:

Replacement of aged and fragile transmission and distribution pipelines

Reduction in Water Losses

Water & Sewerage Authority | Water Sector Transformation Programme

Solution (2):



Mains Replacement Programme

Scope:

Execution of various pipeline replacement projections throughout Trinidad, including: Petit Valley, Freeport, Wallerfield, Point Fortin, Mt. Lambert, Port of Spain, Laventille, Sangre Grande and Valsayn South

Reduction in Water Losses

Water & Sewerage Authority | Water Sector Transformation Programme

Solution (2):



Mains Replacement Programme

Impact:

- Reduction of water loss
- Improved water supply to approximately 45,000 customers

Reduction in Water Losses

Water & Sewerage Authority | Water Sector Transformation Programme

Solution (2):



Bulk Metering Project

Objective:

Installation of bulk meters and data loggers on 100% of the production facilities throughout the Country, where meters are non -functional or non - existent.

Reduction in Water Losses

Water & Sewerage Authority | Water Sector Transformation Programme

Solution (2):



Bulk Metering Project

Scope:

- Installation of 263 electromagnetic flow meters and data loggers on Water Treatment Plants, Booster Stations and Wells
- Seamless connectivity of the flow and pressure readings to our telemetric system for data viewing

Reduction in Water Losses

Water & Sewerage Authority | Water Sector Transformation Programme

Solution (2):



Bulk Metering Project

Impact:

- Collection of valuable production data leading to the accurate calculation of unaccounted for water
- Data loggers will facilitate the smooth transfer of pressure and flow data remotely to assist with the acute monitoring of the daily production
- Equitable distribution of water to be more sustainable thereby improving the level of service to customers

Reduction in Water Losses

Water & Sewerage Authority | Water Sector Transformation Programme

Solution (2):



Non-Revenue Water Reduction Programme

Objective:

Design and implementation of a NRW Reduction Programme through a Co - Management approach between WASA and a NRW consultant

Non-Revenue Water Reduction Programme

Solution (2):



Scope:

- Procure a specialized NRW consulting firm under a fixed and variable results -based payment modality
- Implement targeted DMAs/PMAs
- Training and capacity building in NRW Management

Non-Revenue Water Reduction Programme

Solution (2):



Impact:

- Targeted leak detection and repair using modern techniques
- Use of Smart Water Infrastructure Technologies for collation and analysis of NRW data
- Substantial reduction in NRW due to performance -based contract

Solution (3):



SCADA Automation

Objective:

Enable remote management of 9 critical facilities, including: Caroni, North Oropouche, Navet and Hollis Water Treatment Plants

Solution (3):



SCADA Automation

Scope:

- Upgrade existing instrumentation at each facility to enable monitoring and control
- Rollout a telecoms network to facilitate data transmission
- Development of a state -of- the -art Centralized Control Room

Solution (3):



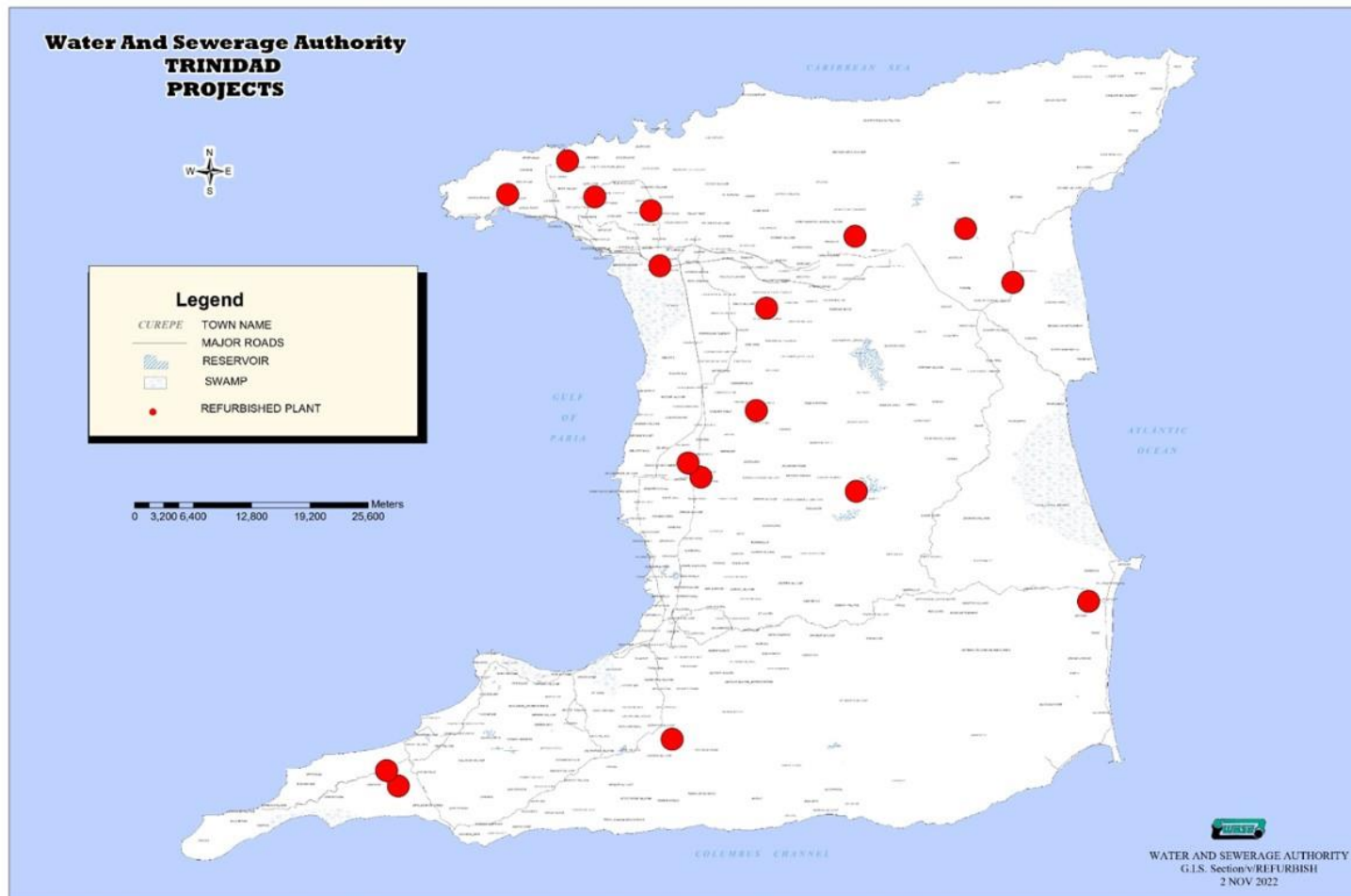
SCADA Automation

Impact:

- Remote control of pump sets and motorized actuated valves
- Real-time monitoring of production, pump status, water levels, pressure measurements, tank heights and water quality measurements
- Predictive analysis to facilitate preventative maintenance
- Improved reliability of supply to customers

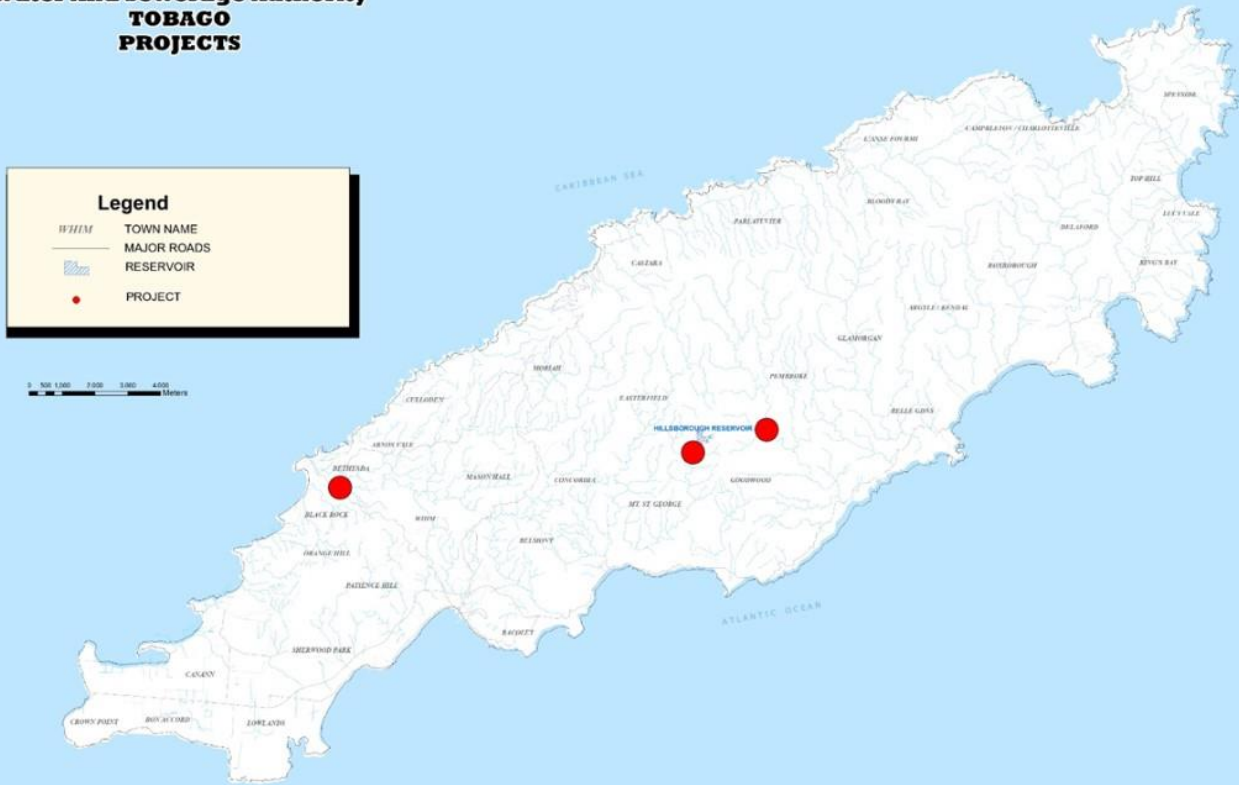
Where are these
projects to take place?



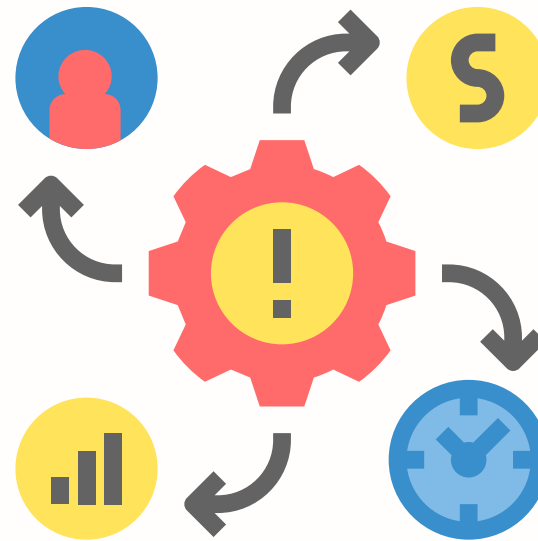


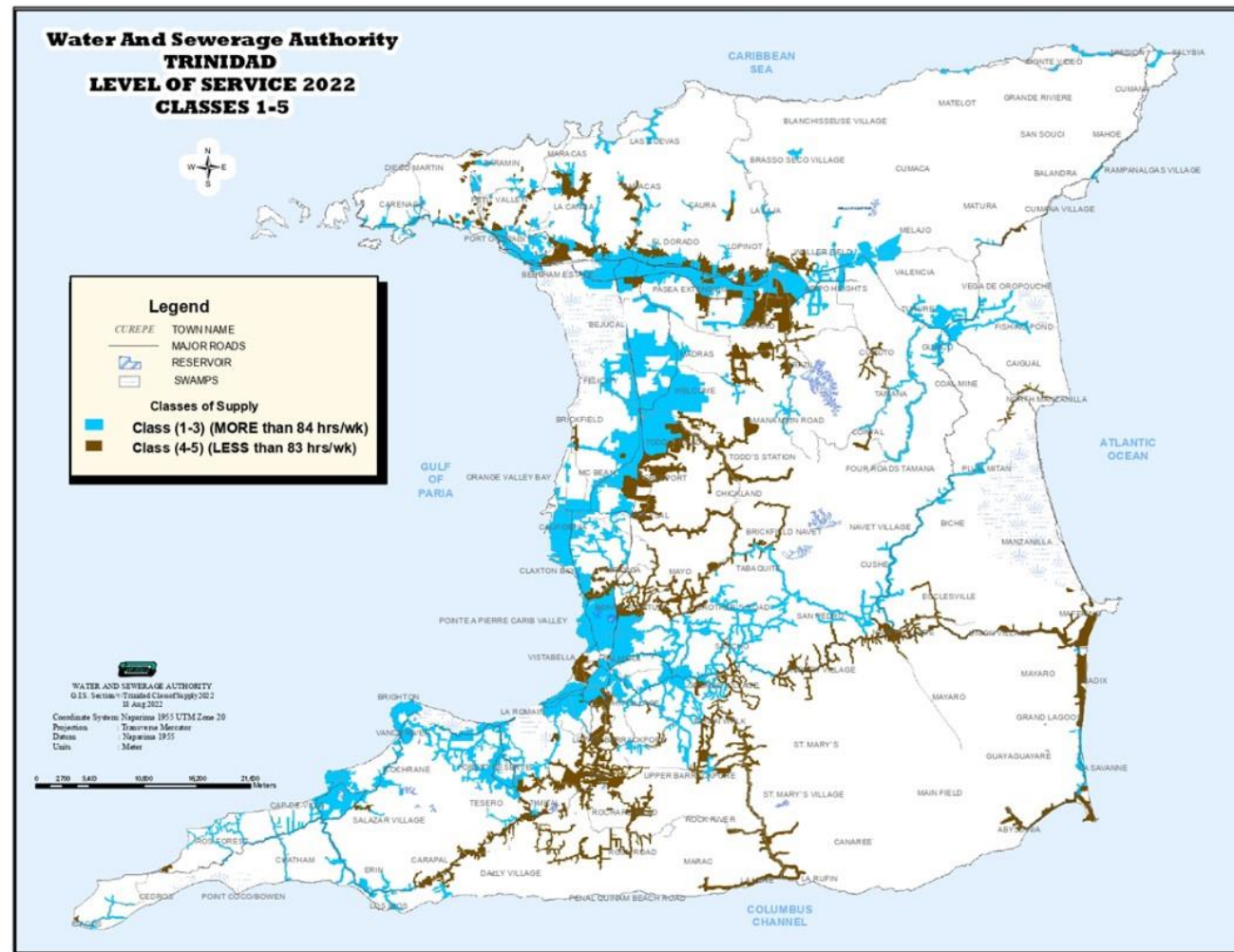
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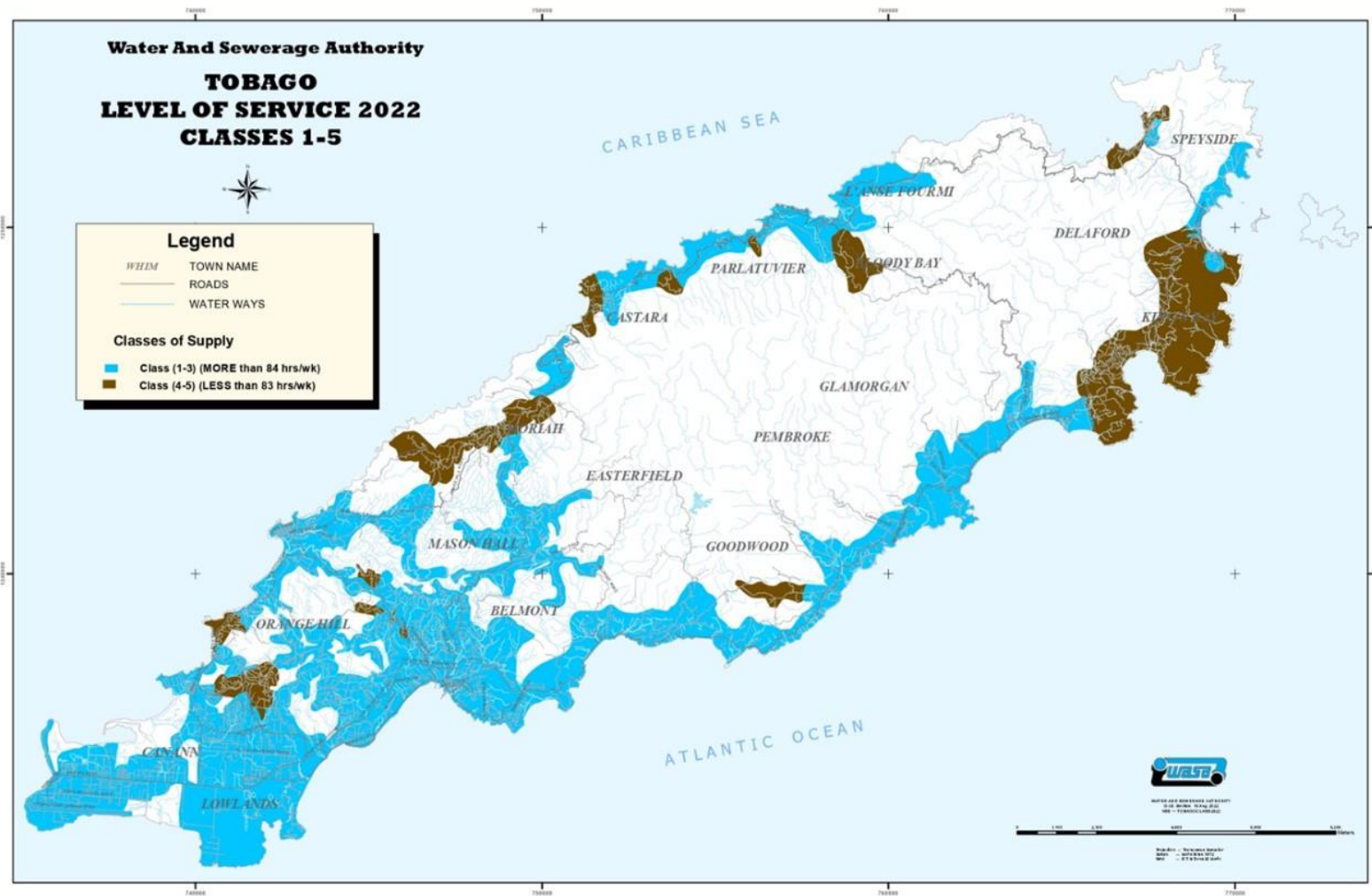
	TOWN NAME
	MAJOR ROADS
	RESERVOIR
	PROJECT

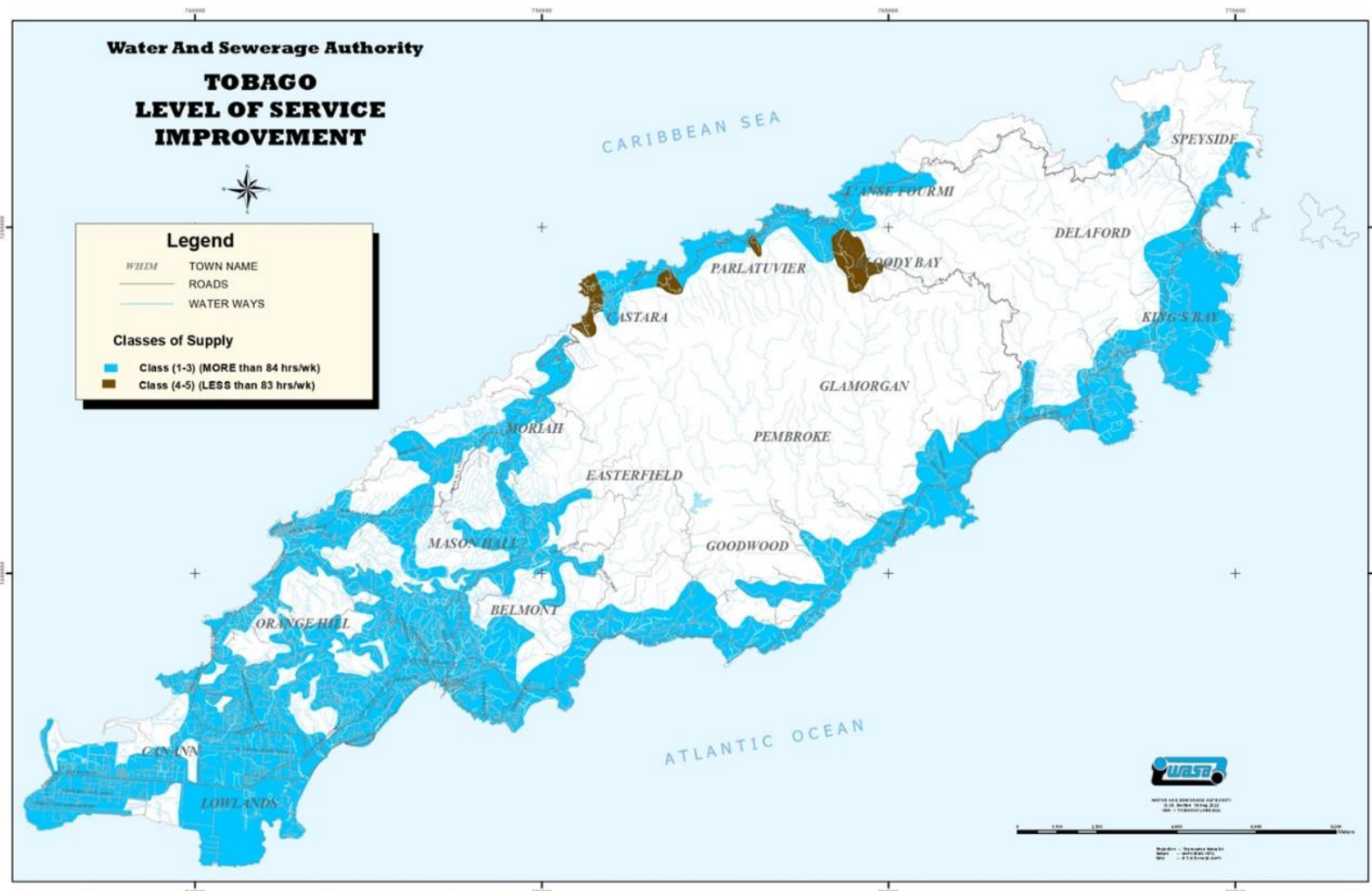


What is the impact?









Thank You



**We will now take any
questions you may have**



Trinidad and Tobago: TT-L1055: National Water Sector Transformation Program

November 2, 2022

Environmental Solutions Ltd.

Annmarie Goulbourne





Why are we here today?

- **Project objective** – The Government of the Republic of Trinidad and Tobago (GoRTT), has sought funding to improve the efficiency and quality of potable water services and water security in Trinidad and Tobago.
- This Environmental and Social Assessment (ESA) evaluates the infrastructure and associated impacts based on the following components:
 - Water Stabilization and Improvement
 - Support for the water sector transformation plan
 - Network optimization
- **Today's Objective** - We are here today to present the findings of the ESA and solicit feedback from the stakeholders





Trinidad and Tobago Background



Environmental Solutions Ltd.

Contracted to the Inter-American
Development Bank

Execute the project: Environmental and
Social Assessment (ESA) for the National
Water Sector Transformation Program

For: Water and Sewage Authority (WASA)

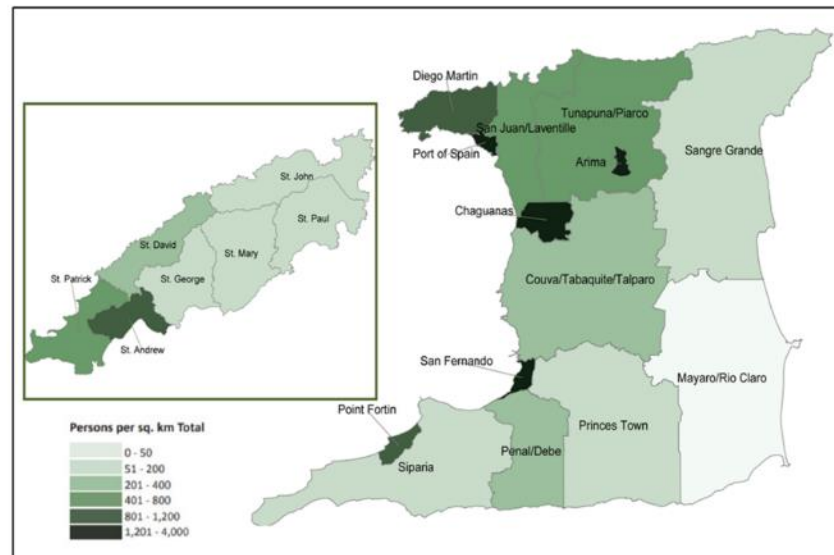


The Project Team

- Dr. Theresa Rodriguez-Moodie, 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
- Mr. Richard Coutou, Geologist
- Ms. Peta-Gay Harris, Environmental Analyst



The Study Area



- The project area for this Consultancy covers all areas of Trinidad and Tobago
- However, the first and third component focuses on the North-West, North-East, Central, and South regions of Trinidad and operational zones in Tobago which includes the following municipalities:
 - Diego Martin
 - San Juan/Laventille
 - Port of Spain
 - Borough of Arima
 - Tunapuna/Piarco
 - Couva/Tabaquite/Talparo
 - Siparia
 - Mayaro/Rio Claro
 - Princes Town
- The project covers the entire island of Tobago, while Trinidad represents an estimated area of 3,551 km², which consists of almost 77% of the island's population (CSO, 2012).
- The project area covers several municipalities with varying population densities.

Project Background



- In August 2022, GoRTT announced it will carry out its mandate to transform the water sector.
- Significant investments required to achieve:
 - wider water sector transformation
 - undertake long-term infrastructural improvements to improve water supply
 - increase water security, protect watersheds, and water resources, strengthen sector institutions,
 - support the sector in its planning capacity and execution.
- The Bank to provide financing for water sector support through the CCLIP instrument.
- CCLIP will allow the Bank to support the development of water and sanitation services in the medium and long-term

Approach



Desktop Research & Analysis of Maps and Plans

Ecology
Topography & Geology
Hydrology
Natural Hazards
Climate & Climate Change
Noise, Air, Water Quality
Data



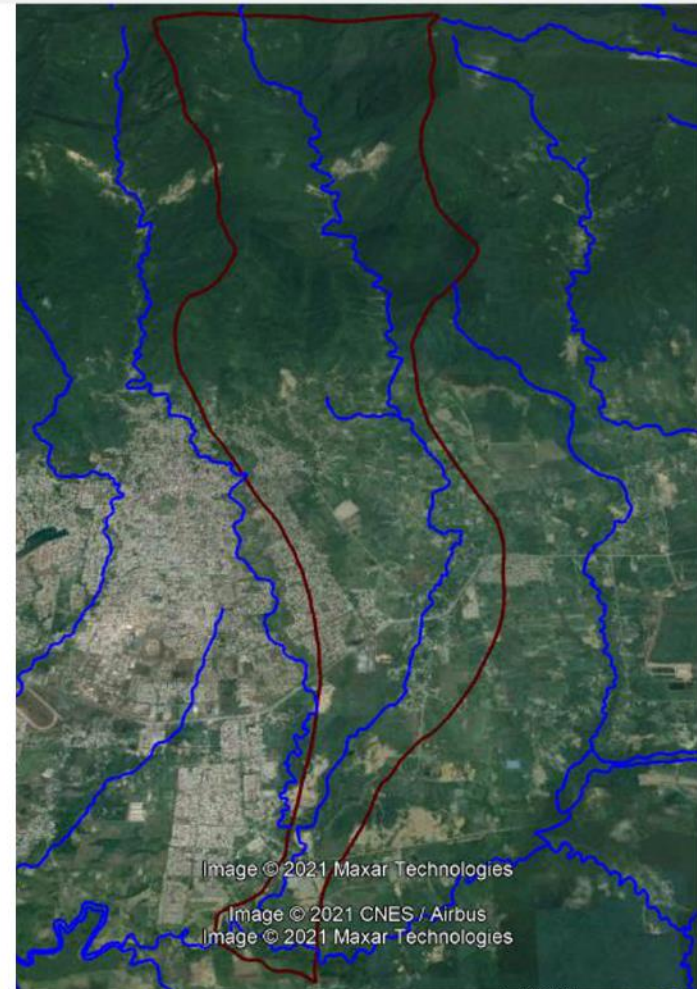
Stakeholder Consultations

Stakeholder Mapping and
Analysis
Several telephone
meetings with WASA and
other stakeholders



Literature Review & Data Analysis

Review past reports
Past damage assessments
Analysis of Maps and
Plans





Policy and Legislative Review

Planning



National Development Strategy of Trinidad and Tobago – Vision 2030

Resource Management



National Integrated Water Resources Management Policy 2005

Water and Sewerage Authority Act of 1965

Water Pollution Rules 2019

Social and Economic



Draft National Policy on Gender and Development 2009





Policy and Legislative Review

Environment



Environmentally Sensitive Areas Rules, 2001

Forest Act #42 of 1915 Chapter 66:01 amended 1955, 1999



National Environmental Policy, 2006

National Climate Change Policy (NCCP) 2011

National Protected Areas Policy, 2011

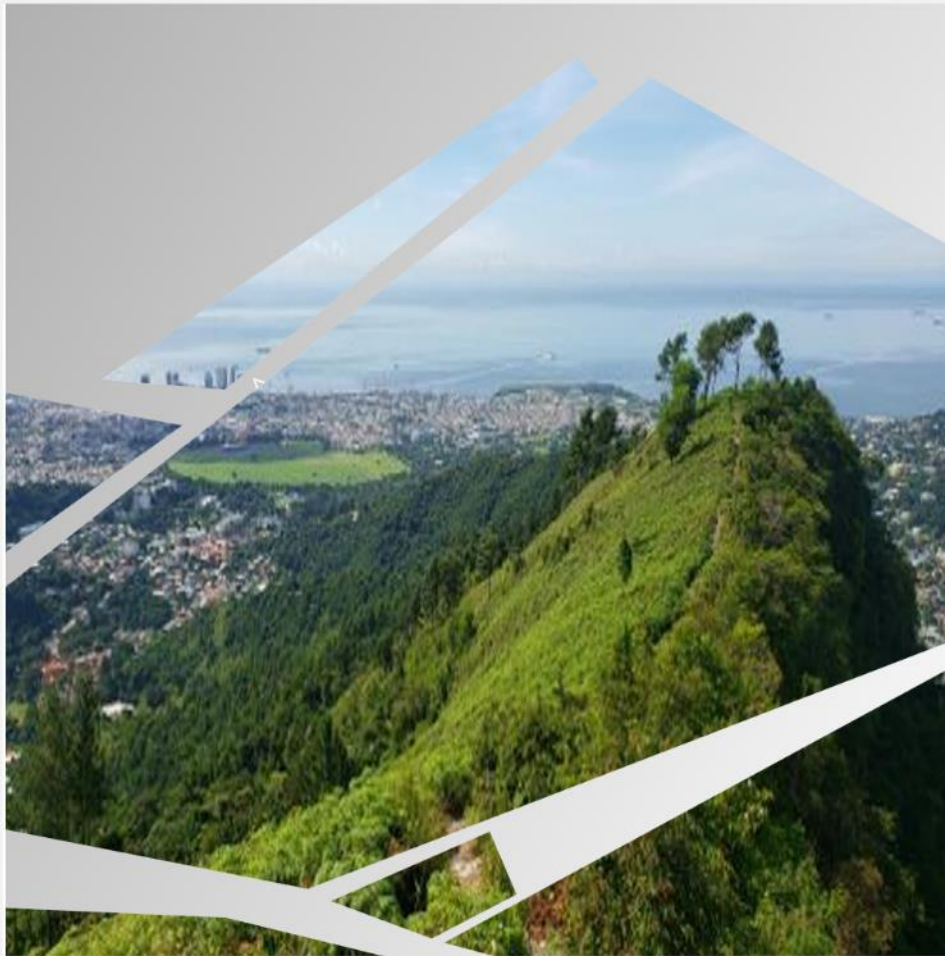
National Forest Policy, 2011



The Environmental Management Act, 2000

Certificate of Environmental Clearance Rules, 2001





Policy and Legislative Review

International Treaties and Protocols

Convention on Biological Diversity

The 2030 Agenda

United Nations Framework Convention on Climate Change (UNFCCC) Gender Action Plan





Policy and Legislative Review

IDB Environmental and Social Safeguards



Access to Information Policy (April 2010)

Public Utilities Policy (November 2013)



Operational Policy on Environment and Safeguards Compliance (January 2006) and Guidelines (May 2007)



Operational Policy on Gender Equality in Development (November 2010) and Guidelines

Operational Policy on Indigenous Peoples (July 2006) and Guidelines





Policy and Legislative Review

IDB Environmental and Social Safeguards (cont'd)

Operational Policy on Natural Disaster Risk Management (February 2007) and Guidelines (March 2008)



Institutional Review

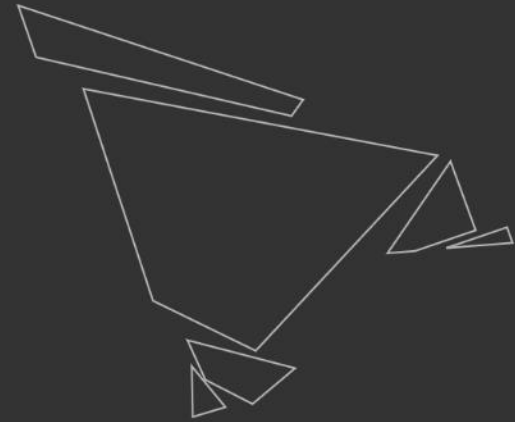


- Trinidad and Tobago water sector comprises the following entities:
 - The Water and Sewerage Authority (WASA) – the service provider
 - The Ministry of Public Utilities (MPU) - the ministry responsible for policy direction
 - The Regulated Industries Commission (RIC) - the economic regulator; and
 - The Environmental Management Authority (EMA) - responsible for environmental regulation
 - The Water Resources Agency – the resource regulator is an agency within WASA

Institutional Review - Challenges



- Needs to function within robust and transparent governance
- Needs legal/regulatory and institutional framework that provides the enabling environment
- Needs to be subjected to an accountability framework between the Board, Management, Ministries, customers, and other key stakeholders.
- Low tariffs and low collections ultimately resulting in WASA's current position of degraded assets leading to a "Spiral of Decline".

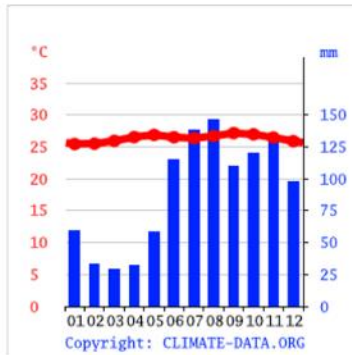


Existing Environment

Physical
Ecological
Social



Physical Environment



Climate

Wet season June – Dec

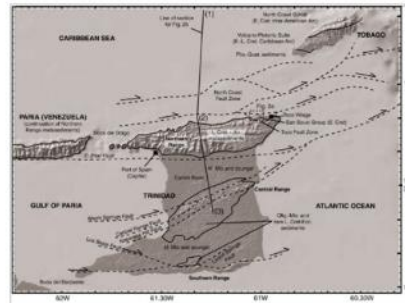
Dry season Jan – May

Average annual rainfall

2200mm

Average annual air temp

26°C



Geology

Located on the southeastern edge of the Caribbean Plate and the South American Plate margins

Trinidad- Uplifted ranges separated by flat-lying basin-filled areas

Tobago- Volcanic Rocks to the north and predominately coralline limestones to the south

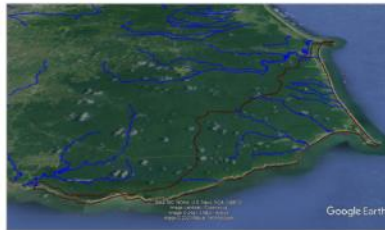


Topography

Trinidad has three distinct east-west trending mountain ranges, (The Northern Range, The Central Range, and the Southern Range) separated by flatlands

Tobago has hilly terrain with steep slopes associated with the Main Ridge

Physical Environment



Hydrology

Surface water availability of Trinidad is estimated at 3,600 MCM/year while for Tobago it is 136 MCM/year.

Water availability in Trinidad and Tobago is more than 2,000 cubic meters per year



Water Demand and Deficit

Water demand for Trinidad and Tobago is estimated at 135 IMG/day or 83 gals/capita/day (gpcd) while the production is 232 IMGD.

Production is 72% greater than demand

53% of the population receives a 24/7 water supply in the wet season and 42% in the dry season

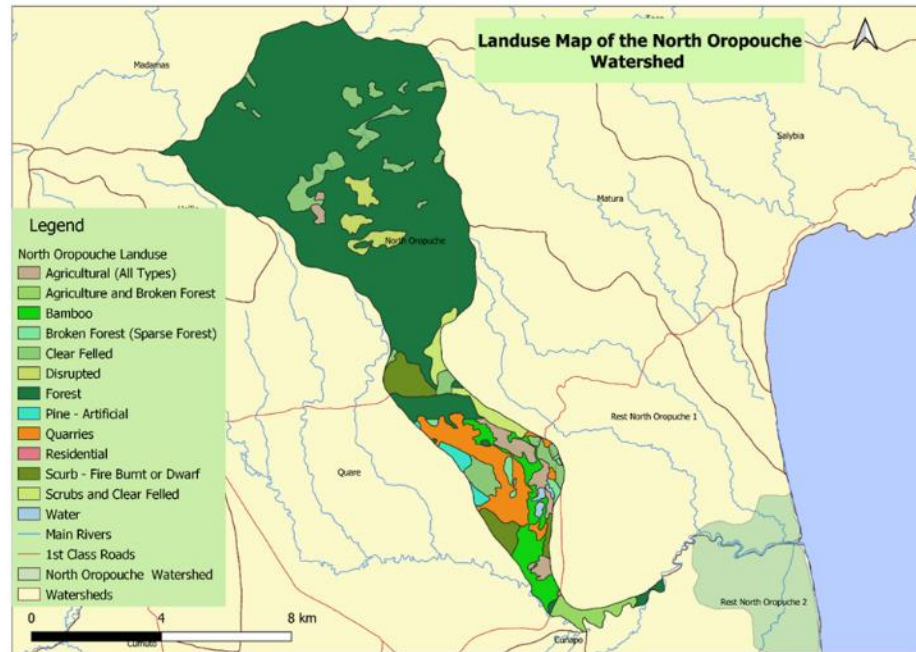


Natural Hazards

Flooding, Tropical Cyclones (hurricanes), Heavy Rains, Drought/Dry Spells, Climate Change, Earthquakes, Landslides



Physical Environment



Land Use and Water Resources

Trinidad Watersheds include: The North Oropouche Watershed, Guanapo Watershed, Lopinot Watershed, Caura Watershed, Maracas /St. Joseph Watershed, San Juan Watershed, Rincon Watershed, Pilote Watershed

Tobago Watersheds include: Goldsborough Watershed, Argyle Watershed, Invarine Watershed, Bloody Bay Watershed, Little Englishman Watershed (Tobago North), Parlatuvier East Watershed, Hermitage Watershed

Ecological Environment



The Northern Range

Extension of the Coastal Cordillera of Venezuela contains *Miconia* sp. of the family Melastomaceae- a floral species that birds rely on for food

Contains a number of species of birds such as the band-tailed Pigeon and Lined Quail-dove as well as the Golden Tree frog



Matura National Park

Consists of moist tropical forest and premontane sub-tropical forests with Mora Forest, dominated by the Mora (*Mora excelsa*)

Contains the Trinidad piping guan, the ocelot, the anteater, the Neotropical River otter, and the Red Howler Monkey



Aripo Savannas

Has a total of 457 plant species found in the distinct vegetation communities

Habitats and source of food for five bird species and 78 insect species, 8 Amphibians species, 26 reptile species, 132 bird species, 25 mammal species



Ecological Environment



Caroni Swamp

The Caroni Swamp is the largest mangrove wetland in the country accounting for 56% of this forest type

Has a wide variety of aquatic, and estuarine invertebrates, 190 species of birds



Nariva Swamp

Complex system of swamp forest, permanent herbaceous swamp, seasonally flooded marshes, and mangrove forest

Habitat for various species of mammals, birds, fish, reptiles, and amphibians, some of which are rare and threatened.



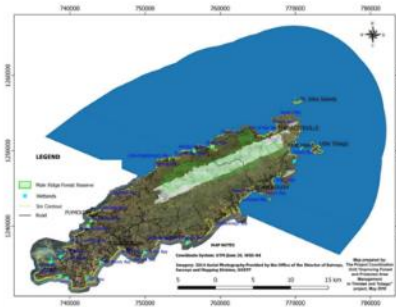
Victoria Mayo Reserve

Two major types of evergreen seasonal forest consisting of *Eschweilera subglandulosa* - *Carapaguianensis* (Crappo-Guatacare)

Majority of the island's mammals (Ocelots, tamandua anteaters (*Tamandua tetradactyla*) both species of monkeys (*Alouatta seniculus* and *Cebus albifrons*) can be found within the site



Ecological Environment



Main Ridge Forest Reserve

Has 3 main plant communities/vegetation types: lower montane, lowland rainforest, and xerophytic rainforest.

Home to 266 animal species including 16 species of mammals, 24 species of snakes, and 16 species of lizard



Developed Urban Area

Flora found are mostly either ornamental plants or crop species

Various birds, mammals, reptiles and amphibians, molluscs and insects, captured likely species found within the project area

Socioeconomic and Gender Environment



Demography

Declining population in Diego Martin and the City of San Fernando

Female population size is slightly higher than the male population

Population relatively young, with more than half of the population, under 40 years

Aging population across municipalities

Diverse ethnic population



Housing

80 informal settlements within the project areas

Separate houses are the most prevalent (81.7%), followed by flat/apartment dwelling units (9.3%).

Avg. household size of 3.3 persons

Owner-occupied dwellings constituted a significant proportion of dwellings



Education

Communities are dispersed across six of the eight education districts in the nation

Reasonable access to education for all

106 primary schools and 37 secondary schools in St. George East and 95 primary schools and 39 secondary schools in the Port of Spain

Post-secondary and tertiary education is accessible to the project communities in widely distributed locations



Socioeconomic and Gender Environment



Health Services

Public health services for the are administered by the 4 health authorities.

Each regional health authority provides primary, secondary and tertiary health services through a number of hospitals, district health facilities and health, extended care and outreach centers



Security and Safety

Six of the nine police divisions of the Trinidad and Tobago Police Service (TTPS) are responsible for law and order in the project areas.

Trinidad and Tobago Fire Service has a total of 17 fire stations and 3 division headquarters are positioned across 3 divisions

Socioeconomic and Gender Environment



Economic activity

Over 60% of the businesses registered as of 2008 were located within the municipalities

2011 labour participation rates for the population within the project area are less than the national average of 61.3%



Poverty

Relative poverty rate averaged 15.5% of the population, of which 1.2% was food poor (indigent).

Another 9.0% of the population was vulnerable to poverty.

This figure ranged from 4.5% (in Arima) to 39.1% (in Sangre Grande).



Recreation and Sporting Facilities

Sporting and recreation grounds and parks in populated areas of urban municipalities are limited

Apart from municipalities that have major cultural facilities, major public cultural facilities are limited.



Heritage

42 listed sites and 450 registered sites on the Heritage Asset Register nationally.

38 heritage sites within the project areas





Impact Assessment

Construction



Impact Assessment – Physical

- **Main Risk – Soil erosion**

- **Impact** - Soil erosion can lead to topsoil loss, blocked drainage from sedimentation and water pollution. Erosion can also lead to the deterioration of riverbanks.

- **Mitigation Measure** - Only clear topsoil from areas to be used.
- Place berms around stockpiles of topsoil and aggregate (sand, gravel, etc.)

- **Residual Impact** –Minor

- **Main Risk – Soil contamination**

- **Impact** - Soil contamination can result in poor soil quality and could potentially contaminate shallow groundwater in construction areas and adjacent surface water sources

- **Mitigation Measure** - Environmental conditions must be included in any construction contract, thereby making contractors accountable for preventing accidental spillages.
- Effective implementation, monitoring and enforcement of the National Environmental

- **Residual Impact** -Minor

- **Main Risk – Land Pollution**

- **Impact** - Land pollution can lead to soil contamination and water pollution. Additionally, land pollution can negatively impact the visual aesthetics at and near the construction site.

- **Mitigation Measure** - Contain garbage and construction debris onsite until disposal at the
- Prohibit burning of solid waste on project sites.
- **Residual Impact** -Minor

Impact Assessment – Physical

- **Main Risk – Water pollution**

- **Impact** - Water pollution can cause the deterioration of the quality of local water resources.

- **Mitigation Measure** - Environmental conditions must be included in any construction contracts, thereby making contractors accountable for preventing accidental spillages

- All potential pollutants should be removed immediately after the completion of works

- **Residual Impact** – Moderate

- **Main Risk – Air pollution**

- **Impact** - Air pollution can lead to negative health impacts for construction workers and local communities (i.e., respiratory conditions).

- **Mitigation Measure** - Environmental conditions must be included in any construction contract, thereby making contractors accountable for preventing accidental spillages.

- Cover haulage vehicles transporting aggregate, soil and cement

- **Residual Impact** -Moderate

- **Main Risk – Noise and vibration pollution**

- **Impact** - Noise and vibration pollution can be a nuisance and have negative health impacts (i.e., hearing impairment, discomfort, etc.) on construction staff and the local population. Noise and vibration pollution can also affect fauna, especially birds, inhabiting areas adjacent to construction areas.

- **Mitigation Measure** - • 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.

- **Residual Impact** - Moderate



Impact Assessment – Physical

- **Main Risk – Flooding**

- **Impact** - Flooding can damage houses, buildings and roads and lead to soil erosion, sedimentation, and surface water pollution. Flooding can also be the cause of landslides. Traffic could also be affected

- **Mitigation Measure** - Ensure an emergency preparedness and response plan is in place to cover man-made and natural hazards. Workers must be trained in the requirements of the emergency preparedness and response plan.

- **Residual Impact – Major**

- **Main Risk - Landslides**

- **Impact** - Landslides can lead to further soil erosion, sedimentation, water pollution and can damage property, houses, buildings and roads.

- **Mitigation Measure** - Only clear topsoil from areas to be used.
- Avoid steep cuts and where there are steep cuts, they must be shored.

- **Residual Impact** - Major

Impact Assessment – Ecological

- **Risk – Disruption of/ damage to ecosystems.**
- **Impact** - Soil disruption, soil erosion, soil and surface water contamination, noise pollution and placement of structures can lead to a full or partial loss of habitat, habitat fragmentation, loss of functionality, loss of biodiversity and wildlife migration
- **Mitigation Measure** – Conduct an environmental assessment to identify project -specific risks and impacts and recommend additional mitigation measure to reduce risks identified.
- 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.
- **Residual Impact** – Moderate impact



Impact Assessment – Social

- **Risk – Institutional conflict**
 - **Impact** -Scheduling clashes and poor working relationships between implementing agency and stakeholder agencies
 - **Mitigation Measure** - Establish a formal system to inform, coordinate and reduce conflicts that may arise in conducting project works and planned municipal activities.
 - **Residual Impact** – Moderate
- **Risk – Under-representation of Women in the Project Workforce**
 - **Impact** - Temporary local employment opportunities are only beneficial for men seeking employment in the unskilled and semi-skilled categories; Low employment opportunities for women
 - **Mitigation Measure** - As part of the Implementing 's agency contractual arrangements with the construction contractor, encourage the contractor to maximise local employment opportunities
 - **Residual Impact** – Minor
- **Risk – Employment Generation**
 - **Impact** - This could lead to improved living conditions and quality of life for the residents in these communities..
 - **Mitigation Measure** – Prioritize the hiring of local workers
 - Avoid discrimination in employment through establishment of social policies and guidelines to which contractors responsible for hiring, will need to adhere.
 - **Residual Impact** – High

Impact Assessment – Social

- **Risk – Disruption of Community Activities**
 - **Impact** – Unfavourable changes in traffic patterns, congestion, and delays to drivers and commuters.
 - **Mitigation Measure** -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
 - **Residual Impact** – Moderate
- **Risk – Community road safety**
 - **Impact** - Additional traffic generated from construction activities may increase the number of road safety incidents and accidents.
 - **Mitigation Measure** - 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.
 - **Residual Impact** - Moderate
- **Risk – Land Acquisition**
 - **Impact** – Loss of employment and livelihoods in the affected communities
 - **Mitigation Measure** - Develop the site-specific Land Acquisition and Compensation Plan in accordance with the Implementing Agency's Land Acquisition and Compensation Strategy
 - **Residual Impact** - Major

Impact Assessment – Social

- **Risk – Noise pollution**

- **Impact** – This could have negative health related impacts. Exposure influences will be linked strongly to proximity to construction works, with the greatest effects likely to occur to project workers, and to households and sensitive receptors that are closest to the construction works.
- **Mitigation Measure** - Continuous monitoring will be necessary.
- Schedule the hours for construction work to minimise the impact on community.
- **Residual Impact** – Moderate

- **Risk – Poor Air Quality**

- **Impact** - This could have negative health impacts. Exposure influences will be linked strongly to proximity to construction works, with the greatest effects likely to occur to project workers, and to households and sensitive receptors that are closest to the construction works.
- **Mitigation Measure** - Continuous monitoring will be necessary. The parameters to be monitored during construction include PM 10 and PM2.5, NO2, SO2, CO and O3.
- **Residual Impact** - Moderate

- **Risk – Occupational health and safety**

- **Impact** – Minor and major worker injury and death may result from accidental falls, improper operation of construction hand-held tools, equipment, vehicular accidents and improper handling and storage of chemicals.
- **Mitigation Measure** – Fair compensation and treatment of workers for work done
- Equitable and ethical terms and conditions of employment for workers
- **Residual Impact** - Moderate

Impact Assessment – Social

- **Risk – Temporary Economic displacement**
 - **Impact** – Loss of livelihoods in the affected communities.
 - **Mitigation Measure** – Develop a Livelihood Restoration Plan (LRP) in line with national legislation, OP-710, and international best practice.
 - **Residual Impact** – Short term
- **Risk – Disruption of Water Supply**
 - **Impact** - The disruption of public water supply to domestic, commercial and industrial customers may affect routine activities and events.
 - **Mitigation Measure** -Notify impacted communities of the possible disruption of services starting two weeks in advance of construction works.
 - **Residual Impact** - Medium Term
- **Risk – Health and Safety Hazards to Affected Communities**
 - **Impact** – Minor and major injury and possible death due to both accidental and natural hazards, especially in cases where structural elements or components of the project are accessible to affected community members or where failure could result in injury to the community.
 - **Mitigation Measure** –Use of proper signage and safeguards to protect the public in case of authorized and unauthorized entry on the site to the highest extent possible.
 - **Residual Impact** -Short Term



Impact Assessment – Social

- **Risk – Damage to private property**
- **Impact** – There may be property loss and damage, asset loss and/or economic loss by private landowners, businesses, and leaseholders/ renters. Disruption to other utility infrastructure and services due to damage
- **Mitigation Measure** –Provide compensation for loss of assets (property – land and structures) to private landowners (persons with legal rights to land or recognisable claims
- **Residual Impact** – Minor
- **Risk – Damage to or destruction of cultural and historical heritage resources**
- **Impact** - Loss of sites/ artifacts of cultural and historical value close to or within the boundaries of the project sites, for example, The Blue Basin River particularly in cases of laying of new pipelines. Visual modification of landscapes.
- **Mitigation Measure** - Trust/Archaeological Committee in identifying their exact locations.
- **Residual Impact** -High



Impact Assessment

Operation



Impact Assessment – Physical

- **Main Risk – Soil contamination**

- **Impact** - Soil contamination can result in poor soil quality and could potentially contaminate shallow groundwater in construction areas and adjacent surface water sources
- **Mitigation Measure** - Environmental conditions must be included in any construction contract, thereby making contractors accountable for preventing accidental spillages.
- Effective implementation, monitoring and enforcement of the National Environmental
- **Residual Impact** - Moderate

- **Main Risk – Water pollution**

- **Impact** - Water pollution can cause the deterioration of the quality of local water resources.
- **Mitigation Measure** - Conduct preventive maintenance for vehicles and machinery to ensure integrity and reliability and reduce/avoid leaks
- **Residual Impact** – Moderate

- **Main Risk – Noise and vibration pollution**

- **Impact** - Noise and vibration pollution can be a nuisance and have negative health impacts (i.e., hearing impairment, discomfort, etc.) on construction staff and the local population. Noise and vibration pollution can also affect fauna, especially birds, inhabiting areas adjacent to construction areas.
- **Mitigation Measure** - • 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.
- **Residual Impact** - Moderate

Impact Assessment – Physical

- **Main Risk – Over Extraction of water resources**

- **Impact** - Excessive extraction of groundwater can lead to saltwater intrusion and possible aquifer mining, and potential depletion.
- **Mitigation Measure –**
- Abstraction should not be greater than the sustainable yield of the aquifer
- Sustainable Yield Determinations for aquifers
- **Residual Impact – Major**

- **Main Risk – Air pollution**

- **Impact** - Air pollution can lead to negative health impacts for construction workers and local communities (i.e., respiratory conditions).
- **Mitigation Measure** - Environmental conditions must be included in any construction contract, thereby making contractors accountable for preventing accidental spillages.
- Cover haulage vehicles transporting aggregate, soil and cement
- **Residual Impact** -Moderate

- **Main Risk – Noise and vibration pollution**

- **Impact** - Noise and vibration pollution can be a nuisance and have negative health impacts (i.e., hearing impairment, discomfort, etc.) on construction staff and the local population. Noise and vibration pollution can also affect fauna, especially birds, inhabiting areas adjacent to construction areas.
- **Mitigation Measure** - • 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.
- **Residual Impact** - Moderate



Impact Assessment – Physical

- **Main Risk – Flooding**

- **Impact** - Flooding can damage houses, buildings and roads and lead to soil erosion, sedimentation, and surface water pollution. Flooding can also be the cause of landslides. Traffic could also be affected

- **Mitigation Measure** - Ensure an emergency preparedness and response plan is in place to cover man-made and natural hazards. Workers must be trained in the requirements of the emergency preparedness and response plan.

- **Residual Impact – Major**

- **Main Risk - Landslides**

- **Impact** - Landslides can lead to further soil erosion, sedimentation, water pollution and can damage property, houses, buildings and roads.

- **Mitigation Measure** - Only clear topsoil from areas to be used.
- Avoid steep cuts and where there are steep cuts, they must be shored.

- **Residual Impact** - Major

- **Main Risk – Earthquakes**

- **Impact** - Earthquakes can lead to rupture or leaking of pipelines. It may also disrupt electrical utilities which may disrupt water distribution networks and pumps.

- **Mitigation Measure** - 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.

- **Residual Impact** - Moderate



Impact Assessment – Ecological

- **Risk – Alteration of habitat**
- **Impact** - Soil disruption, soil erosion, soil and surface water contamination and noise pollution can lead to a full or partial loss of habitat, habitat fragmentation, loss of functionality, loss of biodiversity and migration of wildlife.
- **Mitigation Measure** – Implementation of the National Environmental Policy, and National Biodiversity Policy
- 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
- Ensure that proper handling, use and storage of all chemicals are done according to best practices
- **Residual Impact** – Moderate impact

Impact Assessment – Social

- **Risk** – Over abstraction can impact downstream users (domestic, commercial and recreational users)
 - **Impact** –Reduced availability and access to water
 - **Mitigation Measure**-. Proper Monitoring location to of the stream flow to ensure that the environmental baseflow is sustained and downstream users will still have access.
 - **Residual Impact** – Moderate to High
- **Risk** – Minimisation of non-revenue water
 - **Impact** – Reduction in losses of non-revenue water. Better assessment of demand due to metering customers
 - **Mitigation Measure** -N/A
 - **Residual Impact** –Major
- **Risk** -Increased reliability of water supply and improved water quality to customers
 - **Impact** – More reliable water supply and improved water quality for the public and TT can meet the SDG goals.
 - **Mitigation Measure** –N/A
 - **Residual Impact** – Major



Impact Assessment – Social

- **Risk** – Improved institutional efficiency of WASA
 - **Impact** – Sustainability in managing the water resources in the project areas.
 - Better customer relations and customer satisfaction
 - **Mitigation Measure** – Major
 - **Residual Impact** – Moderate
- **Risk** – Occupational health and safety
 - **Impact** – Minor and major worker injury and death may result from accidental falls, improper operation of construction hand-held tools, equipment, vehicular accidents and improper handling and storage of chemicals.
 - **Mitigation Measure** – Fair compensation and treatment of workers for work done
 - Equitable and ethical terms and conditions of employment for workers
 - **Residual Impact** -Moderate





Conclusion

- Not likely to result in significant negative environmental impacts.
- Once mitigated, the potentially negative physical and ecological impacts highlighted above are significantly minimized.
- The project is expected to result in significant positive social impacts associated with the improvement in the supply of water to customers across the twin-island state
- Additionally, significant improvements in the efficiency at which WASA operates and the ability of being able to properly assess demand with metering infrastructure this will result in improved long-term integrated water resources management.



Thank You



Questions and Answers