PARLIAMENT
REPUBLIC OF TRINIDAD AND TOBAGO

First Report of the Joint Select Committee on Land and Physical Infrastructure

On a Continuation inquiry into the

Measures for ensuring Water Security in Trinidad and Tobago

with reference to the Eleventh Report of the Committee in the Fifth Session (2019/2020) of the Eleventh Parliament

First Session (2020/2021), Twelfth Parliament

An electronic copy of this report can be found on the Parliament's website: www.ttparliament.org

The Joint Select Committee on Land and Physical Infrastructure

Contact the Committees Unit

Telephone: 624-7275 Extensions 2232/2425/2283, **Fax:** 625-4672

Email: jsclpi@ttparliament.org

PARLIAMENT
REPUBLIC OF TRINIDAD AND TOBAGO

Joint Select Committee on Land and Physical Infrastructure

(including Land, Agriculture, Marine Resources, Public Utilities, Transport and Works)

A Continuation inquiry into the Measures for ensuring Water Security in Trinidad and Tobago with reference to the Eleventh Report of the Committee in the Fifth Session (2019/2020) of the Eleventh Parliament

First Report of the First Session (2020/2021), Twelfth Parliament

Report, together with Minutes

Ordered to be printed

Date Laid H.o.R:	Date Laid Senate:

Published on _____ 20__

THE JOINT SELECT COMMITTEE ON LAND AND PHYSICAL INFRASTRUCTURE

Establishment

1. The Joint Select Committee on Land and Physical Infrastructure was appointed pursuant to section 66A of the Constitution of the Republic of Trinidad and Tobago. The House of Representatives and the Senate on Monday November 09, 2020 and Tuesday November 17, 2020, respectively agreed to a motion which, *inter alia*, established this Committee.

Current Membership

2. The following Members were appointed to serve on the Committee:

- Mr. Deoroop Teemal - Chairman[1]
- Mr. Nigel De Freitas - Vice Chairman[2]
- Mr. Franklin Khan
- Mr. Kennedy Richards
- Mr. Saddam Hosein
- Mrs. Lisa Morris-Julien
- Mr. Anil Roberts
- Mr. Symon de Nobriga

Functions and Powers

3. The Committee is one of the standing Departmental Select Committees of Parliament, the functions and powers of which are set out principally in Standing Orders 91 and 101 of the Senate and 101 and 111 of the House of Representatives. The Standing Orders are available on the Parliament's website via www.ttparliament.org.

[1] Mr. Deoroop Teemal was elected as Chairman of the Committee at its first meeting held on 18.11.2020
[2] Mr. Nigel De Freitas was elected as Vice-Chairman of the Committee at its first meeting held on 18.11.2020

4. The Committee is mandated to inquire into areas related to Land, Agriculture, Marine Resources, Housing, Public Utilities, Transport and Works as listed in Appendix IV and V of the Standing Orders of the House of Representatives and Senate respectively.

Secretarial Support

5. Secretarial support was provided by Mr. Johnson Greenidge, Procedural Clerk Assistant who served as Secretary to the Committee, Ms. Renee Batson as Assistant Secretary and Ms. Katharina Gokool as Graduate Research Assistant.

Contacts

6. All correspondence should be addressed to the Secretary to the Joint Select Committee on Land and Physical Infrastructure, Parliamentary Complex, Cabildo Building, St. Vincent Street, Port-of-Spain. The telephone number for general enquiries is 624-7275 and the Committee's email address is jsclpi@ttparliament.org.

ACRONYMS AND ABBREVIATIONS

ABBREVIATION	ORGANISATION
AARP	Adopt A River Programme
BWRP	Beetham Wastewater Reuse Plant
EMA	Environmental Management Authority
GPW	Global Water Partnership
IDB	Inter-American Development Bank
IWRM	Integrated Water Resources Management
MALF	Ministry of Agriculture, Land and Marine Affairs
MEEI	Ministry of Energy and Energy Industries
MET	Trinidad and Tobago Meteorological Services
MoF	Ministry of Finance
MoNS	Ministry of National Security
MoPD	Ministry of Planning and Development
MoRDLG	Ministry of Rural Development and Local Government
MoWT	Ministry of Works and Transport
MPU	Ministry of Public Utilities
MSD	Meteorological Services Division
NRW	Non-Revenue Water
NSDS	National Spatial Development Strategy
ODPM	Office of Disaster Preparedness and Management
OECS	Organisation of Eastern Caribbean States
PPP	Public Private Partnerships
PPRD	Project Planning and Reconstruction Division
PSIP	Public Sector Investment Programme
RIC	Regulated Industries Commission
TCPD	Town and Country Planning Division
TEMA	Tobago Emergency Management Agency
THA	Tobago House of Assembly
UN	United Nations
UTT	University of Trinidad and Tobago
UWI	University of the West Indies
WASA	Water and Sewerage Authority
WHO	World Health Organisation
WQMS	Water Quality Monitoring System
WRA	Water Resources Agency

WSIP	Water Sector Improvement Programme
WWTP	Wastewater Treatment Plant

LIST OF TABLES

LIST OF FIGURES

TABLE OF CONTENTS

REPORT SUMMARY

1. At its Second Meeting held on December 02, 2020, your Committee considered the work of the Joint Select Committee on Land and Physical Infrastructure appointed in the Eleventh (11th) Parliament (2015-2020), with a view to following-up on the work commenced by the Committee in 11th Parliament. Your Committee agreed to conduct ***a continuation inquiry into the Measures for ensuring Water Security in Trinidad and Tobago with reference to the Eleventh Report of the Committee in the Fifth Session (2019/2020) of the Eleventh Parliament.***

2. The following are the objectives of the inquiry:

   (i) To examine the current strategies for ensuring water security and the effectiveness of these strategies;

   (ii) To determine the measures required for improving water security; and

   (iii) To determine the challenges with ensuring water security in Trinidad and Tobago.

Work of the Joint Select Committee on Land and Physical Infrastructure appointed in the Fifth Session (2019/2020) of the Eleventh Parliament on an inquiry into the Measures for ensuring Water Security in Trinidad and Tobago

3. At its Forty-Fourth Meeting held on May 21, 2019, the Joint Select Committee on Land and Physical Infrastructure, appointed in the 11th Parliament, agreed to an inquiry into the Measures for ensuring Water Security in Trinidad and Tobago.

4. The Committee agreed that the objectives of the inquiry would be as follows:

   (i) To examine the current strategies for ensuring water security and the effectiveness of these strategies;

   (ii) To determine the measures required for improving water security; and

   (iii) To determine the challenges with ensuring water security in Trinidad and Tobago.

5. The Committee thereafter requested and received information on the subject matter via written submissions from the stakeholders listed in **Table 1** below.

Table 1

Preliminary Written Submission received from Stakeholders

Date	Ministry/Entity
February 11, 2020	Ministry of Public Utilities (MPU)
March 9, 2020	Water and Sewerage Authority (WASA)
February 12, 2020	Ministry of Rural Development and Local Government (MoRDLG)
March 6, 2020	Ministry of Planning and Development (MoPD)

6. Subsequently, the Committee held one (1) public hearing on March 09, 2020 with officials of the Ministry of Public Utilities and the Water and Sewerage Authority as listed in **Table 2** below.

Table 2

List of Attendees – Public Hearing held on March 09, 2020

Ministry of Public Utilities	
Name	**Position**
Ms. Nicolette Duke	Permanent Secretary (Ag.)
Ms. Beverly Khan	Deputy Permanent Secretary
Ms. Sara Jade Govia	Water Sector Specialist
Mr. Kenneth Kerr	Chief Climatologist (Ag.) Met Services
Water and Sewerage Authority	
Name	**Position**
Mr. Alan Poon-King	Chief Executive Officer (Ag.)
Mr. Sherland Sheppard	Director, Operations
Mrs. Denise Lee Sing Pereira	Director, Programmes & Change
Mrs. Sherry Dumas-Harewood	Director, Customer Care
Mr. Rajindra Gosine	Head, Water Resources Agency

7. Following the public hearing, the Committee requested additional information from the Ministry of Public Utilities and the Water and Sewerage Authority. These responses were received on March 25, 2020 and May 18, 2020 respectively.

8. The Committee also requested a written submission from the National Gas Company (NGC) on March 16, 2020 to assist in its deliberations. The NGC submitted the information by letter dated April 07, 2020.

9. The Committee was scheduled to meet with officials from the Ministry of Rural Development and Local Government and the Ministry of Planning and Development on March 16, 2020. However, owing to nationwide health and safety measures implemented to combat the COVID-19 pandemic, the Committee was unable to so do. The inability to meet was further compounded by the dissolution of the 11th Parliament.

10. As a result, the 11th Parliament Committee concluded in its Eleventh Report that the matter required further investigation and therefore recommended that the Joint Select Committee on Land and Physical Infrastructure, appointed in the 12th Parliament, continue deliberations on the inquiry and submit a final report to Parliament.

11. The report of the 11th Parliament Committee may be accessed at: http://www.ttparliament.org/reports/p11-s5-J-20200702-LPI-r11.pdf.

Work of the Joint Select Committee on Land and Physical Infrastructure, appointed in the 12th Parliament, on a continuation inquiry into the Measures for ensuring Water Security in Trinidad and Tobago with reference to the Eleventh Report of the Committee in the Fifth Session (2019/2020) of the Eleventh Parliament

12. On December 17, 2020, your Committee held a virtual public hearing facilitated via Zoom Video Conference with officials from the Ministry of Public Utilities, Ministry of Rural Development and Local Government, Ministry of Planning and Development and the Water and Sewerage Authority, as listed in **Table 3** below.

Table 3

List of Attendees – Public Hearing held on December 17, 2020

Ministry of Public Utilities	
Name	**Position**
Ms. Nicolette Duke	Permanent Secretary (Ag.)
Ms. Beverly Khan	Deputy Permanent Secretary (Ag.)

Mr. Kenneth Kerr	Chief Climatologist (Ag.) Met Services
Ministry of Rural Development and Local Government	
Name	**Position**
Mr. Raymond Seepaul	Deputy Permanent Secretary
Mr. Jerry David	Senior Disaster Management Coordinator
Ministry of Planning and Development	
Name	**Position**
Ms. Joanne Deoraj	Permanent Secretary
Ms. Camille Guichard	Assistant Director, Town and Country Planning Division
Mr. Kishan Kumarsingh	Head, Multi-Lateral Environmental Agreements Unit
Water and Sewerage Authority	
Name	**Position**
Mr. Alan Poon-King	Chief Executive Officer
Mr. Sherland Sheppard	Director, Operations
Mrs. Denise Lee Sing Pereira	Director, Programmes & Change Management

13. Thereafter, the Committee requested additional information and received responses as follows:
    - Ministry of Rural Development and Local Government - January 22, 2021
    - Ministry of Planning and Development - January 22, 2021
    - Water and Sewerage Authority - January 21, 2021

14. The Minutes of the Meeting held on December 17, 2020 is attached at *Appendix I* and the Verbatim Notes at *Appendix II*.

15. This Report does not take into consideration *The Report of the Cabinet Sub-Committee Appointed to Review the Operations of the Water and the Sewerage Authority and to Determine a Strategy for enabling the Authority to Achieve its Mandate'*, which was laid in the House of Representatives and Senate on March 5 and 9, 2021 respectively. Notwithstanding, the Committee will consider the findings of the Cabinet Sub-Committee's report in its inquiry into the Management of WASA and other related matters which is currently in progress.

INTRODUCTION

Background to Inquiry

1. The UN-Water defines water security as "*the capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability*". (UN-Water, 2013).[3]

2. Water security is one of the central pillars of human and environmental sustenance which have been codified in the Millennium Development Goals and the Sustainable Development Goals (SDG's) 6, to "ensure availability and sustainable management of water and sanitation for all" (UNSDSN 2013).[4]

3. Water security is threatened by factors such as, *inter alia,* climate change, inadequate storage for fresh water, degradation and pollution of water reserves.

4. In Trinidad and Tobago, water security focuses on an efficient supply and reliable provision of safe and potable water to the citizens as well as effective treatment of wastewater throughout the country.[5]

5. The Water and Sewerage Authority (WASA) is the state enterprise established under the Water and Sewerage Act, Chapter 54:40 with responsibility for the provision of an adequate and reliable water supply and the treatment and disposal of wastewater in Trinidad and Tobago. WASA has responsibility for both the regulatory and operational activities related to the management of the water and wastewater sectors of Trinidad and Tobago[6], as well as the development and control of

[3] https://www.wri.org/blog/2017/02/what-does-water-have-do-national-security
[4] https://www.wri.org/blog/2017/02/what-does-water-have-do-national-security
[5] Page 35 PSIP, 2018 https://www.finance.gov.tt/wp-content/uploads/2018/10/PSIP-Trinidad-and-Tobago.pdf
[6] Administrative Report of WASA for Fiscal Year 2016/2017

water supply and sewerage facilities.[7] Its mandate is "*Water Security for Every Sector. Deliver it, Sustain it,*[8][9]

6. The Ministry of Public Utilities (MPU) has oversight over the Authority's operations. The MPU is mandated to manage the nation's resources in such a manner as to satisfy its diverse customer base while respecting the constraints and carrying capacity of the environment.[10]

7. At the time of the inquiry, WASA was facing a myriad of issues. Among them were an aging, porous pipe-line infrastructure which contributed to leakages and wastage. Further, some communities did not have access to a pipe-borne water supply while others did not receive an adequate supply of pipe-borne water.

8. Given the foregoing and considering the need to ensure that all citizens have access to a consistent and adequate supply of water that is of a safe quality at all times and the need to ensure the proper management and conservation of this precious resource, your Committee therefore deemed this inquiry as imperative.

[7] Page 52-53 State Enterprises Investment Programme 2019 https://www.finance.gov.tt/wp-content/uploads/2018/10/State-Enterprises-Investment-Programme-2019.pdf
[8] https://www.wasa.gov.tt/WASA_AboutUs_visionmission.html
[9] http://www.mpu.gov.tt/home/node/42
[10] http://www.mpu.gov.tt/home/node/42

GENERAL FINDINGS

1. THE CURRENT STRATEGIES FOR ENSURING WATER SECURITY AND THE EFFECTIVENESS OF THESE STRATEGIES

1) The National Integrated Water Resources Management (IWRM) Policy will treat with new and emerging issues such as drought, climate change, rainwater harvesting and storm-water management.

2) The IWRM Policy approach requires new institutional arrangements and legislative framework to be implemented.

3) The Policy did not provide any preliminary detailed investigation on the legislative framework for the responsible entity including its role nor did it specify whether new legislation will be put in place or the existing legislation amended.

4) The creation of a Water Resources Management Authority (WRMA) as a new and separate statutory organisation with a clear mandate and well-defined responsibilities was recommended in a Water Resources Management Strategy Study (WRMSS) in 1999 by the Government to allow for independent regulation of water resources functions, coordination and cooperation between organisations and facilitation of a strong and financially autonomous water resources sector.

5) The groundwork for the legislative framework has been completed but the draft WRMA Bill, 2009 requires updating to include policy prescriptions contained in the draft National IWRM Policy 2018.

6) There is need for an independent regulating body to monitor and allocate water resources to WASA and to penalise WASA for over-abstraction.

7) The responsibility for water resources regulation is essentially split between the entities as indicated and the current institutional arrangements do not exist to formalise corporation between these stakeholders in times of crisis.

8) There is need for implementation of institutional arrangements that formalise cooperation between stakeholders in times of crisis.

9) There is need to separate the resource regulator from the service provider and service regulator, WASA.

10) There is need for the IWRM Policy to clearly identify the lead/responsible entity for managing and control of all the surface water, groundwater and coastal nearshore waters of Trinidad and Tobago.

11) WASA was awaiting a policy decision as to whether or not to adopt the proposed model in the IWRM Policy, which contains particular benchmarks for institution, management, financial and the enabling environment.

12) The MPU's performance indicators assist to benchmark WASA against regional and international utility services, and against its own progress across time.

13) The stakeholders involved in water security work collaboratively.

14) MPU is the entity responsible for setting policy and high-level strategy to ensure water security, while WASA and the Trinidad and Tobago Meteorological Services (MET) implement the policy.

15) There is need to address issues such as increased industrial activity, climate change and variability, and changing demand which are intrinsically linked to land use planning and clearly articulated in the National Spatial Development Strategy (NSDS).

16) The Municipal Corporations and WASA have an effective and reliable relationship where accessing water is concerned and in instances where there is not a great need for the truck borne water supply.

17) There is need to re-establish a structure for regular meetings amongst entities with responsibility for water security.

18) Reservoir levels vary seasonally, WASA manages storage and production levels accordingly to balance customers' needs against water conservation.

19) Water Resources Agency (WRA) provides frequent assessments of available surface and groundwater resources to support the efforts to provide a reliable water supply.

20) There is need to reduce the current per captia consumption of water by 60-70%.

21) There is need to increase water storage including pump storage facilities to deal with shorter duration of higher intensity rainfall.

22) Cumulative rainfall has decreased over the past decade.

23) Trinidad and Tobago has been experiencing irregular rainfall and 'El Nino' events where rainfall impacts have been occurring within relatively short periods of time.

24) The MET is unable to determine specific regions or catchments where, in terms of rainfall trends and patterns, rainfall harvesting can be optimised.

25) Statistically, cumulative rainfall in the late wet season has significantly increased, at Piarco in particular.

26) WASA is reviewing impounding reservoir storage and projects that would not only provide a supply but also provide a flood mitigation component.

27) WASA is unaware of efficient and practical methods for reducing evaporation at impounding reservoirs and is dependent on the annual wet season to replenish reservoirs.

28) New security procedures including technological solutions to detect, monitor and prevent security breaches are needed.

29) The WRA lacks the legislative mandate necessary to move forward with management of water resources.

30) There is no clear lead agency with primary responsibility for watershed management.

31) Due to variances in rainfall, it is necessary to transmit water from where it is more abundant. However, the IWRM approach suggests that the supply of water should be maximised from within watershed resources and that cross watershed distribution, which can contribute to high capital and maintenance costs, should be discouraged.

32) Robust watershed management relies on land use practices that optimally balance physical development with protection of critical zones.

33) The majority of Trinidad's watershed areas have been showing significant degradation.

34) The rapid watershed degradation is primarily attributed to convoluted regulation and weak governance arrangements which involves multiple regulators overseeing various land uses (such as quarrying, agriculture, housing, and environmental issues). This weakens responsibility and accountability for proper land use planning and regulation, and has resulted in increased deforestation in watersheds, and increased runoff and pollution in rivers.

35) A decade of development has degraded the Courland and Sandy River watersheds in Tobago.

36) The MoPD commenced the strategising of an action plan, inclusive of a financing and financial investment plan to roll out the Vulnerability and Capacity Assessment.

37) The communities within the Caroni River Basin (15 watersheds) and South West Tobago were identified as the most vulnerable to water contamination due to variations in climate which results in increased instance of pollution and sedimentation of water resources.

38) Climate change will exacerbate the existing situation as it pertains to the level of contamination in the waterways.

39) The adaptation measures or the approaches to reducing these risks of pollution would lie in the various agencies responsible for pollution control.

.

40) Pollution control requires a holistic approach among the agencies with responsibility.

41) There is need for a collaborative effort towards minimising the negative effects of activities that pose significant threats to watercourses which ultimately impacts on water availability, quality and flooding.

42) It is challenging to differentiate climate change impacts from developmental impacts.

43) WASA recently secured loan funding to pay outstanding bills to DESALCOTT.

44) WASA incurred a deficit in revenues from rates received because a greater percentage of water purchased from DESALCOTT is directed to domestic customers (50-55% of the 40mg).

45) There is a high level of inconsistency between the rates paid for water from DESALCOTT distributed within the Point Lisas Industrial Estate as opposed to domestic, commercial or industrial customers outside the estate, which is affecting WASA's revenues.

46) The Water Sector Improvement Programme (WSIP) addresses the implementation of metering, consumption management, Non-Revenue Water (NRW) reduction and climate change investments.

47) Metering will assist individuals to manage their consumption of water and WASA with managing demand.

48) Once wastewater is properly treated, it can be recycled for agricultural, industrial or even potable water use.

49) Many people may not accept the use of treated wastewater from sewers to taps.

50) Currently, wastewater from WASA's Beetham Wastewater Treatment Plant is currently discharged into the environment. Larger plants such as the San Fernando and the Malabar Plants are being considered as potential wastewater re-use plants because they are less challenging.

51) A cost-benefit analysis, which includes the examination of -social and environmental components, is key to assessing re-use potential, if the Authority proposes to pursue wastewater reuse as one of the main avenues of New Water.

52) The Beetham Reuse Project was originally an NGC project and WASA did not have any direct involvement with its management or funding.

53) NGC initiated the Beetham Reuse Project without a legally binding agreement with WASA.

54) A contractor was procured in 2014 to execute design and construction works but was terminated one (1) year later by the NGC.

55) NGC is taking the necessary steps to dispose of the assets acquired for the Beetham Wastewater Reuse Plant (BWRP).

56) The Ministers of Public Utilities and Energy and Energy Industries requested NGC to transfer the assets of the BWRP to WASA. NGC is amenable to said request in the best interest of Trinidad and Tobago.

57) The treated effluent from the Beetham Wastewater Treatment Plant (WWTP) will first need to undergo additional treatment (reuse plant) before it is stored and then later used for potable/industrial use.

58) Treated wastewater effluent that meets irrigation water standards without needing additional treatment (reuse) is a good source of supply for agricultural uses.

59) The cost of the reuse treatment is similar to desalination and similar membrane technology is used for treatment.

60) In considering the use of the BWRP, the market demand for reuse water, and the cost of reuse treatment should be considered.

61) There is need to convey data to the public to encourage the public to conserve water.

62) There is the need to use water sensor technology to assist with conserving water.

63) The MPU collaborates with WASA and produces its own water conservation communication messages. However, the MPU primarily relies on WASA to educate the public.

64) The MPU issues regular communication to facilitate public understanding of the water sector.

65) The MPU has identified water conservation and efficiency as a priority area for intervention in setting policy and strategy for the water sector.

66) Average domestic consumption is twice the World Health Organisation (WHO) recommended rate.

67) There is need for conservation and demand management to be implemented together with the 'water winning' projects.

68) The WASA Act and other laws related to it, provides for enforcement as it pertains to the conservation of the water resource.

69) There is need for a comprehensive public education strategy and related measurables to gauge the effectiveness of the strategy.

70) WASA promotes conservation of water in general with emphasis on the residential sector and there is currently no initiative specifically promoting water efficiency in agriculture.

71) There has been no change with respect to the baseline figures for the percentage of the population with access to potable water in their homes, the percentage of the population with pipe access to water and service levels to residents.

72) The target for total water production has been increased by 47.8IMGD from 203IMGD in the year 2019 to 277.8IMGD in 2020.

73) The target for Non-Revenue Water (NRW) was decreased by five percent (5%) from fifty to forty-five percent (50 – 45%) from 2017 to 2020.

74) The allocation for Water Resource Management is small and is only enough to finance the beginning of the IWRM Project.

75) The allocation for Water Security Projects decreased from TT$71.1 million in 2019 to TT$70.5 million in 2020.

76) The Water Sector requires additional funding for the management of the water resource and water security projects.

77) WASA has been able to accept more calls at its Call Centre owing to an increase in the complement of staff in this department.

78) WASA is seeking to improve the functionality of its service application.

79) WASA's customer service is at 80% efficiency and there is some groundwork to be done to achieve the target of 90%.

80) WASA's Service Centre at Couva is being closed based on a review of WASA's customer interaction and cost cutting initiatives.

2. THE MEASURES REQUIRED FOR IMPROVING WATER SECURITY

81) WASA is still striving to meet the existing supply challenges of providing 24/7 water to the population.

82) Fifty percent (50%) of WASA's customers receive 24/7 supply, however, the remaining utilise on-site storage (tanks) to buffer the impact of an infrequent supply.

83) The gap in 24/7 supply is attributed to forty to fifty percent (40 to 50%) of the water WASA produces (73% of demand) earning no revenue (NRW).

84) The water security strategies proffered by the MPU are practical and should be implemented.

85) The solution to the water problem is not to singularly improve production and the volume of water being produced.

86) There is need to address both the supply and demand for water.

87) Trinidad and Tobago has a history of storing rainwater to supplement the pipe-borne water supply.

88) WASA has been encouraging citizens to participate in rainwater harvesting as a water security measure through its Adopt A River Programme (AARP), and through the construction of Integrated Rainwater Harvesters in partnership with Habitat for Humanity.

89) Implementation of an underground system for storage and distribution reduces demand for potable water from the public distribution system, improving service levels to customers on the network.

90) Factors to consider when implementing underground systems include cost, inspection, maintenance, sanitising, site suitability/feasibility analysis, soil testing and catchment analysis.

91) Maintenance of underground cisterns may be most challenging while the treatment of water (for human consumption) will require careful monitoring and vigilance.

92) The use of underground cisterns to retain water for consumption, agricultural use, or other purposes would help with water conservation.

93) The Ministry of Health will have a role in providing guidance regarding the implementation of an underground system.

94) The MoPD does not usually collect information on households with cisterns during its daily activities.

95) The MPU is conducting further research into rainwater harvesting for incorporation into WASA's system.

96) The MPU will be the lead agency in coordinating institutional arrangements necessary to prevent a water crisis.

97) There is no shortage of water resources in Trinidad and Tobago as reported by the MPU. The challenge is in ensuring continuity of the supply of water.

98) A multipronged, multidimensional approach is required to achieve water security. The institutional arrangements that should be put in place should follow the approach used by Western Cape Province, South Africa in dealing with the drought of 2016/2017.

99) Encouraging and educating all sectors to include water security in their respective policies and strategies is critical to sustainable management of water and climate variability.

100) WASA currently implements a form of privatisation as it contracts some services that are not available in-house.

101) WASA proposed that certain areas of its privatised operations may need to be increased or decreased but did not suggest the use of privatisation as an overall tool going forward.

102) WASA is doing well compared to its regional counterparts in the area of water and sewerage coverage.

103) All regional utilities are struggling in the area of Non-Revenue Water.

104) WASA has the lowest water tariff in the region and this is impacting negatively on its operations.

105) WASA's rates were last reviewed in 1993.

106) There is no facility to increase WASA's rates during a crisis.

107) WASA prepared a business plan which outlines WASA's expenditures and proposals going forward and the type of tariff that could be considered.

108) The business plan is under final review by WASA and the MPU.

109) The review of WASA's tariff is based on the proposed intervention of the Inter-American Development Bank (IDB).

110) The Committee was unclear as to which authority commissioned a review of WASA's rates.

111) WASA's rates will be amended accordingly if the property law is amended.

112) Metered rates will apply for metered customers.

113) A rate of fifty percent (50%) is proposed for the wastewater rate.

114) There is need for the Authority to reduce its accounts receivables which are high compared to other regional utilities.

115) Residential customers constitute the highest amount of receivables due to WASA.

116) Trinidad and Tobago has the most dated Water Act in the region.

3. THE CHALLENGES ASSOCIATED WITH ENSURING WATER SECURITY IN TRINDAD AND TOBAGO

117) There is a deficiency in water tenders available to Municipal Corporations to effectively provide the truck borne water service given the number of water tenders available (23) and the number required (103) based on the number of households and the weekly quota to be supplied to each household).

118) Given that almost 10,000 households depend on a truck borne service daily, the water tenders service does not appear to be a short-term measure, but rather a mid-term to long-term measure.

119) The MoRDLG is cognisant of the severe fiscal challenges facing the Municipal Corporations.

120) The Municipal Corporations require releases from the MoF and MoRDLG although they are deemed independent.

121) The Municipal Corporations were facing severe fiscal challenges to meet the needs of communities that require the water trucking service.

122) The fourteen (14) corporations will be able to access up to $1 million from their unspent balances to "combat water challenges faced by water challenges faced by various communities across the island".

123) There is the need for a collaborative approach to be taken to address the issues involving the water trucking service and for priority and urgency to be given to the subject.

124) The all-sectors approach is not employed for the truck borne water distribution because it affects several corporations and the issue recurs annually particularly during the dry season.

125) There is a challenge where certain Municipal Corporations are unable to fulfill the requirement of providing a truck borne water supply to communities in need particularly during the dry season.

126) WASA submitted that it can provide truck borne water supply to limited number of customers depending on the duration of the crisis and its' extent.

127) There is a challenge of adequate funding to provide communities that are devoid of a pipe borne water supply with a truck borne water service, particularly during the dry season.

128) Approximately $11.6M is required to supply these communities with a truck borne water supply.

129) The Corporations have been making request for funding for truck borne water distribution in the draft estimates.

130) The issue of funding has to be addressed by agencies responsible for disbursing funding to the Corporations.

131) The Corporations received cuts in their allocation in the Budget for fiscal year 2021.

132) The all-sectors approach is not employed for the truck borne water distribution because it affects several corporations and the issue recurs annually particularly during the dry season. Emphasis is placed on certain emergency situations.

133) Trinidad and Tobago is challenged with harnessing, treating and distributing water to people.

134) WASA's challenge lies in continuing and providing a 24/7 supply.

135) WASA's focus is on NRW.

136) A reduction is required in both actual consumption and unaccounted for water.

137) 243.2 km of high leakage pipelines have been identified for replacement at an estimated cost of nine hundred and forty-six million, four hundred and twenty-eight thousand, five hundred and seventy-five dollars and twenty-six cents ($946,428,575.26) over a period of ten (10) years However, due to funding limitations only 5km of pipeline was replaced between the first and second public hearing on the inquiry which represents approximately 1%.

138) Leaks exist throughout Trinidad and Tobago.

139) The present challenges to continuous supply of water will worsen during a crisis.

140) When the rate of groundwater withdrawal exceeds the recharge of water aquifers, this can lead to both water quantity (shortages) and negative environmental impacts.

141) Groundwater extraction can cause land subsidence and other negative effects.

142) There is need for spatial data that can be used to establish sustainable groundwater development.

143) There is need for diversified access to water to reduce sole reliance on pipe-borne water.

144) Trinidad and Tobago has been experiencing meteorological droughts over the past decade particularly during the dry season with a duration of up to three months.

145) Although the water resource is renewable, it is finite and must therefore be managed.

146) WASA will be collecting less revenue with the closure of any plant in the Point Lisas Industrial Estate.

147) The National Disaster Preparedness Plans requires funding and external execution support.

148) WASA has been reaching the public through its public education initiatives.

149) The majority of WASA's industrial and commercial customers are metered. However, less than 4% of domestic customers are metered which is where the majority of demand is concentrated.

150) Bulk metering will aid in efficient leak detection and repair which will in turn reduce NRW.

151) The TCPD tries not to enforce on other State agencies alternately it tries to mitigate, to get the building construction permissions completed, and assists with the agenda of State bodies as best as possible.

152) The TCPD's role as a regulator is at the planning approval stage, not at the construction stage.

153) There is need for State agencies to obtain planning permissions from the TCPD before construction.

154) WASA's debts are approximately $4.5B.

155) The WASA has standards for resurfacing of roads.

156) WASA acknowledges that it has not been meeting the RICs standard for road repairs.

157) A development programme of works is required where one entity follows the other.

158) The priority of some entities involved in road repair may not be the same as WASA's.

159) There is communication amongst the entities.

SUMMARY OF RECOMMENDATIONS

1. THE CURRENT STRATEGIES FOR ENSURING WATER SECURITY AND THE EFFECTIVENESS OF THESE STRATEGIES

1) **The IWRM Policy should:**
   - **(i) Address the anomaly of abstractor and regulator under same body;**
   - **(ii) Clearly identify the 'Responsible Entity' for managing, monitoring regulating and ensuring effective integrated management of Trinidad and Tobago's water resources; and**
   - **(iii) Adequately ventilate the legislative reforms required to effect IWRM.**

2) **The MPU update the draft WRMA bill 2009 to include policy prescriptions of the draft National IWRM Policy 2018 as approved.**

3) **Consideration should be given to the WRA to be the Responsible Entity for water regulation given that it has the foundational basis required and should ideally be removed from under the purview of WASA.**

4) **A final IWRM Policy be prepared and adopted and the necessary resources be allocated to MPU to facilitate the immediate implementation of this final IWRM Policy.**

5) **There should be quarterly coordination meetings with entities with responsibility for water. Consideration should be given to virtual meetings given the challenges posed by the Covid-19 pandemic.**

6) **Discussions at quarterly meetings include issues such as increased industrial activity, climate change and variability, collaboration regarding enforcement measures for those persons/entities violating laws that impact on water security and changing demand which are intrinsically linked to land use planning.**

7) **The WASA examine areas where storage can be increased including pumped storage facilities to treat with inadequate/shorter duration of intense rainfall.**

8) **The stakeholders involved in water security collaborate to conduct a study to determine the regions or catchments where rainfall harvesting can be optimised.**

9) **The WASA engage in research to determine efficient and practical methods for reducing evaporation at impounding reservoirs.**

10) **The WASA explore and implement new security procedures and technological solutions to detect, monitor and prevent security breaches.**

11) **The IWRM Policy include provisions to maximise the use of water from within watersheds and seek to minimise cross watershed distribution which can be effective in reducing high capital transmission and maintenance costs.**

12) **Innovative initiatives be used to involve stakeholders in watershed management, such as the use of Zoom conferencing to host educational public seminars.**

13) **In stakeholder discussions proposals for streamlining the regulation of land uses be included in discussions with a view to preventing watershed degradation in Trinidad and Tobago.**

14) **The IWRM Policy should clearly identify the lead agency/entity with the primary responsibility for watershed management. This agency will be responsible for spearheading the overall coordination of the work of the stakeholders who have various responsibilities in watershed management and protection of same.**

15) **Particular attention be paid to impact of climate change on water resources.**

16) **The stakeholders involved in watershed management examine, discuss and implement innovative and necessary mechanisms to protect watersheds. Priority should be given to watersheds located in the Caroni River Basin given that it is most susceptible to climate change impacts.**

17) **That the MoPD consolidate their efforts with all other stakeholders with responsibilities regarding the pollution and sedimentation of watercourses and establish a collaborative framework to address this growing challenge.**

18) **Review the use of desalinated water supplied by DESALCOTT to ensure industrial water security in light on the high cost of this water to WASA and the inability of WASA to fully utilise the water supplied by DESALCOTT within the Pt. Lisas Industrial Estate and thus generate the revenues necessary to balance the cost of purchase paid to DESALCOTT.**

19) **The continuation of the WSIP.**

20) **The submission of a status report on the WSIP by WASA as it pertains specifically to increasing supply.**

21) **Consideration be given to the use of small to medium size plants in addition to large plants for treated wastewater reuse.**

22) **Cost-benefit analyses be conducted for significant wastewater treatment plants inclusive of the social and environmental components in order to assess the re-use potential of treated wastewater.**

23) **Consideration be given to the re-use of wastewater from WASA's Beetham Wastewater Treatment Plant for industrial and other alternative use/s.**

24) **In determining the best use of the BWRP that an examination be conducted to determine the market demand for treated waste water reuse water, the cost of wastewater treatment for industrial reuse and other alternate uses.**

25) **WASA encourage the use of sensored taps and other technology to conserve water in its public education programme.**

26) **That conservation and demand management be implemented simultaneously with water winning projects.**

27) **The implementation of a comprehensive public education strategy that can be measured in order to determine the success of the strategy.**

28) **Included in the comprehensive public education strategy should be a specific initiative directed at promoting water efficiency in agriculture.**

29) **Adequate additional funding for the implementation of integrated water resource management policy and water security projects.**

30) **WASA implement alternate mechanisms for bill payment, reporting a leak or request for a truck borne water supply. Consideration could be given to a drop box at convenient**

locations. The role of the call centres in this regard becomes even more critical and therefore every effort should be made to accept calls.

2. THE MEASURES REQUIRED FOR IMPROVING WATER SECURITY

31) An incentive for storage tanks for customers who do not receive a 24/7 supply.

32) The stakeholders involved in water security examine the underground water harvesting system in detail for possible implementation by individual households and communities particularly those that do not receive a supply or a regular supply of water.

33) Consideration be given to an incentive for implementing an underground rainwater harvest system.

34) The establishment of a risk prevention plan for a water crisis which should include the approach used by Western Cape Province and the institutional measures suggested by the MoRDLG.

35) The preparation of a water crisis plan which could be implemented if risks to prevent such a crisis are not adequately mitigated.

3. THE CHALLENGES ASSOCIATED WITH ENSURING WATER SECURITY IN TRINDAD AND TOBAGO

36) The Municipal Corporations establish a coordinated mechanism where available resources for the truck borne service that is not being used in a Municipality can be used to assist another Municipality with communities that are in need of a truck borne water supply particularly during the dry season.

37) Timely releases from the MoRDLG and MoF for the truck borne water distribution.

38) The MoPD assist with establishing spatial data to inform sustainable groundwater development.

39) That the entities with responsibility for water security commence discussions on diversified access to water with a view to reduce sole reliance on a pipe-borne water supply.

40) That a comprehensive assessment be done on the possible negative impact of climate change on water security with identification of possible mitigating factors.

41) **Refer to Recommendation 18.**

42) **That some level of priority be given to the metering of domestic customers in phases.**

43) **The TCPD mandate that State agencies obtain planning permissions from the TCPD before construction so that mitigation action can be taken if needed at the planning approval stage rather than at the construction stage.**

44) **The MoWT establish a development programme of works for road reinstatement and share same with the relevant entities (MoRDLG and the Municipal Corporations, WASA).**

OBJECTIVE 1.
THE CURRENT STRATEGIES FOR ENSURING WATER SECURITY AND THE EFFECTIVENESS OF THESE STRATEGIES

Plans and Policies

National Integrated Water Resources Management (IWRM) Policy

1.1 The draft National Integrated Water Resources Management (IWRM) Policy 2018 was developed utilising the tools developed by the Global Water Partnership (GPW)[11], and various best practice and model documents such as the Organisation of Eastern Caribbean States (OECS) Model Water Policy. GWP defines IWRM as "a process which promotes the coordinated development and management of water, land and related resources in order to maximise economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems and the environment". The leading practices in IWRM involves four (4) pillars:

1. Enabling environment - developing polices and legislation necessary to manage water resources.
2. Institutional framework – to give effect to the policies and legislation.
3. Management instruments – tools and technology to manage water including water allocation, assessments and regulation.
4. Financial instruments (sometimes included under point 1) – creating the investment structures to finance water supply, address water-related emergencies, capacity building and balance development with environmental sustainability.

1.2. The goal of this Policy is *"…to provide not only a reliable water supply to meet present demands of all but to ensure sustainability of supply and the available water resources of the country to meet the needs of future generations."*

1.3. To achieve this goal, the Policy set a number of objectives which are targeted at a range of stakeholders. In effect, IWRM is an internationally accepted approach recognising the spread

[11] The Global Water Partnership (GPW) is one of the leading thought-bodies on IWRM which is the coined term for the sustainable management of water.

of water-related responsibilities and therefore calls for involvement of all stakeholders (social, economic and environmental) in decision-making for a country's water resources. The specific targets of the Policy are to:

- Adopt and implement IWRM;
- Create an appropriate institutional framework and organisational structure for effective management of the country's water resources;
- Develop and maintain an effective water resources/hydrological monitoring network and information system;
- Implement a water loss reduction programme;
- Improve security of water supply;
- Develop a water supply drought and dry season management plan;
- Develop and implement food management plans;
- Implement a wastewater management programme; and
- Implement approved projects addressing specific concerns or issues to improve water supply and/or water management which have been identified by stakeholders at national and community levels.

1.4. At the first public hearing, the Committee was informed by the Ministry of Public Utilities (MPU) that the draft IWRM Policy, 2018 succeeded a previous policy in 1999. The Committee was also informed that the Water and Sewerage Authority (WASA) has been implementing some activities that speak to areas of the Policy even though the Policy has not yet been approved.

1.5. Additional information requested on the Policy was received from the MPU by letter dated March 25, 2020 which indicated that the IWRM Policy, 2018 proceeds a 2005 Cabinet-approved IWRM Policy and has been updated to treat with new and emerging issues such as drought, climate change, rainwater harvesting and storm-water management. The Policy was prepared by a Cabinet-appointed Technical Steering Committee comprising various governmental and non-governmental stakeholders and chaired by the MPU.

Status of the National Integrated Water Resources Management (IWRM) Policy

1.6. At the first public hearing on the inquiry held in the 11th Parliament, the Committee was informed that the MPU finalised a revised National IWRM Policy in 2018 which was later submitted to Cabinet in early 2019 and was pending a decision.

1.7. Subsequently, the Committee sought to obtain an update on the Policy and was informed by the MPU by letter dated March 25, 2020 that *"no official feedback on a decision was provided by the Cabinet"*.

1.8. In the 12th Parliament, your Committee inquired into status of the Policy. The MPU indicated that, the Cabinet Note was returned to the MPU because of the change in administration. However, the MPU has since referred the revised IWRM Policy to the Cabinet.

The Model Framework for the IWRM

1.9. The MPU informed the Committee that there is a particular model that the IWRM follows which requires a functional separation between policy-maker (MPU), economic regulator, of water and wastewater services (Regulated Industries Commission (RIC)), water resource regulator (Water Resources Agency (WRA) and service provider for water and wastewater services (WASA). Currently, the primary regulator of water, the WRA is a department within the major abstractor, WASA, which naturally creates conflict in regulation. Therefore, there is no independent regulating body to monitor and allocate water resources to WASA nor to penalise WASA for over-abstraction.

1.10. Further, the responsibility for water resources regulation is essentially split between:

- WASA/WRA;
- EMA (water pollution);
- TCPD (land use planning);
- Local Government/Regional Corporations, (land use planning enforcement);
- Ministry of Works /Drainage Division (flooding);
- Ministry of Agriculture, Land and Fisheries (irrigation water and watershed management);
- Meteorological Services Division (weather and climate monitoring);
- Ministry of Health (potable water quality regulation);
- RIC (economic regulation of water resources); and

- Tobago House of Assembly (environmental management in Tobago).

1.11. The MPU also informed the Committee that the institutional arrangements presently do not exist to formalise cooperation between these stakeholders in times of a crisis.

1.12. The IWRM is therefore calling for:

- the separation of the function of water resources;
- institutional arrangements to be mandated through water management legislation that defines roles, responsibilities and interrelationships, and facilitates autonomy of the regulators; and
- formalised inter-agency coordination and collaboration through mechanisms such as Memorandums of Understanding or Memorandums of Agreement (MoUs/MoAs).

1.13. A number of models for the institutional set up have been put forward.

1.14. The proposed separation is not new, it was recommended since 2000 in a strategy funded by the World Bank.

1.15. WASA was awaiting a policy decision as to whether or not to adopt the proposed model which has particular benchmarks of institution, management, financial and the enabling environment.

1.16. The Committee requested details on the model framework for the IWRM agency and the legislative findings and received same by letter dated March 25, 2020 from the MPU:

Institutional Arrangements:

1.17. In 1999, the government of the Republic of Trinidad and Tobago approved a Water Resources Management Strategy Study (WRMSS) which made recommendations for institutional strengthening in water resources management. One of the approved recommendations was the creation of a Water Resources Management Authority (WRMA) as "a new and separate statutory organisation" with "a clear mandate and well-defined responsibilities". Once established the WRMA would allow for independent regulation of water resources, streamlined water resources functions, coordination and cooperation between organisations,

and facilitation of a strong and financially autonomous water resources sector. The specific functions of the WRMA were proposed to include:

(i) water resources policy and strategy development;

(ii) water resources assessment;

(iii) master planning and allocation; and

(iv) water abstraction licensing and enforcement.

In updating the recommendations on the institutionalisation of IWRM, the MPU completed an evaluation of three (3) options of various institutional arrangements detailing the advantages and disadvantages of each. The three options were:

1. Creation of a Water Resource Authority;
2. Expand Functions of the Environmental Management Authority; and
3. Establishment of a Unit within the MPU.

See Appendix V for The report entitled, 'Institutional Options Surrounding Effecting Integrated Water Resources Management in Trinidad & Tobago Economic Research, Policy and Planning - October 2017'.

Legislative Arrangements

1.20. The WRMSS also made recommendations on the legal framework for water resources management in 1999, specifying that an act of Parliament must be generated to grant the relevant powers to the proposed WRMA. In 2009, a draft bill and legislative scheme was generated following the approval of the 2005 National IWRM Policy. The draft WRMA bill 2009 requires updating to incorporate the revised policy prescriptions of the draft National IWRM Policy 2018, and inclusion of modernised legal instruments for water resources regulation such as a financing structure that allows for protection and rehabilitation of watersheds. Therefore, the legislative groundwork exists.

1.21. In reviewing the IWRM Policy, the Committee noted that, the Policy is consistent with sustainable development goals 2030. However, it does not clearly identify 'Responsible Entity' for managing and controlling *all surface water, groundwater and coastal nearshore waters of Trinidad and Tobago*. The Committee also observed that there are approximately twenty-two (22) stakeholders identified in the Policy involved in the water industry.

1.22. The Committee also observed that the Policy did not address the anomaly of the abstractor, (WASA) and the regulator, (WRA) of water falling under the purview of the same body or make a definitive recommendation regarding same.

1.23. The MPU acknowledged the Committee's observations and indicated that there may be room to revisit these issues before the Policy is approved.

1.24. The MPU informed the Committee that whatever decision is taken by the Cabinet as it relates to the review of the operations of the WASA, will impact on all aspect of the operations of WASA including whether there will be an acceptance of separating the regulator from the operator.

The Need for Effective Coordination amongst Agencies to Establish the Water Sector Policy

1.25. The MoPD indicated that it continues to see the relevance of achieving effective coordination among relevant Government agencies and Ministries in order to establish a clear and direct water sector policy for the country.

WASA's Strategy Documents and Plans

1.26. WASA informed the Committee that the following plans were developed to ensure water security:

- a Water and Wastewater Infrastructure Plan 2017-2022; and
- a Draft Strategic Plan 2017-2022 which includes measure for ensuring water security.

1.27. Additionally, WASA informed the Committee that a Water Resources Management Strategy for Trinidad and Tobago was completed in 1999 by DHV Consultants BV/Lee Young and Partners for the Government of Trinidad and Tobago.

The MPU's Strategic Priorities

1.28. The MPU as part of its governing and oversight mandate of the WASA and MET has developed a number of policies and high-level strategies for the short, medium and long term that are aligned to Vision 2030 and the UN Sustainable Development Goals to set the strategic direction for water related agencies.

1.29. These strategic priorities include but are not limited to providing safe and reliable public utility services to meet the needs of household, communities and businesses, expanding accessibility to public utility services to the currently unserved and underserved areas, streamlining the operations of the public utilities to increase efficiency, productivity and financial viability and promoting conservation and sustainable consumption.

1.30. According to the MPU, WASA's implementation of these priorities is intended to assist the Authority in providing a water supply that is of an adequate quality and quantity to sustain the population of Trinidad and Tobago as well as to ensure the sustainable use, conservation and protection of water resources.

MPU's Performance Benchmarks

1.31. The MPU, has gone further to develop performance indicators for WASA which it is requested to report on at various frequencies. These performance indicators assist to benchmark WASA against regional and international utilities, and against its own progress across time.

1.32. Broadly, these performance indicators encompass the following strategic areas which are aligned to the Ministry's priority areas:

1. **Customer Centric Culture -** The MPU is measuring this by WASA's response and handling of complaints as well as the time it takes to process for example, a new connection or a completion certificate.
2. **Operational Efficiency -** The MPU is examining WASA's leak repair and road restoration status as well as WASA's coverage and production and water storage.
3. **Financial Viability -** The MPU has financial metrics which include, EBITDA Margins[12], receivable turnover ratio, liquidity and inventory turnover ratio.
4. **Organisational Redesign**
5. **Governance -** The indicators for governance is specific to business continuity, WASA's implementation of a preparedness and response strategy in times of a disaster as well as WASA's statutory submission to both the MPU and the Parliament.

[12] https://www.investopedia.com/terms/e/ebitda-margin.asp#:~:text=What%20Is%20EBITDA%20Margin%3F,to%20others%20in%20its%20industry.

FINDINGS

1) The National Integrated Water Resources Management (IWRM) Policy will treat with new and emerging issues such as drought, climate change, rainwater harvesting and storm-water management.

2) The IWRM Policy approach requires new institutional arrangements and legislative framework to be implemented.

3) The Policy did not provide any preliminary detailed investigation on the legislative framework for the Responsible entity including its role nor did it specify whether new legislation will be put in place or the existing legislation amended.

4) The creation of a Water Resources Management Authority (WRMA) as a new and separate statutory organisation" with "a clear mandate and well-defined responsibilities was recommended in a Water Resources Management Strategy Study (WRMSS) in 1999 by the Government to allow for independent regulation of water resources functions, coordination and cooperation between organisations and facilitation of a strong and financially autonomous water resources sector.

5) The groundwork for the legislative framework has been completed but the draft WRMA Bill, 2009 requires updating to include policy prescriptions contained in the draft National IWRM Policy 2018.

6) There is need for an independent regulating body to monitor and allocate water resources to WASA and to penalise WASA for over-abstraction.

7) The responsibility for water resources regulation is essentially split between the entities as indicated and the current institutional arrangements do not exist to formalise corporation between these stakeholders in times of a crisis.

8) There is need for institutional arrangements that formalise cooperation between stakeholders in times of crisis.

9) There is need to separate the resource regulator from the service provider and service regulator, WASA.

10) There is need for the IWRM Policy to clearly identify the lead entity/responsible entity for managing and control of all surface water, groundwater and coastal nearshore waters of Trinidad and Tobago.

11) WASA was awaiting a policy decision as to whether or not to adopt the proposed model in the IWRM Policy, which contains particular benchmarks for institution, management, financial and the enabling environment.

12) The MPU's performance indicators assist to benchmark WASA against regional and international utilities, and against its own progress across time.

RECOMMENDATIONS

1) **We recommend that the IWRM Policy should:**
   - **(i) Address the anomaly of abstractor and regulator under same body;**
   - **(ii) Clearly identify the 'Responsible Entity' for managing, monitoring regulating and ensuring effective integrated management of Trinidad and Tobago's water resources; and**
   - **(iii) Adequately ventilate the legislative reforms required to effect IWRM.**

2) **We recommend that the MPU update the draft WRMA bill 2009 to include policy prescriptions of the draft National IWRM Policy 2018 as approved.**

3) **We concur with the separation of the WRA from the WASA and further recommend that consideration be given to the WRA to be the Responsible Entity for water regulation given that it has the foundational basis required and should ideally be removed from under the purview of WASA.**

4) **We recommend that a final IWRM Policy be prepared and adopted and the necessary resources be allocated to MPU to facilitate the immediate implementation of this final IWRM Policy.**

The Stakeholders Involved in Water Security

1.33. The MPU indicated that the subject of water security spans several agencies. WASA and the Trinidad and Tobago Meteorological Services Division (MET) are the major players in water

security, WASA provides the water supply to the citizenry and the MET monitors the weather and climate that is linked to the water supply.

1.34. The MPU also indicated that the following other stakeholders are involved in water security:

- Environmental Management Authority (EMA);
- Town and Country Planning Division (TCPD);
- Ministry of Agriculture, Land and Marine Affairs (MALF);
- Regional Corporations;
- Minerals Division; and
- the public who are all involved in the protection, conservation and management of watersheds which are central to security water supply.

1.35. According to the WASA, the following stakeholders are involved in water security:

- Water and Sewerage Authority (WASA); and
- Environmental Management Authority (EMA);
- Regulated Industries Commission (RIC);
- Ministry of National Security (MoNS); and
- Ministry of Energy and Energy Industries (MEEI).

Role of Entities Responsible for Water Security

The Ministry of Public Utilities' Role in Water Security

1.36. The MPU is the entity responsible for setting policy and high-level strategy to ensure water security, as defined by the UN, in alignment with Vision 2030 and the UN Sustainable Development Goal 2030 (SDG).

1.37. The policy developed by the MPU is in turn implemented by the agencies under and divisions within the MPU with responsibility for water, namely:

- WASA – Mandated through the Water and Sewerage Act Chapter 54:40 to provide water supply and wastewater management services to the population and also gives effect to the policy set by the Minister with responsibility for water. WASA also has responsibility to manage water resources through the WRA.

- The Meteorological Services Division (MSD) - the MSD monitors weather climate which are intricately linked to water supply in the country. This information is fed to WASA through WRA for input into future decision-making relative to securing water resources.

1.38. The MPU also has oversight responsibility for projects financed under the Public Sector Investment Programme (PSIP) that are aimed at improving water security as concpetualised, developed and implemented by WASA in alignment with the policy mandates given by the MPU.

1.39. The MPU embraces its role as an advocate of the national vision which fundamentally seeks to improve the quality of life of all its citizens. Therefore, emphasis is placed on the provision of efficient, cost effective and reliable public utility services throughout Trinidad and Tobago. The MPU will continue to provide strategic guidance support and facilitate WASA in delivering on its initiatives so the Authority can continue to contribute to Trinidad and Tobago's socio-economic development.

WASA's Role in the IWRM Process towards achieving Water Security

1.40. WASA has a major role to play in the IWRM process and plans towards achieving water security. WASA is mandated to supply water and wastewater services to the population of Trinidad and Tobago. As part of the Authority's mandate to deliver potable water to its customers, a truck-borne water service is provided at no cost to customers whose account is in good standing.

1.41. According to the Authority, the Water Resource Agency leads in the IWRM efforts.

1.42. In order to provide water services, the Authority must undertake several key activities associated with developing and maintaining water treatment sources as well as transmission and distribution systems:

1.43. The Authority therefore continues to develop new water sources, maintain existing ones and treat raw water sources to meet international drinking water standards.

1.44. Some of the infrastructure development projects undertaken by the Authority includes construction of intakes and wells.

1.45. WASA also indicated that it must also place focus on its pipeline transmission and distribution network in order to effectively deliver and sustain a water supply to citizens. The pipeline transmission and distribution network has been enhanced through the construction of new service reservoirs throughout the country and booster stations in North, Central and South Trinidad. The Authority has also laid critical pipelines to provide connectivity to previously underserved areas in Trinidad and Tobago and place great emphasis on leak repair programme in order to reduce the level of unaccounted for water while improving its level of service to customers.

1.46. Another key area that requires equal attention regarding infrastructural development and maintenance is the area of wastewater collection and treatment given that this can have a major impact on public health and the environment. In this regard a new Malabar wastewater treatment plant and collection system has been completed with funding secured through the Inter-American Development Bank (IDB).

1.47. The MoPD submitted that in fiscal 2020, under the strategic leadership of the MPU, WASA's three (3) strategic focal areas for ensuring water security are as follows:

(i) Augment Water Supply (Well Development/Rehabilitation, Treatment Plants, Booster Stations);

(ii) Reduce NRW (Leak repair and replacement of high leakage mains); and

(iii) Expand Transmission and Distribution Systems (Pipeline and Storage).

1.48. The objective of these strategic areas is to provide a reliable and consistent supply of water for the citizens of Trinidad and Tobago by increasing water production through the Well Development Programme, the rehabilitation of dams, the refurbishment of Water Treatment Plants, the construction of reservoirs and booster stations, the refurbishment and upgrade of pipeline infrastructure to bring about a reduction of NRW and increased water storage capacity with an effective and efficient water distribution.

The Ministry of Rural Development and Local Government's Role in Water Security

1.49. The Ministry of Rural Development and Local Government (MoRDLG) provides oversight over the fourteen (14) Municipal Corporations which are legislatively governed by the Municipal Corporations Act Chapter 25:04.

1.50. The Act makes provisions under Section 232(a) for the distribution of truck borne water subject to the provisions of the Water and Sewerage Act Chapter 54:40. All Municipal Corporations are involved in truck borne water distribution.

1.51. Policies are formulated to supply water to the most vulnerable organisations and communities. These include educational institutions, health centres, police stations and other service organisations with high sanitisation requirements.

1.52. The truck borne water service involves water tenders belonging to the Corporations accessing water at hydrants and pumping stations under the jurisdiction of the WASA. Ten (10) Municipal Corporations are equipped with a Water Trucking line item under the Recurrent Service (Sub Item 68). This exercise primarily occurs during the dry season through a contracted water trucking programme.

1.53. Based on the magnitude of this exercise, particularly during the dry season, the services of contractors are procured to provide the truck borne service. The trucks used in these operations are subjected to mechanical inspections while the water tanks are closely examined by public health officers to ensure that the water being distributed is not contaminated.

1.54. As it pertains to whether or not Regional Corporations charge citizens for truck-borne water supply in the time of crisis, the Committee was informed by the MoRDLG that *"…it has never been the policy of Regional Corporations to charge burgesses for truck-borne water in times of crisis, or any other time for that matter."* The MoRDLG further indicated that it is not anticipated that such a policy will change in the future.

1.55. The MoRDLG also operates in alignment with the Disaster Measures Act 1978. Disaster Management Units are established at all Municipal Corporations to serve as first responders to hydrometeorological and other disastrous events such as floods, droughts and pollution. A

Disaster Management Coordinating Unit/Emergency Operations Centre has been instituted at the MoRDLG's Head Office at Kent House, Maraval to improve the efficiency and effectiveness of the response and recovery mechanism in collaboration with other State and non-State agencies.

1.56. Additionally, through the Municipal Corporations, the MoRDLG indirectly contributes to the improvement of water quality by reducing pollution, eliminating indiscriminate dumping, and minimising the release of faecal and other hazardous waste into watercourses. The implementation of such measures is addressed by the Corporations' Public Health Departments as well as the Building Inspectorates during the building application process.

MoPD's Role in Ensuring Water Security

1.57. The MoPD is responsible for the overall management of projects/programmes that comprise the PSIP. Specifically, the role of the Project Planning and Reconstruction Division (PPRD), of the MoPD, is to monitor and evaluate the implementation of the PSIP to ensure that resources are efficiently and effectively allocated based on policy objectives.

1.58. The MoPD and by extension the TCPD recognises that whilst Trinidad and Tobago is reasonably well endowed with water resources, a number of water related challenges resulting from issues such as increased industrial activity, climate change and variability, and changing demand for water must be addressed.

1.59. The TCPD recognises that these issues are intrinsically linked to land use planning which are clearly articulated in the National Spatial Development Strategy (NSDS).

1.60. The NSDS advocates for development that contributes to conservation and optimising water resources. Hence, the policies of the TCPD include:

- Preservation of significant water recharge area under vegetative cover;
- Requirements for the recycling and reuse of wastewater for non-potable water demands such as watering of lawns and plants; and
- Maximising of the land space in proposed developments that must be retained under vegetation.

1.61. Therefore, conditions attached to proposed development applications include requirements for water recycling and reuse, provision of detention and retention ponds, and the minimising of building coverage while maximising provision of open space and landscaping.

1.62. The MoPD's analysis of water security indicates that water security takes a number of forms such as distribution and water availability, security as is relates to climate change and it also relates to how other resources are managed to assist to retain water for example from forest cover, maintenance of NRW supply.

1.63. Therefore, an integrated approach is priority for the MoPD.

1.64. While the lead Ministries continue to be the MPU and WASA, the MoPD would be undertaking a monitoring and evaluation role to ensure that deliverables are met under the several projects and programmes and to ensure that they are in fact reaching citizens as intended.

1.65. Additionally, in establishing the PSIP for 2021, the MoPD has been examining the synergies required to ensure that financing and the project development would be able to meet some of the requirements for water security.

Relationship amongst stakeholders in Water Security

WASA's Collaborations to treat with a Water Crisis

1.66. The Committee was informed by WASA that it collaborates with the following entities in a water crisis:

1. MET- provides projections on the severity of the dry season upon which plans are formulated for water supply particularly from surface water sources;
2. Office of Disaster Preparedness of the Ministry of National Security and the Tobago Emergency Management Agency - on acute issues which may arise; and
3. Regional Corporations - for delivery of service to residences beyond WASA's distribution network.

The MoPD's Relationship with Stakeholders

1.67. The TCPD indicated that it works collaboratively with other government agencies and stakeholders to help safeguard the natural environment and ensure water security. Among them are the WASA, EMA, and the WRA Unit of the WASA. This collaboration includes obtaining advice where necessary, referral of development applicants to the Agencies and the coordinated development of policy and procedures related to planning in respect of water supply, waste treatment and water quality issues.

1.68. Based on the MoPD's strategic position as the manager of the PSIP, it receives feedback and information from all Ministries and agencies.

The Relationship between the MoRDLG and the WASA for providing the truck borne water service

1.69. The MoRDLG informed the Committee that as it relates to coordination for the truck borne water service, the relationship between the Municipal Corporations and WASA in accessing water from the pumping stations and hydrants is effective and reliable and therefore is not a challenge.

1.70. The MoRDLG also informed the Committee that at Corporations where there is not a great need for the truck borne water supply, these Corporations have a good relationship with WASA and are responsible for providing the truck borne service to State and non-State organisations, schools and community centres as well as construction projects.

The Relationship between Entities with responsibility for Watershed Management

1.71. The Committee was informed that the WRA has a close relationship with the EMA with regard to projects and their impact on water resources.

1.72. The WRA works closely with other entities who have regulatory functions e.g. the EMA writes to the WRA for input on proposed projects such as surface run-off, infiltration into aquifiers.

1.73. The WASA is part of a Mineral Advisory Committee which reviews applications for mining and quarrying. This Committee membership comprises, MoWT, EMA, MoH, MoF and

TCPD. The membership works together to ensure what is being proposed will have minimal impact as possible on water resources.

Meetings with stakeholders in Water Security

1.74. The MoPD indicated that it met once with entities with responsibility for water such as, MPU, MoRDLG, WASA, MET Office, and some other entities to discuss the various studies and initiatives as it pertains to water security (between the first and second public hearing on the inquiry which spanned approximately one year). The MoPD indicated that the year 2020 was challenging, however, it has been following-up and trying to maintain the integrated approach to the development of water and water security for Trinidad and Tobago.

1.75. The MoPD anticipates more regular meetings in 2021 to discuss some of the initiatives.

FINDINGS

13) The stakeholders involved in water security work collaboratively.

14) MPU is the entity responsible for setting policy and high-level strategy to ensure water security, while WASA and the Trinidad and Tobago Meteorological Services (MET) implement the policy.

15) There is need to address issues such as increased industrial activity, climate change and variability, and changing demand which are intrinsically linked to land use planning and clearly articulated in the National Spatial Development Strategy (NSDS).

16) The Municipal Corporations and WASA have an effective and reliable relationship where accessing water is concerned and in instances where there is not a great need for the truck borne water supply.

17) There is need to re-establish a structure for regular meetings amongst entities with responsibility for water security.

RECOMMENDATIONS

5) **We recommend quarterly coordination meetings with entities with responsibility for water. Consideration should be given to virtual meetings given the challenges posed by the Covid-19 pandemic.**

6) **We recommend that discussions at quarterly meetings include issues such as increased industrial activity, climate change and variability, collaboration regarding enforcement measures for those persons/entities violating laws that impact on water security and changing demand which are intrinsically linked to land use planning.**

WASA's Current Measures for Ensuring Water Security

WASA's Water Resources

1.76. WASA accesses water supply from 3 types of sources:

1. Surface – this is WASA's primary source of water which accounts for approximately 60-80% of production. WASA has four (4) impounding reservoirs, three (3) are located in Trinidad and one (1) in Tobago. WASA indicated that its focus is to ensure it protects its surface water. As such, WASA has been examining areas where it can store more surface water and add security of supply to the components.
2. Ground – this is water supplied by wells. WASA has been exploring alternative untapped aquifers to enhance its ground water supply.
3. Desalinated – this involves plants operated by entities external to WASA abstracting water from the sea.

Water Available for Distribution

1.77. WASA has available for distribution depending on the time of year between 220 and 240mn gallons of water.

1.78. Comparisons of current capacities and Long-Term Average (LTA) production of sources are depicted in Table 4 below:

Table 4

WASA'S WATER RESOURCES

Source	Current Capacity (mgd)	Long Term Average (mgd)
Ground Water	58.2	55.9
Surface (Major)	139.6	137.9
Desalination	46.6	36.2
Total	**244.4**	**230.0**

1.79. WASA submitted the following information as it pertains to its current sources of water and respective levels as at February 14, 2020.

Table 5

CAPACITIES OF IMPOUNDING RESERVOIRS

(FEBRUARY 14, 2020)

Reservoir	% Capacity
Arena	73.0
Navet	87.8
Hollis	80.1
Hillsborough	94.3

1.80. Current levels of production of the larger surface sources and comparisons to Long Term Averages are shown in Table 6.

Table 6

WASA'S WATER RESOURCES IMPACTED BY RAINFALL

Reservoir	Current Capacity February 14, 2020 (%)	Long Term Average February 14, 2020 (%)
Arena	74.21	91.25
Navet	81.48	89.47
Hollis	73.07	85.87
Hillsborough	96.17	88.12
Production Facility	**Normal Production (mgd)**	**Long Term Projection (mgd)**
North Oropouche WTP	22.00	20.20
L&N WTP	1.00	0.84

Acono WTP	0.28	0.25
Caura WTP	3.00	2.82
Guanapo WTP	3.00	2.85
Aripo WTP	3.00	2.91
Blanchisseuse WTP	0.14	0.12
Tyrico WTP	0.24	0.21
La Filette WTP	0.36	0.32
Las Cuevas WTP	0.08	0.07
Trinity WTP	0.50	0.44
Kings Bay WTP	0.42	0.29

The Adequacy of Reservoirs to Supply the Nation in a Time of Crisis

1.81. WASA informed the Committee that reservoir levels vary seasonally, as such production is adjusted to balance customer needs and water conservation. Further, WASA manages storage and production levels to maintain its service to customers while having adequate volumes storage to respond to different scenarios which may arise including extended periods of below normal rainfall.

Water level trends in reservoirs

1.82. The Committee was informed that the levels in the reservoirs are based on variation in the wet and dry seasons. WASA receives information on variation annually as they occur.

1.83. The examination of variations from past years, has pointed to shorter duration and higher intensity rainfall. Below average rainfall was also experienced during the wet season. Additionally, in the year 2019 the dry season was particularly harsh. Overall rainfall is decreasing and this would therefore impact water in reservoirs.

Isohyetal Shifts Projected for the Short Term

1.84. According to the MET, when cumulative rainfall for the decade 2010-2019 is compared to the 30-year period, 1961-1990, the cumulative rainfall was 5% less. However, when cumulative rainfall for the decade 2010-2019 with 1980-2010 it was 11% less than that period. Additionally, when compared by decade, the last decade has cumulatively produced the least

amount of decadal rainfall since the 1970's or late 1960. The projection is for this trend to continue.

1.85. Extremes are challenging to determine. Depending on the index or metrics used, rainfall is increasing or decreasing. The MET observed that the top 1% of heaviest rainfall events or those at the 99 percentile are contributing more rainfall to the annual average. The rainfall is very intense and therefore the ability to capture the rainfall becomes more a challenge where the overall deficit in rainfall is occurring. The MET is hopeful that Trinidad and Tobago can climate proof its water resource management. The MET office has introduced a number of products that it provides to the WRA that speaks directly to water security and has to some degree enabled the WRA to help WASA with managing the water resource.

1.86. In terms of whether or not the less rainfall is being received in the catchments with the four major reservoirs and that this trend is expected to continue, the Committee was informed that the MET has been seeing trends, but each year is not the same. In the past six years, four out of the six years in all the reservoir areas were within the lowest 10 and 25% of the historical rainfall. These trends are occurring more frequently. Additionally, the El Nino phenomenon brings dryer than usual conditions in Trinidad and Tobago. Since 2010 to present, Trinidad and Tobago had this unusual phenomenon where three significant El Nino events in terms of impacts occurring within relatively short periods of time.

1.87. In terms of the specific regions or catchments where in terms of rainfall trends and patterns, rainfall harvesting can be optimised, the MET indicated that it is unable to determine these regions or catchments**.** The MET suggested that the country in general needs to move to a level where it can utilise water harvesting in greater ways. For example, in Australia rainwater harvesting has been incentivised to the extent that it has a greater uptake in residents who receive payouts for implementing rainwater harvesting initiatives for example toilets. Additionally, the government by policy ensures that schools implement rainwater harvesting initiatives. Policies to this effect can be used to change the behavior in Trinidad and Tobago.

The months in Trinidad and Tobago with the highest amount of rainfall

1.88. It is difficult to assess a particular month that receives the highest amount of rainfall at some stations because rainfall occurs irregularly in Trinidad and Tobago. In the North Eastern areas,

the month of August is the highest producing month whereas in the Western areas, the month of June and in Tobago the month of November is the highest producing month. Rainfall is dependent of a number of climatic background factors. The MET also observed that overtime, since 1946 for the months of October, November and December cumulative rainfall the late wet season at Piarco in particular have significantly increased statistically.

1.89. The Committee was interested in finding out whether the Authority takes into account the capacity of water available at its reservoirs to determine how it distributes its water particularly during the dry season and whether or not programmes are put in place to increase capacity at reservoirs given that for example the capacity at the Hollis reservoir in March, 2019 was 63.34% which dropped after five months to 18.91% and in February, 2020 increased to 73.07% capacity.

1.90. WASA indicated that the MET does its analysis and within the WASA through the WRA projections for the reservoirs are done and water is produced at the treatment plants based on those projections. The last dry season was particularly harsh and WASA amended its production levels to match the water available to ensure continuity of supply. WASA received updated projections and will be reviewing and amending as required.

1.91. In terms of the projections for August, 2020, the Committee was informed that the WRA received the six-month outlook from February to July, 2020 and staff has been working on the assessment. MET service provides three forecasts, an outlook, upper threshold and lower threshold. For water supply purposes it is prudent to use the lower threshold to help guide supply. WRA does two assessments, one for normal rainfall expected and the other to determine the lower threshold. WRA had a low point capacity of 29.9% occurring at the end of June at the Arena reservoir. The lower threshold rainfall forecasted for February to July, 2020 is 29.9%. In worse case scenarios actual rainfall can be less than the lower thresholds and this has happened at times. For the Navet reservoir, the low point is at the end of May, 2020 at 44.4% capacity. Navet has a redundant system as it is a lower reservoir and the dam is on an adjacent watershed, therefore water can be pumped from the lower reservoir to the upper reservoir to the benefit of the Authority. The low point for Hollis will be at the end of May, 2020 at 34.3% capacity. Estimated production is 5mgd. At the time of the public hearing, the Hillsborough reservoir was above average. Its low point is in July, 2020 at 38%.

The Effectiveness of the WRA in Ensuring a Reliable and Sustainable Supply of Water

1.92. WRA provides frequent assessments of available surface and groundwater resources to support the efforts to provide a reliable water supply. The assessment includes additional water which may be available from existing and new sources. The WRA recommends abstraction limits for all water sources based on natural recharge rates, environmental demands and salinity risks. The recommended abstraction limit is the management tool used by the Agency to ensure sustainability of the resource.

Current Per Capita Consumption of Water

1.93. The Committee was informed that the current per capita consumption of water is 580 liters per capita day and this amount needs to be reduced by 60-70%.

Industries Currently Demanding the Largest Water Supply from WASA

1.94. According to the WASA, the industries that are currently demanding the largest water supply are within the Energy Based Sector. Further details are at Appendix VI.

WASA's Plans to Improve the Entire Water Cycle and Storage of Water

1.95. WASA informed the Committee that it is pursuing a programme through the MPU in collaboration with the IDB to examine and improve the entire water cycle and storage of water.

1.96. WASA indicated the need to balance supply and demand of water. As it pertains to the supply side, WASA indicated the need to increase storage.

1.97. WASA also indicated the need to examine some of its facilities such as pump storage facilities to determine whether there is need for greater capacity to deal with shorter duration higher intensity rainfall.

WASA's Mitigation Strategies to addressed reduced rainfall and production deficits

1.98. WASA has identified vulnerable areas throughout both Trinidad and Tobago and has developed mitigation strategies against reduced rainfall and production deficit that are unique to each area. The considerations include, source of supply, population, topography; and resource availability.

1.99. The authority also indicated that the following measures are to be implemented:

- Network Management;
- System Interconnectivity;
- Alternative Supply;
- Operation of Transmission/Distribution Systems;
- management of production and distribution from Water Treatment Plants;
- Equipment Reliability;
- Dry Season Schedules;
- Rigid Monitoring of affected areas;
- Water Trucking;
- Operationalising Additional Filling Bays;
- Operationalising Communal Tanks; and
- partnering with Regional Corporations.

WASA's Measures in place to ensure Water Availability and Accessibility

1.100. As it pertains to the measures being put in place to ensure water availability, the Committee was informed:

- WASA has redundant power supply systems/standby generators at critical treatment facilities;
- Water treatment facilities have treatment chemicals stored on site;
- WASA utilises automation in treatment processes, where practicable; and
- The cadre of Process Plant Operators is sufficiently large to facilitate easy deployment of staff.

1.101. In terms of accessibility, WASA has undertaken the extension of the distribution networks to permit access of previously unserved communities through the now closed National Social Development Programme (NSDP) and the current Community Water Improvement Programme (CWIP).

WASA's Measures to ensure Quality and Safety of Water

1.102. With regards to measures to ensure Quality and Safety of Water, WASA's treatment and distribution processes comply with the Guidelines for Drinking Water Quality of the World Health Organisation.

WASA's Plans for Groundwater Development and Resource Management

1.103. WASA's plans for groundwater development and resource management include:

- Monitoring of water levels and abstraction of several aquifers to determine safe yields to reduce long-term risks including deterioration of water quality; and
- Advice on optimal sites for news wells to maximise efficient production within established safe yields and provide for recharge.

WASA's Measures to Capture Flood Waters to Utilise in a Period of Scarcity

1.104. WASA's reservoirs were constructed with a primary objective of supply. The action of drawing water for water production purposes particularly during a flood event contributes to a reduction in the extent of flooding that may occur. As such, WASA is looking at impounding storage and projects that would not only provide a supply but also provide a flood mitigation component.

1.105. Additionally, through the MPU, WASA is looking at projects in Cummuto and Ravine Sable Sandpits to provide both water supply and flood mitigation.

WASA's Measures to Eliminate Water Loss by Evaporation

1.106. WASA indicated that it is not aware of efficient and practical methods for reducing evaporation at impounding reservoirs. Given the climate of Trinidad and Tobago, reservoirs are normally replenished by the end of the Annual Wet Season.

The Measures in Place to Prevent Water Contamination

1.107. WASA has internal mechanisms to prevent water contamination, which includes securing of water sources and treatment facilities as well as the monitoring of watercourses and impounding reservoirs. The EMA subsidises WASA's efforts with their own monitoring regime. These mechanisms include the following:

- Security is stationed at all manned water treatment facilities;

- All unmanned water treatment facilities are secured with fencing and signage;
- Automated water quality monitors are in service; and
- Water sources are monitored by personnel from WRA, WASA Security and WASA Operations Division (River Wardens, Mobile Operational staff and the Quality Control Laboratory).

WASA's Security Infrastructure

1.108. The first level of deterrent at WASA facilities includes perimeter fencing, lighting and secured facilities. This is supplemented by a security presence, comprising in-house and contracted staff, who would be either static or mobile. Additionally, some locations are equipped with camera surveillance systems to assist in the monitoring of these sites. Depending on the level of threat, the service of relevant arms of government including the Trinidad and Tobago Police Service and the Trinidad and Tobago Fire Service would be engaged as required.

New Security Procedures and Technological Solutions required to Detect, Monitor and Prevent Security Breaches

1.109. WASA indicated that new security procedures including technological solutions to detect, monitor and prevent security breaches are needed given that with an ever-increasing population and greater industrialisation, the threat of pollution is ever present. WASA also indicated that widespread implementation of remote monitoring of water resources is prudent. Accordingly, WASA is implementing a closed-circuit camera system to permit monitoring of key facilities complemented by static and mobile security personnel.

1.110. Specifically, with respect to water quality on the Caroni River, WASA has a Water Quality Monitoring System (WQMS) for monitoring raw water within the catchment supplying the Water Treatment Plant in Piarco. There are seven (7) monitoring stations upstream within the Caroni River Catchment.

1.111. As it pertains to Security Breaches, the Security Services Department (In-house and contracted) is the first responder at WASA's facilities and have been trained in emergency response procedures for various crises. Additionally, the Authority has established formal linkages with the Office of Disaster Preparedness and Management (ODPM), which is mandated to coordinate relief efforts in the occurrence of natural disasters and other hazards

which may inadvertently contribute to social unrest. Depending on the level of threat, linkages with the Trinidad and Tobago Police Service (TTPS) are used to assisting patrols to secure water resources and infrastructure.

WASA's Measures to Reduce Contamination of Water Supplies during a Crisis

1.112. The Committee was informed that the WASA has a Disaster Preparedness and Business Continuity Plan which provides a structured framework for responding to emergencies.

1.113. Prevention of water contamination during a crisis is undertaken by monitoring of raw water sources, adequate treatment at the facilities and active monitoring along the transmission and distribution systems. Where pipelines can be contaminated due to breakages, sections of the pipeline can be quickly isolated and disinfected.

FINDINGS

18) Reservoir levels vary seasonally, WASA manages storage and production levels accordingly to balance customers' needs and water conservation.

19) Water Resources Agency (WRA) provides frequent assessments of available surface and groundwater resources to support the efforts to provide a reliable water supply.

20) There is need to reduce the current per captia consumption of water by 60-70%.

21) There is need to increase water storage including pump storage facilities to deal with shorter duration of higher intensity rainfall.

22) Cumulative rainfall has decreased over the past decade.

23) Trinidad and Tobago has been experiencing irregular rainfall and 'El Nino' events where rainfall impacts have been occurring within relatively short periods of time.

24) The MET is unable to determine specific regions or catchments where, in terms of rainfall trends and patterns, rainfall harvesting can be optimised.

25) Statistically, cumulative rainfall in the late wet season has significantly increased, at Piarco in particular.

26) WASA is reviewing impounding reservoir storage and projects that would not only provide a supply but also provide a flood mitigation component.

27) WASA is unaware of efficient and practical methods for reducing evaporation at impounding reservoirs and is dependent on the annual wet season to replenish reservoirs.

28) New security procedures including technological solutions to detect, monitor and prevent security breaches are needed.

RECOMMENDATIONS

7) We recommend that the WASA examine areas where storage can be increased including pumped storage facilities to treat with inadequate/shorter duration of intense rainfall.

8) We recommend that the stakeholders involved in water security collaborate to conduct a study to determine the regions or catchments where rainfall harvesting can be optimised.

9) Given that WASA is dependent on the Annual Wet Season to replenish reservoirs and rainfall has decreased compared to the last decade, we recommend that the WASA engage in research to determine efficient and practical methods for reducing evaporation at impounding reservoirs.

10) We recommend that the WASA explore and implement new security procedures and technological solutions to detect, monitor and prevent security breaches.

Management of Watersheds in Trinidad and Tobago

Location of Watersheds

1.114. The WRA informed the Committee that there are 59 watersheds in Trinidad and 14 in Tobago. A map detailing the location of these watersheds are at Appendix VII. According to the WRA, a watershed is defined as an area where rain falls that comes to a common point. The MPU defined a watershed as the land area that water (from rainfall) flows over and eventually drains into a river/watercourse/stream. All land area is classified as a watershed. A watershed collects (through vegetation, ponds/lakes), stores (in vegetation, soil and aquifers) and releases water through rivers and wetlands. Watersheds also provide important habitats for flora and fauna,

and therefore maintain biodiversity. The term watershed is used interchangeably with catchment, hydrologic/drainage basin.

1.115. The Committee was also informed that a public education component is included in the management of watersheds which allows for collaboration with grassroots organisations for a programme called Adopt a River Programme (AARP) which aims to encourage citizens who reside near a watershed to become stewards of the environment. The AARP is one of the key national interventions for safeguarding and rehabilitating watersheds in the last five (5) years. Water warriors are trained in the communities on the role of the protection of water resources and to do simple water quality testing so they can monitor watersheds. In order to foster increased stewardship, meetings are held at primary and secondary schools. The WRA also noted that younger persons are more in tuned with what is going on in the environment and can assist to guide older persons. The AARP is funded by the Green Fund, executed by a project implementation unit within WRA, and is overseen by a steering committee of multiple governmental and non-governmental stakeholders. While the AARP has tangible objectives such as clean-ups, reforestation exercises, public education activities, etc. the overarching goal is to empower citizens with the knowledge and competencies to become custodians of their watersheds and implement community-based projects to achieve robust watershed management. Additional details on the AARP are attached as Appendix VIII.

1.116. However, the Committee was also informed that the WRA does not have legislation in order to move forward with management of water resources.

The Agencies Responsible for Watershed Management in Trinidad and Tobago

1.117. According to the WRA, watershed management in Trinidad and Tobago is spread amongst various stakeholders. These are the key entities that have a role to play by legislation with regards to watershed management:

- MoWT's Drainage Division with regards to approvals on projects affecting river courses;
- TCPD examines current land use for projects; and
- EMA issues certificate of environmental clearance and requests environmental assessments where required before issuing a CEC.

The Management of Watersheds in the IWRM Policy

1.118. The WRA informed the Committee that the IWRM policy is a decentralisation of the process where all the key stakeholders work together. However, there is need for key stakeholders to continue to work together to ensure that there are no gaps.

1.119. The Committee noted from the information received on the IWRM Policy that:

a. There is no clear lead agency with primary responsibility for watershed management; and

b. the IWRM approach suggests that the supply of water should be maximised from within the watershed resource.

1.120. The WRA informed the Committee that there are some areas where there are not many aquifers in a certain geographical area in Trinidad and Tobago. As a result, water is exported out of watersheds. For instance, primarily the North-East area experiences heaviest rainfall, an area with concentration will be Hollis reservoir and because of some of the population centers are in areas where rainfall is insufficient for example the North West area, it is necessary to transmit water from where it is more abundant.

1.121. The WRA also mentioned that in other countries such as US and provinces of Canada, water is not allowed to be extracted from major river basins e.g. Great Lakes Compact.

Success in protecting and conserving watersheds in Trinidad and Tobago

1.122. According to the MPU, robust watershed management relies on land use practices that optimally balances physical development with protection of critical zones such as groundwater recharge areas, flood plains, wetlands, ecologically undisturbed, primary forested areas (with native trees), etc. Watershed management is most effective when the quantity and quality of water (and other natural resources) remains close to the baseline, i.e. prior to development. In effect, a healthy watershed is able to do the following:

- Collect and store flood waters with minimal damage to infrastructure.
- Maintain minimum flows in rivers and streams enabling preservation of the natural ecosystem (flora and fauna).
- Filter sediment and chemicals in rainfall resulting in pristine or near-pristine water quality.

1.123. Over the past 20 years but primarily in the past decade, the majority of Trinidad's watershed areas have been showing significant degradation. For example, in North-East Trinidad (where water resources are most prolific because it records the highest, most intense rainfall), the Toco and Madamas watersheds drastically deteriorated from good to bad/moderate across a seventeen (17) year timeframe (1998 to 2015).

1.124. This rapid watershed degradation is principally due to convoluted regulation and weak governance arrangements which involves multiple regulators overseeing various land uses such as quarrying, agriculture, housing, and environmental issues. This weakens responsibility and accountability for proper land use planning and regulation and is resulting in increased deforestation in watersheds, and increased runoff and pollution in rivers.

1.125. Similarly, a decade of development in Tobago has resulted in degradation of the Courland and Sandy River watersheds from good to bad in the lower watershed. The Tobago West, Tobago South, Goldsborough and Louis D'Or watersheds have also declined from good to moderate in the lower watersheds. The lower watersheds are more significantly depleted due to most developments taking place (housing, agriculture, quarrying, other infrastructure) in those areas.

1.126. The Tobago and Trinidad watershed assessments are based on water quality sampling of various chemical parameters such as turbidity (sedimentation), nitrates (pesticides/fertilisers), sulphates (sewage), etc. in the upper and lower parts of the major rivers that drain these watersheds.

FINDINGS

29) The WRA lacks the legislative mandate necessary to move forward with management of water resources.

30) There is no clear lead agency with primary responsibility for watershed management.

31) Due to variances in rainfall, it is necessary to transmit water from where it is more abundant. However, the IWRM approach suggest that the supply of water should be maximised from within watershed resources and that cross watershed distribution, which can contribute to high capital and maintenance costs should be discouraged.

32) Robust watershed management relies on land use practices that optimally balance physical development with protection of critical zones.

33) The majority of Trinidad's watershed areas have been showing significant degradation.

34) The rapid watershed degradation is primarily attributed to convoluted regulation and weak governance arrangements which involves multiple regulators overseeing various land uses (such as quarrying, agriculture, housing, and environmental issues). This weakens responsibility and accountability for proper land use planning and regulation, and has resulted in increased deforestation in watersheds, and increased runoff and pollution in rivers.

35) A decade of development has degraded the Courland and Sandy River watersheds in Tobago.

RECOMMENDATIONS

11) We recommend that the IWRM Policy include provisions to maximise the use of water from within watersheds and seek to minimise cross watershed distribution which can be effective in reducing high capital transmission and maintenance costs.

12) We recommend that innovative initiatives be used to involve stakeholders in watershed management, such as the use of Zoom conferencing to host educational public seminars.

13) We recommend that in stakeholder discussions proposals for streamlining the regulation of land uses be included in discussions with a view to preventing watershed degradation in Trinidad and Tobago.

14) In an effort to stem the rapid deterioration of our watersheds, we recommend that the IWRM Policy clearly identifies the lead agency/entity with the primary responsibility for watershed management. This agency will be responsible for spearheading the overall coordination of the work of the stakeholders who have various responsibilities in watershed management and protection of same.

Studies to Assess the Impact of Climate Change on Water Security in Trinidad and Tobago

Vulnerability and Capacity Assessment (2019)

1.127. The MoPD informed the Committee that a Vulnerability and Capacity Assessment (2019) was conducted by the Government of Trinidad and Tobago through support received from the European Union (EU) under the "Technical Assistance to the Environment Programme in Trinidad and Tobago". The environment programme is aimed at addressing the challenges of pursuing a low-carbon climate resilient development path and contributing to the achievement of the Government of Trinidad and Tobago's goals to improve the management of natural resources in the country. As part of the larger Environmental Programme, technical assistance was provided to support the MoPD in undertaking climate change vulnerability and risk assessments that:

(a) Provided a comprehensive picture of the impacts of climate change, climate variability and projected climate change impacts; and

(b) Facilitated decision-making on climate change risk management by key Agencies.

1.128. The support for this vulnerability assessment was over the period of two (2) years from September 2016 to 2018.

1.129. The project examined potential and current physical, economic, social and ecological trends and conditions in selected sectors related to climate change over specific timescales. The seven (7) priority sectors were:

1. Agriculture and food security;
2. Water resources;
3. Human health;
4. Coastal resources and fisheries;
5. Human settlements and infrastructure;
6. Biodiversity; and
7. Finance Sector (including insurance).

1.130. At the Second Public Hearing held virtually in the 12th Parliament, the MoPD informed the Committee that it commenced the strategising of an action plan to roll out the Vulnerability and Capacity Assessment as well as the financing and financial investment plan.

Integrated Island Management-Tobago

1.131. At the request of the stakeholders in Tobago, an Integrated Island Management approach was used for Tobago. Integrated Island Management (IIM) responds to the unique circumstances of small island ecosystems through development of holistic integrated management systems that operate at the scale of ecological, social or physical processes within Islands.

Findings with regards to the Water Resource Sector

1.132. The MoPD submitted the following findings as it pertains to the Water Resources Sector:

- The quality of the surface water is deteriorating in many locations as evidenced by high levels of biological oxygen demand, bacterial content, turbidity and the presence of chemical pollutants in rivers.
- The main threats are uncontrolled point water discharges, in particular from Industries and domestic sources, as well as the high level of erosion in the upper reaches of watercourses.
- Given the climate risk factors on water resources, the increasingly warmer climate, frequency of intensifying cyclones, droughts and floods are of major concern and present varying degrees of challenges to development of adaptation strategies.
- The highest risks from climate change are from variations in precipitation (localised) resulting in more instances of water contamination as pollution control systems are not designed to deal with variations resulting in increased instance of pollution and sedimentation of water resources.
- The communities within the Caroni River Basin (15 watersheds) and South West Tobago were identified as the most vulnerable.
- The recommended adaptation measures primarily focus on conducting risk assessments and integrating risk management into legislation, policy and practice.

Contamination of Waterways

1.133. The Committee was informed that the impact of climate change is going to exacerbate the existing situation as it pertains to the level of contamination in the waterways. Contamination becomes concentrated with increasing temperatures, decreasing rainfall, higher evaporation rates, and consequently results in an increase in the cost of water treatment.

1.134. The adaptation measures or approaches to reducing contamination risks lies with the various agencies with responsibility for pollution control.

1.135. Pollution control requires a holistic approach because of the nexus between pollution and water winning and water resources. The MoPD is therefore, currently seeking to engage various agencies and Ministries in integrating the findings of the Vulnerability and Capacity Assessment Report, 2019.

1.136. The Committee was informed that the MoPD tries to finance and support recommendations emanating from reports.

1.137. The MoPD indicated that it is in the process of developing a financial investment plan for rolling out the recommendations and findings of the Report in a holistic way given that various agencies and Ministries are required to take action to reduce the risks.

The need for collaborative effort to minimise threats to watercourses

1.138. WASA indicated that there must be a collaborative effort towards minimising the negative effects of activities that pose significant threats to watercourses which ultimately impacts on water availability, quality and flooding. These include, indiscriminate wastage, dumping, sedimentation of streams through poorly managed quarrying, disposal of effluent, discharge from non-functioning wastewater treatment plants, slash and burn practices and agricultural run-off.

Challenges with differentiating climate change impacts from developmental impacts

1.139. The MoPD indicated that one of the challenges with dealing with climate change impacts in a small island developing State lies with differentiating climate change impacts from developmental impacts. Issues such as upstream erosion, contamination from quarrying activities can only be differentiated from climate change impacts up to a certain point. As a result, the MoPD adopted a 'past days approach' of assessing the climate risks which involves identifying the intervention options to reduce the risks and revisiting and evaluating the risks overtime.

Institutional Arrangement for treating with Climate Change

1.140. The MoPD has a dedicated unit for treating with climate change, the Environmental Policy and Planning Division which deals with all environmental issues in Trinidad and Tobago. The

Division is both a combination of policy and securing financing and project execution unit for certain areas associated with climate change.

1.141. Many other Ministries are also lead in terms of executing some projects. For example, the Ministry of Agriculture, Land and Fisheries and the MPU.

FINDINGS

36) The MoPD commenced the strategising of an action plan inclusive of a financing and financial investment plan to roll out the Vulnerability and Capacity Assessment.

37) The communities within the Caroni River Basin (15 watersheds) and South West Tobago were identified as the most vulnerable to water contamination due to variations in climate which results in increased instance of pollution and sedimentation of water resources.

38) Climate change will exacerbate the existing situation as it pertains to the level of contamination in the waterways.

39) The adaptation measures or the approaches to reducing these risks of pollution would lie in the various agencies responsible for pollution control.

40) Pollution control requires a holistic approach among the agencies with responsibility.

41) There is need for a collaborative effort towards minimising the negative effects of activities that pose significant threats to watercourses which ultimately impacts on water availability, quality and flooding.

42) It is challenging to differentiate climate change impacts from developmental impacts.

RECOMMENDATIONS

15) We recommend that particular attention be paid to impact of climate change on water resources.

16) Further we recommend that the stakeholders involved in watershed management examine, discuss and implement innovative and necessary mechanisms to protect watersheds. Priority should be given to watersheds located in the Caroni River Basin given that it is most susceptible to climate change impacts.

17) **We recommend that the MoPD consolidate their efforts with all other stakeholders with responsibilities regarding the pollution and sedimentation of watercourses and establish a collaborative framework to address this growing challenge.**

The Role of DESALCOTT in Water Security

1.142. DESALCOTT produces and delivers to the Authority forty million gallons (40 mg) of desalinated water daily which is 16% of WASA's distribution. WASA's contract with DESALCOTT was renewed and is in force to deliver the daily amount until the year 2039 at a cost of US$6m monthly.

1.143. DESALCOTT's source of water is sea water and is not subject to all the issues associated with rainfall. However, there is an issue annually with the dry season which causes less run-off from local rivers and South America which causes the salinity of the water in the Gulf of Paria to increase and makes the treatment process difficult in achieving the 40mg per day. Notwithstanding, DESALCOTT is a significant component of WASA's water supply infrastructure.

WASA's Outstanding Bills to DESALCOTT and the arrangements made to settle such outstanding bills

1.144. WASA has some outstanding bills to DESALCOTT and has made arrangements to have these paid.

1.145. As at April 21st 2020, WASA was up to date with payments to the DESALCOTT, with the exception of one disputed invoice (Desal-533) in the amount of US$22,907.25 for the provision of excess water over the period July 01, 2019 to August 02, 2019.

1.146. The Authority secured loan funding in the amount of US$100.0Mn. which was approved by the Ministry of Finance (MoF) on January 13, 2020 and subsequently executed on February 19, 2020 with the following key terms and conditions:

i. Tenor – Fourteen (14) years;

ii. Interest Rate – Fixed at 5.6% per annum;

iii. Interest Payment – Payable Semi-Annually;

iv. Principal Repayment – Bullet at maturity; and

v. Security – Letter of Guarantee, pending finalisation of the Deed of Guarantee.

1.147. The purpose of the US$100.0Mn Loan was to pay:

i. The Authority's US$60.0Mn. Desalcott Revolving Facility held at Republic Bank Limited.;

ii. A US$5.0Mn. Short-Term Loan held at Republic Bank Limited utilised for payment of desalinated water purchases from DESALCOTT; and

iii. Outstanding arrears owed to Desalcott totaling US$35.0Mn

1.148. Invoice and payment details of the utilisation of the US$100.0Mn are in Appendix IX.

Revenue from customers supplied by DESALCOTT

1.149. Water from DESALCOTT is confined to:

- Companies in the Point Lisas Industrial Estate; and
- Other Customers – Residential, commercial and industrial customers in areas served by a mix of Caroni WTP and DESALCOTT.

1.150. The total annual revenue from rates received from the supply of water from DESALCOTT is estimated at $334.7M comprising of $303.5M from Point Lisas Industrial Estate and $31.2M from other customers. This estimate is based on the assumption that a mixture of supply from WASA's Caroni Water Treatment Plant and DESALCOTT is provided to customers in Central and South West Trinidad.

1.151. WASA informed the Committee that it has incurred a deficit in revenues from rates received because domestic customers receive 50-55% of the 40mg of water purchased from DESALCOTT and the balance goes to the industrial estate.

1.152. Further, WASA indicated that because the rate for water distributed within the industrial estate is $12 per cubic meter, the revenue received is sufficient to cover production costs. However,

a deficit is incurred when a rate of $3.50 per cubic meter is applied to any domestic, commercial or industrial outside of the industrial estate.

FINDINGS

43) WASA recently secured loan funding to pay outstanding bills to DESALCOTT.

44) WASA incurred a deficit in revenues from rates received because a greater percentage of water purchased from DESALCOTT is directed to domestic customers (50-55% of the 40mg).

45) There is a high level of inconsistency between the rates paid for water from DESALCOTT distributed within the Point Lisas Industrial Estate as opposed to domestic, commercial or industrial customers outside the estate which is affecting WASA's revenues.

RECOMMENDATIONS

18) We recommend that the use of desalinated water supplied by DESALCOTT to ensure industrial water security be reviewed in light on the high cost of this water to WASA and the inability of WASA to fully utilise the water supplied by DESALCOTT within the Pt. Lisas Industrial Estate and thus generate the revenues necessary to balance the cost of purchase paid to DESALCOTT.

The MPU's Water Sector Improvement Programme (WSIP)

1.153. In addition to developing the IWRM Policy, the MPU has developed a long-term, no-regret strategy to achieving continuous water supply, a Water Sector Improvement Programme (WSIP).

1.154. The WSIP specifically focuses on:

(i) Infrastructural changes to reduce Non-Revenue Water (NRW) through network enhancements and metering, and build resilience to climate change (storage and flood mitigation); and

(ii) Institutional changes to enhance governance and performance improvements in water-sector agencies.

1.155. In order to achieve the objectives of this program the following imperatives are to be undertaken:

1. Implementation of metering throughout the population (100% metering of the population);
2. Network optimisation to replace strategic high leakage mains and service connection, and de-bottling of the network;
3. Climate change investments to increase storage mitigate flooding, and localised production; and
4. Establishment of a performance-based culture in WASA.

Details of the IDB intervention -WISP

1.156. The Committee was informed by the MPU that

- the WISP was developed by the IDB intervention in collaboration with the MPU and WASA and would span a number of years;
- the WISP has a specific focus on NRW reduction which includes metering;
- Funds are available for strategic pipe replacement work under the WSIP.

1.157. The Committee was made cognisant that it is a challenge for WASA to be able to manage demand without the implementation of metering and for individuals to manage their conservation of water. As such, metering is an infrastructural improvement that the WISP is examining. The WSIP will also include NRW reduction not only from a leak repair and pipeline replacement perspective but also pressure management as well as climate change investments.

1.158. According to the MPU, the models of utility management have indicated the need to establish district metered areas or discreet areas of supply and manage flows and pressure within the areas. This would enable WASA's ability to pinpoint leaks in the system in both the network and customer sides. There is therefore need to segregate the country into district metered areas, measure and manage the use and supply within those areas.

1.159. With the recovered NRW water and metering, WASA has projected from a financial perspective that the entire programme will have a 17% internal rate of return. This means with recovered NRW and metering, WASA can increase revenue and simultaneously decrease its operating cost. It was also indicated that the programme pays back for itself, therefore there will be no need to increase the subvention, or for government to service the debt as WASA will be able to pay or service its loan given the savings it will obtain from their more efficient and lean operations.

FINDINGS

46) The Water Sector Improvement Programme (WSIP) addresses the implementation of metering, consumption management, Non-Revenue Water (NRW) reduction and climate change investments.

47) Metering will assist individuals to manage their consumption of water and WASA with managing demand.

RECOMMENDATIONS

19) We recommend the continuation of the WSIP.

20) We recommend the submission of a status report on the WSIP by WASA as it pertains specifically to increasing supply.

WASA's Programmes and Initiatives

WASA's PSIP Programmes

1.62. As it pertains to the water supply project to La Brea Industrial Development Company Limited (LABIDCO) and Union Industry Estate the Committee was informed that four (4) work packages encompasses the project. Details are in Appendix X.

1.63. Further, Appendix XI provides a summary of projects under the Community Water Improvement Programme (CWIP).

The National Social Development Programme (Water Component)

1.160. The National Social Development Programme (NSDP) Water Component (Bond Issue) involved the implementation of five hundred and thirteen (513) projects to improve the water supply to communities experiencing either water shortages or restricted access to pipe-borne water.

1.161. To date, five hundred and two (502) projects which represents approximately 98% have been completed with eight (8) projects on hold and three (3) being no longer required because of

system re-configuration. The programme has benefitted approximately eighty-two thousand (82,000) persons.

1.162. However, WASA has not received funding for this programme since 2015.

Water and Wastewater Construction/Refurbishment Programme

1.163. WASA has been pursuing projects in water production, transmission and distribution. See Appendix XII for further details.

Potential Wastewater Reuse as a Possible Source of Water

1.164. WASA indicated that the Malabar Plant was considered the and currently the San Fernando Plant is being considered for a volumes of water between 40,000 and 45,000 cubic meters per day ultimately, approximately 8-9mgs.

1.165. WASA indicated that smaller plants will be more challenging. Therefore, its main focus is the San Fernando Plant and how the water from this Plant can be utilised.

1.166. WASA also indicated that the San Fernando plant has potential for industrial application or agriculture to the east or San Fernando.

Status of Wastewater Initiatives

1.167. WASA's Wastewater Construction/Rehabilitation Programme currently focuses on the construction of the Malabar and San Fernando Wastewater Treatment Plants and associated Collection Systems as well as the Maloney Wastewater Treatment Plant under the Multi-Phase Wastewater Rehabilitation Phase 1 Programme.

1.168. Funding for Phases II and III has to be sourced in order to expand centralised wastewater coverage in Arima and San Fernando.

1.169. The status of the San Fernando and Malabar components as well, the status of the Beetham Wastewater Treatment Plant and the Treatment Plant at Matura is at Appendix XIII.

1.170. The Modernisation of the Wastewater Infrastructure Programme comprises the construction of the South West Tobago Wastewater Project as well as the design and construction of the Trincity Wastewater Treatment Plant. This Loan Operation is 78% complete with works

completed in South West Tobago at Bon Accord and Samaan Grove. The project at Trincity has commenced and is in the Design Phase. The project is scheduled to be completed in September 2021. Other wastewater initiatives include the refurbishment of wastewater treatment facilities at Beetham, Lange Park, Frederick Settlement, Edinburgh 500 and Couva North and South.

1.171. WASA is also actively looking at the possibility of piping effluent from the San Fernando Wastewater Treatment plant which is currently under construction to the Point-a-Pierre refinery to replace the water that is currently used for industrial purpose so the Point-a Pierre refineries can be considered for alternative uses including potable water supply.

1.172. As it pertains to the Beetham Reuse Plant, WASA also indicated that the intent of the Beetham Reuse Plant was to take the effluent from WASA's Beetham Wastewater Treatment Plant to be further treated for industrial quality water for Point Lisas. However, this did not occur. As a result, the wastewater from WASA's Beetham Wastewater Treatment Plant is currently discharged into the environment.

Wastewater Services in Tobago

1.173. In Tobago, there has been a significant improvement in wastewater services with the construction of two new sewer systems at Bon Accord and Samaan Grove. This has resulted in over four hundred (400) new wastewater customers and an improvement in the wastewater coverage to customers in the coastal areas of Crown Point, Pigeon Point, Black Rock, Golden Grove and Bucco.

The Quantity of Wastewater Effluent Generated from WASA and Private Sector Wastewater Treatment Plants

1.174. The quantity of wastewater generated from WASA facilities is estimated at 24.3 million gallons daily (mgd). The quantity from the private sector is estimated at 12.1 mgd.

Potential to Convert Effluent Water for Reuse for Agricultural, Industrial or Potable Water Use

1.175. According to the WASA, once wastewater is properly treated, it can be recycled for agricultural, industrial or even potable water use. The end use will dictate the level of treatment required. As it pertains to using wastewater for agriculture, the Committee was informed that

the nutrient (nitrogen and phosphorus) content of the treated wastewater has the benefit of acting as a fertiliser. The type of crop to be irrigated will dictate the level of treatment. The food crop types are listed below:

- Food crops to be eaten raw: crops which are intended for human consumption to be eaten raw or unprocessed;
- Processed food crops: crops which are intended for human consumption not to be eaten raw but after treatment process (i.e. cooked, industrially processed); and
- Non-food crops: crops which are not intended for human consumption (e.g. pastures, forage, fiber, ornamental, seed, forest and turf crops).

1.176. Treated effluent can also be used in industries as part of the industrial water usage. The industry type will dictate the effluent quality parameters. Treated effluent can be used for processing water; cooling water, recirculating cooling towers, wash down water; washing aggregate; making concrete, soil compaction, dust control.

1.177. However, the use of recycled water for drinking is less common, as many people do not accept the use of treated wastewater from sewers to taps. Recycled water using extensive purification methods to achieve potable water quality is used in countries like Singapore, Australia and Namibia, and States such as California, Virginia and New Mexico where water is very scarce.

1.178. A cost-benefit analysis is a key element that is required to assess the re-use potential if the Authority proposes to pursue wastewater reuse as one of the main avenues of New Water. The social and environmental components will also be required in the analysis.

FINDINGS

48) Once wastewater is properly treated, it can be recycled for agricultural, industrial or even potable water use.

49) Many people may not accept the use of treated wastewater from sewers to taps.

50) Currently, wastewater from WASA's Beetham Wastewater Treatment Plant is currently discharged into the environment. Larger plants such as the San Fernando and the Malabar

Plants are being considered for potential wastewater re-use plants because they are less challenging.

51) A cost-benefit analysis which includes the examination of social and environmental components is a key to assessing re-use potential if the Authority proposes to pursue wastewater reuse as one of the main avenues of New Water.

RECOMMENDATIONS

21) Building storage capacity using treated wastewater from small to medium sized plants may be beneficial particularly in times of crisis or scarcity to provide a localised supply, we therefore recommend that consideration be given to the use of small to medium size plants in addition to large plants for treated wastewater reuse.

22) We recommend cost-benefit analyses be conducted for significant wastewater treatment plants inclusive of the social and environmental components in order to assess the re-use potential of treated wastewater.

23) We recommend that consideration be given to the re-use of wastewater from WASA's Beetham Wastewater Treatment Plant for industrial and other alternative use/s.

Status of the Beetham Wastewater Reuse Plant

1.179. The MPU informed the Committee that the Beetham Wastewater Reuse Plant (BWRP) is being managed by the National Gas Company of Trinidad and Tobago Limited (NGC) through a Memorandum of Understanding (MoU) with WASA, agreed to in 2013.

1.180. The MPU indicated that the NGC is better positioned to respond to the status of the project.

1.181. WASA shared a similar position to the MPU. Further, WASA indicated that the project was originally a NGC project and as such the Authority did not have any direct involvement with respect to the management or funding of the project.

1.182. Based on a request for additional information on the matter, the Committee was informed by WASA by letter dated May 15, 2020 that the WASA entered into a MoU in 2013 with the

NGC *inter alia*, *"to explore and consider the feasibility and suitability of constructing infrastructure as part of their mutual cooperation for:*

a) Water Recycling through the treatment of effluent from the Beetham Wastewater Treatment Plant;

b) Storage and Transmission of water from the Beetham Wastewater Treatment Plant to the Point Lisas Industrial Estate; and

c) Distribution of Industrial quality Water within the Point Lisas Industrial Estate."

1.183. The MoU was subject to required approvals and the conclusion and execution of a legally binding agreement between NGC and WASA. However, that legally binding agreement was not entered upon.

1.184. Notwithstanding, NGC initiated the Beetham Reuse Project including:

i. BWRP with a capacity of 50,000 cubic metres daily including a Feedwater Storage Facility (18,000 cubic metres) and a Product Water Storage Facility (8,200 cubic metres); and metre diameter Product Water Pipeline with a total length of approximately 40 kilometres (km)of pipe between the proposed BWRP and the Point Lisas Industrial Estate.

ii. Product Water Storage Facilities at Point Lisas with a total capacity of 32,500 cubic metres with a pumping station.

1.185. In 2014, under a Design & Build arrangement, NGC procured the services of a contractor to execute the works of design and construction of the BWRP including the operation of the plant for five (5) years. The contract was terminated by NGC in 2015 with a significant quantity of incomplete works, including incomplete process units at the Plant's site, segments of incomplete product water pipeline and incomplete product water storage facilities at Point Lisas. Equipment procurement as well as engineering designs however were reportedly deemed generally completed.

1.186. The foundation for the Re-use plant was constructed. Equipment for reuse plant was received and is in NGC's possession. Approximately 16.2 km of pipe was installed from Point Lisas to Guayamare. The storage tanks were approximately 75% completed.

1.187. The Committee wrote to the NGC on March 16, 2020 regarding the status of the BWRP. A response was received from the NGC by letter dated April 7, 2020 confirming that NGC duly terminated the contract in relation to the BWRP around December 2015 and the Board of NGC subsequently agreed not to continue with the Project. The Committee was also informed that:

- NGC was currently engaged in arbitration proceedings with the contractor for, *inter alia*, the recovery of certain sums expended on the BWRP;
- in parallel with the arbitration process and having received the advice of external Attorneys and the approval of the Board of the NGC, the NGC has been in the process of taking the necessary steps to dispose of the assets acquired for the BWRP;
- NGC received a request from the Minister of Public Utilities and the Minister of Energy and Energy industries for the transfer of these assets to the WASA to be utilised to assist in increasing the WASA's transmission main capacity and better supply the nation;
- NGC is amendable to acceding to this request for the transfer in the best interest of Trinidad and Tobago.
- NGC has reached out to WASA with a view to engaging in discussions on suitable terms and conditions for the transfer of the assets. Discussions have commenced and are ongoing and any agreed terms and conditions would be subject to the approval of the Boards of both the NGC and WASA. The Committee noted that the transfer of the BWRP assets to WASA was agreed.

The Use of Water from the Beetham Reuse Project for WASA's Mainstream Supply

1.188. The Committee was informed by the NGC that it does not intend to continue with the BWRP. However, if agreement on terms and conditions are reached and the assets are transferred to the WASA, it would be within the purview of the WASA to determine how it will use the water in the best interest of Trinidad and Tobago.

The Implications to Converting the Beetham Project into a Water Storage Facility

1.189. The MPU informed the Committee that the BWRP was initially conceptualised to supply eleven (11) IMGD of water for industrial use by converting the high-quality, treated effluent from the Beetham Wastewater Treatment Plant (WWTP) to high-grade industrial process water. The BWRP was conceptualised to include:

i. A treatment plant with preliminary and secondary treatment, and UV disinfection; and

ii. Product water storage faculties at Beetham Rees site that is 10% (1.1 IMG) of the plant design, and 7.1 IMG of storage located at the site of acceptance of the feedwater.

1.190. While storage was included in the project design, the central component is the treatment facility. Therefore, the treated effluent from the Beetham WWTP will first need to undergo additional treatment (reuse plant) before it is stored and then later used for potable/industrial use. However, treated wastewater effluent that meets irrigation water standards without needing additional treatment (reuse) is a good source of supply for agricultural uses.

1.191. The MPU was unable to advise on whether there is consideration to convert the Beetham project to a storage facility.

1.192. The MPU also indicated that the NGC is better positioned to respond to the plans for the Beetham project. However, the MPU cautioned that any decision on the BWRP should take into account the market demand for this reuse water, particularly since the cost of reuse treatment is similar to desalination and both facilities use similar membrane technology.

1.193. The MPU also advised that a further investment decision should consider how WASA intends to meet the existing 24/7 supply gap for the country and whether increasing production is the most cost-effective and sustainable strategy in comparison to reducing NRW and meeting the shortfall in localised areas on the extremities of the network using traditional water sources.

FINDINGS

52) The Beetham Reuse project was originally an NGC project and WASA did not have any direct involvement with its management or funding.

53) NGC initiated the Beetham Reuse Project without the legally binding agreement with WASA.

54) A contractor was procured in 2014 to execute design and construction works but was terminated one (1) year later by the NGC.

55) NGC is taking the necessary steps to dispose of the assets acquired for the Beetham Wastewater Reuse Plant (BWRP).

56) The Ministers of Public Utilities and Energy and Energy Industries requested NGC to transfer the assets of the BWRP to WASA. NGC is amendable to said request in the best interest of Trinidad and Tobago.

57) The treated effluent from the Beetham WWTP will first need to undergo additional treatment (reuse plant) before it is stored and then later used for potable/industrial use.

58) Treated wastewater effluent that meets irrigation water standards without needing additional treatment (reuse) is a good source of supply for agricultural uses.

59) The cost of the reuse treatment is similar to desalination and similar membrane technology is used for treatment.

60) In considering the use of the BWRP, the market demand for reuse water, and the cost of reuse treatment should be considered.

RECOMMENDATIONS

24) We recommend that in determining the best use of the BWRP that an examination be conducted to determine the market demand for treated waste reuse, the cost of wastewater treatment for industrial reuse and other alternate uses.

Public Education Initiatives to encourage Water Conservation

MPU's Role in Educating the Public on Water Conservation

1.194. The MPU regularly collaborates with WASA and produces its own water conservation communication messages.

1.195. In setting policy and strategy for the water sector the MPU has recommended water conservation and efficiency as a priority area for intervention given that the average domestic consumption is twice the WHO recommended rate.

1.196. The draft National IWRM Policy 2018 puts forward the MPU's policy position on water conservation as follows:

a. Introducing an equitable water tariff that is based on consumption which should be facilitated by the installation of universal metering; and

b. Encouraging water use efficiency, water reuse and recycling of wastewater.

1.197. The MPU primarily relies on WASA to educate the public given its mandate from the Water and Sewerage Act Chapter 54:40 to promote *"…the conservation and proper use of water resources…"*

1.198. Notwithstanding, the MPU issues regular communication to facilitate public understanding of the water sector. According to the MPU, the procedures in place for conserving water in a crisis are specific to the Water and Sewerage Act Chapter 54:40 and enforced by WASA. This includes:

i. The power to prohibit or restrict temporarily use of hosepipe; and
ii. Provisions for WASA to make byelaws to prevent waste, undue consumption, misuse or contamination of water supplied by it or water purveyors.

WASA's Efforts to Encourage Water Conservation

1.199. The Committee was informed that WASA has been spreading to the public the message of conservation. WASA indicated the need for conservation and demand management to be implemented together with the water winning projects.

1.200. In terms of how comprehensive, aggressive and effective WASA's conservation programmes have been thus far, the Committee was informed that WASA promotes conservation at the school level through its public education center and has had different initiatives in this regard over the years. This initiative is coupled with WASA's water hose restriction which has been in place since January, 2019. WASA has also been engaging in patrols and applying the relevant charges to persons who are in breach.

1.201. WASA indicated the need for the consciousness that water is finite. WASA also indicated that athough punitive measures will continue, people need to understand the need to conserve water.

1.202. The WASA Act and other laws related to the Authority allows for compliance as it pertains to the conservation of the water resource. However, WASA indicated that there is need for a comprehensive public education strategy and related measurable to gauge the effectiveness of the strategy.

Promoting water efficiency in agriculture

1.203. WASA submitted that it promotes conservation of water in general with emphasis on the residential segment and there is no initiative specifically promoting water efficiency in agriculture.

FINDINGS

61) There is need to convey data to the public to encourage the public to conserve water.

62) There is the need to use water sensor technology to assist with conserving water.

63) The MPU collaborates with WASA and produces its own water conservation communication messages. However, the MPU primarily relies on WASA to educate the public.

64) The MPU issues regular communication to facilitate public understanding of the water sector.

65) The MPU has identified water conservation and efficiency as a priority area for intervention in setting policy and strategy for the water sector.

66) Average domestic consumption is twice the World Health Organisation (WHO) recommended rate.

67) There is need for conservation and demand management to be implemented together with the 'water winning' projects.

68) The WASA Act and other laws related to it, provides for enforcement as it pertains to the conservation of the water resource.

69) There is need for a comprehensive public education strategy and related measurables to gauge the effectiveness of the strategy.

70) WASA promotes conservation of water in general with emphasis on the residential sector and there is currently no initiative specifically promoting water efficiency in agriculture.

RECOMMENDATIONS

25) We recommend that WASA encourage the use of sensored taps and other technology to conserve water in its public education programme.

26) We recommend that conservation and demand management be implemented simultaneously with water winning projects.

27) We recommend the implementation of a comprehensive public education strategy that can be measured in order to determine the success of the strategy.

28) We recommend that including in the comprehensive public education strategy should be a specific initiative directed at promoting water efficiency in agriculture.

Status of Achieving Goal 6 of the Sustainable Development Goals, Clean Water and Sanitation

1.204. The MoPD indicated that similar to that of the Sustainable Development Agenda, the Vision 2030 Development Strategy, emphasises water and sanitation as being fundamental to human sustenance, health and dignity, and by extension, to economic opportunity. It also notes that critical gaps in accessing water and sanitation services still exist.

1.205. Through the National Performance Framework, the MoPD reports on the progress of national outcomes, outputs and indicators that have been agreed upon across Government. Information provided by the MPU to the MoPD for the water and sewerage sector, supported the measurement of the following indicators:

- Percentage of the population with access to potable water to their homes (amount of residents with piped and standpipe access to water services as a percentage of the total population) was 93.6 percent (baseline) in 2010. As of May 2019, that figure remained unchanged;
- Percentage of the population with pipe access to water (amount of residents with direct service connections to their homes as a percentage of the total population) in 2017 was 87 percent (baseline). As of Mary 2019, that figure remained unchanged;
- Total water production (measures average amount of water produced throughout the year from various sources such as groundwater, surface, desalination and wastewater reuse) in 2019 was 230 IMGD. The target for 2020 was 277.8 IMGD;
- Service level to residents (measures the estimated amount to customers that receive water based on established service level categories). Categories are based on water received in hrs per week i.e. 24/1, 24/2, 24/3, 24/4, 24/5, 24/6, 24/7 and were as follows:

Table 7

Percentage of water received in hours per week in the Dry and Wet Seasons in the year 2017

No.	Dry Season (2017)	Wet Season (2017)
1.	24/7-31%	24/7-60%
2.	24/5-24/7-26%	24/5-24/7-12%
3.	24.3.5-24/5-13%	24/3.5-24/5-7%
4.	24/2-24/3.5-25%	24/2-24/3.5-17%
5.	24/1-24-2-6%	24/1-24/2-4%

The above figures remained unchanged as of May 2019; and

- NRW percentage. Losses can be real losses (through leaks, sometimes also referred to as physical losses) or apparent losses (example, through theft or billing/metering inaccuracies) in 2017 was 50 percent baseline. The target for 2020 was 45 percent.

FINDINGS

71) There has been no change with respect to the baseline figures for the percentage of the population with access to potable water in their homes, the percentage of the population with pipe access to water and service levels to residents.

72) The target for total water production has been increased by 47.8IMGD from 230 IMGD in the year 2019 to 277.8 IMGD in 2020.

73) The target for Non-Revenue Water (NRW) was decreased by five percent (5%) from fifty to forty-five percent (50-45%) from 2017 to 2020.

Allocation for Water Resource Management

1.206. The MPU received an allocation of $500,000 in fiscal 2021 for the Water Resources Management. The Committee questioned the adequacy of the funding considering the work required to implement the IWRM Policy. The MPU anticipates that the allocation will be able to finance the beginning of the project. The MPU is awaiting a definitive position from the Cabinet given that the extent of funding required will be determined by the model selected.

Expenditure on Water Security Projects

1.207. The MoPD submitted that the total expenditure for Water Security Projects in 2019 was TT$71.1 million with the total allocation for 2020 being TT$70.5 million.

1.208. Details of the projects aimed at water security are highlighted in Appendix XIV.

FINDINGS

74) The allocation for Water Resource Management is small and is only enough to finance the beginning of the IWRM Project.

75) The allocation for Water Security Projects decreased from TT$71.1 million in 2019 to TT$70.5 million in 2020.

76) The Water Sector requires additional funding for the management of the water resource and water security projects.

RECOMMENDATIONS

29) We recommend adequate additional funding for the implementation of integrated water resource management policy and water security projects.

WASA's Customer Services

1.209. As it pertains to customer service and interaction, WASA has a customer call centre which is its primary mode of communication with customers.

1.210. WASA has increased the complement of staff within the call centre by approximately 25%. Therefore, it has been accepting more calls.

1.211. Prior to the increase in staff, WASA had an acceptance rate of between 40 to 50-55%. In February 2020, WASA's acceptance rate was 80%.

1.212. WASA also has a service application which can be downloaded to a smartphone. The Authority indicated that it is seeking to improve the functionality of the application. Currently, customers can pay a bill, report a leak or request a truck borne water supply using the application.

1.213. WASA also has other modes that people can utilise to communicate with the authority such as Facebook, email and Twitter. Additionally, its schedule is on its website. The schedules are

updated based on any changes that occur and where they need to be amended based on water availability. This is an ongoing process.

WASA's System for Assessing its Customer Services

1.214. The Committee was informed that WASA records the number of calls it receives, accepts and responds to.

1.215. WASA acknowledges that it has some groundwork to do to achieve its target of 90% in terms of customer service. Currently, WASA's customer service is at 80%.

Closure of WASA Service Centre, Couva

1.216. WASA's service center at Couva is being closed. The decision to close the service centre was based on a review of WASA's customer interaction and cost cutting initiatives. Notwithstanding, WASA is seeking alternative mechanisms for interacting with the public such as WhatsApp, Facebook and its Website to receive payments and reduce personal interaction and possibility of infection due to the Covid-19 pandemic.

FINDINGS

77) WASA has been able to accept more calls at its Call Centre owing to an increase in the complement of staff in this department.

78) WASA is seeking to improve the functionality of its service application.

79) WASA's customer service is at 80% efficiency and there is some groundwork to be done to achieve the target of 90%.

80) WASA's Service Centre at Couva is being closed based on a review of WASA's customer interaction and cost cutting initiatives.

RECOMMENDATIONS

30) Given that some persons may not be amendable to the use of technology and by extension the WASA application and bearing in mind the imminent closure of the service centre at Couva we recommend that WASA implement alternate mechanisms for bill payment, reporting a leak or request for a truck borne water supply. Consideration could be given

to a drop box at convenient locations. The role of the call centres in this regard becomes even more critical and therefore every effort should be made to accept calls.

OBJECTIVE 2.

THE MEASURES REQUIRED FOR IMPROVING WATER SECURITY

Measures Required to Meet Existing Supply Challenges

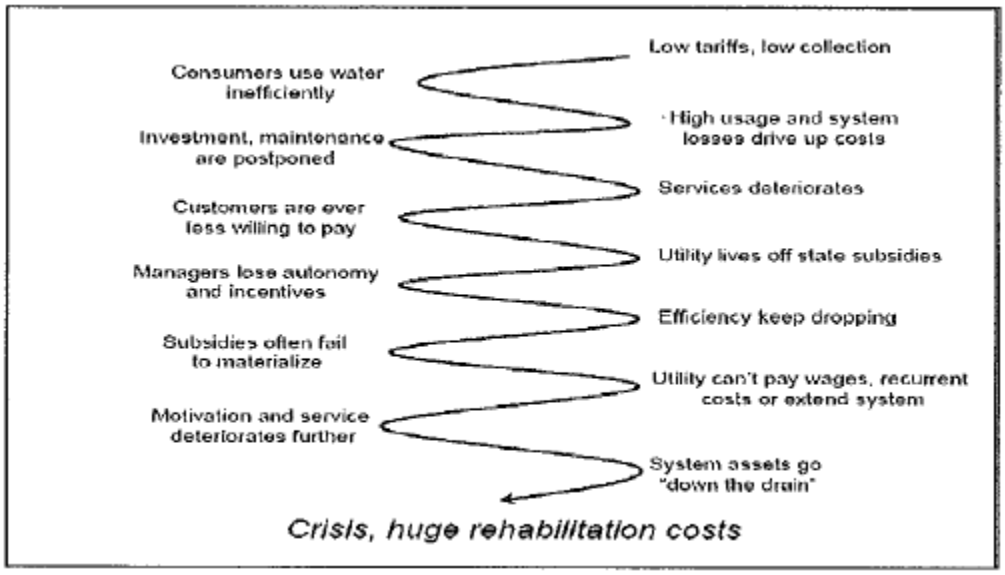
2.1 The MPU informed the Committee that WASA is still striving to meet the existing supply challenges of providing 24/7 water to the population.

2.2 While 50% of WASA's customers receive 24/7 supply, the remaining tend to utilise on-site storage (tanks) to buffer the impact of an infrequent supply. The strategy of both on-site storage and rainwater harvesting (especially for rural customers) has allowed the population to maintain some resilience through regularity in their supply of water.

2.3 The 24/7 gap is caused by the fact that forty to fifty percent (40 to 50%) of the water WASA produces (73% of demand) earns no revenue (NRW). This is despite high volumes of water production (72% more than demand and 22% more than Jamaica) that is higher than demand (2 times the WHO, 200% Jamaica and 40% more than Barbados). The high NRW is divided in half between physical losses (pipes, facilities, valves etc.) and commercial losses where actual consumption is greater than volume of water billed because of excessive use facilitated by no metering and economic incentive.

2.4. The high NRW is a culmination of infrastructure and institutional issues that, according to the World Bank, is a spiral of decline as depicted in figure 1 below:

Figure 1 Spiral of Decline due to infrastructure and institutional issues



2.5. Given the foregoing, the MPU proffered that in effect, water security strategies should include:

(a) Water supply of adequate quality and quantities to sustain life. This requires infrastructure to meet the demand needs including:

i. Surface water intakes and groundwater wells to harness the natural water, efficient treatment systems;

ii. A robust and interconnected network;

iii. Adequate water storage; and

iv. Metering of water moving around the network and reaching customers.

(b) Sustainable use, conservation and protection of water resources to ensure that the supply of water protects well-being, enhances socio-economic development and preserves vital ecosystems. Collection and treatment of wastewater is also a function of preserving the quality of the country's natural water resources.

(c) Safeguarding against the impacts of water-related disasters and climate change and variability. This involves building water and wastewater infrastructures that can withstand the risks posed by natural disasters and climate change and variability.

The reason behind the WASA's spending on increasing the supply of water, rather than fixing its aged distribution network

2.6. The Committee enquired into the reason behind the WASA's spending on increasing the supply of water, which is not an issue rather than fixing its aged distribution network.

2.7. WASA indicated that there is need to address both the supply and demand for water.

2.8. WASA also indicated that in some areas there is a need for an increase in supply in localised areas whereas in others it is a piping issue. The solution to the water problem is neither to singularly improve production and the volume of water being produced. If there is a localised/population problem, the supply must be increased, where transmission is inadequate this would also require an increase. Water management in terms of water pressure as well as conservation by users is also required to address the water problem.

FINDINGS

81) WASA is still striving to meet the existing supply challenges of providing 24/7 water to the population.

82) Fifty percent (50%) of WASA's customers receive 24/7 supply, however, the remaining utilise on-site storage (tanks) to buffer the impact of an infrequent supply.

83) The gap in 24/7 supply is attributed to forty to fifty percent (40 to 50%) of the water WASA produces (73% of demand) earning no revenue (NRW).

84) The water security strategies proffered by the MPU are practical and should be implemented.

85) The solution to the water problem is not to singularly improve production and the volume of water being produced.

86) There is need to address both the supply and demand for water.

RECOMMENDATIONS

31) We recommend an incentive for storage tanks for customers who do not receive a 24/7 supply.

Involving Citizens in Rainwater Harvesting as a Water Security Measure

2.9. According to WASA, Trinidad and Tobago has a history of storing rainwater to supplement pipe-borne water supply.

2.10. WASA informed the Committee that it has been encouraging citizens to participate in rainwater harvesting as a water security measure. The initiative is being undertaken by the Adopt a River Programme through Public Education and through the construction of Integrated Rainwater Harvesters in partnership with Habitat for Humanity.

The Implications to Encouraging the use of Underground Cisterns to Retain Rainwater

2.11. Information submitted by WASA indicated that implementation of an underground system reduces demand for potable water from the public distribution system improving service levels to customers on the network.

2.12. The MoRDLG informed the Committee that cisterns are primarily used for storing water for domestic and other purposes. The immediate implication is that of the cost factor in the installation of cistern domestically. Additionally, cisterns must be designed appropriately to allow entry for inspection, maintenance and sanitising. Site suitability/feasibility analysis, soil testing and catchment analysis are also major considerations prior to design and construction. It is to be noted that the maintenance of underground cisterns may be most challenging while the treatment of water (for human consumption) will require careful monitoring and vigilance. Notwithstanding, the use of underground cisterns is encouraged in areas devoid of pipe-borne water and where agricultural activities take place on a relatively large scale.

2.13. The MoPD informed the Committee that the use of underground cisterns to retain water for consumption, agricultural use, or other purposes would help with water conservation. The availability of the stored rainwater would minimise the need for potable water supplied by WASA, and aid with the sustainability of the water supply in Trinidad and Tobago. However, care must be taken to ensure the cisterns are properly and safely constructed and placed in the most appropriate location. There would also be a role for the Ministry of Health to give guidance regarding such structures and the control of certain insect vectors as well as possibly WASA to issue permits re same.

The Number of Applications Received for Approvals for Developments Containing Construction of Rainwater Harvesting Systems such as Cisterns

2.14. The MoRDLG informed the Committee that all Municipal Corporations have indicated that no such applications were received for the construction for rain/storm water harvesting systems.

2.15. Similarly, the MoPD indicated that its databases did not reveal any applications for such construction. Notwithstanding, the MoPD also indicated that such data is not usually collected by the TCPD during its daily activities.

2.16. The TCPD indicated that these types of structures have been a feature of older homes in parts of Trinidad and Tobago. Therefore, the TCPD would recommend these types of structures.

Incentives for the use of rainwater

2.17. The Committee inquired into the offering of incentives for the use of rainwater, including the construction of cisterns and other measures outside of the agricultural sector. The MPU indicated that it is conducting further research into rainwater harvesting and the ways it can be incorporated in WASA's system. Additionally, the MPU indicated that research is in progress to make one or two programmes complementary to rainwater harvesting.

FINDINGS

87) Trinidad and Tobago has a history of storing rainwater to supplement pipe-borne water supply.

88) WASA has been encouraging citizens to participate in rainwater harvesting as a water security measure through its Adopt A River Programme (AARP), and through the construction of Integrated Rainwater Harvesters in partnership with Habitat for Humanity.

89) Implementation of an underground system for storage and distribution reduces demand for potable water from the public distribution system, improving service levels to customers on the network.

90) Factors to consider when implementing underground systems include cost, inspection, maintenance, sanitising, site suitability/feasibility analysis, soil testing and catchment analysis.

91) Maintenance of underground cisterns may be most challenging while the treatment of water (for human consumption) will require careful monitoring and vigilance.

92) The use of underground cisterns to retain water for consumption, agricultural use, or other purposes would help with water conservation.

93) The Ministry of Health will have a role in providing guidance regarding the implementation of an underground system.

94) The MoPD does not usually collect information on households with cisterns during its daily activities.

95) The MPU is conducting further research into rainwater harvesting for incorporation into WASA's system.

RECOMMENDATIONS

32) We recommend that the stakeholders involved in water security examine the underground water harvesting system in detail for possible implementation by individual households and communities particularly those that do not receive a supply or a regular supply of water.

33) We further recommend that consideration be given to an incentive for implementing an underground rainwater harvest system.

The Institutional Arrangements Necessary for a Water Crisis

2.18. The Committee was informed by the MoPD that the MPU will be the lead agency in coordinating institutional arrangements necessary to prevent a water crisis.

2.19. According to the MPU a water crisis, in this instance, is a situation of water scarcity which according to UN-Water is defined as "scarcity in availability due to physical shortage, or scarcity in access due to the failure of institutions to ensure a regular supply or due to a lack of adequate infrastructure."

2.20. The MPU also informed the Committee that in Trinidad and Tobago, there is no shortage of water resources.

2.21. The MPU indicated that according to the WRA, Trinidad and Tobago experiences rainfall that translates to 1,800 IMGD (Trinidad) and 100 IMGD (Tobago) of both ground and surface water. This equates to 0.5IMG/person/year which is 25 times the UN water scarcity benchmark of 0.02IMG/person/year.

2.22. The challenge is in ensuring continuity of supply of water.

2.23. However, if a water-related disaster were to occur that would create a situation of water scarcity. In such an instance, the institutional arrangements that should be put in place should follow the approach used by Western Cape Province, South Africa in dealing with the drought of 2016/2017.

2.24. The MPU indicated that the Western Cape Province was able successfully managing water in a time of water scarcity by taking the following steps:

(a) Convening of an Inter-Governmental Committee to evaluate drought/water crisis projects. This should include stakeholders such as Office of the Prime Minister, MPU and its agencies (WASA, WRM, MET Division), the EMA, MALF, MoRDLG and Regional Corporations, the Ministry of National security and its agencies (Fire, Police, Defense Force, and the ODPM.
(b) Prioritising funds to guarantee water supply to hospitals followed by schools and education facilities.
(c) Budget re-prioritization and funding allocation for interventions outlined in the Drought/Water Crisis Risk Register.
(d) Publishing guidelines for standardising water restrictions and associated penalties.
(e) Appointing water specialists to manage water resources.
(f) Launching a water scarcity, communication and awareness campaign.
(g) Fast-tracking environmental permissions for urgent infrastructure projects that can improve the supply of water.

2.25. The MoRDLG submitted the following as it pertains to some of the institutional measures necessary to prevent a water crisis:

1. Enforcement of water and related laws, by-laws, policies;
2. Preparation and implementation of water security action plans;

3. Monitoring and regulation of water services (e.g. data collection, storage analysis);
4. Timely collection of water rates;
5. Engagement of local leaders, farmers and business managers to understand their needs and priorities;
6. Inclusion of community-based organisations, electronic and print media, social media, and schools to streamline water utilisation methodology.

The need for a multidimensional approach and IWRM approach to be taken to achieve water security

2.26. WASA indicated that based on the UN's definition for water security it is clear that it requires a multipronged, multidimensional approach in order to successfully achieve its goal, including the adoption of an IWRM approach for dealing with this precious resource.

2.27. Similarly, the WRA indicated that the IWRM is not unique to Trinidad and Tobago, it is a global process. IWRM speaks to the fact that water has a direct link with land use planning and environment and in order to manage water resources it requires integration and coordination with other managers of water such as the agricultural sector, watershed, forestry and climatology.

The Need to Encourage and Educate All Sectors to Include Water Security in Their Policies and Strategies

2.28. According to the MoRDLG, encouraging and educating all sectors to include water security in the respective polices and strategies is critical to sustainable management of water and climate variability. For example:

1. Public health- to address safe water, environmental sanitation and human hygiene;
2. Economic growth – income generation relies heavily on water availability for agriculture, energy production and other livelihood activities;
3. Environmental sustainability – natural ecosystems rely on water and deteriorate rapidly when deprived of natural flows;
4. Disaster risk reduction – floods and landslides can be catastrophic events affecting lives and local economies.

2.29. Additionally, the MoRDLG indicated that specific interventions which can be adopted to facilitate water security include:

- Construction and management of watercourses diversion (weirs & barrages), storage (retention and detention ponds, damns), conveyance (canals, pipes, gates and valves);
- Improved organisation and management of water structures and systems (asset management leak detection, metering);
- Climate-proofing of infrastructure;
- Agroforestry;
- Afforestation and forest conservation;
- Restoration and conservation of wetlands and/or coastal ecosystems;
- Vegetation/bio-structural engineering for riverbank or slope stabilisation, erosion control, fisheries and biodiversity;
- Stormwater management (reduction of runoff and sedimentation) and river and floodplain management (riparian buffers, controlled flooding, levee set-back/removal);
- Awareness raising and social marketing campaigns (regarding water security risks, improved water use behaviours and practices);
- Capacity building of water users (soil and water management for farmers);
- Livelihood diversification;
- Collective action, community mobilisation (riverbank or pond clean-ups, waste and wastewater recycling and reuse);
- Education and curriculum development on water security; and
- Organisational change management.

FINDINGS

96) The MPU will be the lead agency in coordinating institutional arrangements necessary to prevent a water crisis.

97) There is no shortage of water resources in Trinidad and Tobago as reported by the MPU. The challenge is in ensuring continuity of supply of water.

98) A multipronged, multidimensional approach is required to achieve water security. The institutional arrangements that should be put in place should follow the approach used by Western Cape Province, South Africa in dealing with the drought of 2016/2017.

99) Encouraging and educating all sectors to include water security in the respective polices and strategies is critical to sustainable management of water and climate variability.

RECOMMENDATIONS

34) We recommend the establishment of a risk prevention plan for a water crisis which should include the approach used by Western Cape Province and the institutional measures suggested by the MoRDLG.

35) We recommend the preparation of a water crisis plan which could be implemented if risks to prevent such a crisis are not adequately mitigated.

Privatisation as a measure to ensure Water Security

2.30. The Committee inquired into whether or not privatisation of Trinidad and Tobago's water supply or any aspect thereof was discussed in establishing the integrated approach analysis for water security.

2.31. The MoPD indicated that it is unaware of any discussion on privatisation. Further, the MoPD indicated that it has examined projects submitted by stakeholder ministries and WASA and these did not suggest a policy initiative on privatisation.

2.32. WASA indicated that a Cabinet-appointed sub-committee is in the process of doing a review of the Authority and based on the outcome of that review, the way forward will be charted.

2.33. However, WASA indicated that privatisation within the water sector is a tool that can be used. WASA currently implements a form of privitisation because some of its services are not available in-house.

2.34. WASA indicated that certain areas of its privitised operations may need to be increased or decreased. WASA also indicated that privitisation can be applied in external areas such as water trucking, backhoes, non-revenue reduction initiatives and other areas where appropriate. Notwitstanding, the extent of the use of privatisation has to be determined.

2.35. As it pertains to whether WASA recommended to the Cabinet-appointed Committee, privitisation that will impact on the nation's water supply, WASA indicated that it has not suggested the use of privitisation as an overall tool or going forward.

2.36. WASA also indicated that it contributed and commented with respect to the concerns and these will be included in making a determination on the way forward.

2.37. The MPU informed the Committee that the Cabinet-appointed committee to review the operations of WASA and to revise strategies for enabling the authority to deliver on its mandate completed its work which included submissions and contributions from stakeholders. The Committee submitted its report to the Prime Minister on Friday December 11, 2020. The MPU was awaiting feedback on the report of the committee.

2.38. In terms of whether the MPU recommended the privitisation of WASA, the Committee was informed that the MPU provided support to the Cabinet appointed committee in respect of housing the secretariat to the committee. The MPU did not make a recommendation to privitise the Authority as there was no opening for the Ministry to act in such a manner.

The Possibility of Staff cuts as a result of WASA's inefficiency

2.39. WASA anticipates that the findings of the review by the Cabinet appointed committee will determine whether staff cuts at the Authority are required.

FINDINGS

100) WASA currently implements a form of privitisation as it contracts some services that are not available in-house.

101) WASA proposed that certain areas of its privitised operations may need to be increased or decreased but did not suggest the use of privitisation as an overall tool or going forward.

Water Security in other Jurisdictions

2.40. According to WASA, water security in other regions revolve around the reduction of NRW and water efficiency.

2.41. WASA is following a similar model with reduction of leakage and demand management. Additional water sources are being explored with the drilling of new wells and the rehabilitation of existing wells. The exploration of bedrock water is also being pursued.

2.42. Additionally, WASA informed the Committee that representatives from both the MPU and WASA visited the National Water Commission in Kingston, Jamaica and the Water and Sewerage Corporation in Nassau, Bahamas through an IDB Technical Exchange Mission held on January 28-31, 2019 in relation to NRW Reduction Projects.

WASA Rank Against Regional and International Utilities

2.43. Both the MPU and regional research bodies such as the IDB have conducted performance benchmarking assessments of WASA performance relative to other utilities in the Caribbean. The assessments revealed that WASA's water coverage is high compared to other regional utilities. WASA is the second-best performing utility with 95% service coverage behind Barbados and Belize which have 100% coverage.

2.44. WASA ranks highest in terms of centralised sewerage coverage at 30%. Regionally, the numbers vary between 2-17%.

2.45. Another efficiency indicator is NRW. Most regional utilities battle with NRW. WASA's NRW is estimated 40-50% and most regional utilities are around this percent, save Jamaica which is at 60%.

2.46. The Committee was also informed that most of the other utilities are tackling NRW potentially. As a result, this percentage has been reduced in the last two (2) years.

WASA's Water Rates

2.47. From a governance and financial perspective, WASA has the lowest water tariff in the region. Within this hemisphere, only Suriname has a lower tariff than WASA. This spirals into the other problems relative to WASA's operations.

Rate increase during a Crisis

2.48. At the first public hearing held in the 11th Parliament, WASA informed the Committee that rates are dictated by the RIC as such, there is no facility to increase same during a crisis.

The Status for the Application for an Increase in Tariffs

2.49. At the first public hearing the Committee was informed that WASA prepared a business plan which was at that time under final review by WASA and the MPU.

2.50. The business plan outlines WASA's expenditures and proposals going forward and the type of tariff that could be considered. The Committee was also informed that the review of WASA's tariff is based on the proposed intervention of the IDB. WASA is hoping to complete it revision of the business plan within 2-3 months. Thereafter, WASA will work with the MPU to have it considered.

2.51. At the second public hearing held in the 12th Parliament on the inquiry, the Committee continued to enquire into the WASA's rates and tariffs and was informed that the last time WASA's rates were adjusted was in 1993.

2.52. The Committee sought to determine the authority which commissioned a review of WASA's rates. WASA indicated that the issue of the rate review will be directed by policy. WASA also indicated that the rate review involves a process, therefore WASA will continue to provide the RIC with the information they require for the assessment of the rates in keeping with the process that is approved.

2.53. The Committee pressed to determine the avenue used to commission a review of WASA's rates, either by the RIC every five years in accordance with Section 48 of the Regulated Industries Commission Act Chapter 54:73 which states:

"48. The Commission shall review the principles for determining rates and charges for services every five years or, where the licence issued to the service provider prescribes otherwise, at such shorter interval as it may determine."

or by the service provider (WASA) in accordance with Section 49 of the same Act which states:

"49. (1) Notwithstanding section 48, where it is the opinion of a service provider that there has been such a fundamental change in circumstances as to warrant a review of the principle for determining rates for the service

which it provides, it may give written notice to the Commission requesting a review of the principle except that it may not request a review more than once in any year."

2.54. The Committee was informed by the WASA that it has been in communication with the RIC and has provided documentation. WASA also indicated that the process of the review commenced in 2007 and has not yet been completed. WASA also confirmed that it made a submission for a rates review to the RIC in 2007.

2.55. As it pertains to the current review being conducted by the RIC, WASA provided similar information it submitted in the previous inquiry in the 11th Parliament that it prepared a business plan on the way forward with respect to service which includes a business model. The business plan was submitted to the line Ministry (MPU) and also to the RIC. WASA also indicated that there has been ongoing discussion with respect to format amongst the entities.

2.56. The Committee requested information on the date the Authority's Business Plan, 2019-2024 was submitted to the RIC. By letter dated January 20, 2021 the Committee was informed that same was submitted on August 7, 2020.

The Impact of the Implementation of the Property Tax on WASA's Rates

2.57. The Committee was informed that WASA's domestic system is an unmetered system and is based on the Annual Taxable Value of the property (ATV). Given that the property tax uses the same ATV, WASA's rates will be amended accordingly if the property law is amended. However, metered rates will apply for metered customers.

WASA's Wastewater Rates

2.58. WASA has prepared a Business Plan and will be in further communication with its line ministry regarding same. The proposal going forward is that fifty percent (50%) of the water rate would be applied as a wastewater rate.

Outdated Water Act

2.59. From a legislative perspective, Trinidad and Tobago has the most dated Water Act in the region which speaks to a wider issue of governance and how the sector is being managed as a whole and not just the utility.

WASA's Receivables

2.60. As well, the MPU informed the Committee that WASA's accounts receivables is high compared to other regional utilities.

2.61. At the first Public Hearing held on March 9, 2020, WASA confirmed that its receivables are $827M. WASA's debt recovery steps are twofold, encouragement and thereafter enforcement. Therefore, WASA's first response to treating with its receivables is to contact customers to encourage them to make payments. WASA uses telephone reminders, reminder notices, and interactions with the customers. The intent is never to disconnect the service but rather to collect the rate then disconnect properties.

2.62. As it pertains to enforcement, WASA disconnects the service. However, because the majority of WASA's customer base are not metered, WASA first installs curve valves to make disconnections easier. In instances where a customer is disconnected for more than three (3) months, WASA exercises the legal actions steps which includes serving pre-action protocol letters to the extent of sale of property.

2.63. In terms of why receivables are at a high level, WASA indicated that this occurs when there is difficulty in disconnecting a customer. Other sectors such as abstractions also contributes to receivables.

2.64. Government receivables are approximately $78mn. However, WASA indicated that the residential customers carry the highest amount of receivables, as such, being able to disconnect these customers would easily assist the Authority in reducing its receivables.

2.65. In terms of percentages, WASA provided the following top categories of receivables:

- Residential -62.9%
- Public Sector -8.5%
- Water Abstraction -7.0%
- Industrial estate -6.4%
- Business and industrial 4.4%

2.66. WASA also indicated that there are other receivables with lower percentages.

FINDINGS

102) WASA is doing well compared to its regional counterparts in the area of water and sewerage coverage.

103) All regional utilities are struggling in the area of Non-Revenue Water.

104) WASA has the lowest water tariff in the region and this is impacting negatively on its operations.

105) WASA's rates were last reviewed in 1993.

106) There is no facility to increase WASA's rates during a crisis.

107) WASA prepared a business plan which outlines WASA's expenditures and proposals going forward and the type of tariff that could be considered.

108) The business plan is under final review by WASA and the MPU.

109) The review of WASA's tariff is based on the proposed intervention of the Inter-American Development Bank (IDB).

110) The Committee was unclear as to which authority commissioned a review of WASA's rates.

111) WASA's rates will be amended accordingly if the property tax law is amended.

112) Metered rates will apply for metered customers.

113) A rate of fifty percent (50%) is proposed for the wastewater rate.

114) There is need for the Authority to reduce its accounts receivables which are high compared to other regional utilities.

115) Residential customers constitute the highest amount of receivables due to WASA.

116) Trinidad and Tobago has the most dated Water Act in the region.

OBJECTIVE 3.
THE CHALLENGES ASSOCIATED WITH ENSURING WATER SECURITY IN TRINDAD AND TOBAGO

Water Trucks to Distribute Water to the Nation in the Event of a Crisis

The Challenge of Providing a Truck Borne Water Service for Communities in need particularly during the Dry Season

3.1. The MoRDLG indicated that there is a challenge where certain Municipal Corporations are unable to fulfill the requirement of providing a truck borne water supply to communities in need particularly during the dry season. The MoRDLG indicated that it is fully cognisant that the inability of burgesses to access potable water for daily life can severely impact human well-being.

The Provision of a Truck Borne Water Service During A crisis

3.2. WASA submitted that it can provide truck borne water supply to limited number of customers depending on the duration of the crisis and its extent.

Current Number of Water Trucks

3.3. WASA submitted that its current fleet of water trucks comprises sixty-six (66) tankers including seven (7) WASA tankers with a total carrying capacity of approximately 115,000 gallons.

3.4. The MoRDLG informed the Committee that based on information received in 2020 from the Municipal Corporations, there is a total of twenty-three (23) water tenders at all fourteen (14) Corporations.

3.5. Supplement information received from the MoRDLG by letter dated January 22, 2021 on the total number of water trucks owned, rented or leased by each Municipal Corporation, indicated that based on a survey conducted in March, 2020 by the MoRDLG:

- the total number of serviceable water trucks at the Corporations is twenty-three (23);
- the total number of water trucks currently owned by the Corporations including those unserviceable is twenty-eight (28); and
- no water trucks were rented or leased by the Corporations apart from the annual contracted Truck Borne Water Distribution Programme.

3.6. See details in Table 8 below:

Table 8

Number of Water Trucks owned and Rented/Leased by Corporation

No.	Municipal Corporation	No. of Water Trucks Owned by Corporation	No. of Water Trucks Rented/Leased by Corporation
1.	Port of Spain	4	
2.	San Fernando	2	
3.	Arima	2	
4.	Point Fortin	1	
5.	Chaguanas	1	
6.	Couva/Tabaquite/Talparo	2	
7.	Diego Martin	2	
8.	Mayaro/Rio Claro	3	
9.	Penal/Debe	1	
10.	Princes Town	3	
11.	San Juan/Laventille	2	
12.	Sangre Grande	2	
13.	Siparia	2	
14.	Tunapuna/Piarco	1	
	Total	**28**	**0**

Source: MoRDLG submission dated January 22, 2021

The Number of Water Trucks required to Supply Water to Rural Communities during the Dry Season

3.7. The MoRDLG informed the Committee that the number of water trucks required is based on the number of households and the weekly quota to be supplied to each household as agreed by the Corporation. The efficiency of this exercise is premised upon the establishment of Water Distribution Areas based on the demography of the respective Municipalities as illustrated in Table 9 below:

Table 9

The Number of Water Trucks Required and Water Distribution Areas in each Municipal Corporation

No.	Municipal Corporation	No. of Water Distribution Areas	No. of Water Trucks Required
1.	Port of Spain		
2.	San Fernando		
3.	Arima		
4.	Point Fortin		
5.	Chaguanas		
6.	Couva/Tabaquite/Talparo	11	13
7.	Diego Martin	9	18
8.	Mayaro/Rio Claro	12	12
9.	Penal/Debe	12	12
10.	Princes Town	6	10
11.	San Juan/Laventille	6	6
12.	Sangre Grande	14	14
13.	Siparia	11	11
14.	Tunapuna/Piarco	7	7
	Total	**88**	**103**

Source: MoRDLG submission dated January 22, 2021

The Amount of Water Required to Supply the Truck Borne Water Service

3.8. Based on a survey conducted in March, 2020, the actual supply of truck borne water required by the Corporations for approximately 5,000 households is 25.5mg annually. However, the survey conducted by the MoRDLG on all 14 Municipalities revealed that average truck borne water supply totals 63,800 gallons per day.

3.9. A second survey carried out in January 2021 disclosed that almost twice the number of households are dependent on a truck borne water supply (9,892) compared to the first survey conducted in March, 2020 (4,981). Details of both surveys were provided as follows:

Table 10 No. of Households Dependent on Truck Borne Water

No.	Municipal Corporation	No. of Households Dependent on Truck Borne Water	
		March 2020	January 2021
1.	Port of Spain		
2.	San Fernando		
3.	Arima	30	
4.	Point Fortin		
5.	Chaguanas		35
6.	Couva/Tabaquite/Talparo	1,000	1,200
7.	Diego Martin	250	500
8.	Mayaro/Rio Claro	150	150
9.	Penal/Debe	571	653
10.	Princes Town	351	379
11.	San Juan/Laventille	20	4,000
12.	Sangre Grande	1,240	1,740
13.	Siparia	539	665
14.	Tunapuna/Piarco	830	570
	Total	**4,981**	**9,892**

Inadequate Funding to provide Truck Borne Water Services

3.10. The MoRDLG informed the Committee that there is a challenge of adequate funding to provide communities that are devoid of a pipe borne water supply with a truck borne water service, particularly during the dry season.

3.11. The MoRDLG explained that although some Municipal Corporations are allocated funding to facilitate truck borne water distribution there is always the complaint from these bodies that such funding is hardly ever adequate to satisfy the great demands.

3.12. The MoRDLG in its survey requested the Municipal Corporations to put a dollar value to the water required to supply these communities and was informed that the cost is approximately $11.6M.

3.13. The Corporations have been making request for funding for truck borne water distribution in the draft estimates. The MoRDLG advised that the issue of funding has to be addressed by agencies responsible for disbursing funding to the Corporations.

3.14. As it pertains to the purchase of water truck, the Committee was informed by the MoRDLG that the Corporations are independent bodies and reserve the right to acquire equipment such as water tenders. Therefore, the Corporations can request funding for a water truck as a priority item in the draft estimates under the PSIP development programme that is sent to the MoF through the MORDLG.

3.15. The MoRDLG also provided financial data pertinent to this Water Trucking line item for the past two (2) fiscal years at Appendix XV. Information was not provided for the Port of Spain City Corporation, San Fernando City Corporation, Arima Borough Corporation and the Chaguanas Borough Corporation.

3.16. The financial information on the Water Trucking line item disclosed a great disparity between the funding required by the Corporations and funding actually received to provide a truck borne water service to communities in need.

3.17. It was further indicated that the situation is exacerbated by the following other factors:

- The duration of the dry season- Municipal Corporations engage in water trucking for approximately ten (10) weeks from February to April based on funding available. Funding is usually not available to extend the service for long and harsh dry seasons which lasts for up to twenty (20) weeks until June where residents would be able to harvest rainwater during the rainy season.
- Water Tenders not being roadworthy- It is not unusual for water tenders to be unserviceable due to inadequate funding to undertake maintenance and repairs in a timely manner which negatively affects the provision of truck borne water to communities in need.

3.18. The Corporations also received cuts in their allocation in the Budget for fiscal year 2021.

3.19. The MoRDLG indicated that it is cognisant of the severe fiscal challenges facing the Municipal Corporations as a result of the current fiscal challenges being experienced across the board. However, the MoRDLG was unable to comment further on what is being done to address the current fiscal challenges.

3.20. The MoRDLG indicated that it understands the tremendous concern that exists as it relates to citizens without access to an adequate water supply and as such, agreed to the need for a collaborative approach to be taken to address the issue and for priority and urgency to be given to the subject.

3.21. Subsequent to the second public hearing the Committee noted from news reports that the fourteen (14) corporations will be able to access up to $1 million from their unspent balances to "combat water challenges faced by water challenges faced by various communities across the island".

The Use of an All-Sectors Approach to Provide the Water Trucking Service

3.22. The Committee was informed at the second public virtual hearing on the inquiry, that an all-sectors approach is an option available at the MoRDLG and with all Municipal Corporations. However, emphasis is placed on certain emergency situations for example the Point Fortin dump fire. The approach is not employed for the truck borne water distribution because it affects several corporations and the issue recurs annually particularly during the dry season.

3.23. Examples of such collaborations to deal with emergency situation were provided as follows:

- The clean-up exercise following floods in the San Juan/Laventille Municipality in September 2018. The Port of Spain City and Arima Borough Corporations assisted by sharing their water tenders.
- A fire at the Paria Facility, Mahaica, Point Fortin on April 15, 2019. The San Fernando City, Chaguanas Borough, Sangre Grande Regional, Penal/Debe Regional, Couva Tabaquite/Talparo Regional and Arima Borough Corporations all assisted with their water tenders.
- A chemical fire at the Kaizen Environmental Services compound, Labidco Estate, La Brea on May 26, 2019. The Siparia Regional Corporation was assisted by a water truck from the Point Fortin Regional Corporation.
- A fire at the Guanapo landfill, Arima. The Port of Spain City, Couva/Tabaquite/Talparo Regional and the Point Fortin Borough Corporations assisted SWMCOL with their water tenders.

3.24. The Committee was also informed that the responsibility for the pooling of resources in a crisis lies with the Senior Disaster Management Coordinator (SDMC) who is based at the Emergency Operations Centre located at the headquarters of the MoRDLG. As such, in accordance with the MoRDLG's Disaster Management Plan, in the event of an emergency, the SDMC will conduct an assessment in consultation with the Disaster Management Units at the relevant Municipal Corporations in order to determine the necessary remedial measures. The resources required are then quickly mobilised from strategically located Corporations to provide the necessary assistance.

The Arrangement between the Regional Corporations and WASA to Provide the Truck-Borne Water to Communities in Time of Crisis

3.25. The MoRDLG informed the Committee that there is close collaboration between WASA and the Municipal Corporations to facilitate/augment the needs of burgesses in time of crisis, where WASA permits the Corporation's water tenders and approved contracted water tenders to access water from its hydrants/pumping stations.

3.26. An example of such a collaborative effort occurred between the Penal/Debe Regional Corporation, and WASA over the period October 7 to 15, 2019, during the shutdown of the Point Lisas Desalination Plant. This resulted in two hundred and seventy-four (274) households located in high point areas in both the environs of Penal and Debe being distributed with seventy-two hundred (7,200) gallons per day during that period.

FINDINGS

117) There is a deficiency in water tenders available to Municipal Corporations to effectively provide the truck borne water service given the number of water tenders available (23) and the number required (103) based on the number of households and the weekly quota to be supplied to each household).

118) Given that almost 10,000 households depend on a truck borne service daily, the water tenders service does not appear to be a short-term measure, but rather a mid-term to long-term measure.

119) The MoRDLG is cognisant of the severe fiscal challenges facing the Municipal Corporations.

120) The Municipal Corporations require releases from the MoF and MoRDLG although they are deemed independent.

121) The Municipal Corporations were facing severe fiscal challenges to meet the needs of communities that require the water trucking service.

122) The fourteen (14) corporations will be able to access up to $1 million from their unspent balances to "combat water challenges faced by water challenges faced by various communities across the island".

123) There is the need for a collaborative approach to be taken to address the issues involving the water trucking service and for priority and urgency to be given to the subject.

124) The all-sectors approach is not employed for the truck borne water distribution because it affects several corporations and the issue recurs annually particularly during the dry season.

125) There is a challenge where certain Municipal Corporations are unable to fulfill the requirement of providing a truck borne water supply to communities in need particularly during the dry season.

126) WASA submitted that it can provide truck borne water supply to limited number of customers depending on the duration of the crisis and its extent

127) There is a challenge of adequate funding to provide communities that are devoid of a pipe borne water supply with a truck borne water service, particularly during the dry season.

128) approximately $11.6M is required to supply these communities with a truck borne water supply.

129) The Corporations have been making request for funding for truck borne water distribution in the draft estimates.

130) The issue of funding has to be addressed by agencies responsible for disbursing funding to the Corporations.

131) The Corporations received cuts in their allocation in the Budget for fiscal year 2021.

132) The all-sectors approach is not employed for the truck borne water distribution because it affects several corporations and the issue recurs annually particularly during the dry season. Emphasis is placed on certain emergency situations.

RECOMMENDATION

36) **We recommend that the Municipal Corporations establish a coordinated mechanism where available resources for the truck borne service that is not being used in a Municipality can be used to assist another Municipality with communities that are in need of a truck borne water supply particularly during the dry season.**

37) **We recommend timely releases from the MoRDLG and MoF for the truck borne water distribution.**

Challenges with ensuring the availability, accessibility, quality and safety of water during a crisis

The Challenge of Continuity of the Supply of Potable Water

3.27. The Committee was informed by the MPU that according to the UN's benchmark to determine water scarcity, (water resources divided by the number of people), Trinidad and Tobago surpasses the benchmark. This means, it has more water per person.

3.28. However, the country is challenged with harnessing, treating and distributing water to people. Although WASA has done well in terms of providing access to a water supply in comparison to its Caribbean counterparts, (95% of the population has coverage) the challenge lies in continuing a 24/7 supply. As such, WASA's focus is on NRW.

The Current Percentage of Unaccounted Water

3.29. The Committee was informed by WASA that Trinidad and Tobago's per capita consumption is extremely high at 580 liters per captia per day. However, this amount includes approximately 50% unaccounted for water. Therefore, actual per capita per day is approximately 290 liters.

3.30. WASA indicated that a reduction is required in both actual consumption and unaccounted for water.

3.31. NRW and unaccounted for water are used interchangeably to describe water that is lost to consumption.

3.32. At the second public hearing on the inquiry in the 12th Parliament, the Committee was informed that the level of unaccounted for water is estimated between 45 and 50 percent.

3.33. The Committee was also informed that total current production levels from all sources range between 230 and 240 billion gallons daily. Therefore, the water lost through unaccounted for water which includes leakages is approximately 100 to 110 billion gallons daily.

3.34. Supplement information received from the Authority indicated that the amount of water lost as a result of leakages during the period 2015-2020 is estimated at 187.6 million cubic metres (calculated using the total water production for the period 2015-2020 and applying 50% for NRW.

3.35. The MPU informed the Committee that NRW does not only comprise leaks or physical loss but also commercial losses that is water lost in households and water that is used in households but not billed because of limited metering and high consumption figures.

Lack of Funding to Replace Aged Pipelines

3.36. The Committee was informed that 243.2 km of high leakage pipelines have been identified for replacement at an estimated cost of nine hundred and forty-six million, four hundred and twenty-eight thousand, five hundred and seventy-five dollars and twenty-six cents ($946,428,575.26) over a period of ten (10) years. Further details are at Appendix XVI.

3.37. WASA also has a priority list to treat with leaking mains across Trinidad and Tobago that is based on the level of leakage.

3.38. WASA indicated that although it has identified high leakage pipelines for replacement and has approached the MPU with a plan to replace pipelines in phases, it has not been replacing the pipelines at the required rate due to funding limitations. 5km of pipeline was replaced between the first and second public hearing on the inquiry. In this regard, approximately 1% has been completed to date.

Areas most affected by leaking mains

3.39. In terms of the areas most affected by leaking mains, the Committee was informed that there is no area/s in particular that is most affected by leaking mains, pipeline leaks exist throughout Trinidad and Tobago.

Challenges to a Reliable Supply of Raw Water

3.40. The MPU informed the Committee that the present challenges to continuous supply of water will worsen during a crisis. In addition to water infrastructure for supply, it is important to note that the management of the upstream side of water supply, i.e. water resources, is critical to securing water during and outside of a crisis.

3.41. Evidence tendered by the WASA indicated that the catchment areas in Trinidad and Tobago are spread across both islands in diverse terrain and topography. Anthropogenic activity in such catchments negatively affects the yield from both surface and ground water sources resulting in reduced water availability in the established water surplus areas. Apparent change in climate has manifested in seasonal fluctuation from the norm with respect to rainfall patterns. This has reduced the reliability of supply of the raw water available for treatment.

3.42. Further, with an aged, and in some areas, under capacity infrastructure, delivery to customers is below targeted levels. High demand through excessive consumption further compounds the supply demand imbalance.

The Consequences Associated with Withdrawing Water from Natural Sources, River Widening, Installing Stormwater Management Infrastructure

3.43. The Committee was informed by the MoRDLG that the impact of water withdrawals becomes a concern when the rate of withdrawal exceeds the replacement of water. This can lead to both water quantity (shortages) and negative environmental impacts.

3.44. Withdrawal from a river can reduce the water level and flow of a stream at the withdrawal point, impact its natural condition, and affect the water-fed ecology and environment. The impacts will be different based on the size, depth and flow of the stream. Additionally, withdrawal of water from natural sources disrupts the natural water cycle.

3.45. River widening increases the catchment area thus increasing the volume of water in the river. River widening also lowers flood water levels hence lowering flood probabilities. The rate of flow of the river is also reduced when a river is widened. However, it should be noted that one major limitation to river widening by Municipal Corporations is the existence of squatting communities along riverbanks/reserves which prevents the action of dredging and widening in key areas.

The Impact of Groundwater Extraction on Infrastructural Developments

3.46. The MoPD informed the Committee that groundwater extraction can cause land subsidence. As groundwater levels fall due to extraction, some aquifers compress significantly causing land subsidence with corresponding damage to infrastructure.

The Implications to Groundwater Extraction on the Environment

3.47. The major implications are related to over extraction which can cause, falling water levels leading to dry wells and reduction in spring and river baseflows, vegetation stress, saline intrusion, loss of aquifer capacity and land subsidence.

The Lack of Spatial Data to Establish Sustainable Groundwater Development

3.48. The MoPD informed the Committee that it does not have spatial data that can be used to establish sustainable groundwater development. However, the TCDP is in possession of shapefiles that delineates the watersheds in Trinidad and Tobago. Further, the TCPD is not in possession of spatial data other than "hard maps" which point to the location of reservoirs. The TCPD also indicated that it is only in receipt of "hard" drawing of any new pipeline infrastructure that WASA seeks to implement. These would be on files within the Regional Office of the TCPD.

3.49. The Committee was also made cognisant that the source of the TCPD's information is obtained from the WASA.

3.50. However, TCPD responds to request from the WASA for the provision of spatial data. This includes requests for land use maps and land use policies for specific areas within the country.

Annual Dry Season Water Crisis

3.51. According to the MoRDLG, the dry season in Trinidad and Tobago on an annual basis contributes to what may be deemed to be a water crisis for many citizens. Many Municipalities are severely affected by a drastic reduction in the water supply from WASA during this period. Limited or no rainfall also affects sectors of the population which are reliant on roof storm water that are collected in tanks. The consequences of the above includes loss of productive time, adverse effects on those involved in the education system and public health concerns (including health challenges arising from the use of water from unsafe sources).

The Non-Diversified Access to Water

3.52. The non-diversified access to water can also lead to sole reliance on pipe-borne water in many homes and business. This has the potential to be disastrous during water distribution system interruption, particularly for extensive periods.

Droughts in Trinidad and Tobago

3.53. The Committee inquired into the droughts experienced in Trinidad and Tobago. The MPU's Climatologist provided the following information:

- A drought is a period of very low rainfall relative to some normal;
- There are various types of droughts such as meteorological, agricultural, hydrological and socioeconomic;
- The type of drought experienced is based on various factors including timeframes;
- The MPU operates based on scientific principles where a drought is quantified using a Standardised Precipitation Index which is when rainfall amounts deviate from the normal by one standard deviation;
- Small islands like Trinidad and Tobago, are likely to experience frequent Standardised Precipitation Index;
- Trinidad and Tobago has been experiencing meteorological droughts over the past decade for example, in 2010, 2016 and 2019, particularly during the dry season with a duration of up to three months; and
- Droughts will occur because of natural climate variability and will worsen because of climate change which has been affecting agriculture and water sectors.

Climate Change Impacts on Water Resources

3.54. WASA informed the Committee that in addition to anthropogenic activities, there is also natural threats to water resources from the impacts of climate variability and climate change. This is evident by the reduced rainfall locally in recent years, the harsh 2019 dry and wet seasons in particular. These threats to the water quantity and quality of Trinidad and Tobago's water resources are also occurring against the backdrop of increasing demand for potable water.

3.55. According to WASA, although the water resource is renewable, it is finite and must therefore be managed. WASA also indicated that there is urgent need for a paradigm shift towards the way water resources in Trinidad and Tobago are treated. The narrative of Trinidad and Tobago being classified as a water rich nation must be tempered by the reality that without efficient water resource management Trinidad and Tobago will not avoid the fate of other water stressed nations. This speaks to directly to the ability of all sectors and stakeholders working collaboratively to achieve water sustainability for our nation.

3.56. WASA indicated that it remains committed to doing its part towards this end and will continue to work closely with other stakeholders to achieve this goal.

3.57. According to the MoPD, the Vulnerability and Capacity Assessment has identified the following challenge with respect to Climate Change Impacts on Water Resources:

- Studies have shown cases where the permeable soil which would have allowed water to infiltrate was replaced with compacted earth fill, covered in concrete and asphalt, caused overland flow.
- The mitigation implemented in the form of box drains which empty into undersized drainage channels proved to be insufficient to carry the volume of water.
- Unplanned and unmitigated hillside developments contributed to slope instability which was only exacerbated by the intense rainfall and resultant flooding.
- Reduced freshwater supply has also been reported due to decreased rainfall and subsequent reduction in stream flow.
- Water resource managers in Trinidad and Tobago would need to consider present and future demand in light of declining rainfall, more frequent and longer dry spells, higher evaporation rates and salinity intrusion.

- The quality of the surface water is deteriorating in many locations as evidenced by high levels of biological oxygen demand, bacterial contents, turbidity and the presence of chemical pollutants in rivers.
- Given the climate risk factors on water resources, the increasingly warmer climate, frequency of intensifying cyclones, droughts and floods are of major concern and present varying degrees of challenges to development of adaptation strategies.
- Projections suggest an increase in intense rainfall events over shorter periods that will result in lower surface water quality, a reduction in the recharge of ground water as run-off would be at a maximum; while increases in longer dry spells and drought events coupled with warmer temperatures would increase agricultural irrigation demands, affect crop scheduling, increase health impacts, coral bleaching and saline intrusion.

FINDINGS

133) Trinidad and Tobago is challenged with harnessing, treating and distributing water to people.

134) WASA's challenge lies in continuing and providing a 24/7 supply.

135) WASA's focus is on NRW.

136) A reduction is required in both actual consumption and unaccounted for water.

137) 243.2 km of high leakage pipelines have been identified for replacement at an estimated cost of nine hundred and forty-six million, four hundred and twenty-eight thousand, five hundred and seventy-five dollars and twenty-six cents ($946,428,575.26) over a period of ten (10) years However, due to funding limitations only 5km of pipeline was replaced between the first and second public hearing on the inquiry which represents approximately 1%.

138) Leaks exist throughout Trinidad and Tobago.

139) The present challenges to continuous supply of water will worsen during a crisis.

140) When the rate of groundwater withdrawal exceeds the rechargeof water aquifers, this can lead to both water quantity (shortages) and negative environmental impacts.

141) Groundwater extraction can cause land subsidence and other negative effects.

142) There is need for spatial data that can be used to establish sustainable groundwater development.

143) There is need for diversified access to water to reduce sole reliance on pipe-borne water.

144) Trinidad and Tobago has been experiencing meteorological droughts over the past decade particularly during the dry season with a duration of up to three months.

145) Although the water resource is renewable, it is finite and must therefore be managed.

RECOMMENDATION

38) We recommend that the MoPD assist with establishing spatial data to inform sustainable groundwater development.

39) We recommend that the entities with responsibility for water security commence discussions on diversified access to water with a view to reduce sole reliance on a pipe-borne water supply.

40) We recommend that a comprehensive assessment be done on the possible negative impact of climate change on water security with identification of possible mitigating factors.

WASA's Reduced Revenues due to the Closure of Industries

3.58. Generally, WASA will be collecting less revenue with the closure of any plant in the Point Lisas Industrial Estate.

3.59. WASA also experiences reduced revenues as a result of water being redirected from industries to domestic customers without a commensurate increase in the collection of money.

3.60. WASA continues to monitor the closure of plants and projects that the reduction in rate will be significant in terms of WASA's collection profile.

FINDINGS

146) WASA will be collecting less revenue with the closure of any plant in the Point Lisas Industrial Estate.

RECOMMENDATION

41) Refer to Recommendation 18.

Challenges associated with ensuring water security in Trinidad and Tobago

3.61. The MoRDLG submitted that securing water is a multi-faceted issue which depends on several elements and requires long-term coordinating efforts and integration among stakeholders. Challenges associated with ensuring water security in Trinidad and Tobago include:

1. Lack of proper institutional framework to address water resources management;
2. Degradation of watersheds, soil erosion, landslides and flooding due to indiscreet quarrying operations, deforestation, planned and unplanned developments, indiscriminate hillside clearing for agriculture, and poor solid waste disposal practices;
3. A growing population, increase in housing developments and increased industrial activities;
4. Degradation of wetlands, coastal ecosystems and habitats'
5. Pollution of watercourses due to malfunctioning wastewater treatment plants, pesticides, herbicides and industrial waste;
6. Ageing and deteriorating water infrastructure.
7. Impacts of climate change in relation to temperature increases, changes in precipitation and sea level rise;
8. Water management regulations for agriculture (cultivation and livestock) during periods of water scarcity.

3.62. The MoPD submitted the following with regards to the challenges to water security:

- Aged pipeline infrastructure;
- High Unaccounted For Water (UFW);
- Dependence on Central Government for funding infrastructure development projects;
- Increased water demand from expanding Housing and Energy sectors;
- Contamination of surface/groundwater sources;
- Seasonal variation in surface water sources;
- Achieving effective coordination among relevant Government Agencies and Units;

- Obtaining buy-in from the general public who would be expected to contribute towards conserving water; and
- Government's commitment towards providing the necessary resources to achieve the goal of water security.

The MPUs Efforts to Address the Challenges associated with ensuring water security in Trinidad and Tobago

3.63. The MPU has drafted a revised National IWRM Policy 2018 which refers to water-related emergencies. The Policy outlines that Government should undertake the following:

- Prepare and update National Disaster Preparedness Plans and list the events that these plans should address;
- Encourage water and water-related agencies to prepare Business Continuity Plans to ensure minimum service levels during periods of disaster; and
- Ensure adequate routine surveillance of all major water facilities.

3.64. In addressing overarching water supply management issues, the National IWRM Policy 2018 also refers, and assigns responsibility for the various prescriptions of the policy.

3.65. The MPU also indicated that the National Disaster Preparedness Plans requires funding and external execution support.

WASA's Efforts to Address Its Challenges

3.66. WASA collaborates with agencies responsible for development which may impact on water resources including quarrying, housing, industrial, commercial and agriculture. Such collaboration is aimed at protecting the water resource and providing for sustainable potable water production.

3.67. With respect to the infrastructure, upgrade is proposed in collaboration with the IDB towards undertaking works to renew the infrastructure to provide improved regularity and reliability of supply. This also includes management of demand through conservation and metering.

FINDINGS

147) The National Disaster Preparedness Plans requires funding and external execution support.

Limited Metering to Measure Effectiveness

3.68. According to WASA, Management of water consumption is to be done through Bulk Metering complemented by Universal Domestic Metering.

3.69. One of the limitations of the WASA as it pertains to measuring reduction in demand or usage to determine the effectiveness of conservation programmes, is limited metering. However, WASA indicated that it has been reaching the public through its public education initiatives consistent with its plan. The plan is a comprehensive proposal and looks at both the demand and supply issues including improving metering.

3.70. The MPU acknowledges that metering is a critical, no-regret strategy that must be undertaken to manage demand. This has been a policy mandate set by the MPU and given to WASA for execution. WASA has accordingly, made steps to procure bulk meters for one region in the country which will allow it to monitor water moving around its network.

Status of Metering

3.71. WASA informed the Committee that metering continues to be a three-pronged approach:

1. Domestic- currently stands at 4% of domestic customers. Recent policy decisions have ensured that all new residential developments are metered prior to final approval.
2. Commercial/industrial – stands at approximately 50% with a scheduled project to take this to 80% by the end of 2020; Industrial customer metering currently stands at 99%.
3. Bulk/source – continues with approximately 15% completion. The completion of the North West Bulk Metering Project will take this to 20%.

3.72. The Authority plans to establish one hundred and twenty (120) District Metered Areas (DMA's) which is estimated for full DMA coverage of Trinidad and Tobago. Each functional DMA, with specific set boundaries, will consist of a bulk meter which will facilitate the calculation of NRW by subtracting the customer metered consumption when installed from the bulk meter reading for the same period (Water Balance). This will aid in efficient leak detection and repair which will in turn reduce NRW. In addition, customer consumption would decrease after being converted from an unmetered (A3) to a metered customer (A4) as they will now be paying based on usage.

3.73. The establishment of a monitoring system via Supervisory control and data acquisition (SCADA) will make the information real time and would allow for a faster response to leakage management.

3.74. The scope of works for each DMA using bulk meters are as follows:

i. Procurement of temporary measuring devices;
ii. Detailed site investigations, updating of distribution network drawings, complete with all trial holes that might be required to verify pipe connections (and the consequent reinstatement of road, sidewalk or any other surface);
iii. Population Count and Demand Survey in order to generate DMA reports for each zone containing length of mains, population, street names, storage etc.
iv. Verification of system input values;
v. DMA Design inclusive of hydraulic models for each DMA, Hydraulic modeling reports and Network Alternative Reports;
vi. Verification of suggested DMA boundaries; locating of existing boundary valves, functioning and tightness checks of existing boundary valves, identification of location for additional boundary valves to be installed via zero pressure testing;
vii. Procurement of bulk and domestic meters;
viii. Installation of bulk meters;
ix. Installation of domestic meters on all customers within a DMA;
x. Commissioning of DMA;
xi. Water balance for each DMA;
xii. Leak detection surveys (using listening sticks, leak noise correlators and leak noise loggers);
xiii. Pressure management: stabilising, managing and reducing average DMA pressure using Pressure Reduction Valves (PRVs)/ Pressure Sustaining Valves (PSVs);
xiv. Leak repair on mains;
xv. Replacement of leaking service connections;
xvi. Leak detection surveys, repairs and pressure fine-tuning shall be repeated and/or shall continue until an acceptable level of leakage is achieved; and
xvii. Development of a monitoring system via SCADA

3.75. The outputs of the Programme are as follows:

i. Reduction in leak repair time;
ii. Reduction in water losses;
iii. Decrease in customer consumption;
iv. Improvement in assets efficiency;
v. Reduction in operating cost;
vi. Calibrated hydraulic models and subsequent hydraulic recommendation report;
vii. Establishment of One Hundred Fifteen (120) DMAs;
viii. Updated customer and infrastructure database; and
ix. Development of water consumption data and monitoring system.

3.76. The MPU has received various project estimates for a universal metering programme, including from WASA. However, funding to execute same has not been secured.

The Percentage of Domestic Meters

3.77. The Committee was informed that currently, residential metered customers is low and stands at 2.97%. Universal Metering is being used to address this issue and a significant capital investment is proposed under the IDB intervention for the water sector. It is anticipated that when the programme is implemented the number of or percentage of residential customers who are metered will increase.

FINDINGS

148) WASA has been reaching the public through its public education initiatives.

149) The majority of WASA's industrial and commercial customers are metered. However, less than 4% of domestic customers are metered which is where the majority of demand is concentrated.

150) Bulk metering will aid in efficient leak detection and repair which will in turn reduce NRW.

RECOMMENDATION

42) We recommend that some level of priority be given to the metering of domestic customers in phases.

Enforcement on State agencies responsible for Building Construction in Watercourses

3.78. The MoPD informed the Committee that generally, the TCPD tries not to enforce on other State agencies. Alternately, the TCPD tries to mitigate, to get the permissions completed, and assist with the agenda of State bodies as best as possible.

3.79. The TCPD's role as a regulator is at the planning approval stage, not at the construction stage. Development of projects under State lands are forwarded to the TCPD. The TCPD is part of the committee responsible for the development of housing and other buildings. The TCPD therefore work intimately with developers and scrutinizes all proposals and projects.

3.80. The TCPD in its approval process ensures that all plans are robust and prevent negative impacts on citizens.

3.81. The TCPD works with State agencies such as the Housing Development Corporation (HDC) to try to process planning permissions efficiently. For large housing developments such as Greenvale and Tarouba, the TCPD granted the requisite approvals and ensured that plans and developers adhere to the expectations outlined by the TCPD.

3.82. However, some State agencies proceeded to build during the discourse of the planning process.

3.83. As it pertains to the Greenvale Housing Development, there may have been construction prior to planning permission. Notwithstanding, the TCPD met with the relevant stakeholder of the regulatory bodies subsequently, to implement mitigating efforts against any negative situation arising from the building development without planning permission.

3.84. Nevertheless, the MoPD maintained that generally, the TCPD interacts directly with most State agencies that seek planning permissions for building development and the TCPD tries to maintain a robust relationship that completes the planning permission process prior to construction occurring.

FINDINGS

151) The TCPD tries not to enforce on other State agencies alternately it tries to mitigate, to get the building construction permissions completed, and assists with the agenda of State bodies as best as possible.

152) The TCPD's role as a regulator is at the planning approval stage, not at the construction stage.

153) There is need for State agencies to obtain planning permissions from the TCPD before construction.

RECOMMENDATION

43) We recommend that the TCPD mandate that State agencies obtain planning permissions from the TCPD before construction so that mitigation action can be taken if needed at the planning approval stage rather than at the construction stage.

WASA's Debts

3.85. At the second public hearing held on December 17, 2020, the Committee requested an update on WASA's current debt and was informed that it is an all-encompassing $4.2billion.

3.86. WASA provided a breakdown of the debt as requested by the Committee. Details are at Appendix XVII.

3.87. Based on the information submitted, the Committee observed that:

- The aggregate Principal Balance as at December 31, 2020 was $4,461,537,922; and
- Five (5) loans were taken in the year 2020 with a total Principal of $ 942,560,828.

3.88. The number of loans the WASA has with the IDB are at Appendix XVIII.

FINDINGS

154) WASA's debts are approximately $4.5B.

WASA's Standards for Resurfacing of Roads

3.89. WASA has standards for resurfacing of roads. Part of its collaborative relationship with the RIC includes the formulation of such standards as set forth in the regulations.

3.90. The RIC's standard is two (2) days for temporary repairs and permanent repairs within seven (7) days. However, WASA acknowledges that it has not been meeting the RICs standard for road repairs.

3.91. Currently, WASA has road restoration crews but it did not have road restoration crews in the past.

3.92. WASA also indicated that it is placing more emphasis on road restoration subsequent to the repair of pipelines.

The need for a programme of works

3.93. WASA informed the Committee that once new road surface is mixed with old infrastructure beneath road repairs will be required after conducting leak repairs. WASA proposed an exchange of information with respect to its intent to lay pipe or from the MOWT or MoRDLG of their intent to pave a road. Ideally what should be implemented is a development programme where one entity follows the other. However, the priority of some entities involved in road repair may not be the same as WASA's. Notwithstanding, WASA indicated that there is communication amongst the entities.

FINDINGS

155) The WASA has standards for resurfacing of roads.

156) WASA acknowledges that it has not been meeting the RICs standard for road repairs.

157) A development programme of works is required where one entity follows the other.

158) The priority of some entities involved in road repair may not be the same as WASA's.

159) There is communication amongst the entities.

RECOMMENDATION

44) There is value in establishing a progamme of works for road reinstatement after repair works on pipelines to fix leaks or new pipeline are installed by WASA. We recommend that the MoWT establish a development programme of works for road reinstatement and share same with the relevant entities (MoRDLG and the Municipal Corporations, WASA pany).

4.1. Your Committee therefore respectfully submits this Report for the consideration of the Houses.

Mr. Deoroop Teemal
Chairman

Mr. Saddam Hosein, MP
Member

Mr. Kennedy Richards, MP
Member

Mr. Symone de Nobriga, MP
Member

Mrs. Lisa Morris-Julien, MP
Member

Mr. Anil Roberts
Member

Mr. Nigel De Freitas
Member

APPENDIX I

UNCONFIRMED MINUTES OF PROCEEDINGS

DATED MARCH 09, 2020

UNCONFIRMED MINUTES OF THE FIFTY FIRST MEETING OF THE JOINT SELECT COMMITTEE ON LAND AND PHYSICAL INFRASTRUCTURE, HELD (IN CAMERA AND IN PUBLIC) IN THE LINDA BABOOLAL MEETING ROOM (GRAND COMMITTEE ROOM 2), CABILDO BUILDING, PARLIAMENTARY COMPLEX, ST. VINCENT STREET, PORT OF SPAIN ON MONDAY MARCH 9, 2020 AT 2:00 P.M.

Present were:

Mr. Deoroop Teemal	Chairman
Mrs. Glenda Jennings-Smith, MP	Member
Mr. Nigel De Freitas	Member
Mr. Wade Mark	Member
Mr. Julien Ogilvie	Secretary
Ms. Renee Batson	Assistant Secretary
Mr. Jean-Marc Morris	Legal Officer I
Ms. Katharina Gokool	Graduate Research Assistant
Ms. Safiyyah Shah	Graduate Research Assistant

Excused were:

Dr. Lovell Francis, MP	Member
Mr. Rushton Paray, MP	Vice Chairman
Mr. Darryl Smith	Member
Mr. Franklin Khan	Member

PUBLIC HEARING WITH THE MINISTRY OF PUBLIC UTILITIES AND THE WATER AND SEWERAGE AUTHORITY

6.1 The meeting resumed at 2:40 p.m.

6.2 The Chairman welcomed representatives of the Ministry of Public Utilities and the Water and Sewerage Authority and introductions were exchanged.

6.3 The ***Appendix*** herein contains a summary of questions and concerns raised during the hearing.

[Meeting suspended at 4:56 p.m.]

Next meeting

7.2 The **Chairman** reminded Members of the Committee's decision to convene its second public hearing pursuant to its ***inquiry into the measures for ensuring water security in Trinidad and Tobago*** on Monday **March 16, 2020** at **1:30 p.m.**

ADJOURNMENT

8.1 The adjournment was taken at 5:04 p.m.

I certify that these Minutes are true and correct.

Chairman

Secretary

March 12, 2020

51st Meeting of the Joint Select Committee on Land and Physical Infrastructure

Monday March 9, 2020 at 2:35 p.m.

Public Hearing Summary

Opening Remarks

Ministry of Public Utilities (MPU)

The Ministry's role as it relates to water security in Trinidad and Tobago

i. The subject of water security spans several agencies. Under the remit of the Ministry, the Water and Sewerage Authority (WASA) and the Meteorological Services Division are the major players;
ii. WASA provides water supply to the citizenry and the Met Services Division monitors the weather and climate that is linked to the water supply in our country;
iii. As part of the governing and oversight mandate of these agencies, MPU has developed a number of policies and high-level strategies for the short, medium and long-term that are aligned to Vision 2030 and the United Nations Sustainable Development Goals. These guide the strategic direction for related agencies;
iv. These strategic priorities include, but are not limited to:
    a. providing safe and reliable public utilities services to meet the needs of households, communities and businesses;
    b. expanding accessibility to public utility services to the currently unserved and underserved areas;
    c. streamlining the operations of public utilities to increase efficiency, productivity and financial viability; and
    d. promoting conservation and sustainable consumption.
v. WASA's implementation in respect of these priorities are intended to assist the Authority in providing water supply that is of an adequate quality and quantity to sustain the population of Trinidad and Tobago, as well as to ensure the sustainable use, conservation and protection of water resources;
vi. Performance indicators were also developed to benchmark WASA against regional and international utilities, as well as against its own progress. These indicators are aligned to the Ministry's priority areas and include:
    a. development of a customer-centric culture;
    b. operational efficiency;
    c. financial viability;
    d. organization redesign; and
    e. governance.
vii. WASA has some overarching water supply management issues to address and as such has been working with the Inter-American Development Bank to develop a water sector

improvement programme. In order to achieve the objects of this programme, the following imperatives are to be undertaken:

a. implementation of metering throughout the population;
b. network optimization to replace strategic high-leakage mains;
c. service connection and debottling of the network;
d. climate change investments to increase storage, mitigate flooding and localize production; and
e. establishment of a performance-based culture in WASA.

WASA's contribution to the establishment of water security

viii. In order to achieve the goal of water security, as defined by UN Water 2013, a multipronged, multidimensional approach is necessary.

ix. The integrated approach to water management is a process that seeks to attain three main strategic objectives: efficiency, equity and environmental sustainability.

WASA's mandate

x. WASA is mandated to provide water and wastewater services to the population of Trinidad and Tobago.

xi. The provision of water services to the citizens requires the Authority to undertake several key activities associated with developing and maintaining water treatment sources, as well as transmission and distribution systems.

xii. WASA continues to develop new water sources, maintain existing ones and treat raw water sources to meet international drinking standards.

Effective delivery and providing sustainable water supply

xiii. WASA also focuses on its pipeline, transmission and distribution network, which has been enhanced through the construction of new service reservoirs across the country and booster stations in north, south and central Trinidad.

xiv. WASA has laid pipelines to provide connectivity to previously underserved areas in Trinidad and Tobago.

xv. Its leak repair programme has contributed to a reduction in the levels of unaccounted for water, while improving the level of service to customers.

Wastewater Collection and treatment

xvi. The Malabar wastewater treatment plant and collection system has been completed with funding secured through the Inter-American Development Bank (IADB).

xvii. The construction of this facility benefits approximately 30,000 residents and this is expected to increase to more than 108,000, upon completion of all phases on the collection system, which will serve the full Malabar catchment.

xviii. In Tobago, the construction of two new sewerage systems at Bon Accord and Samaan Grove resulted in over 400 new wastewater customers and improvement in the wastewater coverage to customers in the coastal areas of Crown Point, Pigeon Point, Black Rock, Golden Grove and Buccoo.

Threats to water resource quantity and quality

xix. The Water Resource Agency is working to minimize significant threats to watercourses which impact water availability, quality and flooding:

a. indiscriminate wastage;

b. indiscriminate dumping;
c. sedimentation of streams through poorly-managed quarrying;
d. disposal of industrial effluent discharged from non-functioning wastewater treatment plants;
e. slash and burn agricultural practices; and
f. agricultural runoff.

xx. Natural threats include the impact of climate variability and climate change through, reduced rainfall locally in recent years and the harsh 2019 dry and wet seasons.
xxi. Threats to the quantity and quality of our water resources are also occurring against a backdrop of increasing demand for potable water.
xxii. Although the resource is renewable, it is finite and must therefore be managed.
xxiii. Trinidad and Tobago is classified as water-rich but the reality is that without efficient water resource management, we will not avoid the faith of other water-deficient nations.

Upgrade to booster stations and storage tanks

xxiv. Contracts have been signed to commence work on four (4) booster stations and the project will commence soon.
xxv. The Quarry and the Guanapo tanks are approximately 95 per cent completed. Currently WASA is working to complete the interconnecting pipework, and to put those tanks into service. The tanks should be fitted and commissioned by the end of March.
xxvi. A review of the treatment process at the Matura Treatment Plant has to be executed due to deterioration of raw water quality during periods of heavy rainfall.

Sangre Grande water supply source

xxvii. Sangre Grande is supplied primarily from the North Oropouche water treatment plant, and also from other localized supplemental wells.
xxviii. Issues with the wells in Sangre Grande are currently being addressed to restore productivity.

Priority list of leak repairs to mains across Trinidad and Tobago

xxix. WASA has a listing that has been prioritized based on the level of leakage.

Level of water in reservoirs

xxx. The level of the reservoir is due to the variations in dry and wet season.
xxxi. Overall the rainfall is decreasing and since rainfall is the main source of water captured by the reservoir, the reservoirs will be impacted.

Balancing water supply and demand

xxxii. Climatic conditions have produced intense but shorter wet and dry seasons. Pump storage facilities not only capture water within their catchment, but from adjoining catchments which are then pumped to the reservoir. Therefore increased storage is necessary.

Promoting the practice of water conservation

xxxiii. WASA has been advocating for water conservation since the last two or three years.
xxxiv. The current volume of water that is being produced ought to be sufficient to supply the public.
xxxv. Several initiatives promoting conservation with young children in primary and secondary schools.

xxxvi. Water hose restriction has been implemented since January 2019 based on the water availability.

xxxvii. WASA is empowered by the Act to enforce action against persons in breach of the law and patrols are being done, and the relevant charges applied to persons in breach.

xxxviii. WASA intends to sustain these punitive measures, however more needs to be done.

xxxix. Measuring reduction in demand or usage is challenged through the limited metering component.

Sources of water for WASA's production

xl. The primary source of water that currently exists is via surface water sources, which accounts for about 50 to 60 per cent of our production, however, groundwater alternatives are being explored.

Water consumption in Trinidad and Tobago

xli. Consumption in the range of 580 litres per capita per day and includes an unaccounted for water level of approximately 50 per cent.

xlii. Consumption of 290 litres per capita per day is equivalent to 60 or 70 per cent which is more than the accepted standard.

Water scarcity in Trinidad and Tobago

xliii. According to the UN's benchmark, Trinidad and Tobago has more water per person than the UN benchmark of water scarcity.

xliv. However, Trinidad and Tobago is challenged to provide, treat and distribute this water to persons.

WASA's performance based on regional and international standards

xlv. WASA indicated that is performance can be rated as "good" when compared regionally in terms of access or coverage of water supply. Approximately 95 per cent of this country's population is covered.

xlvi. The challenge is in continuing that supply and having 24/7 supply.

Non-revenue water

xlvii. Non-revenue is defined as water lost as a result of leaks or physical losses, "commercial losses" and water that is used but not billed to households.

xlviii. As a result of no metering and high consumption figures, citizens use more water than they are actually billed for by WASA.

Increased storage of excess water as a result of floods

xlix. WASA has four impounding reservoirs – three in Trinidad and one in Tobago.

l. For example, within the Caroni River basin, the Arena Reservoir stores water for water production purposes;

li. When there is a flood event, WASA draws the water from the river and transfers it to storage facilities.

lii. Through collaborating with the Ministry, WASA is planning to execute projects in Cumuto and Ravine Sable's sandpits which would augment the current water supply.

National Integrated Water Resources Management Policy

liii. Submitted to Cabinet in early 2019 and it is pending a decision.

liv. This policy would have succeeded a previous policy completed1999 that WASA was charged with effecting.

Integrated water resources management

lv. Not unique to Trinidad and Tobago - a global process that is being championed by one of the UN's agencies.

lvi. In order to manage water resources, it requires integration and coordination with other managers of water. For example, the agricultural sector, watershed, or forestry, climatology.

lvii. Legislative groundwork exists, but policy decision as to whether the country is adopting integrated water resources management is outstanding. Accordingly, a study/report funded by the World Bank recommended the establishment of resource regulator where the policymaker (Ministry) should be separated from the service provider (the utility), and should be separated from the resource regulator (WRA).

Watershed protection and sustainability in Trinidad and Tobago

lviii. There are 55 watersheds in Trinidad, and 14 watersheds in Tobago.

lix. With respect to management of the watersheds, the Water Resources Agency works closely with other entities to execute its regulatory functions, for example, Environmental Management Authority (EMA).

lx. When a project is proposed and it is indicted that there will be a potential impact on the water resources, the entity would write to the WRA and request its input into the proposed project.

lxi. The public education components of the "Adopt a River Programme" entails::

- educating in the role of protection of their water resources;
- training to do simple water quality testing so that they could monitor their watersheds; and
- meetings at schools, primary schools, high schools, in order to foster greater stewardship.

lxii. With respect to amount of water within different watersheds, the region with the heaviest rainfall is primarily the north-east. An area of concentration would be like Hollis Reservoir.

Risk assessment and projections based on climatic conditions

lxiii. 2010 to 2019, compared to the cumulative rainfall in 1961 to 1990, was 5 per cent less.

lxiv. 2010 to 2019, compared to the cumulative rainfall in 1981 to 2010 was 11 per cent less.

lxv. Comparative analysis has revealed that the last decade has cumulatively produced the least amount of decadal rainfall since 1970 or the late 1960s.

Incentivising rainwater harvesting

lxvi. Rain water harvesting needs to become a priority.

lxvii. For example, in Australia rainwater harvesting has been incentivized by connecting toilets or washing machines to a rainwater tank. Through Government policy, schools also engage in rainwater harvesting to flush toilets.

Months with the highest amount of rainfall

lxviii. At some stations it is difficult to assess the monthly rain fall average as rainfall occurs irregularly in Trinidad and Tobago.

lxix. In north-eastern areas, the month of August is the highest producing month, whereas, in the western areas the month of June is the highest, and then in Tobago the month of November is the highest.

lxx. It depends on a number of climatic background factors.

Water level projections at reservoirs in Trinidad and Tobago for 2020

lxxi. The projected low point at Arena, occurring at the end of June 2020 is 29.9 per cent.

lxxii. The projected low point at Navet, occurring at the end of May is 44.4 per cent.

lxxiii. The projected low point at Hollis, occurring at the end of May is 34.3 per cent.

lxxiv. The projected low point at Hillsborough, occurring in July is 38 per cent.

Measuring WASA's performance

lxxv. MPU has set five strategic pillars and each of these pillars has performance indicators defining what WASA is expected to report on:

- Customer-centric culture – measured by WASA's response and handling of complaints, as well as time it takes to process new connections etc.;
- Operational efficiency – leak repair and road restoration status, as well as coverage and production of water and water storage;
- Financial viability – financial metrics including EBITDA margin, receivables, turnover ratio, liquidity and inventory turnover ratio; and
- Governance - implementation of WASA's preparedness and response strategy in times of a disaster, as well as statutory submissions.

lxxvi. WASA is the second best performing utility with 95 per cent service coverage behind Barbados and Belize which is at 100.

lxxvii. WASA is the highest ranking regional utility in terms of centralized sewerage coverage which is around 30 per cent coverage in all of Trinidad and Tobago. Regionally, the numbers vary between 2 to 17 per cent.

lxxviii. Non-revenue water is likewise an efficiency indicator with WASA's estimate around 40 to 50 per cent.

lxxix. WASA has the lowest water tariff in the region. Only Suriname within this hemisphere has a lower tariff than WASA.

lxxx. This low tariff spirals into all of the other problems relative to operations, as well as the value of WASA's receivables.

lxxxi. From a legislative perspective, Trinidad and Tobago has the most dated legal framework for Water in the region.

WASA's receivables in terms of arrears

lxxxii. Currently, WASA's receivables are valued at$827Mn

lxxxiii. This figure is disaggregated as follows:

- business and industrial, 4.4 per cent;
- residential 62.9 per cent;
- public sector at 8.5 per cent;
- water abstraction at 7.0 per cent; and
- industrial estate at 6.4 per cent.
- Government receivables are valued at $78Mn.

WASA's debt recovery steps

lxxxiv. Recovery is accomplished through encouragement and subsequently, enforcement.

lxxxv. Encouragement through telephone reminders, reminder notices and actual interactions with the customer, and enforcement through, disconnections.

lxxxvi. In the majority of cases WASA's customer base is not metered, therefore curve valves are installed to make the disconnections easier. Once a client is disconnected for more than three months, then legal action is take which would include serving a pre-action protocol letters outlining that property will be seized.

Beetham Wastewater Reuse Project

lxxxvii. The project was originally an NGC project, so WASA did not have direct involvement with respect to the management of funding for the project.

WASA's Beetham Wastewater Treatment Plant

lxxxviii. Water is collected from wastewater catchment spanning from Westmoorings to Mount Hope, treated and then discharged.

lxxxix. The aim of the Beetham reuse plant is to extract effluent from WASA's wastewater plant and then further treat that to produce industrial quality water for Point Lisas.

xc. That project did not happen so the water from WASA's Wastewater Treatment Plant currently is discharging into the environment.

New water-reuse projects

xci. Possibility of having the Pointe-a-Pierre refinery use effluent from the San Fernando Wastewater Treatment Plant, which is currently under construction.

xcii. The Pointe-a-Pierre refinery could then be considered for alternative use, including potable water supply.

xciii. The volumes are between 40,000 and 45,000 cubic metres per day, which equates to approximately eight to nine million gallons

Water tariff in Trinidad and Tobago

xciv. WASA has prepared a business plan that outlines WASA's expenditures and proposals going forward, and what type of tariffs could be considered.

xcv. It is under final review between WASA and the Ministry.

xcvi. Review that is currently being done is based on the proposed intervention of the IDB. It is estimated that the review will be completed within the next two to three months.

The Water Sector Improvement Programme

xcvii. Developed by the IDB in collaboration with the Ministry of Public Utilities and WASA

xcviii. Has a specific focus on non-revenue water reduction and that includes metering:

- it is a challenge for WASA to manage or have the ability to manage demand without metering; and
- it is also a challenge for an individual to manage demand without having that signpost of how much water you are actually using.

xcix. Non-revenue water (NRW) reduction through leak repair and pipe replacement and also pressure management:

- the need to establish or segregate the country into district-metered areas and measure the use and manage use and supply within those areas;
- establish district metered areas;
- manage flows and pressure within there; and
- specifically pinpoint leaks in the system, both in the network side as well as on the customer side.

c. WASA projects will accrue a 17 per cent internal rate of return.

ci. This programme is self-sustaining so there is no need to increase the subvention of the Government to service the debt, with the savings that WASA will get from more efficient and lean operations, the loan can be paid and/or serviced.

Customer service at WASA

cii. Primary mode of communication with customers is through the call centre.

ciii. WASA has increased the complement of staff within the call centre by approximately 25 per cent.

civ. Prior to getting more staff, up to 55 per cent of calls were retrieved, however this has since increased to 80 per cent.

Water distribution schedules

cv. These schedules are on the website, and will be updated based on any changes that would occur or based on water availability.

The role of Desalcott in terms of water security

cvi. Of WASA's yearly 220 - 240 million gallons of water, Desalcott produces and delivers 40 million gallons per day (16 per cent).

cvii. WASA's contract with Desalcott is until 2039.

cviii. Since Desalcott's source is sea water, it would not be subject to the issues associated with rain water.

cix. One issue that arises on an annual basis during the dry season, where there is less run-off from local rivers from South America, the salinity in the Gulf of Paria goes up, making the treatment process more difficult to achieve the daily output of 40 million gallons per day.

cx. The monthly bill paid to Desalcott is approximately US$6Mn.

cxi. WASA has some outstanding bills with Desalcott, and has made arrangements to settle arrears.

Committees Unit

March 13 2020

APPENDIX II

VERBATIM NOTES OF PROCEEDINGS DATED MARCH 09, 2020

VERBATIM NOTES OF THE FifTY-FIRST Meeting OF THE JOINT SELECT COMMITTEE APPOINTED TO INQUIRE INTO AND REPORT ON LAND AND PHYSICAL INFRASTRUCTURE (IN CAMERA) HELD IN THE LINDA BABOOLAL MEETING ROOM (GRAND COMMITTEE ROOM 2), PARLIAMENTARY COMPLEX, CABILDO BUILDING, OFFICE OF THE PARLIAMENT, ST. VINCENT STREET, PORT OF SPAIN. ON MONDAY, MARCH 09, 2020 AT 2.35 P.M.

PRESENT

Mr. Deoroop Teemal	Chairman
Mr. Rushton Paray	Vice-Chairman
Mrs. Glenda Jennings-Smith	Member
Mr. Wade Mark	Member
Mr. Nigel De Freitas	Member
Ms. Angelique Massiah	Secretary
Ms. Katharina Gokool	Graduate Research Assistant

ABSENT

Mr. Franklin Khan	Member [*Excused*]
Dr. Lovell Francis	Member
Mr. Darryl Smith	Member

MINISTRY OF PUBLIC UTILITIES

Ms. Nicolette Duke	Permanent Secretary (Ag.)
Ms. Beverly Khan	Deputy Permanent Secretary
Ms. Sara Jade Govia	Water Sector Specialist
Mr. Kenneth Kerr	Chief Climatologist (Ag.) Met Services

WATER AND SEWERAGE AUTHORITY

Mr. Alan Poon-King	Chief Executive Officer (Ag.)
Mr. Sherland Sheppard	Director, Operations
Mrs. Denise Lee Sing Pereira	Director, Programmes & Change Assistant
Mrs. Sherry Dumas-Harewood	Director, Customer Care
Mr. Rajindra Gosine	Head, Water Resources Agency

Mr. Chairman: I welcome everyone to this meeting the 51st meeting of the Joint Select Committee on Land and Physical Infrastructure, pursuant to an enquiry into the measures for ensuring water security in Trinidad and Tobago, as well as welcome our viewing and listening audience.

I would like to remind all members and officials to please, if you can turn your cell phones off or place them on silent or vibrate, and to indicate to everyone that this hearing is being broadcast live on Parliament Channel 11, Parliament Radio 105.5 FM and the Parliament's YouTube Channel, *ParlView*, and to inform members of the viewing and listening audience that you can send your comments via email to Parl101@ttparliament.org, on our Facebook page at Facebook.com\ttparliament, or on Twitter@ttparliament.

I would like to welcome officials of the Ministry of Public Utilities and the Water and Sewerage Authority, and we would seek your introduction a bit later on. I would like to introduce myself. My name is Deoroop Teemal and I Chairman of this Joint Select Committee. I would like to invite members of the Committee to introduce themselves.

[*Introductions made*]

Mr. Chairman: Thank you members. I would like to inform all representatives here from the respective entities of the objectives of this particular enquiry. We have three key objectives, the first one being to exam the current strategies for ensuring water security and the effectiveness of these strategies; (2), to determine the measures required for improving water security; and the third objective, to determine the challenges with ensuring water security in Trinidad and Tobago.

I would like to, at this point, invite the officials who are here to introduce themselves, following which I would ask for opening remarks to be made by one representative each, respectively from the Ministry of Public Utilities and WASA, please.

[*Introductions made*]

Mr. Chairman: Okay, thank you. At this stage, we would open with questioning from—before we go, the opening remarks, please, both from WASA and Public Utilities.

Ms. Duke: Thank you, Chair. Thank you for this opportunity to the committee to share the Ministry of Public Utilities' role as it relates to water security in Trinidad and Tobago. The subject of water security spans several agencies. However, under the remit of the Ministry, the Water and Sewerage Authority and the Meteorological Services Division are the major players. WASA providing the water supply to the citizenry and the Met Services Division, monitoring the weather and climate that is linked to the water supply in our country.

The Ministry of Public Utilities, as part of its governing and oversight mandate of these agencies, has developed a number of policies and high-level strategies for the short, medium and long-term that are aligned to *Vision 2030* and the United Nations Sustainable Development Goals to set the strategic direction for relate-related agencies. These strategic priorities include, but are not limited to providing safe and reliable public utility services to meet the needs of households,

communities and businesses; expanding accessibility to public utility services to the currently unserved and underserved areas; streamlining the operations of public utilities to increase efficiency, productivity and financial viability; and promoting conservation and sustainable consumption.

WASA's implementation in respect of these priorities is intended to assist the Authority in providing water supply that is of an adequate quality and quantity to sustain the population of Trinidad and Tobago, as well as to ensure the sustainable use, conservation and protection of water resources.

To assist the Ministry in its oversight, performance indicators were also developed to benchmark WASA against regional and international utilities, as well as against its own progress. These indicators are aligned to the Ministry's priority areas and include: development of a customer-centric culture, operational efficiency, financial viability, organization redesign and governance.

The Ministry acknowledges that WASA has some overarching water supply management issues to address and as such has been working with the Inter-American Development Bank to develop a water sector improvement programme. In order to achieve the objects of this programme, the following imperatives are to be undertaken: implementation of metering throughout the population, network optimization to replace strategic high-leakage mains and service connection and de-bottling of the network, climate change investments to increase storage, mitigate flooding and localize production and establishment of a performance-based culture in WASA.

Members, the Ministry embraces its role as an advocate of the national vision, which fundamentally seeks the improvement of the quality of life of all its citizens. And, therefore, emphasis is placed on the provision of efficient, cost-effective and reliable public utility services throughout Trinidad and Tobago. The Ministry will continue to provide strategic guidance, support and facilitate WASA in delivering on its initiatives, so that the authority can continue to contribute to Trinidad and Tobago's socioeconomic development.

The Ministry, therefore, looks forward to the recommendations of the committee and as well as its other stakeholders, in moving this thrust forward. Thank you.

Mr. Chairman: Thank you. Mr. Poon-King, you are going for WASA?

Mr. Poon-King: Good afternoon, Chairman and members of the Joint Select Committee, and thank you for having WASA here to provide information on our contribution towards the establishment of water security for citizens of Trinidad and Tobago.

In 2013, UN Water provided a working definition of "water security" as the capacity of population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being and socio-economic development for ensuring protection against waterborne pollutions and water-related disasters and for preserving ecosystems in a climate

of peace and political stability. This definition is quite broad in its context. However, it is clear that it requires a multipronged, multidimensional approach in order to successfully achieve its goal, including the adoption of an integrated water resources management approach for dealing with this precious resource.

IWRM explicitly challenges conventional fragmented water development and management systems and places emphasis on an integrated approach with more coordinated decision-making across sectors. This integrated approach to water management is a process that seeks to attain three main strategic objectives: efficiency, equity and environmental sustainability. The process recognizes that exclusively top-down supply-oriented technically-based and sectoral approaches to water management are imposing unstainable high economic cost on society.

WASA is mandated to provide water and wastewater services to the population of Trinidad and Tobago. This means that the authority has a major role to play in the IWRM process and ultimately plans towards achieving water security.

It is important to note that in order to provide water services to our citizens, the authority must undertake several key activities associated with developing and maintaining water treatment sources, as well as transmission and distribution systems. In this regard, the authority continues to develop new water sources, maintain existing ones and treat these raw water sources to meet international drinking standards. Towards this end, some of the infrastructure development projects completed by the authority include construction of intakes and wells.

In order to effectively deliver and sustain a water supply to our citizens, the authority must also place focus on its pipeline, transmission and distribution network, which has been enhanced through the construction of new service reservoirs across the country and booster stations in north, south and central Trinidad. The authority has also laid critical pipelines to provide connectivity to previously underserved areas in Trinidad and Tobago and place great emphasis on its leak repair programme in order to reduce its level of unaccounted for water, while improving the level of service to customers.

Another key area of the authority's operation that requires equal attention regarding infrastructural development and maintenance is the area of wastewater collection and treatment, since this can have a major impact on public health and environment. To this end, a new Malabar wastewater treatment plant and collection system has been completed with funding secured through the Inter-American Development Bank. Through this programme approximately 30,000 residents are benefiting from the construction of the facility, and this is expected to increase to over 108,000, upon completion of all phases on the collection system, to serve the full Malabar catchment.

In Tobago there has also been a significant improvement in wastewater services, with the construction of two new sewer systems at Bon Accord and Samaan Grove. This has resulted in over 400 new wastewater customers and improvement in the wastewater coverage to customers in the coastal areas of Crown Point, Pigeon Point, Black Rock, Golden Grove and Buccoo.

As the Water Resources Agency leads in the IWRM efforts, we must all work to minimize the negative effects of activities that pose significant threats to our watercourses, which ultimately impact water availability, quality and flooding. These include indiscriminate wastage, indiscriminate dumping, sedimentation of streams through poorly-managed quarrying, disposal of industrial effluent discharged from non-functioning wastewater treatment plants, slash and burn agricultural practices and agricultural runoff.

In addition to these anthropogenic activities, there are also natural threats to our water resources from the impacts of climate variability and climate change. This is evident by the reduced rainfall locally in recent years and the harsh 2019 dry and wet seasons in particular. These threats to the quantity and quality of our water resources are also occurring against a backdrop of increasing demand for potable water. Although the resource is renewable, it is finite and must therefore be managed to sustainably.

As a country, we urgently need to achieve a paradigm shift in the way we treat with our water resources. The narrative of Trinidad and Tobago being classified as water-rich must be tempered by the reality that without efficient water resource management, we will not avoid the faith of other water-stressed nations. This speaks directly to the ability of all sectors and stakeholders working collaboratively to achieve water sustainability for our nation. The authority remains committed to doing its part towards this end and will continue to work closely with other stakeholders to ensure that we remain on a path to achieving this goal. I thank you.

Mr. Chairman: Okay. So, we will now have questions being posed by members. Just as a reminder to bear in mind, that I am sure WASA has appeared many times before joint select committees, and is, from what I understand, scheduled to appear before other select committees in the very near future, so that it is just the objectives of the enquiry we are basically focusing on water security. We do not intend to get into all the detail operations, the nitty-gritty and all of those things regarding the authority itself, but more broad-based policy and directives regarding ensuring water security as based on the objectives I outlined at the beginning. Member Jennings-Smith.

Mr. Jennings-Smith: I would be very specific. I want to refer my first question to WASA. I want to refer to your own submission on page 7 where you indicated that four booster stations are to be constructed or upgraded in northwest Trinidad, the contracts are to be awarded and work is expected

to be completed in the third quarter of 2020.

Now, I represent the constituency of Toco/Sangre Grande and I have complaints from those people every single month, in particular the people from Matura and Sangre Grande and the outlying areas. But I want to specifically focus on this question right now. You said that storage tanks have been constructed and commissioned at Four Roads, Diego Martin, Tucker Valley, Chaguaramas, Hololo, Cascade and Charlotteville, Tobago with two additional to be commissioned in Quarry, Valencia and Guanapo. And you also said that communities to benefit include Carenage, Petit Valley, Diego Martin, St. Ann's, Arima, Calvary Hill, Valencia and Charlotteville. Given the work that is expected to be completed in the third quarter of 2020 for the four booster stations, can you provide details on the status of the award of contract, the tendering process used to select the contracts, the contracts' cost and the contractor selected for the work?

Mr. Poon-King: Okay, first with respect to the four booster stations, we are at the stage where the physical work, we have signed the contracts, and so on, with the vendors and the work is scheduled to commence shortly. I will let Ms. Lee Sing Pereira provide the details of that.

The two contractors that were selected, it was an open tender and there were two contractors, Toshiba Water is one and the other is D. Rampersad.

Mr. Jennings-Smith: Okay, great. Could you tell me the status for the two additional storage tanks to be commissioned in Quarry, Valencia and Guanapo? And when will these be commissioned?

Mr. Poon-King: Right, so I will let Ms. Lee Sing Pereira provide those details.

Mrs. Lee Sing Pereira: The Quarry and the Guanapo tanks, they are approximately 95 per cent completed. Right now, what we are working on is the interconnecting pipework to just complete, to put those tanks into service. But those tanks are completed, 95 per cent substantially complete, and it is just the pipework now to close it off and do the testing.

Mr. Jennings-Smith: Could you give me a timeline as to when it will be commissioned? Because I realize that residents of Valencia will get some level of impact, in terms of supply of water. So could you tell me when, the locality you are looking at.

Ms. Lee Sing Pereira: So we anticipate by the ending of this month, March, that those tanks should be placed and commissioned.

Mr. Jennings-Smith: I have another question for the Chairman. Now, you are aware that there is a station in Matura, and I have there in office for the past four years, and I have been asking questions about that particular booster station in Matura. I believe that the problem still exists. Can give me an update as to what is really happening in Matura? I know you are very well aware because I continue discussion with the area manager about that particular booster station in Matura.

Mr. Poon-King: Would this be the treatment plant in Matura?

Mr. Jennings-Smith: Yes, the treatment plant in Matura, because there is a problem with the tank, the pump, that every time rain falls there is no water and consistent it has been happening over the past few years. Can you tell me if any improvement work was done, and if so what was done?

Mr. Poon-King: No, no improvement work would have been done yet to that station. But based on what you have described, the plant as it is we need to review the treatment process, what would occur, during periods of heavy rainfall you will get a deterioration in the raw water quality, which will result in what you have described. So we will have to review that process. I have asked the Director of Operations, but he does not have firsthand information, so we will have to provide an update.

Mr. Jennings-Smith: And last question is that: Can you tell me where do the residents of Sangre Grande and outlying areas get water supply from?

Mr. Poon-King: Sangre Grande is supplied primarily from the North Oropouche water treatment plant, and we do also have localized wells to supplement the supply within Sangre Grande itself.

Mr. Jennings-Smith: Has any work been identified, in terms of, with regard to the supply of water to these areas within the last two years?

Mr. Poon-King: We have had issues with the wells in Sangre Grande and we are currently working on those to have them back up to full production. Other than that, well the North Oropouche, we have done work at North Oropouche which would have benefited Sangre Grande.

Mr. Jennings-Smith: Okay, thank you very much. Your submission also indicated that a list of high leakage mains has been developed by WASA, which takes into account the rate of leakage. Which areas are most affected by leaking mains?

Mr. Poon-King: The leaking mains would be across Trinidad and Tobago. So there is no area that I can, at this point, pinpoint to say this one is worse.

Mr. Jennings-Smith: So, in other words there will not be an opportunity to say that you have a priority listing to deal with those leaking areas?

Mr. Poon-King: There would be a listing that has been prioritized, based on the level of leakage. That could be provided.

Mr. Jennings-Smith: So you can provide this Committee with a list of the priority listing?

Mr. Poon-King: Correct.

Mr. Jennings-Smith: Okay, can you.

Mr. Chairman: Member De Freitas.

Mr. De Freitas: Thank you, Mr. Chairman. So we are dealing with water security today and a lot of what you have submitted to us speaks to the objective that WASA is trying to achieve, which is supply

of water 24/7 supply of water to a large percentage of the papulation.

I have noticed, not just over the last year, probably before that as well, in treating with the amount of water in our reservoirs that WASA has been putting out, the percentage of water in the reservoir, to let the population know exactly what is there. And this comes in quite handy. My first question is: Based on the data you have, the amount of water in those reservoirs, has it been trending upwards or downwards over time?

Mr. Poon-King: The levels in the reservoirs are due to the variations between dry and wet season. In the dry season, we could expect it the go down and in the wet season it is replenished. We do get from year to year, variations or fluctuations that occur. Last year in particular, the dry season was particularly harsh, and the wet season we had below normal rainfall.

I think I attended a conference with Dr. River recently and it was stated that overall the rainfall is decreasing, which would mean that the water in our reservoirs, because we draw water from rainfall, that would be impacted.

Mr. De Freitas: There is a reason I asked that question. Because what you are saying is absolutely true. But based on data you would be able to tell if it is going to be trending downwards. We all know about climate change. We all know the effect that it is having worldwide. One of the effects in Trinidad and Tobago is that in the rainy season you will get shorter periods of rainfall, so more water in a shorter period, which, ironically does not really affect the reservoirs. In other words it does not fill them up. And the dry season is a little bit longer. It is a little bit drier and you do not get as much rainfall and whatnot. My point is this, the data should be able to tell you, whether it be 10 years, 15 years, 20 years. If it is trending downwards, you might be able to get a rate at which it is trending downwards, and the question is: What plans are you all putting in place, given that the wider population does not know this. And in order to conserve water they would need to know this, change their behaviours, so that we can, you know, mitigate that problem.

Mr. Poon-King: I think the PS in her opening remarks had intimated that a programme that we are looking at currently, through the ministry, with the IDB, to look at the entire water cycle with respect to improvements in that regard. And certainly storage of water will be in that programme. We need to also look, and you indicated it, the water balance is supply and demand. So we need to ensure that the demand part of it is managed as well.

Insofar as the supply, which is the part you are speaking of, we do need to increase the storage that we have. And also we need to look at, and have been looking at, the variations that have occurred from years ago up to now, that it appears to the layman that we have shorter duration, higher intensity events.

Some of our facilities are what we call pump storage facilities. So they do not only capture water within their catchment, we get water from adjoining catchments and pump it up to the reservoir. So that needs to be looked at, in terms of do we need more capacity to deal with the shorter duration, higher intensity rainfall events that capture that water as well. So all of that is part of the process towards having water security.

Mr. De Freitas: Okay, so I understand where you are coming from with that. One of my major concerns is that we have no control, as human beings, in relation to how much rain falls in the rainy season. So if it is that, where we are located geographically, we are seeing a trending downwards in the amount of rainfall that we are getting in the rainy season; that is the starting point of the water cycle and everything changes. So for example, you may find that a particular well you have dug, which was dug to a particular depth because of an aquifer, you may need to dig a little deeper to get the same amount of water.

The reason I was talking about the population is because the snapshot of where we are in Trinidad and Tobago right now is that one, we are not providing 24/7 supply to 100 per cent of the population. That is one. Two, what you are supplying to those who are getting water, there are problems with leakages, and whatnot, but yet the reservoirs that we have are saying that they are not where we are comfortable for them to be. So if it is that we are not running at maximum level, but the reservoirs are still not where we are comfortable, then I am hard pressed to see how we are going to, you know, do better with that, given that the overall rainfall is seeming as though it is getting less with climate change.

So, my point is we are going down a road of, well yes we want to give 24/7 supply to as many people as we can in Trinidad and Tobago, but are you going to hit a problem where you are just not going to find the water? The first thing in my mind is changing the behaviour. We need to move from water is bountiful and plentiful because we are on a tropical island close to the equator, to what Las Vegas and California and these places are doing, which is, you need to be conserving as much water as possible. Because you know what? There is just not enough. And they have a whole reuse policy and plan, in terms of dealing with their water supply. So are we moving from free use of water to conserving water? Because the trend is telling us we are going to run out if we keep doing this. That is what I want to hear from WASA. Is that what we are doing?

3.10 p.m.

Mr. Poon-King: Well, the message of conservation, we have been putting that to the public and this was, even two or three years ago before we had that bad dry season last year. So conservation and demand management as a whole needs to be done together with the water winning projects. When

we look as the volumes of water we produce, we should have enough water to supply the public. Because of—

Mr. De Freitas: For how long? For how long will you take to meter? So somebody born today can be confident that they are good for when they turn 80 years old, 50 years from now?

Mr. Poon-King: Well, 80 may be a bit long to project. The primary source of water we currently have would be surface water sources, which account for about 50 to 60 per cent of our production. So our focus is always there to try to ensure that we protect that. We do have ground water and we have been looking at— As I said, can we store more surface water to add security of supply to that component?

And in terms of the ground water we are looking at alternative, previously untapped aquifers that would have significant volumes of water and that have not yet been tapped, that those we are looking to utilize as well.

Mr. Chairman: Mr. Poon King, you mentioned with regard to the conservation that member De Freitas is asking about. But how comprehensive? And how aggressive have been your water conservation programmes? How effective have they been thus far?

Mr. Poon-King: Okay. The water conservation initiative, we start at the school level, we do have a public education centre. So we have started with young children into secondary school as well and we have had different initiatives over the years, promoting conservation. That is coupled with the— where we currently have a water hose restriction in place since January of 2019 based on the water availability that we have had. All these are under the WASA Act that we are empowered to do. And we have been doing patrols and applying the relevant charges and so on, to people who are in breach.

I think we have where it has to be a consciousness that water is finite. And yes, the punitive measures will continue but more needs to be—that people recognize that this resource is something that we have now and we have to treasure it and utilize it properly for our personal use, industrial use, commercial use. It is literally what drives the economy of Trinidad and Tobago.

Mr. Chairman: Now, I am hearing you with those things and that has been the language that has been outside there, if you do not mind, for decades. And in terms of effective— because one, from your response it seems as okay, the enforcement aspect of it through whatever bylaws and laws under the WASA Act that we can put into place and the level of your resources to ensure compliance with those laws. But another aspect really hinges largely on public education and getting across to the public, "Look, this is a precious finite resource" and as member De Freitas is saying, it is not going to last forever. And due to, of course, climatic changes and whatever that we are hearing, it is even more imperative that we reduce consumption.

So I know, yes, the schools—we have been talking and a couple of things. But in terms of—

do you all have a comprehensive public education strategy that identifies all facets of conservation, how it could be marketed? How you could enact it with the public? Do you have measurables to gain how effective it is being done? And are results being seen in the actual reduction in consumption?

Mr. Poon-King: In terms of measuring the reduction in demand or usage, the problem or one of the issues that we would face is the metering component where we have limited metering insofar as getting data on usage and usage patterns. So the effectiveness, it would be difficult to measure. But we have been, I think, getting the message out consistent with our plan and again, the plan that the PS referred to with the IDB is a comprehensive proposal and it looks at both supply and demand issues including improving metering at that point.

Mr. Chairman: But specifically, in terms of your public education programme, would you be able to provide this Committee with such a programme that—what you all have in place?

Mr. Poon-King: Yes, that could be provided.

Mr. De Freitas: Mr. Chairman, I just wanted to add to what you are saying a little bit. I am a tad bit scared because we are at a stage globally where we are feeling the effects of climate change. We are no longer guessing, we are no longer projecting, we are no longer doing models. A lot of places are feeling the effects. And we are still at a point where we cannot categorically state what the demand is because we do not have the meters. It is nobody's fault.

But I am worried that as much as you indicated that there is still quite a bit of supply that we have not tapped into yet—I know how this thing works by way of the water cycle and I am worried that as we are moving forward and the years roll by, we are not going to be replenishing these stores that we are dependent on, and we are still not grasping exactly, whether through our conservation efforts, if the demand is going down at all. And that is what the Chairman is getting at because that is the most important part, that is where we will have the greatest effect, reducing that demand.

But at this current time, what I am hearing is that we do not even have a way to measure that because what I am hearing right now coming from WASA is that the reservoirs are 40 per cent or 50 per cent, please conserve. What I am hoping that we are hearing, based on empirical data, is the reservoirs are at 50 per cent, they are not being replenished because of climate change or whatever, if we continue using water the way we continue to use water, we will not have enough to supply the nation by so and so date.

They do it for oil. They could tell you that with oil based on consumption, supply, how much oil is in the ground, estimates. It does not have to be 100 per cent accurate but they can estimate by a certain year you are going to run out of oil. This is all data and trends and if that is the narrative then it is hard-pressed for somebody to say, "Well, you know, let me continue to use water the same way."

The other public education programme that could be done is that there is so much technology now: sensors on your taps in your house that if you are going to wash your hand—you see it in bathrooms in public spaces— you put your hand under, the water runs for a few seconds and it turns off. People in Trinidad and Tobago are still using, turn on your tap and you leave it while you brush your teeth. That cannot continue given what is coming. But we are not educating from a standpoint of, if we continue down this road, we are all going to be thirsty very soon, and that is what is scaring me.

I am just hoping you take what I say because it is not— I do not think it is too expensive or something, a hurdle that we cannot cross. It is just a matter of getting data out there, changing the narrative to really let the people know how important this is. We really do have to start conserving water because when I saw those numbers for those reservoirs for last year, it started to scare me. One bad dry season and "we in trouble".

Mr. Chairman: Mr. Mark, we will just continue along the lines, just before I go to you. Member De Freitas mentioned "one bad dry season", but I shudder to think two consecutive bad dry seasons, what our position would be? Or three consecutive bad dry seasons? And based on climatic changes, I do not think I am stretching my imagination too far because the possibilities are there.

In your wastewater infrastructure plan, Mr. Poon King, 2017 to 2022, which you were gracious enough to include in your submittals to the Committee as an appendix, on page 2, section 2.0 background, you indicated that the per capita consumption in Trinidad and Tobago is extremely high indicating that it encompasses both actual consumption and unaccounted for water. From what I understand is that our per capita consumption is in the range of—you can correct when you respond— maybe around 580 litres per person per day and what we are aiming for is something substantially lower than that. Could you indicate what percentage of that consumption could be assigned to "unaccounted for water" out of that figure? And what is the target consumption, based on our present situation, that the Authority has as its target?

Mr. Poon-King: The figure of 580 litres per capita per day includes an unaccounted for water level of approximately 50 per cent and then—so, you would be left with around 290litres per capita per day in terms of consumption. So that figure, roughly, it is probably about 60 or 70 per cent at least above what it should be. So that needs to be reduced significantly—this is the 290 in addition to the unaccounted for water component. We need reduction on both components.

Mr. Chairman: In the responses from the Ministry of Public Utilities, the term "non-revenue water" is used instead of "unaccounted for water". Is there a difference in the terminologies, "unaccounted for water" and "non-revenue water", just for clarification before we move on?

Mr. Poon-King: I think for our purpose it would be interchangeable. Non-revenue water would normally be probably more applicable in a metered environment. We are not really metered so you can use non-revenue water or unaccounted for water at this time. It will have the same meaning.

Mr. Mark: Thank you, Mr. Chairman, thank you. Let me welcome all the representatives here this evening. The first thing I wanted to clarify based on what Mr. De Freitas raised a little earlier— and that has to do with the challenges that we face particularly in the period of climate change and scarcity of water supply. In reading the submission made to us by the Ministry of Public Utilities, we are told on page 6 of the Ministry's submission under institutional arrangements that, and I quote:

> In Trinidad and Tobago there is no shortage of water resources.

And as you go later down, we are told and I quote:

> The challenge is in continuity of supply of water.

Could you explain that to the Committee? So that we could be clear in our minds because we are hearing from our colleagues here that there is a finite supply of water. But we are hearing and reading, rather, that in Trinidad and Tobago there is no shortage of water resources and the challenge is really the continuity of the supply of water. Could you elaborate for us please?

Ms. Duke: Thank you for that question, member. I will ask our Water Sector Specialist to respond.

Ms. Govia: Thank you, PS. When we are looking at the benchmark that the UN has given to define water scarcity really what they do is they take the amount of water resources that you have available using rainfall and runoff and they divide it by the number of people that you have in your country. So there is a particular benchmark which T&T surpasses. So, according to the UN's benchmark, we have more water per person than their benchmark of water scarcity. The challenge that we have is in providing or treating and distributing this water to supply people so: how we harness this water; how we treat it; and then how we distribute it to get to people.

While WASA has done a really good job based on its Caribbean counterparts of giving access or coverage of that water supply— so around 95 per cent of the population is covered— the challenge is in continuing that supply with having 24/7 supply and that really is the problem or the focus of non-revenue water.

And just to be clear, non-revenue water is not just leaks or physical losses, it is also what we call "commercial losses" which is water lost in households and water that is used but not billed in households. And because we do not have metering and we have high consumption figures, we tend to use more water than we are actually billed by WASA.

Mr. Mark: Mr. Poon King, given the fact that we have heavy rainfalls, when we experience them, flooding is very dramatic in our country particularly over the last two to three years. The question of

storage came up a short while ago. Is WASA taking measures or steps to construct more dams in Trinidad and Tobago in order to preserve, to conserve water that is in excess supply during the rainy season having regard to all the global challenges that we are familiar with? And when we look at what took place last year and what can be repeated this year and beyond, is WASA taking any measure or initiatives to construct dams so that when we have, as I said, excess water through flooding, the water can be captured, treated, preserved and utilized in periods of heavy—or in periods of, let us, say scarcity? Could you help me in that area?

Mr. Poon-King: When— WASA has four impounding reservoirs; three in Trinidad, one in Tobago. When those would have been constructed, I think the primary objective of those particular projects would have been from a water supply perspective. So, for example, within the Caroni River basin, we have the Arena Reservoir, and while we store water there for water production purposes, ultimately, when you have a flood event and we are drawing water off of the river to put into storage, that in fact does contribute in some way to a reduction in the extent of flooding that may occur.

I think we are looking at increasing our impounded storage, I think, but the thinking now is a little bit different in that we are looking for projects that would not only provide water supply but also provide for a flood mitigation component. So we are, through the Ministry, looking at projects in Cumuto and Ravine Sable's sandpits to provide both water supply and flood mitigation going forward.

Mr. Mark: Any time frame, Sir?

Mr. Poon-King: Well that— again, the PS would have indicated the IDB programme and that whole consideration is within that programme.

Mr. Mark: As you talk about the IDB, you seem to have a lot of relations with that institution. Maybe you can commit pen to paper and share with us how many loans you have with the IDB, and for what purposes have these loans been contracted, and the value of these loans, and for what period of time these loans are for? I think that would be useful for us to understand what is taking place. You can put that in writing and submit it.

Let me ask the Acting Permanent Secretary. You told us in your submission that the Ministry is responsible for setting policy and high-level strategy, and that is to deal with water security. Do you have a policy, a written policy given that you set policies to deal with water security? Is there a policy in the Ministry of Public Utilities on water security in T&T?

Ms. Duke: Member, in 2018, the Ministry would have finalized a revised National Integrated Water Resources Management Policy. This was submitted to Cabinet in early 2019 and it is pending a decision. This policy would have succeeded a previous policy in 1999 that WASA was charged with effecting but it would have gone further to look at integrated water resources management and to

speak to some of the things that must be put in place in order for us to have effective water supply and quality water supply.

Even though the policy has not yet been approved, building on that policy initiative of 1999, WASA is, in fact, implementing some activities that speak to areas of the Integrated Water Resources Management Policy. And I would just ask if I may, my Water Sector Specialist to elaborate on what some of those initiatives are.

Mr. Mark: Before she does that, can you share with us what is the current status of this policy that has been submitted? I do not know if you are in a position to do so. But from what I have read, this policy would have been submitted to the Cabinet, was it in February of 2019, if I am not mistaken? We are talking about one year and maybe going into some days later. Can you share with us, from your perspective, Permanent Secretary and from the Ministry's perspective, can you brief this Committee as to the current status of this policy that has been submitted and remains outstanding?

Ms. Duke: Member, unfortunately, I am not in a position right at this point to do that. But I could enquire.

Mr. Mark: All right, well, could the—.

Mr. Chairman: Please, before we go to you, Water Sector Specialist, I just have one or two observations regarding that Integrated Water Resources Management Policy. So I will just identify those so that maybe it could be dealt with in the response at the same time. I think the Integrated Water Resources Management Policy is a step in the right direction. It does tie in with the Sustainable Development Goals that has been outlined for 2030 and really and truly, we need an integrated approach to water management, water security as adopted by many countries now throughout the world.

A couple of things, with regard to the policy, in that one, is that from what I gather is that a certain entity— it has not been given a name as yet, it has not been given a name in the policy per se— but a specific entity would be given certain lead responsibilities in terms of coordinating. I think there is a matrix that is attached into the policy and just a rough check I did, there are almost 22 other stakeholders in the water industry that is on that matrix. Some of them have lead responsibilities, but this certain entity that is being identified has certain lead responsibilities.

It is just that, you know, I would have thought that the policy would have gone a bit further at this stage. It would have clearly identified, probably in a bit more detail, the role and responsibilities of the entity. And bearing in mind, the paradox with the Water Resources Agency, in particular, where we have the Water Resources Agency lodged in WASA so both the abstractor of water and the regulator of water is within the same body, it would have addressed that anomaly in more detail and

made a definitive recommendation that the Water Resources Agency be removed from the ambit of WASA.

And maybe gone so far as to say, look, in the formulation of this new entity that would be responsible for the integrated water resources management of the country, maybe the Water Resources Agency could be the seed agency, removed from WASA and be allowed to develop, seeing that it has a foundational basis already, and that agency be looked at to form the framework for a new integrated water resources agency with clear and definitive roles.

Ms. Duke: Member, your point is taken. Maybe when we speak to where the policy is now at, there may be room to relook that. That is something we can look at when we see what is happening with the policy before its approval.

Mr. Chairman: All right. It is just that— why was it not done together with the policy? Because also, to me, the policy did not address really— I mean there is certain legislation in place including the WASA Act. But the amount of legislation that is there that impacts on water and water security, is that the policy did not really go into any detailed investigation or even preliminary investigation at this stage into the sort of legislative framework that such an entity would have to be given in order for it to function effectively in terms of the lead responsibilities that have been assigned to it in the policy.

Because that legislative framework—I mean, the work has to be done, a review of all legislation pertaining to water and what the role of this entity is intended to be and what is the necessary legislation, whether new or amended legislation, that has to be put in place and I just felt that the policy should have addressed that, at least a first pass in that regard.

3.40 p.m.

Mr. Mark: I think somebody was supposed to—

Mr. Chairman: So at this time we would like to invite the inputs from your Water Sector Specialist.

Ms. Govia: Thank you. Just to go back a little bit, and I think this is to contextualize our goal for water security. Integrated water resources management is not something that is unique to Trinidad and Tobago. It is actually a global process that is being championed by one of the UN's agencies. But really, it speaks to the fact that water has a direct link with land use planning with the water environment, and in order to manage water resources, it requires integration and coordination with other managers of water. So, like the agricultural sector, watershed, or forestry, climatology and those types of agencies.

So, there is a particular model for that integrated water resources management, which the policy follows. So, it looks at the enabling environments, so the institution legislation which you mentioned. Then the institutional setup which you are referring to, this agency that will manage water

resources. And the policy says clearly, that the agency, whoever that is, will manage, monitor and regulate water resources. So it is calling in essence for a separation of the functions of water resources management that now lie with WASA through its Water Resources Agency. And of course, it recognizes that that institutional capacity exists in the Water Resources Agency.

So a number of models for the institutional set up of the organization have been put forward, including utilising the Water Resources Agency services. Because that is really where the capacity is and that has been put forward for a decision. And actually this separation is not new. It has been going on since the early 2000s where the recommendation was made out of a strategy that was funded by the World Bank to set up a resource regulator. So your policymaker which is the Ministry, should be separated from your service provider which is the utility should be separated from the resource regulator which is WRA.

So the legislative groundwork actually exists. What we are waiting on is a policy decision as to whether we are going to adopt as a country integrated water resources management, which has particular benchmarks of institution management, financial, and the enabling environment.

Mr. Chairman: Could this Committee be provided with those two items of information that you mentioned. One, the model framework for this integrated water resources management agency, and two, the legislative findings that you referred to.

Mr. Mark: Yes, may I continue, Mr. Chairman? In your submission Acting Permanent Secretary, you indicated that the public involvement in protection, conservation, management of watersheds constitute a central focus when it comes to the security of water supply. I was interested in the management of our watersheds. First of all, can you identify where these watersheds are located? Could you also advise this Committee whether public education initiatives on the protection and conservation of these watersheds have been pursued? What initiatives have been taken in that regard in terms of education? And to what extent these exercises that I have mentioned have been successful in protecting and conserving our watersheds? So it is a three-part question to get some clarification on.

Ms. Duke: Okay, member, in terms of—

Mr. Mark: Or if you want to put them in writing, you can do that but you can give us a tight summary of these concerns.

Ms. Duke: I think that the WRA would be able to address the questions that you have asked.

Mr. Gosine: Good afternoon, member. With respect to watersheds in Trinidad and Tobago, there are 55 watersheds in Trinidad, and 14 watersheds in Tobago. A watershed is defined as an area when rain falls they come to a common point. So, all of the land surface would be part of a particular

watershed. With respect to management of the watersheds, the Water Resources Agency works closely with other entities who have regulatory functions. For example, we have EMA, when a project is proposed and they say that there would be some potential impact on the water resources, they would write to us and ask for our input into the proposed project. So, it could be with regard to whether its surface runoff which is going to be impacted, or infiltration into our aquifers would be impacted and so forth. So, we have a very close relationship with the EMA with regard to projects and their impacts on the water resources.

In addition, the Water and Sewerage Authority is part of the Mineral Advisory Committee which basically reviews applications for mining and quarrying. So, this Mineral Advisory Committee would review mining applications and the membership of this MAC is comprised of: Ministry of Works and Transport; EMA; Ministry of Health; Ministry of Finance; Town and Country Planning Development. And we basically try to work together to ensure what is being proposed would have as minimal impact as possible on the water resources. So, overall, we try to use our relationships even though with regard to legislation, WRA really does not have any legislation on its own in order to move forward with management of the water resources.

In addition, we have a public education component, as well as working with grassroots organizations and that programme is called the "Adopt a River Programme". And that basically to get the citizens in a watershed to become stewards of their environment. The Adopt a River Programme would train water warriors in the communities, and we basically would educate them in the role of protection of their water resources. We train them to do simple water quality testing so that they could monitor their watersheds. We have meetings at schools, primary schools, high schools, in order to foster this greater stewardship because the young people they are probably more in tuned with what is going on, and they could help guide the adults and nudge them along the right direction.

Mr. Mark: May I ask, you can put in writing, where these watersheds are located in Trinidad and Tobago? And if you can also indicate to this Committee, Sir, how successful have we been so far in preserving and ensuring longevity as it relates to these watersheds, re: management of it, and conservation of same? Could you just share with us, you know, what is the experience, or what the experience has been like thus far in preserving, conserving these watersheds?

Mr. Chairman: Could I also just add a couple things to what Mr. Gosine has indicated and what member Mark is asking for? Mr. Gosine, could you safely identify, or is there a clear identifiable agency that is responsible for watershed management in Trinidad and Tobago? Or is it spread among several stakeholders?

Mr. Gosine: It is spread among various stakeholders. When you look at the drainage division they

give approvals of projects with regard to impacting river courses, right. So a lot of the projects, developments, would have to get drainage approval for any kind of development. You also have Town and Country Planning department and they basically would have to look at the current land use, and they may have to modify the land use if there is a particular project that is going to be done. Of course, we have the EMA whereby they issue a Certificate of Environmental Clearance with regard that give their conditions with respect to that proposed project.

However, if they sense that the project is of too great a scope they would require an environmental impact assessment before they would issue a CEC. So those are the key entities, Drainage Division, Town and Country Planning department, and EMA that basically have legislation whereby they have a role to play with regard to watershed management.

Mr. Chairman: Okay, thank you, but it seems as though there is no clear lead agency that has a primary responsibility for watershed management. And I am just wondering in terms of the Integrated Water Resource Management approach, whether we will be going in that direction in terms of the agency, the IWRM agency that would be charged with that primary responsibility for watershed management. Because from what I have looked at in terms of the responses that have been sent, it seems as though the Integrated Water Resource Management approach is also significantly suggesting that the supply of water, as much as possible, should be maximized from within the watershed resources itself.

I mean, we have cases where water is treated in Caroni and sent all the way down to south Trinidad, engaging, you know miles and miles of transmission lines and other than capital cost, the maintenance and the booster stations and everything that they require to take that water from Caroni and get it all down to south. And the integrated water management approach would be to say, well look, within the watersheds themselves, these are the potential sources of water. And we try to treat, we try to extract, treat and distribute within the watersheds itself, rather than cross watersheds distribution. Obviously, the thinking is that the benefits of minimizing cross watershed transmission is of course cost and getting the communities more involved and more active stakeholders in conserving what their watershed is producing. And I hope that the policy that we are looking at really would seek to maximize this aspect of the watershed management, and extraction and distribution of water within the watershed itself.

Mr. Gosine: Well, with respect to the IWRM policy, it is basically a decentralization of that process whereby you have all these entities, these key stakeholders, working together. But in terms of, I think we just need to be working closer together much more to ensure that there are no gaps. With respect to water within different watersheds, when you look at the rainfall occurring in Trinidad, the areas

with the heaviest rainfall is primarily the north-east, all right. An area of concentration would be like Hollis Reservoir. In addition, where we have the location of our aquifers we have some areas whereby you really do not have too many aquifers in that geographic area. As a result, they do basically export water out of watersheds.

But you are right in the sense that overall when you look at for example the United States, you have basically they would not allow water out of major river basins. Like you have the Great Lakes Compact between the Great Lake States of the US, and those provinces of Canada that share the Great Lakes. So, you basically have those kind of things in place to not export water out of large areas. But I think here in Trinidad, because of some of the population centres being in areas where rainfall is not as much as the north-east, for example the north-west, we have really no choice but to basically bring in water from where it is more abundant.

Mr. Chairman: Thank you. I think I see Mr. Kerr is here, and we have been talking a fair amount about climate change and its impact on the water security. I had the privilege of hearing Mr. Kerr deliver a short paper when we had an inter-parliamentary union seminar, I think sometime late last year. And, Mr. Kerr, in terms of the whole impact of climate change, in terms of what we are looking at, and from the view of the work of the Met Office, I am asking in terms of risk assessment and projections based on certain climatic conditions, the present case. What scenarios, what analysis are we looking at or have we done to come up with projections in terms of—I know long term is difficult—but in terms of medium term, short- to medium-term impact on water availability and water resources? Because Mr. Poon-King mentioned about the surface water and the impact of the rain fall. Is there marked isohyetal shifts coming out of rainfall patterns over the years, and what is projected for the short term? And also of concern is that remember although it is ground water, and we are extracting from wells the recharge of those aquifers is dependent on surface water.

Mr. Kerr: Thank you, Chair. Good evening again, and I want to just place it in context of member De Freitas, the question that he would have asked. And our analysis shows that we have seen a decline in rainfall. The last decade 2010 to 2019, when we compared the cumulative rainfall to the 1961 to 1990, 30-year period, we are seeing that that decade was 5 per cent less. When we compared the same decade with 1981 to 2010, we see that the cumulative rainfall was a whole 11 per cent less than that period. When we do decade to decade, we see that the last decade has cumulatively produced the least amount of decadal rainfall since 1970 or the late 1960s. So we are definitely seeing a trend with respect to the decline in rainfall and the projections is for that trend to continue.

So, for us, we have looked at the isohyetal and we have seen that there is a trend across Trinidad and Tobago, and the challenge though is that with respect to the extremes it depends on

which index or which metrics you use, some are increasing, some are decreasing. But be that as it may, even to the point that member De Freitas made with respect to the high intense rainfall events, we are seeing the top 1 per cent of the heaviest rainfall events or those that are occurring at the 99 percentile are contributing more rainfall to the annual average. So the rainfall that we are witnessing is actually very, very intense and therefore the ability to capture that become even more a challenge, where the overall deficit in rainfall is occurring.

So, for us we are seeing these trends and we are hopeful that we in Trinidad and Tobago can climate-proof our water resource management. To that extent the Met Office has introduced a number of products that we provide to the Water Resource Management Agency that speaks directly to water security, and has to some degree enabled the Water Resource Management Agency to really help WASA with managing the water resource to the extent that we are a little more comfortable now than we would have been, had it not been for those kind of products and services.

Mr. Chairman: In the catchments where the reservoirs are located for the four major dams that Mr. Poon-King mentioned, is it definitive that we are getting less rainfall in those catchments? And the trend is that we are going to continue to get less rainfall in those catchments?

Mr. Kerr: Well, let me put this in context. We are seeing the trends but each year is not the same. In the last six years it is informative to see that four of those six years in all the reservoir areas, were within the 10 per cent or 25 per cent, the lowest 10 and 25 per cent of the historical rainfall. So we are seeing those trends and they are happening more frequently now. One of the other things that we have to place there is that the El Niño phenomenon typically brings much dryer than usual conditions in Trinidad and Tobago, and since 2010 to now, we had this unusual phenomenon where we see three significant El Niño events in terms of the impacts happening in relatively short period of time. So those are the nuances that are happening within the rainfall distribution that has direct linkage to water security in Trinidad and Tobago.

Mr. Chairman: I know one aspect based on all the responses we have gotten is the whole thing about rainfall harvesting. Maybe particularly for agricultural use, but at the same time, not discounting it in terms of possible sources for winning water that could be treated and put into potable use. Is the Met Office in a position based on the work that you all are doing to point to any specific regions of catchments, where in terms of rainfall trends and patterns that rainfall harvesting could be optimized?

Mr. Kerr: Unfortunately, we are not able to pinpoint that. But what I can say is that the country in general needs to move to a level where we utilise rainwater harvesting in greater ways. As an example, in Australia rainwater harvesting has been incentivized to the extent that it has a greater uptake in residents. And it has been incentivized in a way where if you connect your toilets or your washing

machine to a rainwater tank, then you get a particular payout from the Government. And then the Government by policy ensures that the education system, the schools, have rainwater harvesting to flush their toilets, and I feel that in Trinidad and Tobago policies to that effect can be used to really bring the change in behaviour in Trinidad and Tobago.

Mr. Chairman: My follow-up question is whether the Ministry of Public Utilities and WASA in terms of offering incentives for the use of rainwater, even in terms of the construction of cisterns and underground cisterns which in a lot of the islands is standard. You are building a house, you do an underground cistern at the same time. Whether in terms of are there any plans from Ministry or WASA to accelerate or to give more impetus to the whole aspect of rainfall harvesting outside of the agricultural sector?

Ms. Duke: We are actually at this point in time at the Ministry conducting some further research into the whole rainwater harvesting and how we can put it to use in terms of WASA's system, and we have one or two programmes that we wanted to make it complementary too, but we are still conducting that research.

Mr. De Freitas: Mr. Chair, I just want to jump in here and ask a question. Maybe the Ministry might know it or WASA might know if off hand. Which months in Trinidad and Tobago do we get the highest amount of rainfall usually?

Ms. Duke: I will ask Mr. Kerr.

Mr. Kerr: At some stations it is difficult to assess a particular month given how rainfall occurs irregularly in Trinidad and Tobago. So, what you may find is that on the north-eastern areas the month of August is the highest producing month, whereas, in the western areas the month of June is the highest, and then in Tobago the month of November is the highest. So, it depends on a number of climatic background factors. But what we are seeing, for example, is that the late wet season at Piarco in particular we are seeing what we call "a wetting" in that, October, November, December, over time since 1946 to now, the cumulative rainfall for those three months have increased, and increased statistically significant. The last three months of the year.

Mr. De Freitas: The reason I was asking that question is, I just quickly got some data from the press releases that WASA put out last year. And I have noticed that in March, using Hollis, we saw that there was 63.34 per cent capacity, and just a mere five months later in August of the same year, Hollis dropped to 18.91 per cent capacity. That is five months. That is a precipitous drop in five months. And I was just trying to compare that to where the rainfall was, because you know, most people do not understand this but it is not a black and white line that you go through for dry season and wet season, it sort of blends. So, you know, it is not June and then all of a sudden this great amount of

rain and what not.

And the reason I am asking that is because that is just one year and, you know, when you go over a decade for example, you can pick up trends. Does WASA take into account that type of data to sort of determine how it distributes its water? So, let me just go a little further, for February it is being reported already, Hollis is at 73.07; that is 2020, and obviously we will wait to see what happens in August. But is WASA looking at that? And then taking that into account to say well, listen in the month of June, July and August, the population of Trinidad and Tobago, given the fact that we are at the tail end of the dry season, so we have not had much rain, and the reservoir is expected to drop that low, because that is pretty low, 18 per cent is pretty low. You know, do they put programmes in place to ramp it up outside of telling the population to conserve? What else are you all doing to sort of treat with that? Because we do not want this year we find out it is at 15 or 10 if that is where it is trending based on what the gentleman said just a few moments ago.

Mr. Poon-King: Well, as Mr. Kerr had indicated, he does his analysis and within WASA through the Water Resources Agency we do do our projections for the reservoirs, and produce water at the treatment plants based on those projections. So, we do look at what is proposed. As I indicated, the last dry season was particularly harsh, and we amend our production levels to match the water that is available to ensure we have continuity of supply. So, I think in fact, we just got from Mr. Kerr projections, yesterday. So, again we will be reviewing and amending as required.

4.10 p.m.

Mr. De Freitas: This might be a lil bit premature. What projections you all have for August of this year? Would it be just as bad or would it be better?

Mr. Poon-King: I think I would let Mr. Gosine at WRA, he has some projections. I do not know if he has them on you but—

Mr. Gosine: Good afternoon member. So we received the six-month rainfall outlook yesterday and staff is currently, basically, trying to do the assessment. So the information I have is basically about a month old. Met Service provides basically three forecasts: one is called the outlook, which is the best estimate of the expected rainfall. They have an upper threshold and a lower threshold. For water supply purposes, it is prudent to use the lower threshold to help guide. What we do, two assessments, one for normal rainfall expected and then the lower threshold rainfall. So because it is a six-month forecast we received, this went from February to July. Right? So based on that and did you have a particular reservoir—Hollis, you said?

Mr. De Freitas: If you have all that is fine, it will be instructive to the population.

Mr. Gosine: Okay. Well, we had a low point in terms of capacity at Arena and occurring at the end

of June and 29.9 per cent at the end of June, if we get the lower threshold rainfall from February through July.

Mr. De Freitas: That is actually the lower end of the rainfall?

Mr. Gosine: That is correct.

Mr. De Freitas: Okay.

Mr. Gosine: Right. So, it is basically a worst case scenario and when you are trying to stack for each month, however, as we have realized, sometimes the actual rainfall can be even less than the lower threshold. That has happened at times.

For Navet, we are in the better situation there. The low point would be at the end of May, and it will be about 44.4 per cent full. Navet has a redundant system whereby there is a lower reservoir and the dam is on an adjacent watershed, so water can be pumped from that lower reservoir to the upper reservoir. So that redundancy is of benefit to the Authority.

Hollis, the low point will be at the end of May and that will be 34.3 per cent capacity, and the production we estimated to be 5 mgd. So if you produce more, the end of month capacity, I mean, the level will be less. Right? So it is that interplay. And at Hillsborough, Hillsborough is presently above average and the low point would be in July, 38 per cent.

Mr. De Freitas: That sounds really good. Just to continue on, based on the projections that you had for the lowest amount of rainfall that is projected to occur between that five-month period, at least two of the four that you have called out would be above what it was last year, and I think it is only one, which is the first one, which is Arena, if you hit that low mark, that would come in at lower than last year. So the projections sound good to me and like I said, it is instructive to the population to at least know that so that they could, in terms of their conservation, they keep conserving for their own benefit, WASA and water security.

Mr. Mark: In terms of performance indicators in order to assist to benchmark WASA against regional and international utilities and against its own progress over time, how does WASA rank against regional and international utilities? That is one. And how has WASA performed over the last few years in terms of its five performance indicators that you have identified? So that is the first question I would like you to pay attention to.

The other one, I know WASA has a lot of challenges and to overcome your infrastructural challenges, even your institutional barriers, you need revenue. So you go to IDB, as you said earlier, and then you get funding from the State through subsidies and subventions. Could you inform this Committee why WASA, in the face of a crisis of cash, would have allowed its receivables to reach this astronomical level of $1.6 billion? Could you share with us why WASA would have allowed this to

happen and what measures, aggressive measures, are being taken by WASA to address this huge and astronomical level as it relates to your receivables of what I have seen to be about TT $1.6 billion? You could correct me if I am wrong, but that is what we are seeing. So my first question went to the performance indicators and the second one is in a crisis of cash environment, why has WASA allowed its receivables to reach that level? So Madam, please.

Ms. Duke: Yes, Member, thank you for the questions. In terms of how WASA stacks up against other utilities, I believe that was part of the first question, I will ask our Water Sector Specialist to speak to how WASA stacks up in terms of coverage and service to the citizenry, as well as to speak to some of the elements of the strategic pillars that we spoke about earlier like operational efficiency and so on, and then I will ask the DPS to share with us some of the reporting that WASA does based on what we have asked of them.

Mr. Chairman: Before you do, Madam Permanent Secretary, I think the member also specifically referred to the performance indicators that you have in your response. You had five performance indicators I think that you alluded to.

Ms. Duke: The Water Sector Specialist will speak to that.

Mr. Chairman: Yeah—to measure against those specific indicators?

Ms. Duke: Yes, she will.

Mr. Chairman: Okay. Thank you.

Ms. Duke: All right.

Ms. Govia: All right. We have set five strategic pillars and each of these pillars have performance indicators and we have defined what we actually want WASA to report on and specific to— So the five indicators which you have, one of them is a customer-centric culture, and we are measuring that by WASA's response and handling of complaints as well as the time it takes to process things like a new connection as well as a completion certificate which is in WASA's control. On the operational efficiency side, we are looking at their leak repair and road restoration status as well as their coverage and production of water, as well as water storage.

Financial viability: we have a bunch of financial metrics which include the EBITDA margin, their receivables, turnover ratio as you mentioned, their liquidity and their inventory turnover ratio. We are also requiring that they report on governance and the indicators for governance are specific to business continuity, how they have been able to implement their preparedness and response strategy in times of a disaster as well as their statutory submissions to both the Ministry as well as the Parliament. And then the fifth indicator is—I think that was five—how WASA performs relative to other entities in the Caribbean? So both the Ministry as well as regional research bodies such as the

Inter-American Development Bank have done a sort of performance benchmarking assessment of WASA.

And, as I mentioned before, water coverage is pretty high compared to other regional utilities. WASA is the second best performing utility with 95 per cent service coverage behind Barbados and Belize which is at 100—wastewater coverage, sorry. WASA is ranking the highest regional utility in terms of centralized sewerage coverage which is around 30 per cent coverage in all of Trinidad and Tobago. The rest, of course, are septic tanks. Regionally, the numbers vary between 2 to 17 per cent.

On the non-revenue water side which is another efficiency indicator that both the Ministry as well as other entities used, a lot of the regional utilities battle with non-revenue water. So WASA, the estimate is around 40 to 50 per cent and most of the utilities are around that with Jamaica at 60 per cent and most of the other utilities are actually tackling that. So, potentially that number would have gone down in the last two years.

From a governance and source of financial perspective, and it leads back to WASA's tariff, WASA has the lowest water tariff in the region, and I think only Suriname within this hemisphere has a lower tariff than WASA and, of course, that spirals into all of the other problems relative to their operations, as well as their receivable situation. Again, I mean, their account receivable is pretty high compared to other utilities, but one thing just to note is that from a legislative perspective, Trinidad and Tobago probably has the most dated water Act in the region. So it speaks to a wider issue of governance and how we have been managing our sector as a whole, not just the utility.

Mr. Mark: Yes, Mr. Poon-King, can you help us with the next question?

Mr. Chairman: Yeah, regarding the receivables, the 1.5 billion, I think it is.

Mr. Poon-King: So, just to correct the figure, member. The figure is about half of that, $827 million. It is still a significant figure, but just for correction. Insofar as what we are doing, the first mode of attack would be to disconnect properties. Well even before that, we contact customers encouraging them to make payment. The intent is never to stop the service but rather to collect the rate and then we go to disconnection and there are some other activities, so I will ask my Director, Customer Care, Mrs. Dumas-Harewood and she could give some more details on it.

Mrs. Dumas-Harewood: The debt recovery steps, we have two steps: encouragement and then we have enforcement. So for encouragement, we will use things like telephone reminders, reminder notices and actual interactions with the customer and then on the enforcement, we have disconnections, but because the majority of our customer base are not metered. We first, in the majority of cases, have to install curve valves so as to make the disconnections easier to do, and then thereafter once somebody is disconnected for more than three months, then we will take the legal

action steps which would include serving the pre-action protocol letters to the extent of sale of property.

I think the first part of your question had to do with why would receivables reach to this level. I think in the majority of cases, if you cannot disconnect someone—that is the majority of the problem—then you have the instances of the government receivables, which is at the level let us say about $78 million, at this time, and then you have some other sectors where we have like abstraction and so on which are contributing. Nevertheless, the residential carries the highest receivables and, basically, being able to disconnect those customers easily will help WASA to reduce the receivables.

Mr. Mark: Mr. Chairman, before, can I ask the official, what percentage of this $800 million would you categorize as industrial, commercial, residential and governmental in terms of this 800—and thanks for the correction Mr. Poon-King—what percentage would you say, without you know, we could probably ask through the Chairman to give us a listing because we would like to help you, so maybe you could give us just a percentage if you can. I have them in broad terms, but you may have it captured differently: industrial, commercial, governmental and residential as the case may be, in that kind of category.

Mr. Poon-King: I have the data, so I could provide it. In terms of percentages for business and industrial, 4.4 per cent. What I would do I would probably give the highest ones and that would be more instructive. Residential is 62.9 per cent; the next highest is public sector at 8.5 per cent and then water abstraction at 7.0 per cent and then industrial estate at 6.4 per cent. There are others but they are at lower levels.

Mr. Mark: But Mr. Poon-King, when we talk about residential, we are talking about ordinary residence in T&T or you are talking about, for instance—where is the bulk of this coming from, because I thought, you know, we had customers from a residential point of view, faithfully honouring their monthly or bi-monthly commitments. I am shocked to hear that 62 per cent is residential. Can you help us to clarify where are these people, this residential in Trinidad and Tobago?

Mr. Poon-King: I do not have—I can provide that.

Mr. Chairman: If you could provide that information in writing to the Committee, please, because I am sure when you appear in front of the PAC, I think it is next week, a lot of questions are going to be asked along these lines. I would just like to, in terms of where we are with the questioning, is to focus on wastewater reuse. All right? And, in particular, certain aspects in terms of, have we assessed or has any study been done to realistically assess the potential of wastewater reuse in terms of ensuring water security?

And, secondly, roughly if you have any figures, if not, you could give it to us in writing, how

much wastewater effluent is generated from both WASA plants and the private sector plants in order that we get an overall picture of how much effluent is generated from our wastewater treatment plants and the potential or the feasibility—based on the effluent standards, you know, what potential is there to convert that wastewater effluent into water for reuse for both agricultural as well as industrial and even potable water use? And what is the status regarding the Beetham wastewater reuse project and the plans, whatever plans there are to get that water from that project into the mainstream supply? I know that the Ministry of Public Utilities in their response has referred this Committee to NGC, because they said as far as they are concerned they do not really have information, but in terms of WASA specifically and that Beetham wastewater reuse project.

Mr. Poon-King: With respect to the Beetham reuse, WASA's position is similar to that of the Ministry, that the project was originally an NGC project, so we did not have direct involvement with respect to the management funding and so on of the project.

Mr. Chairman: Could you advise the Committee is the plant operational? Is any of the effluent being used by WASA?

Mr. Poon-King: No. What is operational at the Beetham is WASA's Beetham Wastewater Treatment Plant where water is collected from our wastewater catchment which spans from Westmoorings to Mount Hope. Water comes to the wastewater treatment plant to treat and then discharged. The intent of the Beetham reuse plant was to take the effluent from WASA's wastewater plant and then further treat that to produce industrial quality water for Point Lisas. So that project did not happen so the water from WASA's Wastewater Treatment Plant currently is discharging into the environment.

Mr. Chairman: Okay. And your response to what I asked before, Mr. Poon-King.

Mr. Poon-King: With respect to water reuse as a whole, we are actively looking at a possibility of having the Pointe-a-Pierre refinery consider using effluent from the San Fernando Wastewater Treatment Plant which is currently under construction. So the dent there would be to pipe the water from the plant which is under construction to Pointe-a-Pierre to replace the water that is currently used or to augment the water that is currently used for industrial purpose and the Pointe-a-Pierre refineries could then be considered for alternative use, including potable water supply. There are a number of factors. It is currently being considered.

Mr. Chairman: Okay. And the newly constructed plants or upgraded plants at Malabar and those plants?

Mrs. Lee Sing Pereira: Good day, Chairman. When the Malabar Plant was conceptualized, what we had looked at is the same thing in terms of the use of the wastewater. The Malabar Plant and that catchment actually is just upstream of our Caroni intake which services the Caroni Water Treatment

plant and, you know, when we looked in terms of the best use of the water it was really to return the water back to the Caroni River itself so that it could replenish the base flows in the Caroni River. So the intention always was for Malabar to replenish the Caroni River so that it can continue supporting the Caroni Water Treatment Plant.

Mr. Chairman: Okay. Just for Mr. Poon-King, but in consideration of the challenges in terms of surface water and the impact of it on climatic changes, is the authority really considering to investigate in further detail the potential of wastewater reuse as a possible source of water?

Mr. Poon-King: Yes, well as I indicated, we want to look at a volume of water that is viable and, certainly, as Mrs. Lee Sing Pereira had indicated, Malabar was considered and currently the San Fernando is being considered. The volumes we are looking at they are between 40,000 and 45,000 cubic metres per day ultimately around eight to nine million gallons. The smaller plants, it would be more challenging, so we are looking at, as I said, the main focus is that San Fernando plant as to how we could utilize that water. There is the potential for industrial application or potentially agriculture for the east of San Fernando and so on.

Mr. Chairman: Particularly, in terms of agriculture, because I know we are looking at the large outflows from the treatment where we have substantial quantities of effluent and may think that it might be more feasible for those large quantities, but actually the small to medium-sized plants, particularly in localized environments, may prove to be a lifesaver in terms of a crisis, particularly, in terms of scarcity, may be. I am just suggesting that may be for localized supply and, particularly, to build storage capacities in respective areas. It might be worthwhile looking into some of the medium-sized wastewater plants as well.

I would like to come to the whole question of tariffs. I mean, we have been told that our tariff or the charges for water consumption is the lowest in the Caribbean, and considering all the cash flow problems that WASA has and the amount of subsidies that have to go into WASA to keep it operational, I mean, what is the status with application for an increase in tariffs and what are the issues that you are really dealing with that you have so much problems in really getting a reasonable tariff for the water that is supplied?

Mr. Poon-King: In terms of tariff, we have WASA has prepared a business plan and that is currently under final review and it outlines WASA's expenditures and proposals going forward and what type of tariffs could be considered. So it is under final review between WASA and the Ministry and towards having it finalized going forward.

Mr. Chairman: Would you want to advise the Committee of a time frame, when it will be submitted? What sort of time is the RIC going to take based on your experience of all of these things? Because I

mean, the intention may be there but maybe a year, two years or three years will pass and you know, you would not have.

Mr. Poon-King: What I would want to indicate is the review that is currently being done is based on the proposed intervention of the IDB. We are looking at that. So I think that we want to probably within two to three months to have that revision done and then to work with the Ministry towards having it considered thereafter. So that is one part. As to how long the actually process will take, that I cannot say.

Mr. Chairman: All right. In case you are wondering, we will be stopping at 5.00 p.m. So we do not intend to keep you all here into the wee hours of the night, not this time, but we have some questions that we have gotten from the public and we have selected two questions that I will be asking before we close off, but before we do, I would like to come back to the question of metering. Now, we know as part of the efforts to reduce consumption and manage consumption, the authority intends to get into a bulk metering programme. I know we would probably need some more details of it, but we will request that in writing from you, and the bulk metering programme would, of course, help you to assess where your water is being consumed and also I understand it will allow you to do some degree of pressure management.

4.40 p.m.

But what are the reasons really? Maybe it might be funding, but in terms of the domestic metering programme because to me it is a catch-22 situation, you get into domestic metering, your revenues have the potential to drop significantly because it is a deterrent to excessive consumption but that could work against you, because the less water people consume, of course your revenues are going to drop. And in such a scenario where also your metering itself, if you could indicate to us what percentage have you accomplished with regard to domestic metering?

And seeing that you have put metering as one of the main pillars for the control of consumption rate, a deduction of consumption of water, what measures, what proposals does the Authority have specifically to really get this domestic metering going?—because it has been around for decades; we have been talking about metering. And the progress, if you could indicate the progress to us and what proposals you have to get this programme really going?

Mr. Poon-King: In terms of the residential metered customers, it is just at around 3 per cent; that is 2.97 per cent actually, so it is fairly low. Insofar as having the universal metering to address that there will be a significant capital investment to be done and that again is proposed under the IDB intervention for the water sector. So at that point the programme will take place where we will see the number or the percentage of customers, residential customers, who are metered to have that number

increased.

Mr. Chairman: Could you give a little more details on the IDB intervention as you put it? Is it a short-term intervention? Is it going to be phased over the years to come? What are some of the details, if you could inform us, please?

Ms. Duke: The IDB intervention would be over a number of years, but I would ask the Water Sector Specialist to give you the key highlights of what it will concern.

Ms. Govia: The Water Sector Improvement Programme which was developed by the IDB in collaboration with the Ministry of Public Utilities and WASA has a specific focus on non-revenue water reduction and that includes metering, because Mr. Poon-King said earlier that it is a challenge for WASA to manage or to be able to manage demand without metering, but it is also a challenge for an individual to manage demand without having that signpost of how much water you are actually using. So you could be the most water conscious person in the world but if you do not know if there is a leak in your property, for example, because you do not have a meter there is no way for you to actually conserve.

So the metering is one of the infrastructure improvements that the Water Sector Improvement Programme is looking at. It is also referring to non-revenue water reduction from the perspective of not just leak repair and pipe replacement but also pressure management. So what we are saying is that—and the models have shown in terms of utility management that you have to establish district metered areas or discreet areas of supply and manage flows and pressure within there, and that will enable you to specifically pinpoint leaks in your system, both in your network side as well as on the customer side.

So we are saying we need to establish or segregate the country into district-metered areas and measure the use and manage use and supply within those areas. So those are the infrastructural changes that we are looking for as well as climate change investments. With the recovered NRW water and metering we have projected from a financial perspective that this entire programme will have a 17 per cent internal rate of return, and what that means is that with recovered NRW with metering, WASA can see an increase in revenue with a simultaneous decrease in their operating cost because they are now more efficient in terms of their operations. And this programme actually pays back for itself so there is no need to increase the subvention of the Government itself to service the debt, but the savings that WASA will get from their improved or their more efficient and lean operations they can actually now pay or service this loan.

And then the final pillar under the Water Sector Improvement Programme is sustaining the results which is instituting or establishing a performance-based culture within WASA to hold them

accountable to particular benchmarks as it relates to their operations. So that is really the focus of the entire Water Sector Improvement Programme.

Mr. De Freitas: Mr. Chairman, let me just ask one question tied to that.

Mr. Chairman: Yes, please.

Mr. De Freitas: I may not have heard it, you may have indicated this before; in that Water Sector Improvement Programme, are there funds available for replacement of pipe work?

Ms. Govia: Yeah. So strategic pipe replacement.

Mr. Chairman: Would it be possible, the Committee would be requesting that if there are any reports regarding this Water Sector Improvement Programme, particularly the IDB inputs and proposals, if we could be provided with copies of those, please?

Ms. Duke: Yes.

Mr. Chairman: All right. We just have 14 minutes remaining and, I mean, we do have some more questions but I think what the Committee would do is review the questions that we have not brought up as yet and we would decide that we would send it to you in writing and you can respond in writing, or maybe if we need to get you all back in for another session. So we will let you know. But there are two questions here; we have some questions but some I would prefer not to ask. I have selected two from members of the public who have emailed in who are watching on.

The first one is: Can WASA listed measures in place to address the issues of customer service as there have been complaints of calls being dropped when calls are made about a potential leak? And the second question is: Does WASA have its water schedule for all areas on its website, if not why not? And where can this information be obtained? Mr. Poon-King.

Mr. Poon-King: Okay, first, with respect to the customer service part and the interaction with WASA, we do have our call centre which is the primary mode of communication with customers—well, for customers to communicate with WASA on service issues. We have increased the complement of staff within the call centre by approximately 25 per cent, and so we have been receiving or accepting more calls. Prior to getting the staff on we would have an acceptance rate of between 40 to 50 and 55 per cent. Last month we had an acceptance rate of 80 per cent.

What we are going to also have available is we have the WASA Services App where you can have the app put on your smartphone and you can make some requests. We still want to improve or increase the functionality of the app. Currently you can pay your bill, you can report a leak or you could request truck borne, and we are looking, as I say, to make it more functional so that it would provide for other services. And we also have where people can communicate via Facebook, via Twitter, via email, so that we do have other modes of communication that people can utilize. The

second question was—if you could just repeat the second question for me?

Mr. Chairman: The second question was in terms of the water schedules.

Mr. Poon-King: Right. So the schedules, yes, the schedules are on the website and we will be updating them based on any changes that would occur and where they need to be amended based on water availability. So that would be an ongoing process where we will have them updated going forward.

Mr. Chairman: So in terms of your customer service, the calls and all of those things, do you have an assessment system in place to assess how effective that face is, your customer face—

Mr. Poon-King: Yes, we can. We do record the number of calls we get in, the number we accept and respond to, and stuff, we do have that inform.

Mr. Chairman: And the Authority is satisfied that you have a fairly acceptable level of performance with regards to that programme?

Mr. Poon-King: Well, I think based on where we were, we acknowledged that we had some groundwork to do so we did increase the staff. Our target is 90 per cent and we are currently at 80 per cent, so we still have a little work to do towards getting where we want to be.

Mr. Chairman: So we would have to start wrapping up, but before I invite brief closing remarks from both entities, just briefly if you can indicate to the Committee the role of Desalcott in terms of water security. They produce a fair amount of water that is purchased by WASA and in the context of security, medium and long term and your contractual arrangements with Desalcott, how do you see that? I mean, where specifically is the Authority with regard to that in terms of water security?

Mr. Poon-King: WASA, we currently have available for distribution depending on the time of year, between 220 and 240 million gallons of water. Desalcott produces and delivers to us 40 million gallons a day, so they are fairly significant. So it is around 16 per cent of our total distribution. In terms of the contracts, I believe the contract is enforced until 2039, so it was renegotiated and renewed. So we do have that contract in place for some time and going forward, and it would be for the delivering for 40 million gallons of water a day until the expiration of the contract.

In terms of water security, based on their source being sea water, it would not be subject to all the issues associated with rainfall. There is one issue that does come up on an annual basis where during the dry season where you have less run-off from local rivers and from South America, the salinity in the Gulf of Paria goes up making the treatment process a little more difficult to achieve the 40 million gallons of water a day. But they are, at this time, a significant component of our water supply infrastructure.

Mr. Mark: Just for a few seconds, through the Chair. Mr. Poon-King, what is the value to the taxpayers of this 40 million gallons per day? And does WASA owe or has any outstanding bills to this particular supplier?

Mr. Poon-King: Well, first, I do not know if you could clarify when you say—the first part of your question—

Mr. Mark: No, in other words, what do we pay as a nation state through WASA to this supplier, you know, in terms of the supply of water?

Mr. Poon-King: Okay. The monthly bill to Desalcott is approximately US $6million for the delivery of water, and at present we did have some outstanding bills with Desalcott and we have made arrangements to have those paid off.

Mr. Mark: Could you put that in writing and submit to us?

Mr. Poon-King: Certainly.

Mr. Chairman: Okay. So we could ask Ms. Duke, Permanent Secretary, for brief closing remarks, and afterwards Mr. Poon-King, any brief closing remarks, if any, before we wrap up.

Ms. Duke: Chairman, members, the Ministry of Public Utilities thank you for the opportunity to share today. We have certainly taken note of some of your observations, and as we move forward we will incorporate in our policies and plans. Thank you.

Mr. Poon-King: Similarly from WASA, I would like to thank the Committee on behalf of the WASA team. I look forward to—well, you have said further questions would be coming, but even beyond the question, to have the support that when the responses are provided that we get the support to having those recommendations implemented towards improving the water and wastewater services that we provide. Thank you.

Mr. Chairman: Yes, definitely the support would be there because the mandate of the Committee is really in terms of this particular enquiry. With all the concerns, the current situation with WASA and all the agencies involved with water security is to see if we can distil from all of it all, you know, a clear direction, a clear pathway, and whatever recommendations that this Committee could come up with to augment the tremendous work that is being done, because the Committee gathers that our intent is good. I mean, we are really working for the welfare of the nation in ensuring water security and whatever recommendations we can come up with that would support and consolidate all of the efforts that are being made, we would certainly do so.

So I would like to thank everyone who came from their respective agencies and to thank all Committee members for their participation, to thank our viewing and listening audience, particularly for their inputs; and to thank the staff of the Parliament of Trinidad and Tobago, Mr. Julien Ogilvie who is standing in for Ms. Angelique Massiah, Secretary, and then all other support staff and the broadcast staff of Parliament for their input. Thank you very much. This meeting is adjourned. **4.56 p.m.:** *Meeting adjourned.*

APPENDIX III

MINUTES OF PROCEEDINGS

DATED DECEMBER 17, 2020

MINUTES OF THE THIRD MEETING OF THE JOINT SELECT COMMITTEE ON LAND AND PHYSICAL INFRASTRUCTURE, HELD ON THURSDAY DECEMBER 17, 2020 AT 1:30 P.M.

Present:

Mr. Deoroop Teemal	-	Chairman
Mr. Nigel De Freitas	-	Vice Chairman
Mrs. Lisa Morris-Julian, MP	-	Member
Mr. Kennedy Richards, MP	-	Member
Mr. Saddam Hosein, MP	-	Member
Mr. Anil Roberts	-	Member

Secretariat:

Ms. Candice Skerrette	-	Secretary
Ms. Renee Batson	-	Assistant Secretary
Mr. Johnson Greenidge	-	Procedural Clerk Assistant
Ms. Katharina Gokool	-	Graduate Research Assistant

Excused/Absent:

Mr. Franklin Khan	-	Member (Excused)
Mr. Symon de Nobriga, MP	-	Member (Absent)

The meeting was facilitated via Zoom Video Conference

PUBLIC HEARING: A CONTINUATION INQUIRY INTO THE MEASURES FOR ENSURING WATER SECURITY

7.1 The meeting resumed at 2:26 p.m.

7.2 The following officials joined the meeting:

Officials from the Ministry of Public Utilities

Ms. Nicolette Duke	Permanent Secretary (Ag.)
Ms. Beverly Khan	Deputy Permanent Secretary (Ag.)
Mr. Kenneth Kerr	Chief Climatologist (Ag.)

Officials from the Ministry of Rural Development and Local Government

Mr. Raymond Seepaul	Deputy Permanent Secretary

Mr. Jerry David	Senior Disaster Management Coordinator

Officials from Ministry of Planning and Development

Ms. Joanne Deoraj	Permanent Secretary
Ms. Camille Guichard	Assistant Director, Town and Country Planning Division
Mr. Kishan Kumarsingh	Head, Multi-Lateral Environmental Agreements Unit

Officials from the Water and Sewerage Authority

Mr. Alan Poon-King	Chief Executive Officer
Mr. Sherland Sheppard	Director, Operations
Ms. Denise LeeSing Pereira	Director, Programmes & Change Management

7.3 The Chairman welcomed the witnesses present and gave opening remarks. Introductions were exchanged.

7.4 The Chief officials of the abovementioned organisations gave opening statements.

7.5 The **Appendix** herein contains a summary of questions and concerns raised during the hearing.

7.6 There being no quorum of the Committee Membership, the Chairman advised that the public hearing must be concluded, in accordance with the Standing Orders.

7.7 The Chairman thanked all officials for attending and advised that given the circumstances, any further questions/requests for information will be sent to stakeholders in writing.

ADJOURNMENT

8.1 The adjournment was taken at 4:37 p.m.

I certify that these Minutes are true and correct.

Chairman

Secretary

December 17, 2020

Key Issues Discussed with the Ministry of Rural Development and Local Government (MoRDLG)

The challenges regarding the coordination and effective execution of water trucking services

i. There are challenges with providing water truck services to communities without a pipe borne water supply owing to inadequate funding, particularly during the dry season.

ii. There is a good relationship between WASA and the Municipal Corporations and the co-ordination exercise between both entities for truck borne water is effective and reliable.

The proportion of water supply required on a regular basis versus emergency situations particularly during the dry season

iii. The MoRDLG conducted a survey amongst all 14 Municipalities which revealed that the average truck borne water supply totals 63,800 gallons per day.

iv. The actual supply of truck borne water required by the Corporations for approximately 5,000 households is 25.5 million gallons annually.

The reason for the deficit of truck borne water in rural communities and funding issues for water

v. The working relationship between the Corporations and WASA provides for ease of access to pump borne water at the water stations and hydrants.

vi. The challenge exists in accessing the quantum of water required for an adequate truck borne supply to communities.

Solutions envisaged by the MoRDLG to ensure that rural communities are adequately supplied with truck borne water

vii. The MoRDLG, in its survey, requested that Corporations provide a dollar value in order to adequately assess the truck borne water supply required by communities and found that it would cost in the vicinity of $11.6M to provide truck borne water to communities.

viii. The Corporations included the required funding for an adequate truck borne water supply in their respective Draft Estimates.

Whether the purchase of water trucks by each Corporation has stopped

ix. Municipal Corporations are independent bodies and reserve the right to acquire equipment including water trucks.

x. Municipal Corporations can place the purchase of a water truck as a priority item under the Public Sector Investment Programme.

The sharing of water trucks amongst entities to supplement shortfalls

xi. The whole-of-government approach to pool resources by sharing water trucks is made available at the MoRDLG and all the Corporations.

xii. Emphasis is placed on the pooling of resources during emergency situations.

xiii. The whole-of-government approach is not utilised to supplement the truck borne water service which affects several Corporations annually, particularly during the dry season.

Whether the plan to pool resources is ready for the upcoming dry season

xiv. The MoRDLG understands the concerns for citizens who do not have access to an adequate supply of water.

xv. The MoRDLG agrees on the need for a collaborative approach to be taken to treat with the truck borne water supply issue and the immediate need for prioritisation of said issue.

The number of water trucks per Corporation

xvi. Based on information received from the Corporations in early 2020, the Corporations have a total of twenty-three (23) water tenders to service all fourteen (14) Corporations.

The instances when truck borne water is contracted

xvii. The MoRDLG provides oversight and does not play a role in the financial aspect of truck borne water distribution.

xviii. The Corporations receive disbursements for truck borne distributions from the Ministry of Finance. Funds are utilised based on the decisions of the respective Councils of the Corporations.

Whether the MoRDLG receives subventions for the Corporations.

xix. Each Corporation submits their draft estimates to the MoRDLG for onward transmission to the Ministry of Finance.

xx. Budgeted requests reflect the needs of the respective Corporations. Such requests are then sent to the Ministry of Finance through the MoRDLG.

Challenges faced by Corporations with obtaining funds to pay for water supply and trucks.

xxi. The Corporations are experiencing severe challenges to obtain funds from the Ministry of Finance for the purchase of water trucks and truck borne water.

Key Issues Discussed with the Ministry of Planning and Development (MoPD)

The status of the MoPD's report on rivers, watersheds, waterways and flooding

i. Since the public hearing held in the 11th Parliament, the MoPD met once with the entities responsible for water resources including the MPU, MoRDLG, WASA, MET Office.

ii. The MoPD has been following-up and trying to keep the integrated approach to the development of water and the water security for Trinidad and Tobago.

iii. The MoPD has been examining the synergies that are to be created in terms of financing and project development to meet the requirements.

The status of achieving Goal 6 of the UN's Sustainable Development Goals.

iv. The MoPD has prepared the Voluntary National Review Report which contains information on Goal 6 of the SDGs.

The MoPD's approach to address the deterioration of water sheds and the quality of surface water

v. The impact of climate change will worsen the existing level of contamination in the waterways resulting in an increase in the cost for water treatment.

vi. The adaptation measures to reducing these risks is within the purview of the various agencies with responsibility for pollution control. The MoPD is the line Ministry with responsibility for pollution control.

vii. The MoPD is currently engaging the various stakeholder agencies to develop a financial investment plan to treat with pollution control.

viii. There is a challenge with differentiating contamination from climate change impacts with other activities such as upstream erosion, quarrying activities, etc.

ix. There is a need to examine climate change factors via the pathways approach.

x. The MoPD has begun to strategise the roll out of the Vulnerability Capacity Assessment Study and develop the financial investment plan to treat with issues identified in the study.

The role of the MoPD in relation to water security and climate change

xi. The MoPD's Environment Policy and Planning Division addresses all environmental issues in Trinidad and Tobago. The work involves a combination of policy, securing financing and project execution for aspects of climate change.

The relevance of the Water Management Resources Authority and IWRM[13] Policy in order to establish clear and direct water sector policy for the country

xii. The MoPD's analysis of water security takes various forms including water distribution. Security also relates to climate change, forest cover and non-revenue water.

xiii. The MoPD has prioritised an integrated approach to deal with other aspects that impact on water security. In this regard, there are lead agencies such as MPU and WASA.

xiv. The MoPD performs Monitoring and Evaluation for development initiatives.

[13] Integrated Water Resources Management.

Whether privatisation was discussed at any level as it pertains to the integrated approach to and analysis of water security, and if so to what extent.

xv. The MoPD has no knowledge of discussions on privitisation of water resources.

The role of the MoPD in the planning approval process

xvi. All development projects on State Lands are generally submitted to the TCPD[14].

xvii. The TCPD is part of the Committee with responsibility for the development of housing.

xviii. The role of the MoPD is that of a regulator and the TCPD works intimately with housing developers at the approval stage and not at the construction stage.

xix. Generally, the TCPD interacts directly with state agencies including the HDC with respect to processing of planning permissions.

xx. The TCPD endeavours not to impose on other state bodies, instead, the Ministry seeks to get the relevant permissions out to assist with the agenda of these state agencies.

Key Issues Discussed with the Water and Sewerage Authority (WASA)

The number of pipelines replaced and the respective costs

i. Approximately 5km of pipeline has been replaced out of 243km of pipeline to be replaced.

ii. WASA approached the MPU to replace aging pipelines in phases. However, the main challenge has been obtaining the funding to replace said pipelines.

The volume of water wasted per day as a result of leakages

iii. Unaccounted for water level, including leakages, amounts to an estimate of between 45 and 50%, which means 100-110 mg[15] of water is wasted, out of the 230-240 mg produced from all sources on a daily basis.

The review of WASA's rates and tariffs

iv. The last time an adjustment was made to WASA's rates and tariffs by the Regulated Industries Commission (RIC) was in 1993.

v. The issue of a rates review is directed by policy. WASA acknowledges that its rates which dates back to 1993, is no longer applicable and should be subject to review.

vi. There is a process for rates to be reviewed. The review of WASA's rates by the RIC is ongoing and the Authority continues to work with the RIC by providing the information required for the assessment, in keeping with the approved process.

vii. The initial submission by WASA for a review of its rates commenced in 2007.

[14] Town and Country Planning Division.
[15] Million gallons.

viii. WASA prepared a Business Plan which was submitted to the RIC and there is an ongoing discussion regarding formatting of the Business Plan.

Whether there is any plan to privitise WASA

ix. A Cabinet appointed sub-committee has conducted a review of the Authority and based on the outcome of that review the way forward will be charted.

Whether WASA has plans to reduce Service Centres to the public

x. WASA's Service Centre in Couva was closed based on the Authority's review of customer interaction and cost cutting initiatives.

xi. WASA is looking at alternative mechanisms of interaction with the public and has been using more social media platforms, such as WhatsApp and Facebook, as well as its webpage to facilitate payments and reduce personal interaction and possible infection during the COVID-19 pandemic.

WASA's current local and foreign debts

xii. WASA's local and foreign debts totals TTD 4.2bn.

WASA's plan to improve the level of communication with the MoWT, the Corporations and entities with responsibility for road repairs

xiii. WASA collaborates with the MoRDLG and MoWT with regards to road repairs.

xiv. In Point Fortin a high leakage pipe is currently being changed. WASA initiated a joint effort with the MOWT to decommission the old pipeline and install the new pipeline at that location.

xv. Once there is a mix of new road works with old infrastructure beneath, the risk of a leak occurring within a day, week or month thereafter is possible, therefore necessitating an excavation on the newly paved surface.

xvi. Collaborations exist, however there ought to be a common focus amongst entities via a development programme to have a particular road fixed.

Spending on increased water supply as opposed to fixing the distribution network

xvii. WASA's water supply equation involves two sides, the supply and demand for water.

xviii. The solution must take a comprehensive approach. If there is a localised/population problem, the supply must be increased, where transmission is inadequate this would also require an increase. Water management in terms of water pressure as well as conservation by users, is also controlled by the WASA.

The issue of staff cuts as a result of WASA's inefficiency

xix. WASA anticipates that the findings of the review by the Cabinet appointed committee will determine whether staff cuts at the Authority are required.

Whether WASA recommended the privitisation partially or wholly to the Cabinet Committee

xx. Privatisation within the water sector is a tool that can be used. The extent of the use of privatisation has to be determined.

xxi. WASA currently implements one form of privitisation as some of its services are not available in-house.

xxii. Certain areas of WASA's privitised operations may need to be increased or decreased. Privitisation can be applied in external areas such as water trucking, backhoes, it can also be applied to non-revenue reduction and other areas.

xxiii. WASA has not made a recommendation of privatisation going forward.

Increasing the efficiency of WASA re: Point Fortin project

xxiv. The intent is to complete the Point Fortin project by Monday December 21, 2020. The completion date for said project provides for road repairs.

The revenue WASA generates from customers supplied with water from DESALCOTT

xxv. Water from DESALCOTT is confined to the Point Lisas Industrial Estate.

xxvi. Approximately $25M is received in revenue from customers supplied with water from DESALCOTT.

xxvii. Water beyond that provided by DESALCOTT goes to the domestic customers and is based on the Annual Taxable Value of the property (ATV).

xxviii. The domestic system is an unmetered system.

An incurred deficit with regards to water purchased from DESALCOTT

xxix. WASA has incurred a deficit because 50-55% of the 40mg of water purchased from DESALCOTT goes to the domestic customers and the balance goes to the industrial estate.

xxx. WASA's revenue from the industrial estate is sufficient to cover the production costs for water on the estate.

xxxi. WASA's rate is $12 per cubic meter within the industrial estate and $3.50 per cubic meter to a commercial entity outside of the estate.

The impact of the closure of industries due to deficit situation with DESALCOTT.

xxxii. Water from closed industries such as ArcelorMittal is distributed to domestic customers.

xxxiii. WASA experiences reduced revenues as a result of water being redirected from industries to domestic customers without a commensurate increase in the collection of money.

xxxiv. Overall WASA will be collecting less revenue with the closure of any plant in the Point Lisas Industrial Estate.

xxxv. WASA continues to monitor the closure of plants and projects that the reduction in rate will be significant in terms of WASA's collection profile.

WASA's contract obligations with DESALCOTT

xxxvi. WASA confirmed that a term of the contract is that it is required to take 40mg per day from DESALCOTT until 2036.

Whether the introduction of property tax will impact on WASA's rates

xxxvii. WASA's rates are linked to the taxable value. WASA's rates will be amended accordingly if the property law is amended. Metered rates will apply for metered customers.

Update on the IDB initiative

xxxviii. WASA has two loans under the IDB intervention; Loan 2600 and 2890 respectively.

xxxix. The funding from Loan 2600 was utilised for a wastewater project in South-West Tobago (completed) and works at a Trincity wastewater plant (ongoing)

xl. Loan 2890 funds involved two components: (1) construction of the Malabar Treatment Plant (completed) and extension of collection system (completed); and (2) construction of the San Fernando wastewater plant (90-91% complete, delayed with expected completion in 2021).

Whether the review of WASA rates includes the review of wastewater rates, taking into consideration the extensive wastewater works undertaken by WASA

xli. WASA has done a Business Plan and will be in further communication with its line ministry.

xlii. WASA's wastewater rate that currently applies 50% of the water rate would be applied as the wastewater rate.

WASA's standards with regard to the resurfacing of roads and the mechanisms in place to ensure compliance by in-house staff and contractors

xliii. WASA has standards re: the resurfacing of roads. Part of its collaborative relationship with the RIC includes the formulation and agreement on those standards.

xliv. The RIC's standard is two (2) days for temporary surface restored and permanent restoration within seven (7) days.

xlv. WASA acknowledges that it has not been meeting the RICs standard for road repairs, as in the past WASA did not have dedicated road restoration crews. However, this has changed and crews are now assigned to road restoration.

Key Issues Discussed with the Ministry of Public Utility (MPU)

Whether there are plans by the Government to privitise WASA.

xlvi. The Cabinet appointed committee completed its work and its report was submitted to the Prime Minister on Friday December 11, 2020. The MPU awaits feedback on the report of the committee.

xlvii. The MPU indicated that it is unaware of any attempts to privitise WASA.

The status concerning the IWRM policy.

xlviii. The MPU has not received a response from the Cabinet regarding the IWRM policy.

xlix. A note to Cabinet re: the IWRM policy was sent previously by the Ministry. The note was returned to the MPU as a result of the change in administration.

l. The optimum proposal for the water sector is to have all regulators separate.

The adequacy of a $500,000 allocation for Water Resource Management

li. Officials indicated that the $500,000 allocation will only fund the beginning of the project.

The definition of a drought and whether Trinidad and Tobago has ever experienced a drought during the past 10 years

lii. A drought is period of very low rainfall and there are various types of droughts.

liii. Droughts can be meteorological, agricultural hydrological or socio-economic depending on different factors, including time frames.

liv. Meteorological droughts have been experienced over ten (10) years and were short-lived with a duration of up to 3 months.

lv. A number of meteorological droughts have been experienced for instance in 2010, 2016 and 2019.

lvi. Droughts will occur frequently and worsen owing to climate change which has been affecting agriculture and the water sector.

Committees Unit

December 17, 2020

APPENDIX IV

MINUTES OF PROCEEDINGS

DATED DECEMBER 17, 2020

VERBATIM NOTES OF THE THIRD VITUAL MEETING OF THE JOINT SELECT COMMITTEE ON LAND AND PHYSICAL INFRASTRUCTURE held ON THURSDAY, DECEMBER 17, 2020, AT 2.25 PM

PRESENT

Mr. Deoroop Teemal	Chairman
Mr. Nigel de Freitas	Vice-Chairman
Mr. Saddam Hosein, MP	Member
Mr. Kennedy Richards, MP	Member
Mr. Anil Roberts	Member
Mrs. Lisa Morris-Julian, MP	Member
Ms. Candice Skerrette	Secretary
Ms. Katharina Gokool	Graduate Research Assistant

ABSENT

Mr. Symon de Nobriga, MP	Member [*Excused*]
Mr. Franklin Khan	Member [*Excused*]

MINISTRY OF PUBLIC UTILITIES

Ms. Nicolette Duke	Permanent Secretary (Ag.)
Ms. Beverly Khan	Deputy Permanent Secretary (Ag.)
Mr. Kenneth Kerr	Chief Climatologist (Ag.)

MINISTRY OF RURAL DEVELOPMENT AND LOCAL GOVERNMENT

Mr. Raymond Seepaul	Deputy Permanent Secretary
Mr. Jerry David	Senior Disaster Management Coordinator

MINISTRY OF PLANNING AND DEVELOPMENT

Ms. Joanne Deoraj	Permanent Secretary
Ms. Camille Guichard	Assistant Director, Town and Country Planning Division
Mr. Kishan Kumarsingh	Head, Multi-Lateral Environmental Agreements Unit

WATER AND SEWERAGE AUTHORITY

Mr. Alan Poon-King	Chief Executive Officer
Mr. Sherland Sheppard	Director, Operations
Ms. Denise LeeSing Pereira	Director, Programmes & Change Management

Mr. Chairman: I would like to reconvene this Third meeting of the Joint Select Committee on Land and Physical Infrastructure of Parliament of Trinidad and Tobago. And I would like to extend a very warm welcome to all present, as well as the viewing and listening audience, to this particular meeting. I would like to advise that this meeting is being broadcast live on Parliament Channel 11 and Radio 105.5 FM and the Parliament's YouTube Channel, *ParlView*.

Let me extend a very warm welcome to the officials of the following entities: The Ministry of Rural Development and Local Government; the Ministry of Planning Development; the Ministry of Public Utilities and the Water and Sewerage Authority. And we will take your introductions a bit later on. First of all let me introduce myself. My name is Deoroop Teemal and I Chairman of this Joint Select Committee on Land and Physical Infrastructure. I would like to ask each member of this Committee if you can please introduce yourselves. You would have to unmute, introduce yourself and then mute back again. So maybe we can start with Mr. Roberts.

[*Introductions made*]

Mr. Chairman: We have with us also Member Kennedy Richards who would be joining us by phone, so would be a bit intermittent. And also belonging to this Committee, we have excuses from Mr. Franklin Khan who is not able to attend, Mr. Symon de Nobriga, MP, who is also not present.

I would just like to give the mandate of this particular Committee to the viewing audience and those present. The Joint Select Committee on Land and Physical Infrastructure has been mandated to consider and report on the areas of land, agriculture, marine resources, housing, public utilities, transport and works. And this particular enquiry our topic is—the purpose of this meeting is to continue the enquiry into the measures for ensuring water security in Trinidad and Tobago. This enquiry was started during the life of the last Parliament and the Committee decided that we would continue with this particular enquiry due to its exceeding—its extreme importance to the nation of Trinidad and Tobago.

So the enquiry is to continue the enquiry into measures for ensuring water security in Trinidad and Tobago. And I would just like to brief everyone on the objectives of this particular enquiry. We have three major objectives. The first one is to examine the current strategies for ensuring water security and the effectiveness of these strategies. Two, to determine the measures required for

improving water security, and three, to determine the challenges with ensuring water security in Trinidad and Tobago.

So at this stage I would like to ask the members of the respective entities to please, if you can, please introduce yourself and then after the introduction I would invite opening remarks from each of the entities present here today. So we probably take it in an order seeing that we cannot signal to each other and all those things readily. I would ask the representatives from the Ministry of Rural Development and Local Government to introduce themselves after which representatives of the Ministry of Planning and Development. Following Ministry of Planning and Development we would have representatives from the Ministry of Public Utilities and then representatives from the Water and Sewerage Authority; just to briefly introduce yourselves. So we will start with the Ministry of Rural Development and Local Government.

[*Introductions made*]

Mr. Chairman: Thank you. Ministry of Planning Development.

[*Introductions made*]

Mr. Chairman: Thank you. Ministry of Public Utilities.

[*Introductions made*]

Mr. Chairman: Thank you. WASA.

[*Introductions made*]

Mr. Chairman: Thank you very much and welcome once again. As we begin our session with questions and answers I would just like to remind Committee members and officials if you could please direct your questions and concerns through the Chair. And just a reminder again that once you are not speaking that if your microphone could be kept on mute. At this point I would like to open the floor to members of the Committee to ask representatives any questions they may have. And I think what the members of the Committee would prefer the approach is, is that we would try to deal with each entity one at a time because of the Zoom platform that we are on, cross entity, questions and all of those things might prove to be a bit difficult to coordinate using this forum.

So we would try to focus our questions on the respective entities as much we could. I am sure there would be some cross flow. It is inevitable but we would try to focus as much as possible on the entities. So first we would ask members if there are any questions to direct it to the Ministry of Rural Development and Local Government. And maybe I can start of, directed to the Ministry of Rural Development and Local Government. Judging from the response that was submitted in response to the questions asked by the Committee, may be this particular Ministry is not as directly involved with the issue of water security as the other entities present. But what I would like to ask in terms of

particularly the water trucking service that the Ministry of Rural Development and Local Government is responsible for through its municipal corporations, in terms of any specific challenges that the Ministry faces regarding the coordination and effective execution of water trucking service.

Mr. Seepaul: Thank you, Chair. As members of the Committee may be aware, the Ministry of Rural Development and Local Government provides oversight over the 14 municipal corporations. The thing about truck borne water distribution particularly in those corporations which are primarily rural in nature, there is the challenge of adequate funding to provide communities that are devoid of a pipe borne water supply. As it relates to the aspect of coordination, what we have been told is that the relationship between these municipal corporations and the Water and Sewerage Authority in accessing water from pumping stations and hydrants, there is basically effective and reliable coordination with WASA.

As I would have indicated before the real challenge is where those corporations are responsible for providing water for those communities in need, particularly during the dry season, and where they are unable to really fulfill the requirements to provide the required service according to the needs of these individuals. At other corporations where there is not such a great need, the relationship with the Water and Sewerage Authority is a good one. This has been communicated to the Ministry and these corporations are basically responsible for providing a service for state and non-state organizations, schools, community centres; also they are responsible for providing water on construction projects, et cetera. But briefly to respond to your question the issue of coordination, we at the Ministry do not see it as a major challenge with the Water and Sewerage Authority in actually making water available for the truck borne exercise.

Mr. Chairman: Thank you, Mr. Seepaul. What I would like to ask is, in terms of the demand situation, what sort of proportions that you have to deal with in terms of regular supply of truck borne water to certain areas versus emergency situations in terms of water scarcity, particularly, during the dry season. Do you find yourselves—what sort of proportions of supply in such situations?

Mr. Seepaul: Mr. Chair, we would have conducted a survey among all 14 municipalities. I have the result of this survey where the total average truck borne water supply on a daily basis amounted to, on average, 63,800 gallons per day. What we would have been informed about is that the actual required supply that was needed by these municipal corporations was more in tune of 25.5 million gallons. This would be an annual supply. So this is basically the reality that exists out there based on current supply and required supply. We are also looking at overall number of households in the vicinity of 5,000.

Mr. Chairman: Five thousand. Do you have a spread over the corporations of those 5,000? You need

not provide us with the answer now, but what the Committee would like is probably if you could give us that breakdown in writing. Mr. Seepaul we are not hearing you for some reason.

Mr. Seepaul: The information that you are seeking is available and we will communicate it to you.

Mr. Chairman: Okay. I would like to hand over to member Anil Roberts. He has a question. Member Roberts.

Mr. Roberts: Thank you, Mr. Chairman. To the acting Deputy Permanent Secretary: Forgive me because the volume is not very loud but I heard you say that you believe that your relationship or communication with WASA is great, you see no problem, yet citizens in rural communities are suffering daily for water. You also gave us a statistic there that you provide 63,800 gallons per day. Then you gave us a figure of 25.5 million gallons and you said that is the annual requirement. So I would like to know, what is the deficit of truck borne water in rural communities now, and why are there funding issues for water which is so critical? And if there are funding issues and people are not getting water, how can you state that there appears to be no problem between Ministry of Rural Development and Local Government and WASA? Thank you.

Mr. Seepaul: Thank you for the question and for the observation, member. The relationship that I referred to with the Water and Sewerage Authority has to—is really with the ability to access water at the pumping stations and the hydrants. As far as the quantum of water is concerned that is required by the communities, that is a totally different issue. But I am making a specific remark as far as the access of water at the hydrants based, first of all on the water tenders that belong to the municipal corporations as well as those contracted water tenders that usually function at corporations during the dry season. So it is really two different issues that we are speaking about here.

Mr. Roberts: Well, yes, it is two different issues but one problem. Rural communities are not getting access to water. I would like you to provide us with your solutions going forward so that we do not repeat the debacle of this year where citizens were without water for sustained periods, some without water for about three months. You noted funding issues. I am happy that you have access, but if you do not have sufficient trucks to get water to people and WASA is not providing it in the taps we are going to come around—dry season is beginning all now in the next two weeks and we will be suffering the citizens again. So please let me know how are we solving, what are the funding issues, who needs to get you funding, how much funding are you short, how many trucks to provide rural communities with water in this dry season? Thank you.

Mr. Seepaul: Okay. Thank you again and I agree with you. Your observation is noted. This is a cry that is coming from many municipal corporations particularly those that are more rural in nature that would have communities which are devoid of a pipe borne water supply. We have also in our survey

requested corporations to put a figure, a dollar value, to the water that is required to adequately supply these areas. And we were told that it will cost some way in the vicinity of $11.6 million to do that. This is something that has to be addressed by the agencies responsible for disbursing funding to the corporations.

Mr. Roberts: So you are saying paltry sum of the $11.6 million is what is humbugging an entire 270,000 people in rural communities from getting water. Have you written to the relevant Ministry, Ministry of Rural Development and Local Government, the Minister of Finance? What have you done to ensure that this little 11.6 million, less than what we are renting buildings for in town, is made available to you to provide water to our people?

Mr. Seepaul: Thank you, thank you member. I just want to respond to your question and concern and indicate that these corporations would have included these request on their draft estimates. And this is what the process is for the allocation of funds to the corporations to address line items, such as truck borne water distribution.

Mr. Chairman: Okay, member Roberts.

Mr. Roberts: Sir, bear with me Chairman because I understand the process and I know that if we sit back and we do nothing people are going to suffer once again. So a Deputy Permanent Secretary in a Ministry has seen an emergency, realizes there is a shortfall, they understand the system. How many extra communications, calls, text, WhatsApp, emails have been made to the relevant authorities to get the money release so that these corporations can be standing by to provide our children, our people with water. Water is life. There is no more important resource. Please, I need to hear some answers. All I am hearing is, prepare for disaster in the next month.

Mrs. Morris-Julian: Through you, Mr. Chairman, to the Deputy Permanent Secretary, Mr. Seepaul. Mr. Seepaul, I recently came out of local government and when I left there was a whole government approach, meaning that in the Arima Borough Corporation our trucks would go to Chaguanas or San Fernando or to Point Fortin, wherever it was necessary. Each corporation was asked to purchase a water truck for various places and spaces. Has that been stopped? Is that still ongoing? Is that still being used?

Mr. Seepaul: Thanks for the question, member. The corporations are, by and large, independent bodies and in preparing their draft estimates, both for recurrent services and for the PSIP, they reserve the right to acquire equipment under the respective line items. So corporations are—they are able to acquire water tenders if they would place that as a priority, especially in their PSIP, their development programme.

Mrs. Morris-Julian: Through Chairman Teemal once more, Mr. Seepaul, what I am asking about, I

know, for example, when the desal plant was down the APC truck was sent to, I think maybe Point Fortin or San Fernando, I cannot remember exactly where. And basically wherever there is a shortfall if they need another truck the rural government Ministry would make sure that everybody heads in the same direction. Is that policy still continuing? I am asking because I also remember they used water trucks from Chaguanas, Tabaquite, I think, with the dump fire that happened in Arima. So I am just asking just to clarify because as far as I know most if not all regional corporations supposed to have a water truck.

Mr. Seepaul: Thank you, member, and you are correct. This all of government approach or all sectors approach actually is one of the options available at the Ministry and with all the municipal corporations. However, this emphasis is placed more in emergency situations if we are looking at truck borne water distribution which is something that affects several corporations because of the need that exists in communities. This type of operation really is not looked at as to address these needs that would arise almost every year and particularly during the dry season. But, yes, you are correct. In certain crisis and emergency situations like the fire at the Point Fortin dump, for example, there is this all of government approach where the corporations will normally pool their resources to address issues like these.

Mr. Roberts: Mr. Seepaul, I heard you say that corporations are independent. You would be well fully aware that independence is famed unless resources are available. No corporation has their own resources sitting there. They need tranches, they need releases from the Treasury, from Minister of Finance, from the Ministry of Rural Development and Local Government. Why are these not forthcoming?

Secondly, I heard the hon. Minister talk about crisis and you are describing a fire in a dump and so. I believe that crisis occurred in the last two years with the so-called drought and the lack of WASA's ability to deliver water. There was a crisis across the country, people could not get water. So are you going to institute this brilliant plan that the Minister is talking that is available to out fires in a dump? Has that been accessed and put on the ready for the upcoming dry season?

Mr. Seepaul: Thank you, member. I am not in a position to give you a ready response, however, I understand the tremendous concern that exists as it relates to citizens of this country not having, you know, access to adequate water, right. I also agree that there has to be a collaborative approach. I understand that priority and urgency have to be given to the subject. And unfortunately it is beyond me to make any further statement of the matter. I trust that you will understand the position that I am in.

Mr. Chairman: Deputy Permanent Secretary, notwithstanding what you just said in terms of the

Committee understanding the constraints and all of those things, but member Morris-Julien mentioned about that measure that she recalls being in place and if you could submit it to the Committee in writing, if you can look back at that measure and you could advise the Committee accordingly as to that overall measure in terms of treating with how it would be—get it into effect for the coming crisis.

I would like to invite member Hosein to ask his question.

2.55 p.m.

Mr. Hosein: Thank you very much, Mr. Chair. To Mr. Seepaul: Mr. Seepaul, now the corporations would have the trucks available to them that they would provide water to the burgesses of the regional corporation. Can you advise us, if you have the breakdown, how many trucks we have per corporation?

Mr. Seepaul: Thank you, member. From the information received early in 2020 from the corporations, there is a total of 23 water tenders existing at all 14 corporations. Would you like me to indicate each corporation individually?

Mr. Hosein: You can probably submit the full breakdown in writing.

Mr. Seepaul: Sure.

Mr. Hosein: But it is good that we know the total number of trucks we have because when you have 23 trucks in 14 corporations you can definitely see that there is a large deficiency in terms of the resources available to corporations in order to provide truck borne water. I can tell you in my constituency alone we have a lot of problems for water supply in San Juan. It is very difficult to get truck borne supply of water. The other thing is, if there is such the small number of the water tenders available, when does the Ministry take it upon themselves to retain contracted services to provide water in the event of a shortage?

Mr. Seepaul: Well, as I indicated before, the Ministry really provides an oversight role. Those corporations receive disbursements from the Ministry of Finance under the line Item of truck borne water distribution. So the Ministry really does not have a role to play as far as the financial aspect is concerned. Right? And these funds are utilized based on the decision of the respective councils.

Mr. Hosein: If there is a need for contracted services would representation not have to be made from the various regional corporations to the line Ministry so that funding can then be available to the corporation?

Mr. Seepaul: I would have mentioned earlier when your colleague would have enquired about the funding arrangement, each corporation will prepare their draft estimates or their budgets to indicate what financial resources they will be requiring to carry out the mandate or to fulfil the mandate of the corporation, and these documents are sent to the Ministry of Finance through the Ministry of Rural

Development and Local Government, and these documents or these budgeted requests are normally or will normally reflect the needs of the respective corporations.

Mr. Hosein: With all due respect, we went through every single line Item in the budget from the Ministry of Rural Development and Local Government corporation by corporation during the Standing Finance Committee, and what was surprising is that we got an answer that whatever some of the corporations would have submitted, the Budget Division was the division that would have cut down most of the budget that a corporation would have asked for. There are even bigger cuts in terms of corporations across the board, I believe by $2 million. So when we hear that moneys is being allocated to the corporation that really is not in fact so, because at the end of the day, one, what they had asked for is not what they got; and two, there are problems with releases. So is there a problem with getting releases from the Ministry of Finance to the corporations in order for them to acquire vehicles, trucks or even to pay for water?

Mr. Seepaul: Thank you, member. I can only respond to your question in this way, that based on the current fiscal challenges being experienced across the board, we at the Ministry, and I also understand at the municipal corporation level, they are experiencing severe fiscal challenges. As far as whether anything can be done to address these challenges, I am not in a position to say.

Mr. Chairman: Thank you, Deputy Permanent Secretary. Mr. Seepaul, I think based on the responses you have given to members, there is some commonality in what you are saying, the challenges that you are experiencing with regards to funding, particularly for truck borne water. But amongst all of it, I would repeat the request I made from you earlier on in terms of the outlining of the measures especially where you pull support from different areas and all of these things, those things could be taken into consideration particularly with the coming dry season, and a plan be submitted to this Committee for our consideration. Because remember coming out of this enquiry, the Committee would be making recommendations as well in its finding, and that would help towards what the Committee is mandated to do.

I think we have spent a fair amount of time with this water trucking issue with the Ministry of Rural Development and Local Government. I would just like to move across now to the Ministry of the Planning and Development, and later on if we need to come back the Ministry of the Rural Development and Local Government we will do so. But in the Ministry of Planning and Development, if any members have any questions they would like to address to the Ministry of Planning and Development? Mr. Nigel de Freitas has joined us, I would like to welcome him.

Mr. de Freitas: Thank you, Mr. Chair.

Mr. Chairman: You have a question?

Mr. de Freitas: Yes I do, to the Ministry of Planning and Development. Now remember in the Eleventh Parliament before we ended when we were doing this enquiry, I think it was the Ministry of Planning and Development that indicated the they were doing a—sort of a report on rivers and waterways in Trinidad and Tobago where they were, and it was in terms of trying to figure out exactly what would happen in relation to flooding and what not that may occur. I am wondering where that report is now and how far they have gotten, because that particular report, which is on all of Trinidad and Tobago, report in relation to watersheds and waterways and was being duplicated by several Ministries at the time, but I think the Ministry of Planning and Development had gotten the furthest in relation to developing something so that we could begin to figure out distribution of water in Trinidad and Tobago and how we could alleviate this problem of water, some places not getting water other places having water.

Ms. Deoraj: Good afternoon, member, and thank you for the questions. Yes since the last meeting of this Committee, the Ministry of Planning and Development did in fact host one meeting so far with several of the entities with responsibility for water. That would have been the Ministry of Public Utilities, Ministry of Rural Development and Local Government was also present, WASA was also present, Met Office and some of the other entities to discuss exactly that you—referenced here which would be as it relates to all the different studies, all the different initiatives that have been going on.

The year has been a challenging one for us as you are fully aware, but we have been following up and trying to keep that sort of integrated approach to the way that we want to see the development of the water and water security for Trinidad and Tobago. So while we may have only had one meeting, even when we were forming the *Public Sector Investment Programme* we are looking at the synergies that have to be created to ensure that the financing and the project development would in fact meet some of those requirements. So the works still continues, and I am hoping that next year we would be able to meet more regularly to discuss some of the initiatives.

Mr. de Freitas: Okay, Mr. Chair. And just to respond to that because I came in—I am sorry for being late, but I came in when we were talking about the water tenders and water trucking from a local government standpoint, but in my mind set something like that was always indicated for really emergency situations and that could only be a short-term measure because I cannot see that we go on into the future 25, 30, 40 years, using water trucks as a main source to get water to people. Obviously, the pipes to be upgraded and we need the get information in terms of where our water sources are and how best we are that utilize that distribution once we have the report to get water to people.

So I just wanted to and throws in my two cents there in relation to the water tenders, and that has to be a short-term measure and obviously there is mid-term measure and a long-term measure and

in going forward in this meeting I would love to hear where we at in that.

I have heard all about the pipes that needs to be replaced, I have heard all about the leakages in the systems, but obviously we have to have a plan going forward because I cannot see 50 years from now we still dependent on water trucks to deliver water to people.

Mr. Chairman: And I think member de Freitas you came in a bit late because earlier on in the discussion with the Ministry I think we were trying to find out what portion of is just to ensure that citizens get a regular supply from water trucking of how much of it is really for emergency purposes, and I think Mr. Seepaul would send some information to the Committee in writing regarding that matter.

I know member Roberts you had a question for the Ministry of Rural Development and Local Government on the water trucking, but I would prefer we come back to that in the second rounds of questions that we will take up after when we come back to the Ministry. Okay? Member Saddam Hosein, you had a question for the Ministry of the Planning and Development?

Mr. Hosein: Yes. Thank you very much, Chair. To the Permanent Secretary Mr. Chairman. Now I note that Trinidad and Tobago has adopted the SDG, the Sustainable Development Goals based that had been outlined by the United Nations and Goal 6 talks about clean water and sanitation, and Trinidad and Tobago will obviously have to do some level of assessment in terms of reporting back to the United Nations on where we are with respect to attaining those goals by 2030. Can you, PS, indicate to us how far along we are in terms of clean water supply to Trinidad and Tobago in terms of whether or not you have a percentage of the number of persons when received clean water supply?

Mr. Chairman: PS, you will have to answer—

Ms. Deoraj: Yes. Yes, thank you. Sorry I had a little difficulty there. Yes thank you, member. I would like to be able to provide that in writing. We did prepare a report for our first voluntary report on the SDGs, and while we did not report on all the goals we do have information with respect to the potable water and I would like to provide that in writing.

Mr. Chairman: Permanent Secretary, in response to the questions that were asked by the Committee in particular question (vi), page 3 of your response, when a question was asked regarding any studies with regard to the impact of climate change on water security in Trinidad and Tobago, you did refer to a vulnerability and capacity assessment 2019 study that was conducted by Government of Trinidad and Tobago with support from the European Union, and you went on to mention seven priority sectors regarding climate change. One was item two, water resources, and you further went on to say that under the water resources sector that the quality of the surface water is deteriorating in many locations as evidenced by high levels of BOD, bacterial content, et cetera. I am reading from your

response.

> The— [*Inaudible*]—are unconfirmed point waste discharges in particular pump industries and domestic sources as the well as high level of erosion upper regions in water courses.

And later down in your response you mentioned that:

> The communities within the Caroni River Basin which is comprises of 15 watersheds on south-west Tobago were identified as the most vulnerable.

From that time of this particular report, in terms of the Ministry of Planning and Development, what approach are you all taking, what particular initiatives are you all putting in place to address this, well the other aspects, but in particular this deterioration of the watersheds and the quality of surface water?

Ms. Deoraj: Thank you very much, Mr. Chair. The response would be given by Mr. Kumarsingh, but I would also like to note that the way we try to finance and support on the public sector investment, we really try to deal with the things that come out of the reports so that we finance the mediation and adaptation strategies as they become available in terms of project format. But I will ask Mr. Kumarsingh to answer in detail.

Mr. Kumarsingh: Thank you. Thank you very much for the question. I think it would be important to understand the context in which the response was given, and that is that the impacts of climate change is going to exacerbate or worsen the existing situation, and the existing situation is the level of contamination in the waterways. When you overly—climate change impacts on that, such as increasing temperatures, decreasing rainfall, higher evaporation rates, you are going to get more concentration of these contamination—of these contaminants rather, and therefore, the cost of water treatment is going to go up obviously because you have more pollution to deal with. So therefore, the adaptation measures or the approaches to reducing these risks would lie in the various agencies responsible for pollution control.

Ministry of Planning and Development, of course, is the parent agency. But we are currently now looking to engage the various agencies and Ministries in integrating the findings of the report because this requires a holistic approach because of the nexus between pollution and between water wining and water resources generally. So we are in the process right now of engaging stakeholders and developing actually, as the PS said in terms of finance, developing a financial investment plan for rolling out the recommendations and the findings of this report in a holistic way because of the various agencies and Ministries that are required to take action to reduce the risks.

One of the uncertainties or one of the challenges in dealing with climate change impacts in a small island developing State, is how do you distil the impacts from the developmental impacts? And so, some of the issues that we found in terms of upstream erosion, contamination from quarrelling

activities, and so on, can only be differentiated from the climate change impacts only up to a point. So therefore the approach that we are taking is to assess the climate risks, identify the intervention options to reduce those risks and then we evaluate them over time, to revisit them. It is what is called the past days approach. So it is an iterative process and we have just begun to strategize on an action plan to roll out this VCA study, the vulnerability capacity assessment study, and as well the financing or financial investment plan for adjusting some of the issues that have been identified therein. I hope that it answers the question. Thank you very much.

Mr. Chairman: Thank You, Mr. Kumarsingh. Madam Permanent Secretary, is there a specific dedicated unit that is established within the Ministry of Planning and Development for this aspect of the climate change aspect?

Ms. Deoraj: Yes. Well Environmental Policy and Planning Division, which Mr. Kumarsingh is a member, they deal with all environmental issues as it relates to Trinidad and Tobago, our lead department in that. From that it is both a combination of policy and securing financing and project execution for some of the areas associated with climate change. But, of course, many of the other Ministries are also lead in terms of executing some of the projects that are needed, example, Ministry of Agriculture, Land and Marine Affairs, Public Utilities, et cetera.

Mr. Chairman: Okay. Thank you. Just one more question from me. In your response to the challenges regarding water security which was a question (xiv), which you have on page 8 of your response, one of the bullet items you said, "achieving effective coordination among relevant Government agencies and Ministries", and I know, I cannot recall the exact year, but you all had commissioned a consultant to look at the creation of water management resources authority. It was done by Lee Young and Partners together with another foreign consultant, and subsequent to that there was the integrated water resource management policy that was developed by the Ministry of Public Utilities. Bearing in mind all that work has gone into it, do you still see the relevance in order to establish clear and direct water sector policy for the country? From the point of view of the Ministry of Planning and Development do you still see that as a necessity and, if so, the sense of urgency about it?

Ms. Deoraj: Yes. Thank you for the questions Mr. Chairman. Yes, integrated water management and in this case you are asking on ensuring water security. Our analysis would show that water security takes a number of forms. Yes, would be distribution in some instances. So you want to ensure that citizens enjoy a certain level of water availability, but also security also relates to climate change, it also relates to how we manage the other resources that will help us retain water like forest cover, it also retains in terms of the maintenance of our non-revenue water supply, et cetera.

So an integrated approach would be a priority for us. As I said, the Committee that—we did have one meeting last year was specifically to look at that, how do we approach an integrated approach from a policy perspective, as well as a programming perspective so that we are able to deal with all the different aspects of water security? So that yes there are lead Ministries like the Ministry of Public Utilities and WASA which we will ensure that they are able to do what they have to do in terms their priority mandates and the Ministry of Planning and Development would also be undertaking what we would call a monitoring evaluation role to ensure that what we have set as targets and deliverables under the several projects and programmes are in fact reaching the citizens as they are supposed to be taking care of under the development initiatives.

So yes, we advocate for an integrated approach and we will as indicated that hopefully 2021is going to be a better year in terms of be able to get our initiatives off the ground and more integrated meetings and interactions on some of the priorities.

Mr. Chairman: Thank you very much, Madam Permanent Secretary. Member Roberts, do you have a question for the Ministry of Planning and Development?

Mr. Roberts: Thank you, Mr. Chairman. I have two questions. First one following from your question about water security. I will ask the Permanent Secretary with the integrated approach analysis for our water security was privatization discussed at any level and, if so, to what extent was privatization of our water supply or aspects thereof discussed?

Ms. Deoraj: Thank you, member, for that question. No, I have no knowledge of any discussion on privatization. We have looked at the projects as they relate to the projects being submitted by the Ministries and WASA, and that has nothing to do with that policy initiative on privatization.

Mr. Roberts: Thank you. And secondly, well climate change is a forward thinking process and very good, but as Bob Marley would say, that is way down on our line right now, because we have gone backwards because with WASA wasting four billion gallons of water per month I think climate change is the least of our worries at this present moment. But you were speaking about planning and development and we have heard in the last six years a attacks on private on citizens for building in water courses, affected water courses, not receiving proper planning permission, but I have a report before me which shows that the biggest culprit who has done construction and development without planning approval from your Ministry is in fact the State, the Government, especially in their housing projects, in Greenvale, Harmony Hall, Tarodale, Tarouba, St. Joseph and so on. Does your analysis show that your Government, the State itself, is shirking its responsibility to adhere to the laws and planning, or the planning laws of Trinidad and Tobago?

Ms. Deoraj: Thank you, member, for the question. The development of projects under state lands

would always come to the Town and Country Planning Division. We are actually part of the committee that would be for development of housing, et cetera. So the Ministry's Town and Country Planning Division works very intimately with the developers and we scrutinize all the proposals and the projects. So for this big development sites, as you are suggesting, Greenvale, Tarouba, et cetera, Town and Country Planning would be part of the planning committee.

We would do the requisite approvals, we would ensure that the plans and developers adhere to what is expected to be executed. So we are at the planning approval stage, not at the constructions. So in our approval process we ensure that all the plans are robust and can prevent any sort of negative impacts on the citizens. So that is our role in terms as a regulator and we do that as a regulating agency. I do not know if Ms. Guichard would like to add anything further at this point.

Mr. Roberts: Permanent Secretary, thank you. However, I know that they had the approval, but I would only use one or two examples. In Greenvale your Ministry said do not develop it. It is agricultural, it is flood playing HDC. You were not given approval. They ignored the Ministry of Planning and Development, and went ahead and we have a disaster zone 12 years later. What is your Ministry doing to have more teeth to handle and control the very Government of which you are a part?

Mr. Chairman: Before—Madam Permanent Secretary before I ask an answer of you, member Roberts, I just would want to pull back the line of questioning in terms of planning with regard to water security. Now I do acknowledge unplanned development would contribute to some extent to the question of flooding in particular and that would have an impact on the water security, but I do want the get us too side track in getting into planning and approval processes and all of those things which may be more appropriate and to a number of enquiries that I am sure would be coming out in—

Mr. Roberts: Chairman with all due respect, the climatologist had spoken about the quality of water, faecal content, and so on and leading to increase water treatment cost by building without planning permission in flood prone areas on agricultural land and impacting in the water courses with human excrement, and so on. That is part and parcel of our water security and that is why the Ministry of Planning and Development is so important. And if they tell the State do not build there then they must be able to have some authority to ensure that the State does not build there because then we are left with this problem of water treatment cost

3.25 p.m.

Mr. Chairman: Yeah, I agree with you in terms of the pollution and all of the elements because in addition to that, we have got the issue of agricultural land, runouts and the use of chemicals, and all

of these things are pollution of the water process. But what I am saying, distinctly in terms of linking it, it is linked but in terms of the role of the Ministry of Planning and Development, you know, getting into the question of the approval process, particularly with state approvals and all of those things. But I will still invite the Permanent Secretary to respond.

Ms. Deoraj: Thank you, Mr. Chair. As I said, I will ask Ms. Guichard to talk a bit about the process.

Ms. Guichard: Good everyone, Chair, members. The Town and Country Planning Division works very integrally hand in hand with the state agencies, including HDC, in terms of trying to get the planning permissions efficiently processed. Yes, I would agree that sometimes the state agencies may proceed to build development during our discourse or through the planning process. But in the case of, for example, you used Greenvale where there may have been construction prior to planning permission, the Town and Country Planning Division did meet with the relevant stakeholders of the regulatory bodies subsequently to try to implement mitigating efforts to any sort of situation that may have occurred negatively from the build development occurring without planning permission. But generally, the state unit at the Town and Country Planning Division interacts directly with most of the state agencies that come for planning permission for build development and we try very hard to maintain a robust relationship that gets the planning permissions out prior to the construction.

With regard to enforcement, generally the state tries not to enforce on the other state units. We try to mitigate, we try to get the permissions out to assist with the agenda of the state bodies as best as possible.

Mr. Chairman: Okay. Thank you.

Mr. Roberts: Thank you, Ms. Guichard. I am certain though that you would agree with me that it would be far better if the State would listen to experts like yourself and not go ahead on their own, so that mitigation would not be necessary. Would you not prefer action or approve at the approval stage rather than mitigation?

Ms. Guichard: Of course. In an ideal scenario, that is the optimal process.

Mr. Chairman: Yeah, I think we would move on. We have spent quite some time on this aspect of the approval and if we have no more questions for Ministry of Planning and Development, thank you very much, Madam Permanent Secretary and Ms. Guichard for your responses.

Ms. Deoraj: Thank you.

Ms. Guichard: Thank you, Mr. Chair.

Mr. Chairman: And I would like for us to move on to the Water and Sewerage Authority. Member Hosein, you had some questions for the Water and Sewerage Authority?

Mr. Hosein: Thank you very much, Chairman. So with respect to the submission that was made by

WASA on the 15th of May, I just have some additional questions that I would like to ask. In that submission, it was indicated there were about 243.2 kilometres of high-leaking pipelines and they were identified for replacement in the sum of $946 million over a period of 10 years. Can we get an update in terms of how many pipes have been replaced in terms of those that have been identified and what was the cost?

Mr. Chairman: Mr. Poon-King, are you there?

Mr. Poon-King: Yeah. I will ask the Director of Programmes and Change Management, Ms. LeeSing Pereira, she will respond.

Ms. LeeSing Pereira: All right. So good afternoon, member. Thank you for the question. Approximately out of that listing of 243 kilometres, approximately about five kilometres of pipelines would have been replaced. That is just out of that particular listing. We did have in terms of plans moving forward where we had approached the Ministry in terms of at least doing it in segments, in phases, but in terms of moving forward, the challenge has been funding in terms of moving those pipelines and replacements forward.

Mr. Hosein: Okay. And so, how much water— I am just focusing on the—it will now be about 238 kilometres now, in terms of our volume of water, the leakages —how much water does this account for in terms of leakages?

Ms. LeeSing Pereira: I would have to quantify that. I will have to work it out. I cannot say it off the top of my head, I will have to quantify it and respond at another time.

Mr. Hosein: Generally now, based on WASA's assessment, how many of gallons of water wasted per day in terms of leakages?

Ms. LeeSing Pereira: I would—

Mr. Poon-King: Let me answer. I will answer that one. So our unaccounted for water level, it is between 45 and 50 per cent. It is an estimate. Based on our levels of production, we are currently producing between 230 and 240 billion gallons daily. So the water that we lost through unaccounted for water would be of the order of between 100 and 110 billion gallons of water.

Mr. Hosein: On a daily basis?

Mr. Poon-King: On a daily basis.

Mr. Hosein: So that is about 50 per cent of the water is lost through leakages.

Mr. Poon-King: Yeah. That is the estimate. Well, it is unaccounted for water including leakages.

Mr. Hosein: And this would be water coming out of all of the treatment plants including the Desalcott too?

Mr. Poon-King: Correct. That is from all sources.

Mr. Hosein: All sources. And Mr. Poon-King, if you can just give us—

Mr. Roberts: Saddam, could you hold please? Chairman, could you ask Mr. Poon-King to take off the mask, I am not hearing a word.

Mr. Chairman: Well, if he is in—

Mr. Roberts: I am very sorry. I would love to hear what he is saying.

Mr. Chairman: All right. Provided he is socially distanced from others in the room.

Mr. Poon-King: Are you hearing me now, member? Member, are you hearing me?

Mr. Roberts: Much better. Thank you.

Mr. Hosein: My other question goes in terms of rates and tariffs. Mr. Poon-King, can you tell us the last time the RIC did an assessment in terms of rates and tariffs?

Mr. Poon-King: Well, what I can say is the last time we got an adjustment of the rates and that was 1993.

Mr. Hosein: 1993. I know the RIC is currently— I saw it in the public that there is some review taking place now. Is that true?

Mr. Poon-King: Well, we do communicate with the RIC and we have been communicating on an ongoing basis with respect to review of the tariff and that is ongoing so they will have their mandate and I think that question would be better directed to them.

Mr. Chairman: Mr. Poon-King—

Mr. Hosein: The reason I am asking is under the RIC Act— sorry?

Mr. Chairman: No, go ahead, please, member Hosein.

Mr. Hosein: Under the RIC Act, the service provider being WASA does have the power to ask the RIC where there is a change in their circumstance to review the rates. So I just wanted to confirm that it was not WASA who was asking for the rates to be reviewed.

Mr. Poon-King: At this point in time, the issue of the rate review will be directed by policy. We have acknowledged that the current rate structure being dated 1993, that it is no longer applicable at this time and should be subject to review.

Mr. Hosein: So, can I then confirm that it is the RIC who started the rate review process and it was not initiated by WASA?

Mr. Poon-King: There is a process to follow and we will and we have been and would continue to work with the RIC with respect to providing them the information that they require for their assessment in keeping with the process that is approved.

Mr. Hosein: Well, there are two ways in which the rates can be reviewed. One, every five years by the RIC on their own volition under section 47 of the Act and then, under section 49 of the Act, the

service provider can initiate the rate review process. So which one is currently taking place? Is it the section 49 where WASA asked the RIC for the review?

Mr. Poon-King: I cannot say which section of the Act. I say we have been in communication with the RIC, we have provided documentation. It has been a process that in fact started—I think the initial time that it was done within recent memory would have been in 2007. So it has been going to and fro since then. I cannot say under which section.

Mr. Chairman: Mr. Poon-King, if I may ask, you mentioned—

Mr. Hosein: Mr.—

Mr. Chairman: Sorry, member Hosein. We will come back to you just now but I just want to ask something in relation to the response that you are seeking. In 2007, you said that there was a review?

Mr. Poon-King: There was a submission by WASA to the RIC.

Mr. Chairman: Right. So the initiative was made by WASA in 2007? There was a submission from you in 2007?

Mr. Poon-King: To my recollection, yes.

Mr. Chairman: Okay. But this current one, based on what member Hosein is asking, I think he is just trying to clarify whether it is an initiative of the RIC under their five-year period for the review of tariffs or is this a specific request from WASA for a review of the tariff?

Mr. Poon-King: We have prepared a business plan looking at the way forward with respect to service and well, the business model to go with that. And that document has been submitted to our line Ministry and we have shared with the RIC. There has been an ongoing discussion with respect to format and so on, and that discussion is ongoing at this time.

Mr. Chairman: Member Hosein.

Mr. Hosein: Thank you very much, Chairman. Mr. Poon-King, can you tell us what date you submitted this business model to the Ministry?

Mr. Poon-King: I do not have the date offhand but that could be provided in writing.

Mr. Hosein: Thank you. And based on also we are hearing that there is going to be a restructuring of WASA and if a new business model has been submitted to the Ministry, it means that there is some level of restructuring that is going to happen in terms of WASA's management. Can you confirm to this Committee whether or not there is any plan afoot in order to privatize WASA?

Mr. Poon-King: Okay. I think there has been a Cabinet-appointed sub-committee that has done a review of the Authority and based on the outcome of that review, the way forward will be charted. I think the question that you are asking would probably be better directed to the Ministry of Public Utilities rather than WASA at this time.

Mr. Hosein: Okay. And Mr. Poon-King, also, there are some of the service centres that have been closed by WASA currently. I think in Couva, there has been a closure of one of the service stations. Are there any plans in order to further reduce the services available to the public?

Mr. Poon-King: Okay. Well, the service centre in Couva will in fact be—the services there will stop. It is based on our review of our customer interaction and our cost cutting initiatives. What we are looking at as well coming out of the current modes of interaction coming out of the pandemic—so we are looking at alternative mechanisms for interaction with the public. So we are using WhatsApp more, we are using Facebook more and our web page for interactions for payments and so on to reduce the personal interaction, to again looking at reducing the possibility of infection in the current scenario.

Mr. Hosein: And my last question relates to WASA's business sustainability. Can you just quantify, if you can, what is the debt that WASA currently owes, be it local or in terms of foreign debts?

Mr. Poon-King: Our current hard debt, I would call it, would be at $4.2 billion all-encompassing.

Mr. Hosein: $4.2 billion?

Mr. Poon-King: Correct. And we could get the exact figure and provide that in writing.

Mr. Hosein: Can we have a breakdown, if you can get a breakdown of the debt?

Mr. Poon-King: Certainly, certainly, that could be provided.

Mr. Hosein: Thank you. Thank you very much, Mr. Chairman.

Mr. Chairman: Okay, member Hosein. We have two members who wants to pose questions to WASA, member Roberts and member Morris-Julian. So I will ask member Morris-Julian to go first and then after we will have questions from member Roberts.

Mrs. Morris-Julian: Thank you, Chairman. Through you to Mr. Poon-King, I have a question regarding the level of communication between WASA, Ministry of Rural Development Local Government and Ministry of Works and Transport when it comes to road repairs. Having experienced first time, brand new road paved and then WASA comes literally the same day, next day, two weeks afterwards, and currently I have a situation on O'Meara Road that has been ongoing for nearly seven years. With regard to, again, the road being dug up for a WASA project, my concern is the level of communication. Are there any plans to improve this level of communication? For example, the corporation would usually write to say we are going to pave this road and then afterwards, you will hear something about old pipes or something along that nature. So I am concerned about the level of communication between WASA, Ministry of Works and Transport, and yes, let us add the local government corporation.

Mr. Poon-King: Okay. With respect to— you used the word communication. I would perhaps use

collaboration rather than communication. We do have a situation currently in Point Fortin that goes towards a little more of the collaboration where a pipeline—it is a high-leakage pipe that we are changing out in Point Fortin and Ministry of Works and Transport in fact, they wanted to pave the section of road and we communicated with them, indicated that we had intent to replace the pipeline and we did have a delay in getting funding and so on. But that has been addressed and the pipeline project was scheduled to start and we have been working with the Point Fortin corporation and with the Ministry of Works and Transport with respect to us getting the pipeline installed and the old pipeline decommissioned. And that collaboration will now—when the road is paved, the situation that you describe will not or should not occur.

What happens in the cases that you described is where paving is being done on a roadway that may have older pipelines. In this case, paving will be done on a section with new pipelines. Once you are mixing the new road surface with old infrastructure beneath, you will have the risk of a leak occurring a day, a week, a month after the road works have been completed, necessitating that that excavation be done on the newly paved surface.

Mrs. Morris-Julian: Right. So through you, Mr. Chairman, again, what can we do? Is there anything to improve this form of collaboration/ communication? Because I know that I have written in the past to WASA informing them that this road was supposed to be done, this will be completed in this year, this month, and there will be no response, and then casually we will find out from someone you can go ahead and pave and then it is almost certain in a few days something would happen to the very road that you paved. Right? I can name several roads that it happened. I am just asking is it possible that we can explore a more collaborative effort other than—what you just described is all well and good, but it is not the norm.

Mr. Poon-King: I agree too and it is not the norm, and what can be exchanged is information with respect to our intent to lay a pipe or from the Ministry of Works and Transport or Ministry of Rural Development and Local Government of their intent to pave a road and then we look at if we have a concern with respect to instillation of a pipe. I think the bigger problem though is where we would see leaks occurring on a pipeline that we—let us say a particular road is being identified to be paved, we would normally get the information, go in, if there are leaks, address the leaks and communicate with the implementing agency—okay, the leaks are being addressed but as I indicated, the pipe may be an old pipe.

Ideally what should occur is that the development programme of one entity follows the other but the priority, let us say of a regional corporation to get a particular thoroughfare paved, may not be consistent with WASA's intent to try to improve the water supply to a particular community. So we

want to lay a pipe along one road, you may have a desire to pave another and that is where you get some diversion of the approach. But there is communication, I think it is just the common focus to have a particular road done if as it happened in Point Fortin, if more could happen like that, certainly that would be the way to go.

Mr. Chairman: Thank you, Mr. Poon-King. Member Roberts, you can pose your questions.

Mr. Roberts: Thank you, Chairman. Let me assure Minister Morris-Julian, thank you for that observation. All she has to do is go back to the People's Partnership Kamla Persad-Bissessar's playbook with Ministers Ganga Singh and Jack Warner where the Ministry of Works and Transport and WASA would get together and they would go hand in hand. They will fix the pipes first and then the roads. So she could go back and look at the Cabinet Notes of 2011 to 2013 to solve that problem.

Mr. Poon-King, WASA recently—you need to help me understand this. Three years ago at a joint select committee, WASA said that we are treating water and producing water, 7.2 billion gallons of water per month and when WASA tries to pump this freshly treated portable water out to citizens, approximately 4.1 billion gallons are wasted due to poor piping and leakage and wastage. That was put on the *Hansard*, on the record, 53 per cent of portable water was lost.

WASA recently, within the last two years, has spent US $125 million, a loan from the IDB. Please tell me why did we spend this money close to TT $1 billion on trying to increase supply when supply was not the issue? Why was that spent on groundwater reservation, groundwater wells, drilling wells and so on, rather than fixing the distribution network which is the problem? Kindly explain that for me.

Mr. Poon-King: Right. So the solution in terms of the water supply equation, there are two sides: supply and demand, and we need to address both. In some areas, there would be a need for an increase in supply in localized areas; in others, it will be a piping issue. The solution to the water problem is neither to singularly improve production or in for that matter to change out pipes and extend the system. It needs to be a comprehensive approach insofar as looking at the supply side where we have localized issues in terms of when you look at the population and the volume of water being produced. If we have a localized problem, you need to increase supply.

In cases where the pipeline network, whether transmission or distribution is inadequate, we need to increase that and get the water from where it is available to where it is needed.

And then the final part would be when it gets to the customer, insofar as ensuring that customer usage is managed, we would have to look at and we have been in different areas, pressure management insofar as a part of an overall demand management system to manage pressure in terms of reducing breaks on our pipes and also usage on properties. And then the final part would be the conservation by the consumer or customer as to how much water they actually use for whatever they need to do.

Mr. Roberts: I will move on to the next week, Sir. But if you have "ah bucket full ah holes", you are telling me that rather than fix the holes, you are going to increase the pressure of the water to fill the "holely" bucket? I cannot understand that, maybe I am not intelligent enough.

Next question. WASA's objective is to provide the nation with water. It is failing due to, as one of your officials just said, a lack of funding. The infrastructure is archaic. Yet we are seeing decisions being made that could potentially impact employees in the thousands at WASA. We are hearing politicians making claims that WASA is overburden with its wage bill by 2,000 employees and so on, while WASA has not taken steps to provide its mission, its statement, its use. Its whole viability is to provide water. It is failing there but it seems that workers are now going to be made the scapegoats of WASA's inefficiency? Can you please explain this?

Mr. Poon-King: Okay. Insofar as a relook at WASA's operations, I think that, as indicated before, Cabinet sub-committee has done a review and that report I think has been completed and based on that, we are looking forward to the findings of that committee to inform the way forward. Insofar as what that committee will find, I cannot predict or foresee and based on that, we will determine the way forward.

Mr. Roberts: Is it your assertion here that this committee—because the way I see it, you are WASA, you are the expert, you are knowledgeable, you have the day-to-day information, you know what needs to be done, how it needs to be done, what is going on, what are the problems. Is it your assertion that this committee is coming to dictate to you what is going to happen or have you, as WASA, instructed, provided this committee with a detailed plan, WASA's opinion, the management's opinion on the way forward to ensure water security, water production, water clarity, water purity for the population? Is it the experts who are advising the committee or a committee of Ministers who are not experts going to tell us what is going to happen with our water? What is this process, please?

Mr. Poon-King: All right. So WASA has contributed and commented with respect to the concerns and that will be included in making a determination on the way forward, but WASA has contributed.

Mr. Roberts: Final question. If WASA has contributed, my colleague Saddam Hosein was asking about the possibility of privatization. In any of the recommendations, proposals, analyses or reports put forward to the committee, has WASA, the experts, advised that committee that privatization of any or all of WASA's functions is an option? Has WASA recommended privatization in any form or fashion to the Cabinet committee?

Mr. Poon-King: Privatization within the water sector is a tool that can be used. The extent to which you use it, that needs to be determined. WASA currently has a form of privatization in that not all the services that WASA uses do we have the resources in-house. So we do have a private sector

involvement at present. Insofar as to whether that increases or decreases, again, within some areas, it may need to increase and in others, it may decrease, but that evolves as we go along.

Mr. Roberts: Let me be a little bit more specific because you have a private sector entity in utilization in functions of maintenance and contracting and so on, I am talking about the Trinidad and Tobago water supply, control of the water supply, affects of the water supply, distribution of the water supply. Has WASA recommended to the committee, as privatization is a tool, that they use a jack hammer of privatization to impact the nation's water supply? Is that anywhere in WASA's recommendation?

3.55 p.m.

Mr. Poon-King: Not as on overall tool. As I indicated, it is something that is used in different segments of the water sector. So where appropriate, it can be used, but not as an overall model.

Mr. Chairman: Thank you, member.

Mr. Roberts: Where is it appropriate? In what areas do you believe—

Mr. Chairman: Mr. Roberts.

Mr. Roberts:—and have you recommended that it is appropriate?

Mr. Poon-King: WASA has not made a recommendation on privatization going forward. Where it can be applied, as I say currently we do utilize external resources to WASA in water trucking, in backhoe, and so on. It can also be applied in non-revenue water reduction and other areas, which we currently do not use, but that can be considered.

Mr. Chairman: Mr. Chairman, I hand over now. I do not want to dominate or monopolize our water supply but I put the nation on alert that privatization may be coming. So I hope the people are listening.

Mr. Chairman: Thank you, member Roberts. I was about to intervene, so I am glad we are handing over to member Richards. Member Richards, you with us? You have a question?

Mr. Richards: Yes, I am here. Chairman, do you hear me?

Mr. Chairman: Yes, we are hearing you. Please proceed.

Mr. Richards: Yes, I am here. All right, it is follow-up question basically to member Morris-Julian, when the CEO of WASA, Mr. Poon-King, spoke about the project in Point Fortin. As the Member of Parliament for Point Fortin I would have him know that I also was a part of that team that WASA has been liaising with. He did not mention that; maybe he forgot.

Added to that, at some of those meetings a couple of things stood out. One, they started a couple of weeks late after the start date, so with regard to his communication, as what member Morris-Julian was alluding to, they need to actually get that going. Because if you say Monday, then you need to have things in place for Monday. It could never be three or four Mondays down the line after you said

Monday. Added to that, the end date of that project supposed to be the 8th of December. So as the Member of Parliament I informed the constituents that the project will finish on the 10th. So I gave them a two-day grace period. So now today is the 17th, we are still midway through the project. Needless to say, the road is in a terrible condition and I have been getting complaints left, right and center. So my biggest issue is, and the issue that the constituents would have had over the last few weeks, is the efficiency of WASA.

At the initial meetings, they were supposed to start at nine o'clock in the morning and finish four o'clock or three o'clock. But now, we see a trend where nine o'clock, no one is there. At 10 o'clock they would gather, 12 o'clock work would start and by two o'clock is rain. So, I want to ask the CEO going forward now, what is the plan for increasing the efficiency of WASA, especially with regard to that Point Fortin project? And when can we look forward to a completion date for that project? And also what is going to happen in terms of the repairs for the roads? Thank you.

Mr. Poon-King: Okay, so with respect to getting the work finished—first of all, let me apologize to MP Richards. He was, in fact, instrumental in the coordination between WASA and the Point Fortin Corporation. So my apologies in that regard. But going forward, insofar as getting the work finished, we have had hiccups. The member did indicate rainfall and so on affecting and delaying. We will be looking at the project. We did have a date, as you indicated, of December 10th. I know that the pipe-laying along the section where we had a concern and we wanted to complete the actual pipe-laying, it is completed. I think we are doing service connections at this time, and the intent is to have the works finish by the end of this week. So that we could—so we are looking at tomorrow and possibly probably latest on Monday to have everything finished and to have a temporary surface put on the road and then thereafter to work with the Ministry of Works to have a final surface put down.

Mr. Chairman: Mr. Poon-King, thank you. Just one or two questions again for you in your capacity as CEO of WASA. In your previous response to the Committee, particularly, to questions regarding Desalcott, now, you indicated that your Desalcott bill is approximately US $6million per month. And I wanted to ask the question: In terms of the consumers who are supplied with Desalcott water, based on the amount of moneys that you pay, that US $6 per month, what revenue WASA generates from its customers that is supplied by Desalcott only, approximately?

Mr. Poon-King: Okay, I will have do quick math in my head, but I could provide that in writing. But the water from Desalcott goes to the Point Lisas Industrial Estate, and the figure there is of the order of TT $25 million or thereabouts, I think. So I will get the exact figure, per month. And the water beyond that goes to the domestic system. Our domestic system is not metered and that is based on the ATV of properties, and so on. So to say revenue generated specifically from water Desalcott it

would be confined to the Point Lisas Industrial Estate and we could provide that information over a 12-month period for the Committee.

Mr. Chairman: Okay, I note you will provide in writing some details. But overall, Mr. Poon-King, are we purchasing water at a higher price than what we are collecting, the revenues that we are collecting to the consumers? Is there a deficit situation with regard to water purchased from Desalcott?

Mr. Poon-King: There would be a deficit in that the Desalcott plant produces around 40 million gallons of water a day, and probably 50 to 55 per cent of that would go out onto the domestic system, with the balance being between within Point Lisas, and the fee within Point Lisas would cover the production of the water that is consumed in Point Lisas.

But when water goes out, even if it goes to a commercial entity outside of the industrial estate, the rate is $3.50 per cubic meter. Within the industrial estate it is $12 per cubic meter. So once you go beyond and we consider that we are paying US $1, which $6.80, so once it leaves the estate we operate at a deficit, whether it is a commercial, industrial or a domestic customer.

Mr. Chairman: Okay, so the supply within the estate is feasible. It is justified.

Mr. Poon-King: Correct, yes.

Mr. Chairman: Okay. In terms of the number of industries that have been mothballed or shutdown within the Point Lisas area, which is, I think the last count I am aware of is seven such industries/plants, or could be more. I have not—yeah, 10. I am being advised by member Roberts. What impact is that having on the situation with Desalcott and the reduced revenues from these industries? What position is that putting us in?

Mr. Poon-King: Right, so there would be a deficit in terms of our revenue, our collection of money from the industrial estate. The additional water that would previously have been consumed by let us say by ArcelorMittal, that water now becomes available for going out on to the domestic system to go to other areas but there is not necessarily a commensurate increase and collection of money from those areas. So we would be collecting less money overall with the closure of any plant in Point Lisas.

Mr. Chairman: Okay, so based on your projections for the coming years, it is not an optimistic projection at all regarding revenues from the Point Lisas Industrial Estate.

Mr. Poon-King: Correct. So we continue to monitor the plants and I think the plants are driven by the economies not only of Trinidad but others, and given the current downturn they have reduced production in some cases, either stopped altogether or reduced their production. So we continue to monitor and look to see how best we can utilize that water to improve the service to the domestic customer. But that certainly, the reduction in rates at Point Lisas will be significant in terms of our collection programme.

Mr. Chairman: Right. Member Hosein has a question but before you ask your question, member Hosein, just permit me to close off on Desalcott. From what we understand from previous responses, Mr. Poon-King, the Desalcott contract has been extended to the year 2039. Is that true? Is that accurate?

Mr. Poon-King: 2036.

Mr. Chairman: 2036. And we are still under the obligations to take that 40 million-gallons a day that is a must under the contract?

Mr. Poon-King: So the contract is for 40 million gallons a day until 2036, yes.

Mr. Chairman: Okay. Member Hosein.

Mr. Hosein: Thank you very much Chair. Just a very short question. Mr. Poon-King, you had alluded earlier on to the fact that the water rates are based on the ATV which is the annual taxable value of the property. Can you just confirm whether or not, with the introduction of the property tax, which uses the same annual taxable value, whether or not that also would impact on the rates that WASA would charge to consumers?

Mr. Poon-King: Right, so, currently as I indicated it is linked to the taxable value and if the property tax or the property law is amended, our rates would be amended accordingly. Alternatively to that, you will have the situation where in some cases some customers are metered and the meter rate would apply in such cases.

Mr. Hosein: Okay. So the new property tax value will affect the WASA rates?

Mr. Poon-King: It will apply, yes.

Mr. Hosein: Okay, thank you.

Mr. Chairman: Mr. Poon-King, one final question for you. Would you just please update the Committee with regard to the IDB initiative that was mentioned in your previous responses to us?

Mr. Poon-King: Okay. The IDB intervention, we had two loans. One was loan 2890 and one was loan 2600. The loan 2600, the funding from that was utilized in terms of projects to do a wastewater project in southwest Tobago. So that project has been completed. Another project being funded under the loan 2600 is the works at the Trincity Wastewater Plant. Those works are ongoing, and under loan 2890, there were two components: construction of a new plant at Malabar in east Trinidad and extension of the collection system. That project has been completed and the last component under 2890 is the construction of the San Fernando Wastewater Plant and that was delayed and is ongoing still at this time and that project, I say it is about 90 per cent, 90 to 91 per cent complete and we are looking towards a completion during 2021 of that project.

Mr. Chairman: All right, before I go to member Hosein, in terms of the tariff review that is being

done currently, does that include proposed increases in the wastewater rates as well; bearing in mind these extensive wastewater works that WASA has undertaken?

Mr. Poon-King: We have done a business plan and that we would be in further communication with our line Ministry and then towards the RIC. I think the proposal at this time suggests that the wastewater rate that currently applies, applies going forward, and that is at 50 per cent of the water rate would be applied as a wastewater rate.

Mr. Chairman: Okay, thank you. Member Hosein.

Mr. Hosein: Chairman, I have no more questions, thank you.

Mr. Chairman: Okay, so we move on to the Ministry of Public Utilities. Any member has any—before we do so, Mr. Poon-King, there is a question from the public that has come through. The question from the public is that:

> Does WASA have any set standards for its in-house staff and contractors in respect of the resurfacing of roads? And if yes, what mechanism does WASA have in place to ensure that these standards are met?

This is a question from the public.

Mr. Poon-King: Right, so in response to that question, yes we do have standards and part of the collaboration with the RIC is towards the formalization of those standards and it will be a standard under the regulation. So that will form part and parcel of the consideration by the RIC, in terms of their review of authority's tariff and operation.

Mr. Chairman: Right. The question also included:

> What mechanisms does WASA have in place right now to ensure that the standards are met with regard to reinstatement of the roads?

Mr. Poon-King: Right. So the standard that the RIC has, and we will be adopting on an ongoing basis moving forward, is within two days we are required to have the temporary surface restored and thereafter permanent restoration within seven days.

I think we need to acknowledge and WASA acknowledges that we have not been meeting that standard and in the past we have not had, for example, road restoration crews dedicated to that particular activity. That has changed where we have crews now assigned to road restoration. So we are putting more emphasis on that towards having the restoration done following the repair of pipelines.

Mr. Chairman: Okay, thank you. Any questions for the Ministry of Public Utilities from any member? Member Hosein?

Mr. Hosein: Thank you, Chair. I know Mr. Poon-King told me that his department may not have knowledge of this, but I think I can pose it out to the Ministry of Public Utilities. Is there any plan by

the Government to privatize WASA?

Ms. Duke: Thank you for the question, member. As Mr. Poon-King would have indicated—

Mr. Hosein: Chair, I do not think I am hearing properly.

Mr. Chairman: Ms. Duke, we are not hearing you too clearly.

Ms. Duke: I am actually hearing you fine. I am not too sure what is the problem on my end.

Mr. Chairman: We are hearing you a lot better now.

Ms. Duke: All right. As Mr. Poon-King would have indicated earlier member, and thank you for the question. The Cabinet set up a subcommittee to review the operations of WASA and to revise strategies for enabling the authority to deliver on its mandate. Now, that committee would have completed its work. It would have had submissions and contributions from many stakeholders and that report was delivered to the hon. Prime Minister last Friday.

Of course, moving forward, the recommendations of that committee have to be accepted or not or varied by an approved Cabinet. And therefore, at this point in time I cannot say to you that I know of any attempts to privatize WASA because I do not. We await feedback on the report of the committee in order to guide us on the way forward.

Mr. Hosein: You can confirm to this Committee that the Ministry of Public Utilities made no recommendations to the Cabinet that there is any need to privatize WASA?

Ms. Duke: I am not certain I understand the question.

Mr. Hosein: So you can confirm as Permanent Secretary of the Ministry of Public Utilities that you have made no recommendation to privatize WASA because you said that you know no plan to privatize WASA.

Mr. de Freitas: Member Hosein, just to jump in here. I think what Ms. Duke indicated was that there was a subcommittee of Cabinet. A report was done. It was delivered and they await any direction.

Mr. Hosein: I understand. Member de Freitas, I understand all of that, you know. I asked a direct question whether or not there was a recommendation by the Ministry to privatize WASA or not.

Mr. Chairman: What I—

Mr. de Freitas: So then what you are asking for is what the Ministry would have recommended in the report that has not yet been made public.

Mr. Hosein: I am just asking for one recommendation you know, just one.

Mr. de Freitas: I know you are asking for one. But what I am telling you is that the report has been done. It is where it needs to be and there is a process to take place. And I think that is what she was indicating. So I am indicating to you now that what you are asking for might be a little bit premature.

Mr. Hosein: I do not think we should be giving evidence as members.

Mr. Chairman: Members, please could I just intervene at this point in time? The question has been posed to Ms. Duke. Ms. Duke is free to decline to answer the question if it puts her in any position, or if she is not in a position to answer.

Ms. Duke: Now, Chairman, I think I would have said earlier that the committee received contributions from several stakeholders. So I do not know if that is the context in which the member is asking the question. I would just say in response that the committee was headed by the Minister of Public Utilities. That was the chairman of committee, and I am sure that the Minister would have added his own contributions to the report, the committee was supported by the Ministry of Public Utilities in respect of housing the secretariat to the committee. So as to speak to the member's question as to whether the Ministry itself would have made such a recommendation, I do not believe that there would have been any opening for the Ministry to act in such a manner. That is my response.

Mr. Chairman: Right, I think we would take that response because—I know that the issue of WASA is integral to water security as well. It is a major player in the whole question of water security. But in terms of whether or not the report that is before the Cabinet, whether the acting Permanent Secretary of the Ministry of Public Utilities, whether or not she can say whether privatization of WASA is contained within that report or not, I think it is moving away from the—we are straying from the objectives of the enquiry, which I did mention the objectives of the enquiry at the very beginning.

To pursue this particular question of the privatization of WASA, in the context of what is before the report that was done and what is before the Cabinet, I think we are moving away from that. So I would—the acting Permanent Secretary has given a response, I would leave it as that. Okay? What I would like to ask you—

Member Roberts, we are not hearing you. Member Roberts, we are not hearing. Member Roberts, your mike is muted. We are not hearing you.

Mr. Roberts: Sorry, Chairman. Thank you. I am certain that the Permanent Secretary did not need an attorney. So I do not know why member de Freitas had to jump in. What is clear, we understand that the Permanent Secretary has no authority to approve. That lies with the Cabinet. However, what we are here to know is, because this Cabinet, Mr.de Freitas, member, has a history of doing its own thing. Petrotrin was not recommended to be shut down. The board did not recommend it to be shut down.

Mr. Chairman: Member Roberts, Member Roberts.

Mr. Roberts: It is shut down. So all we have—

Mr. Chairman: Member Roberts, Member Roberts.

Mr. de Freitas: Mr. Chair.

Mr. Chairman: We are really straying away—

Mr. de Freitas: Thank you.

Mr. Chairman:—from this enquiry and I suggest we would move on.

Mr. Roberts: Chairman, this is a water security. If they sell our water we will not feel secure.

Mr. Chairman: References to Petrotrin and all those things, I do not think it is applicable here right now.

Mr. Roberts: No, Sir. I may just use that to make a point. We are asking if the Ministry of Public Utilities, which is an expert, if in their recommendations to the Cabinet, they recommended privatization as a possibility. If they did not, when the Cabinet approves something and we hear privatization, we would know that it came wholly and solely from the Cabinet. That is the key point.

Mr. Chairman: Well, the purpose of this enquiry is really not to know that in particular, Mr. Roberts. I do not agree with you on that. The Acting Permanent Secretary has answered. I am going move on. I am going ask a question of the Ministry of Public Utilities.

Mr. Roberts: No problem. I just find Mr. de Freitas was getting nervous, nervous.

Mr. Chairman: Okay. Madam Permanent Secretary, I would like to come back to the question of the integrated water resources management policy. Because I do know the last time we spoke to you, you had indicated it had gone to Parliament and you were awaiting further directives from the Cabinet. Do you have any update for us regarding the IWRM?

Ms. Duke: Chairman, I do recall the conversation about the IWRM and we spoke to it at length in the previous meeting and you would recall that we said that at time it was at Cabinet and we had not received a response. Well, since then, the last administration went out. So that Note was returned to us. One of the things that we discussed at the last meeting was the whole issue of the regulator being inside of the operator, right, and whether the Ministry thought it would not be better to separate the regulator from the operator, so that we can have better oversight concerning the water resources and the watersheds and that sort of thing.

4.25 p.m.

So that we have the opportunity now and I have again to refer to that report that has gone to Cabinet because— that has gone to the Prime Minister excuse me, because on that hinges a number of things. Right? As I said, it was to review the operations of WASA so it means that whatever decision is taken, impacts on all aspects of the operation of WASA including, whether there will now be an acceptance of separating the regulator from the operator. So, we are still in a situation where we have to wait a bit longer in order to have the decision of Cabinet so that we can advance the policy that we would have put before Cabinet previously, as well as whether there is a separate entity that deals with

the regulating as opposed to the operating which we discussed on the last occasion would be the optimum situation to have. So, we are still, you know, waiting but this time because of this report.

Mr. Chairman: Okay. Because we do have the situation where WASA is the service provider—service regulator, Ministry of Public Utilities is the policy regulator, the RIC is the economic regulator, the EMA is the environmental regulator, the Water Resources Agency is the resource regulator—

Ms. Duke: Yes.

Mr. Chairman:—are all separate entities dealing with the issue of water security. And I know, yes, WASA and its key role in the water security. But based on all the responses we have gotten when we consider the watershed management, the effects of pollution, agricultural runoff, the contamination of water that goes for treatment for portable sources and everything, and then we have signed on to the multilateral agreements, international agreements, particularly *Vision 2030* mentions about the integrated management approach to water security. And it is just that in the context of it all, whilst focus is on WASA, the adoption of this Integrated Water Resources Management Policy, to me, as Chair of this Committee, seems to be a vital aspect of the overall question of water security.

And are you saying that it has been resubmitted to Cabinet for consideration? Because when I looked at the fiscal measures, the budgetary allocations for this particular piece of—for the implementation of this policy, I think the budget allocation is rather minimum. I think it is just around $500,000. So I was just wondering whether that would be adequate to really initiate this sort of work that is needed to go towards the implementation of this policy.

Ms. Duke: Chair, I would ask the DPS to give some perspective on the question you posed.

Ms. Khan: So thank you, Mr. Chairman, your observation is correct. The amount that we have received as an allocation for the Water Resources Management is 500,000 and we anticipate that that will be able to finance the beginning of the process. But because we did not have at that time of preparing the budget, a definitive position of the Cabinet, that decision on that recommendation that was made, we do not as yet know. We know that the separation is something that we have recommended, but what will be the form of that separation? What it will emerge—what will emerge out of that separation? We have not yet had a decision on that. So yes, it will initiate some of the work related to the separation but the extent of the funding required will be determined by what is the model we select for that separation to take the form of.

Mr. Chairman: Okay. Thank you. Any member has any more questions for the Ministry of Public Utilities? All right. Well, we have been through the four entities. I think member Roberts wanted to ask one more question of the Ministry of Rural Development and Local Government. Member

Roberts, are you there? You have to unmute your mike member Roberts. You had one more question for the—

Mr. Roberts: I keep being muted. Let me see. It had to do with climate changes. It is not for the Ministry. I think there was a climatologist. Which Ministry was that? Planning and Development?

Mr. Chairman: I think Mr. Kerr. Yes. Chief Climatologist, Mr. Kerr from the Ministry of Public Utilities.

Mr. Roberts: Yes. Just some information, I would like him to define for us what is considered a drought and give us the probably the 10-year annual rainfall average for Trinidad and Tobago, and let us know, in any one of those years, have we ever qualified as being in a drought?

Mr. Kerr: Thank you, member. Good evening again to everyone. Chair, there—the question is a broad question. A drought, there are various types of droughts and overall, it is a period of very low rainfall relative to some normal. And we can contextualize that into what we know as a meteorological drought, an agricultural drought, a hydrological drought and a socioeconomic drought. So it depends on different factors, it depends on time frames as well. And for us, we have had, from a mythological perspective, we have had meteorological droughts occurring in Trinidad and Tobago over the last 10 years but more so during the dry season and more often than not, short lived in terms of duration, perhaps up to three months.

But we are experiencing—a number of droughts have been experienced. We had one in 2010, we had another in 2016 and last year we had a very excessive dry period during the dry season that did not reach the threshold because we operate based on scientific principles where we quantify a drought based on something called a standard precipitation—Standardized Precipitation Index, meaning that when the rainfall amounts deviate from the normal by one standard deviation, so to speak, and we have had these events occurring. From a climate change perspective, these events are likely to get more frequent for small islands like Trinidad and Tobago, but we do not have to wait on climate change. From a climate variability perspective alone, we know for a fact that whenever there is an El Niño event, we in Trinidad and Tobago tend to get drier, much drier, including up to drought conditions, especially late in the wet season into the dry season. And that has occurred during those three years that I have mentioned, and occurred in quick time, meaning 2010, 2016, 2019, and over time, we have experienced these.

We know for a fact as well—I know member Roberts indicated that climate change is down the road. I want to alert the community too and the Committee that we are experiencing climate change. And we—it is not down the road. Some of these events, they will occur as the droughts have occurred because of natural climate variability, but are made worse because of climate change. So we

have experienced droughts. Some of these have impacted the agricultural sector and some of it impacted the water sector. So yes, we have experienced droughts in Trinidad and Tobago.

Mr. Chairman: Thank you very much, Mr. Kerr. Member Roberts.

Mr. Roberts: Thank you, Sir. I remember the question for the Deputy PS of the Ministry of Rural Development and Local Government.

Mr. Chairman: Before you move on, member Roberts, we have a procedural issue that I have to address. We no longer have a quorum for the meeting because the Members of the lower House are no longer with us, that is, member Hosein and member Minister Morris Julian. So unfortunately, I would have to ask members—I would have to adjourn the hearing. And I would have to ask members—not to pre-empt your question in any way member Roberts, but I will have to ask you and any other members who have any questions for the entities present today, to please submit them in writing to the Secretariat and these questions will be forwarded to the respective entity.

So, without a quorum, I have to adjourn the meeting. I would not be able to invite any closing comments from our entities, which is the normal procedure. But I would really like to thank everyone, all of the representatives from the entities who have joined us today. Thank you very much for your time and for the responses given and we look forward to your future cooperation through any written questions that the Committee may have in the future. I would like to thank all members of the Committee for attending our hearing today. And I would like to thank our listening and viewing audience who listened on the *ParlView* channel and the 105.5 FM. Thank you very much for your public interaction. We did get one or two questions from the public which was posed to the representatives.

And in closing, I would really like to extend our thanks on behalf of the Committee and also the representatives to the Secretariat of the Parliament for this Joint Select Committee on Land and Physical Infrastructure. Madam Secretary, Ms. Candice Skerrette and assisted by Mr. Johnson Greenidge; our research assistant, Ms. Gokool, and all the technical team who made this broadcast possible. Thank you. I will declare this meeting adjourned. Thank you.

Members: Thank you, Mr. Chair.

Mr. Roberts: Thank you all. God bless. Merry Christmas.

Members: Merry Christmas.

Mr. de Freitas: Merry Christmas, Sen. Roberts.

4.36 p.m.: *Meeting adjourned.*

APPENDIX V

INSTITUTIONAL OPTIONS SURROUNDING EFFECTING INTEGRATED WATER RESOURCES MANAGEMENT IN TRINIDAD & TOBAGO ECONOMIC RESEARCH, POLICY AND PLANNING - OCTOBER 2017

Institutional Options Surrounding Effecting Integrated Water Resources Management in Trinidad & Tobago

APPENDIX II

Introduction

Water is a key driver of social and economic development, while having a basic function in maintaining the integrity of the natural environment. Managers—whether in the government or private sectors—therefore have to make difficult decisions on water allocation in a world of limited supplies and ever-increasing demands. Moreover, drivers such as demographic and climatic changes increase the stress on water resources.

In this context, the traditional fragmented approach is no longer viable to ensure the holistic management of water resources. This is the rationale for the Integrated Water Resources Management (IWRM), the international best practice for the management of the water sector.

Accordingly, the Government of the Republic of Trinidad and Tobago (GoRTT) has mandated the adoption and implementation the IWRM approach.

> *"The present institutional structure that exists for water management in Trinidad and Tobago does not reflect international best practice. International best practice dictates that the water resources of a country should be managed in a holistic and integrated approach (i.e. IWRM) by an organization that is independent of the service provider (Water and Sewerage Authority) or any other user of the water resource."*
>
> — Official Policy Framework of the Government of Trinidad and Tobago

This position is supported by a number of consultancies which have recommended that the agency responsible for water resources management be kept separate and apart from supply and distribution (Dillon Consulting Limited, 2000), (DHV Consultants, Delft Hydraulics, Lee Young and Patners, 1999), (Safege, Corporate Solutions, 2015). This reality is further compounded by the absence of a coherent policy and institutional framework for water resources management.

The report assesses three recommended institutional options surrounding effecting independent water resources management in Trinidad and Tobago through the separation of Water Resource Agency (WRA) from with the Water and Sewerage Authority (WASA). The following are the three options recommended for review at this time:

1. Creation of a Water Resource Authority;
2. Expand Functions of the Environmental Management Authority; and
3. Establishment of a Unit within the Ministry of Public Utilities.

Evaluation Criteria

The recommended institutional options have been evaluated using the following criteria:

- **Cost**: The estimated cost of engaging in each option.
- **Sustainability**: The ability to self-fund recurrent expenditure.
- **Implementation Schedule**: The length of time required to operationalize each option.
- **Legislation:** The need for amendments to existing legislation or the creation of new legislation.
- **Institutional/Technical Strength:** The degree of complexity associated with establishing or strengthening the institutional framework and attract highly skilled talent.
- **Independence & International Best Practice:** The consistency with international best practice to keep water resources management separate and apart from supply and distribution.

Suggested Options

The table below provides a comparative assessment of the three recommended institutional options.

Comparison Table

Evaluation Criteria	***Creation of a Water Resource Authority***	***Expansion of the Environmental Management Authority***	***Establishment of a Unit within the Ministry of Public Utilities***
Cost	High	Moderate	Low
Sustainability	Self-sustainable	Dependent	Dependent
Implementation Schedule	Two years	One year	One year

Legislative Requirement	Creation of new legislation	Amendment to existing legislation	Amendment to existing legislation
Institutional / Technical Strength	High	Moderate	Low
Independence / International Best Practice	Highly Compliant	Compliant	Not compliant

Note: In order to attach exact metrics to the evaluation criteria a more elaborate exercise will be required

Creation of a Water Resource Authority [16]

To ensure effective integrated management of the country's water resources, Government may wish to establish a financially autonomous entity, the Water Resources Authority (WRA). The Authority will have lead responsibility for managing, monitoring and regulating the country's water resources, but not for supply and distribution. Many other government and non-government entities will play critical roles in ensuring an integrated approach to water resources management. This is considered the "ideal" technical treatment of integrated water resources management which espouses that an independent body is the best approach. It creates an opportunity to establish a new and effective institutional culture. There is also an opportunity to attract the best in the field. Additionally, the creation of an autonomous Authority is a self-sustainable option as it can fund itself through the application of fees to operators. However, it does not consider the current economic climate of the country. The costs to implement a separate Authority is high and the length of time before the institution becomes operational is significant as it requires the creation of new legislation.

Expand Functions of the Environmental Management Authority

The Environment Management Authority (EMA) is tasked with the management of the natural resources and environment of the country by providing a transparent framework to facilitate policy and decision making in development. As such, there

[16] It should be noted that a contractor has already been engaged for approximately one million dollars to provide technical input into the setup of a separate Authority.

exists a synergy between the environment and water which may make the expansion of the functions of the EMA to include the management of water a potentially smooth transition. In addition, the EMA may have an established network of stakeholders which may facilitate the efficient operationalization of the function of an Authority at a relatively moderate cost, due in part to the ability to share services (human resources, procurement, information communications technology). The institutional and technical strength may be moderate with this option and will require amendments to existing legislation. Moreover, the expansion of the function of the EMA may dilute the Authority's functions, as water resources management may now compete for attention with the other roles. In addition, while the current level of independence associated with the EMA may persist, there may be an established ingrained institutional culture that may inhibit the performance of the expanded role.

Establishment of a Unit within the Ministry of Public Utilities

The Government of a country is usually charged with managing the natural resources of that country, including water. As such, it has been postulated that the management of water resources should remain under the ambit of the relevant line Ministry, which will also bear the attending cost for same. In theory, this would be similar to the operations of the Ministry of Energy which manages/regulates the oil and gas industry through a department within the Ministry. While it is difficult to provide exact costs, it is estimated that this method will be the most cost effective of the two previous options due in part to shared services (human resources, procurement, information communications technology). Additionally, the GoRTT may have closer access to information and more effective communication could be achieved. WASA currently has the legal mandate to manage water resources and therefore amendments to the WAS Act will have to be made to separate WASA's existing functions of management of water resources, including water abstraction licensing. However, the autonomy of the Unit may be impaired by its location within Government and the possible political influence which may arise. There is also the risk of the traditional bureaucratic structures as well as the human resources constraints associated with the public service impacting the performance of the water resources management function. Finally, while WASA and WRA will be separated both will fall under the purview of the same Ministry which may give rise to a conflict of interest. This option is also in breach of the Official Policy Framework which states "International best practice dictates that the water resources of a country should be managed in a holistic and integrated approach (i.e. IWRM) by an organization that is independent of the service provider (Water and Sewerage Authority) or any other user of the water resource." The Government is considered a user of water.

APPENDIX VI

INDUSTRIES DEMANDING THE LARGEST WATER SUPPLY

TABLE 7 - INDUSTRIES DEMANDING THE LARGEST WATER SUPPLY		
No	Company	Monthly Consumption (m3)
1	Methanol Holding Ltd(M 5000)	1,000,378
2	PCS Nitrogen Trinidad Ltd.	461,045
3	Nu Iron	218,585
4	AUM	111,788
5	Caribbean Nitrogen Company Ltd	90,951
6	Caribbean Development Company Ltd	84,660
7	Nitrogen (2000) Unlimited	82,438
8	Point Lisas Nitrogen Limited	81,142
9	Tringen II (B)	78,630
10	Jaleel Investments Ltd	74,070
11	AUM Plant	60,530
12	Point Lisas Nitrogen Limited	57,457
13	Titan Methanol Company	42,190
14	Caribbean Gas Chemical Limited (CGCL)	37,321
15	Trinidad Generation Unlimited	19,200
16	Atlas Methanol Plant	18,984
17	Yara Trinidad Ltd	12,850
18	Air Liquide T&T Limited	12,798

APPENDIX VII

MAPS DETAILING THE LOCATION OF WATERSHEDS IN TRINIDAD AND TOBAGO

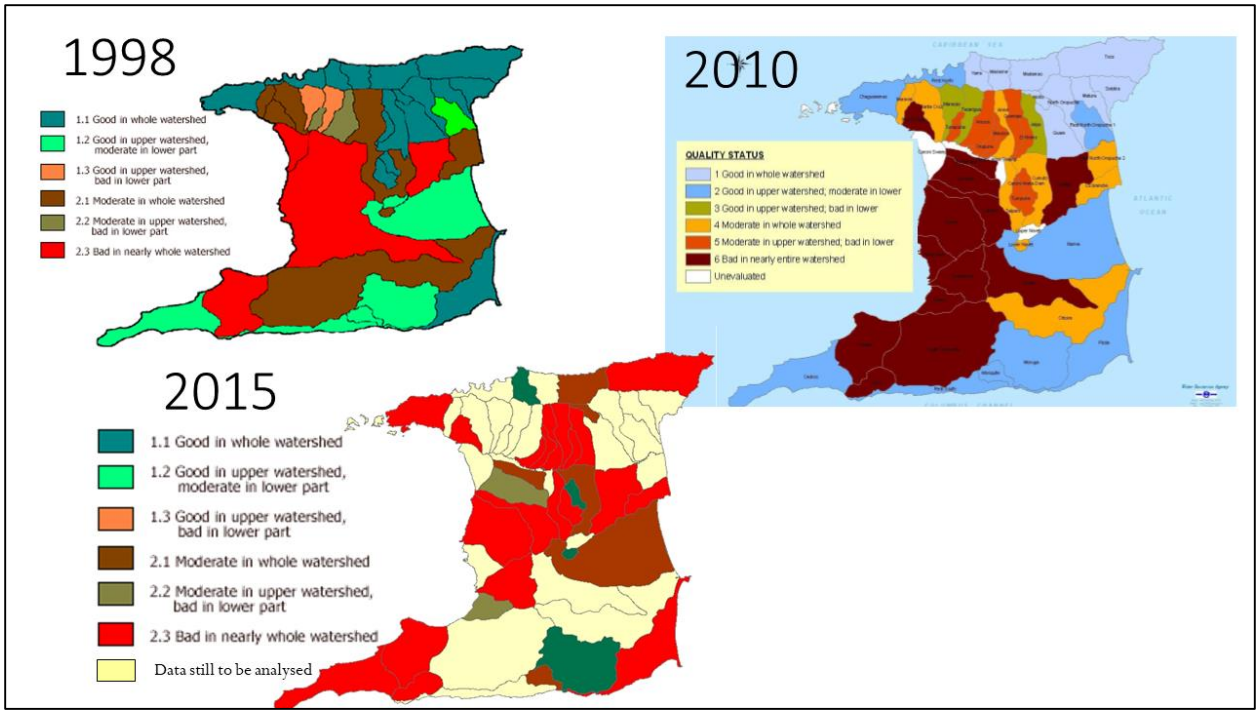


Figure 1: State of Trinidad's Watersheds from 1998 to 2015 (Source WRA – Adopt a River Programme)

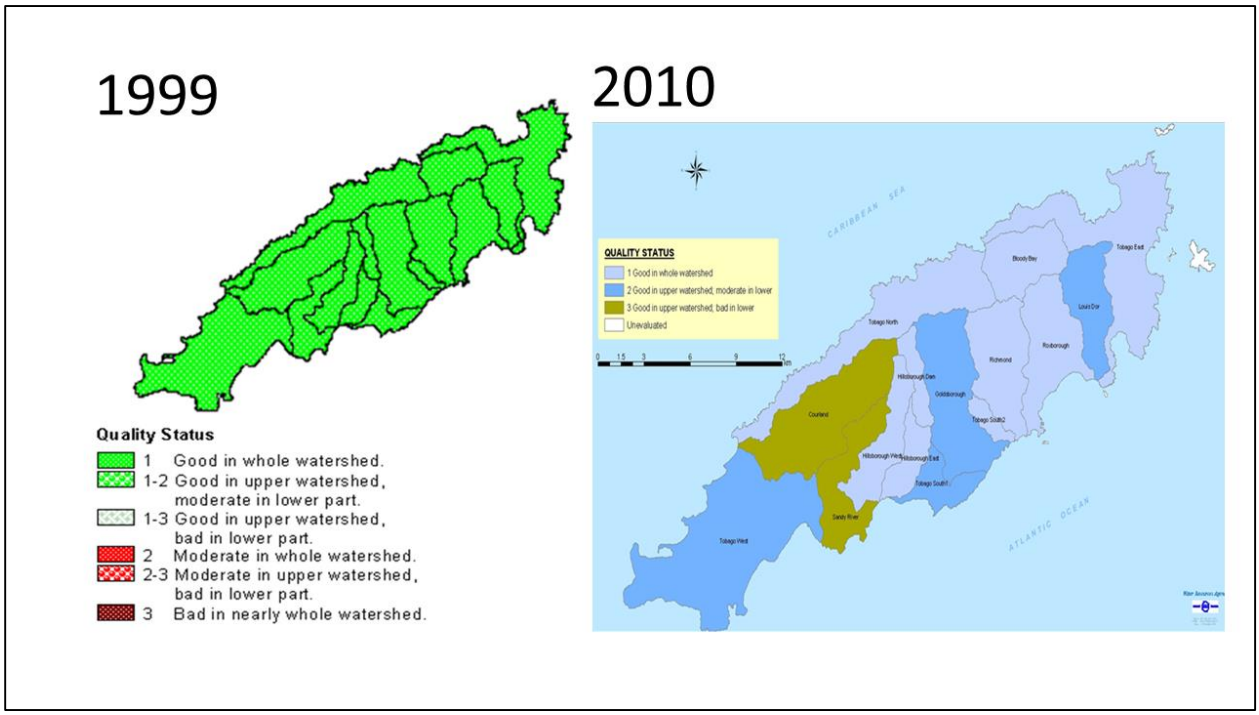


Figure 2: State of Tobago's Watersheds from 1999 to 2010 (Source WRA – Adopt a River Programme)

APPENDIX VIII

DETAILS ON THE ADOPT A RIVER PROGRAMME

Details on the Adopt A River Programme

The Adopt A River Programme is an initiative of WASA to bring together corporate entities, community groups and educational institutions to develop holistic, coordinated and sustainable projects to improve the status of local rivers and their supporting watersheds. The objective of the Programme is to implement approved watershed rehabilitation and conservation projects, identified by stakeholders at national and community levels, for water supply and/or water management improvement.

The Water Resources Agency began implementation of the Programme in 2012. In 2015, the Programme was aligned with the Government's overarching policy for improvement of the water sector, including its commitment to adopt and implement IWRM locally. In that same year, the Programme received funding from the Green Fund in the amount of $34.2Million for over a five year period ending June 2020.

The Programme has 5 non-administrative project areas. These are:

2. Public Outreach & Education;
3. Media Campaign;
4. Stakeholder Consultations;
5. Community Water Warriors Training;
6. Water Management Projects.

1. Public Outreach and Education

The foundation of the Programme is education. The Programme participates in one-off educational events such as exhibitions and outreaches to schools and communities. Since 2016, the Programme has engaged 5,123 persons in its activities with 2,108 of these being children. It is also mandated to complete an annual conference to report on its work.

1. Media Campaign

The Programme uses traditional and digital media to educate and update the country on ongoing projects. Traditional media includes radio, television and electronic billboard advertisements. The Programme has also successfully completed a website, which it uses to inform on community

partners and projects. The website contains a list of all publications including conference papers and RiverSpeak (a collection of spoken word pieces, submitted as part of the RiverSpeak Secondary School Spoken Word Competition).

Our citizen science trainings are supported by the development of a water quality sampling app. This app allows any user to store site location, site quality and water quality information on their phones, without the need for internet, which can be accessed by computer later. The app is the first offline water-sampling app in the world and to date, it has collected over two hundred (200) data points from five (5) community groups and from the Programme staff.

2. Stakeholder Consultations

Community engagement is an important part of the Programme and hence, it is important to involve and encourage participation of NGOs as well as important business stakeholders. Consultations were held in the following areas: i. St. Joseph ii. Santa Cruz Scouts iii. Cunupia iv. Tobago Scouts v. Recycling Stakeholder Consultations – held in partnership with Caribbean Bottlers Limited.

3. Community Water Warriors Training

The Programme also trains communities in water management and water quality testing and gifts them testing kits to monitor their rivers, under the Community Water Warriors Training. This training empowers communities and provide avenues for citizen science, which is an important aspect of IWRM. In-house, the Programme's staff also monitors rivers to provide background information on project progress as part of our river monitoring exercises. To date from fourteen (14) communities, twenty-five (25) groups were trained with a total of two hundred and seven people (207).

4. Water Management Projects

After educating communities through river quality testing, assistance was provided in developing projects to improve the status of rivers and their water supply. This is the main thrust of the Programme. These projects include the:

- Installation of rainwater harvesters – three (3) harvesters installed in Tobago and ten (10) approved for Trinidad;
- Installation of irrigation ponds;

- Development of springs;
- Installation of rural intakes – three (3) intakes in process;
- Reforestation exercises – three (3) exercises completed in Brasso Seco, Lopinot and Arima;
- Recycling projects – Fifty six (56) recycling projects in twenty (20) watersheds were implemented, and
- Clean-up exercises – Thirty-five (35) clean-ups completed in twenty-four (24) watersheds with a total participation of nine hundred and eighty-six persons (986).

The Programme has partnered with Government Ministries and other Programmes, like ICARE, in order to successfully complete these projects, illustrating the commitment to an integrated approach to water management.

APPENDIX IX

INVOICE AND PAYMENT DETAILS OF THE UTILIZATION OF DESALCOTT'S LOAN

Invoice Period	Invoice Number	Payments US$	Date Paid	Details
January 02 to February 01, 2019	Desal-527	3,000,000.00	19.12.2019	US$5.0Mn. loan proceeds
February 01 to March 01, 2019	Desal-528	2,000,000.00	19.12.2019	US$5.0Mn. loan proceeds
February 01 to March 01, 2019	Desal-528	2,494,090.50	20.02.2020	Part proceeds of US$100.0Mn. loan
March 01 to April 01, 2019	Desal-529	6,302,795.63		
April 01 to May 01, 2019	Desal-530	6,086,928.38		
May 01 to June 03, 2019	Desal-531	6,562,229.63		
June 03 to July 01, 2019	Desal-532	5,575,216.50		
July 01 to August 02, 2019	Desal-533	6,545,412.00		
August 02 to September 02, 2019	Desal-534	2,134,306.98		
August 02 to September 02, 2019	Desal-534	3,899,261.52	06.03.2020	US$60.0Mn. Desalcott Revolving Facility at RBL
September 02 to October 01, 2019	Desal-535	5,946,565.50		
October 01 to November 01, 2019	Desal-536	4,481,312.63		
November 01 to December 02, 2019	Desal-537	5,875,701.75		
December 02, 2019 to January 02, 2020	Desal-538	6,119,548.88		
January 02 to February 03, 2020	Desal-539	6,518,876.63	12.03.2020	US$60.0Mn Desalcott Revolving Facility at RBL
February 03 to March 02, 2020	Desal-540	5,503,884.75	02.04.2020	US$60.0Mn Desalcott Revolving Facility at RBL
TOTAL		**79,046,131.28**		

APPENDIX X

WASA'S PSIP PROGRAMMES

WASA's PSIP Programmes

Completion of the Savonetta Booster Station	Savonetta Booster was completed in August 2018 and has been put into operation.
Completion of upgrade of existing Booster Station at South Oropouche	Upgrade of South Oropouche Booster Station was completed in August 2019.
Completion of installation of 17km of pipeline from the South Oropouche Booster Station to the La Brea Station	Installation of 15.7 km of pipeline from South Oropouche Booster Station to Union industrial Estate was completed in March 2018.
Commencement of Works on Vessigny Tank, with respect to demolition of the storage tank in Sobo	Demolition of existing storage tank at Sobo was completed.
Non-Revenue Water Reduction Programme	The purchase of Three (3) Backhoes and Two (2) Dump Trucks is in progress. The purchase of the equipment will assist in the leak repair programme. Installation of 1.9 km of pipe in Blue Basin is in progress.
Upgrade works on the Carlsen Field and Maloney Water Treatment Plants	Upgrade works at the Carlsen Field and Maloney Water Treatment Plants (WTPs) are on-going. Upgrade works on the treatment process at Carlsen Field is completed and the plant is back to full capacity. Remaining works are on the building and civil structure. Works on Maloney WTP are expected to be completed in March 2020.
Water Distribution System in Tobago	The following provides an update on the Water Distribution System in Tobago: i) Upgrade works of Charlotteville Intake and Service Reservoir were completed in September 2019 and November 2019 respectively. These works included the construction of: 1. a new raw water intake 2. new treatment facility 3. 100,000 imperial gallon service reservoir

	ii) Approximately 900 meters of 150 millimeters PVC pipe were installed along All Fields Phase 3 and pipeline placed into service May 2019. iii) The installation of 700 meters of 150millimetre PVC pipe is to be installed along Mt. Grace Trace, Tobago.
Water Security Programme for Tobago	The project is 90% completed and the Draft Final Report was submitted by Consultant with completion scheduled for June 2020.
Rehabilitation Works for the Hillsborough Dam	The Bathymetric Survey and Environmental Impact Survey have been completed. The Enabling Works at the Hillsborough are in progress and are expected to be completed in April 2020 to facilitate commencement of desilting works by end March 2020 with a duration of 30 months.
Drought and Dry Season Water Supply Management Plans	The project is 90% completed and the Draft Final Report was submitted by the consultant with completion scheduled for June 2020.
Community Water Improvement Programme	The Community Water Improvement Project includes 13 projects with a scope to install 10.0 km of pipe to be installed at a cost of $13.324 Million to benefit 3,187 persons. To date, 1,970 metres have been installed
Integrated Water Improveent Programme North West Trinidad	i) Refurbishment of 3 booster stations and construction of 1 booster station are to commence during 2nd Quarter of Fiscal Year 2020. ii) The installation of 1,500 metres of 300 millimetre pipe from Four Roads Water Treatment Plant to Goodwood Park Crescent along Morne Coco Road/Western Main Road is in progress.
Completion of Phase 1 works on the construction of the Avocat Well	Works scheduled to start in February 2020.

Completion of works to Carlsen Field Water Treatment plant	Upgrade works on the treatment process at Carlsen Field is completed and the plant is back to full capacity. Remaining works are on the building and civil structure are to be done.
Completion of construction of two (2) new service reservoirs in Guanapo and Four Roads	Construction of the Guanapo Service Reservoir is in progress with a scheduled completion of March 2020. The Four Roads Service Reservoir has been completed and is in service.
Commencement of a booster station at Calvary Hill	Works on Calvary Booster station is in progress with a scheduled completion of April 2020.

APPENDIX XI

WASA'S COMMUNITY WATER IMPROVEMENT PROGRAMMES (CWIP)

WASA's Community Water Improvement Programmes (CWIP)

TABLE 6 - SUMMARY OF PROJECTS UNDER CWIP			
No	**Project**	**Project Details**	**Status Completed**
1	Battoo Boulevard	Installation of 103m of 100mm PVC along Battoo Boulevard Extension	100%
2	Phipps Trace, Talparo	Installation of 922m of 100mm PVC along three (3) Streets (Phipps Trace Extension, Farook Avenue, Un-named Street).	100%
3	Lemon Drive	Installation of 371m of 100mm PVC main and 53m of 50mm PVC main along Mendez Drive (Installation of 53 m of 100 mm PVC Main from Mendez Drive Booster to corner Mendez Drive and Lemon Drive and Installation of 318 m of 100 mm PVC from Lot No. 10 Lemon Drive to end of Lemon Drive)	100%
4	Beverly Heights, Santa Cruz	Installation of 547m of 100mm PVC mains to be installed along Beverly Heights extension and Construction of Booster Pumping Station	28%
5	Wharton Street, off Warden Road, Point Fortin	Installation of 1,663m of 100mm PVC along Wharton Road, Point Fortin	30%
6	Beach Road, Palo Seco	Installation of 456m of 150mm pipe along Beach Road from SS Erin Road to LP No. 7	40%
7	Solomon Street off Delhi Road, Fyzabad	Installation of 200m of 100mm PVC along Solomon Street off Delhi Road, Fyzabad	95%
8	Boyack Hill and Unnamed Trace No. 4, Santa Flora	Installation of 346m of 100mm PVC and Appurtenances along Boyack Hill and Unnamed Trace No. 4, Santa Flora	91%.
9	Tattoo Trace, Valencia	Installation of 1,400m of 150mm PVC on Tattoo Trace Valencia	35.2%
10	Plantation Road, Valencia	Installation of 1,700m of 150mm PVC from Plantation Road to Tattoo Trace along Valencia Main Road and Installation of a Booster at the corner of Plantation and Valencia Road	6%
11	Green Hill, off Covigne Road	Installation of 250m of 50mm PVC main from base Green Hill, off Covigne Road, Diego Martin	34%
12	Texeira Extension, Diego Martin	Installation of 100m of 50mm PVC main from base Texeira Extension, Diego Martin	61%
13	Comparo No. 2 Fishing Pond, Sangre Grande	Installation of 1,937m of 150mm PVC main from the existing End Valve to Comparo No. 2 Junction	35.2%

APPENDIX XII

WATER PROJECTS UNDER THE WATER AND WASTEWATER CONSTRUCTION/REFURBISHMENT PROGRAMME

Water projects under the Water and Wastewater Construction/Refurbishment Programme

Production	Areas have been identified where there is potential for additional water production. The increased production from ground water can be realized from the rehabilitation of under producing wells and the drilling of new wells. The following works have been identified: 1. 12 Wells are currently under construction 2. 15 Wells for rehabilitation are being tendered 3. 3 wells in Tobago at Roxborough, Scarborough and Mary's Hill to start construction. 4. 16 new wells to be drilled as listed at Table __ 5. Additional surface water source at Lopinot River to be constructed. Further details on wells currently under construction, to be rehabilitated and to be drilled are at Appendix __.
Transmission	Transmission pipelines have been identified for upgrade or installation to improve the capacity to distribute the water supply from the source to areas. To date, 16.4 km of 147.4 km have been installed.
Booster Stations and Reservoirs	Four booster stations are to be constructed or upgraded in North West Trinidad. The contracts are to be awarded and work is expected to be completed in Third Quarter, 2020. Storage tanks have been constructed and commissioned at Four Roads, Diego Martin; Tucker Valley, Chaguaramas, Hololo, Cascade and Charlotteville, Tobago with two additional to be commissioned in Quare, Valencia and Guanapo. Communities to benefit include Carenage, Petit Valley, Diego Martin, St Anns, Arima, Calvary Hill, Valencia and Charlotteville. As it pertains to the two additional storage tanks located at Quare and Guanapo, WASA indicated that: - the tanks are approximately 95% completed; - pipework work is required to be completed to conclude the project; and - the tanks will be commissioned by the end of March 2020. Four (4) new tanks are to be constructed in 2020 including Calvary Hill, La Filette and Sobo in Trinidad and Bloody Bay in Tobago. In total, ten (10) storage tanks provide an additional storage volume of 3.3million imperial gallons.

	With regard to the four (4) new booster stations being constructed at Calvary Hill, La Filette and Sobo in Trinidad and Bloody Bay in Tobago, the Committee was informed that: - contracts have been signed with the vendors for the four stations; - work is scheduled to commence shortly; and - the two contractors selected using an open tender are Toshiba water and D. Rampersad.
Replacement of high leakage mains	A list of high leakage mains has been developed by WASA, which takes into account the rate of leakage. A summary of the mains identified as high leakage for replacement over a 10-year period together with preliminary costs is at Appendix ____. It was indicated that projects for the City of San Fernando are initially considered over a Ten-Year period and are to be prioritized into Tranches for Years 1-5 and 6-10. 1.9km of mains have been replaced to date.
Continued reduction of Non-Revenue Water with Bulk Metering and Pressure Management	Bulk metering is to start in North West Trinidad. 40 District Metered Areas (DMAs) have been established in North East and Central Trinidad with an additional 120 DMAs to be established throughout Trinidad and Tobago. These DMAs will also include pressure management.
Demand Reduction with the Expansion of Universal Metering	This proposes metering of all segments including domestic customers on a phased basis.

Source WASA's submission by letter dated February 19, 2020

APPENDIX XIII

STATUS OF WASTEWATER TREATMENT PLANTS

Status of the Wastewater Water Treatment Plants

San Fernando	As at January 15, 2020, the project was 81.2% completed with an anticipated completion of December 21, 2020.
Malabar	The Malabar Wastewater Treatment Plant was conceptualised with the reuse of wastewater. It is located upstream of the Caroni intake which serves the Caroni Water Treatment Plant. The intent of the Malabar Plant is to return the water to the Caroni River to replenish its baseflows in order to continue to support the Caroni Water Treatment Plant. The new Malabar plant and collection system has been completed with funding secured through the IDB. The project was handed over to the Authority on January 1, 2020 and is being operated and maintained by the Authority. Through this project, 30,000 residents are benefiting from the facility and this is expected to increase to 108,000 upon completion of all phases to serve the full Malabar catchment.
Beetham	WASA's Beetham Wastewater Treatment Plant is operational. Water is collected from the wastewater catchment which spans from Westmooring to Mt. Hope.
Matura	The WASA indicated that has not yet commenced improvement works at the Treatment Plant located at Matura. WASA attributed the lack of water when rain falls in the Matura area to a deterioration in the raw water quality during periods of heavy rainfall. As such, WASA indicated that a review of the treatment process at the plant will be required.

APPENDIX XIV

DETAILS OF THE PROJECTS AIMED AT WATER SECURITY

Water Security Projects

Strategic Focus	Projects	2019 Expenditure	2020 Allocation	Effectiveness of these Strategies
Augment Water Supply *2019 Expenditure: $56.9 Mn* *2020 Allocation: $56.5 Mn*	Upgrade of Carlsen Field Water Treatment Plant (WTP)	$2.0 Mn	$0 Mn	1. Increased water supply availability and reliability to 7,423 persons in Carlsen Field, Orange Field, Chase Village, Carapichaima, Palmiste and environs 2. Improved class of supply during the Dry Season from 24/3.5 to 24/5.
	Construction of Calvary Hill Booster Station	$1.1 Mn	$0 Mn	1. Increased reliability of water supply to 2,300 persons in Calvary, Mt Pleasant and Alenore Gardens Phases 2 and 3 2. Improved class of supply to 2,300 persons in Calvary, Mt Pleasant and Alenore Gardens Phase 2 and 3 in the dry season from 24/3 to 24/5.
	Arouca Well Development	$1.0 Mn	$0Mn	1. Increased production by 1.0 mgd. 2. Increased reliability of water supply to 11, 250 residents of Bon Air North Development 3. Improved class of supply in the dry season from 24/3 to 24/4 to 11, 250 of Arouca.
	Well Development Programme	$18.9 Mn	$12.0 Mn	Improved reliability of service to 72,011 persons and increased Total Production of 40,399 m3/d
	Desilting and Rehabilitation of Hillsborough Dam Tobago	$6.4 Mn	$10.0 Mn	Improved water supply to approximately 15,000 persons in Bamboo Hill, Cinnamon Hill, Concordia, Ebo Gully, Les Coteaux, Mary's Hill, Mt. Grace, Orange Hill Rd, Parts of Mason Hall, Summer Hill, Table Piece, Union and Whim Development.
	Upgrade of Maloney Water Treatment Plant	$0.2 Mn	$0 Mn	1. Improved reliability of water supply to approximately 12,200 residents of Guayaguayare Mayaro Road between Hingwan Drive and Frontin Road. 2. Improved class of supply in the Dry Season from 24/2 - 24/3.5 and 24/4

Strategic Focus	Projects	2019 Expenditure	2020 Allocation	Effectiveness of these Strategies
	Integrated Water Improvement Programme North West Trinidad	$0 Mn	$1.0 Mn	1. The refurbishment of Booster Pumping Stations at, Richplain, School Street, Tucker Valley, Seaview Hill, Lower Convigne and laying of transmission pipeline at Four Roads, Cascade Road, Coco Road and Leone 2. Increased water supply to 114,000 persons.
	Refurbishment Works at Caroni WTP	$0 Mn	$5.0 Mn	Increased water supply to 450,000 customers in North and South Trinidad.
	Upgrade of Petrotrin Guayaguayare WTP	$0 Mn	$1.0 Mn	Increased water supply for approximately additional 2,200 customers in Guayaguayare
	Water Supply to Labidco and Union Industrial Estate	$16.4 Mn	$10.0 Mn	Improved reliability and security of water supply to 25,000 persons from Union Industrial Estate, San Fernando, Debe, Siparia to Erin and Claxton Bay.
	Upgrade of Charlotteville Intake	$2.8 Mn	$0 Mn	1. Improved operations and final water quality benefitting 1,700 persons in the Charlotteville catchment area. 2. Improved level of service. 3. Reduction in downtime
	Community Water Improvement Programme (CWIP)	$6.7 Mn	$10.0 Mn	Improved water supply to at least Class III (72 hrs per week) to benefit a total of 789 households (3,192 persons).
	Moruga Well Development	$0.4 Mn	$1.5 Mn	Improved reliable pipe borne water supply to residents of Moruga.
	Special Skills Training for Water Conservation	$0 Mn	$5.0 Mn	This project involves the development of an Apprenticeship Programme for the Youth of Trinidad and Tobago for the development of Skills and implementation of activities to reduce

Strategic Focus	Projects	2019 Expenditure	2020 Allocation	Effectiveness of these Strategies
				water loss and promote water conservation and is expected to: 1. Reduce water loss 2.Reduce unemployment rate
	Tobago Well Development	$1.0 Mn	$1.0 Mn	1. 40,000 persons of Les Coteaux, Carnbee, Signal Hill, Calder Hall Scarborough, Mary's Hill and Roxborough. 2. Improve supply in the dry season from 24/2 - 24/3.5 to 24/5 and during the wet season from 24/5 - 24/7. 3. Two (2) million Imperial gallons of water would be gained upon completion of each well.
Reduce Non-Revenue Water *2019 Expenditure: $8.2 Mn* *2020 Allocation: $4.0 Mn*	Non-Revenue Water Reduction Programme	$8.2 Mn	$4.0 Mn	1. Reduced water loss from leaking pipelines 2. Improved response time to leak repairs 3. To improve security of water supply
Expand Transmission and Distribution Systems *2019 Expenditure: $6.0 Mn* *2020 Allocation: $10.0 Mn*	Construction of Avocat Wells	$0.9 Mn	$3.0 Mn	Improved and expanded water delivery to approximately 240 households in Oropouche, St Mary's and Avocate Village.
	Design and Installation of Guanapo Service Reservoir	$0.1 Mn	$0 Mn	1. Increased reliability of water supply to 3,000 persons from Arima and Environs. 2. Improved class of supply to 3,000 persons from Arima and Environs in the Dry Season from 24/3.5 to 24/5
	Quare Service Reservoir	$0 Mn	$0 Mn	Improved reliability of water supply to approximately 4,200 persons in Valencia, Quare and Environs.

Strategic Focus	Projects	2019 Expenditure	2020 Allocation	Effectiveness of these Strategies
	Upgrade of Distribution System– Tobago	$2.7 Mn	$0 Mn	Improved reliability of service to 1,120 residents in Bon Accord, Belle Garden, Mason Hall, Boxborough, Bacolet and Lowlands Tobago.
	Pipeline Replacement for Ministry of Works and Transport Bridges Reconstruction Programme	$2.3 Mn	$1.0 Mn	1. Avoidance of damages and interference to water supply during execution of works by PURE and 2. Positive impact on public health and the environment
	Upgrade of Transmission Network Tobago	$0 Mn	$1.0 Mn	Provision of localised transmission capacity and reduced distribution leakage benefitting 5,300 persons in Northside Road, Connector Road, Mt Pelier, Sandy River, Darrel Spring, Road Reserve, Bethel #3, Bloody Bay Ph 2, Buccoo to Four Roads, Buccoo to Montgomery, Hillsborough to Belmont, Hope Village, Ms. Mills to Mt St George.
	Calvary Tank and Transmission Pipeline	$0 Mn	$5.0 Mn	Improved and expanded level of supply to 3,000 customers in the catchment area including: Calvary, Mt Pleasant and Alenore Gardens Phase 2 and Phase 3 from three (3) days to five (5) days per week.
TOTAL		**$71.1 Mn**	**$70.5 Mn**	

Source MoPD submission dated March 6, 2020

APPENDIX XV

DETAILS OF FUNDING FOR WATER TRUCKING

The table below provides financial data pertinent to the Water Trucking line item 68 for the past two (2) fiscal years at Municipal Corporations:

No.	Municipal Corporation	Fiscal 2019		Fiscal 2020	
		Original Request	Actual Releases	Original Request	Actual Releases
1.	Port of Spain				
2.	San Fernando				
3.	Arima				
4.	Point Fortin	675,000	0	675,000	0
5.	Chaguanas				
6.	Couva/Tabaquite/Talparo	700,000	0	1,000,000	873,815
7.	Diego Martin	1,000,000	113,265	500,000	0
8.	Mayaro/Rio Claro	2,880,000	397,957	896,400	400,000
9.	Penal/Debe	1,025,540	315,179	861,120	665,000
10.	Princes Town	1,500,000	582,057	1,650,000	587,337
11.	San Juan/Laventille	100,000	0	200,000	0
12.	Sangre Grande	3,500,000	700,000	3,800,000	813,075
13.	Siparia	450,000	412,143	600,000	415,000
14.	Tunapuna/Piarco	1,500,000	153,883	500,000	0
	Total	**13,330,540**	**2,674,484**	**10,182,520**	**3,754,227**

APPENDIX XVI

WASA'S HIGH LEAKAGE REPAIR PLAN

WATER AND SEWERAGE AUTHORITY
HIGH LEAKAGE PIPELINE REPAIR PLAN

Region	Distance/km		Estimated Cost	
	Years 1-5	Years 6-10	Years 1-5	Years 6-10
North	59.3	43	$ 197,568,390.21	$ 156,220,725.00
South	57.4	23.4	$ 257,651,496.05	$ 95,940,000.00
Tobago	25.7	34.4	$ 96,756,424.00	$ 142,291,540.00
Sub-Total	**142.4**	**100.8**	**$ 551,976,310.26**	**$ 394,452,265.00**
Total	**243.2**		**$**	**946,428,575.26**

	PRIORITY 1		PRIORITY 2			PRIORITY 3				
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
North	$ 23,078,200.00	$ 27,470,000.00	$ 40,323,329.00	$ 55,960,975.72	$ 50,735,885.49	$ 40,450,500.00	$ 36,715,225.00	$ 21,809,000.00	$ 33,026,000.00	$ 24,220,000.00
South	$ 18,607,900.00	$ 53,830,326.05	$ 72,108,670.00	$ 68,002,100.00	$ 45,102,500.00	$ 16,400,000.00	$ 16,400,000.00	$ 25,100,000.00	$ 20,000,000.00	$ 18,040,000.00
Tobago	$ 10,088,772.00	$ 22,811,980.00	$ 9,206,672.00	$ 40,249,000.00	$ 14,400,000.00	$ 30,240,000.00	$ 25,367,800.00	$ 40,613,000.00	$ 23,650,740.00	$ 22,420,000.00
Total	**$ 51,774,872.00**	**$ 104,112,306.05**	**$ 121,638,671.00**	**$ 164,212,075.72**	**$ 110,238,385.49**	**$ 87,090,500.00**	**$ 78,483,025.00**	**$ 87,522,000.00**	**$ 76,676,740.00**	**$ 64,680,000.00**

APPENDIX XVII

DETAILS OF WASA'S PORTFOLIO AS AT DECEMBER 31, 2020

Water and Sewerage Authority
Finance Division
Debt Portfolio as at December 31, 2020

Loan Purpose	Currency of Issue	Issue Date	Financial Institution (Payee)	Borrowed Principal (TT$)	Type	Interest Rate	Principal Balance as at December 31, 2020	Maturity Date	Notes
IOA Loan - Interim Operating Agreement Loan	TT$	7/11/2001	Citibank	456,419,000	Fixed	11.75%	456,419,000	7/11/2021	Sinking Fund Account for principal repayment
North Water 2	TT$	21/11/2001	Fincor	330,000,000	Fixed	11.50%	30,776,233	21/11/2021	
VESP - Voluntary Employee Separation Programme	TT$	30/12/2001	Citibank	99,327,195	Fixed	11.75%	99,327,195	30/12/2026	Sinking Fund Account for principal repayment
Deficit Financing (3)	TT$	21/12/2004	Fincor	500,000,000	Fixed	6.18%	100,000,000	21/12/2024	
Special Projects	TT$	28/3/2011	RBC Trust	1,335,900,000	Fixed	6.95%	1,335,900,000	28/3/2031	Sinking Fund Account for principal repayment
Refinance RBL $616Mn Loan	TT$	8/5/2018	Republic Bank	508,666,667	Fixed	5.56%	508,666,667	8/5/2028	
To assist with the financing of the Authority's ongoing operational requirements	TT$	3/7/2020	NCB Global Finance	125,000,000	Fixed	6.00%	125,000,000	3/7/2028	
To refinance the NWP1 bond - tranche 2	TT$	27/8/2020	NCB Global Finance	192,200,000	Fixed	6.25%	192,200,000	27/8/2032	
Repayment of existing overdraft facility	TT$	28/10/2020	Republic Bank	220,000,000	Fixed	5.00%	220,000,000	28/10/2028	
				200,000,000	Fixed	7.50%	200,000,000	28/10/2041	
Total (TT$)				**3,967,512,862**			**3,268,289,094**		

Loan Purpose	Currency of Issue	Issue Date	Financial Institution (Payee)	Borrowed Principal (US$)	Type	Interest Rate	US$ Principal Balance as at December 31, 2020	Maturity Date	Notes
Revolving Desalcott Facility	US$	2/11/2000	Republic Bank	60,000,000	Floating	Current effective as at August 18, 2020 : 3.5%	60,000,000	2/11/2020	Spread 3% over US Dollar 6 Month Libor with a floor of 3.5%. Subject to semi-annual resets
Repayment of US$60.0Mn. Desalcott Revolving Facility; US$5.0Mn. Short-Term Loan and outstanding arrears owed to Desalcott	US$	19/02/2020	Republic Bank	100,000,000	Fixed	5.60%	100,000,000	19/02/2034	
Total (US$)				160,000,000			160,000,000		
TTD Equivalent				**1,087,888,000**			**1,087,888,000**		

Description	Currency of Issue	Issue Date	Financial Institution (Payee)	Limit (TT$)	Type	Interest Rate	Principal Balance as at December 31, 2020	Maturity Date	Notes
Overdraft Facility	TT$	4/11/2020	RBC Merchant Bank	200,000,000	Floating	3.75%	105,360,828	4/11/2025	Interest Rate of 3.75% per annum (to be reset annually)
Total (TT$)				**200,000,000**			**105,360,828**		

Grand Total (TT$)	**5,255,400,862**		**4,461,537,922**	

Attachment I

APPENDIX XVIII

WASA'S LOANS WITH THE IDB

The number of loans the WASA has expected with the IDB

WASA is the "Executing Agency" (EA) of two (2) IDB Loans signed between the Government of the Republic of Trinidad and Tobago (GORTT) and the IDB. The Loans 2600/OC-TT and 2890/OC-TT both have terms of twenty-five (25) years.

a. Loan 2600/OC-TT was entered into on November 30, 2011 for execution of a program for the WASA's Modernization and Wastewater Infrastructure Rehabilitation.
   Project Number: TT-L1018
   The general objective of the Program is to improve the environmental conditions in Trinidad and Tobago by increasing the amount of wastewater treated, and to improve WASA's efficiency by supporting the reorganization of its personnel structure and reduction in personnel costs.
   The specific objectives of the Program are:
      a. The takeover, refurbishment, upgrade, integration or decommissioning of Malfunctioning Wastewater Treatment Facilities.
      b. The rationalization of WASA's personnel.
      c. The improvement of WASA's Wastewater Management operational and maintenance performance.

      Pursuant to Section 3.05 of the Loan Contract, the IDB approved on May 05, 2017 an extension of the Disbursement Period to April 03, 2020. This extension will allow execution of activities which includes construction of a Wastewater Treatment Plant at Trincity and construction designs of the proposed Maloney Wastewater Treatment Plant.

Loan 2600/OC-TT has a loan amount of USD50.0Mn.

Original Table of loan amount (expressed in United States dollars)

	Component	Total US$
1.0	**Project Administration**	
1.1	Project Management	200,000
2.0	**Direct Costs**	
2.1	Improvement of T&T's Wastewater System	28,935,000
2.2	Re-organization of WASA	20,000,000
2.3	Institutional Strengthening of WASA	625,000
3.0	**Concurrent Costs**	
3.1	Program Auditing	150,000
3.2	Program Monitoring	15,000
3.3	Program Evaluation	75,000
	Total	**50,000,000**

Revised Investment Program In May 2017, the Program was realigned such that the undisbursed funds from the Original Program of US$29.8Mn. was redirected to support the following projects:

a. South West Tobago Wastewater Upgrade Project – upgrade of the existing Samaan Grove and Bon Accord Waste Stabilization Ponds ('WSP') at an estimated cost of US$16.4Mn;

b. Provision of Consultancy Services for the Detailed Designs and Bid Documents of the Maloney Wastewater Treatment Plant and Phase 2 Collection System at an estimated cost of US$2.1Mn;

c. Design/Construct Trincity Wastewater Treatment Plant to expand and upgrade at an estimated cost of US$8.8Mn;

d. Continuation of Existing Contracts under Loan 2600 relating to Program Evaluation and Auditing of US$2.5Mn.

iii. Loan 2890/OC-TT was entered into on January 19, 2013.

Project Number: TT-L1026

The main objective of this project is to contribute to the GORTT's efforts to improve the environmental conditions of Trinidad and Tobago by decreasing the uncontrolled discharge of untreated wastewater into the environment. In order to achieve this objective, the Loan (2890/OC-TT) will finance the following components:

a. Component 1 – Construction of San Fernando and Malabar Wastewater Treatment Plants The construction of two (2) Wastewater Treatment Plants (WWTPs) and Collection Systems for the San Fernando and the Malabar catchment areas, which will require infrastructure works together with trunk sewers connecting to collection systems from existing connections. Detailed designs for construction including bill of quantities, drawings and specifications of the works are fully developed. Works are in progress at the San Fernando Wastewater Treatment Plant and collection system. Construction of the Malabar WWTP and Collection System have been completed and handed over to WASA.

b. Component 2 – Institutional strengthening for the Authority Finance activities related to the initiation of policy and institutional reforms at the Authority, as well as to institutional restructuring and capacity building. The specific activities comprised in this component include: i. implementation of key actions to improve corporate governance (such as development of comprehensive corporate governance policies, improvement of the current information management policies and disclosure practices, training on risk management and controls systems, and establishment of a permanent financial statements team to strengthen auditing and internal control practices); ii. implementation of key actions to improve commercial management services (including the purchase, installation, integration and implementation of a new billing system); and iii. training activities on contract management of outsourced operations, operation and maintenance, and environmental management.

Loan 2890/OC-TT has a loan amount of US$246.5Mn. See details at Appendix. This represents the first of a three-phase rehabilitation program valued at US$546.5Mn.

Loan 2890/OC-TT has a loan amount of US$246.5Mn. See details below. This represents the first of a three-phase rehabilitation program valued at US$546.5Mn.

No	Category	Original Budget	Revised Budget
		US$	US$
1	**Project administration**		
	1.1 Project management and supervision	1,000,000	600,000
	1.2 Works supervision	5,445,000	6,695,000
2	**Direct costs**		
	2.1 Construction of San Fernando and Malabar Wastewater Treatment Plants	210,942,000	220,634,000
	2.2 Works cost escalation allocation	23,438,000	6,006,000
	2.3 Institutional strengthening for WASA	4,255,000	9,095,000
3	**Concurrent costs**		
	3.1 Auditing	200,000	300,000
	3.2 Monitoring and evaluation	100,000	100,000
4	**Unallocated**		
	4.1 Contingencies	1,120,000	670,000
	Total	**246,500,000**	**246,500,000**

At the second public hearing on the inquiry in the 12th Parliament, the Committee received an update on the IDB loan initiatives:

6. Under Loan 2600/OC-TT:
    a. the wastewater project in southwest Tobago has been completed; and
    b. Works at the Trincity Wastewater Plant are ongoing.
7. Under Loan 2890/OC-TT:
    a. Construction of a new plant at Malabar and extension of the collection system has been completed; and
    b. Construction of the San Fernando Wastewater Plant was delayed and is ongoing. The project is approximately 90-91 percent complete and is expected to be completed during 2021.