



Water and Sewerage Authority

Administrative Report

Fiscal Year 2016/2017

Final
08 May 2018

12. Accordingly, the Minister of Public Utilities submits and Cabinet is asked to:

- (i) **note** the Administrative Report of the Water and Sewerage Authority (WASA) for the fiscal year 2017, a copy of which is attached as **Appendix I** to this Note; and
- (ii) **agree** that the Administrative Report identified at (i) above be submitted to the President, for subsequent laying in both Houses of Parliament, in accordance with the provision of section 66D of the Constitution of the Republic of Trinidad and Tobago.

MINISTRY OF PUBLIC UTILITIES

EXECUTIVE SUMMARY

Background

In conformance with the request from the Ministry of Public Utilities, the Water and Sewerage Authority (the Authority) prepared its Administrative Report for the fiscal year (FY) 2016/17 (October 2016 to September 2017). The report provides an overview of the Authority's operations, performance, financial position and compliance with statutory regulations.

Operating Environment

The Water and Sewerage Authority is a statutory authority created by an Act of Parliament – Act 16 of 1965 and the Authority's operation is regulated. The key regulators are the Regulated Industries Commission (RIC); the Environmental Management Authority (EMA) and the Occupational Safety and Health (OSH) Authority and Agency. Additionally, the Authority fulfils its obligations under Sections 7, 8 and 9 of the Freedom of Information Act 1999 (FOIA) and the Securities (General) By-laws 2015.

Vision and Objectives

The Authority's vision was 'To be the best performing water utility in the Western Hemisphere' and strategic objectives of FY 2016/17 were (i) to expand 24/7 water delivery service, (ii) to develop a Wastewater Programme, (iii) to undergo an organisational restructuring exercise, (iv) to improve operating ratio and (v) to engage in institutional strengthening to improve governance.

Financial Position¹

The Authority's expenditure for fiscal year 2016/17, inclusive of finance expenses was **Two Billion, Five Hundred And Eighty Five Million, Six Hundred And Ninety Four Thousand, Seven Hundred and Ninety Five Dollars** (\$2,585,694,795) which is \$26.2Mn lower than the budgeted estimate of **Two Billion, Six Hundred And Eleven Million, Nine Hundred And Ninety One Thousand, Seven Hundred and fifty Four Dollars** (\$2,611,991,754) for the period.

Total revenue for the Authority for fiscal year 2016/17 amounted to **Seven Hundred And Twenty-Four Million, One Hundred and Seventeen Thousand, Two Hundred And Sixty-Three Dollars** (\$724,117,263)

¹ Source: Management Accounts, 30 Sept 2017

which was 2.1% higher than the budgeted estimate of **Eight Hundred And Ten Million and Fifty Three Thousand Dollars** (\$810,053,000) for the said period.

Water and Wastewater Services

The Authority's average production for FY 2016/17 was approximately 225.2² million gallons per day (mgd) and provided water service to **Four Hundred And Twenty-Two Thousand, Seven Hundred And Fifty** (422,750) customers. Of this total, **Seventy Nine Thousand, Three Hundred And Fifty Six** (79,356) customers have centralised sewerage coverage.

Operating Structure

The operating organisational structure in fiscal year 2016/17 comprised six (6) divisions headed by Directors, the General Counsel and Corporate Secretary, Head Internal Audit and Head, Water Resources Agency all reporting to the Chief Executive Officer. The Authority's manpower level at the end of FY 2016/17 was **Five Thousand, One Hundred And Fifty One** (5,151) employees

The Way Forward

The Authority developed its short, medium and long term infrastructure plans (2015-2025) which focus on improving water and wastewater services and managing water demand.

² Production and Supply Monthly Reports

5.7. Performance Assessment/Management Strategies	34
5.8. Employee Support Services.....	34
5.9. Industrial Relations	35
6. Procurement Procedures and criteria used in selecting each system.....	36
6.1. Open tender.....	36
6.2. Selected tender	37
6.2.1. Contractor Selection.....	37
6.2.2. Invitees	37
6.3. Sole tender	38
6.3.1. Emergencies: Tender Rule 17.....	38
6.3.2. Non Competitive Procurement: Tender Rule 18.....	39
7. Public and Community Relations.....	40
7.1. Client and public access to services/service delivery systems	40
7.2. Community and stakeholder relations/outreach	40
8. Appendices	42
Appendix 1: Standard Operating Procedure – Appointment and Promotion.....	42
Appendix 2: Five Year Water and Wastewater Infrastructure Plan	45
Appendix 3: Investment Procedure.....	80

List of Tables and Figures

Table 1 Corporate Structure –Divisions and Departments.....	8
Table 2 Authorization for procurement of goods and services.....	10
Table 3 Key Reports generated by WASA	11
Table 4 Status of WASA’s initiatives to meet GORTT’s mandate	16
Table 5 Budgeted Income versus Actual Income for Fiscal year ending September 30, 2017.....	25
Table 6 Budgeted Expenditure versus Actual Expenditure for Fiscal year ending September 30, 2017.....	26
Table 7 Budgeted Capital Expenditure vs Actual Capital Expenditure for Fiscal year ending September 30, 2017.....	26
Table 8 Category of Employees Engaged as at September 30, 2017	31
Figure 1 Executive Management Team for Fiscal Year 2016/17	9

Contents

1. Vision, Mission, Philosophy and Strategic Objectives	5
1.1. Vision	5
1.2. Mission	5
1.3. Philosophy	5
1.3.1. Core Values	5
1.3.2. Strategic Objectives	6
2. Organisational Structure	7
2.1. Organisational profile, legislative and regulatory framework	7
2.2. Corporate structure – Divisions, Departments, Units	8
2.3. Services/products	9
2.4. Delegated Levels of Authority	10
2.5. Reporting Functions – Departmental Reports, Reports to Ministries, President/Parliament 11	
3. Policies and development initiatives	12
3.1. Short, medium and long term plans	12
3.2. Performance objectives and accomplishments.	15
3.2.1. Performance Objectives and Accomplishments	15
3.2.2. Remedial plans to address performance gaps	19
4. Financial Operations	22
4.1. Budget formulation	22
4.1.1. Recurrent Budget	22
4.2. Income versus Expenditure	25
4.3. Debt policy	27
4.4. Investment Policy	27
4.5. Internal Audit functions	27
5. Human Resource Development Plan	30
5.1. Organizational Establishment	30
5.2. Category of Employees (Monthly Paid, Daily Rated, Temporary Staff, Contract Staff)	30
5.3. Career Pathing Systems	31
5.4. Mission Critical/ Critical Positions	32
5.5. Workforce Assessment	32
5.6. Training and Development	33

1. Vision, Mission, Philosophy and Strategic Objectives

1.1. Vision

The Authority's vision is 'To be the best performing water utility in the Western Hemisphere'.

1.2. Mission

WASA's mission statements are:

- To be a leading provider of water and wastewater services;
- To deliver customer service along the highest internationally recognized and accepted standards;
- To continuously develop best business practices utilizing advanced technology and a well-developed and motivated workforce;
- To leverage on industry expertise to offer global water and wastewater services; and
- To sustain a commercialized business while remaining sensitive to our stakeholders and the environment.

1.3. Philosophy

1.3.1. Core Values

The Authority developed core value statements with the aim to shape the Authority's culture to promote efficiency, productivity and guide behaviour in keeping with good governance.

- **Respect:** Treating its stakeholders equally with appreciation and value, devoid of discrimination as diversity is recognized in the inherent worth of every human being;
- **Integrity:** Conducting its business with honesty, transparency and accountability, placing the public's interest above personal interest;
- **Excellence:** Providing the best quality service and customer care that would translate into satisfaction and sustainability;
- **Professionalism:** Preserving its corporate image through people, who are self-regulated, committed to upholding the highest standards and are examples that positively influence and enhance the communities in which we operate; and
- **Trust:** Being truthful in its declarations, to be ethical in conducting business and building relationships based on mutual respect.

1.3.2. Strategic Objectives

The Authority's strategic objectives are as follows:

1. To improve and expand the access to water service to support social well-being and economic growth;
2. To improve and expand wastewater services to support the health of the people and the environment;
3. To continuously improve performance by minimizing operational cost and adopting appropriate technologies and practices;
4. To proactively establish operational resilience by Enterprise Risk Management; and
5. To guarantee water availability and preserve the environment by the adoption of integrated water resources principles.

The strategic objectives are in keeping with the Government of the Republic of Trinidad and Tobago (GORTT) Water Sector initiatives (September 2015) which the Authority is mandated to fulfil. In this regard, the Authority aligned its work programme with these initiatives which are listed below:

- Adopt and Implement Integrated Water Resources Management (IWRM);
- Create an appropriate Institutional Framework and Organizational Structures for effective water management including the establishment of a Water Resources Agency (WRA) as a separate organization to manage the country's water resources;
- Develop and maintain an effective water resources/hydrological monitoring network, reliable data collection and water resources assessment, and development and maintenance of a national water data and information system;
- Implement a Water Loss Reduction Programme;
- Improve security of water supply by upgrading the water infrastructure to extend the water supply service to areas underserved or unserved and increasing service storage;
- Develop a Water Supply Drought Management Plan and a Water Supply Management Plan for the Dry Season and implementation of required actions;
- Implement a Wastewater Management Programme;
- 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; and
- Develop and implement Flood Management Plans, including mitigation, response and adaptation measures.

2. Organisational Structure

2.1. Organisational profile, legislative and regulatory framework

The Water and Sewerage Authority (WASA) is a statutory authority created by an Act of Parliament – Act 16 of 1965. The Act was thereafter modified by a series of amendments and legally empowers the Authority as the sole provider of water and wastewater services in Trinidad and Tobago: *'The Authority is responsible for maintaining and developing the waterworks and other property relating thereto and for administering the supply of water thereby established and promoting the conservation and proper use of water resources and the provision of water supplies in Trinidad and Tobago.'* WASA's operation is regulated with the key regulators being:

- The Regulated Industries Commission (RIC) – the economic regulator of tariff which is dependent on levels of service;
- The Environmental Management Authority (EMA) – regulator of how operations impact the environment;
- The Trinidad and Tobago Securities and Exchange Commission (SEC) – regulator of Reporting Issuers continuous disclosure obligations; and
- Occupational Safety and Health (OSH) Authority and Agency – regulator of work practices.

The Water Resources Agency was appended to WASA in March 1976. The Agency has responsibility for both the regulatory and operational activities related to the management of the Water Resources in Trinidad and Tobago. Additionally, the Authority fulfils its obligations under Sections 7, 8 and 9 of the Freedom of Information Act 1999 (FOIA).

This regulatory framework guides and controls the development and operations of the Water and Wastewater Sector. Over the period under review, the Authority was in compliance with:

- Reporting requirements of Security Exchange Commission (SEC);
- Responding to Freedom of Information Act (FOIA) applications;
- Issuance of Sanitary Constructors License & Publication of List;
- Publication of FOIA Statement 2016;
- OSH Standard; and
- CEC requirements for projects implemented over the period.

As at the end of FY 2016/17, the Authority produced circa 225.2 mgd and provided water service to **Four Hundred and Twenty-Two Thousand, Seven Hundred and Fifty (422,750)** customers. Of this total, **Seventy-Nine Thousand, Three Hundred and Fifty-Six (79,356)** customers have centralised sewerage coverage.

2.2. Corporate structure – Divisions, Departments, Units

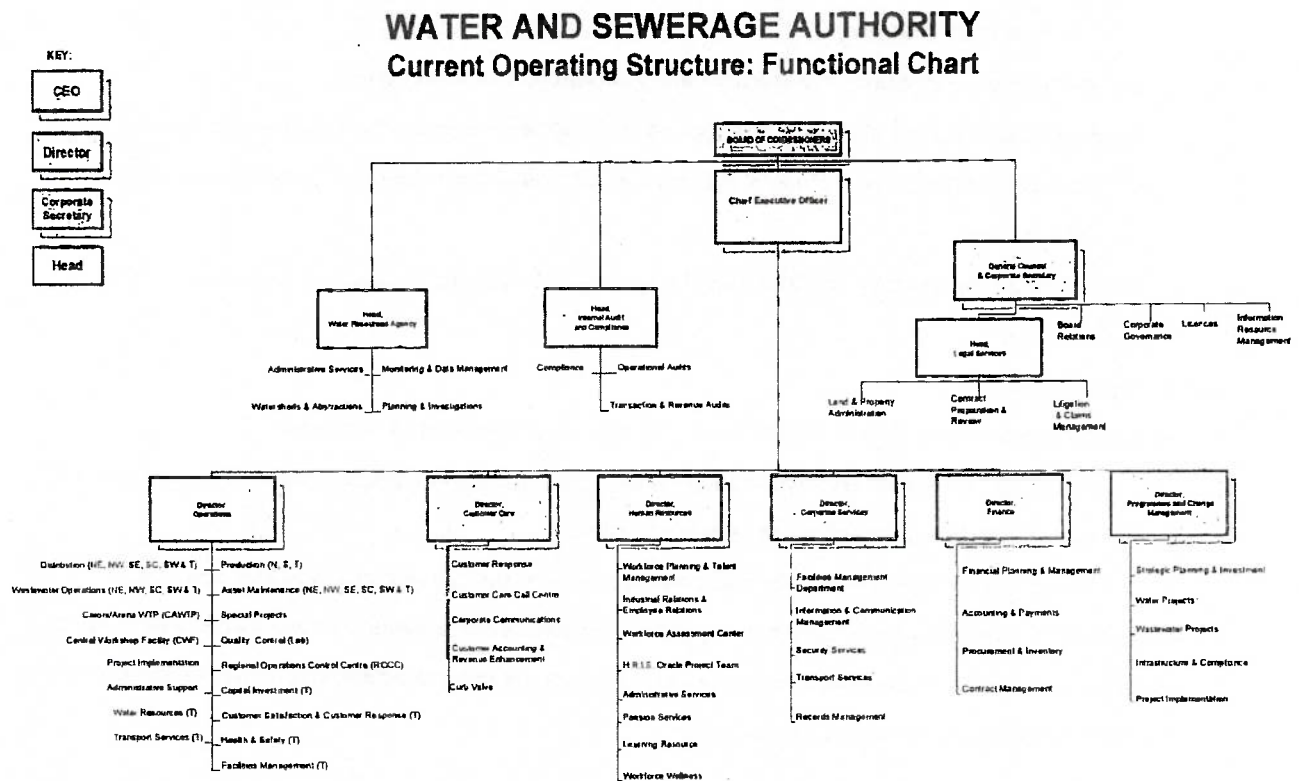
In the Financial year 2016/2017 the Water and Sewerage Authority’s Corporate Structure comprised of the same six (6) Divisions and three (3) Departments as listed in Table 1.

Table 1 Corporate Structure –Divisions and Departments

Divisions	Departments
1. Corporate Services Division	1. Internal Audit and Compliance Department
2. Customer Care Division	2. Corporate Secretariat and Legal Services Department
3. Finance Division	3. Water Resources Department
4. Human Resources Division	
5. Operations Division	
6. Programmes and Change Management Division	

Within each of the six (6) Divisions there are several Departments which are responsible for specific functions that collectively contribute to the key result areas of the relevant Division, and ultimately to the achievement of the goals of the Authority. Figure 1 highlights the Departments and functional areas within each of the Divisions.

Figure 1 Executive Management Team for Fiscal Year 2016/17



2.3. Services/products

The Authority is engaged in the following activities as it conducts the business of providing:

1. **Water services.** To provide water supply to the population of Trinidad and Tobago, the Authority manages a water supply system which involves:
 - o Development of surface, ground and desalination water sources;
 - o Construction and rehabilitation of water infrastructure, namely, Water Treatment Plants, Booster Pumping Stations, Reservoirs and Wells;
 - o Development of pipeline network inclusive of the installation, extension and replacement of transmission and distribution pipelines; and
 - o Operation and maintenance of water treatment facilities to produce water for domestic and industrial use.
2. **Wastewater services.** To provide sanitation services to the population of Trinidad and Tobago, the Authority manages a wastewater system which involves:

- Construction and rehabilitation of wastewater infrastructure, namely, Wastewater Treatment Plants and Lift Stations;
- Installation, extension, replacement and maintenance of sewer lines;
- Operation and maintenance of wastewater treatment facilities to collect, treat and discharge domestic and industrial effluent that conforms to regulatory standards, into the receiving water courses; and
- Adoption of existing facilities and integration of systems to expand centralized sewerage coverage.

3. Supporting services

3.1. Approvals and licences. The Authority issues the following licences and approvals:

- Approvals for water and wastewater reticulation systems for single properties (domestic and non-domestic) and building developments; and
- Licences which permit the abstraction of water from surface and groundwater sources.

3.2. Protection of catchment areas and conservation. To ensure sustainability of the water resources for the future, WASA conducts education programmes on catchment protection and conservation which is important to both water quality and quantity.

2.4. Delegated Levels of Authority

The level of authorization for procurement of goods and services is detailed in Table 2:

Table 2 Authorization for procurement of goods and services

Item	Amendments
Purchase Requisition Authorization Levels	≤ \$100, 000.00 Accountable Manager
	\$100, 000.00 - \$250, 000.00 Accountable Manager and Senior Manager
	> \$250, 000.00 - \$500, 000.00 Accountable Manager, Senior Manager and Head
	> \$500, 000.00 Accountable Manager, Senior Manager, Head and Director
Award of Contracts Authorization Levels	< \$1Mn Chief Executive Officer
	> \$1Mn - \$5Mn Tenders Committee
	> \$5Mn Board of Commissioners

2.5. Reporting Functions – Departmental Reports, Reports to Ministries, President/Parliament

The Authority prepares reports for various stakeholders as required. The table below identifies some of the key reports.

Table 3 Key Reports generated by WASA

Report	Stakeholder	Frequency
Divisions' Reports	WASA's Board of Commissioners	Monthly
Public Sector Investment programme (PSIP) Status Report	Ministry of Public Utilities	Monthly
PSIP Quarterly Achievement Report	Ministry of Public Utilities	Quarterly
Financial Statements	Securities Exchange Commission (SEC)	Quarterly
Overall and Guaranteed Standards Report	Regulated Industries Commission (RIC)	As requested
Freedom of Information Act 1999 (FOIA)	Ministry of Public Utilities	Quarterly
Status of Negotiations with Collective Bargaining Units	Ministry of Public Utilities	As requested
Pension Plan Report	First Citizen Bank (FCB) Trust Company Beacon, Woodrow and De Souza	Quarterly
Gratuity Payment	Ministry of Finance	As required
Pension Benefits	Ministry of Finance	As required

3. Policies and development initiatives

3.1. Short, medium and long term plans

The Authority developed its short, medium and long term plans based on improvements in customer service, optimizing cost, enhancing revenue and development of human capital.

The plans focus on improving water and wastewaters services, corporate image, operational efficiency, financial sustainability, staff productivity, governance and managing water demand.

Short and Medium-Term Plans

The major initiatives in the short and medium-term horizons are as follows:

- Improve Water Services
 - *Water Sustainability.* Expansion and monitoring of hydrological network; monitoring and protection of well fields and conditions of watersheds;
 - *Develop New Water Sources.* Ground Water Development Programme; Expansion of desalinated plant;
 - *Improve Reliability of Service.* Desilting and Rehabilitation of Hillsborough Dam; and
 - *Upgrade Water Delivery Infrastructure.* Water Treatment Plants, transmission and distribution pipelines, booster pumping stations and storage tanks including replacement of transmission mains.
- Improve Wastewater Services
 - *Expansion of Wastewater Coverage.* Expansion of collection systems and Treatment Facilities at Malabar and San Fernando; rehabilitation and extension of the Sewerage System in South West Tobago; and
 - *Public Education.* Build awareness in wastewater education.
- Implement Demand Management: *Network and pressure management:* bulk metering on plants and along transmission mains; increase district metered areas.
- Corporate Image
 - *Improve Corporate Image.* Enhance existing administrative facilities and plants;
 - *Expand Communication Channels.* Improve customer communication; outreach programme in rural communities and media, publication of quarterly magazine; social media; and
 - *Social Responsibility.* Facilitate Water Sector education programmes, protection of watersheds, facilitate social/cultural events.

- **Improve Operational Efficiency**
 - *Optimize Water Delivery.* Rehabilitate Water Treatment Plants, upgrade of Booster Stations;
 - *Optimize Wastewater Treatment.* Rehabilitate wastewater treatment plants, Sewers and Lift Stations;
 - *Verification of Title and Asset Inventory Exercise.* Pursue vesting of land parcels;
 - *Reassessment of Procurement Processes and Procedures.* Alignment of the Procurement processes with the new public procurement and disposal of public property bill;
 - *Integrate IT Platforms.* Implement enterprise resource planning solution: human resource system and payroll, customer information system;
 - *Improve Internal Control system.* Evaluate, improve and manage internal controls in accordance with COSO framework; and
 - *Audited Accounts.* Complete outstanding fiscal years audited statements.
- **Improve Staff Productivity.** Implement systems that maximize staff outputs.
- **Reduce Water Loss**
 - *Illegal Connections.* Crackdown on illegal connections;
 - *Expand Metering.* Implement metering programme; and
 - *Leakage management.*
- **Achieve Financial Viability**
 - *Implement Disconnection Drive.* Target non-paying consumers;
 - *Provide expert services.* Provide water and wastewater infrastructure services for projects of GORTT agencies;
 - *Increase in tariff.* Pursue increase in rates for potable water and wastewater services; and
 - *Benchmark operation cost.* Implement cost control measures.
- **Build a Capable Workforce.**
 - *Close Skills Gap.* Conduct training programmes to achieve revenue generation.
- **Build Organisation Human Capacity**
 - *Succession Planning.* Review and develop recruitment procedure to fill critical positions.
- **Establish a Culture of performance.** *Staff Performance:* increase productivity of marginal performers through the use of PAS inclusive of an individual performance plan.
- **Organisation Restructuring**
 - *Restructure Organisation.* Development and implementation of new monthly paid organization arrangement.

- **Governance and Transparency**
 - *Corporate Governance Action Plan*. Implement critical corporate governance practices in corporatization framework, control, information and disclosure and financial discipline; and
 - *Corporate Reputation*. Establish system for promoting and monitoring compliance with Code of Ethics and business conduct; rollout the anti-fraud policy; monitor legal compliance, implement standardized & re-engineered process for licensing sanitary constructors.
- **Risk Management**
 - *Enterprise Risk Management (ERM)*. Continue implementation of a robust ERM Framework.
- **Health and Safety.**
 - *Meet Regulatory Requirements*. Continue institutionalizing HS&E actions throughout the Authority.

Long Term Plans

The programme of works in potable water delivery will focus on increasing water availability while reducing demand. Projects identified address source protection, development of new sources, rehabilitation of existing sources, rehabilitation and upgrade of the transmission network, expansion and rehabilitation of the distribution network. Specific works will include construction of impounding reservoirs, construction and rehabilitation of water treatment plants, installation of pipelines, construction and rehabilitation of storage reservoirs and booster pump stations, commencement of universal metering, pressure management and the undertaking of a Customer Cadastre. It will also identify actions to be done by others including control of quarrying, dumping, deforestation and increase of tariff.

The Wastewater Programme will focus on major maintenance of wastewater assets, upgrade of facilities to satisfy effluent compliance, expansion of wastewater coverage and construction of regional wastewater systems to service catchments with expansion and integration of existing wastewater systems, decommissioning of existing wastewater plants and pumping stations and refurbishment of private wastewater facilities.

Appendix 2 provides details of the proposed Five (5) Year Water and Wastewater Infrastructure Plan.

3.2. Performance objectives and accomplishments.

3.2.1. Performance Objectives and Accomplishments

GORTT's mandate for Water Sector

WASA continues to implement strategic actions in alignment with the key water sector initiatives as outlined in the Government of the Republic of Trinidad and Tobago's (GORTT's) 2015 Work Programme. In this regard, WASA is currently pursuing several projects/programmes to meet GORTT's mandate, aimed at managing the water resources in a holistic and integrated manner. Table 4 lists GORTT's initiatives and WASA's programme/projects which are directly related to the sector initiatives listed below.

- Adopt and Implement Integrated Water Resources Management (IWRM);
- Create an appropriate Institutional Framework and Organizational Structures for effective water management including the establishment of a Water Resources Agency (WRA) as a separate organization to manage the country's water resources;
- Develop and maintain an effective water resources/hydrological monitoring network, reliable data collection and water resources assessment, and development and maintenance of a national water data and information system;
- Implement a Water Loss Reduction Programme;
- Improve security of water supply by upgrading the water infrastructure to extend the water supply service to areas underserved or unserved and increasing service storage;
- Develop a Water Supply Drought Management Plan and a Water Supply Management Plan for the Dry Season and implementation of required actions;
- Implement a Wastewater Management Programme;
- 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; and
- Develop and implement Flood Management Plans, including mitigation, response and adaptation measures.

Table 4 Status of WASA's initiatives to meet GORTT's mandate

#	GORTT Initiative	WASA's Programme/projects
1.	Adopt and Implement Integrated Water Resources Management (IWRM)	<ul style="list-style-type: none"> • Revision of National Integrated Water Resources Management (NIWRM) Policy (WTC 62/2016): <ul style="list-style-type: none"> ○ <i>Technical Steering Committee finalized document on 16th August 2017</i> ○ <i>Draft Note to Cabinet is being revised by MPU</i> • Preparation of Five (5) year Plan with annual work programme to implement IWRM: <ul style="list-style-type: none"> ○ Project to be developed after revision of the National IWRM Policy
2.	Create an appropriate Institutional Framework and Organizational Structures for effective water management including the establishment of a Water Resources Agency (WRA) as a separate organization to manage the country's water resources	<ul style="list-style-type: none"> • Water Resources Management Authority (WRMA) Legislation <ul style="list-style-type: none"> ○ <i>Drafting Instructions/Brief to be done by MPU in collaboration with WRA, WASA</i> ○ <i>Legislation to be drafted by CPC based on Revised National IWRM Policy</i> • Development of Institutional Framework and Organisational Structure for WRA (WTC 63/2016) <ul style="list-style-type: none"> ○ <i>Kickoff meeting held at the Ministry on 29th August 2017</i> ○ <i>The Ministry is desirous of condensing the schedule from eight (8) months to four (4) months</i>
3.	Develop and maintain an effective water resources/hydrological monitoring network, reliable data collection and water resources assessment, and development and maintenance of a national water data and information system.	<ul style="list-style-type: none"> • Enhancement of the Hydrological Monitoring Networks (WTC 48/2017) <i>Status: Project deferred; implementation is subject to MPU identifying funding</i> • Development of a National Water Resources Information System (WTC 03/2017) <i>Status: Project deferred; implementation is subject to MPU identifying funding</i>
4.	Implement a Water Loss Reduction Programme	<ul style="list-style-type: none"> • Leakage Reduction Plan has been developed which is aimed at reducing leakage. <i>Status: For FY 2016/17, 22,124 leaks were completed, and the net backlog is 2,342</i> • Network and Pressure Management Project <i>Status: 92%; Completion of project subject to funding</i>
5.	Improve security of water supply by upgrading the water infrastructure to extend the water supply service to areas underserved or unserved and increasing service storage.	<ul style="list-style-type: none"> • Rehabilitation of Water Infrastructure (Continuing Programme) <ul style="list-style-type: none"> ○ Well Development Programme (Trinidad) - drilling and equipping of wells at Avocat, and Arouca. <p><i>Status: Avocat wells – 22% complete. The Evaluation report on the preferred bidder is currently being finalized; Arouca - 20% complete</i></p>

#	GORTT Initiative	WASA's Programme/projects
	<p>Improve security of water supply by upgrading the water infrastructure to extend the water supply service to areas underserved or unserved and increasing service storage.</p>	<ul style="list-style-type: none"> ○ Well Development Programme (Tobago) – drilling and equipping of 7 production wells to provide an additional 4.0 IMGD of water. <p><i>Status: 25.2% complete</i></p>
<ul style="list-style-type: none"> ○ Rehabilitation of Water Treatment Plants (Trinidad): Maloney, Maraval, Carlsen Field, El Socorro, Valsayn, Charlotteville and Petrotrin Guayaguayare - Mechanical Electrical and Process equipment replacement at major facilities and upgrade of intakes. <p><i>Status: Maloney WTP – 30% complete; Carlsen Field WTP – 32% complete; El Socorro WW – 32% complete; Valsayn WW - 30% complete; Charlotteville intake – 44.2% complete; Petrotrin Guayaguayare WTP - 63% complete.</i></p>		
<ul style="list-style-type: none"> ○ Construction of Service Reservoirs (Trinidad) –La Fillette, Tucker Valley, Hololo, Quare, Vessigny, Four Roads and Guanapo. <p><i>Status: Four Roads 48% complete, Tucker Valley 48% complete, Hololo 48% complete, Quare 48% complete, Guanapo 30% complete La Fillette – 70% complete, Vessigny - tender to be re-invited for construction on a new site</i></p>		
<ul style="list-style-type: none"> ○ Installation and replacement of major pipelines (Trinidad) – Caroni South trunk, LABIDCO and Union Industrial Estate <p><i>Status: Dualling of the Caroni South Trunk - 92% complete; LABIDCO project – 49% complete</i></p>		
<ul style="list-style-type: none"> ○ Installation and replacement of major pipelines (Tobago) <p><i>Status: project from Pembroke to Richmond along the Windward Road is on hold pending funding (20%)</i></p>		
<ul style="list-style-type: none"> ○ Construction of Hermitage Gravity Feed System – storage tanks and distribution pipelines ○ Installation and replacement of Distribution Pipelines (Tobago)- Hope to Mt St George, Chance Street Buccoo, Jacamar Drive Mt Irvine, Miller and Galla Street, Post Office Street, Sandy Street <p><i>Status: Construction of Hermitage Gravity Feed System – 100% complete; pipelaying from Hope to Mt St George – 100% complete; pipelaying at Jacamar Drive – 100% complete; works commenced on Miller and Galla Streets; others are in the planning phase</i></p>		
<ul style="list-style-type: none"> ○ Installation and replacement of Transmission and Distribution Pipelines (Trinidad) – Oropouche Fishing Pond, Abercromby Street, Guave Road Chaguanas, Moraldo Street Maraval 		

#	GORTT Initiative	WASA's Programme/projects
		<p><i>Status: Oropouche Fishing Pond – 100% complete; Guave Road and Moraldo Street are 97% complete; Abercromby Street - 98% complete</i></p> <ul style="list-style-type: none"> ○ Desilting of Hillsborough Dam <p><i>Status: 20% complete</i></p> <ul style="list-style-type: none"> ○ Construct Intake at Rincon, Mc David in Surrey Lopinot, Acono, Rincon and Aripo <p><i>Status: Mc David – 95% complete; Acono – Project on hold due to unavailability of adequate surface water; Aripo – awaiting funding approval; Rincon – site works ongoing (proposed completion date is 31 October 2017)</i></p> <ul style="list-style-type: none"> ○ Installation of Boosters: Caiman & Tamana <p><i>Status: Caiman- site works ongoing; Tamana – awaiting funding approval.</i></p> <ul style="list-style-type: none"> • Development of New Water Source (Tobago) – Consultancy for construction of a desalination plant at the Cove Industrial Estate. <p><i>Status: 8% complete</i></p> <ul style="list-style-type: none"> • Customer Information System <p><i>Status: 98% complete</i></p>
6.	Develop a Water Supply Drought Management Plan and a Water Supply Management Plan for the Dry Season and implementation of required actions.	<ul style="list-style-type: none"> • Development of Dry Season and Drought Water Supply Management Plans (WTC 71/2016) <ul style="list-style-type: none"> ○ <i>Contract was finalized and forwarded to the Contractor, Cole Engineering Group Ltd.</i> • Development of an Integrated Water Security Programme for Tobago <ul style="list-style-type: none"> ○ <i>Contract was finalized and forwarded to the Contractor, Cole Engineering Group Ltd</i>
7.	Implement a Wastewater Management Programme.	<ul style="list-style-type: none"> • Construction works at the Malabar and San Fernando Wastewater Treatment Plants. On completion, this would improve wastewater services in the Malabar and San Fernando catchments and expand the centralized sewerage coverage from 30% to 34%. <p><i>Status: Malabar Wastewater Treatment Plant (74.2%); San Fernando Wastewater Treatment Plant (34.9%)</i></p>
8.	Implement approved projects addressing specific concerns or issues to improve water supply and /or water management which have been identified by	<ul style="list-style-type: none"> • This initiative is being carried out under the Green Fund Project "Expanded Adopt a River Programme" <ul style="list-style-type: none"> ○ 42 Registered Adopters; 44 watersheds have been adopted ○ 2 outreach events were conducted

#	GORT Initiative	WASA's Programme/projects
	'stakeholders' at national and community levels.	<ul style="list-style-type: none"> ○ Adopt A River mobile app to achieve water quality data in the field was completed ○ 4 site visits and water sampling completed.
9.	Develop and implement Flood Management Plans including mitigation response and adaptation measures	<ul style="list-style-type: none"> • Enhancement of Systems for Flood Monitoring, Early Warning, Mapping (WTC 49/2017) <p><i>Status: Project deferred; implementation is subject to MPU identifying funding</i></p>

3.2.2. Remedial plans to address performance gaps

Improve Water Services

In an effort to improve the delivery of service to customers, WASA will implement strategies to more effectively manage demand and supply to create a balance that will meet the requirements of the various sectors. These strategies will include:

- Protection of catchments and aquifers to reduce degradation done to anthropogenic activities to maintain raw water quality within treatable limits;
- Improvement of treatment processes to meet the requirements based on current and projected raw water qualities;
- Reduction in reliance on surface water sources by development of ground and desalination sources and Water Reuse;
- Provision of impounding storage to mitigate against reductions in base flows;
- Reduction in Non-Revenue Water by implementing Leakage Management, Network and Pressure Management, District Metered Areas (DMA), Bulk Metering and Universal Metering (domestic, commercial and industrial); and
- Water Treatment Plant rehabilitation to improve reliability and to sustain water schedules.

The programme of works to address the short to medium term are highlighted in the five (5) year Water Infrastructure Plan.

Improve Wastewater services

WASA proposes to service the catchments by the construction of regional wastewater treatment plants and the associated sewerage collection system. In assessing the country's development needs in the wastewater sector, it was determined that seven (7) major wastewater catchments would address the sanitation needs of the country and bring us closer to achieving 60% wastewater coverage. The catchments comprise:

- Port of Spain;
- East West Corridor comprising of sub-catchments, Bamboo, Trincity, Maloney, Malabar and Wallerfield/Valencia;
- San Fernando;
- Chaguanas;
- Couva;
- Scarborough; and
- South West, Tobago.

It should be noted that works are ongoing in Malabar, San Fernando and South West Tobago. The programme of works that will improve wastewater services in the short to medium term are highlighted in the five (5) year Wastewater Infrastructure Plan.

Balance Demand and Supply

Several initiatives need to be pursued collectively to balance demand and supply including:

- Three complementary projects are proposed.
 - Introduction of Universal Metering Programme;
 - Increase of Tariff; and
 - Update of Customer Cadastre.

It is to be emphasized that all three (3) of these projects must be implemented; leaving out any will reduce the effectiveness of the others. In addition, the effectiveness of these measures require implementation of appropriate tariff to make the measures for conservation financially beneficial to customers and the promotion of water conservation.

Achieve Financial Sustainability

The Authority will focus on initiatives over the next fiscal year and beyond to enhance the Authority's overall financial stability using five (5) objectives that can improve the Authority's financial position. These objectives are:

1. Collection drives on overdue accounts;
2. Review and management of the Authority's budget and cost reduction strategies so as to reduce overall expenditure;
3. Debt management;
4. Completion of up-to-date Audited Financial Statements; and
5. Strengthening of internal controls to effectively manage risk and prevent fraud.

Implement Integrated Water Resources Management (IWRM) Practices

The Authority will pursue implementation of IWRM practices which is recognised as international best practice for the management of the water sector. The Authority will focus on the following:

- Revision of National Integrated Water Resources Management Policy;
- Separation of Water Resources Agency from WASA; and
- Enhancement of Hydrological Monitoring Networks for Trinidad and Tobago.

4. Financial Operations

4.1. Budget formulation

4.1.1. Recurrent Budget

In compiling the Authority's annual recurrent budget, the following guidelines were compiled and circulated to all budget holders for recurrent estimates in fiscal year 2016/17.

Operating Budgets

- Divisions were required to set out their goals prior to and as a basis for the request for funds, as well as state performance measures and targets identified to monitor performance during the year. These must be in line with the Authority's corporate goals and objectives;
- Divisions must provide for all major increases/ (decreases) in expenditure, as this will determine whether the estimate submitted is adequate;
- Where a Department did not submit a budget, their FY 2015/16 year to date performance will be appraised and an allocation in line with the spending trend less 10% will be granted (for all expenditure excluding Employment and Rental – property, vehicle, telephones, etc.) If however a budget is submitted but there are no goals to support the proposals, then the budget allocations will be capped at the FY 2015/16 forecast outturn;
- For this fiscal year, liaisons from the Finance Division were attached to each Division and worked with Budget Holders (BHs) to deliver each Division's Budgets for FY 2016/17;
- BHs were granted five (5) weeks to complete their data submission exercise;
- Assumptions
 - Inflation Rate (core inflation) – 3.0%
 - Exchange Rates as at March 2016 – US\$1: TT\$6.7
- Management forecasts a decline of 2.0 % in revenue for FY2016/2017 mainly as a result of a decline from the Industrial sector;
- The following were included in each Division's budget submissions:
 - *Goals:* These were clearly stated or defined and were in line with the Authority's corporate goals and objectives;
 - *Assumptions:* These were the factors that the BH considered when deciding his/her budget needs or requirements (these are in addition to the ones listed above); and

- *Justifications:* The reasons/explanations the BH submitted with his/her budget document in order to substantiate or defend their budget requests. Board approvals, Tender Committee approvals, Executive approvals and other Committee approvals can be used to justify expenditure. Extracts from the minutes of these meetings must be provided.

Revenue Budget

- Revenue forecasts were stated in respect of the Authority's major sources of Revenue i.e. water rates and sewerage rates and other miscellaneous sources like connection charges, clearance certificates, sludge disposal etc; and
- Revenue was provided based on classes and segments and all assumptions must be fully stated.

Recurrent Expenditure Budget

The cost assigned here is in respect of core business activities like pipeline repairs and maintenance, upkeep of plant and equipment, etc. and non-core business such as administrative costs, support costs, and other expenses needed to set up or maintain certain conditions necessary for the performance of the Authority's mission like financing, training and development, legal, audit costs etc. These costs occur on a repetitive basis annually.

Capital Expenditure

- Capital expenditure included all expenditure resulting from projects involving construction, purchase, refurbishment, improvement, re-arrangement, extensions or lease of property, pipelines, buildings, storage structures, machinery and equipment and movable assets such as furniture, computers and fixtures. Notwithstanding their nature, the intangible costs of a project, for example, salaries and allowances, wages, consultant fees, vehicle rental and maintenance etc. were capitalized and form part of the asset created; and
- In line with accounting conventions, an asset must provide a benefit to the Authority over a period of years and so any expenditure on an asset, which meets the criteria, must also have a life of more than one year. In effect an asset, which has a life of less than one year, is not treated as capital expenditure but rather as recurrent expenditure.

The instructions for the compilation of the capital expenditure recurrent budget, 2016/17 were as follows:

- Each Division's capital expenditure submission must be in the form of a listing of projects falling within each class and include justification of the requested project.
- Capital expenditure may be in respect of a project or a single item, which must be submitted on the form provided. Estimates must be prepared for every task in the work breakdown structure and then added up to provide a total project cost estimate. Budget Holders should think broadly about their projects. For example, if a project is providing a new building or space for employees, include the cost of furniture, equipment, computers, lighting, etc., necessary for the building to be fully functional. (Each project must be ranked according to its priority as this will be used when budget adjustments must be made).
- A project, which has been approved during FY 2015/16 or prior years, has already started but is projected to continue/end in FY 2016/17, no additional submissions will be required. These projects would have already been accounted for in the ORACLE Project Module.
- Any project that was approved in FY 2015/16 but will likely remain uncommitted at September 30, 2016 will automatically lapse and should be re-introduced as a new project for the upcoming budget period. These projects will be given priority before any new projects in the event of budget adjustments being made.
- A request for Capital Expenditure should:
 - provide a detailed description of the asset;
 - State the basis of cost estimates;
 - Project Definition, including time frame and annual costs to implementation;
 - Project Justification: Technical, Economic, Other;
 - Whether the project is part of the strategic plan;
 - State the Class (objective) of the project and explain why; and
 - Provide cost estimates on an Annual Basis over the life of the project.
- Government Funded Programmes (PSIP, NSDP, WSMP, IDF, etc) are not repeated in this submission. Any project deemed to be a Development Programme funded project, is excluded from this budget submissions.

4.2. Income versus Expenditure

Income

Of the total projected income of \$2,766.18Mn, only \$2,613.34 was earned as Table 5 below depicts:

Table 5 Budgeted Income versus Actual Income for Fiscal year ending September 30, 2017

Income Category	Revised Budget / Allocation	Actual Revenue (Unaudited)	Variance
Revenue	840,846,968	754,924,897	(85,922,071)
Subvention	1,925,340,000	1,858,422,027	(66,917,973)
Total Income	2,766,186,968	2,613,346,924	(152,840,044)

The unaudited actual revenue of \$2,613.34Mn fell short of the budgeted income of \$2,766.18Mn by \$152.8Mn, as a result of the shortfall in both subventions and revenue for FY 2016/17.

The Authority's actual revenue (water and sewer) for FY 2016/17 was \$724.1Mn or 10.6% lower than the budgeted estimate of \$810.1Mn.

Expenditure

The expenditure is presented in two main expenditure categories (1) Salaries & Wages and (2) Operating & Administrative. The actual expenditure for each category is compared against the budgetary allocation for the year showing the variance from budget.

Table 6 outlines the performance of Operating and Administrative expenses for the year ending September 30, 2017 and the overall Deficit arising and Table 7 discloses the budget for Capital expenditure for the year ending September 30, 2017.

Operating and Administrative Services

Table 6 Budgeted Expenditure versus Actual Expenditure for Fiscal year ending September 30, 2017

Expenditure Category	Revised Budget Allocation	Actual Expenditure (Unaudited)	Variance
Salaries & Wages Expense	982,154,883	1,243,229,941	(261,075,058)
Operating & Administrative Charges	1,870,068,098	1,581,716,413	288,351,685
Grand Total Expenditure	2,852,222,981	2,824,946,354	27,276,627
Surplus / (Deficit)		(211,599,430)	

Therefore, at the year-end there was an Unaudited Operating Deficit of \$211.59Mn. Arrears of unpaid invoices from previous years were substantial and limited cash was available for implementation of Capital projects in the year.

Capital Expenditure – Internal Capital Projects

Table 7 Budgeted Capital Expenditure vs Actual Capital Expenditure for Fiscal year ending September 30, 2017

Programme	Budget/Allocation FY 2016/17
Internal Capital Investment Programme (ICIP)	125,000,000.00

The three (3) major internal capital projects initiated in FY 2016/2017 to improve the water and wastewater infrastructure was as follows:

- Drilling and equipping of Well # 8 at Chatham at an estimated cost of \$ 3,441,050.00;
- Design and construction of Mc Kai Booster Pumping Station at a cost of \$ 3,127,362.48; and
- Supply and Delivery of one 3.5 MVA Transformer, one 33 KV Isolator and Medium testing equipment for Beetham Wastewater Treatment Plant valued at \$2,365,812.03.

Asset Inventory & Title Verification

The Authority conducted and completed one hundred and fifty-five (155) title verifications. Eighteen (18) WASA owned properties have been identified to be sold based on a valuation and rationalization of WASA's properties.

4.3. Debt policy

A Debt policy for WASA is to be finalised.

4.4. Investment Policy

The Authority developed a procedure which is used to guide investment decisions. Appendix 3 provides the Investment procedure.

4.5. Internal Audit functions

The mission of the Internal Audit and Compliance Department (IACD) is to enhance and protect organizational value by providing stakeholders with risk based, objective and reliable assurance, advice and insight. This department assists the Authority by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control, and governance processes.

Governance

- The Internal Audit and Compliance Department conducts assessments and makes appropriate recommendations for improving the governance process in an attempt to accomplish the following objectives:
 - Promoting appropriate ethics and values within the Authority;
 - Making strategic and operational decisions.
 - Overseeing risk management and control
 - Ensuring effective organizational performance management and accountability;
 - Communicating risk and control information to appropriate areas of the Authority;
 - Coordinating the activities of and communicate information among the Board, external and internal auditors and management.
- IACD evaluates the design, implementation, and effectiveness of the Authority's ethics-related objectives, programmes and activities and assesses whether the information technology governance of the Authority sustains and supports its strategies and objectives.
- Internal auditors ensure that consulting engagement objectives must be consistent with the overall values and goals of the Authority.

Risk Management

- The Internal Audit and Compliance department evaluates the effectiveness and contributes to the improvement of risk management processes;
- Determining whether risk management processes are effective is a judgment based on the internal auditor's assessment that:
 - The objectives of the Authority support and align with its mission;
 - Significant risks are identified and assessed;
 - Appropriate risk responses are selected that align risks with the Authority's risk appetite; and
 - Relevant risk information is captured and communicated in a timely manner across the Authority, enabling staff, management, and the Board to carry out their responsibilities. This information is gathered during audit engagements.
- IACD evaluates risk exposures relating to the Authority's governance, operations and information systems regarding the achievement of strategic, financial, operational and compliance objectives;
- IACD evaluates the potential for the occurrence of fraud and how the Authority manages fraud risk;
- During consulting engagements, internal auditors address risks consistent with the engagement's objectives and are alert to the existence of other significant risks; and
- When assisting management in establishing or improving risk management processes, internal auditors refrain from assuming any management responsibility by actually managing risks.

Control

- The Internal Audit and Compliance department assists the Authority in maintaining effective controls by evaluating their effectiveness and efficiency and by promoting continuous improvement;
- IACD evaluates the adequacy and effectiveness of controls in responding to risks within the Authority's governance, operations, and information systems regarding the:
 - Achievement of the Authority's strategic objectives;
 - Reliability and integrity of financial and operational information;
 - Effectiveness and efficiency of operations and programmes;
 - Safeguarding of assets; and
 - Compliance with laws, regulations, policies, procedures, and contracts.

- Internal auditors review operations and programmes to ascertain the extent to which results are consistent with established goals and objectives to determine whether such are being implemented or performed as the Authority intended; and
- During consulting engagements, internal auditors address controls consistent with the engagement's objectives and are alert to significant control issues.

5. Human Resource Development Plan

5.1. Organizational Establishment

The Water and Sewerage Authority continues to progress the Restructuring Exercise for the Organization and at the conclusion of this exercise it is projected that the Authority's permanent establishment will be consistent with the Regional Benchmark of eight (8) employees for every one thousand (1000) connections.

The Restructuring Exercise will:-

- Regionalize our business operations so as to expand the levels and type of services provided within the geographic regions throughout Trinidad and Tobago; and
- Increase and enhance the levels of water, wastewater and auxiliary services provided to our customers.

Pending the conclusion of the Restructuring Exercise the Authority continues to focus on developing temporary structural arrangements to support the timely execution of work in the following areas:

- Leak Repairs to our Transmissions and Distributions mains
- Restoration of the nation's roadways upon the conclusion of Leak Repair jobs
- New Service Connections
- Financial Accounting and Recordkeeping

For the financial period 2016 /2017, the restructuring consultations were primarily focused on the Programmes and Change Management and the Customer Care Divisions. At the conclusion of these discussions, it is anticipated that the structural arrangements and staffing levels will collectively support the Authority's Mission and Mandates.

5.2. Category of Employees (Monthly Paid, Daily Rated, Temporary Staff, Contract Staff)

The Authority's manpower level in fiscal year 2016/17 (as at 30th September 2017), was Five Thousand, One Hundred and Fifty-One (5,151) employees and the categories of workers are detailed in Table 8 below.

Table 8 Category of Employees Engaged as at September 30, 2017

CATEGORY OF PERSONS ENGAGED	FISCAL YEAR		
	2016/17		
	Monthly	Daily	Total
Permanent/Temporary	2319	1047	3366
Contract/Casual/Part-time/Trainees	261	201	462
Contingent (Local Labour/ NSDP/ Project)	583	740	1323
TOTAL	3163	1988	5151

5.3. Career Pathing Systems

The Human Resources Division continues to work towards creating a high performing, motivated and engaged workforce within the Water and Sewerage Authority. One of the strategies utilized in creating a high performance organization is the area of Career Pathing, which focuses on identifying vertical and lateral opportunities for advancement/progression and allows the employee to gain an understanding of the skills, experiences, and competencies required for success in each job role consistent with the specified job description. Jobs were profiled and career paths developed consistent with the organizational structural needs of the Authority and employees are able to clearly see the avenues that can be taken to progress their careers within the organization. With this information readily available, the employee is better able to make decisions regarding the course of study that one wishes to pursue and the required qualifications needed to be eligible for placement in the desired job of interest and for promotional opportunities.

As part of the Performance Appraisal system, employees' career interests are noted and supervisors are required to assist the employee in the realization of their career goals. Supervisors are expected to guide/mentor their direct reports and advise on the steps that can be taken to enhance their skills and knowledge that can lead to mastery of their current jobs, attain promotions and highlight possible areas where transfers are available in keeping with their career interests.

5.4. Mission Critical/ Critical Positions

Arising out of the challenges experienced by the Authority regarding the preparation and submission of financial records consistent with regulatory requirements, the Human Resources Division recognized the need to expand the pool of critical positions. It has become increasingly evident that there is an increasing need to ensure that the Authority has the right number and type of employees who possess the requisite qualifications and experience in several non-core functions that are critical to efficient business operations and whose output directly impacts on the day-to-day operations of the Authority.

The recent challenges experienced regarding the preparation of the Authority's financial records indicates that there is a critical need to create a pool of qualified Accountants who can be utilized, as and when required, to assist with the preparation and maintenance of the Authority's financial records within the required timeframe. An assessment to determine any other areas where there are non-core but critical shortages of qualified employees in the Authority is currently in progress and ongoing.

Another key and critical non-core area within the Authority which required improvement was the area of Security. The manpower shortage in this area resulted in the engagement of additional Estate Constables within the Authority. These Officers were exposed to an in-depth orientation training programme prior to being assigned to the job. The training equipped the newly recruited Estate Constables with the competencies to effectively perform their duties and thereafter, they were assigned to mobile patrols and static security duties at the various Rate Payer Centers and specific facilities owned and rented by the Authority. In addition the Security Department completed a security risk assessment for the Authority.

During the period 2016/2017 the Authority also recruited ninety (90) Process Plant Operators; a position which is critical to the organization, since these employees are required to operate the Authority's Water Treatment Process Plants. Prior to September 22nd 2016, a number of Production Plant facilities were manned by only one (1) Process Plant Operator. The inadequate manpower in this function, resulted in a situation which exposed Operators to safety risks whilst on duty. This shortage was subsequently resolved by the engagement of the additional Process Plant Operators.

5.5. Workforce Assessment

During the 2016/2017 fiscal year, the Authority continued the assessment and certification of the newly recruited Process Plant Operators. Upon request, the newly recruited Process Plant Operators' job specific competencies were assessed to confirm that they can competently operate the Authority's Process Plants. The assessments commenced for the newly recruited Process Plant Operators, in the first instance, as this cadre of employees are critical to the achievement of the Authority's mission relative to the treatment and distribution

of water. It is therefore the Authority's responsibility to ensure that newly recruited Process Plant Operators are able to successfully and safely execute their relevant functions.

5.6. Training and Development

The Authority continues to utilize training and development as a strategic tool in improving the performance of the organization through its employees, as well as to increase their levels of engagement. The Human Resources Division successfully conducted a number of training programmes for a cross-section of employees within the various Divisions, namely:

- Supervisory Skills;
- On The Job Training For Persons Who Recently Left School;
- Conducting Effective Workplace Investigations;
- Process Plant Operator Training;
- Customer Service Training;
- Systems Operator Training;
- Health and Safety Awareness Training for Managers;
- Adopt A River Orientation Training;
- Conflict Resolution and Disciplinary Procedures;
- Grievance Handling;
- Self-Contained Breathing Apparatus;
- Variable Frequency Drive Workshop;
- Oracle E-Business Suite HCM Training;
- Poisonous Reptiles, Insects and Plant Sensitization Sessions;
- Performance Management Divisional Advocates Training;
- Effective Business Writing; and
- Time Management and Personal Effectiveness.

In addition, the Authority provided Training and Development Services for External Parties namely

- a. 13 Occupational Standards were developed:
 - 11 – Regional Occupational Standards (CVQ); and
 - 2 – National Occupational Standards (TTNVQ).
- b. Three (3) training programmes were designed and conducted:

Licensed Sanitary Constructors – 112 persons trained;

AutoCAD Drafting and Drawing for Plumbers - 20 persons trained; and

Isometric Drawing and Reading for Plumbers - 27 persons trained.

5.7. Performance Assessment/Management Strategies

The Performance Management System continues to be utilized as a mechanism to focus Monthly Paid employees' efforts relative to the Authority's goals and objectives. With the conclusion of the performance assessment period, Supervisors were required to discuss and appraise their employees' relative to the performance objectives agreed upon in the Performance Planning Phase. Thereafter, the performance appraisal form is completed and submitted to the Human Resources Division for analysis of the data.

5.8. Employee Support Services

In keeping with the Authority's thrust to promote an emotionally, mentally, physically and socially stable workforce the Human Resources Division has maintained its Employee Support Services as one of its strategies for improving employee productivity and performance through the provision of the following workforce wellness services:

- Confidential problem assessment and counselling
- Referral services
- Supervisor training
- Crisis or emergency intervention
- Management consultation
- Educational workshops

The services are designed to minimize the effect of the identified concerns on individuals and/or job performance. In 2016/2017, the Authority's Workforce Wellness Services have been accessed by a number of persons and proven to be beneficial to the organization's workforce as indicated from the details listed below:

- Approximately fifty one (51) employees were referred and accessed counselling; and
- There were approximately eleven (11) crisis intervention and crisis debriefing sessions which have been held with one hundred and nineteen (119) employees.

5.9. Industrial Relations

The Human Resources Division values the relationships forged with the respective Bargaining Unions, as this affords us the opportunities to work together to ensure the interest of both employees and the organization is maintained at all times. The relationships established with all three (3) Bargaining Unions within the Water and Sewerage Authority, has resulted in the Human Resources Division successfully maintaining a peaceful working environment with zero industrial unrest occurring in 2016/2017. Our ability to maintain a harmonious relationship with the Bargaining units within the Authority continues to auger well for the Human Resources Division. The Authority signed Collective Agreements 2011 - 2013 bargaining periods with the Public Service Association (monthly paid staff) and Estate Police Association (Estate Constables).

6. Procurement Procedures and criteria used in selecting each system

6.1. Open tender

Also known as public tenders, this is a bidding process that is open to all qualified bidders. These Tenders are invited through advertisements or other forms of public notice from an eligible party.

Open tendering is used when the Authority's list of registered Contractors does not cater for a particular type of Article, Works or Services, is inadequate for competitive bidding or under any other circumstances as approved by the Tenders Committee.

Procedure:

- For Tenders invited by open tendering a pre-qualification or post-qualification process must be conducted;
- Invitations for the procurement of services will only be pursued subsequent to a pre-qualification exercise;
- The qualification of a Contractor must be based on an assessment of the Contractor's ability to supply the required Articles or perform the required Works or Services satisfactorily. It must also take into account the Contractor's experience, record on similar work, capabilities with respect to size-efficiency and financial situation, litigation history and status as a duly registered legal entity; and
- In the absence of pre-qualification, a post-qualification questionnaire shall be included in the Invitation to Tender which must specify the minimum pre-requisites qualifying Contractor to supply the Articles or carry out the Works involved.

For all Invitations to Tender (ITT) the contractor is required to provide the following:

- A detailed specification of the Articles required or a sufficient Scope of Works or Services to be undertaken and shall whenever necessary also contain the place where and the time when additional information relating thereto can be obtained;
- The form or manner in which the Tender is to be made;
- The duration of Works or Services, or the period for delivery for Articles;
- The closing date and time for submission of Tenders;

- Prior to June 2014 - The place and location of the tender box in which the offer is to be deposited. After June 2014 with the introduction of the Oracle E-Business Suite software financial package bids on Tenders were submitted and opened electronically;
- Applicable matters such as requirements as to evidence from the Board of Inland Revenue of the discharge of tax liabilities, VAT registration, deposit requirements of bonds, signature of offers by duly authorized persons etc;
- A pro-forma contract, where such terms and conditions are not covered by the Authority's General Terms and Conditions of Contract;
- Any other essential matter (s);
- The Letter of Invitation shall be signed by the Manager Purchasing; and
- Any extension to the closing date shall be immediately communicated to all Contractors.

6.2. Selected tender

This is a bidding procedure involving only the Authority's Registered Contractors where selection is made from a shortlist of said registered contractors.

6.2.1. Contractor Selection

The executing/relevant Directorate or delegate in consultation with the Director of Logistics or delegate shall be responsible for the recommendation of Contractors invited to Tender.

Where a Procurement Agent has been employed by the Authority such recommendation may be the responsibility of the Procurement Agent. A suggested list may be obtained from the executing Directorate in consultation with the Purchasing Department.

Recommendations on the selection of Contractors are to be submitted to the relevant Committees for approval. When a person, firm or company recommended is not on the Authority's registered list of Contractors the relevant information for pre-qualification must be submitted prior to the issue of the Invitation to Tender.

6.2.2. Invitees

- Tenders up to \$10,000.00: Minimum of 3 Contractors;
- Tenders greater than \$10,000.00 and up to \$50,000.00: Minimum of 5 Contractors;
- Tenders greater than \$50,000.00: Minimum of 7 Contractors; and
- Tenders covered by pre-qualification: Only pre-qualified Contractors.

The number of invitees should only be reduced where fewer than the specified number of Contractors are registered to supply the particular type of Articles, or perform the particular Works or Services.

If the category has more than the stated number of registered Contractors, every effort must be made to ensure that all Contractors, by rotation are given an equal opportunity to bid. In the rotation process, due cognizance must be given, inter-alias, to the Contractor's past performance and geographical location.

6.3. Sole tender

The sole tender procedure within the Authority may come in two (2) different forms, namely, Emergencies (Tender Rule 17) and Non Competitive Procurement (Tender Rule 18).

6.3.1. Emergencies: Tender Rule 17

Where the safety of people, property, plant and equipment is in jeopardy or where the continuity of the Authority's operations demand that contract (s) be awarded, the most senior official on duty, if unable to contact the Executive Director, the Chairman of the Authority or the Chairman of the Tenders Committee, may award contracts for Articles, Works or Services necessary to avert danger or to bring the situation under control. In such situations the following process shall be observed:

- Within twenty-four (24) hours from the award of the contract, the Executive Director, the Chairman of the Authority or the Chairman of the Tenders Committee must be advised of the action taken.
- Within forty-eight (48) hours from the award of the contract, a report of the action taken must be submitted to the Executive Director (CEO) for transmission to the Chairman of the Authority. The report must include:
 - A Statement of the emergency circumstance that prevailed;
 - Authority's estimate;
 - Actual cost;
 - Reasons why the particular Contractor was chosen; and
 - The attempts made to contact the Executive Director (CEO), the Chairman of the Authority or the Chairman of the Tenders Committee and the results of such attempts.

6.3.2. Non Competitive Procurement: Tender Rule 18

All contracts for the supply of Articles, Works or Services must be awarded on the basis of competitive bidding except as follows:

- Where Articles are spares or replacement parts for equipment in use;
- Where the purchase of similar type equipment already in use is more cost effective;
- Where Articles, Works or Services are available through a sole source or supplier;
- Where Works are to be carried out on a site where the employment of another Contractor will hinder the progress of the works already being performed by an existing Contractor, taking due account of the cost effectiveness if the approach is adopted;
- Where services are to be carried out by a Contractor who is already in possession of relevant information and data and it would be more cost effective for such Contractor to perform the required services; and
- In cases of emergency as described in Article 17 above.

To commence such jobs, please be advised of the following:

- The application must include a detailed description of the Articles, Works or Services and a certification that the Contractor is the only one possessing the necessary capabilities locally, or the particulars of the circumstances surrounding the recommendation for the Contractor.
- The application must indicate whether or not the terms/price appear to be reasonable. This could be in the form of an Authority's estimate;
- Where the value of the Articles, Works or Services is in an amount in excess of five hundred thousand dollars (\$500, 000.00) a recommendation shall be made by the Executive Director (CEO) to the Tenders Committee; and
- Where the value of the Articles, Works or Services does not exceed five hundred thousand dollars (\$500, 000.00) prior approval for the above is required from the Executive Director (CEO).

In an effort to ensure statutory compliance, the Authority review and implemented Standard Operating Procedures for the following during the period:

- Tender Process/ Tender Evaluation Process; and
- Vendor Registration.

7. Public and Community Relations

7.1. Client and public access to services/service delivery systems

Business areas/services

- WASA's customer base at September 2017 is **Four Hundred And Twenty-Two Thousand, Seven Hundred And Fifty** (422,750) of which **Seventy Nine Thousand, Three Hundred And Fifty Six** (79,356) are wastewater customers;
- The Authority provides water and wastewater services, issues licenses and approvals as well protect the catchment and promote conservation;
- The public can access services at the Authority's twelve (12) Customer Service Centres;
- In fiscal year 2016/17 the public accessed information on the Authority from the two (2) Public Education Centres, One hundred and ten (110) times in Trinidad and forty-eight (48) times in Tobago;
- Completion of new Customer Care & Billing (CC&B) system; and
- Completion of the review and reengineering business processes for the :
 - Customer Call Centre Call back/Outgoing Calling Feature
 - Customer Business Services Online Payment Portal.

Service penetration

- The organization provides water services to 93.6% of the population;
- WASA provides centralized wastewater services to 30% of the population; and
- The Authority's customers can also access services using online tools: facebook, twitter, email and website.

7.2. Community and stakeholder relations/outreach

For the fiscal year 2016/17, the Authority conducted outreach sessions involving 112 schools throughout Trinidad and Tobago, reaching over 10,337 children. This includes 83 schools in Trinidad and 29 in Tobago. The Authority also participated in twenty-eight (28) exhibitions inclusive of school fairs, water sector related commemorative days and environmental groups/NGOs. The Authority hosted a Primary Schools Wastewater Poster Competition and a Secondary Schools Wastewater Spoken Word Competition for schools located in the Malabar and San Fernando catchment areas, under the IDB funded Multi phase Wastewater Rehabilitation project. The poster competition attracted one hundred and ninety-one (191)

entries from forty-one (41) Primary Schools; while the spoken word competition saw 35 entries, with the top 15 entries from nine schools performing in the finals.

7.3. Online Services

The Authority currently has 1 active webpage and 3 social media platforms available. They are:

- Facebook;
- Twitter;
- YouTube; and
- www.wasa.gov.tt.

Media releases and articles can be accessed by the Authority's Facebook, Twitter and webpage. This relates to information that is being provided to the public related to schedules, supply disruption and Tender notices.

In addition to articles and media releases being easily accessible on the Authority's website, the following application forms for the Authority's services are also available for customers to download:

- New Service (Temporary, Domestic, Non-Domestic);
- Installation of Plumbing System;
- Clearance Certificate Application;
- Customer Change Ownership;
- Mailing Address Change;
- License to Abstract;
- Disconnection Request; and
- Utilities Assistance.

Online Bill Payment can also be facilitated on the Authority's website utilizing Credit Cards. Visual and Video related campaigns can be accessed by the Authority's YouTube Channel. Ongoing visual campaigns such as Public Education, Water Conservation and awareness are published accordingly on YouTube.

8. Appendices

Appendix 1: Standard Operating Procedure – Appointment and Promotion

1.0 PURPOSE

To outline the process to be applied to facilitate the filling of vacancies on the Authority's Cabinet Approved Structure.

2.0 SCOPE

This procedure highlights the process by which Management and the Union would place employees against positions on the Authority's Cabinet Approved Structure.

3.0 PREREQUISITES

- Access to HR Live
- Employment contract
- Recruitment database
- Personnel file
- Access to Promotions and Appointment database
- Copy of the Authority's Cabinet Approved Structure
- Access to Job Descriptions database

4.0 RESPONSIBILITIES

4.1 HUMAN RESOURCES DIVISION

- Develop a vacancy listing based on the Authority's Cabinet Approved Structure.
- Engage in discussions with the Union to identify a listing of candidates with the required competencies to fill vacancies on the Authority's Structure and develop a ranked listing of recommended persons to fill each vacancy.
- Submit listing of candidates to be promoted and/or appointed to the Director Human Resources in order to seek the requisite approvals from the Board and/ or Human Resources Committee.
- Arrange medical visits for persons who have been selected for first appointment.
- Update the Authority's establishment to reflect all promotions and appointment.
- Dispatch letters of promotion and appointment to employees through their respective Line Management.
- Update record of service for employees promoted and appointed on the HRIS.
- File letters of promotion and appointment in the respective employee personal files.

4.2 UNION

- Review relevant vacancy listing and concur with Management on the list of employees to be promoted and appointed on the Cabinet Approved Structure.

4.3 LINE MANAGEMENT

- The Director of each Division and/or his representative would review the listing of persons recommended for promotion and appointment under his/her respective Division and concur with the submissions by affixing his/her signature on the document and returning the correspondence to the Human Resource Division.

4.4 EMPLOYEE

- Present himself/ herself for medical examination if it is the first time that he/she has been appointed.
- Collect letters of appointment or promotion.

4.5 AUTHORITY'S REGISTERED MEDICAL PRACTITIONER

- Conduct medical assessments for employees to be appointed to determine their fitness for employment and submit a report advising whether or not the person is fit to be employed with the Authority.

4.6 HUMAN RESOURCES COMMITTEE AND THE BOARD OF DIRECTORS

- Review listing of employees to be appointed and promoted and grants the requisite approval.

4.7 FINANCE DIVISION

- Process payment of salary adjustments for those persons who are so entitled based on the preparation of an updated record of service to reflect promotion and/ or appointment.

5.0 PROCEDURE

- i. The Human Resources Division prepares vacancy listing on the Authority's Cabinet Approved Structure
- ii. The Human Resources Division develops a listing of recommended persons to fill vacant positions on the Authority's structure and engages in discussions with the Union to get concurrence. The following criteria is used to develop a list of recommended candidates:
 - a. **Tenure** – the employee must satisfy a minimum of two (2) years performing in the recommended position or a similar capacity
 - b. **Employment Status** – consideration for appointment is done using employment status in ranked order; (i) Permanent (ii) Temporary (iii) Contract
 - c. **Pre-requisites** – job specific qualifications, training and seniority in the position
 - d. **Line Management** – recommendations, endorsement, assessment
- iii. Once, Management and the Union concur on the listing of persons to be promoted and appointed, the Senior Manager, Administrative Services reviews the listing and a copy of the list is transmitted to each Divisional Director.
- iv. The Divisional Director and his/ her representative review the listing and provide feedback to the Human Resources Division within one (1) week of receiving the recommended listing
- v. Once the listing has been reviewed, he/ she affixed his/ her signature on the document as evidence of his/ her approval and identifies any recommendations for which he/ she has a query.

- vi. The listings are then returned to the Human Resources Division by the respective Divisional Director and is then transmitted to the Office of the Director, Human Resources.
- vii. The Director, Human Resources reviews the list and submits recommendations to the Board and the Human Resources Committee for final approval.
- viii. After the list has been approved by the Board and the Human Resources Committee, the Human Resources Division prepares the employee letters of appointment / promotion and obtains the signature of the Chief Executive Officer before they are dispatched to the respective individuals through the Office of the respective Divisional Directors under which the employee is assigned.

NB: In the instances of first time appointment, the Human Resources Division makes the necessary arrangement for the persons to undergo medical examination by one of the Authority's approved medical practitioners. The doctor's medical report must indicate that the employee is fit for employment before he/ she receives his/ her instrument of first appointment.

- ix. The Human Resources Division places a copy of the letter of appointment or promotion in the employee personal file.
- x. The Human Resources Division updates the positions on the Authority's structure to reflect all promotions and appointment.
- xi. The Human Resources Division updates the record of service details for those persons appointed and promoted and prepares any necessary salary adjustment for payment by the Finance Division.

6.0 MONITORING AND EVALUATION

- Chief Executive Officer
- Board of Commissioners and the Human Resources Committee
- Internal Audit

7.0 TIMEFRAME

- Ongoing

8.0 REFERENCES

- Collective Agreement

Appendix 2: Five Year Water and Wastewater Infrastructure Plan

Water Infrastructure Plan

Strategy	Ref.	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
Develop New Sources	i	Growth	Avocat Wells (0.2 mgd)	\$4200,000.00	Drilling of test well to determine water and design of required treatment facility	2018 - 2020		\$2000,000.00	\$2200,000.00			\$4200,000.00
	ii	Growth	Tobago Ground Water (4.0 mgd)	\$17000,000.00	Drilling of seven production wells	2018 - 2019	\$8000,000.00	\$9000,000.00				\$17000,000.00
	iii	Growth	Well Development/Rehabilitation (0.5 Mgd)	\$22000,000.00	Drilling of new wells and rehabilitation of existing wells	2017 - 2022	\$5000,000.00	\$4000,000.00	\$4000,000.00	\$4500,000.00	\$4500,000.00	\$22000,000.00
	iv	Growth	San Fernando Reuse (from San Fernando WWTP to Petrotrin Impounding Reservoirs, Point-a-Pierre) (4mgd)	\$104000,000.00	Installation of transmission pipeline from San Fernando WW to Petrotrin Pointe-a-Pierre	2017 - 2019	\$29000,000.00	\$75000,000.00				\$104000,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	v	Growth	Aripo Megawatershed (10mgd)	\$45000,000.00	Hydrological study and welling drilling to produce 10 mgd	2019 - 2023				\$15000,000.00	\$30000,000.00	\$45000,000.00
	vi	Growth	North Coast Intake and Water Treatment Plant (2 mgd)	\$30000,000.00	Development of new intake and pipelines	2019 - 2022			\$2000,000.00	\$20000,000.00	\$8000,000.00	\$30000,000.00
	vii	Growth	Lopinot River (1mgd)	\$25000,000.00	Development of new intake and treatment facility	2018 - 2020		\$15000,000.00	\$10000,000.00			\$25000,000.00
	viii	Growth	Confirmation of feasibility of Matura & Salybia WTPs (12 mgd)	\$1000,000.00	Consultancy on feasibility	2018			\$1000,000.00			\$1000,000.00
	ix	Growth	Detailed Design & EIA - Matura & Salybia WTPs	\$7500,000.00	Detailed Design & EIA - Matura & Salybia WTPs	2020 - 2021				\$6500,000.00	\$1000,000.00	\$7500,000.00
	x	Growth	Drilling of 11 production in Santa Cruz (2), Chatham (1), Granville (1), Oropune (4), Arima (1), Stonebright (1) and South Maloney (1) & 2 observation wells in Stonebright and South Maloney to	\$31000,000.00	Drilling of 11 production in Santa Cruz (2), Chatham (1), Granville (1), Oropune (4), Arima (1), Stonebright (1) and South Maloney (1) & 2 observation wells in Stonebright and South Maloney to produce water to permit reduced abstraction from current overpumped aquifers	2018 - 2021		\$12000,000.00	\$9000,000.00	\$10000,000.00		\$31000,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18	2018/2019	2019/2020	2020/2021	2021/2022	TOTAL 2017/22
							Estimated Cost	Estimated Cost	Estimated Cost	Estimated Cost	Estimated Cost	
			produce water to permit reduced abstraction from current overpumped aquifers									
			Sub-Total	\$286700,000.00			\$42000,000.00	\$117000,000.00	\$28200,000.00	\$56000,000.00	\$43500,000.00	\$286700,000.00
Construct New Water Treatment Plants	i	Growth	Louis D'or WTP (0.22 MIGD)	\$7000,000.00	Land acquisition and plant design. Improved water quality	2018 -2021		\$800,000.00	\$5000,000.00	\$1200,000.00		\$7000,000.00
	ii	Growth	Bacolet WTP (1.41 MIGD)	\$24000,000.00	Land acquisition and plant design. Improved water quality	2018 -2021		\$900,000.00	\$18300,000.00	\$4800,000.00		\$24000,000.00
	iii	Growth	Carnbee WTP (1.25 MIGD)	\$15000,000.00	Land acquisition and plant design. Improved water quality	2018 -2021		\$500,000.00	\$11500,000.00	\$3000,000.00		\$15000,000.00
	iv	Growth	Santa Cruz WTP	\$15000,000.00	Design and construction of a new WTP	2020 -2022			\$500,000.00	\$6000,000.00	\$8500,000.00	\$15000,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	v	Growth	Quare WTP (6500 m3/day)	\$22400,000.00	Refurbishment of treatment facility	2020 -2022				\$500,000.00	\$21900,000.00	\$22400,000.00
	vi	Growth	Sangre Grande WTP	\$18000,000.00	Construction of water treatment facility to improved water quality	2019 -2021			\$12000,000.00	\$6000,000.00		\$18000,000.00
			Sub-Total	\$101400,000.00			\$0.00	\$2200,000.00	\$47300,000.00	\$21500,000.00	\$30400,000.00	\$101400,000.00
Increase Impounded storage	i	Enhancement	Desilt Hillsborough Reservoir	\$85000,000.00	Procurement of specialist services and equipment for the desilting of Hillsborough	2018 -2021	\$5000,000.00	\$50000,000.00	\$15000,000.00	\$15000,000.00		\$85000,000.00
			Sub-Total	\$85000,000.00			\$5000,000.00	\$50000,000.00	\$15000,000.00	\$15000,000.00	\$0.00	\$85000,000.00
Take over Treatment Plant	i	Growth	Maloney	\$3000,000.00	Take over of plants from BPTT	2019 - 2020		\$2000,000.00	\$1000,000.00			\$3000,000.00
	ii	Growth	Stonebright	\$3000,000.00	Take over of plants from BPTT	2020			\$3000,000.00			\$3000,000.00
			Sub-Total	\$6000,000.00			\$0.00	\$2000,000.00	\$4000,000.00	\$0.00	\$0.00	\$6000,000.00
Refurbish Water Treatment Plants	i	Enhancement	Charlotteville Intake Upgrade (480 m3/day)	\$8524,600.00	Design and construction of a new raw water intake and water treatment plant	2018	\$6000,000.00	\$2524,600.00				\$8524,600.00
	ii	Enhancement	Hillsborough (1.65 MIGD)	\$13000,000.00	Design, supply and installation of water treatment equipment inclusive of all civil, process, mechanical, electrical and	2018 - 2020		\$8000,000.00	\$5000,000.00			\$13000,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
					Instrumentation requirements							
	iii	Enhancement	Courland (2.4 MIGD)	\$6000,000.00	Refurbishment of the Intake and Supply and Installation of two new filters	2018 - 2020		\$4800,000.00	\$1200,000.00			\$6000,000.00
	iv	Enhancement	Richmond (6500 m3/day)	\$2342,931.00	Supply of two spare pumpsets	2019		\$2342,931.00				\$2342,931.00
	v	Enhancement	Petrotrin Guayaguayare (6651 m3/day)	\$14000,000.00	Upgrade of the existing La Wai Intake and Design and Construction of the new Pilote Intake; Design and Construction of new clearwell, Highlift Pumping Station and Plant Electrical System; Design and Construction of new clarification, filtration and chemical dosing systems	2018 - 2020	\$3500,000.00	\$7700,000.00	\$2800,000.00			\$14000,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	vi	Enhancement	Caroni (75 MGD)	\$95860,000.00	Refurbishment/Upgrade of the Original Plant's Coagulation and Flocculation/Sedimentation Basins Process Units, Filter Unit Valves, High Head Station Valves, Flocculation Unit, Chlorinator Complex chlorinators, New Raw Water Station Transformer, Upgrade of the Plant Process Instrumentation and Control System; Refurbishment of the Sludge Lagoons, Upgrade of the Electrical Power Systems at Caroni and Arena Dam, Refurbishment of the Arena Dam Tower Valve Tower valves; Installation of a new Powdered Activated Carbon System	2018 - 2021		\$36000,000.00	\$30000,000.00	\$29860,000.00		\$95860,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	vii	Enhancement	Carlsen Field (3.4 MIGD)	\$5,500,000.00	Supply and installation new Underdrains for Filter #2, Supply of Filter Media for Filter #2, Supply of Buoyant Media and Clarifier components for Clarifiers 1 & 2, Fabrication and installation of a new 3-Level Access Stairway	2017 - 2019	\$3,094,000.00	\$1,906,000.00				\$5,000,000.00
	viii	Enhancement	Caura (2.5 MIGD) (including Turbidity)	\$7,500,000.00	Supply and installation of filter media for three filters, supply and installation of two new backwash blowers, supply and installation of new actuated filter valves, upgrade of the chemical systems, supply of highlift pump	2018 - 2020		\$5,500,000.00	\$2,000,000.00			\$7,500,000.00
	ix	Enhancement	Aripa (8460 m3/day) (including turbidity)	\$7,500,000.00	Supply of new high scale clarification system, modification / improvement of the chemical dosing system and installation of desludging equipment	2019 - 2020			\$5,500,000.00	\$2,000,000.00		\$7,500,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18	2018/2019	2019/2020	2020/2021	2021/2022	TOTAL 2017/22
							Estimated Cost	Estimated Cost	Estimated Cost	Estimated Cost	Estimated Cost	
	x	Enhancement	Acono (2400 m3/day) (including turbidity)	\$7500,000.00	Supply of new high scale clarification system, modification / Improvement of the chemical dosing system and installation of desilting equipment	2021 - 2022				\$5500,000.00	\$2000,000.00	\$7500,000.00
	xi	Enhancement	Liengo Naranjo (0.96 MIGD) (including turbidity)	\$5500,000.00	Supply of new high scale clarification system, modification / Improvement of the chemical dosing system and installation of desilting equipment	2022					\$5500,000.00	\$5500,000.00
	xii	Enhancement	Guanapo (18750 m3/day) (including turbidity and clearwell)	\$8000,000.00	Supply of new high scale clarification system, modification / improvement of the chemical dosing system and installation of desilting equipment	2018 - 2019	\$4500,000.00	\$3500,000.00				\$8000,000.00
	xiii	Enhancement	Stonebright (1259 m3/day)	\$4387,500.00	Refurbishment of the filters; Design and construction of new aerator and chlorination systems; Refurbishment of the plant's electrical and lighting systems; Installation of perimeter fencing	2020			\$4387,500.00			\$4387,500.00
	xiv	Enhancement	Maloney (1735m3/day)	\$3000,000.00	Refurbishment of filters	2018	\$3000,000.00					\$3000,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Work	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	xv	Enhancement	El Socorro (21361 m3/day)	\$5500,000.00	Refurbishment of the highlift station check valves and filter valves; Repairs to the leaking clearwell; Repairs to leaking aerator roof	2018 - 2020	\$900,000.00	\$2800,000.00	\$1800,000.00			\$5500,000.00
	xvi	Enhancement	Valsayn (26516 m3/day)	\$7500,000.00	Replacement of 12" pipeline mains from Highlift Station to B Station, Repairs to leaking clearwell; Construction of new chlorination room and rehabilitation of pumpsets	2020 - 2021			\$5810,000.00	\$1690,000.00		\$7500,000.00
	xvii	Enhancement	Navet (86363 m3/day)	\$20000,000.00	Rehabilitation works for the High and Low Dam	2019 - 2020		\$15000,000.00	\$5000,000.00			\$20000,000.00
	xviii	Enhancement	Siparia	\$3000,000.00	Rehabilitation of wells	2021				\$3000,000.00		

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	xix	Enhancement	Maraval (15,000 m3/day)	\$12000,000.00	Design and construction of a new chemical complex; Installation of new isolation valves for separating surface water clearwell from the ground water clearwell and for the ground water clearwell, rehabilitation of five filters and installation of one new filter; Rehabilitation of filter pump and highlift pump starters and backwash blower motor starter, installation of new backwash tank	2019 - 2020		\$2000,000.00	\$10000,000.00			\$12000,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	xx	Enhancement	North Oropouche (90900 m3/day)	\$30000,000.00	Installation of backup feeder to raw water station, refurbishment of the service reservoirs, filter valve and actuator replacement, refurbishment of the plant SCADA System, Installation of new raw water pollution monitoring system, replacement of electrical and process monitoring instrumentation, new HSE equipment for chemical containment.	2019 - 2021		\$2500,000.00	\$2500,000.00	\$2500,000.00		\$30000,000.00
	xxi	Enhancement	Chatham (10300 m3/day)	\$7500,000.00	Refurbishment of filters	2019 - 2020		\$5000,000.00	\$2500,000.00			\$7500,000.00
	xxii	Enhancement	Freeport (11727 m3/day)	\$6540,000.00	Installation of new highlift pumpsets, actuated filter valves, sedimentation basin valves, new backwash storage tank, rehabilitation of the plant process and instrumentation system, refurbishment of the plant SCADA System	2020 - 2022			\$4400,000.00	\$1140,000.00	\$1000,000.00	\$6540,000.00
	xxiii	Enhancement	Minor Upgrade at other plants	\$15000,000.00	As Required	2019 - 2022		\$3750,000.00	\$3750,000.00	\$3750,000.00	\$3750,000.00	\$15000,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	xxiv	Enhancement	Dam Inspection and Refurbishment	\$22000,000.00	Navel Low Dam, SBM, Hollis \$12M, Arena \$2mM for procurement of contractor	2019 - 2022		\$2000,000.00	\$6000,000.00	\$4000,000.00	\$10000,000.00	\$22000,000.00
	xxv	Enhancement	Installation of chlorine safety systems at WTPs & Booster	\$15000,000.00		2019 - 2021			\$7500,000.00	\$7500,000.00		\$15000,000.00
	xxvi	Enhancement	Installation of Sodium Hypochlorite disinfection Systems at Caroni, Queens Park Savannah Wells, Maraval, Four Roads, Tacarigua, Valisayn	\$25000,000.00		2019 - 2022			\$10000,000.00	\$10000,000.00	\$5000,000.00	\$25000,000.00
			Sub-Total	\$357155,031.00			\$20994,000.00	\$105323,531.00	\$132647,500.00	\$70940,000.00	\$27250,000.00	\$357155,031.00
Install Transmission capacity for redundancy	I	Growth	Maraval - Coblenz BPS to St. Clair	\$6500,000.00	Installation of pipeline from Coblenz Booster to St. Clair	2020			\$6500,000.00			\$6500,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	ii	Growth	Lopinot - Priority Bus Route to Lopinot	\$25100,000.00	Installation of pipeline from Priority Bus Route to Lopinot	2021 - 2022				\$15000,000.00	\$10100,000.00	\$25100,000.00
	iii	Enhancement	Refurbish Flow Control Station between Caroni North Trunk Main and North Oropouche Trunk Mains	\$10000,000.00	Refurbish Flow Control Station between Caroni North Trunk Main and North Oropouche Trunk Mains	2020 - 2021			\$2500,000.00	\$7500,000.00		\$10000,000.00
	iv	Growth	Mausica Road from Churchill Roosevelt Highway to Eastern Main Road	\$5005,000.00	Installation of pipeline from Churchill Roosevelt Highway to Eastern Main Road along Mausica Road	2020			\$5005,000.00			\$5005,000.00
	v	Growth	Detailed design & EIA of 55 km of 900mm pipeline from Sangre Grande to Mayaro inclusive of Booster stations and Reservoirs	\$9000,000.00	Detailed design & EIA of 55 km of 900mm pipeline from Sangre Grande to Mayaro inclusive of Booster stations and Reservoirs	20202 - 2022			\$1000,000.00	\$7000,000.00	\$1000,000.00	\$9000,000.00
			Sub-Total	\$55605,000.00			\$0.00	\$0.00	\$15005,000.00	\$29500,000.00	\$11100,000.00	\$55605,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
Increase Transmission Capacity	i	Growth	Install 5 km of 900mm pipe from Caroni WTP to Flow Central Station	\$45000,000.00	install 5 km of 900mm pipe from Caroni WTP to Flow Central Station	2020 - 2021			\$20000,000.00	\$25000,000.00		\$45000,000.00
	ii	Growth	Install 9 Km of 900mm pipe from Claxton Bay to San Fernando	\$80000,000.00	Install 9 Km of 900mm pipe from Claxton Bay to San Fernando	2019 - 2021		\$32000,000.00	\$25000,000.00	\$23000,000.00		\$80000,000.00
	iii	Growth	Install 16.4 km of 600mm pipe from South Oropouche to La Brea	\$72600,000.00	Install 16.4 km of 600mm pipe from South Oropouche to La Brea	2018	\$45000,000.00	\$27600,000.00				\$72600,000.00
	iv	Growth	12.2 km of 400mm pipe (cross country) between Torrib Tabaquite Road and San Pedro Road to supply New Grant-Tableland - Rio Claro	\$40260,000.00	12.2 km of 400mm pipe (cross country) between Torrib Tabaquite Road and San Pedro Road to supply New Grant-Tableland - Rio Claro	2019 - 2021		\$10000,000.00	\$20000,000.00	\$10260,000.00		\$40260,000.00
	v	Growth	14.4 km of 200mm HDPE along Naparima Mayaro Road between Torrib	\$38700,000.00	14.4 km of 200mm HDPE along Naparima Mayaro Road between Torrib Tabaquite and San Pedro Roads to supply New Grant-Tableland - Rio Claro	2019 - 2022			\$10000,000.00	\$15000,000.00	\$13700,000.00	\$38700,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
			Tabaquite and San Pedro Roads to supply New Grant-Tableland - Rio Claro									
	vi	Growth	8 km of 300 mm pipe from Reform Road to Malgretoute along Naparima Mayaro Road	\$24900,000.00	8 km of 300 mm pipe from Reform Road to Malgretoute along Naparima Mayaro Road	2019 - 2022			\$7500,000.00	\$10000,000.00	\$7400,000.00	\$24900,000.00
	vii	Growth	13km of 400mm Transmission and 200mm Distribution main from Sangre Grande Booster to North Manzanilla	\$118300,000.00	13km of 400mm Transmission and 200mm Distribution main from Sangre Grande Booster to North Manzanilla	2019 - 2021			\$68300,000.00	\$50000,000.00		\$118300,000.00
	viii	Growth	5 km of 600 mm DI pipe between Salybia WTP and Mathura WTP	\$30500,000	5 km of 600 mm DI pipe between Salybia WTP and Mathura WTP	2022 - 2024					\$30500,000.00	\$30500,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	ix	Growth	500m of 200mm DI from Calvary Booster to Calvary Road	\$ 1,500,000.00	500m of 200mm DI from Calvary Booster to Calvary Road	2019		\$1,500,000.00				\$1,500,000.00
	x	Growth	5km of 300mm DI Main from Guanapo WTP to Broadway, into Columbus, Prince, De Gannes and King Street	\$ 2,050,000	5km of 300mm DI Main from Guanapo WTP to Broadway, into Columbus, Prince, De Gannes and King Street	2020 - 2021			\$ 1,050,000	\$ 1,000,000		\$2,050,000.00
	xi	Growth	1.7km of 300mm DI along Karamath Road	\$ 710,000	1.7km of 300mm DI along Karamath Road	2019		\$ 710,000				\$710,000.00
	xii	Growth	15 km of 300 and 200 mm pipe along North Coast Road from proposed Yarra WTP	\$4,455,000.00	15 km of 300 and 200 mm pipe along North Coast Road from proposed Yarra WTP	2019 - 2022			\$1,000,000.00	\$2,000,000.00	\$1,455,000.00	\$4,455,000.00
	xiii	Growth	3.4 km of 600 mm pipe to Interconnect proposed Tobago Desal Plant to network	\$1,341,400.00	3.4 km of 600 mm pipe to Interconnect proposed Tobago Desal Plant to network	2019 - 2020		\$400,000.00	\$941,400.00			\$1,341,400.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	xiv	Growth	12.2 km of 400 mm pipe along Claude Noel Highway, Store Bay Local Road & Shirvan Road to transmit water from proposed Tobago Desal Plant	\$40443,000.00	12.2 km of 400 mm pipe along Claude Noel Highway, Store Bay Local Road & Shirvan Road to transmit water from proposed Tobago Desal Plant	2019 - 2021		\$10000,000.00	\$20000,000.00	\$10443,000.00		\$40443,000.00
	xv	Growth	5 km of 300 mm pipe to connect wells under Tobago Groundwater Project	\$15565,000.00	5 km of 300 mm pipe to connect wells under Tobago Groundwater Project	2018 - 2019	\$7565,000.00	\$8000,000.00				\$15565,000.00
	xvi	Growth	6.1km 300mm ductile DI mains from Trinity Access Road to the Bois Jean Market.	\$18757,500.00	6.1km 300mm ductile DI mains from Trinity Access Road to the Bois Jean Market.	2018 - 2021	\$4689,375.00	\$4689,375.00	\$4689,375.00	\$4689,375.00		\$18757,500.00
	xvii	Growth	Upgrade Tobago Transmission Network	\$3500,000.00	Upgrade Tobago Transmission Network from Pembroke to Richmond	2018		\$3500,000.00				\$3500,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	xviii	Growth	Install additional pump sets El Socorro Booster Station	\$4000,000.00	Install additional pump sets El Socorro Booster Station	2019		\$4000,000.00				\$4000,000.00
	xix	Growth	Install additional pump sets South Oropouche Booster Station	\$3000,000.00	Install additional pump sets South Oropouche Booster Station	2018	\$3000,000.00					\$3000,000.00
	xx	Growth	Construct Savonetta booster	\$25000,000.00	Construct Savonetta booster	2018	\$25000,000.00					\$25000,000.00
	xxi	Growth	Installation of 7km of 900 mm Transmission mains from Salybia WTP to Mathura									
			Sub-Total	\$647591,900.00			\$85254,375.00	\$112389,375.00	\$205405,775.00	\$178392,375.00	\$66150,000.00	\$647591,900.00
Optimise Distribution Network	i	Enhancement	Redesign transmission & distribution system in the City of San Fernando	\$2000,000.00	Redesign transmission & distribution system in the City of San Fernando	2020			\$2000,000.00			\$2000,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18	2018/2019	2019/2020	2020/2021	2021/2022	TOTAL 2017/22
							Estimated Cost	Estimated Cost	Estimated Cost	Estimated Cost	Estimated Cost	
	iii	Enhancement	Redesign transmission & distribution system in the City of Port of Spain	\$2000,000.00	Redesign transmission & distribution system in the City of Port of Spain	2021				\$2000,000.00		\$2000,000.00
	iii	Enhancement	Upgrade Tobago Distribution Network	\$21950,000.00	Upgrade Tobago Distribution Network	2018 - 2023	\$2400,000.00	\$6650,000.00	\$4900,000.00	\$4000,000.00	\$4000,000.00	\$21950,000.00
			Sub-Total	\$25990,000.00			\$2400,000.00	\$6650,000.00	\$4900,000.00	\$6000,000.00	\$4000,000.00	\$25950,000.00
Expand Network	i	Growth	Install pipelines in unserved communities	\$34630,000.00	Extension of distribution network	2020 - 2022			\$10000,000.00	\$10000,000.00	\$14630,000.00	\$34630,000.00
Construct Booster Station	i	Growth	Lopinot Booster	\$3000,000.00	Construction of a booster station	2020			\$3000,000.00			\$3000,000.00
	ii	Growth	Maracas Valley Booster	\$3000,000.00	Construction of booster station	2018	\$3000,000.00					\$3000,000.00
	iii	Growth	Calvary Booster	\$2500,000.00	Construction of booster station	2018	\$2500,000.00					\$2500,000.00
	iv	Growth	Future booster	\$10000,000.00	Construction of booster station as required	2019 - 2022		\$3000,000.00		\$3500,000.00	\$3500,000.00	\$10000,000.00
			Sub-Total	\$18500,000.00			\$5500,000.00	\$3000,000.00	\$3000,000.00	\$3500,000.00	\$3500,000.00	\$18500,000.00

Water and Sewerage Authority

Strategy	Ref.	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18	2018/2019	2019/2020	2020/2021	2021/2022	TOTAL 2017/22
							Estimated Cost	Estimated Cost	Estimated Cost	Estimated Cost	Estimated Cost	
Refurbish Booster Stations	i	Enhancement	Clarke Road	\$1500,000.00	Upgrade of booster	2020			\$1500,000.00			\$1500,000.00
	ii	Enhancement	El Socorro	\$3000,000.00	Refurbishment of booster station	2019		\$3000,000.00				\$3000,000.00
	iii	Enhancement	Refurbish Boosters	\$30000,000.00	Location to be determined based on priority			\$5000,000.00	\$10000,000.00	\$5000,000.00	\$10000,000.00	\$30000,000.00
			Sub-Total:	\$34500,000.00			\$0.00	\$8000,000.00	\$11500,000.00	\$5000,000.00	\$10000,000.00	\$34500,000.00
Install Distribution Storage	i	Enhancement	Charlotteville	\$2000,000.00	Construction of 100,000 IG GFS service reservoir	2018		\$2000,000.00				\$2000,000.00
	ii	Enhancement	Four Roads	\$3500,000.00	Construction of 500,000 IG GFS service reservoir	2018	\$3500,000.00					\$3500,000.00
	iii	Enhancement	Quare	\$3000,000.00	Construction of 500,000 IG GFS service reservoir	2018	\$3000,000.00					\$3000,000.00
	iv	Enhancement	Hololo	\$2500,000.00	Construction of 100,000 IG GFS service reservoir	2018	\$2500,000.00					\$2500,000.00
	v	Enhancement	Vessigney	\$10000,000.00	Construction of 750,000 IG GFS service reservoir	2018 - 2019		\$3000,000.00	\$7000,000.00			\$10000,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	vi	Enhancement	Tucker Valley	\$3000,000.00	Construction of 500,000 IG GFS service reservoir	2018	\$3000,000.00					\$3000,000.00
	vii	Enhancement	Guanapo	\$4500,000.00	Construction of 300,000 IG GFS service reservoir	2018 - 2019	\$3500,000.00	\$1000,000.00				\$4500,000.00
	viii	Enhancement	Calvary Hill	\$4000,000.00	Construction of 300,000 IG GFS service reservoir	2019		\$4000,000.00				\$4000,000.00
	ix	Enhancement	Paramin Level 3	\$3000,000.00	Construction of 100,000 IG GFS service reservoir	2022					\$3000,000.00	\$3000,000.00
	x	Enhancement	Basta Hall	\$2500,000.00	Construction of 500,000 IG GFS service reservoir	2022					\$2500,000.00	\$2500,000.00
	xi	Growth	Pointe a Pierre	\$5000,000.00	Construction of 1 Million IG GFS service reservoir	2022					\$5000,000.00	\$5000,000.00
			Sub-Total	\$32500,000.00			\$15500,000.00	\$10000,000.00	\$7000,000.00	\$0.00	\$0.00	\$32500,000.00
			SUB-TOTAL - Increase water availability to Customers	\$1685531,931.00			\$176648,375.00	\$416562,906.00	\$485958,275.00	\$395832,375.00	\$210530,000.00	\$1685531,931.00
Implement Universal Metering Programme	i	Growth	Install 80,000 meters	\$480000,000.00	Installation of 80,000 meters in the first 5 years with the programme continuing to install a total of 314,000 meters	2019 - 2027		\$50000,000.00	\$125000,000.00	\$150000,000.00	\$155000,000.00	\$480000,000.00

Water and Sewerage Authority

Strategy	Ref	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18	2018/2019	2019/2020	2020/2021	2021/2022	TOTAL
							Estimated Cost	Estimated Cost	Estimated Cost	Estimated Cost	Estimated Cost	2017/22
distribution network			Booster Station									
	ii	Replacement	1.7km of 400mm DI along Caura Royal Road	\$8160,000.00	1.7km of 400mm DI along Caura Royal Road	2019		\$8160,000.00				\$8160,000.00
	iii	Replacement	Replace 20 km High leakage distribution pipelines in Pleasantville / Green Acres/Coconut Drive, San Fernando, Diamond Vale, Diego Martin, Dow Village, Point Fortin	\$39630,000.00					\$10000,000.00	\$15000,000.00	\$14630,000.00	\$39630,000.00
	iv	Replacement	Replace 157 km High leakage distribution pipelines across North Trinidad, South Trinidad & Tobago	\$612520,736.59	Replace 157 km High leakage distribution pipelines across North Trinidad, South Trinidad & Tobago	2018 - 2022	\$58443,642.00	\$95444,333.10	\$143534,801.00	\$208392,075.00	\$106705,885.49	\$612520,736.59

Water and Sewerage Authority

Strategy	Ref.	Classification	Project	Estimated Cost	Description of Works	Implementation Year	2017/18 Estimated Cost	2018/2019 Estimated Cost	2019/2020 Estimated Cost	2020/2021 Estimated Cost	2021/2022 Estimated Cost	TOTAL 2017/22
	v	Replacement	Implement Network and Pressure Management System - Caroni North, Caroni South West, Navet & South West Tobago	\$119634,000.00	Establishment of District Metered areas, network analysis, pressure management	2018 - 2022	\$16992,000.00	\$38752,000.00	\$24475,000.00	\$19565,000.00	\$19850,000.00	\$119634,000.00
	vi	Replacement	Replace 5 km of 44" main	\$60000,000.00	Replace 5 km of 44" main along the transmission system to minimise disruptions	2019 - 2022			\$20000,000.00	\$20000,000.00	\$20000,000.00	\$60000,000.00
			Sub-Total	\$877814,736.59			\$75435,642.00	\$149856,333.10	\$215509,801.00	\$275827,075.00	\$161185,885.49	\$877814,736.59
			SUB-TOTAL - Manage demand	\$1524064,736.59			\$77935,642.00	\$237106,333.10	\$402009,801.00	\$461327,075.00	\$345685,885.49	\$1524064,736.59
			TOTAL	\$3209596,667.59			\$254584,017.00	\$653669,239.10	\$887968,076.00	\$857159,450.00	\$556215,885.49	\$3209596,667.59

Water and Sewerage Authority

Wastewater Infrastructure Plan

Desired Result	Ref.	Initiative	Project / Undertaking	Description of Works	Estimated Capital Cost TT \$	Implementation Year	2017/2018 Estimated Cost TT \$	2018/2019 Estimated Cost TT \$	2019/2020 Estimated Cost TT \$	2020/2021 Estimated Cost TT \$	2021/2022 Estimated Cost TT \$
Reduce Environmental Impact - reduce uncontrolled discharge of untreated wastewater	1	Adoption of Abandoned Facilities	Adoption of WWTPs in North Trinidad	Adopt 17 WW facilities in North and South Trinidad	\$4800,000.00	2018 - 2019		\$ 2880,000.00	\$ 1920,000.00		
			Adoption of WWTPs in South Trinidad	Adopt 26 WW facilities in North and South Trinidad	\$7300,000.00	2018 - 2019		\$ 4380,000.00	\$ 2920,000.00		
	2	Upgrade, Refurbish and Rehabilitate Existing Facilities	Construction of Beetham Sludge Management System	Construction of Beetham Sludge Management System	\$245000,000.00	2020 - 2022			\$ 25000,000.00	\$ 100000,000.00	\$ 120000,000.00
			Construction of Mount Hope Lift Station	Construction of Mount Hope Lift Station	\$5300,000.00	2018 - 2019					
			Expand & Rehabilitate Frederick Settlement WWTP (La Paille)	Expand & Rehabilitate Frederick Settlement WWTP (La Paille)	\$13000,000.00	2019 - 2020		\$ 6000,000.00	\$ 7000,000.00		
			Refurbish and Integrate Homeland Gardens & Point Pleasant WWTPs	Refurbish and Integrate Homeland Gardens & Point Pleasant WWTPs	\$12000,000.00	2019 - 2020		\$ 2000,000.00	\$ 10000,000.00		
			Refurbish Edinburgh 500 WWTP	Refurbish Edinburgh 500 WWTP	\$2000,000.00	2019 - 2020		\$ 500,000.00	\$ 1500,000.00		
			Refurbish Real Spring WWTP	Refurbish Real Spring WWTP	\$9000,000.00	2019 - 2020			\$ 4000,000.00	\$ 5000,000.00	
			Refurbishment of Moka WWTP	Refurbishment of Moka WWTP	\$4000,000.00	2019 - 2020			\$ 1000,000.00	\$ 3000,000.00	
			Refurbishment of Piarco WWTP	Refurbishment of Piarco WWTP	\$5000,000.00	2019 - 2020			\$ 1250,000.00	\$ 3750,000.00	

Water and Sewerage Authority

Desired Result	Rev	Initiative	Project / Undertaking	Description of Works	Estimated Capital Cost TT \$	Implementation Year	2017/2018 Estimated Cost TT \$	2018/2019 Estimated Cost TT \$	2019/2020 Estimated Cost TT \$	2020/2021 Estimated Cost TT \$	2021/2022 Estimated Cost TT \$
			Rehabilitate Central Park and integrate Melanie Gardens (Couva)	Rehabilitate Central Park WWTP and pipeline installation to integrate Melanie Gardens (Balmian, Couva)	\$20000,000.00	2019 - 2020			\$4000,000.00	\$16000,000.00	
			Rehabilitate Orchard Gardens WWTP	Rehabilitate Orchard Gardens WWTP	\$7044,250.00	2016 - 2018	\$6673,500.00	\$370,750.00			
			Rehabilitation of Scarborough WWTP, Tobago	Rehabilitation works for Scarborough WWTP including process, mechanical and electrical with the addition of UV disinfection system	\$5000,000.00	2017-2018	\$5000,000.00				
			Rehabilitation works for Beetham WWTP	Rehabilitation works for Beetham WWTP	\$5000,000.00	2019 - 2020		\$1000,000.00	\$5000,000.00		
			Rehabilitation of Techer WWTP (Point Fortin)	Rehabilitation of Techer WWTP (Point Fortin)	\$10000,000.00	2018 - 2019				\$4000,000.00	\$6000,000.00
			Scott Street sewer replacement	Replace 102m of 200mm diameter Scott St Sewer main	\$1500,000.00	2019 - 2020		\$500,000.00	\$1000,000.00		
			Wellington Debe sewer line upgrade	Replace 300m of 300mm diameter Debe Sewer main	\$1500,000.00	2019 - 2020		\$500,000.00	\$1000,000.00		

Water and Sewerage Authority

Desired Result	Ref.	Initiative	Project / Undertaking	Description of Works	Estimated Capital Cost TT \$	Implementation Year	2017/2018 Estimated Cost TT \$	2018/2019 Estimated Cost TT \$	2019/2020 Estimated Cost TT \$	2020/2021 Estimated Cost TT \$	2021/2022 Estimated Cost TT \$
Increase Centralized Wastewater Coverage	1	Expansion of Collection System	Arima Sewer Trunk main re route	Replacement of 200m of 450mm diameter Arima Sewer Trunk main	\$5500,000.00	2019 - 2020		\$1100,000.00	\$4400,000.00		
			Construct sewers at Dunross, Westmoorings (Reconstruction of Morne Coco Road Sewers)	Construction of sewers at Dunross, Westmoorings (Reconstruction of Morne Coco Road Sewers)	\$2800,000.00	2018			\$2800,000.00		
			Construct Trincity Phase 1 Collection System	Construction of Collection System in Trincity catchment	\$35000,000.00	2020 - 2022			\$10000,000.00	\$15000,000.00	\$10000,000.00
			Construction of Malabar Wastewater Collection System Phase 2	Construction of 58km sewer pipeline, 3 LS, 3,660 sewer service connections	\$386000,000.00	2019 - 2021			\$33900,000.00	\$135600,000.00	\$169500,000.00
			Construction of Malabar Wastewater Collection System Phase 3	Construction of 62.5km sewer pipeline, 4 LS, 3,650 sewer service connections	\$422500,000.00	2021 - 2024				\$42250,000.00	\$126750,000.00
			Construction of San Fernando Wastewater Collection System (Phase 2)	Construction of 12.7km sewer pipeline, 2 LS, 230 sewer service connections, demolition of 2 WWTP and 6 LS	\$181000,000.00	2020 - 2023				\$18100,000.00	\$72400,000.00

Water and Sewerage Authority

Desired Result	Ref.	Initiative	Project / Undertaking	Description of Works	Estimated Capital Cost TT \$	Implementation Year	2017/2018 Estimated Cost TT \$	2018/2019 Estimated Cost TT \$	2019/2020 Estimated Cost TT \$	2020/2021 Estimated Cost TT \$	2021/2022 Estimated Cost TT \$
			Construction of San Fernando Wastewater Collection System (Phase 3)	Construction of 193.9km sewer pipeline, 5 LS, 11,480 sewer service connections, demolition of 2 WWTP and 1 LS	\$789300,000.00	2023 - 2027					
			Design / Construct Maloney Wastewater System (Phase 2)	Construction of Maloney Phase 2 of Collection System	\$150000,000.00	2022 - 2024					\$30000,000.00
			Design/ Built La Goya LS to intercept flows to Trinchly WWTP	Construction of 1.25km of New Sewer 300mm Forcemain to Trinchly WWTP	\$9700,000.00	2018 - 2019		\$3880,000.00	\$5820,000.00		
			Expansion of Sewers, St Michaels Road, Diego martin	Construction of 2km of New Sewer Pipelines, St Michaels Road, Diego martin	\$5000,000.00	2018 - 2019				\$2500,000.00	\$2500,000.00
			Port Spain Sewer upgrade	Replacement of 4km of 300mm diameter Sewer mains	\$156000,000.00	2020 - 2022			\$31200,000.00	\$93600,000.00	\$31200,000.00
			Rehabilitation and extension of Techier Wastewater Collection System (point Fortin)	Construction of 2.4km sewer pipeline, in Techier	\$8600,000.00	2018 - 2019				\$4000,000.00	\$4600,000.00
			Scarborough Property Connections, Zone 1	Sewer connections along Milford Road; Mt. Marie; Cabbage	\$3960,000.00	2020-2021					

Water and Sewerage Authority

Desired Result	Ref.	Initiative	Project / Undertaking	Description of Works	Estimated Capital Cost TT \$	Implementation Year	2017/2018 Estimated Cost TT \$	2018/2019 Estimated Cost TT \$	2019/2020 Estimated Cost TT \$	2020/2021 Estimated Cost TT \$	2021/2022 Estimated Cost TT \$
				Hole and Smith Field							
			Scarborough Property Connections, Zone 2	Sewer connections along Wilson Road; Dutch Fort; Sangster Hill; Pump Hill and Old Wilson Road	\$5622,000.00	2020-2021					
			Scarborough Property Connections, Zone 3	Sewer connections along Burnett Street; Rodd Street; Rose Hill; Young Street; Main Street; Robinson; Piggot; Crooks; Hamilton	\$3012,000.00	2018-2019					
			Scarborough Property Connections, Zone 4	Sewer connections along Kirk Street; Fort Street; McKay Hill; Dacotet Street; Hayes Street; Otley Street; Cuyler Street; Robinson Street; Along Convent Drain	\$4177,000.00	2019-2020					
	2	Construction of Regional wastewater treatment facilities and	Construct South West Tobago Wastewater System, Phase 1	Construction of Two Sewer Systems Centred on the Bon Accord and	\$108814,953.04	2017-2018	\$ 97933,457.74	\$ 10881,495.30			

Water and Sewerage Authority

Desired Result	Ref.	Initiative	Project / Undertaking	Description of Works	Estimated Capital Cost TT \$	Implementation Year	2017/2018 Estimated Cost TT \$	2018/2019 Estimated Cost TT \$	2019/2020 Estimated Cost TT \$	2020/2021 Estimated Cost TT \$	2021/2022 Estimated Cost TT \$
		increase collection system		Sanman Grove Waste Stabilization in SW Tobago							
			Construction of Malabar Wastewater Treatment Plant (WWTP) and associated trunk sewers - Phase 1	Construction of New Malabar 40MLD WWTP, 9.8km sewer pipeline, 3 LS, 118 sewer service connections and 1 year Operations and Maintenance	\$620194,021.00	2014 - 2019	\$ 238743,821.09	\$ 11866,880.00			
			Construction of San Fernando Wastewater Treatment Plant (WWTP) and associated trunk sewers - Phase 1	Construction of New San Fernando 45MLD WWTP, 16.2km sewer pipeline, 69 sewer service connections, demolition of 4 WWTP and 6 LS and 1 year Operations and Maintenance	\$711956,726.17	2014 - 2020	\$ 167000,000.00	\$ 250000,000.00	\$ 128000,000.00	\$ 35000,009.00	
			Design/Construct Trincity WWTP, Medium Term Project	Construction of New Trincity 15MLD WWTP and Consultancy Services for Supervision	\$58000,000.00	2018 - 2020		\$ 11600,000.00	\$ 29000,000.00	\$ 17400,000.00	
			Design / Construct Maloney Wastewater System (Phase 1)	Construction of Maloney WWTP and Phase 1 of	\$450000,000.00	2019 - 2022			\$ 90000,000.00	\$ 270000,000.00	\$ 90000,000.00

Water and Sewerage Authority

Desired Result	Ref.	Initiative	Project /Undertaking	Description of Works	Estimated Capital Cost TT \$	Implementation Year	2017/2018 Estimated Cost TT \$	2018/2019 Estimated Cost TT \$	2019/2020 Estimated Cost TT \$	2020/2021 Estimated Cost TT \$	2021/2022 Estimated Cost TT \$
				Collection System							
Enhanced Process Efficiency	1	Engage supervision consultancy firms	Construction Supervision for Phase 1 San Fernando and Malabar	Construction Supervision for Phase 1 Construction of WWTP and CS for San Fernando and Malabar	\$32037,224.00	2014 - 2020	\$ 8009,306.00	\$ 8009,306.00	\$ 8009,306.00	\$ 8009,306.00	
			Construction supervision for Phase 2 Malabar	Construction supervision for Phase 2 Malabar and San Fernando	\$18900,000.00	2015 - 2021		\$ 1575,000.00	\$ 6300,000.00	\$ 6300,000.00	\$ 4725,000.00
			Construction supervision for Phase 2 San Fernando	Construction supervision for Phase 2 San Fernando	\$18900,000.00	2020 - 2023			\$ 1575,000.00	\$ 6300,000.00	\$ 6300,000.00
			Construction supervision for Phase 3 Malabar	Construction supervision for Phase 3 Malabar and San Fernando	\$18900,000.00	2021 - 2024				\$ 1575,000.00	\$ 6300,000.00
			Construction supervision for Phase 3 San Fernando	Construction supervision for Phase 3 San Fernando	\$18900,000.00	2023 - 2027					
			Construction Supervision of SW Tobago	Construction supervision of the four (4) construction projects for South West Tobago	\$6459,824.37	2017-2018	\$ 3633,651.21	\$ 2826,173.16			
			Supervision of Trincity WWTP, Medium Term Project	Supervision of construction of New Trincity 15MLD WWTP and	\$4100,000.00	2018 - 2020		\$ 820,000.00	\$ 2050,000.00	\$ 1230,000.00	

Water and Sewerage Authority

Desired Result	Ref.	Initiative	Project / Undertaking	Description of Works	Estimated Capital Cost TT \$	Implementation Year	2017/2018 Estimated Cost TT \$	2018/2019 Estimated Cost TT \$	2019/2020 Estimated Cost TT \$	2020/2021 Estimated Cost TT \$	2021/2022 Estimated Cost TT \$
				Consultancy Services for Supervision							
Enhanced Process Efficiency	1	Consultants to Prepare Detailed Designs	Consultancy for the preparation of detailed designs of Collection System in Trincity catchment inclusive of Tender Documents	Consultancy Services for the preparation of detailed designs of Collection System in Trincity catchment	\$10600,000.00	2018 - 2019					\$ 10000,000.00
			Consultant for Detailed Design of CS & WWTP and Tender Documents for Bamboo Valsayn	Consultancy Services for Detailed Design of CS & WWTP and Tender Documents for Bamboo Valsayn	\$7000,000.00	2019			\$ 7000,000.00		
			Detailed designs for Property Connections Phase 2 works in Malabar Catchments	Consultancy Services to Prepare detailed designs for Property Connections Phase 2 works in Malabar Catchment	\$10000,000.00	2018 - 2019		\$ 4000,000.00	\$ 6000,000.00		
			Detailed designs for Property Connections Phase 2 works in San Fernando Catchments	Consultancy Services to Prepare detailed designs for Property Connections	\$750,000.00	2018					\$ 750,000.00

Water and Sewerage Authority

Desired Result	Ref.	Initiative	Project / Undertaking	Description of Works	Estimated Capital Cost TT \$	Implementation Year	2017/2018 Estimated Cost TT \$	2018/2019 Estimated Cost TT \$	2019/2020 Estimated Cost TT \$	2020/2021 Estimated Cost TT \$	2021/2022 Estimated Cost TT \$
				Phase 2 works in San Fernando Catchment							
			Preparation of detailed designs and Tender Documents for Chaguanas Regional Wastewater System	Consultancy Services for the Preparation of detailed designs and Tender Documents for Chaguanas Regional Wastewater System	\$22000,000.00	2019 - 2020			\$8000,000.00	\$12000,000.00	\$2000,000.00
			Preparation of detailed designs and tender documents for Maloney WWTP and Collection System	Consultancy Services to Prepare detailed designs and tender documents for Maloney WWTP and Collection System	\$14280,000.00	2018 - 2019		\$7140,000.00	\$7140,000.00		
			Design Review of South West Tobago	Design review and amendments to South West Tobago designs	\$891,400.00	2017-2018	\$891,400.00				
Reduced Environmental Impact	1	Ensure Compliance with water pollution rules - Planning	Develop a plan for wastewater facilities to achieve 100% compliance with Water Pollution Rules	Consultancy Services to Develop a plan for wastewater facilities to achieve 100% compliance with Water	\$20000,000.00	2019 - 2020		\$4000,000.00	\$4000,000.00	\$8000,000.00	\$8000,000.00

Water and Sewerage Authority

Desired Result	Ref.	Initiative	Project /Undertaking	Description of Works	Estimated Capital Cost TT \$	Implementation Year	2017/2018 Estimated Cost TT \$	2018/2019 Estimated Cost TT \$	2019/2020 Estimated Cost TT \$	2020/2021 Estimated Cost TT \$	2021/2022 Estimated Cost TT \$
				Pollution Rules System							
		Engage Consultants to provide Land Management Services	Land Management Phase 2 works in Malabar and Maloney Catchment	Consultancy Services for Land Management Phase 2 works in Malabar and Maloney Catchment	\$7000,000.00	2018 - 2019			\$3000,000.00	\$4000,000.00	
			Land Management Phase 2 works in San Fernando Catchment	Consultancy Services for Land Management Phase 2 works in San Fernando Catchment	\$8000,000.00	2018 - 2019				\$3000,000.00	\$5000,000.00
Enhanced Organisational Governance & Improved Leadership Capacity	1	Institutional Strengthening of WASA	Loan 2600 Institutional Strengthening	This component will address WASA's institutional strengthening needs, focusing on wastewater management.	\$1530,000.00	2016-2018	\$578,000.00	\$612,000.00	\$340,000.00		
			Loan 2890 Institutional Strengthening (Corporate Governance, CIS, Tariff Review)	Implementation of private sector commercial orientation and managerial independence with systems of accountability to the owner; Updated customer billing system which	\$24686,845.91	2016-2018	\$24004,046.91	\$682,799.00			

Water and Sewerage Authority

Desired Result	Ref.	Initiative	Project /Undertaking	Description of Works	Estimated Capital Cost TT \$	Implementation Year	2017/2018 Estimated Cost TT \$	2018/2019 Estimated Cost TT \$	2019/2020 Estimated Cost TT \$	2020/2021 Estimated Cost TT \$	2021/2022 Estimated Cost TT \$
				Integrates with WASA's financial system and geographic information system; improvements to Tariff Application to the RIC.							
			TOTAL VALUE OF PROJECTS*		\$4718316,244.49		2017/2018	2018/2019	2019/2020	2020/2021	2021/2022
							\$552467,182.95	\$333124,403.46	\$454124,306.00	\$815614,306.00	\$706025,000.00
							\$2861355,198.41				
							**This includes IDB funded projects				

SOP Title / Investment Procedures :

Date: 20/12/2011

Revision #:

Page 2 of 3

1.0 Purpose and Applicability

The purpose of this SOP is to establish a uniform process for the preparation and monitoring of investments.

2.0 Definitions

N/A

3.0 Responsibilities

3.1. Assistant Manager, Treasury-

Responsible for

- Monitor maturity dates for all investments
- Ensure investment documents are prepared and sent to banks on or before maturity dates
- Email banks to request quotes for investments
- Negotiate/liaise with financial institutions for new investments
- Evaluate new quotes
- Obtain approvals for new investments and re-investments
- Check letters for re-investments and new investments
- Prepare letters for re-investments and new investments and cover memo as necessary
- Ensure funds transferred re: investments/interest income are received
- Ensure interest income as calculated by financial institution is accurate
- Check online bank statements for receipt of interest income
- Ensure signatures on investment certificates are obtained and sent to bank
- Update investment schedule upon maturities
- Prepare monthly investment status schedule
- Prepare monthly investment reconciliation

3.2 Treasury Staff

Responsible for:

- Prepare letters for re-investments and new investments
- Prepare cover memo for Chairman's approval and signature on investments
- Obtain signatures on investment certificates, copy, file and return certificates to bank

Title/Designation

Signature

Date (dd/mm/yyyy)

SOP Title / Investment Procedures :

Date: 20/12/2011

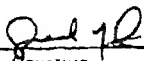
Revision #:

Page 3 of 3

4.0 Procedure

1. Investments are monitored on a daily basis for maturity dates
2. Two weeks prior to each maturity date, an email is sent to the various financial institutions requesting quotes
3. A schedule of all quotes received is prepared
4. Evaluation of quotes
5. Obtain approval for new and re-investments.
6. The financial institutions are notified via email of the outcome (successful or unsuccessful)
7. Letters are prepared based on outcome of highest quote
8. A cover memo is prepared to send documents for the Chairman's approval and signature
9. All documents are sent to the Manager, Exchequer Services for approval before submitting to Chief Financial Officer
10. An email is sent to Manager, Exchequer Services, Deputy General Manager-Finance and Chief Financial Officer as notification of deadlines dates for investments
11. Upon receipt of the signed letters, the documents are faxed to the banks on or before investment maturity dates
12. On the following day, the bank account is checked to confirm receipt of interest income

Director - Finance
Title/Designation


Signature

20/12/11
Date (dd/mm/yyyy)