



WASA'S TARIFF REVIEW

Issues, Impact & Analysis

Study Prepared
by CAP-M Research



for the

Trinidad & Tobago Chamber of Industry and Commerce

and the

Trinidad & Tobago Manufacturers Association

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WASA'S TARIFF REVIEW: Issues, Impact & Analysis

1. INTRODUCTION

1.1 The **Water & Sewerage Authority (WASA)** is the government-owned monopoly provider of water and wastewater services in Trinidad and Tobago. Despite this natural monopoly status, WASA's operational and financial performance is well below internationally accepted benchmarks for a well performing water utility. In fact, the Authority has never made a profit during its forty odd years of existence. With water rates ranking among the lowest in the world, the current water tariff does not even meet its most basic requirement – to raise enough revenues to cover the cost of provision. Under-pricing of water has significantly affected WASA's financial viability and sustainability. Large-scale subsidization has also failed to provide the poor and rural households with adequate water coverage and has resulted in wasteful usage of water. WASA's present situation where its losses have to be either written off or absorbed by the State or merely allowed to be kept on books is totally unsustainable. Radical changes are needed if WASA is to improve its performance.

1.2 It is against this backdrop that WASA plans to undertake a \$6.7 billion capital investment program over the next five years in order to meet its long-term objectives of providing a 24/7 water supply to 98% of its customers by 2020. WASA intends to essentially finance this ambitious capital investment program through a new water tariff structure, which is expected to help it become financially viable. The Authority estimates that, if the proposed tariff schedule is fully implemented, it would result in higher water bills per customer class as follows:

- Domestic (176.7 percent);
- Industrial (388.1 percent);

- Commercial (257.8 percent);
- Agricultural (757.1 percent); and
- Point Lisas (161.7 percent).

WASA's tariff proposal also changes the basis on which it calculates water rates, eliminating the unmeasured Annual Rateable Value (ARV) charges and instituting volumetric consumption facilitated by a Universal Metering program.

1.3 WASA has submitted its Business Plan for the regulatory period 2008-2012 to the Regulated Industries Commission (RIC), as it is required to do before any review of rates and tariffs is undertaken. The Business Plan constitutes WASA's principal submission for the review of water tariffs and will form the basis of the RIC's assessment of the revenue requirements of WASA over the regulatory control period.

1.4 Under the RIC Act of 1998, the RIC plans to undertake a series of consultations with WASA and other stakeholders before making a final determination around August 2008 on the proposed increase in water tariffs. The final determination will set out the maximum amounts WASA can charge its customers, the minimum level of service it must provide and the efficiency improvements that must be achieved over 2008-2012.

1.5 Most importantly, this is the first time that the prices for water and sewerage services will be reviewed under the incentive-based form of regulation rather than the traditional rate of return approach. The incentive-based type of regulatory regime seeks to mimic the discipline of a competitive market, which does not currently obtain in the case of WASA given its monopoly status. An important aspect of the water tariff review, therefore, will be to establish a firm foundation for WASA's economic regulation in the future. The review will seek to answer several critical questions including the following:

- How can the level and reliability of WASA's service be improved within the shortest possible time?
- How can the operational efficiency and financial performance of WASA be improved?
- How can collections be improved and receivables be reduced?
- How should Universal Metering be implemented?
- What is the most efficient and effective subsidy mechanism for the poor?

1.6 This Study helps the Trinidad and Tobago Chamber of Industry and Commerce and the Trinidad and Tobago Manufacturers Association, as key stakeholders in the WASA tariff determination process, to:

- Develop a Position Statement on WASA's water tariff review for submission to the RIC;
- Influence the potential outcome of the final determination on WASA's tariff structure; and
- Shape the appropriate form of economic regulatory regime to be applied to WASA.

1.7 Accordingly, the rest of the Study is structured as follows:

- **Section 2** provides an overview of WASA's operational and financial performance;
- **Section 3** highlights WASA's current tariff structure;
- **Section 4** gives the guiding principles against which the RIC will assess WASA's submission for price review;
- **Section 5** provides an overview of WASA's Business Plan, including its capital investment program, the proposed new tariff structure and water system projections through 2007-2011;

- **Section 6** discusses the form of regulation for WASA and length of regulatory period;
- **Section 7** highlights the broad incentive mechanisms for regulating WASA's quality and levels of service;
- **Section 8** discusses the assessment of WASA's operating expenditure (OPEX);
- **Section 9** gives an assessment of WASA's capital investment program (CAPEX);
- **Section 10** treats with WASA's cost of capital and regulatory asset base;
- **Section 11** deals with other water specific policy issues, including WASA's Debt Burden, Universal Metering and establishment of additional desalination plants; and
- **Section 12** concludes the Study with a Position Statement that expresses the Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association's collective concerns and perspective on WASA's Rate Review.

2. OVERVIEW OF WASA'S OPERATIONAL & FINANCIAL PERFORMANCE

Water Demand/Supply Balance

2.1 **Table 1** shows that the supply of water has been consistently lower than demand, resulting in substantial water deficits in Trinidad & Tobago. In 2006, WASA produced 341 million cubic meters of potable water, but it lost almost 36 percent of this volume of water through the distribution system. This resulted in water supply amounting to 220 million cubic meters, which was insufficient to meet total water demand of 262 million cubic meters. The water system deficit, therefore, amounted to 42 million cubic meters in 2006. In order to increase the supply of water available to customers, WASA entered into a water sale agreement with the Desalination Company of Trinidad & Tobago (Desalcott) to supply 136 thousand cubic meters per day. Of this amount, half goes to meet the requirements of the Point Lisas Industrial Estate.

Table 1: Water System Balance, 2002-2006

(million cubic meters)	2002	2003	2004	2005	2006
Water Demand	234	238	245	251	262
<i>of which Point Lisas</i>	11	12	13	15	16
Water Supply	200	199	208	212	220
UFW	(110)	(109)	(114)	(116)	(121)
Water Deficit	(33)	(39)	(37)	(39)	(42)

Unaccounted For Water

2.2 The supply shortfalls stem from WASA's very high level of Unaccounted For Water (UFW), which reflects the difference between the volume of water WASA sells and what it delivers to the distribution system. UFW arises from:

- Physical or technical losses such as pipe breaks (leaks), and overflows; and

- Commercial losses (meter under-registration, illegal use including fraudulent or unregistered connections and legal, but usually unmetered, uses like fire fighting).

Over the period 2003-2006, about 36 percent of the water distributed annually was lost as UFW. **The best practice for UFW is less than 23 percent for most developing countries.** In the case of WASA, most of the UFW arises from technical losses, reflecting the poor state of its pipeline network.

Pipeline Network Performance

2.3 WASA has an aged pipeline system and a disconnected pipeline network. In many areas, pipelines are over 80 years old and despite efforts to either replace portions of and/or expand the network, supply disruptions are frequent due leakage. Consequently, WASA experiences approximately six pipe breaks per km of water distribution network, compared to a well maintained water utility which has approximately one break per km per year of distribution network. In addition, the Authority receives an average of between 3,500-4,500 reports of leaks each month, leading to numerous unplanned disruptions in the water supply and schedules.

Service Coverage and Quality of Service

2.4 According to WASA, 92 percent of the country's population has easy access to water services either through a direct service connection or residing within 200 meters of a standpipe. **Best practice in this area of service coverage is 100 percent.** Equally important is that only 21 percent of the Authority's customers in Trinidad receive a continuous water supply and is indicative of the poor quality of the service provided by the utility.

Operating Deficit

2.5 Table 2 presents a summary of WASA's financial performance for the period 2002-2006. The Authority's operating deficit widened from \$246 MN in FY 2001/2002 to \$696.1 MN for FY 2005/2006. Additionally, the accumulated deficit stood at an estimated \$7.9 BN at the end of the 2005/2006 financial year. Moreover, the self-financing ratio (which measures the ratio of internal cash generation to the investment level) was negative over this period. This means that WASA did not contribute to its investments from its operating revenue. As a result, the Authority has become increasingly dependent on government-guaranteed loans and overdraft financing to fund all operations and capital needs.

2.6 WASA's total revenue grew from \$401.0 MN in FY 2001/2002 to \$491.4 MN in FY 2005/2006, a cumulative increase of 22.5 percent. Over this period, the unit sales price has remained relatively flat, varying around \$1.23-\$1.39 per cubic meter. WASA's revenue base is unevenly distributed. Water rates constitute about 90 percent of total revenue while sewerage accounted for about 7 percent. Industrial customers are the largest single source of revenue for water, while domestic customers continued to be the largest single source of revenue for sewerage.

Table 2: WASA's Financial Indicators, 2002-2006

	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006
Operating Revenue (\$ Mn)	401	411	433	462	491
Operating Expense (\$ Mn)	647	733	946	1,067	1,188
Operating Deficit (\$ Mn)	246	322	513	605	696
Unit Revenue (\$/cm³)	1.37	1.23	1.31	1.33	1.39
Unit Cost (\$/cm³)	2.22	2.20	2.86	3.08	3.37
Accounts Receivable (outstanding months)	17	17	16	16	15
Debt/Assets Ratio	1.4	1.5	1.7	1.8	1.6
Current Ratio	0.2	0.2	0.2	0.2	0.5
Working Ratio	1.4	1.6	2.0	2.1	2.2
Operating Ratio	1.7	2.2	2.2	2.3	2.4

WASA's operating cost increased from \$647 MN in FY 2001/2002 to \$1,187.6

MN in FY 2005/2006, a cumulative increase of 83.5 percent. Over this period, the unit operational costs (operating expenditure/ water produced) increased from \$2.22 to \$3.37, which constitutes an increase of 30 percent per year. Most of the movement in operating costs is directly related to the movements in personnel costs. **In 2005, WASA had about 14 staff per thousand water connections compared with a benchmark of 5 per thousand water connections for developing countries and an indicator as low as 2 to 3 in developed countries.**

Account Receivables

2.7 A persistent problem in financing WASA's operations is its inability to recover the proportion of its costs represented by billings to its customers. The resulting excessive receivables form a very large part of its current assets. At the end of September 2006, the Authority had outstanding receivables of \$599 BN, of which \$485 BN was provided for. WASA considers the net receivable balance of \$114 BN to be collectable, but its collection period (which measures the average time it takes to collect debts) stood at 15 months while **best practice in this area is less than three months**. This extremely high level of receivables has impacted adversely on the operations of the Authority. Consequently, WASA has had to rely on overdraft facilities, which tend to be high cost funds to finance operating expenditure.

Liquidity Risk

2.8 WASA's short-term liquidity risk is affected by the timing of cash inflows and outflows along with its prospects for future performance. A current ratio (current assets/current liabilities) of less than one is an indication that the utility has short-term liquidity problems. WASA's current ratio has remained relatively flat at 0.2 over the period 2001 to 2005. Two other indicators of WASA's chronic financial situation relate to the working ratio (operating costs excluding

depreciation and interest payments to operating revenues) and the operating ratio (operating costs to operating revenues). In this case operating costs include depreciation and interest payments. **Best practice with respect to the working and operating ratios is less than 0.7.** An operating or working ratio that is greater than one, it is an indication that the utility is in a loss making position. WASA's working and operating ratios were 2.2 and 2.4 respectively in 2005.

Capital Expenditure & Debt

2.9 WASA's weak financial situation results in its inability to finance any capital investment from internal revenue. Thus the Authority relies either on Government guaranteed loans or direct subventions from Government for capital projects. During the past few years, WASA has borrowed heavily on the local capital markets to fund a number of development projects, including:

- 1) North Water Project (\$660 MN);
- 2) Interim Operating Agreement (\$450 MN);
- 3) VSEP (\$80 MN); and
- 4) South Water Project (\$640 MN)

At the end of 2006, WASA had an accumulated debt (government guaranteed loans and working capital financing loans) which amounted to \$2.4 BN. Projections on the repayment schedule indicate that WASA will have to repay \$7.4 BN over the life of this long-term. Consequently, WASA's interest payments consumed 9 percent of total annual operating revenues in 2006. Given its current dire financial situation, WASA will not be able to meet these financial obligations.

3. WASA'S CURRENT TARIFF STRUCTURE

Role of Tariffs

3.1 Setting tariffs requires striking a balance between several main objectives:

- **Economic Efficiency.** Prices should signal to consumers the costs that their decisions to use the water service impose on the rest of the society. From an economic efficiency perspective, a tariff should create incentives to ensure that users obtain the largest possible aggregate benefits.
- **Revenue Sufficiency.** Revenue from users should be sufficient to cover operation and maintenance costs and to attract both equity capital and debt financing. Additionally, the revenue stream should be relatively stable.
- **Fairness and Equity.** Tariffs should treat all consumers equally, that is, users pay proportionate to the costs they impose on the water service provider.
- **Social Orientation of Water Service.** Tariffs should ensure a guaranteed minimum amount of water to all consumers regardless of income.

Over the past 60 odd years, water tariffs have been increased just 3 times – 1937, 1985, and 1993. In 1998 tariffs were increased only at the Point Lisas Industrial Estate where industrial customers pay \$7.50 per cubic meter, which includes the existing charge of \$3.50 per cubic meter and a special water improvement rate of \$4.00 per cubic meter.

WASA's Current Tariff Structure

3.2 **Table 3** shows the current tariff structures for water and wastewater services. On this basis, the following general observations can be made regarding WASA's tariffs:

- 1) Customer classes are defined in terms of activity (e.g. agriculture) or by type of premises (e.g. school) rather than costs imposed on WASA;
- 2) The tariff structure includes two major customer categories, that is, domestic and non-domestic;
- 3) Some of the separate billing categories are identical, e.g. A4, for internally serviced domestic customers is the same as A6, for charitable institutions and places of worship; B4, industrial is the same as C4, commercial;
- 4) Unmetered customers are typically charged a fixed amount per month or quarter, but customers in categories A3 and E3 are charged on the basis of their annual property tax value (ATV), subject to a minimum quarterly or monthly charge;
- 5) Tariffs for metered customers are either a single rate per cubic meter per month, subject to a minimum monthly bill (B4, C4, E4), or a rising two-block tariff with a minimum bill per month e.g. D4 or per quarter e.g. A4 and A6; and
- 6) With the exception of agricultural customers in category E4, all metered customers face the common rate of \$3.50 per cubic meter for at least part of their consumption.

3.3 In summary, WASA's tariff structure is too complex and has too many charging categories. Some categories are identical e.g. B and C, with no useful purpose served by their separation. The metered volumetric rate for commercial/industrial customers (\$3.50 per cubic meter) is twice the metered volumetric rate for domestic customers (\$1.75 per cubic meter). This suggests that there may be cross-subsidization between the two categories of customers. The average water tariff of US\$0.18 per cubic meter in Trinidad and Tobago is the lowest when compared to several countries, both developed and developing.

Table 3: WASA's Current Water Tariff

Customer Class	Category	Metered Charges (\$ m ³ /quarter)	Min. Charge	Unmetered
DOMESTIC				
Standpipe	A1			\$33.75/quarter
Externally serviced	A2			\$67.50/ quarter
Internally serviced	A3			(see below)
Internally serviced (M)	A4	\$1.75 first 150 m ³ then \$3.50 per m ³ thereafter	\$30/quarter	
Charitable institutions	A5			\$108/quarter
Charitable institutions (M)	A6	\$1.75 first 150 m ³ then \$3.50 per m ³ thereafter	\$30/quarter	
NON-DOMESTIC				
Industrial	B3			\$474/month
Industrial (M)	B4	\$3.50 per m ³	\$35/month	
Commercial	C3			\$474/month
Commercial (M)	C4	\$3.50 per m ³	\$35/month	
Cottage	D3			\$300/month
Cottage (M)	D4	\$2.50 first 150 m ³ then \$3.50 per m ³ thereafter	\$25/month	
Agricultural	E3			15% of ATV min charge:\$105/month
Agricultural (M)	E4	\$2.25 per m ³	\$20/month	
Unserviced premises	F			\$50/month
Point Lisas		\$7.50 per m ³		
Internally Serviced (A3)				
ATV (\$)	% ATV	Minimum \$/quarter		
0-500	95	108		
501-1,000	81	118		
1,001-2,000	54	203		
Over 2,000	47	270		
	Maximum		charge	
	\$304/quarter			

3.4 More importantly, however, WASA's existing water tariff structure does not meet any of the above-mentioned criteria for imposing tariffs and suffers the following deficiencies:

- Existing water tariffs do not promote an efficient allocation of resources. Although the demand for water has persistently exceeded the supply, water prices have not increased as a rationing device to bring the system back into balance.
- Water rates are below the levels required to enable WASA to be financially viable and the revenue stream has shown little relative stability.
- In an effort to ensure that water tariffs are "fair" and to enable customers to meet their basic water needs, WASA implemented certain measures it could ill afford. Metered customers are on a two-block tariff, with an initial block of 150 cubic meters per quarter. This block could be thought of as a life-line block. However, the size of this block is much too large when considered in terms of the water needed to meet a household's basic needs for water (drinking, cooking and hygiene-related needs).
- Low tariffs or the social tariff, as it is sometimes known, is an *across the board* subsidy which places a heavy burden on both WASA and the public purse. This approach has done little to benefit poor and low-income families who are sometimes forced to purchase water or collect water from distant sources. The social tariff has also contributed to wasteful consumption practices among some consumers.

4. GUIDING PRINCIPLES USED BY THE RIC TO ASSESS WASA'S RATE REVIEW

Principles in RIC Act

4.1 The RIC is required to assess WASA's submission for price review against principles outlined in the RIC's Act and decide whether the review is warranted or, it may determine the matter by modifying the existing principle or establishing a new principle (Sections 49 and 50). In deciding whether to approve WASA's prices, the Act requires the RIC to ensure that "the service provided by a service provider operating under prudent and efficient management will be on terms that will allow the service provider to earn sufficient return to finance necessary investment" (Section 6). The RIC must also be satisfied that the interests of customers are taken into account and that prices provide appropriate signals about the cost of providing service.

4.2 In carrying out its functions, the RIC is guided by its legislative framework and is required to have regard to the following objectives:

- 1) Protection of consumer interest with regard to the price, quality and reliability of services;
- 2) Facilitation of efficiency and economy of operations by service providers;
- 3) Facilitation of competition where competition is possible and desirable;
- 4) Facilitation of the financial viability of service providers;
- 5) Need to ensure that regulatory decision-making has regard to current national environmental policy; and
- 6) Fairness and transparency of the price determination.

Other Features of RIC Act

4.3 Some other salient features of the RIC Act are that:

- 1) Tariffs, as determined by the RIC, shall not be amended or modified more than once in any year;
- 2) WASA must justify a price review by setting out projected revenues against projected expenditure and reasons for any significant changes thereof; and
- 3) WASA must set out the results of any actions taken to meet the projections of any preceding review.

In deciding whether to approve or specify the price arrangements, the RIC must be satisfied that they provide WASA with sufficient revenue over the 2008-2012 regulatory period to deliver its services. The revenue must be sufficient to allow WASA to recover:

- Least-cost operating expenses which may be incurred;
- Replacement capital cost expended;
- Annual depreciation; and
- Return on the rate base.

4.4 Section 67 of the Act further requires the RIC to be guided, among other things, by the following:

- Funding and ability of WASA to perform its functions;
- Ability of consumers to pay water rates;
- Interest of shareholders of the service provider;
- Quality and reliability of service, in accordance with appropriate standards;

- Factors that would encourage maximum efficiency and economical use of resources; and
- National environmental policy.

4.5 As far as the Capital Investment Plan is concerned, the RIC's objective is to ensure that the Plan is reasonable, prudent and efficient. To fulfill these criteria, the essential ingredients in any analysis are to:

- Ensure WASA is able to finance the CAPEX program necessary to provide the required level of service;
- Ensure value for money; and
- Ensure that the CAPEX program is well-designed and implemented at least cost.

5. OVERVIEW OF WASA'S BUSINESS PLAN

Background

5.1 WASA's Business Plan sets out detailed descriptions of the information that the RIC requires. This includes financial information, information on the proposed investment program, and expected outcomes. The Business Plan constitutes WASA's principal submission for the review of charges and will form the basis of the RIC's assessment of the revenue requirements of WASA for the regulatory control period. The Business Plan, in short, is WASA's statement of its strategy for the future and sets objectives and outputs to be achieved. The following three areas are critical to understanding the general thrust of WASA's Business Plan:

- Capital investment program;
- Proposed tariff structure; and
- Water system projections, 2007-2011

Capital Investment Program

5.2 During the past five years, WASA has been implementing its Strategic Plan which lays the foundation for the achievement of the National 2020 Vision for the Water and Wastewater Sector. The strategic objective is to achieve a 24/7 water supply to 98 percent of its customers with a 75 percent sewerage coverage by 2020. The Authority has estimated that its five-year Capital Investment Program will cost \$6.783 BN to upgrade and modernize the water and wastewater sector during the period 2007-2011. The investment program includes the preparation of the Water and Wastewater Master Plan that will inform the restructuring of the industry. **Table 4** shows the projected cost of the main capital programs and projects that WASA intends to implement over 2007-2011, the targets and the anticipated number of persons who stand to benefit.

Table 4: WASA - Capital Program, 2007-2011

Main Program/Projects	Objective	Estimated Cost	Population to Benefit
Development of Major Water Sources	Significantly boost water supply through impounding reservoirs, desalination plants, groundwater facilities & surface water intakes	\$381.3 MN	97554 persons
Upgrade/Expansion of Booster System	Increase the number of persons served by WASA's network	\$72.3 MN	73,744 persons
Upgrade/Expansion of Service Reservoirs	Upgrade 7 reservoirs with a combined capacity of 6.7 MN gallons	\$28.9 MN	68,800 persons
Leak Detection Program	Reduce UFW from 55% of water produced to between 25-30% by 2020	\$136.9 MN	255,562 persons
Strategic Pipeline Replacement Program	Increase the number of customers who receive a 24/7 water supply from 27% to 47% by 2011	\$171.2 MN	139,919 persons
Universal Metering Program	Implement a Universal Metering system throughout T&T	\$352.9 MN	89,421 persons
Wastewater Projects	Adopt NHA plants and private treatment plants	\$341.3 MN	155,445 persons

5.3 WASA plans to spend \$3.274 BN in upgrading and modernizing the **water sector** during the period 2007-2011. The main developmental projects will comprise the following:

- Rehabilitation of existing mains, booster stations and storage reservoirs to assist in improving the reliability of supply;
- Non-revenue infrastructure works, which involves replacement of old pipes, defective valves and upgrades at plants and pumping stations;
- Operations support projects such as Bulk Metering and Geographical Information Systems development; and
- Network modeling to identify and find solutions to hydraulic imbalances.

5.4 WASA projects investment of \$341.3 MN in upgrading and modernizing the **sewerage sector** during 2007-2011. The following projects have been identified as critical:

- Upgrade of sewerage systems in the cities of Port of Spain and San Fernando;
- Extension of the sewerage system in the East-West Corridor;
- Construction and commissioning of the South-West Tobago sewerage treatment system; and
- Adoption of the National Housing Authority sewerage treatment plants.

5.5 A projected investment of \$93.5 MN will be spent on **institutional strengthening** during 2007-2011, including:

- Development and implementation of the Water and Wastewater Master Plan;
- Implementation of Supervisory Control and Data Acquisition (SCADA) system to monitor the water treatment process; and
- Integration of the Authority's electronic record keeping systems

At the end of the five-year investment program, WASA estimates that 572,613 persons will receive an improved supply from the water projects and 155,445 persons will benefit from the wastewater projects.

Proposed Tariff Structure

5.6 The proposed water tariff structure seeks to attain the following objectives:

- 1) Ensure that WASA becomes financially viable while undertaking network maintenance and expansion activities necessary for an improved level of service to customers;
- 2) Promote the efficient use of water by sending the correct price signals to customers;

- 3) Simplify the tariff structure, which is critical to customer satisfaction; and
- 4) Avoid as far as possible the need for further tariff reviews during the period 2007-2011.

5.7 Table 5 shows the tariff schedule proposal. The proposed tariff schedule comprises the following new customer structures and rates:

- 1) Domestic customers who were currently disaggregated between A2-A6 will be treated as one class and charged the same rate of \$2.64 per cubic meter;
- 2) Industrial customers who were currently disaggregated between B3 and B4 will be treated as one class and charged the same rate of \$28.92 per cubic meter;
- 3) Commercial customers who were currently disaggregated between C3 and C4 will be charged the same rate of \$28.92 per cubic meter;
- 4) Point Lisas industrial and commercial customers will become one class and will be charged the same rate of \$6.08 per cubic meter; and
- 5) Agricultural customers who were currently disaggregated between E3 and E4 will be treated as one class and charged the same rate of \$28.92 per cubic meter.

5.8 WASA plans to change its pricing structure to a volumetric model based on measured consumption from the current reliance on unmeasured Annual Rateable Value (ARV) charges. The volumetric model is usage conservative and fosters conservative demand, particularly in the domestic customer class. The proposed water rates reflect full cost recovery and seek to limit cross-subsidization of residential customers by the commercial and industrial groups.

5.9 This rating structure will serve only as an interim structure pending the completion of WASA's metering program. When this program is completed tariffs

will be revisited and the actual water consumption per cubic meter by each class of customer will be the basis for their average bill.

Table 5: WASA's Proposed Water Tariff

Customer Class	Category	per m ³ charge	Metered Charges /Month	Unmetered Charges/ Month
DOMESTIC				
Standpipe	A1			\$27.20
Externally serviced	A2	\$2.64		\$122.79
Internally serviced	A3	\$2.64		\$122.79
Internally serviced (M)	A4	\$2.64	\$122.79	
Charitable institutions	A5	\$2.64		\$122.79
Charitable institutions (M)	A6	\$2.64	\$122.79	
NON-DOMESTIC				
Industrial	B3	\$28.92		\$29,856.21
Industrial (M)	B4	\$28.92	\$29,856.21	
Commercial	C3	\$28.92		\$5,691.30
Commercial (M)	C4	\$28.92	\$5,691.30	
Cottage	D3	\$28.92		\$5,691.30
Cottage (M)	D4	\$28.92	\$5,691.30	
Agricultural	E3	\$28.92		\$2,751.64
Agricultural (M)	E4	\$28.92	\$2,751.64	
Point Lisas Industrial		\$6.08	\$169,923.22	
Point Lisas Commercial		\$6.08	\$7,748.00	

1. All Domestic Classes are grouped together.
2. Commercial and Cottage Classes are grouped together.
3. Point Lisas Commercial & Industrial Classes separated from regular Commercial & Industrial Classes.

5.10 Table 6 illustrates the projected increase in the bill for the different customer classes from the old tariff structure (base year 2005/2006) to the proposed (2008) tariff structure. The Authority estimates that, if the proposed tariff schedule is fully implemented, it would result in higher water bills per customer class as follows:

- Domestic: 176.7 percent;
- Industrial: 388.1 percent;
- Commercial: 257.8 percent;

- Agricultural: 757.1 percent; and
- Point Lisas: 161.7 percent.

Table 6: Impact of Proposed Tariff on Customer Average Annual Bill

Class	Base Year (2005/2006) Avg. Annual Bill	Estimated Annual Consumption	Tariff Rate	Estimated Annual 2008 Avg. Bill	Change in Avg. Bill
Domestic	\$547.00	130.2 million m ³	\$2.64	\$1,513.78	177%
Industrial	\$43,301.28	5.3 million m ³	\$28.92	\$211,360.20	388%
Commercial	\$11,267.64	18.2 million m ³	\$28.92	\$40,290.24	258%
Agricultural	\$2,272.68	1.1 million m ³	\$28.92	\$19,479.60	757%
Point Lisas	\$1,749,554.76	28.5 million m ³	\$6.08	\$4,555,272.84	162%

Water System Projections, 2007-2011

5.11 Despite plans to implement a very ambitious capital investment program and to introduce a new tariff structure based on full cost recovery, WASA expects water deficits to worsen into the 2007-2011 period. **Table 7** indicates that the demand for water is projected to outstrip the supply of water by an average deficit of 46 million cubic meters in 2007-2011 compared with an average deficit of 38 million cubic meters in the previous five year period 2002-2006. Indeed, water supply is expected to balance water demand by 2015, well into the next regulatory period. The supply shortfalls are likely to arise from:

- Strong growth in domestic demand of between 15-20 percent;
- A reduction in supply of between 10-15 percent depending on the severity of the dry season; and
- High level of leakage of the pipeline network reflecting the slow decline in UFW.

5.12 To meet the growing water demand, WASA plans to significantly boost the water supply through the following four main sources:

- Impounding reservoirs;

- Desalination plants;
- Groundwater facilities; and
- Surface intakes.

Section 11 of this Study examines the issue of investment in desalination production facilities as a solution to boosting water supply over the medium term.

Table 7: Projected Water System Balance, 2007-2011

(million cubic meters)	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011
Water Demand	265	268	268	269	266
<i>of which Point Lisas</i>	18	20	22	25	28
Water Supply	220	220	220	220	220
UFW	(119)	(117)	(112)	(108)	(99)
Water Deficit	(45)	(48)	(48)	(49)	(46)

6. WASA: FORM OF REGULATION & LENGTH OF REGULATORY PERIOD

Regulatory Models

6.1 WASA is a natural monopoly. Regulation seeks to limit the power of a natural monopoly and ensure that it acts in the customer interest. There are five main regulatory models:

- 1) **Cost-of-service regulation.** In this model, the regulator sets the return that can be earned on investment by companies. This enables a company to recoup, at a set rate, the costs and investments that it has put in to provide the services. There is no incentive for a company to minimize prices or to delay investment for as long as possible.
- 2) **Price cap regulation.** Price cap regulation (RPI-X) sets the maximum prices that companies can charge for their services for a period of years. This provides an incentive to a company to improve its efficiency. This is because it has to drive down costs in order to maximize profits.
- 3) **Yardstick regulation.** Yardstick regulation involves comparing the performance of a company with that of other companies in the same industry. The regulator uses these comparisons to set targets for other companies in the industry. Yardstick regulation is usually used in conjunction with either price cap or rate of return regulation.
- 4) **Performance based regulation.** Performance based regulation relies on establishing a reliable link between the profits of the regulated company and the performance measures set by the regulator. Price increases could be delayed or fines become payable if the company does not achieve the defined performance targets. The company therefore has a strong incentive to meet the targets set.
- 5) **Franchise regulation.** Under franchise regulation, the regulator invites companies to bid for the right to provide services to the public. The company that offers the best price-quality package wins the bid and will contract to provide the services at a certain price and to a defined quality standard.

6.2 The RIC Act gives clear support to the use of incentive regulation, using a price-cap approach, rather than rate of return regulation. In the event, price cap regulation seems to be the most appropriate regulatory model for WASA. Using this approach in Trinidad & Tobago will allow more direct benchmarking of the performance of WASA with other water companies in order to determine the extent of efficiencies that are possible. The RPI-X approach is widely used in the regulation of utilities in the United Kingdom.

6.3 In the context of regulated utilities, incentive regulation has been defined as “the use of rewards and penalties to induce the utility to achieve desired goals where the utility is afforded some discretion in achieving goals.” In the case of WASA, these “desired goals” would seek to:

- Keep prices to customers as low as possible;
- Meet environmental and water quality objectives;
- Deliver the required investment program;
- Maintain the long-term sustainability of the industry; and
- Meet customer service targets.

6.4 Ofwat, the U.K. water regulator, lists the general criteria that it considers should apply to incentive mechanisms. Ofwat states that the mechanism should:

- 1) Be in the long-term interests of customers;
- 2) Offer meaningful and worthwhile rewards for genuine out-performance;
- 3) Offer adequate penalties for underperformance;
- 4) Provide timely rewards and penalties;
- 5) Stimulate continuous improvements;

- 6) Be known in advance;
- 7) Be straightforward in concept;
- 8) Follow simple rules;
- 9) Be simple to apply; and
- 10) Avoid retrospective changes.

These criteria relating to incentive based regulation are very relevant to WASA and the RIC should take these into account, where necessary, in designing the appropriate regulatory framework for WASA.

6.5 Various forms of price control fall under the general rubric of the price-cap approach, and are compatible with incentive-based regulation. Consequently, the RIC has flexibility in the choice of the form of the price control to adopt. There are two major categories of price control under the broad price-cap approach:

- Revenue cap approach; and
- Price cap approach.

Revenue Cap Approach

6.6 Under the revenue cap approach, WASA's gross revenues are limited to a fixed amount for a defined set of services. This fixed amount (cap) is usually subject to an annual adjustment for productivity gains (called the X factor) and inflationary effects. Periodic readjustments assist in scaling revenues appropriately to changes in WASA's customer base.

6.7 Revenue caps may be established for different customer groups, for categories of service or for the entire business. An initial revenue cap for a level of service is set according to traditional rate of return procedures (the "building

block” approach for assessing required revenue). Thereafter, real revenue is typically reduced each year by the X-factor until the next review. If WASA can realize efficiency gains greater than the X-factor then it can keep all or some percentage of such gains over the regulatory period. If not, WASA’s profit suffers. It is this cost risk and/or opportunity to outperform that provides WASA with significant incentives to operate more efficiently.

Price Cap Approach

6.8 Price cap regulation attempts to control price rather than revenue. As in the case of revenue caps, prices are set according to traditional rate of return procedures but the cap is applied to particular prices rather than revenue. Price caps could be either in the form of a weighted average price cap (tariff basket) or a series of separate price controls independent of any total revenue requirement. In setting the weighted average price, the weights can be volume (sales) or value (revenue) and the weights may be fixed by reference to the base year or they may reflect actual quantities with a lag, thereby breaking the link between allowed revenue and the volume. This approach allows for more than one charge, i.e. connection as well as a volume charge. Generally, under this approach, total revenues will track total costs, thus limiting the financial risks faced by WASA.

6.9 Price cap regulation provides incentives to WASA for cost reduction and productivity improvements. It provides incentives to satisfy demand as well as protection to individual users of services as it assigns most of the risks to the utility. Among the main disadvantages of price caps are the reduced flexibility to adjust prices to maximize efficiency and the incentives to cut costs through reduced service quality. Additionally, the translation of revenue targets into weighted average price controls is not only complex but also subject to errors.

On the balance of evidence, the TTCIC and TTMA believes that there is merit in adopting a fixed (total) revenue cap for WASA for the first regulatory control period.

LENGTH OF THE REGULATORY PERIOD

6.10 The duration of the price control period affects the extent to which many of the anticipated outcomes of efficient, accurate and sound regulation are achieved. The RIC Act (No. 26 of 1998) specifies in Section 48 that the RIC “review the principles for determining rates and charges for services every five years, or where the licence issued to the service provider prescribes otherwise, at such shorter interval as it may determine.” The Act therefore alludes to the possibility of a control period shorter than the five-year period stipulated.

6.11 WASA must be given enough time to access incentives provided and implement the required measures that are expected to provide improved service, performance and productivity. Since implementation of a leakage arrestment program and universal metering have significant gestation periods before the benefits can be adequately measured, it seems to suggest that WASA ought to be given a longer time to put systems in place to address these issues.

6.12 The potential advantages to WASA of a 5-year regulatory period include:

- 1) Greater incentives to achieve higher levels of efficiency, since it is able to benefit from cost savings achieved over the period. These cost savings are only passed to the consumer through rate changes at the next water rate review;
- 2) Lower regulatory costs for both the RIC and WASA;

- 3) Lower business risk due to a more stable/predictable regulatory environment, which may lead to more prudent investment decisions; and
- 4) A more predictable regulatory environment, which may provide greater assurance to consumers about the extent to which water rates can fluctuate during the control period.

6.13 The disadvantages to WASA in adopting a regulatory period longer than 5 years include:

- 1) Inability to properly identify all outcomes and deliverables to be delivered at the outset of the regulatory control period;
- 2) Consumers are made to wait longer to benefit from any efficiency gains in WASA's operation/production;
- 3) Forecasts of WASA's costs and other related factors hold higher potential for the over or under estimation especially for the later years, and consequently of the required/projected revenue; and
- 4) How best to deal with the impact of unforeseen events.

The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is of the view that there is merit in adopting a five-year regulatory period for WASA for the first control period 2008-2012.

7. BROAD INCENTIVE MECHANISMS FOR REGULATING WASA'S QUALITY & LEVEL OF SERVICE

Why Regulate WASA's Quality of Service?

7.1 Quality of service is an important aspect of water and wastewater services to consumers. Customers must be assured of the quality and value for money of the service. Improvement in water quality will enhance productivity in all sectors of the economy, help attract new investment and provide better living and working conditions for users. As a result, an important feature of this price review process will be to clearly establish the level of performance and the quality of service standards for WASA.

7.2 Economic regulation must consider quality together with price. If quality is not maintained, any fall in service quality is economically the equivalent of a high price. Under incentive regulation, there is the risk that WASA may increase profits by lowering the quality of its service. Quality can be taken into consideration in regulation through the establishment and enforcement of quality standards.

7.3 The Act in this case mandates the RIC to:

- Prescribe and publish in the Gazette and in at least one daily newspaper circulating in Trinidad and Tobago, standards for services;
- Monitor WASA and conduct checks to determine its compliance with the standards; and
- Impose such sanctions as it may prescribe for non-compliance with the standards.

This requires the RIC to set out in detail the areas of service that it will measure and how they will be measured. The RIC must ensure that it measures the factors that are important to customers and that they can understand the RIC's analysis of WASA's performance. This detailed and rigorous monitoring will ensure that the RIC has fulfilled its statutory duty.

Key Aspects of WASA's Service

7.4 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is of the view that the RIC should monitor three broad aspects of WASA's service. These are as follows:

- 1) Asset performance measures;
- 2) Customer service measures; and
- 3) Public health and environmental performance measures.

7.5 Asset performance measures cover areas of service that depend on the water supply and sewerage infrastructure. They cover:

- Pressure;
- Planned supply interruptions;
- Unplanned supply interruptions; and
- Sewer flooding.

7.6 Customer service measures cover areas of service that depend on the management and employees of WASA and the processes they use. Customer service measures cover:

- Billing enquiries;
- Written complaints;

- Telephone contacts; and
- Public health and environmental performance measures.

7.7 Public health and environmental performance measures cover areas of service that relate to WASA's ability to comply with the requirements for quality standards. These measures include:

- Meeting drinking water quality standards;
- Complying with abstraction consents for rivers;
- Complying with discharge consents at waste water treatment works; and
- Number of pollution incidents.

Broad Mechanisms for Regulating WASA's Service

7.8 There are a number of incentive mechanisms which can focus on improving the level and quality of service provided by WASA to all its customers. The main mechanisms are:

- The Performance Incentive Mechanism (S-Factor);
- Guaranteed Service Level (GSL) Schemes; and
- Performance Reporting.

Performance Incentive Mechanism (S-Factor)

7.9 In an attempt to earn higher profits, WASA may opt to reduce spending related to provision of adequate standards of service. The RIC can discourage this practice by the inclusion of an S-factor in the price or revenue formula. This S-factor is a service standards incentive mechanism and it directly ties price/revenue to the quality of service provided by WASA. The S-factor can be

positive or negative depending on the extent to which the service provided has maintained compliance with the established quality service standards. Thus, a high level of compliance ensures a positive S-factor and results in increases to price/revenue, whilst WASA is penalised where there is low or no compliance via reduced price/revenue.

7.10 Although the major objective of an incentive mechanism is to allow WASA to move closer to an efficient level of service, the RIC must ensure that this mechanism is transparent, adequate and not extremely complex, or else it increases regulatory burden and may not in fact lead to the achievement of anticipated efficiency targets.

7.11 The establishment of an appropriate S-factor has inherent challenges that must be considered. These include:

- Form the S-factor is to assume;
- Choice of indicators to be used to judge service quality;
- Availability of data to be used to support the S-factor determination;
- Determination of an efficient incentive that will improve service quality whilst at the same time have no adverse effects on capital investment, production levels etc. (economic efficiency); and
- How this mechanism will account for the effects of external events on service quality?

Guaranteed Service Level Schemes

7.12 Appendix 1 shows the Guaranteed Standards proposed by the RIC for minimum standards of service to be provided by WASA to all customers and the penalties where these standards have not been met or maintained. Thus, where

WASA has failed to provide service at standards deemed acceptable by the RIC, customers are entitled to payments or rebates, the value of which is also set by the RIC. Guaranteed Standards, therefore, provide financial incentives to WASA to maintain acceptable levels of service to its customers.

7.13 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is of the view that the proposed ten Guaranteed Standards target critical areas of concern for WASA customers and seek to protect them from bad service. The Guaranteed Standards addresses the following areas of poor performance:

- 1) Implementation of water schedules;
- 2) Truck borne supply;
- 3) Restoration of supply;
- 4) Repair to water service connections (WSC);
- 5) Installation of new WSCs;
- 6) Reconnections;
- 7) Response to billing queries;
- 8) Response to written complaints;
- 9) Compensatory payments; and
- 10) Poor quality of drinking water.

7.14 Appendix 1 also indicates the proposed Overall Standards for WASA. Though not resulting in compulsory payments where infringed, these standards seek to provide for consumers, a service of a particular quality, and refer to areas of service that affect large numbers or all customers, thereby making compulsory payment an unfeasible option. **The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is in broad agreement with the RIC's system of Overall Standards.**

Performance Reporting

7.15 Performance Reporting provides an incentive for WASA to improve the quality of its service since it requires WASA to provide information on its performance, vis-à-vis specific indicators, during the regulatory period. The fact that WASA must provide this information should motivate it to maintain, if not improve the quality of service provided, since it presents the opportunity for critical appraisal of present performance, given other water utilities' performance and international benchmarks, while at the same time making it possible to compare present with past performance.

7.16 WASA, if made to report on a specific set of measures, as with comparative benchmarking, will be held to higher levels of accountability and transparency. This requirement informs customers and the RIC of baseline levels of performance, whilst providing data and information that can further be used in standards setting and other regulatory functions. Customers are, therefore, given an opportunity to participate in the regulatory process and are empowered to present complaints with higher levels of confidence in cases of underperformance by WASA.

7.17 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is of the view that the RIC should ensure that its performance reporting mechanism is characterised by:

- 1) Data that are reliable and obtained easily;
- 2) Indicators that are representative of the service provided;
- 3) Routine and independent audits of information provided; and
- 4) Presentation of the information in a meaningful manner such that consumers are able to understand and interpret the report.

7.18 The RIC has used this mechanism in the electricity sector and has in fact already drafted a document identifying and describing the indicators to be used for the water and wastewater sector in its performance reporting. These indicators are of four types: technical, administrative, quality of service and financial indicators. As part of its overall regulatory activities for the price review 2008-2012, the RIC will release this document for public comment before finalizing the document.

7.19 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association believes that given WASA's current performance and financial situation, applying an efficiency carryover mechanism for the first regulatory control period may have limited impact and may not provide sufficient incentives to pursue efficiencies. In fact, increasing efficiency may be a difficult and time-consuming process and may require initial increases in expenditure. Therefore, a hard-line regulatory approach of limiting allowable revenue to the efficient cost of service may be counterproductive. Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association supports a more pragmatic approach of implementing a phased program for improving efficiency or establishing a regime of performance benchmarks (e.g. annual targets for the reduction of unaccounted for water, leakage, employee costs, etc.) as markers against which to monitor WASA's efficiency improvements and service delivery performance.

8. ASSESSMENT OF WASA'S OPERATING EXPENDITURE (OPEX)

Why Assess Expenditure Requirements?

8.1 Regulation aims to set price controls at a level that allows WASA to cover its reasonable costs, but no more, over the regulatory control period. Estimating reasonable costs is not straightforward because WASA is inefficient and its current tariffs are well below cost of service. Increasing tariffs to a level that covers reasonable costs is always socially and politically challenging.

8.2 Setting price limits requires complex and detailed analysis. The RIC needs to make decisions about efficient expenditure requirements for both operating (OPEX) and capital (CAPEX) expenditure over the regulatory period, the appropriate cost of capital, the number and type of current and future customers, etc. Section 67 of the RIC Act contains a number of specific requirements that the RIC needs to follow when setting out the principles on which rates chargeable by service providers should be based, as well as a number of specific requirements governing price determinations.

8.3 In summary, to set WASA's maximum price/revenue, the RIC will have to:

- 1) Establish the efficient costs incurred by WASA, including OPEX, CAPEX and the cost of funding capital;
- 2) Decide on the share of these costs to be recovered through user charges, versus being funded by Government;
- 3) Calculate the overall revenue requirement for WASA; and
- 4) Calculate prices/revenues and an RPI-X price path for consumers taking account of assumed consumption.

8.4 Section 67, sub-sections (3) and (4) mandate that when establishing principles, the RIC must have regard to, *inter alia*:

- Funding and ability of WASA to perform its functions;
- Ability of consumers to pay rates; the results of studies of economy and efficiency; and least cost operating expenses which may be considered.

The RIC also needs to ensure that the manner in which price controls are established provides incentives for WASA to pursue efficiency improvements during the regulatory control period.

Building Block Approach

8.5 The first step in determining price/revenue controls is to establish the allowable revenue of WASA on which to base a price control. There are two broad approaches that are used to determine allowable revenue. The first approach (cost-linked) involves linking the WASA's costs to the revenue to be earned or prices to be charged. Therefore, prices will track costs more closely and customers are likely to pay prices near to actual costs of service. The use of this approach has been criticized on the grounds that it requires a high degree of firm-specific information and that it may tend to merge into Rate of Return regulation.

8.6 In the second approach (cost-unlinked), the controls are not directly determined by reference to WASA's costs, instead they may be set by reference to the prices or costs of utilities elsewhere. In the determination of the level of costs under this approach, a variety of approaches is utilized including, benchmarking, econometric analysis or frontier methods such as Data Envelopment Analysis and Stochastic Frontier Analysis.

8.7 As this cost-unlinked approach allows a greater deviation of prices from the specific costs of service providers, the outcome will be generally consistent with the operation of a competitive market. Furthermore, the rate of efficiency improvement is likely to be higher and the benefits derived will redound to the benefit of customers. However, there are a number of serious concerns with setting price/revenue controls completely independent of WASA's costs:

- 1) The approaches used to set prices independent of costs require comprehensive data that are generally not available;
- 2) The benchmarking techniques may not adequately reflect WASA's costs, especially as it faces significant capital expenditure requirements for network replacement, growth and service standards requirements;
- 3) Any reliance on the prices or costs of other utilities may not enable the initial prices to be set at levels which are reasonable, especially given that WASA is currently experiencing large revenue short-falls in its operations;
- 4) The benchmarking techniques used for the estimation of efficient costs are approximate at best, and involve many practical problems and as a result total reliance should not be placed on them; and
- 5) The degree of certainty required to encourage efficient new investment may not be provided when prices are set completely independent of WASA's costs.

8.9 In light of the above concerns, the Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association believes that it is difficult to conceive of circumstances where external benchmarks could become a complete substitute for specific costs data relating to WASA. A starting point for determining revenue requirements and the rate of change in prices would invariably be determined by reference to WASA's costs. In fact, there are very few examples of the pure application of either approach and the Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago

Manufacturers Association is of the view that there is likely to be significant advantage in combining the two approaches to establish the price controls for WASA.

Setting the Allowed Level of Operating Expenditure (OPEX)

8.10 Operating expenditure comprises day-to-day running costs such as employment costs, electricity, chemical materials, hired and contracted services, insurance, and vehicle rental costs. Provision for bad debt is also regarded as a running cost. WASA's OPEX for FY 2004/2005 accounted for some 73 percent of its total expenditure and revenue was just about 48 percent of OPEX.

8.11 Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association believes that following items should not be included in WASA's operating costs for the purposes of calculating the allowed level of OPEX:

- 1) **Maintenance of the asset base** – such expenditure is classed as capital maintenance and is regarded as investment;
- 2) **Depreciation** – this is an accounting charge reflecting the use of non-infrastructure (above-ground) assets. The amount of this charge depends on the application of accounting policies. It does not necessarily reflect WASA's spending on replacing non-infrastructure assets;
- 3) **Infrastructure renewals charge** – this is an accounting charge reflecting the use of infrastructure (below-ground) assets. As with depreciation, the size of this charge depends on the application of accounting policies. It does not necessarily reflect the WASA's spending on maintaining infrastructure assets;
- 4) **Interest payments** – such expenditure is regarded as a financing cost; and

- 5) **Taxation** – the amount of taxation paid is determined by the Board of Inland Revenue. WASA does not currently pay corporation tax.

Base Service Operating Expenditure

8.12 The baseline level of operating expenditure is the expenditure incurred in the base year 2005/2006. The RIC will apply future efficiency targets to this baseline. The **Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association supports the following process to set the baseline level of OPEX:**

- Review WASA's 2005/2006 statutory accounts to establish the total level of operating expenditure;
- Identify exceptional and atypical costs and subtract them from total operating expenditure. This will allow the RIC to establish the normal ongoing costs of running the business; and
- Assess whether there is anything unusual about WASA's 2006 cost allocation and make appropriate adjustments, if necessary.

New Operating Expenditure

8.13 WASA could incur significant new operating costs in the next regulatory control period to deliver improvements in environmental standards, drinking water standards, levels of service to customers, and the supply/demand balance. New operating expenditure will over time represent a significant part of total operating expenditure. The **Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association agrees that the RIC should add such new operating costs to the baseline described above, but stress the importance of carefully scrutinizing any claims for such new operating costs to be included in price limits.**

Customers should not be expected to pay for unnecessary or inefficient levels of new operating expenditure.

8.14 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association proposes that the RIC use the following criteria to assess the level of new operating costs:

- 1) Has the Authority carried out a proper assessment of the proposed new operating expenditure, rather than relying on estimates from contractors/manufacturers or on an arbitrary percentage of the capital cost?
- 2) Has WASA been able to demonstrate management challenge and control over the proposed costs?
- 3) Has WASA compared alternative options on a whole life cost basis, within a project appraisal?
- 4) Do the alternative options include different mixes of operating expenditure and capital investment?
- 5) Has the Authority quantified potential savings to the baseline operating expenditure, which arise from upgrading works or systems, and offset increases in new operating expenditure?

Future Changes in Baseline OPEX

8.15 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association believes it is important that WASA presents a robust case to the RIC for changes to future baseline operating expenditure in its Business Plan. It agrees that the RIC should consider the potential changes in costs that are outside the control of management that could occur during the regulatory control period. Examples of such changes could include:

- 1) **Pensions costs** - Many organizations are facing the need for increased pension contributions. This pressure on costs is not confined to WASA, but it could result in an increase in WASA's baseline operating expenditure;
- 2) **Non-domestic rates** - The basis on which WASA's assets are valued will change. The impact of this change on the valuation and hence the rates paid is not yet known; and
- 3) **Energy costs** - Future changes in energy costs, for example the upcoming electricity rate hike could affect WASA's costs.

8.16 The RIC should take proper account of such changes in order to ensure that WASA can continue to deliver an appropriate level of service. The **Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association** is of the view that the RIC should use the following criteria to assess future changes in WASA's baseline OPEX:

- 1) If the future changes are the result of an economy wide factor, will their impact be accounted for in the Retail Price Index?
- 2) What measures have WASA's management taken to reduce the impact of future increases in baseline operating expenditure?
- 3) Where appropriate, has WASA taken account of external advice in respect of the forecast changes? For example, when we look at pensions costs, we will expect any forecast changes to be supported by an actuarial valuation.
- 4) Are there any offsetting factors that WASA has failed to take into account?
- 5) What similar claims have been made by the electricity and telecommunication sectors?

Approach to Benchmarking

8.17 When evaluating the proposed expenditure for the regulatory control period, the RIC intends to utilize benchmarking in conjunction with any other

relevant information to reach a judgment on the extent to which WASA can improve its efficiency and what rate of efficiency improvements is achievable. Benchmarking also provides an indication of the levels of efficient operating, maintenance and capital expenditure. The RIC must be satisfied that WASA has reflected anticipated efficiency improvements in its proposals.

8.18 Benchmarking describes objective comparisons of performance across (or within) organizations. It involves comparing the performance of leaders in a particular field of activity with that of other similar organizations. The **Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association welcomes the use of benchmarking techniques to make high-level comparisons of WASA's performance with that of water companies.**

8.19 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is of the opinion that one of the simplest ways to benchmark WASA is to use unit cost comparisons. Such unit cost comparisons are fairly simple to understand and it is easy to identify the apparently high cost organizations from the published results. Unit cost comparisons include factors that are likely to impact upon costs. They include the following:

- Unit operating costs per head of population;
- Unit operating costs per connected property;
- Unit operating costs per property billed; and
- Water service operating costs incurred per kilometer of water main.

8.20 Although such comparisons are attractive in their transparency, they do not give a robust indication of the relative efficiency of two companies. Water service operating costs incurred per kilometer of water main, for example, will also include other unrelated costs of the water service, for example water treatment costs. Each of the unit cost comparisons has similar weaknesses.

8.21 Efficiency is a key element of the price setting process. **For this reason, the Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association recommends that the RIC develop more complex benchmarking methods of the water industry in time for WASA's next regulatory review. The models employed by Ofwat are a useful point of departure.** Ofwat uses econometric modeling to establish a relationship between the costs incurred by the companies and a number of cost drivers. These cost drivers take account of both engineering and economics. There are nine models for operating expenditure:

- 1) Water resources and treatment;
- 2) Water distribution;
- 3) Water power;
- 4) Water business activities;
- 5) Sewer network;
- 6) Large sewage treatment works;
- 7) Small sewage treatment works;
- 8) Sludge treatment and disposal; and
- 9) Sewerage business activities.

The purpose of each model is to establish a relationship between the costs reported by the companies and external cost drivers.

9. ASSESSMENT OF WASA'S CAPITAL EXPENDITURE (CAPEX)

Why Does WASA Need to Undertake Capital Investment?

9.1 Customers expect the water supply system to deliver clean water to their homes and places of work as and when they require it. They also expect the sewerage system to remove and treat their wastewater, to drain public areas, and to protect them from flooding by surface run off. In order to meet these expectations, WASA must invest in its water and wastewater capacity. The capital investment required to achieve these objectives places a significant upward pressure on prices. Customers, however, are concerned that water and sewerage services are provided to them at an affordable price. It is therefore essential that the investment that WASA makes in the water and wastewater capacity is carried out in an efficient way.

9.2 The four main components of WASA's asset base are water treatment works, wastewater treatment works, water mains and sewers. Together, they comprise more than 80 percent of the replacement cost of the total asset base. **The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association believes that maintenance of assets should be the highest investment priority for WASA and that the Authority continues to make progress in developing its understanding of both the condition and performance of its fixed assets.** The sustainability of the water industry and its ability to deliver environmental, public health and customer service improvements depends on adequate maintenance on an ongoing basis.

Establishing CAPEX Requirements

9.3 Capital Expenditure (CAPEX) forms an important and integral part of the costs of WASA and contributes significantly to the final prices that customers pay for service. There is also a close link between capital expenditure and quality of supply. It is incumbent on the RIC to ensure that capital expenditure forecasts are prudent and efficient. Once this has been determined, the RIC must allow the appropriate level of CAPEX to form part of the revenue requirement of WASA.

9.4 The Act requires the RIC to ensure that WASA is provided with a sustainable revenue stream that does not reflect monopoly rents or inefficient expenditure and allows WASA to recover expenditure on renewing and rehabilitating existing assets. A return should be allowed only on the legitimate level of investment that is required to service the scale of operations undertaken by WASA and the RIC must always guard against allowing a return on wastefully applied capital. In establishing CAPEX requirements for WASA, the key issues for the RIC are to ensure that:

- 1) CAPEX reflects an unbiased requirement that would be undertaken by an efficient water service provider;
- 2) There is no evidence of unnecessary or inappropriate CAPEX;
- 3) WASA quantifies the reduction in CAPEX through improved efficiency;
- 4) CAPEX requirements are consistent with WASA's demand forecasts, service targets and other obligations; and
- 5) WASA's CAPEX forecasts are credible in light of the outturn results.

Principles to Determine WASA's Investment Program

9.5 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is of the view that the RIC

should apply the following principles when it seeks to determine the investment program that WASA is required to deliver:

- 1) **Cost-effective** – an investment program that is founded on a proper assessment of investment needs for the industry and one that addresses these requirements in the most cost-effective way;
- 2) **Affordable** – there is a need to limit the scale of increases in charges to a level that customers think is fair;
- 3) **Deliverable** – this means limiting the size of the investment program to ensure that it is possible to deliver it. Constraints on the size of the program include civil engineering capacity, WASA’s ability to deliver investment efficiently and the level of disruption that communities can tolerate, for example, from roads being dug up; and
- 4) **Sustainable** –a program that delivers environmental improvements at a cost and pace that is fair and equitable for current and future generations.

9.6 Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association’s main concern is that WASA’s investment program is properly defined, the inputs and the outputs are measurable, and that the investment program is placed in the public domain. **The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is of the opinion that WASA’s proposed capital investment program is set at a level that is too ambitious, with a significant risk that it will not be delivered in full or that it will be delivered inefficiently. This is likely to have implications for the balance of WASA’s funding that comes from debt and that which comes from customers’ charges.**

Establishing the Baseline for CAPEX

9.7 A baseline for the capital investment program is the agreed detailed list of capital projects that WASA will deliver during the next regulatory control period. It is a key part of the regulatory contract between WASA and its customers. The

baseline investment program should be clear, comprehensive and accessible. This will allow stakeholders to monitor WASA's progress in delivering the investment program. It will also ensure that stakeholders' expectations are met. All capital projects funded by the government must be 'ring-fenced', meaning that such projects will not form part of CAPEX that is considered by the RIC in the revenue requirement. As such, these items of expenditure, while they will proceed, will not be financed through rates and tariffs to ensure that the costs are not recovered twice.

9.8 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association proposes that the RIC use the following criteria to help ensure that WASA's CAPEX is carried out at minimum cost to customers:

- 1) Is it reasonable for customers alone to pay for the CAPEX under consideration?
- 2) Is the proposed investment option the most cost effective available?
- 3) Are the planning assumptions that lie behind the CAPEX requirement reasonable?
- 4) Is there any flexibility built into the requirement (either to meet a lower standard of compliance in the regulatory period or invest over a longer period)?
- 5) What level of priority should be attached to the individual investment requirements?
- 6) Is the investment defined at an asset level?

These questions are important as it may be necessary to prioritize projects in order to ensure that the program is deliverable. Clear definition of the program should reduce discussions about the content of the program at a later date.

Investment Program Review

9.9 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association welcomes the intention of the RIC to procure the services of an independent consulting firm to assist the Commission in its determination of an appropriate methodology to value the assets of WASA as well as to advise on the appropriateness of the investments proposed for the regulatory control period. This approach is similar to what transpired when the RIC reviewed prices in the electricity transmission and distribution sector. This is an important step in ensuring that the proposed CAPEX will provide value for money for customers. Also, the incorporation of qualified independent assessments into its deliberations will add credence to the RIC's findings.

Asset Management

9.10 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association also welcomes the RIC's intention to take a closer look as to whether WASA has in place adequate asset management systems. Key elements of good asset management include the establishment of asset databases, the use of GIS and SCADA systems, establishment of condition assessment and the development of economic decision-making tools to evaluate the most cost-effective means for deciding whether to renew or rehabilitate assets.

Water Resource Planning

9.11 The basic water resource problem that WASA faces is to match the supply and the demand for clean water. This involves forecasting future demand for water, then comparing the forecast with the capacity of the existing water supply system. If the existing capacity is insufficient to meet forecast customer demand

then WASA must find a solution that will close the gap. It is important that expenditure to address supply/ demand issues is efficient. The **Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association** believes that it is not efficient for WASA to invest in the water supply system simply to 'be on the safe side'; WASA must balance the requirement to maintain sufficient resources with the need to avoid unnecessary investment.

9.12 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association recommends that WASA carry out water resource planning on an economic basis. An economic approach should include the following elements:

- 1) A detailed description of the planning problem. This should cover a sufficiently long planning period, typically a minimum of 20 years. It should also be sufficiently detailed to include any forecast shortages at particular times in particular locations
- 2) A comprehensive review of the options for balancing supply and demand. This includes possible resource options, pricing policies and leakage reduction schemes. The potential contribution of each of these options should be identified, along with a proper assessment of their costs, taking account of financial, environmental and social elements (such as the disruption caused to local people by building work for a new treatment works)
- 3) An analysis of risks. The approach should show how risks have been taken into account
- 4) A demonstration that the water resource planning solution minimizes the overall cost of matching supply and demand.

In making decisions, both about existing and new demand, WASA should adopt an economic approach, whereby choices are made with reference to the costs for customers and for the environment. High levels of investment to replace the assets, or high levels of leakage, can only be justified on the basis of detailed economic and cost benefit analysis.

10. WASA'S COST OF CAPITAL AND REGULATORY ASSET BASE

Why Depreciate Water Assets?

10.1 The water and sewerage industry has two broad types of asset. These are termed infrastructure (essentially the water mains and sewers) and non-infrastructure (treatment plants, offices, vans, computers, etc). Clearly, these assets will not all need to be replaced at the same time. Effective asset management can ensure that investment in replacing assets is well targeted. However, the effectiveness and value of assets do decline over time, and that this is a cost that should be borne by customers as they receive the benefit from use of the assets. The mechanism through which the full cost of this benefit is recognized and paid for in water prices is the depreciation charge.

10.2 It is important that WASA's depreciation policy reflects the diminishing value of the assets as they wear out. This allows the actual cost of asset use during the year to be reported in WASA's statutory and regulatory accounts. This enables WASA to measure and report its operational performance correctly. An accurate understanding of the cost of asset use is therefore vital to effective price setting. In the water industry there are two types of depreciation charge: a standard depreciation charge on the non-infrastructure assets and an infrastructure renewals charge.

Infrastructure Renewals Charge

10.3 Infrastructure assets such as sewers and water mains usually have very long lives. It is particularly difficult to assess these lives accurately. Moreover, there are plastic, cast iron and asbestos water pipes and the type of construction determines the useful life of the water main. The position is further complicated

by the fact that these different types of construction are interconnected throughout the network. The result is that even in a single area there will be a range of newer and older pipes, a range of construction materials and a range of ground conditions. It is therefore not realistic or meaningful to assess an average life. For that reason, the whole infrastructure network is treated as a single system. The complete portfolio of infrastructure assets will never become obsolete or require replacement at any one time; instead, it is replaced in parts as different elements come to the end of their useful lives.

10.4 Traditional methods of depreciation for discrete assets, which have observable discrete asset lives, do not work. To overcome the problem, the water industry has introduced infrastructure renewals accounting. Under infrastructure renewals accounting, an infrastructure renewal charge is charged to a company's revenue each year. The infrastructure renewal charge is calculated as the average of the forecast capital expenditure on the infrastructure assets over the next 15-20 years.

10.5 When setting the price limit for WASA, the RIC will include the infrastructure renewal charge. The annual infrastructure renewal charge eliminates the need for prices to vary in line with the actual spending on infrastructure in any particular year. Establishing the appropriate depreciation charge for WASA's assets involves three critical elements:

- Estimating the Asset's Useful Life;
- Depreciation Method; and
- Asset Valuation

Estimating the Asset's Useful Life

10.6 This is the expected number of years that an asset will last. The estimated useful life of an asset in the water industry can range from a few years to several decades. The **Trinidad & Tobago Chamber of Industry and Commerce and**

the Trinidad & Tobago Manufacturers Association believes that a five stage classification from ‘very short’ to ‘very long’ is an appropriate method to determine asset life. WASA assets can be grouped into five categories:

- Very short (assets having a life of up to five years);
- Short (assets having a life of six to 15 years);
- Medium (assets having a life of 16 to 30 years);
- Medium/long (assets having a life of 31 to 50 years); and
- Long (assets having a life exceeding 50 years).

Depreciation Method

10.7 The most commonly used depreciation methods, straight line and reducing balance, have been outlined above. The depreciation method chosen should be able to simulate the pattern of ‘economic consumption’ of the asset. This pattern is not always obvious. **The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is of the view that straight line depreciation is the most appropriate mechanism for assessing the annual reduction in value of WASA’s non-infrastructure assets.**

Asset Valuation

10.8 There are two principal ways to value a fixed asset – current cost valuation and historical cost valuation. Current cost keeps revaluing the asset to take account of the current price of replacing the asset. Historical cost simply considers the acquisition cost of the asset to be its value throughout its life. The method chosen has a significant impact when assessing depreciation. **The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is of the opinion that current cost**

accounting using the Modern Equivalent Asset (MEA) valuation provides a suitable method for estimating the value of WASA's fixed assets and is most appropriate for regulatory purposes. MEA valuation is most suited for industries that use long-lived assets where the technology behind these assets is steadily evolving. In such industries, using the acquisition cost of the asset could inflate its value as, through time, technology advancements will provide lower cost and higher quality solutions. The MEA approach ensures that:

- Customers bear reasonable costs for the use of assets;
- WASA is fairly remunerated for its capital expenditure; and
- WASA is provided with the incentive to invest in new technology and more cost-effective assets.

The RCV Method of Price Setting

10.9 At this review, the RIC intends to introduce a Regulatory Capital Value (RCV) for WASA. The cash return allowed on this RCV will form a core element of the price setting approach. Adopting the Regulatory Capital Value approach to price setting will have four major benefits:

- 1) It will give customers greater protection against external shocks and underperformance;
- 2) It will protect customers from long-term price increases in the event that WASA decides to undertake more borrowing than is assumed in price limits;
- 3) It could provide a basis for incentives to management that would be transparent, published in advance and objectively measurable. These incentives should encourage management to deliver the efficiency targets, thus protecting customers; and
- 4) It would allow comparison of financial ratios on a like-for-like basis with other regulated utilities, and so provide a better indication of financial sustainability. This method of price setting protects customers from paying for underperformance.

The RCV is a proxy for the current value of the above-ground infrastructure asset base of WASA. This value will change over time to reflect the use (ageing) of assets, the cost of which is recognized by the depreciation charges, and investment in new assets.

10.10 The current below-ground assets (infrastructure) are considered to be assets that are required in perpetuity and are therefore not included in the RCV. The cost of maintaining and replacing these assets is met through the annual infrastructure renewals charge. If WASA spends more or less in practice, the RCV is amended to take proper account of this and to ensure that the industry is financed on a sustainable basis.

10.11 WASA will receive an appropriate rate of return on this RCV, which is the cost associated with managing and financing the above-ground asset base. Efficient investment in new assets will be added to the RCV. The cash cost of replacement is covered by the depreciation charge and will reduce the RCV.

10.12 The revenue that WASA should be allowed is calculated as follows:

- **Return allowed on the regulatory capital value +**
- **Allowable operating costs +**
- **Depreciation on non-infrastructure assets +**
- **Infrastructure renewals charge (IRC)**

10.13 The product of the RCV and the allowed rate of return will give the total return allowed on the RCV. This ensures that customers only contribute towards those assets that have been created and which are providing a benefit to customers. The level of the RCV does not, by itself, impact on the prices that customers pay. It is the cash return allowed on the RCV that will determine the level of prices that is paid by customers.

10.14 One important feature of the regulatory capital method of price setting is that it is independent of how much extra borrowing WASA should seek. The method of financing (whether from retained surplus or from new debt) will not have an impact on the price paid by customers. However, if debt increases as a proportion of the RCV, future customers will face either higher prices or a service that is less able to absorb operational or legislative shocks.

10.15 Monitoring of the RCV and the ratio of total debt to the RCV should therefore provide stakeholders with a useful indicator of WASA's financial performance. Stakeholders can reasonably expect the RCV to increase in line with the profile that is established at the start of the regulatory period. Smaller increases would suggest that the capital program progressing less than was expected at the start of the regulatory period; larger increases would suggest that better progress had been made.

Setting an Initial RCV

10.16 There are four broad approaches that regulators can use to establish the initial RCV of a regulated utility in the private sector:

- 1) **An Accounting Approach.** The RCV is constructed by considering the accounting value of the company's individual assets. By adding up the values of individual assets, we can build up a picture of the overall asset value of the company. This approach is also referred to as the 'asset based' approach;
- 2) **A Market Value Approach.** A second way to value the RCV is to consider the value that financial markets place on the firm. The value placed on the company by the stock market is known as the equity value. The total value of a firm is the market value of its debt added to its equity value;
- 3) **A Comparator Approach.** It is possible to set an RCV by comparing WASA with other similar utility companies. The comparator company should carry out the same activities and provide the same services as the utility in question. Ideally, the

comparator should be a similar size as WASA, although the observed RCV can be scaled to take account of any difference; and

- 4) **A Discounted Cash Flow Approach.** The fourth approach to setting an initial RCV considers the discounted value of the cash flows generated by the assets. This method of asset valuation is based on developing a financial model of the company over a given period, typically 20 years. An assessment is then made of revenues minus costs over the period. The estimated RCV is the net present value of the revenues and costs.

10.17 Most UK regulators used the market value approach to estimate the initial RCV of their regulated electricity, gas, telecommunications and rail industries, and in most of the water industry. Although the market-based approach is the one that is most commonly used, it is obviously not possible to apply this method to WASA. There is no market value of equity to form the basis of an estimate of RCV. However, there are precedents for the establishment of a RCV for a public sector organization. For example, in Australia regulators have tended to use accounting (asset based) approaches.

10.18 One could potentially set the RCV for WASA by one of four common asset based approaches:

- 1) **Depreciated Actual Cost (DAC).** The DAC approach is straightforward to implement. It is the value that would result from taking the historic cost value of the fixed assets and subtracting the accumulated depreciation for those assets. The simplicity of the DAC approach makes it attractive. However, the use of a simple historic cost measure for the RCV does not allow for the impact of inflation on asset values nor the impact of innovation on asset values;
- 2) **Depreciated Indexed Historical Cost.** Some regulators consider DIHC as a useful reference point for setting the initial capital base. The DIHC approach adjusts historical asset values to take account of inflation by applying an appropriate inflation index. The inflation index takes account of the increase in capital prices experienced by the economy as a whole. This approach is certainly preferable to

depreciated actual cost, but it does not take account of changes in technology;

- 3) **Depreciated Optimized Replacement Cost (DORC).** The DORC methodology focuses on the physical attributes of the assets. The DORC is the net current cost of replacing an existing asset with an asset that has similar service potential. This approach is theoretically the best asset based approach; however, it is very information intensive and can be regarded as quite subjective; and
- 4) **Modern Equivalent Asset Valuation (MEAV).** Similar to the DORC approach, the MEAV methodology values the assets on the basis of replacing the existing assets with a technically up-to-date new asset with the same service capability. It further allows for any difference in the quality of output and in operating costs. MEAV is most suited for industries that use long-lived assets, such as the water industry, where the technology behind these assets is steadily (but not rapidly) evolving. It is used by Ofwat and other utility regulators in the UK as it provides an up-to-date valuation of the asset base, some of which will have been purchased and installed many years ago, making the original acquisition cost a poor indicator of current value.

10.19 Another option would be to use a **Comparator Approach**. This would have the advantage of being consistent with the approach Ofwat used to set the initial RCV of the water only companies. To use this approach, we would need to identify companies that are broadly comparable to WASA. Two sets of information would need to be available for the comparator company:

- A financial measure that is also available for WASA should be available for the comparator. This financial measure could be the book value of debt, the book value of fixed assets or the current cost accounting value of fixed assets; and
- A financial measure that is relevant to estimation of the RCV should be available for the comparator. If the comparator were regulated and had an RCV this could be the RCV itself. If the comparator had no RCV it could be an equity value for the firm.

10.20 The water and sewerage companies in Barbados and Jamaica would provide the most obvious comparators for WASA. The **Trinidad & Tobago**

Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association believes that there are a number of ways that the RIC could look to set an initial RCV for WASA based on comparison with these companies. The options would include setting the initial RCV for WASA by making comparisons with:

- Asset bases (in terms of both value and structure);
- Non-infrastructure capital investment;
- Debt to RCV ratio;
- Funding costs to RCV ratio (that is, debt and dividends); and
- Assets relative to the type and number of customers served.

10.21 The final option that can be used is the **Discounted Cash Flow** method of asset valuation. This requires construction of a financial model to calculate the current value of WASA. One can calculate this by keeping prices consistent in real terms, assuming that operating costs increased in line with inflation, and that capital expenditure is equal to depreciation. The cash flow of WASA would then equal: Revenue – Operating Costs – Capital Expenditure = Cash Flow for Valuation Purposes. There are a number of difficulties in using the discounted cash flow method to establish an initial RCV. Perhaps the most problematic is the choice of an appropriate discount rate. The higher the discount rate, the lower is the initial RCV. As the RCV is a factor in calculating the resources that are required to finance current and future assets, it follows that a lower RCV would require a higher rate of return for the industry to be funded on a sustainable basis.

Setting the Allowed Rate of Return

10.22 The RCV approach separates the cash cost of replacing assets (depreciation) from the financing and management costs. These financing costs and management costs are the cash return on the regulatory capital value. One would estimate the cash return on the RCV using the formula:

Cash Return on RCV = RCV * Allowed Rate of Return

10.23 The regulator sets the allowed rate of return, which is often referred to as the cost of capital. The regulator will set this rate of return to reflect current and expected market conditions. The regulator has a duty to set an appropriate rate of return such that an efficient company can properly finance its functions. A company may choose a mix of debt and equity funding, but its rate of return (unless it outperforms efficiency targets) is capped.

10.24 The allowed rate of return is the rate of return that WASA requires to meet the objectives that have been set by the RIC. If the RIC sets the allowed rate of return at too low a level, there is a risk that WASA would not have sufficient funds to meet its obligations. This could result in debt increasing to unsustainable levels. This would penalize future customers to the benefit of current customers. Alternatively, it could result in delays to the promised environmental, public health or customer service benefits. Customers would certainly pay lower charges if the rate of return was set too low, but they would also receive a poorer service.

10.25 If the RIC sets the allowed rate of return at too high a level, customers will pay more than they need to. This would act as a disincentive on management to achieve efficiency targets. Failure to achieve efficiency targets means that customers pay more than is necessary in the medium term. Alternatively, if efficiency targets were achieved in full the level of outstanding debt would decline significantly relative to the asset value of the company. This would penalize current customers to the benefit of future customers.

10.26 The market value of a firm is equal to the market value of the equity plus the market value of the debt. The Weighted Average Cost of capital (WACC) is

the overall cost of capital for a firm. It takes account of the capital structure of the firm (that is, the market value of its debt and equity) and the rates of return it pays on both its debt and equity. In order to calculate a WACC a regulator therefore has to decide an appropriate rate of return for both debt and equity. It also has to assign an appropriate market value to the debt and equity of the firm. This calculation of the rate of return is further complicated by both taxation and inflation.

10.27 To set an allowed rate of return for WASA based on the same principles used by the regulators of private sector utilities, would require an estimate of an allowed rate of return on debt and an allowed rate of return on 'customer retained earnings'. WASA should be allowed to earn a return when it uses customer retained earnings as a source of funds.

10.28 Assessing the WACC for WASA is problematic. This is because the RIC cannot easily observe costs of debt or equity and, moreover, estimating the market value is difficult. In most cases, WASA does not borrow at commercial rates nor does it borrow directly from the capital markets. WASA's cost of debt is set by Government. As a public sector organization it has no contributed equity capital, although it could generate and reinvest surpluses.

10.29 WASA currently relies on debt provided by government to finance an increase in its asset base. Going forward, customer retained earnings would represent an important source of funds for WASA. The **Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association** is of the view that a practical approach would be to apply a *Hybrid Version of the WACC Approach* to setting the allowed rate of return for WASA. Such an approach would combine an observed real cost of debt with an estimate of an appropriate rate of return on the

customer retained earnings (the equity portion of WASA's RCV) in order to produce an allowed rate of return.

10.30 The future real rate of interest on debt for WASA could be estimated in two ways. The first would be to take the average of observed historic real borrowing rates. The alternative would be to take an average of current borrowing rates faced by WASA. The pre-tax allowed rate of return on WASA's retained earnings could be set at the post-tax allowed rate of return for debt. In real terms this rate is likely to be low. There will be no incentive for WASA to seek to change its current ratio of debt to its regulatory capital value. If the return on the customer retained earnings is greater than the return on debt, WASA would have an incentive to repay debt. In contrast, if the return on the customer retained earnings is lower than the return on debt, WASA would have an incentive to take on more debt.

10.31 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is also of the view that this hybrid approach should also help stakeholders to monitor WASA's performance. If the level of debt to RCV declines, either WASA has outperformed its efficiency targets or it has not delivered its capital program as planned. Conversely, if the level of debt relative to its RCV increases, WASA is either ahead of schedule in delivering the capital program or has underperformed relative to its efficiency targets.

10.32 The hybrid WACC approach outlined above has a number of potential benefits for customers:

- 1) The information to establish an appropriate rate of return for WASA using this approach is readily available;
- 2) The estimated cost of capital will be consistent with WASA's observed cost of capital. Customers will not be required to fund an

allowed rate of return that exceeds WASA's observed cost of capital;

- 3) The approach facilitates performance monitoring; and
- 4) WASA has no incentive to change its debt to RCV ratio. Increasing or reducing borrowing will not have any impact on customers' bills.

11. OTHER WATER POLICY ISSUES

Debt Burden and Funding

11.1 WASA is technically insolvent (cash negative), that is, it spends more than it earns. At the end of 2006, WASA had an accumulated debt of \$2.4 BN with interest payments absorbing 9 percent of total annual operating revenues. WASA's financing expenses have been increasing significantly over the years because its revenue is insufficient to cover the operating costs, capital investment and interest charges. When setting prices under the RCV method, revenue is allowed only after an asset has been added. If interest obligations increase quicker than the allowed revenue, the service provider's financial position will worsen at a faster rate. Such an approach penalizes future customers thereby leading to intergenerational inequality, as it is generally agreed that a generation should pay the full cost of service that it consumes. Managing debt at a prudent and sustainable level is therefore critical.

11.2 WASA's debt burden and its current financial situation raise the issue of debt write-off/debt commutation. It is important to note however, that debt commutation has cost implications for taxpayers and WASA's customers. Even if there were significant benefits in lower water charges from debt write-off/commutation, it is unlikely that this would benefit all customers equally because debt commutation is likely to benefit the non-domestic sector more than households.

The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association proposes that the RIC commission an independent consulting firm to investigate the feasibility of a debt restructuring exercise for WASA, including advising on the implications of a debt write-off for taxpayers and customers.

Universal Metering

11.3 At the end of 2006, only 9,509 or 3 percent of WASA's 342,396 customers are metered. The Authority plans to undertake a Universal Metering program in order to develop a billing system that correlates with actual consumption and to promote water conservation. Phase 1 of the metering program is estimated to cost \$353 MN.

11.4 The proposed water tariff structure will serve only as an interim structure pending the completion of WASA's metering program. When this program is completed tariffs will be revisited and the actual water consumption per cubic meter by each class of customer will be the basis for their average bill.

11.5 Experiences of other countries suggest that metering should not be treated in isolation but should form an integral part of the overall price reform and should be promoted on the basis of fairness and as a means of improving operating efficiency and lowering costs. Moreover, transparent information on water consumption and production enables precise calculation of water tariffs according to marginal costs of service provision. Reducing demand also helps to determine the amount of financial resources needed for new treatment plants, pipes and reservoirs. Also, most tariff formulas and subsidy schemes for the poor are based on metering. In fact, as the real costs of water provision rise, the cost-benefit balance of metering moves towards increased metering, on both economic and environmental grounds.

11.6 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association welcomes WASA's plans to institute Universal Metering since it safeguards customers against abuse of power by the water utility monopoly, protects the environment with lower use of resources, and promotes a more responsible attitude towards water use and wastage. However, Trinidad & Tobago Chamber of Industry and

Commerce and the Trinidad & Tobago Manufacturers Association remains concerned about the length of time to completion. Phase 1 of the metering program can be completed in less than 3 years if all the listed projects are undertaken simultaneously or in 8 years 5 months if the projects are undertaken consecutively. Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is of the view that metering is a potential area for Public Private Partnership so as to allow for the fastest and most efficient method of metering all of WASA's customers throughout Trinidad & Tobago.

Desalination Plants

11.7 In order to increase the supply of water available to customers, WASA entered into a water sale agreement with the Desalination Company of Trinidad & Tobago (Desalcott) to supply 136 thousand cubic meters per day. Of this amount, half goes to meet the requirements of the Point Lisas Industrial Estate. Desalcott operates at 70 percent capacity.

11.8 WASA has identified further investment in at least four major Desalination production facilities as an option to significantly boost water supply in Trinidad & Tobago. However there are several disadvantages to Desalination facilities including the following:

- High cost of capital and operating expenses compared with traditional water winning and supply technologies;
- High energy requirements;
- Extensive infrastructure;
- Generally used in very arid areas / water scarce areas; and
- Raises serious environmental concerns – marine life and habitat, waste disposal.

11.9 Megawatershed exploration and development appears to be a more cost effective, more environmentally sound and faster means of improving the water supply in Trinidad & Tobago rather than investment in desalination plants. Megawatersheds are large volumes of groundwater catchment constantly flowing through deep interconnected networks of fractures and dissolution spaces in the subsurface. These catchments are replenished at faster rates than regular groundwater aquifers.

11.10 The advantages of Megawatersheds are as follows:

- Extend from tens to thousands of square kilometres;
- Naturally and continuously recharged groundwater systems;
- Rainfall in mountainous regions, contributes substantially to deep underground recharge;
- 30-90% of rain from storms percolate into bedrock in fracture systems even in arid regions;
- Free from surface contamination and silt;
- Resistant to evaporation;
- Less affected by seasonal rain and dry periods; and
- Largely unaffected by natural hazards (e.g.. hurricanes)

11.11 Water Resource Management Reports indicate the existence of Megawatersheds capable of producing over 300 million gallons of water per day in the Northern Range. Megawatersheds capable of producing 50 million gallons of water per day have already been developed in Tobago. Table 9 gives a comparison of the alternatives between Megawatershed and Desalination.

Table 9: Comparison of Megawatershed versus Desalination

Criterion	Sea Water Desalination	Megawatershed Development
Capital Cost	High	Low
Treatment Requirements	Very High	Low
Operating Cost	Very High	Low
Environmental Impact	High	Very Low
Land Requirement	2 acres	0.1 acre per well
Water Supply Reliability	Low	High
End Product Water Quality	Potable	Potable
Time to First Production	1-5 years	6 months
Contamination/Pollution Risk	High	Low

Source: EarthWater Global

11.12 The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association is of the view that, when combined with the strategic pipeline replacement program, demand-side management initiatives and full cost recovery tariffs, the capacity built by investing in additional Desalination plants might prove redundant and an imprudent use of public funds. The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association proposes that higher priority be given to Megawatershed exploration and development as a sustainable source of water, rather than Desalination.

12. WASA TARIFF REVIEW: DRAFT POSITION STATEMENT

TRINIDAD & TOBAGO CHAMBER OF INDUSTRY & COMMERCE TRINIDAD & TOBAGO MANUFACTURERS ASSOCIATION (TTMA)

Introduction

The Trinidad & Tobago Chamber of Industry and Commerce and the Trinidad & Tobago Manufacturers Association and the Trinidad & Tobago Manufacturers Association wish to thank the Regulated Industries Commission (RIC) for giving us the opportunity to be part of the deliberations on the WASA Rate Application. Today, about 700 million people live in countries experiencing water stress or scarcity. By 2035, it is projected that 3 billion people, more than one third of the world's population, will be living in conditions of severe water stress. Achieving the Millennium Development Goal (MDG) target 10 – to halve by 2015 the proportion of people without sustainable access to safe drinking water and basic sanitation – is daunting.

In Trinidad & Tobago, about 80% of the population faces an intermittent water supply. Over 10% of the population has less than a two day per week supply. WASA estimates that about 55% of the water distributed annually is lost as Unaccounted For Water (UFW), reflecting the very poor state of its pipeline network. As a result, the supply of water has been consistently lower than demand, resulting in substantial water deficits in Trinidad & Tobago. In 2006, the water system deficit amounted to 262 million cubic meters, or just over 60% of demand. Water is, therefore, an extremely important component of our members' businesses and likewise, a crucial commodity in their private lives.

Incentive-Based Regulation

We have reviewed the business case being proposed by WASA in its tariff application to the RIC, and broadly support the approach being taken by the RIC in its evaluation. We support the objective of developing a strong and responsible water utility, using a fixed (total) revenue cap for the first five-year regulatory control period with world class service quality standards and performance monitoring. It is noteworthy that, despite its natural monopoly status, WASA's operational and financial performance is well below internationally accepted benchmarks for a well performing water utility. In fact, the Authority has never made a profit during its forty odd

years of existence. At the end of September 2006, WASA had an accumulated operating deficit of \$7.8 billion.

Proposed Water Tariffs

We are aware that over the past 60 odd years, water tariffs have increased just 3 times – 1937, 1985, and 1993. In 1998, tariffs were increased only at the Point Lisas Industrial Estate. We fully support the principle that each tariff category ought to be based on full cost recovery. We also note with concern that the poor and rural households have not benefited from large scale subsidization, as they have no access to water or receive water once or twice a week or even once a month. The social consideration of providing affordable water to the poor and rural households is a separate issue that must be addressed through the Government's Budget. We also recognize the strategic importance of agriculture in food security and reiterate that support for this strategic sector must be addressed through the Government's Budget.

Efficiency Carryover Mechanism

We believe that given WASA's weak operational performance and dire financial situation, applying an efficiency carryover mechanism for the first regulatory control period may have limited impact. In fact, increasing WASA's efficiency may be a difficult and time-consuming process and may require initial increases in expenditure. Therefore, a hard-line regulatory approach of limiting allowable revenue to the efficient cost of service may be counterproductive. We support a more pragmatic approach of implementing a phased program for improving efficiency or establishing a regime of performance benchmarks (e.g. reduction of unaccounted for water, leakage, employee costs,) as annual targets against which to monitor WASA's efficiency improvements and service delivery performance.

Establishing Price Controls

We are of the view that it is difficult to conceive of circumstances where external benchmarks could become a complete substitute for specific costs data relating to WASA. A starting point for determining revenue requirements and the rate of change in prices would invariably be determined by reference to WASA's costs. We therefore believe that there is likely to be significant advantage in combining the cost-linked or cost-unlinked approaches to establish the price controls for WASA.

Calculating Allowed Level of OPEX

We are of the opinion that the following items should not be included in WASA's operating costs for the purposes of calculating the allowed level of OPEX:

- Maintenance of the asset base – such expenditure is classed as capital maintenance and is regarded as investment;
- Depreciation – this is an accounting charge reflecting the use of non-infrastructure (above-ground) assets. The amount of this charge depends on the application of accounting policies. It does not necessarily reflect WASA's spending on replacing non-infrastructure assets;
- Infrastructure renewals charge – this is an accounting charge reflecting the use of infrastructure (below-ground) assets. As with depreciation, the size of this charge depends on the application of accounting policies. It does not necessarily reflect the WASA's spending on maintaining infrastructure assets;
- Interest payments – such expenditure is regarded as a financing cost; and
- Taxation – the amount of taxation paid is determined by the Board of Inland Revenue. WASA does not currently pay corporation tax.

Setting the Baseline Level of OPEX

We support the following process to set the baseline level of OPEX:

- Review WASA's 2005/2006 statutory accounts to establish the total level of operating expenditure;
- Identify exceptional and atypical costs and subtract them from total operating expenditure. This will allow the RIC to establish the normal ongoing costs of running the business; and
- Assess whether there is anything unusual about WASA's 2006 cost allocation and make appropriate adjustments, if necessary.

We agree that the RIC should add such new operating costs to the baseline described above, but stress the importance of carefully scrutinizing any claims for such new operating costs to be included in price limits. Customers should not be expected to pay for unnecessary or inefficient levels of new operating expenditure.

Criteria to Assess New OPEX

We, therefore, propose that the RIC use the following criteria to assess the level of new operating costs:

- Has WASA carried out a proper assessment of the proposed new operating expenditure, rather than relying on estimates from contractors/manufacturers or on an arbitrary percentage of the capital cost?
- Has the Authority been able to demonstrate management challenge and control over the proposed costs?
- Has WASA compared alternative options on a whole life cost basis, within a project appraisal?
- Do the alternative options include different mixes of operating expenditure and capital investment?
- Has the Authority quantified potential savings to the baseline operating expenditure, which arise from upgrading works or systems, and offset increases in new operating expenditure?

Criteria to Assess Future Changes in Baseline OPEX

We believe it is important that WASA presents a robust case to the RIC for changes to future baseline operating expenditure in its Business Plan. We are of the view that the RIC should use the following criteria to assess future changes in WASA's baseline OPEX:

- If the future changes are the result of an economy wide factor, will their impact be accounted for in the Retail Price Index?
- What measures have WASA's management taken to reduce the impact of future increases in baseline operating expenditure?
- Where appropriate, has WASA taken account of external advice in respect of the forecast changes? For example, when we look at pensions costs, we will expect any forecast changes to be supported by an actuarial valuation.
- Are there any offsetting factors that WASA has failed to take into account?
- What similar claims have been made by the electricity and telecommunication sectors?

Benchmarking

We welcome the use of benchmarking techniques to make high-level comparisons of WASA's performance with that of water companies. One of the simplest ways to benchmark WASA is to use unit cost comparisons that are fairly simple to understand and help to identify the apparently high cost organizations. Nonetheless, we recommend that the RIC develop more complex benchmarking methods of the water industry in time for WASA's next regulatory review. The models employed by Ofwat are a useful point of departure.

Criteria to Assess CAPEX Program

We believe that maintenance of assets should be the highest investment priority for WASA and that the Authority should continue to make progress in developing its understanding of both the condition and performance of its fixed assets. We are of the view that the RIC should apply the following principles when it seeks to determine the CAPEX program that WASA is required to deliver:

- **Cost-effective** – an investment program that is founded on a proper assessment of investment needs for the industry and one that addresses these requirements in the most cost-effective way;
- **Affordable** – there is a need to limit the scale of increases in charges to a level that customers think is fair;
- **Deliverable** – this means limiting the size of the investment program to ensure that it is possible to deliver it. Constraints on the size of the program include civil engineering capacity, WASA's ability to deliver investment efficiently and the level of disruption that communities can tolerate, for example, from roads being dug up; and
- **Sustainable** – a program that delivers environmental improvements at a cost and pace that is fair and equitable for current and future generations.

Criteria to Ensure CAPEX at Minimum Cost

Our main concern is that WASA's investment program is properly defined, the inputs and the outputs are measurable, and that the investment program is placed in the public domain. We are of the opinion that WASA's proposed capital investment program of \$6.7 billion over five years is set at a level that is too ambitious, with a significant risk that it will not be delivered in full or that it will be delivered inefficiently. This is likely to have implications for the balance of WASA's funding that comes from debt and that which comes from water tariffs.

We, therefore, propose that the RIC use the following criteria to help ensure that WASA's CAPEX is carried out at minimum cost to customers:

- Is it reasonable for customers alone to pay for the CAPEX under consideration?
- Is the proposed investment option the most cost effective available?
- Are the planning assumptions that lie behind the CAPEX requirement reasonable?
- Is there any flexibility built into the requirement (either to meet a lower standard of compliance in the regulatory period or invest over a longer period)?

- What level of priority should be attached to the individual investment requirements?
- Is the investment defined at an asset level?

Asset Valuation Methodology & Management Systems

We welcome the intention of the RIC to procure the services of an independent consulting firm to assist the Commission in its determination of an appropriate methodology to value the assets of WASA as well as to advise on the appropriateness of the investments proposed for the regulatory control period. We also welcome the RIC's intention to take a closer look as to whether WASA has in place adequate asset management systems.

Water Resource Planning

We believe that it is not efficient for WASA to invest in the water supply system simply to 'be on the safe side'; WASA must balance the requirement to maintain sufficient resources with the need to avoid unnecessary investment. We, therefore, recommend that WASA carry out water resource planning on an economic basis.

Establishing the Appropriate Depreciation Charge

We believe that a five stage classification from 'very short' to 'very long' is an appropriate method to determine asset life. WASA assets can be grouped into five categories:

- Very short (assets having a life of up to five years);
- Short (assets having a life of six to 15 years);
- Medium (assets having a life of 16 to 30 years);
- Medium/long (assets having a life of 31 to 50 years); and
- Long (assets having a life exceeding 50 years).

We are of the view that straight line depreciation is the most appropriate mechanism for assessing the annual reduction in value of WASA's non-infrastructure assets. We are also of the view that current cost accounting using the Modern Equivalent Asset (MEA) valuation provides a suitable method for estimating the value of WASA's fixed assets and is most appropriate for regulatory purposes. MEA valuation is most suited for industries that use long-lived assets where the technology behind these assets is steadily evolving.

Setting the Initial RCV

We believe that there are a number of ways that the RIC could look to set an initial Regulatory Capital Value (RCV) for WASA by making comparisons with other companies:

- Asset bases (in terms of both value and structure);
- Non-infrastructure capital investment;
- Debt to RCV ratio;
- Funding costs to RCV ratio (that is, debt and dividends); and
- Assets relative to the type and number of customers served.

Setting the Allowed Rate of Return

We prefer a practical approach that applies a Hybrid Version of the Weighted Average Cost of Capital (WACC) Approach to setting the allowed rate of return for WASA. Such an approach would combine an observed real cost of debt with an estimate of an appropriate rate of return on the customer retained earnings (the equity portion of WASA's RCV) in order to produce an allowed rate of return. This hybrid approach should also help stakeholders to monitor WASA's performance. If the level of debt to RCV declines, either WASA has outperformed its efficiency targets or it has not delivered its capital program as planned. Conversely, if the level of debt relative to its RCV increases, WASA is either ahead of schedule in delivering the capital program or has underperformed relative to its efficiency targets.

Universal Metering

We welcome WASA's plans to institute Universal Metering since it safeguards customers against abuse of power by the water utility monopoly, protects the environment with lower use of resources, and promotes a more responsible attitude towards water use and wastage. However, we remain concerned about the length of time to completion. Phase 1 of the metering program can be completed in less than 3 years if all the listed projects are undertaken simultaneously, or it can be completed in 8 years 5 months if the projects are undertaken consecutively. We are of the view that metering is a potential area for Public Private Partnership so as to allow for the fastest and most efficient method of metering all of WASA's customers throughout Trinidad & Tobago.

Desalination Plant

We note that WASA has identified further investment in at least four major Desalination production facilities to boost water supply in Trinidad and Tobago. However, the issue is not water scarcity but distribution. We believe that, when combined with the strategic pipeline replacement program, demand-side management initiatives and full cost recovery tariffs, the capacity built by investing in additional Desalination plants might prove redundant and an imprudent use of public funds. We propose that higher priority be given to Megawatershed exploration and development as a sustainable source of water, rather than Desalination. Water Resource Management Reports indicate the existence of Megawatersheds capable of producing over 300 million gallons of water per day in the Northern Range. Megawatersheds capable of producing 50 million gallons of water per day have already been developed in Tobago.

Debt Write-Off

WASA's weak financial situation results from its inability to finance any capital investment from internal sources, placing a heavy reliance either on Government guaranteed loans or direct subventions for capital projects. At the end of 2006, WASA had an accumulated debt (Government guaranteed loans and working capital financing loans) which amounted to \$2.4 billion. Projections on the repayment schedule indicate that WASA will have to repay \$7.4 billion over the life of these loans. We are firmly of the view that WASA is technically insolvent (cash negative) and its heavy debt burden raises the issue of debt write-off/debt commutation. We propose that the RIC commission an independent consulting firm to advise on the feasibility of a debt restructuring exercise for WASA, including on the implications of issuing a bond to pay off the entire debt in full.

Privatization of WASA

We believe that asking WASA to reform itself is not an effective solution to the formidable problems facing the water sector in Trinidad & Tobago. Traditionally, WASA has never demonstrated a strong track record of service delivery. We are very disheartened that the goal of "WATER FOR ALL" is only likely to be realized sometime in 2015, assuming program implementation goes as planned. WASA's extremely ambitious capital investment program, however, has little chance of success because Government is unlikely to change the systems of patronage and short-termism, which are at the heart of WASA's problems. WASA's financial controls are very weak and there is little, if any, guarantee that they will ever be in place to help stem the utility's rapidly mounting financial losses and debt accumulation.

We, therefore, strongly recommend that Government give serious consideration to privatization of WASA in order to widen its reform options for the water sector.

We are of the view that engaging a private firm in the provision of water services can:

- **Create a focus on service and commercial performance.** A well-designed arrangement, drawing from WASA's management contract experience with Severn Trent, will hold a private firm more accountable for its contribution to service improvements, and reward it for controlling costs and introducing a businesslike approach to billing and collection. This can translate into a changed culture and attitudes, creating an organizational focus on providing service at least cost.
- **Make it easier to access finance.** The capital market will be more willing to finance WASA's operations if they see it has a credible, commercial management approach. Having a private firm run the utility is one way to provide that credibility.
- **Boost policy clarity and sustainability.** Locking the new approach in place through a binding legal agreement can help Government commit itself not to reverse water reforms under subsequent pressure.

Position on proposed increase for the Agriculture Sector

WASA's proposal to the RIC envisages an increase of 757.1% in water rates for its Agricultural customers. While we broadly supports the principle of full cost recovery in the application of water tariffs, it is also cognizant of the critical and strategic role of the agricultural sector in enhancing national food security and combating escalating food prices. We, therefore, recommend that the Government provide well-targeted allowances for farmers to help ease the financial burden of higher water rates.

We, nevertheless, reiterate that Government's responsibility to ensure sustainable access to safe drinking water and basic sanitation must continue, especially given its commitment to achieving the Millennium Development Goals (MDGs). Citizens will continue to hold Government accountable for the quality of their water services. Government cannot escape this accountability by involving the private sector.