

Performance Monitoring  
and Reporting Framework  
*For The  
Water and Wastewater Sector*

April  
2018

Consultative  
Document

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## ABBREVIATIONS

<b>Abbreviation</b>	<b>Meaning</b>
breaks/km/yr	Breaks per kilometer per year
clogs/km/yr	Clogs per kilometer per year
hrs/day	Hours per day
m <sup>3</sup> /conn/d	Cubic metres per connection per day
m <sup>3</sup> /conn/m	Cubic metres per connection per month
m <sup>3</sup> /km/d	Cubic metres per kilometres per day
\$/ m <sup>3</sup> prod	Dollar per cubic metre of production
\$/conn	Dollar per connection
\$/ m <sup>3</sup> /yr	Dollars per cubic metre per year
\$/conn/yr	Dollars per connection per year
GDP	Gross domestic product
ILI	Infrastructure leakage index
lpcd	Litres per capita per day
mcm/d	Million cubic metres per day
RAB	Regulatory Asset Base
WASA	Water and Sewerage Authority
W&WW	Water and Wastewater

## 1.0 Introduction

### 1.1 Background

The Regulated Industries Commission (RIC) is responsible for, among other things, establishing the principles and methodologies for determining rates, monitoring the performance and efficiency of service providers, and setting and enforcing standards of service. Additionally, section 6 (1) (d) of the Regulated Industries Commission Act, No. 26, of 1998, specifically requires the RIC to carry out studies of efficiency and economy of operation and of performance by service providers and publish the results thereof. Performance monitoring and reporting is an integral tool for the fulfillment of this mandate. The RIC has operated a Performance Monitoring and Reporting Scheme for the Electricity Transmission and Distribution Sector since 2006, and publishes annual reports in this regard. T&TEC's performance under the Scheme has shown marked improvements and the RIC intends to continue with the Scheme.<sup>1</sup> Against this background, the RIC is seeking to institute a **Performance Monitoring and Reporting (PMR) Scheme** for the purposes of monitoring the Water and Wastewater Sector. This scheme will also form part of the RIC's overall compliance and reporting framework for the Sector.

### 1.2 Purpose of the Document

This document discusses the establishment of a PMR Scheme for the Water and Wastewater Sector. It also identifies appropriate performance indicators which would be included in the PMR Scheme (see Appendix).

### 1.3 Structure of the Document

This document is organized in four (4) sections. Section 2 discusses the need for performance monitoring and reporting. Section 3 outlines the principles and scope for the design of the PMR Scheme. Lastly, Section 4 outlines the reporting and verifying mechanisms for the PMR Scheme.

### 1.4 Written Submission and Comments

The RIC invites feedback from the public with respect to the approach being proposed for the PMR Scheme.

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<sup>1</sup> The RIC published its views on revisions to the existing PMR for T&TEC in its document "Review of the Performance Monitoring Scheme for the Transmission and Distribution Sector", published February 2018.

All persons wishing to comment on this document are invited to submit their written responses by  
May 16, 2018

Executive Director  
Regulated Industries Commission  
1st & 3rd Floors, Furness House  
Cor. Wrightson Road and Independence Square  
Port-of-Spain, Trinidad

**Tel:** 1(868) 625-5384; 627-7820; 627-0821; 627-0503

**Postal Address:** P.O. Box 1001, Port-of-Spain, Trinidad

**Fax:** 1(868) 624-2027

**E-mail:** [ricconsultation@ric.org.tt](mailto:ricconsultation@ric.org.tt)

All responses will normally be published on the RIC's website unless there are good reasons why they must remain confidential. Any requests for confidentiality must be indicated. A copy of this document is available from the RIC's website at **[www.ric.org.tt/consultations](http://www.ric.org.tt/consultations)**.

## 2.0 Importance of Performance Monitoring and Reporting

Monopoly utilities do not face the normal competitive pressures that would be an impetus to providing a high quality of service. Consequently, a regulator has to institute certain measures to ensure that the customers of such utilities receive a high quality of supply. There are various options available to the regulator to incentivize the service providers to improve inefficiencies and exceed performance targets. These include establishing quality of service standards, setting an X factor (efficiency factor), and other mechanisms such as efficiency carryover mechanisms, implementing a service incentive scheme and establishing a performance monitoring and reporting scheme<sup>2</sup>.

Information on the services being provided is essential for the economic regulation of network industries. Performance monitoring and reporting can also provide incentives for service providers to maintain and improve quality by providing information to customers, the media and stakeholders enabling them to critically assess performance. In fact, in the absence of effective competition and customer choice, monitoring and reporting of service performance can operate as a transparent customer protection measure.

The main objective of the RIC's PMR scheme therefore, is to provide comprehensive information to stakeholders in the local water and wastewater sector about the services they receive, while at the same time provide incentives for the service provider to improve its performance. Under the scheme, the measures of performance established at the beginning of the price control period would be subsequently compared with actual performance throughout the period. Furthermore, the performance reporting will be a starting point from which more comprehensive and regularly updated analysis can be undertaken.

In short, the PMR scheme can be a significant performance driver and a useful tool for:

- informing customers and other interest groups about the level of service they are receiving;

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<sup>2</sup> An efficiency carryover mechanism allows a service provider to keep the savings made above those embodied in the X factor for a specific period of time and a service incentive scheme links quality of service to revenue.

- providing information and data for developing regulatory standards where required and for on-going assessment of compliance with such standards;
- informing the decision-making processes of regulators;
- identifying baseline performance of service providers as well as comparing relative performance with other utilities; and
- assessing the current performance of the sector and determining areas for improvement of service needs.

***The RIC invites comments on the following:***

***- Should the RIC establish a Performance Monitoring and Reporting (PMR) Scheme for the Water and Wastewater Sector as set out in this framework?***

### **3.0 Principles and Scope for the Design of the PMR Scheme for Water and Wastewater Sector**

The identification, determination and monitoring of performance indicators is an integral tool in the evaluation of the performance of utilities. However, the types of performance indicators that stakeholders are interested in can be very diverse. For example, customers want to be assured that certain benchmarks are being met and there are continuing quality improvements in the services provided by the utility. Whereas, shareholders, boards and executive management show interest in the performance indicators that affect the bottom line of the organization. This interest is prompted by their concerns to ensure that improvements lead to enhanced cost effectiveness. Consequently, the RIC proposes that the PMR Scheme should have regard for the following principles:

- the performance indicators must be well defined and collected on a consistent basis to provide a valid measure of performance, and to allow reasonable comparisons over time and with other utilities;
- the performance indicators must be meaningful, relevant, pertain to key issues relating to the service provider and its customers, and reflect local conditions;
- the PMR Scheme must focus on a reasonable range of performance indicators and draw upon existing indicators to minimize the costs of collecting information and aid reasonable comparisons; and
- the accuracy and reliability of information provided must be verifiable.

#### **3.1 Performance Indicator Scope**

It is generally accepted that a well-run utility should provide efficient services to all customers at prices that are generally affordable and which allow the utility to recover efficient costs and finance new investment. There are five (5) broad characteristics of such a utility, including efficient operations and maintenance, financial sustainability, efficient and effective capital investment, responsiveness to customers, and accountability to stakeholders.<sup>3</sup> Assessing the achievement of each these characteristics can be determined by reference to appropriate indicators that measure

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<sup>3</sup> Tynan Nicola, and Kingdom Bill. 2002. *“Effective Water Service Provision: Performance targets for a well-run utility.”* The World Bank.

the utility's performance. Accordingly, the RIC proposes that the scope for the performance indicators for the PMR Scheme should broadly cover the following major areas:

- **baseline explanatory data** (e.g. customer number, system length);
- **network reliability and efficiency** (e.g. leakages, interruptions);
- **customer responsiveness and services** (e.g. response to service disruptions, complaints handling);
- **financial performance** (e.g. profitability, that is assessing profit or loss position, return on RAB, liquidity);
- **service coverage** (e.g. water coverage, sewerage coverage); and
- **affordability** (e.g. prices).

Whenever possible, the PMR Scheme should include qualitative (explanatory) information.

A draft list of performance indicators for the Water and Wastewater sector (inclusive of definitions etc.) is set out in the **Appendix**.

The indicators should be clear to ensure that the information being reported is consistent over time and allows for trends in performance to be monitored, and for comparison with other utilities on a fair and reasonable basis. This comparison requires that the indicators be defined according to international standards, while local conditions are taken into consideration when assessing the actual performance level of the utility. Additionally, the RIC will undertake periodic reviews of the indicators to ensure they take into account future developments, and remain relevant and meaningful over time.

*The RIC invites comments on the following:*

*- The principles and scope for the design of the Performance Monitoring and Reporting (PMR) Scheme for the Water and Wastewater Sector.*

*- The draft list of performance indicators for as set out in the Appendix.*

#### 4.0 Reporting and Verification Mechanisms for PMR Scheme

The RIC notes that the service provider has to be adequately monitored and the targets must be effectively enforced, in order for the performance indicators to deliver desired results. Accordingly, the RIC proposes that the reporting and verifying mechanisms (i.e. the frequency of collection and reporting and the process for verifying information) for the PMR Scheme should broadly encompass the following:

- standardized electronic templates developed by the RIC with the input of the service provider;
- reporting requirement of the service provider to provide information to the RIC on a monthly/quarterly/annually basis in accordance with the standardized templates;
- analysis of the reported information by the RIC, and preparation of a draft report; and
- publication of an annual PMR report, based on the reported data and analysis for the relevant period.

For performance reporting to be credible under the PMR Scheme, the information must be accurate and reliable. WASA must therefore ensure that adequate resources are devoted to meeting its regulatory commitments in this regard, and therefore should consider the establishment of a dedicated regulatory unit as part of its overall compliance efforts. The RIC also has a responsibility to review the integrity of the data collection processes and to be satisfied that the service provider has in place processes and procedures to ensure the integrity of data. Regulatory audits will therefore be used to test the effectiveness and efficiency of a service provider's design or systems of control as well as the integrity of the data provided. Audits will be undertaken, as necessary, prior to the release of a performance report. These audits can be undertaken by the RIC's internal staff or an external auditor, as the RIC deems necessary.

The RIC will release an *Annual Performance Indicator Report for WASA* at the end of each year. This report will serve as a measure of performance for the service provider, and a permanent record of the progress attained with respect to the performance indicators over the relevant period. It will also assist in identifying performance gaps which may need to be resolved by the service provider, while better informing customers and other stakeholders about the level of service they are receiving. Over the longer term, the Report will feed into the RIC's Price Review Process.

In keeping with the PMR amendments proposed for the Electricity and Transmission and Distribution Sector, the RIC also intends to:

- Employ all enforcement powers contained in the RIC Act, to obtain timely and reliable information from the service provider, including:
  - Caution letters;
  - Publication of non-compliance in the media; and
  - Any other action necessary to achieve compliance (inclusive of fines); and
- Report on an abbreviated list of major indicators (i.e. “traffic signal” indicators) at six (6) months intervals to give a snapshot of the performance and financial health of WASA. In order to provide a broad perspective, the indicators will cover the following areas: **financial health, operational efficiency and customer responsiveness**. The rationale behind this list of indicators is to depict the overall health and performance of the service provider using no more than five (5) indicators that may be of interest to customers and easily understood by them (see Table below). These “traffic signal” indicators will also be included in the water bills of customers.

**Table – List of Major Indicators**

INDICATOR	What it Measures
Non-revenue water	Non-revenue water represents water that has been produced and is “lost” before it reaches the customer (either through leaks, through theft, or through unbilled legal usage ).
Current Ratio	Financial Health – Liquidity
% Net Profit	Financial Health (assessing the profit or loss position of the service provider)
Number of employees per 1000 connections	Operational Efficiency of the service provider
Written Complaints Response Rate	Customer Responsiveness

*The RIC invites comments on its proposed mechanisms to verify the data and to ensure compliance on the part of the service provider.*

## APPENDIX

### PERFORMANCE INDICATORS FOR THE WASA (DETAILED)

Item	Category	Indicator	Definition	Key Data	Source	Monitored by	Reported by	Reporting Period
1.0	<b>Baseline Explanatory Data</b>							
1.1		Number of water customers  (no.)	The number of customers that the utility provides water services to, according to customer class and area	1. Total no. of water customers 2. No. of water customers per class <sup>4</sup> 3. No. of water customers per area	WASA	WASA, RIC	WASA	Annually
1.2		Number of wastewater customers  (no.)	The number of customers that the utility provides wastewater services to, according to customer class and area	1. Total no. of wastewater customers 2. No. of wastewater customers per class 3. No. of wastewater customers per area	WASA	WASA, RIC	WASA	Annually
1.3		Length of water mains  km	All the water mains used in the utility's operations	1. Total length of water mains	WASA	WASA, RIC	WASA	Annually
1.4		Length of wastewater mains  (km)	All the wastewater mains used in the utility's operations.	1. Total length of wastewater mains	WASA	WASA, RIC	WASA	Annually

<sup>4</sup> WASA's customer classes include: Domestic, Agricultural, Non-Domestic, Cottage and General. Public Utilities Commission of Trinidad and Tobago Tariff Book to Order 83 Schedule of Rates and Charges of the Water and Sewerage Authority of Trinidad and Tobago.

Item	Category	Indicator	Definition	Key Data	Source	Monitored by	Reported by	Reporting Period
1.5		Volume of water abstracted by Source  (mcm/d)	The volume of water abstracted from all sources, including surface water, groundwater and desalinated water.	1. Total volume of water abstracted 2. Volume of water abstracted per source	WASA	WASA, WRA, RIC	WASA	Annually
<b>2.0</b>	<b>Affordability</b>							
2.1		Connection charge – water  TT\$/conn	The cost to make a residential pipe connection to the water system measured in absolute amount.	Connection cost	WASA, RIC	WASA, RIC	WASA	Annually
2.2		Connection charge –sewer  TT\$/conn	The cost to make a residential pipe connection to the sewer system measured in absolute amount.	Connection cost	WASA, RIC	WASA, RIC	WASA	Annually
2.3		Disconnections for non-payment of bills (per 100 customers)	Number of domestic customers disconnected due to non-payment of bill, expressed per 100 customers.	1. No. of domestic customers per class 2. No. of customers disconnected per class	WASA	WASA, RIC	WASA	Annually

Item	Category	Indicator	Definition	Key Data	Source	Monitored by	Reported by	Reporting Period
<b>3.0</b>	<b>Cost and Staffing</b>							
3.1		Staff (per 1000 connections) #/000	The total number of staff, expressed per thousand water connections.	1. Employee figures 2. No. of connections	WASA	WASA, RIC	WASA	Annually
3.2		Labour costs (% operating costs) %	The total annual labour costs (including benefits), expressed as a percentage of the total annual operational costs.	Financial statements	WASA, Auditors	WASA, RIC	WASA	Annually
3.3		Contracted out service cost (% operating cost) %	The total cost of services contracted-out to the private sector, expressed as a percentage of total annual operational costs.	1. Contract data 2. Financial statements	WASA, Auditors	WASA, RIC	WASA	Annually
<b>4.0</b>	<b>Customer Responsiveness and Service</b>							
4.1		Complaints by Major Type #	Reports on the major areas of complaint	1. No. of complaints by major type 2. Total no. of complaints	WASA	WASA, RIC	WASA	Quarterly and Annually
4.2		Complaints resolution rate %	The number of complaints resolved, expressed as a percentage of the number of complaints received.	1.No. of complaints received 2.No. of complaints resolved and unresolved 3.Average time to resolve complaints	WASA	WASA, RIC	WASA	Quarterly and Annually

Item	Category	Indicator	Definition	Key Data	Source	Monitored by	Reported by	Reporting Period
4.3		Complaints Received per 100 Customers	The number of complaints received for every 100 customers	1. Total no. of complaints received 2. Total no. of customers	WASA	WASA, RIC	WASA	Quarterly and Annually
4.4		Calls to Emergency Phone Line % answered in 30 seconds	The percentage of calls answered within 30 seconds.	1.Total no. of calls to emergency phone line 2.No. of calls answered within 30 seconds	WASA	WASA, RIC	WASA	Quarterly and Annually
4.5		Response to Written Complaints %	Number of written response within the target time period / number of written complaints during the period * 100	1. Total no. of written response within the target time period 2. Total no. of written complaints during the period	WASA	WASA, RIC	WASA	Quarterly and Annually
<b>5.0</b>	<b>Financial Performance</b>							
5.1		Total Revenue (by Category)	The operating revenue and other revenues for the period.	Financial statements	WASA, auditors	WASA, RIC	WASA	Annually
5.2		Total Expenditure (by Major Category)	The sum of operating expenses and other expenses. Operating expenses includes Production, Transmission and Distribution, Administration and General and Depreciation	Financial statements	WASA, auditors	WASA, RIC	WASA	Annually
5.3		Gearing	$\frac{[\text{Interest bearing debt}]}{[\text{Interest bearing debt} + \text{equity}]}$	Financial statements	WASA	WASA, RIC	WASA	Annually
5.4		Funds Flow Operations \$	Operating Revenue – Operating Expenses	Financial statements	WASA	WASA, RIC	WASA	Annually

tem	Category	Indicator	Definition	Key Data	Source	Monitored by	Reported by	Reporting Period
5.5		Funds Flow Interest Cover  Times	$\frac{(\text{FFO} + \text{Interest})}{\text{Interest}}$	Financial statements	WASA	WASA, RIC	WASA	Annually
5.6		Cash Interest Cover  Times	$\frac{\text{Opening Cash Flow}}{\text{Interest Expense}}$	Financial statements	WASA	WASA, RIC	WASA	Annually
5.7		Debt Pay Back Period  Years	$\frac{\text{Net Debt}}{\text{FFO}}$	Financial statements	WASA	WASA, RIC	WASA	Annually
5.8		Debt as a Proportion of Regulatory Asset Base (RAB) %	$\frac{\text{Net Debt}}{\text{RAB}}$	Financial statements	WASA	WASA, RIC	WASA	Annually
5.9		Collection Rate	$\frac{\text{Operating Revenue} - \text{Receivables}}{\text{Operating Revenue}} \times 100\%$	Financial statements	WASA	WASA, RIC	WASA	Annually
5.10		Revenue Billed/Operating Cost	$\frac{\text{Operating Revenue Billed}}{\text{Operating Cost}}$	Financial statements	WASA	WASA, RIC	WASA	Annually
5.11		Revenue Collected/Operating Cost	$\frac{\text{Revenue Collected}}{\text{Operating Cost}}$	Financial statements	WASA	WASA, RIC	WASA	Annually
5.12		Internal Financing %	$\frac{(\text{FFO} - \text{Dividends})}{\text{Net CAPEX}} \times 100\%$	Financial statements	WASA	WASA, RIC	WASA	Annually
5.13		Return on RAB %	$\frac{\text{Net operating income}}{\text{RAB}} \times 100\%$	Financial statements	WASA	WASA, RIC	WASA	Annually
5.14		Operating Cost per Unit	$\frac{\text{Total Operating costs}}{\text{Total no. of kWh sold}}$	Financial statements	WASA	WASA, RIC	WASA	Annually

Item	Category	Indicator	Definition	Key Data	Source	Monitored by	Reported by	Reporting Period
<b>6.0</b>	<b>Metering</b>							
6.1		Metering level (%)	The total number of connections with operating meters, expressed as a percentage of the total number of connections.	1. No. of connections 2. No. of metered connections 3. No. of new connections for year	WASA	WASA, RIC	WASA	Annually
<b>7.0</b>	<b>Pipe Network Performance</b>							
7.1		Pipe breaks (break/km/yr)	The total number of pipe breaks per year expressed per km of the water distribution network.	1.No. of jobs per region per year 2.Size of distribution network (km)	WASA	WASA, RIC	WASA	Quarterly/Annually
7.2		Pipe breaks (break/conn/yr)	The total number of pipe breaks per year expressed per number of water connections.	1. No. of jobs per region per year 2.No. of water connections	WASA	WASA, RIC	WASA	Quarterly/Annually
7.3		Sewerage clogs (clogs/km/yr)	The total number of blockages per year, expressed per km of sewers.	1.No. of repair jobs per area 2.Size of distribution network (km)	WASA	WASA, RIC	WASA	Quarterly/Annually
7.4		Sewerage clogs (clogs/conn/yr)	The total number of blockages per year, expressed per number of sewerage connections.	1. No. of repair jobs per area 2.No. of new sewerage connections	WASA	WASA, RIC	WASA	Quarterly/Annually
<b>8.0</b>	<b>Service Coverage</b>							
8.1		Water coverage (%)	The population with easy access to water to water services (either with direct connection or within 200m of standpipe), expressed as a percentage of the total population under utility's nominal responsibility.	1.Population served 2.Total population 3.Map of served population 4. Map of infrastructure (pipe, plant) 5. New mains (km) 6. Replaced mains (km)	WASA, CSO	WASA, RIC	WASA	Annually

Item	Category	Indicator	Definition	Key Data	Source	Monitored by	Reported by	Reporting Period
8.2		Sewerage coverage (%)	The population with sewerage services (direct service connection), expressed as a percentage of total population under utility's nominal responsibility.	1.Population served 2.Total population 3.Map of served population 4.Map of infrastructure (pipe, plant) 5.New sewers laid (km)	WASA, CSO	WASA, RIC	WASA	Annually
<b>9.0</b>	<b>Quality of Service</b>							
9.1		Continuity of service (hrs./day)	The average hours of service per day for water supply.	1.FSE data 2.Customer feedback on service (hours and days per week)	WASA	WASA, RIC	WASA	Annually
9.2		Water pressure	The level of pressure shown anywhere on the water supply piping system.	1.Customer feedback 2. Site visit tests	WASA	WASA, RIC	WASA	Annually
9.3		Customers per class of supply <sup>5</sup> (%)	The percentage of customers in each class of water supply, during a given period.	1.FSE data 2.Customer feedback on service (hours per week and days per week) 3.Breakdown of water supply schedules per class of supply 4.No. of customers per class of supply 5. Population in receipt of supply	WASA	WASA, RIC	WASA	Annually
<b>10.0</b>	<b>Water Losses</b>							
10.1		Non revenue water (%)	The difference between water supplied and water sold (i.e. volume of water 'lost') expressed as a percentage of net water supplied	1.Water into supply 2.Estimated authorized consumption (domestic, commercial, public) 3.Estimated unauthorized consumption (illegals)	WASA	WASA, RIC	WASA	Annually

Item	Category	Indicator	Definition	Key Data	Source	Monitored by	Reported by	Reporting Period
10.2		Non revenue water (m <sup>3</sup> /conn/d)	The volume of water 'lost' per water connection per day	1. Water into supply 2. Estimated authorized consumption (domestic, commercial, public) 3. Estimated unauthorized consumption (illegals) 4. No. of water connections	WASA	WASA, RIC	WASA	Annually
10.3		Non revenue water (m <sup>3</sup> /km/d)	The volume of water 'lost' per km of water on the distribution network per day	1. Water into supply 2. Estimated authorized consumption (domestic, commercial, public) 3. Estimated unauthorized consumption (illegals) 4. Size of distribution network (km)	WASA	WASA, RIC	WASA	Annually
10.4		Infrastructure leakage index	Quantifies how well the distribution system is managed (maintained, repaired, rehabilitated) for the control of real (leakage) losses at the current operating pressure.	1. Current Annual Real Losses (CARL) <sup>6</sup> 2. Unavoidable Annual Real Losses <sup>7</sup>	WASA	WASA, RIC	WASA	Annually
<b>11.0</b>	<b>Water Production</b>							
11.1		Total water production (lpcd)	The total annual volume of water produced, expressed as litres per capita per day.	1. Total volume of water produced 2. No. of production facilities 3. Average plant production 4. Plant capacity	WASA, CSO	WASA, RIC	WASA	Quarterly/ Annually

<sup>5</sup> WASA's class of supply includes: Class I, Class II, Class III, Class IV and Class V

<sup>6</sup> CARL represents the volume of water lost from reported leaks, unreported leaks, background losses, and operator error (storage tank overflows) during the water audit reporting period.

<sup>7</sup> UARL represents the lowest loss technically achievable in a water utility based on its key characteristics

Item	Category	Indicator	Definition	Key Data	Source	Monitored by	Reported by	Reporting Period
11.2		Total water production (m <sup>3</sup> /conn/month)	Total annual volume of water produced, expressed as connections per month.	1. Volume of water produced 2. No. of production facilities 3. Average plant production 4. Plant capacity 5. No. of connections	WASA	WASA, RIC	WASA	Quarterly/ Annually
11.3		Total water supplied (lpcd)	The total annual volume of water supplied to the distribution system, (including purchased water, if any), expressed as litres per capita per day.	1. Total volume of water supplied 2. Average household size	WASA, CSO	WASA, RIC	WASA	Quarterly/ Annually
11.4		Total water supplied (m <sup>3</sup> /conn/month)	The total annual volume of water supplied to the distribution system, (including purchased water, if any), expressed as connections per month.	1. Total volume of water supplied 2. Average household size 3. No. of connections	WASA	WASA, RIC	WASA	Quarterly/ Annually