

# National urban water utility performance reporting framework:

Indicators and definitions handbook

January 2018



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Indicators and definitions handbook*

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This handbook has been jointly developed by the Bureau of Meteorology and the parties to the National Water Initiative (NWI), being the Commonwealth of Australia and the governments of New South Wales, Victoria, Queensland, South Australia, the Australian Capital Territory, the Northern Territory, Tasmania and Western Australia (the NWI Parties), and the Water Services Association of Australia (WSAA).

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## Table of Contents

1	Introduction.....	1
1.1	Purpose .....	1
1.2	National urban water utility performance reporting .....	1
1.3	Governance and annual reporting .....	1
1.4	Participation .....	2
1.5	Benefits.....	2
2	National performance reporting.....	3
2.1	Performance Indicators .....	3
2.2	General notes for reporting .....	4
3	Indicator summary .....	6
4	Water resources indicators .....	21
4.1	Sources of water .....	21
4.2	Transfers: water supply .....	23
4.3	Water produced.....	24
4.4	Water use.....	25
4.5	Wastewater collected .....	27
4.6	Inflow to plant.....	28
4.7	Transfers: wastewater .....	29
4.8	Extraction for sewer mining .....	30
4.9	Outflow from plant .....	30
4.10	Transfers: recycled water .....	32
4.11	Recycled water use.....	33
4.12	Stormwater use.....	35
4.13	Derived indicators .....	36
5	Assets.....	42
5.1	Water treatment plants.....	42
5.2	Other water assets .....	43
5.3	Wastewater assets.....	44
5.4	Water supply main breaks.....	46
5.5	Water supply losses .....	46
5.6	Sewer breaks and chokes .....	48
6	Customers .....	51
6.1	Connected properties and population.....	51

6.2	Water quality complaints .....	54
6.3	Water service complaints .....	55
6.4	Sewerage service complaints.....	56
6.5	Billing and account complaints .....	57
6.6	Total water and wastewater complaints.....	58
6.7	Connect time to a telephone operator .....	59
6.8	Unplanned water supply interruptions .....	60
6.9	Water interruption frequency .....	61
6.10	Restrictions or legal action for non-payment of water bill.....	61
7	Environment .....	64
7.1	Comparative treatment levels.....	64
7.3	Biosolids reused.....	67
7.4	Net greenhouse gas emissions .....	67
8	Pricing .....	72
8.1	Tariffs.....	72
8.2	Annual bill .....	75
9	Finance.....	78
9.1	Revenue .....	78
9.2	Written down replacement costs of fixed assets.....	81
9.3	Operating costs.....	83
9.4	Capital expenditure .....	87
9.6	Dividends .....	90
9.7	Net debt to equity.....	91
9.8	Interest cover .....	92
9.9	Net profit after tax.....	93
9.10	Community service obligations (CSOs) .....	94
9.11	Capital works grants.....	96
10	Public health .....	97
10.1	Water quality compliance .....	97
11	Practice Notes .....	104
	Practice Note 1 – Alignment of the water resource indicators with the Bureau's Category 7 Urban water information requirements.....	104
	Practice Note 2 – The urban water supply system .....	105
	Practice Note 3 – Infrastructure Leakage Index (ILI) .....	108

Practice Note 4 – Build, Own, Operate, and Transfer (BOOT) schemes ..... 112



# 1 Introduction

## 1.1 Purpose

This handbook provides definitions and notes for all indicators in the *National urban water utility performance reporting framework* (the Framework). They are provided to support consistency in reporting across all jurisdictions.

The handbook is reviewed regularly to ensure the definitions, calculations, and examples are interpreted and applied consistently.

Questions relating to clarifications of the definitions and notes should be sent to the Bureau of Meteorology's (the Bureau) water team [water@bom.gov.au](mailto:water@bom.gov.au).

## 1.2 National urban water utility performance reporting

On 25 June 2004, the Commonwealth of Australia, the States of New South Wales, Victoria, Queensland and South Australia, the Australian Capital Territory and the Northern Territory signed the Intergovernmental Agreement on a [National Water Initiative](#) (NWI). The State of Tasmania became a signatory to the NWI Agreement on 2 June 2005 and Western Australia became a signatory on 6 April 2006.

Under clauses 75 and 76 of the NWI, the parties agreed to:

- 75. report independently, publicly, and on an annual basis, on benchmarking of pricing and service quality for urban and rural water utilities; and*
- 76. meet the costs of this performance reporting through the recovery of water management costs.*

## 1.3 Governance and annual reporting

In September 2005, the National Water Commission (NWC), in conjunction with State and Territory governments and the Water Services Association (WSAA), led the formation of the Framework's steering committee—the Roundtable Group. The Roundtable Group developed the Framework's performance indicators, definitions, data collection, collation, auditing, and reporting processes and practices. It continues to oversee the collection of performance indicators and the production of the annual *Urban national performance report* (Urban NPR).

The Roundtable Group's objectives are to:

- i. Ensure nationally consistent reporting on the performance of urban water utilities.
- ii. Oversee the maintenance and revision of the urban national performance reporting framework indicator set which includes the definition of indicators, reporting handbook and audit protocols.
- iii. Oversee the production of an annual, independent and public Urban NPR, including the processes for the collection of data and its audit.

Under guidance from the Roundtable Group the NWC produced the annual performance reports for the 2006–7 to 2012–13 reporting years. Following the disbandment of the NWC, the Bureau entered into an agreement with the Roundtable Group to coordinate and produce annual performance reports.

## 1.4 Participation

Bulk water suppliers and utilities and councils (utilities) with more than 10,000 total water or wastewater connected properties (excluding rural water connections) are expected to participate in urban national performance reporting.

## 1.5 Benefits

National performance reporting provides an annual benchmarking of utilities across a range of parameters that influence the cost and quality of urban water supply and wastewater service across Australia.

The independent and public nature of the report helps consumers and governments determine whether the urban water sector is operating in an efficient and cost effective manner. Benchmarking informs customers, and provides a catalyst to support industry innovation, improved service delivery and efficiency gains



## 2 National performance reporting

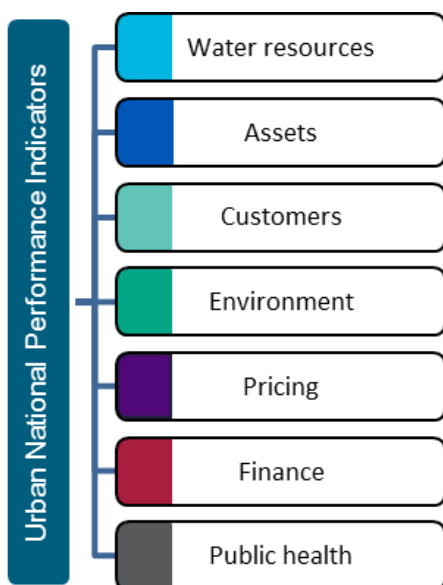
The performance indicators (indicators) defined in this handbook are required as part of the States and Territories commitment under the NWI to report independently, publicly, and on an annual basis, on benchmarking of pricing and service quality for urban and rural water utilities (metropolitan and non-metropolitan).

Indicator data is maintained in the urban national performance report database (database), developed and supported by the Bureau. For access to the database and associated reporting application please contact the Bureau's water team [water@bom.gov.au](mailto:water@bom.gov.au).

### 2.1 Performance Indicators

The indicators were developed in collaboration with the Roundtable Group (representing all parties to the NWI Agreement), the Water Services Association of Australia (WSSA), the Bureau, and in consultation with water utilities.

The indicators are thematically grouped into seven major categories (Figure 2.1). Within each category sub-categories are used to further group indicators.



**Figure 2.1 Urban national performance reporting framework indicator groups**

A summary of the indicators is presented in Section 3 of this handbook. The summary adopts a numerically sequential presentation of the indicators.

Sections 4 to 10 provide detailed definitions, supporting notes, examples and, where applicable, derivations for each indicator. The definitions, notes and examples clarify the inclusions or exclusions relevant to each indicator. Section 11 contains a series of practice notes relating to topics that impact the interpretation of multiple indicators.

## 2.2 General notes for reporting

### Units

All indicators should be reported in the units specified in the indicator definition.

### Reporting year

The reporting year is the financial year i.e. from 1 July to 30 June.

### Derived Indicators

Derived indicators are indicators that are calculated solely from other component indicators. For example, indicator A8, the number of water main breaks, bursts and leaks, per 100 km of water mains, is a derived indicator calculated by dividing the number of water main breaks, bursts and leaks (IA8) by the length of water mains (A2).

Utilities are not required to enter values for derived indicators—they are calculated automatically by the database. The method of calculating derived indicators is provided in both the indicator summary (Section 3) and in its detailed definition and supporting notes (Sections 4 to 10). Derived indicators are also identified using a **light grey background**.

### Nominal and real values

In economic terms a nominal value is one that has not been adjusted for inflation.

**Only nominal** values should be used when reporting pricing and financial indicators.

Real values are those that have been adjusted for inflation.

Reporting on financial and pricing indicators in the Urban NPR (Parts A and B) utilises real values. This enables the comparison of indicators across years by excluding the effect of inflation.

Real values are calculated using the national average Consumer Price Index<sup>1</sup> (CPI) to inflate values to real dollars.

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<sup>1</sup> The national average consumer price index is calculated as the mean of the Australian Bureau of Statistics' quarterly national CPI estimates for the reporting year. ABS product ID 6401.0 - Consumer Price Index, Australia, Series ID A2325846C.

## 2.2.1 Terminology—key interchangeable terms

Due to differing terms used in legislation in various jurisdictions, the following are considered interchangeable terms:

- ✓ 'wastewater' and 'sewage—the term 'wastewater' is used in this handbook
- ✓ connected properties and customers
- ✓ sewer blockages and sewer chokes
- ✓ sewer spills and wastewater overflows
- ✓ treatment plants and treatment works
- ✓ supply and consumption
- ✓ property service and mains to meter connections.

## 2.2.2 Zero, not applicable and no data

Appropriately characterising a utility's operations is important when reporting indicators. To assist with the clear interpretation of indicator data the following convention should be adopted when entering data.

**Zero**—A value of zero should only be entered where it is a legitimate value and not when data is unavailable or an indicator is not applicable.

**No data**—Reporting no data shows the indicator is applicable to your utility but no data is available at the time of reporting.

**Not applicable**—Reporting an indicator as not applicable should only be done in circumstances where it is not relevant to a utility's operations.

### Example

Council X provides water and wastewater services to a large regional urban centre in inland Australia.

In the current reporting year, the Council sourced all its water from surface water. Council X also has a groundwater extraction licence and can source water from a local bore field during times of drought.

Given the Council's distance from the coast desalination of marine water is not an option for sourcing water.

In addition to surface water the Council recycles treated effluent from its wastewater treatment plant. However, due to a metering failure it does not have any data on the volume of recycled water supplied to residential properties during the reporting year.

Council X would therefore characterise its water sourced in the following manner for the purposes of reporting.

<b>W1</b> —Volume of water sourced from surface water	<b>= 50,000 ML</b>
<b>W2</b> —Volume of water sourced from groundwater	<b>= 0 ML</b>
<b>W3.1</b> —Volume of water sourced from desalinated marine waters	<b>= Not applicable</b>
<b>W20</b> — Volume of recycled water supplied to residential customers	<b>= No data</b>

### 3 Indicator summary

Category	Sub category	Indicator	Units	Status	Page
Water resources	Sources	<b>W1</b> —Volume of water sourced from surface water	ML	Report	21
	Sources	<b>W2</b> —Volume of water sourced from groundwater	ML	Report	22
	Sources	<b>W3.1</b> —Volume of water sourced from desalinated marine waters	ML	Report	22
	Transfers	<b>W5.3</b> —Volume of water, excluding recycled water, received from other service providers or operational areas within the urban water supply system	ML	Report	23
	Transfers	<b>W14.3</b> —Volume of water, excluding recycled water, exported to other service providers or operational areas within the urban water supply system	ML	Report	24
	Production	<b>W11.3</b> —Volume of potable water produced for supply into the urban water supply system	ML	Report	24
	Use	<b>W8.3</b> —Volume of water supplied to residential customers	ML	Report	25
	Use	<b>W9.3</b> —Volume of water supplied to non-residential customers	ML	Report	25
	Use	<b>W31</b> —Volume of water returned to surface water and groundwater from the urban water supply system	ML	Report	26

Category	Sub category	Indicator	Units	Status	Page
Water resources	Use	<b>W13</b> —Volume of water returned as environmental flows from outside of the urban water supply system	ML	Report	26
	Use	<b>W10.1</b> —Volume of non-revenue water	ML	Report	27
	Wastewater collected	<b>W16</b> —Volume of wastewater, excluding trade waste, collected	ML	Report	27
	Wastewater collected	<b>W17</b> —Volume of trade waste collected	ML	Report	28
	Inflow to plant	<b>W18.4</b> —Volume of wastewater inflow to wastewater treatment plants	ML	Report	28
	Transfers:	<b>W18.2</b> —Volume of wastewater received from other service providers or operational areas within the urban wastewater system	ML	Report	29
	Transfers	<b>W18.1</b> —Volume of wastewater exported to other service providers or operational areas within the urban wastewater system	ML	Report	29
	Extraction for sewer mining	<b>W18.3</b> —Volume of wastewater taken through sewer mining	ML	Report	30
	Outflow from plant	<b>W18.5</b> —Volume of treated effluent outflow from wastewater treatment plants	ML	Report	30
	Use	<b>W29</b> —Volume of treated wastewater disposals	ML	Report	31
Outflow from plant	<b>W30</b> —Volume of wastewater losses and discharges	ML	Report	31	

Category	Sub category	Indicator	Units	Status	Page
Water resources	Transfers	<b>W6</b> —Volume of recycled water received from other service providers or operational areas within the urban water supply system	ML	Report	40
	Transfers	<b>W15</b> —Volume of recycled water exported to other service providers or operational areas within the urban water supply system	ML	Report	32
	Use	<b>W20</b> —Volume of recycled water supplied to residential customers	ML	Report	33
	Use	<b>W21</b> —Volume of recycled water supplied to non-residential customers	ML	Report	33
	Use	<b>W23</b> —Volume of recycled water supplied as environmental flows	ML	Report	34
	Use	<b>W25.1</b> —Volume of recycled water supplied to managed aquifer recharge	ML	Report	34
	Use	<b>W28.4</b> —Volume of urban stormwater supplied to residential customers	ML	Report	35
	Use	<b>W28.5</b> —Volume of urban stormwater supplied to non-residential customers	ML	Report	35
	Sources	<b>W7</b> —Total volume of water sourced	ML	$W7 = W1 + W2 + W3.1 + W5.3 - W31 + W20 + W21 + W28.4 + W28.5$	36

Category	Sub category	Indicator	Units	Status	Page
Water resources	Transfers	<b>W5</b> —Total volume of water received from other service providers or operational areas within the urban water system	ML	$W5 = W5.3 + W6$	37
	Transfers	<b>W14</b> —Total volume of water exported to other service providers or operational areas within the urban water supply system	ML	$W14 = W14.3 + W15$	37
	Use	<b>W8</b> —Total volume of water supplied to residential customers	ML	$W8 = W8.3 + W20 + W28.4$	38
	Use	<b>W9</b> —Total volume of water supplied to non-residential customers	ML	$W9 = W9.3 + W21 + W28.5$	38
	Production	<b>W11</b> —Total volume of urban water supplied	ML	$W11 = W8.3 + W9.3 + W20 + W21 + W28.4 + W28.5$	39
	Use	<b>W12</b> —Average volume of residential water supplied per property	ML/property	$W12 = (W8) / C2$	39
	Wastewater collected	<b>W18</b> —Total volume of wastewater collected	ML	$W18 = W16 + W17$	40
	Wastewater collected	<b>W19</b> —Average volume of wastewater collected per property	ML/property	$W19 = W18 / C8$	40
	Use	<b>W26</b> —Total volume of recycled water supplied	ML	$W26 = W20 + W21 + W23 + W25.1$	40
	Use	<b>W27</b> — Recycled water as a percentage of total wastewater collected	%	$W27 = (W26 + W15 - W6) / W18.5 * 100$	41
Assets	Water treatment plants	<b>A1</b> —Number of water treatment plants providing full treatment	plants	Report	42
	Other water assets	<b>A2</b> —Length of water mains	km	Report	43

Category	Sub category	Indicator	Units	Status	Page
Assets	Other water assets	<b>A3</b> —Number of properties served per km of water main	properties/km	$A3 = C4 \times 1000 / A2$	44
	Wastewater assets	<b>A4</b> —Number of wastewater treatment plants	plants	Report	45
	Wastewater assets	<b>A5</b> —Length of sewer mains and channels	Km	Report	45
	Wastewater assets	<b>A6</b> —Number of properties served per km of sewer main	properties/km	$A6 = (C8 \times 1000) / A5$	45
	Water main breaks	<b>IA8</b> —Number of water main breaks, bursts and leaks	mains breaks	Report	46
	Water main breaks	<b>A8</b> —Number of water main breaks, bursts and leaks, per 100 km of water mains	mains breaks/100 km	$A8 = (IA8 / A2) \times 100$	46
	Water losses	<b>A9</b> —Infrastructure leakage index		Report	47
	Water losses	<b>A10</b> —Real losses: service connections	L/service connection/day	Report	48
	Water losses	<b>A11</b> —Real losses: water mains	kL/km water main/day	Report	48
	Wastewater breaks and chokes	<b>A14</b> —Number of sewer mains breaks and chokes per 100 km	breaks and chokes/100km	Report	49
Wastewater breaks and chokes	<b>A15</b> —Number of property connection sewer breaks and chokes per 1,000 properties	breaks and chokes/1,000 properties	Report	49	



Category	Sub category	Indicator	Units	Status	Page
Customers	Connected properties and population	<b>C1</b> —Population receiving services: water supply	population 000s	Report	51
	Connected properties and population	<b>C2</b> —Number of connected residential properties: water supply	properties 000s	Report	51
	Connected properties and population	<b>C3</b> —Number of connected non-residential properties: water supply	properties 000s	Report	52
	Connected properties and population	<b>C4</b> —Total number of connected properties: water supply	properties 000s	$C4 = C2 + C3$	52
	Connected properties and population	<b>C6</b> —Number of connected residential properties: wastewater	properties 000s	Report	53
	Connected properties and population	<b>C7</b> —Number of connected non-residential properties: wastewater	properties 000s	Report	53
	Connected properties and population	<b>C8</b> —Total number of connected properties: wastewater	properties 000s	$C8 = C6 + C7$	53
	Water quality complaints	<b>IC9</b> —Number of water quality complaints: water supply	complaints	Report	54
	Water quality complaints	<b>C9</b> —Number of water quality complaints per 1,000 properties: water supply	complaints/1,000 properties	$C9 = IC9 / C4$	54
	Water service complaints	<b>IC10</b> —Number of water service complaints	complaints	Report	55
Water service complaints	<b>C10</b> —Number of water service complaints per 1,000 properties	complaints/1,000 properties	$C10 = IC10 / C4$	55	

Category	Sub category	Indicator	Units	Status	Page
Customers	Wastewater service complaints	<b>IC11</b> —Number of sewerage service complaints	complaints	Report	56
	Wastewater service complaints	<b>C11</b> —Number of sewerage service complaints per 1,000 properties	complaints/1,000 properties	$C11 = IC11 / C8$	56
	Billing and account complaints	<b>IC12</b> —Number of billing and account complaints: water supply and sewerage	complaints	Report	57
	Billing and account complaints	<b>C12</b> —Number of billing and account complaints per 1,000 properties: water supply and sewerage	complaints/1,000 properties	$C12 = IC12 / C4$	57
	Total water and wastewater complaints	<b>IC13</b> —Number of water and sewerage complaints	complaints	Report	58
	Total water and wastewater complaints	<b>C13</b> —Number of water and sewerage complaints per 1,000 properties	complaints/1,000 properties	$C13 = IC13 / C4$	58
	Connect time to a telephone operator	<b>C14</b> —Percentage of calls answered by an operator within 30 seconds	%	Report	59
	Average duration of unplanned water supply interruptions	<b>C15</b> —Average duration of an unplanned interruption: water supply	minutes	Report	60
	Water interruption frequency	<b>IC17</b> —Number of unplanned interruptions: water supply	interruptions	Report	61
	Water interruption frequency	<b>C17</b> —Number of unplanned interruptions per 1,000 properties	interruptions/1,000 properties	$C17 = IC17 / C4$	61

Category	Sub category	Indicator	Units	Status	Page
Customers	Restrictions or legal action for non-payment of water bill	<b>IC18</b> —Number of restrictions for non-payment of water bills	restrictions	Report	62
	Restrictions or legal action for non-payment of water bill	<b>C18</b> —Number of restrictions for non-payment of water bills per 1,000 properties	restrictions/1,000 properties	$C18 = IC18 / C4$	62
	Restrictions or legal action for non-payment of water bill	<b>IC19</b> —Number of legal actions taken for non-payment of water bills	legal actions	Report	63
	Restrictions or legal action for non-payment of water bill	<b>C19</b> —Number of legal actions taken for non-payment of water bills per 1000 properties	legal actions/1,000 properties	$C19 = IC19 / C4$	63
Environment	Comparative wastewater treatment levels	<b>IE1</b> —Volume of wastewater treated to a primary level	ML	Report	64
	Comparative wastewater treatment levels	<b>E1</b> —Percentage of wastewater treated to a primary level	%	$E1 = (IE1 / W18) \times 100$	64
	Comparative wastewater treatment levels	<b>IE2</b> —Volume of wastewater treated to a secondary level	ML	Report	65
	Comparative wastewater treatment levels	<b>E2</b> —Percentage of wastewater treated to a secondary level	%	$E2 = (IE2 / W18) \times 100$	65
	Comparative wastewater treatment levels	<b>IE3</b> —Volume of wastewater treated to a tertiary level	ML	Report	66

Category	Sub category	Indicator	Units	Status	Page
Environment	Comparative wastewater treatment levels	<b>E3</b> —Percentage of wastewater treated to a tertiary level	%	$E3 = (IE3 / W18) \times 100$	66
	Biosolids reused	<b>E8</b> —Percentage of biosolids reused	%	Report	67
	Net greenhouse gas emissions	<b>IE9</b> —Net greenhouse gas emissions: water supply	t CO <sub>2</sub> equivalents	Report	68
	Net greenhouse gas emissions	<b>E9</b> —Net greenhouse gas emissions per 1,000 properties: water supply	t CO <sub>2</sub> equivalents/1,000 properties	$E9 = IE9 / C4$	68
	Net greenhouse gas emissions	<b>E9.1</b> —Net greenhouse gas emissions per ML: water supply—bulk utility	t CO <sub>2</sub> equivalents/ML	$E9.1 = IE9 / W11$	68
	Net greenhouse gas emissions	<b>IE10</b> —Net greenhouse gas emissions: wastewater	t CO <sub>2</sub> equivalents	Report	69
	Net greenhouse gas emissions	<b>E10</b> —Net greenhouse gas emissions per 1,000 properties: wastewater	t CO <sub>2</sub> equivalents/1,000 properties	$E10 = IE10 / C8$	69
	Net greenhouse gas emissions	<b>E10.1</b> —Net greenhouse gas emissions per ML: wastewater—bulk utility	t CO <sub>2</sub> equivalents/ML	$E10.1 = IE10 / W18$	69
	Net greenhouse gas emissions	<b>IE11</b> —Net greenhouse gas emissions: other	t CO <sub>2</sub> equivalents	Report	70

Category	Sub category	Indicator	Units	Status	Page
Environment	Net greenhouse gas emissions	<b>E11</b> —Net greenhouse gas emissions per 1,000 properties: other	t CO <sub>2</sub> equivalents/1,000 properties	E11 = IE11 / C4	70
	Net greenhouse gas emissions	<b>E11.1</b> —Net greenhouse gas emissions per ML: other—bulk utility	t CO <sub>2</sub> equivalents/ML	E11 = IE11 / W11	70
	Net greenhouse gas emissions	<b>IE12</b> —Total net greenhouse gas emissions	t CO <sub>2</sub> equivalents	IE12 = IE9 + IE10 + IE11	71
	Net greenhouse gas emissions	<b>E12</b> —Total net greenhouse gas emissions per 1,000 properties	t CO <sub>2</sub> equivalents/1,000 properties	E12 = IE12 / C4	71
	Net greenhouse gas emissions	<b>E12.1</b> —Total net greenhouse gas emissions per ML: bulk utility	t CO <sub>2</sub> equivalents/ML	E12.1 = IE12 / W11	71
Pricing	Residential tariff structure	<b>P1</b> —Tariff structure: water supply	provided as text	Report	72
	Residential tariff structure	<b>P1.2</b> — Fixed charge: water supply	\$	Report	72
	Residential tariff structure	<b>P1.3- P1.7</b> —Usage charge: step 1 to 5	\$/kL	Report	73
	Residential tariff structure	<b>P1.3a- P1.7a</b> Upper bound of usage: step 1 to 5	kL	Report	73
	Residential tariff structure	<b>P1.12</b> —Special levies: water supply	\$	Report	73
	Residential tariff structure	<b>P1.13</b> —Income from special levies retained by the utility: water supply	yes/no	Report	73

Category	Sub category	Indicator	Units	Status	Page
Pricing	Annual bill	<b>P2</b> —Annual residential bill based on 200 kL per annum: water supply	\$	Report	75
	Annual bill	<b>P3</b> —Typical residential bill: water supply	\$	Report	76
	Residential tariff structure	<b>P4</b> —Tariff structure: wastewater	provided as text	Report	74
	Residential tariff structure	<b>P4.1</b> —Fixed charge: wastewater	\$	Report	74
	Residential tariff structure	<b>P4.2</b> —Usage charge: wastewater	\$/kL	Report	74
	Residential tariff structure	<b>P4.3</b> —Special levies: wastewater	\$	Report	75
	Residential tariff structure	<b>P4.4</b> —Income from special levies retained by the utility: wastewater	yes/no	Report	75
	Annual bill	<b>P5</b> —Annual residential bill based on 200 kL per annum: wastewater	\$	Report	76
	Annual bill	<b>P6</b> —Typical residential bill: wastewater	\$	Report	77
	Annual bill	<b>P7</b> —Total annual residential bill based on 200 kL per annum	\$	$P7 = P2 + P5$	76
	Annual bill	<b>P8</b> —Total typical residential bill	\$	$P8 = P3 + P6$	77
Finance	Revenue	<b>F1</b> —Total revenue: water supply	\$ 000s	Report	78
	Revenue	<b>F2</b> —Total revenue: wastewater	\$ 000s	Report	79
	Revenue	<b>F3</b> —Total income for the utility	\$ 000s	Report	80

Category	Sub category	Indicator	Units	Status	Page
Finance	Revenue	<b>F4</b> —Percentage of residential revenue from usage charges: water supply	%	Report	81
	Revenue	<b>F5</b> —Revenue per property: water supply	\$/property	$F5 = F1 / C4$	78
	Revenue	<b>F5.1</b> —Revenue per ML: water supply—bulk utility	\$/ML	$F5 = F1 / W11 \times 1000$	78
	Revenue	<b>F6</b> —Revenue per property: wastewater	\$/property	$F6 = F2 / C8$	79
	Revenue	<b>F6.1</b> —Revenue per ML: wastewater—bulk utility	\$/ML	$F6.1 = F2 / W18 \times 1000$	79
	Revenue	<b>F7</b> —Total income per property	\$/property	$F7 = F3 / C4$	80
	Revenue	<b>F7.1</b> —Total income per ML: bulk utility	\$/ML	$F7.1 = F3 / W11 \times 1000$	80
	Revenue from community service obligations	<b>F8</b> —Community service obligations ratio		$F8 = F25 / F3$	94
	Costs	<b>F9</b> —Written-down replacement cost of fixed water supply assets	\$ 000s	Report	82
	Costs	<b>F10</b> —Written-down replacement cost of fixed wastewater assets	\$ 000s	Report	82
	Costs	<b>IF11</b> —Operating cost: water supply	\$ 000s	Report	83
	Costs	<b>F11</b> —Operating cost per property: water supply	\$/property	$F11 = IF11 / C4$	83
	Costs	<b>F11.1</b> —Operating cost per ML: water supply—bulk utility	\$/ML	$F11.1 = IF11 / W11 \times 1000$	83
	Costs	<b>IF12</b> —Operating cost: wastewater	\$ 000s	Report	84

Category	Sub category	Indicator	Units	Status	Page
Finance	Costs	<b>F12</b> —Operating cost per property: wastewater	\$/property	F12 = IF12 / C8	84
	Costs	<b>F12.1</b> —Operating cost per ML: wastewater—bulk utility	\$/ML	F12.1 = IF12 / W18 x 1000	84
	Costs	<b>F13</b> —Combined operating cost per property: water supply and wastewater	\$/property	Report	86
	Costs	<b>F13.1</b> —Combined operating cost per ML: water supply and wastewater—bulk utility	\$/ML	Report	86
	Capital expenditure	<b>F14</b> —Capital expenditure: water supply	\$ 000s	Report	87
	Capital expenditure	<b>F15</b> —Capital expenditure: wastewater	\$ 000s	Report	88
	Capital expenditure	<b>F16</b> —Total capital expenditure: water supply and wastewater	\$ 000s	F16 = F14 + F15	88
	Economic real rate of return	<b>F17</b> —Economic real rate of return: water supply		Report	89
	Economic real rate of return	<b>F18</b> —Economic real rate of return: wastewater		Report	89
	Economic real rate of return	<b>F19</b> —Economic real rate of return: water supply and wastewater		Report	89
	Dividends	<b>F20</b> —Dividend	\$ 000s	Report	90
	Dividends	<b>F21</b> —Dividend payout ratio		F21 = F20 / F24	90
	Net debt to equity	<b>F22</b> —Net debt to equity ratio		Report	91



Category	Sub category	Indicator	Units	Status	Page
Finance	Interest cover	<b>F23</b> —Interest cover ratio		Report	92
	Dividends	<b>F24</b> —Net profit after tax (NPAT)	\$ 000s	Report	93
	Community service obligations	<b>F25</b> —Community service obligation	\$ 000s	Report	94
	Capital works grants	<b>F26</b> —Capital works grants: water supply	\$ 000s	Report	96
	Capital works grants	<b>F27</b> —Capital works grants: wastewater	\$ 000s	Report	96
	Capital expenditure	<b>F28</b> —Capital expenditure per property: water supply	\$/property	F28 = F14 / C4	87
	Capital expenditure	<b>F28.1</b> —Capital expenditure per ML: water supply—bulk utility	\$/ML	F28.1 = F14 / W11 x 1000	87
	Capital expenditure	<b>F29</b> —Capital expenditure per property: wastewater	\$/property	F29 = F15 / C8	88
	Capital expenditure	<b>F29.1</b> —Capital expenditure per ML: wastewater—bulk utility	\$/ML	F29.1 = F15 / W18 x 1000	88
	Net profit after tax	<b>F30</b> —Net profit after tax ratio		F30 = F24 / F3	93
Public health	Water quality compliance	<b>H1</b> —Water quality guidelines	provided as text	Report	97
	Water quality compliance	<b>H3</b> —Percentage of population where microbiological compliance was achieved	%	Report	97
	Water quality compliance	<b>H4</b> —Number of zones where chemical compliance was achieved	zones	Report	99

Category	Sub category	Indicator	Units	Status	Page
Public health	Water quality compliance	<b>H4a</b> —Total number of zones	zones	Report	99
	Water quality compliance	<b>H5</b> —Risk-based drinking water management plan externally assessed	yes/no	Report	102

## 4 Water resources indicators

### 4.1 Sources of water

Information on the sources of water used by utilities supports an understanding of the availability and use of water resources across the nation. It provides insight into the diversity of supply sources and can inform water security policy, planning and management decisions.

Information on water sources is also important for understanding and comparing the relative performance of utilities. For example, the cost of treating water to an acceptable standard and supplying it to users affects the revenue collected by water utilities, their profitability and the strength of their water-usage pricing signal.

<b>Indicator</b>	<b>W1</b> —Volume of water sourced from surface water
<b>Definition</b>	The gross volume of water taken by the utility from surface water sources during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Surface water sources</b> include:</p> <ul style="list-style-type: none"> <li>✓ rivers, creeks, and streams</li> <li>✓ surface water storages</li> <li>✓ irrigation channels</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ urban stormwater.</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ any water returned to surface water (also reported separately under W31)</li> <li>✓ water taken by service providers operating on behalf of the utility</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water purchased from another service provider such as a bulk water supplier (reported under W5.3).</li> </ul> <p>The <b>reported volume</b> should be based on the metered inflow of raw water to water treatment plants (WTPs) or metered extraction of raw water where it is supplied directly into the urban system without treatment.</p> <p>If a WTP inflow measurement is not available an outflow measurement can be used. In such cases, this should be documented in the associated footnote.</p> <p>Where possible avoid reporting volumes based on meters that are upstream of a WTP. Distribution system losses and gains can influence the measured volume significantly.</p>

<b>Indicator</b>	<b>W2</b> —Volume of water sourced from groundwater
<b>Definition</b>	The gross volume of water sourced by the utility from groundwater during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Groundwater sources</b> include:</p> <ul style="list-style-type: none"> <li>✓ aquifers, including those subject to aquifer replenishment.</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ water sourced by service providers operating infrastructure on behalf of the utility</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ water purchased from another service provider such as a bulk water supplier (reported under W5.3).</li> </ul> <p>The <b>reported volume</b> should be based on the metered outflow of treated water from WTPs or the metered extraction of raw water where it is supplied directly into the urban system without treatment.</p> <p>Where possible avoid reporting volumes based on meters that are upstream of a WTP. Distribution system losses and gains can influence the measured volume significantly.</p>

<b>Indicator</b>	<b>W3.1</b> —Volume of water sourced from desalinated marine waters
<b>Definition</b>	The net volume of water produced by the utility from the desalination of marine or estuarine water during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Marine or estuarine water</b> excludes:</p> <ul style="list-style-type: none"> <li>✗ surface water</li> <li>✗ groundwater</li> <li>✗ wastewater.</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ water produced by service providers operating infrastructure on behalf of the utility</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water purchased from another service provider such as a bulk water supplier (reported under W5.3).</li> </ul> <p>The <b>reported volume</b> should be based on the metered outflow of treated water from WTPs or the metered extraction of raw water where it is supplied directly into the urban system without treatment.</p> <p>Where possible avoid reporting volumes based on meters that are upstream of a WTP. Distribution system losses and gains can influence the measured volume significantly.</p>

## 4.2 Transfers: water supply

Information about water transfers supports an understanding of the availability and use of water resources in a regional context. It assists in understanding inter and intra catchment relationships, regional management practices and informs water security policy, planning and management decisions. For example, information on water transfers provides insight into the regional availability and use of water resources, water security and the impact of urban centres on surrounding catchments and groundwater aquifers.

<b>Indicator</b>	<b>W5.3</b> —Volume of water, excluding recycled water, received from other service providers or operational areas within the urban water supply system
<b>Definition</b>	The volume of water, potable and non-potable, excluding recycled water and urban stormwater, received by the utility from other service providers or operational areas within the urban water supply system during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Other service providers</b> include:</p> <ul style="list-style-type: none"> <li>✓ bulk water utilities</li> <li>✓ third-party infrastructure operators</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ service providers operating infrastructure on behalf of the utility e.g. BOOT schemes (see Practice Note 4).</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ raw water</li> <li>✓ bulk water purchases</li> <li>✓ any water that is subsequently exported to another utility</li> <li>✓ transfers not associated with a financial transaction</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ recycled water</li> <li>✗ urban stormwater.</li> </ul>

<b>Indicator</b>	<b>W14.3</b> —Volume of water, excluding recycled water, exported to other service providers or operational areas within the urban water supply system
<b>Definition</b>	The volume of water, potable and non-potable, excluding recycled water and urban stormwater, exported by the utility to other service providers or operational area within the urban water supply system during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Other service providers</b> includes:</p> <ul style="list-style-type: none"> <li>✓ bulk water utilities</li> <li>✓ third-party infrastructure operators</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ service providers operating infrastructure on behalf of the utility e.g. BOOT schemes.</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ raw water</li> <li>✓ bulk water purchases</li> <li>✓ any water that is subsequently exported to another utility</li> <li>✓ transfers not associated with a financial transaction</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ recycled water</li> <li>✗ urban stormwater.</li> </ul>

### 4.3 Water produced

The volume of water produced provides insight into the efficiency of the urban water supply system and supports an understanding of losses and other non-revenue streams. For example, the comparison of production data with customer usage data provides insights into the performance of urban water supply systems; including system losses.

<b>Indicator</b>	<b>W11.3</b> —Volume of potable water produced for supply into the urban water supply system
<b>Definition</b>	The volume of potable water produced by the utility for supply into the urban water supply system, during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	The <b>reported volume</b> is measured at the outflow of treatment plants (e.g. water treatment plants, desalination plants, disinfection plants) or at the beginning of the urban water supply system. Distribution system losses and gains can influence the measured volume significantly and should be excluded.

## 4.4 Water use

Understanding water use is central to the planning and management of urban water systems. In particular, it underpins water security planning and management as well as being central to developing water policy which supports decision making at all levels of government. It also assists in understanding the role of water in the economy and the impact of management decisions on it. For example, understanding the impact of water restrictions on the economy assists in developing restriction policies.

<b>Indicator</b>	<b>W8.3</b> —Volume of water supplied to residential customers
<b>Definition</b>	The volume of water, potable and non-potable, excluding recycled water and urban stormwater supplied by the utility to residential customers during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ water received from other service providers</li> <li>✓ metered and unmetered volumes—metered volumes should be based on customer metering data and information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ recycled water</li> <li>✗ urban stormwater.</li> </ul>

<b>Indicator</b>	<b>W9.3</b> —Volume of water supplied to non-residential customers
<b>Definition</b>	The volume of water, potable and non-potable, excluding recycled water and urban stormwater supplied by the utility to non-residential properties during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Non-residential residential customers</b> include:</p> <ul style="list-style-type: none"> <li>✓ commercial, industrial and municipal customers</li> <li>✓ agricultural customers including irrigation of crops, forestry and livestock</li> <li>✓ water treatment process water, e.g. mains flushing and other consumption due to operations</li> <li>✓ fire services</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water supplied to managed aquifer recharge schemes (reported under W31)</li> <li>✗ environmental releases (reported under W31 or W13).</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ water received from other service providers</li> <li>✓ unbilled authorised consumption, unauthorised consumption and real and apparent losses for the potable and non-potable systems—metered volumes should be based on customer metering data and information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ recycled water</li> <li>✗ urban stormwater.</li> </ul> <p>Note, the unbilled authorised consumption, unauthorised consumption and real and apparent losses for the potable system are reported separately under W10.1 as the volume of non-revenue water.</p>

<b>Indicator</b>	<b>W31</b> —Volume of water returned to surface water or groundwater from the urban water supply system
<b>Definition</b>	The volume of water, potable and non-potable, returned by the utility to surface water or groundwater from the urban water supply system during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ raw water</li> <li>✓ water supplied to managed aquifer recharge</li> <li>✓ water received from other service providers</li> <li>✓ water that has been subjected to treatment for use and subsequently returned to surface water</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> <li>✓ environmental releases made from the potable supply system, i.e. after treatment—releases from the potable supply system should be noted in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✓ recycled water</li> <li>✓ urban stormwater.</li> </ul>

<b>Indicator</b>	<b>W13</b> —Volume of water returned as environmental flows from outside of the urban water supply system
<b>Definition</b>	The volume of non-potable water returned by the utility to the environment during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Environmental flows</b> are:</p> <ul style="list-style-type: none"> <li>✓ released under a specific environmental management plan prepared in conjunction with and/or approved by the appropriate regulator.</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ environmental releases made from outside of the urban water supply system, i.e. before treatment</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water that has been subjected to treatment for use and subsequently returned to surface water (reported under W31)</li> <li>✗ accidental or unintentional releases, unless they are incorporated into the environmental flow management regime—clarification should be sought from the State or Territory regulator on any component of unintended releases to be included in environmental flows</li> <li>✗ recycled water</li> <li>✗ urban stormwater.</li> </ul>



<b>Indicator</b>	<b>W10.1</b> —Volume of non-revenue water
<b>Definition</b>	The volume of non-revenue water associated with the utilities potable water supply system during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Non-revenue water</b> includes:</p> <ul style="list-style-type: none"> <li>✓ unbilled (non-revenue), authorised metered and unmetered supply</li> <li>✓ apparent losses—including unauthorised use and customer metering inaccuracy</li> <li>✓ real losses—including leakage on mains, leakage and overflows at storages, and leakage on service connections up to the point of the customer meter.</li> </ul> <p>Non-revenue water losses are defined as per the Water Services Association of Australia<sup>2</sup> (WSAA) and International Water Association (IWA) guidelines<sup>3</sup> (see Practice Note 3).</p>

## 4.5 Wastewater collected

Information on the volumes of wastewater collected by utilities supports an understanding of the use and disposal of water resources across the nation. It provides insight into the performance of wastewater and water supply systems and informs urban planning and management policies and decisions. It can also help explain trends in recycled water production and use, revenue from wastewater services, wastewater asset performance, and operating costs and capital expenditure.

<b>Indicator</b>	<b>W16</b> —Volume of wastewater, excluding trade waste, collected
<b>Definition</b>	The volume of wastewater, excluding trade waste collected by the utility during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Non-trade waste wastewater</b> includes:</p> <ul style="list-style-type: none"> <li>✓ domestic wastewater (sewage)</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ trade waste.</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ infiltration of groundwater in the wastewater system</li> <li>✓ stormwater—including stormwater ingress and illegal connections</li> <li>✓ wastewater collected by the utility or service providers operating infrastructure on behalf of the utility</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ transfers from other utilities, third-party operators and other operational areas (reported under W18.2)</li> <li>✗ transfers from the wastewater treatment system.</li> </ul>

<sup>2</sup> Lambert A. and Hirner W. (2000): Losses from Water Supply Systems: Standard Terminology and Recommended Performance Measures.

<sup>3</sup> Water Services Association of Australia (2001). Benchmarking of Water Losses in Australia.

<b>Indicator</b>	<b>W17</b> —Volume of trade waste collected
<b>Definition</b>	The volume of trade waste collected by the utility during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Trade waste</b> includes:</p> <ul style="list-style-type: none"> <li>✓ liquid waste generated from any industry, business, trade, or manufacturing processes</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ domestic wastewater</li> <li>✗ recycled water.</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ any volumes of stormwater collected in the trade waste system</li> <li>✓ trade waste collected by the utility or service providers operating infrastructure on behalf of the utility</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ transfers from other utilities, third-party operators and other operational areas (reported under W18.2).</li> </ul>

## 4.6 Inflow to plant

The volume of wastewater entering treatment plants provides insight into the operation and efficiency of urban wastewater systems and supports an understanding of their performance. This information in turn supports policy as well as planning and management decisions. In addition to providing insight into the performance of the urban wastewater system, inflow information assists with data validation and ensuring the integrity of the data reported.

<b>Indicator</b>	<b>W18.4</b> —Volume of wastewater inflow to wastewater treatment plants
<b>Definition</b>	The volume of wastewater inflows to the utility's wastewater treatment plants during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ trade waste</li> <li>✓ wastewater collected by the utility or service providers operating infrastructure on behalf of the utility</li> <li>✓ wastewater taken from other infrastructure operators</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ wastewater supplied to other utilities or infrastructure operators</li> <li>✗ wastewater transferred to plants owned or operated by the utility but outside of the reporting region</li> <li>✗ wastewater extracted for sewer mining.</li> </ul> <p>The <b>reported volume</b> should be based on the metered inflow to WWTPs. Where inflow meters are not available the method for estimating inflows should be noted in the associated footnote.</p>

## 4.7 Transfers: wastewater

Information on wastewater transfers supports an understanding of urban wastewater disposal in a regional context and provides a holistic understanding of the impact of urban centres on their surrounding environments. It assists in understanding inter-catchment relationships and regional management practices and informs planning and management decisions

<b>Indicator</b>	<b>W18.2</b> —Volume of wastewater received from other service providers or operational areas within the urban wastewater system
<b>Definition</b>	The total volume of wastewater received by the utility from other service providers or operational areas, within the urban water supply system, during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ trade waste</li> <li>✓ transfers not associated with a financial transaction</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ recycled water</li> <li>✗ urban stormwater.</li> </ul>

<b>Indicator</b>	<b>W18.1</b> —Volume of wastewater exported to other service providers or operational areas within the urban wastewater system
<b>Definition</b>	The total volume of wastewater exported by the utility to other service providers or operational areas within the urban wastewater system during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ trade waste</li> <li>✓ transfers not associated with a financial transaction</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote.</li> </ul>

## 4.8 Extraction for sewer mining

Information on sewer mining supports an understanding of the overall urban wastewater system balance, and of the recycling and reuse of wastewater. Understanding these extractions also informs policy, planning, and management decisions.

<b>Indicator</b>	<b>W18.3</b> —Volume of wastewater taken through sewer mining
<b>Definition</b>	The volume of wastewater extracted through sewer mining by any service provider, from the utility's sewer system during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes wastewater extracted by the:</p> <ul style="list-style-type: none"> <li>✓ utility or a service provider operating infrastructure on behalf of the utility</li> <li>✓ independent operators</li> <li>✓ extractions not associated with a financial transaction</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote.</li> </ul>

## 4.9 Outflow from plant

Information on the wastewater discharges and disposals from wastewater treatment plants (WWTPs) supports an understanding of the use and disposal of water resources across the nation. It provides insight into the performance of urban wastewater and water supply systems, informs urban planning and management policies and decisions and supports an understanding of the environmental impacts of urban centres.

<b>Indicator</b>	<b>W18.5</b> —Volume of treated effluent outflow from wastewater treatment plants
<b>Definition</b>	The volume of treated wastewater (effluent) discharged from a utility's wastewater treatment plants during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ treated effluent that is subsequently disposed of (also reported under W29)</li> <li>✓ treated effluent returned to the wastewater system</li> <li>✓ treated effluent that is recycled, either directly or with further treatment</li> <li>✓ losses during treatment processes</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ onsite usage (reported under W21).</li> </ul> <p>The <b>reported volume</b> should be based on the metered outflows at the outlet of WWTPs. Where outflow meters are not available the method for estimating outflows should be noted in the associated footnote.</p>

<b>Indicator</b>	<b>W29</b> —Volume of treated wastewater disposals
<b>Definition</b>	The volume of treated wastewater (effluent) disposed of by the utility during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ treated wastewater disposals</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ aquifer replenishment</li> <li>✗ recycling</li> <li>✗ onsite use</li> <li>✗ environmental releases</li> <li>✗ losses that occur between leaving the WWTP and the disposal site.</li> </ul> <p>The <b>reported volume</b> should be based on metering at the disposal site.</p>

<b>Indicator</b>	<b>W30</b> —Volume of wastewater losses and spills
<b>Definition</b>	The volume of treated and untreated wastewater losses and spills from the utility’s urban wastewater system during the reporting year.
<b>General supporting notes</b>	<p><b>Losses and spills</b> include:</p> <ul style="list-style-type: none"> <li>✓ system overflows upstream of the wastewater treatment plant (WWTP)</li> <li>✓ WWTP plant bypasses (e.g. wet weather flows)</li> <li>✓ evaporation and exfiltration losses</li> <li>✓ sludge removal.</li> </ul>

## 4.10 Transfers: recycled water

Information on recycled water transfers supports an understanding of the urban wastewater and recycled water systems in a regional context. It assists in understanding inter-catchment relationships and regional management practices and informs planning and management decisions.

<b>Indicator</b>	<b>W6</b> —Volume of recycled water received from other service providers or operational areas within the urban water supply system
<b>Definition</b>	The volume of recycled water received by the utility from other service providers or operational areas within the urban water system, during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ bulk recycled water purchases</li> <li>✓ any water that is subsequently exported to another utility</li> <li>✓ water extracted by sewer mining</li> <li>✓ recycled water received from independent operators</li> <li>✓ transfers not associated with a financial transaction</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water extracted from aquifers subject to aquifer replenishment</li> <li>✗ treated urban stormwater</li> <li>✗ recycled water received from a service provider operating infrastructure on behalf of the utility.</li> </ul>

<b>Indicator name</b>	<b>W15</b> —Volume of recycled water exported to other service providers or operational areas within the urban water supply system
<b>Definition</b>	The volume of recycled water exported by the utility to other service providers or operational areas within the urban water system, during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ bulk recycled water exports</li> <li>✓ water extracted by sewer mining</li> <li>✓ transfers not associated with a financial transaction</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water extracted from aquifers subject to aquifer replenishment</li> <li>✗ treated urban stormwater</li> <li>✗ recycled water exported to a service providers operating infrastructure on behalf of the utility.</li> </ul>

## 4.11 Recycled water use

Understanding urban recycled water use is central to policy, planning and management decisions. For example, information on recycled water use provides insight into the role of alternative water sources in managing water security through source diversification and can provide an important measure of success for policy and investment decisions aimed at increasing the use of this resource. Recycled water use information also assists in understanding the role of the resource in the economy. Understanding usage patterns and trends can inform policy and investment decisions that impact on the recycled water sector and users of the resource.

<b>Indicator</b>	<b>W20</b> —Volume of recycled water supplied to residential customers
<b>Definition</b>	The volume of recycled water supplied by the utility to residential customers during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ potable water used to top-up the recycled water system</li> <li>✓ recycled water derived from sewer mining</li> <li>✓ unmetered volumes—information on estimates should be included in the associated</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water extracted from aquifers subject to aquifer replenishment using recycled water (reported under W2)</li> <li>✗ treated urban stormwater.</li> </ul>

<b>Indicator</b>	<b>W21</b> —Volume of recycled water supplied to non-residential customers
<b>Definition</b>	The volume of recycled water supplied by the utility to non-residential customers during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Non-residential residential customers</b> include:</p> <ul style="list-style-type: none"> <li>✓ commercial, industrial and municipal customers</li> <li>✓ agricultural customers including irrigation of crops, forestry and livestock</li> <li>✓ water treatment process water, e.g. mains flushing and other consumption due to operations (onsite use)</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water supplied to MAR schemes (reported under W25.1)</li> <li>✗ recycled water supplied as environmental flows (reported under W23).</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ potable water used to top-up the recycled water system</li> <li>✓ recycled water derived from sewer mining</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water extracted from aquifers subject to managed aquifer recharge using recycled water (reported under W2)</li> <li>✗ treated urban stormwater (reported under W28.5).</li> </ul>

<b>Indicator</b>	<b>W23</b> —Volume of recycled water supplied as environmental flows
<b>Definition</b>	The volume of recycled water supplied by the utility to the environment during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ recycled water discharged to waterways (rivers, seas, natural wetlands) for environmental purposes as prescribed by the environmental regulator</li> <li>✓ recycled water derived from sewer mining</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ non-harvestable forests and bushland if the regulator determines this is 'disposal' rather than 'beneficial use'</li> <li>✗ water extracted from aquifers subject to aquifer replenishment with recycled water</li> <li>✗ treated urban stormwater.</li> </ul>

<b>Indicator</b>	<b>W25.1</b> — Volume of recycled water supplied to managed aquifer recharge
<b>Definition</b>	The volume of recycled water supplied by the utility to managed aquifer recharge during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Managed aquifer recharge</b> is:</p> <ul style="list-style-type: none"> <li>✓ the intentional recharge of water to suitable aquifers for subsequent recovery or to achieve environmental benefits.</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ treated urban stormwater.</li> </ul>



## 4.12 Stormwater use

Understanding urban stormwater use is central to policy, planning and management decisions. For example, information on stormwater use provides insight into the role of alternative water sources in managing water security through source diversification. It can provide an important measure of success for policy and investment decisions aimed at increasing the use of this resource

<b>Indicator</b>	<b>W28.4</b> —Volume of urban stormwater supplied to residential customers
<b>Definition</b>	The total volume of urban stormwater supplied by the utility to residential customers during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ potable water used to top-up the urban stormwater supply system</li> <li>✓ unmetered volumes—information on estimates should be included in the associated</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water extracted from aquifers subject to recharge with urban stormwater (reported under W2).</li> </ul>

<b>Indicator</b>	<b>W28.5</b> —Volume of urban stormwater supplied to non-residential customers
<b>Definition</b>	The total volume of urban stormwater supplied by the utility to non-residential customers during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>The reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ urban stormwater discharged to waterways (rivers, seas, natural wetlands) for environmental purposes as prescribed by the environmental regulator</li> <li>✓ potable water used to top-up the urban stormwater supply system</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water extracted from aquifers subject to recharge with urban stormwater (reported under W2).</li> </ul>

### 4.13 Derived indicators

<b>Indicator</b>	<b>W7</b> —Total volume of water sourced
<b>Definition</b>	The total volume of water, potable and non-potable, sourced by the utility during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ raw water</li> <li>✓ bulk water purchases</li> <li>✓ any water that is subsequently exported to another utility</li> <li>✓ transfers not associated with a financial transaction</li> <li>✓ unmetered volumes</li> <li>✓ recycled water</li> <li>✓ urban stormwater</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ any water (raw, potable, non-potable, recycled and stormwater) supplied to managed aquifer recharge (MAR) or as environmental flows.</li> </ul>
<b>Derivation</b>	$  \begin{aligned}  \mathbf{W7} &= W1 + W2 + W3.1 + W5.3 - W31 + W20 + W21 + W28.4 + W28.5 \\  &= [W1—Volume of water sourced from surface water] \\  &+ [W2—Volume of water sourced from groundwater] \\  &+ [W3.1—Volume of water sourced from desalinated marine waters] \\  &+ [W5.3—Volume of water, excluding recycled water, received from other service providers or operational areas within the urban water supply system] \\  &- [W31—Volume of water returned to surface water or groundwater from the urban water supply system] \\  &+ [W20—Volume of recycled water supplied to residential customers] \\  &+ [W21—Volume of recycled water supplied to non-residential customers] \\  &+ [W28.4—Volume of urban stormwater supplied to residential customers] \\  &+ [W28.5—Volume of urban stormwater supplied to non-residential customers]  \end{aligned}  $

<b>Indicator</b>	<b>W5</b> —Total volume of water received from other service providers or operational areas within the urban water system
<b>Definition</b>	The total volume of water, potable and non-potable, excluding urban stormwater, transferred by the utility to other service providers or operational areas within the urban water system, in megalitres (ML).
<b>General supporting notes</b>	<p>The reported volume includes:</p> <ul style="list-style-type: none"> <li>✓ raw water</li> <li>✓ bulk water purchases</li> <li>✓ any water that is subsequently exported to another utility</li> <li>✓ transfers not associated with a financial transaction</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote.</li> <li>✓ recycled water</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✓ urban stormwater.</li> </ul>
<b>Derivation</b>	<p><b>W5</b>= W5.3 + W6</p> <p>= [W5.3—Volume of water, excluding recycled water, received from other service providers or operational areas within the urban water supply system]</p> <p>+ [W6—Volume of recycled water received from other service providers or operational areas within the urban water supply system]</p>

<b>Indicator</b>	<b>W14</b> —Total volume of water exported to other service providers or operational areas within the urban water supply system
<b>Definition</b>	The total volume of water, potable and non-potable, excluding urban stormwater, transferred by the utility to other service providers or operational areas within the urban water system, in megalitres (ML).
<b>General supporting notes</b>	<p>The reported volume includes:</p> <ul style="list-style-type: none"> <li>✓ raw water</li> <li>✓ bulk water purchases</li> <li>✓ any water that is subsequently exported to another utility</li> <li>✓ transfers not associated with a financial transaction</li> <li>✓ unmetered volumes</li> <li>✓ recycled water</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✓ urban stormwater.</li> </ul>
<b>Derivation</b>	<p><b>W14</b>= W14.3 + W15</p> <p>= [W14.3—Volume of water, excluding recycled water, exported to other service providers or operational areas within the urban water supply system]</p> <p>+ [W15—Volume of recycled water exported to other service providers or operational areas within the urban water supply system]</p>

<b>Indicator</b>	<b>W8</b> —Total volume of water supplied to residential customers
<b>Definition</b>	The total volume of water, potable and non-potable, supplied by the utility to residential properties during the reporting year in megalitres (ML).
<b>General supporting notes</b>	The <b>reported volume</b> includes: <ul style="list-style-type: none"> <li>✓ water received from other service providers</li> <li>✓ metered and unmetered volumes</li> <li>✓ recycled water</li> <li>✓ urban stormwater.</li> </ul>
<b>Derivation</b>	$W8 = W8.3 + W20 + W28.4$ $= [W8.3—Volume of water supplied to residential customers]$ $+ [W20—Volume of recycled water supplied to residential customers]$ $+ [W28.4—Volume of urban stormwater supplied to residential customers]$

<b>Indicator</b>	<b>W9</b> —Total volume of water supplied to non-residential customers
<b>Definition</b>	The total volume of water, potable and non-potable, supplied by the utility to non-residential properties during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Non-residential residential customers</b> include:</p> <ul style="list-style-type: none"> <li>✓ commercial, industrial and municipal customers</li> <li>✓ agricultural customers including irrigation of crops, forestry and livestock</li> <li>✓ water treatment process water, e.g. mains flushing and other consumption due to operations</li> <li>✓ fire services</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water supplied to MAR schemes</li> <li>✗ environmental releases.</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ water received from other service providers</li> <li>✓ metered and unmetered volumes</li> <li>✓ environmental releases made from the urban water supply system, i.e. after treatment</li> <li>✓ recycled water</li> <li>✓ urban stormwater</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✓ unbilled (non-revenue), authorised metered and unmetered supply.</li> </ul>
<b>Derivation</b>	$W9 = W9.3 + W21 + W28.5$ $= [W9.3—Volume of water supplied to non-residential customers]$ $+ [W21—Volume of recycled water supplied to non-residential customers]$ $+ [W28.5—Volume of urban stormwater supplied to non-residential customers]$

<b>Indicator</b>	<b>W11</b> —Total volume of urban water supplied
<b>Definition</b>	The total volume of water, potable and non-potable, supplied to residential and non-residential customers by the utility during the reporting year, in megalitres (ML).
<b>General supporting notes</b>	<p><b>Non-residential residential customers</b> include:</p> <ul style="list-style-type: none"> <li>✓ commercial, industrial and municipal customers</li> <li>✓ agricultural customers including irrigation of crops, forestry and livestock</li> <li>✓ water treatment process water, e.g. mains flushing and other consumption due to operations</li> <li>✓ fire services</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water supplied to MAR schemes</li> <li>✗ environmental releases.</li> </ul> <p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ raw water</li> <li>✓ bulk water purchases</li> <li>✓ any water that is subsequently exported to another utility</li> <li>✓ transfers not associated with a financial transaction</li> <li>✓ unmetered volumes</li> <li>✓ recycled water</li> <li>✓ urban stormwater.</li> </ul>
<b>Derivation</b>	$W11 = W8.3 + W9.3 + W20 + W21 + W28.4 + W28.5$ $= [W8.3\text{—Total volume of water supplied to residential customers}]$ $+ [W9.3\text{—Total volume of water supplied to non-residential customers}]$ $+ [W20\text{—Volume of recycled water supplied to residential customers}]$ $+ [W21\text{—Volume of recycled water supplied to non-residential customers}]$ $+ [W28.4\text{—Volume of urban stormwater supplied to residential customers}]$ $+ [W28.5\text{—Volume of urban stormwater supplied to non-residential customers}]$

<b>Indicator</b>	<b>W12</b> —Average volume of residential water supplied per property
<b>Definition</b>	The average volume of water, potable and non-potable, supplied to residential properties by the utility during the reporting year, in megalitres per property (ML/property).
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ water received from other service providers</li> <li>✓ metered and unmetered volumes</li> <li>✓ recycled water</li> <li>✓ urban stormwater.</li> </ul>
<b>Derivation</b>	$W12 = W8 / C2$ $= ([W8\text{— Total volume of water supplied to residential customers}]$ $/ [C2\text{—Number of connected residential properties: water supply}]$

<b>Indicator</b>	<b>W18</b> —Total volume of wastewater collected	<b>W19</b> —Average volume of wastewater collected per property
<b>Definition</b>	The total volume of wastewater collected by the utility during the reporting year, in megalitres (ML).	The average volume of wastewater collected by the utility, during the reporting year, in megalitres per property (ML/property)
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ trade waste collected by the utility or service providers operating infrastructure on behalf of the utility</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> <li>✓ wastewater collected by the utility or service providers operating infrastructure on behalf of the utility</li> <li>✓ unmetered volumes—information on estimates should be included in the associated footnote</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ transfers from other utilities or third-party operators</li> <li>✗ transfers from other operational areas (reported under W18.2)</li> <li>✗ transfers from the wastewater treatment system.</li> </ul>	
<b>Derivation</b>	<b>W18</b> = W16 + W17 = [W16—Volume of wastewater, excluding trade waste, collected] + [W17—Volume of trade waste collected]	
	<b>W19</b> = W18 / C8 = [W18—Total volume of wastewater collected] / [C8—Total number of connected properties: wastewater]	

<b>Indicator</b>	<b>W26</b> —Total volume of recycled water supplied	
<b>Definition</b>	The total volume of recycled water supplied by the utility during the reporting year, in megalitres (ML).	
<b>General supporting notes</b>	<p>The <b>reported volume</b> includes:</p> <ul style="list-style-type: none"> <li>✓ potable water used to top-up the recycled water system</li> <li>✓ recycled water derived from sewer mining</li> <li>✓ recycled water discharged to waterways (rivers, seas, natural wetlands) for environmental purposes as prescribed by the environmental regulator</li> <li>✓ unmetered volumes—information on estimates should be included in the associated</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water extracted from aquifers subject to aquifer replenishment using recycled water (reported under W2)</li> <li>✗ treated urban stormwater.</li> </ul>	
<b>Derivation</b>	<b>W26</b> = W20 + W21+ W23 + W25.1 = [W20—Volume of recycled water supplied to residential customers] + [W21—Volume of recycled water supplied to non-residential customers] + [W23—Volume of recycled water supplied as environmental flows] + [W25.1—Volume of recycled water supplied to managed aquifer recharge]	

<b>Indicator</b>	<b>W27</b> —Recycled water as a percentage of total wastewater collected
<b>Definition</b>	The volume of recycled water supplied by the utility as a percentage of the total wastewater collected during the reporting year (%).
<b>General supporting notes</b>	<p>The reported volume includes:</p> <ul style="list-style-type: none"> <li>✓ raw water</li> <li>✓ bulk water purchases</li> <li>✓ any water that is subsequently exported to another utility</li> <li>✓ transfers not associated with a financial transaction</li> <li>✓ unmetered volumes</li> <li>✓ recycled water</li> <li>✓ urban stormwater.</li> </ul>
<b>Derivation</b>	$\text{W27} = (W26 + W15 - W6) / W18.5 \times 100$ <p>= ([W26—Total volume of recycled water supplied]</p> <p>+ [W15—Volume of recycled water exported to other service providers or operational areas within the urban water supply system]</p> <p>– [W6—Volume of recycled water received from other service providers or operational areas within the urban water supply system])</p> <p>/ ([W18.5—Volume of treated effluent outflow from wastewater treatment plants])</p> <p>x 100</p>

## 5 Assets

### 5.1 Water treatment plants

Information on water treatment plants supports an understanding of the level and complexity of treatment provided by utilities to bring water quality to an acceptable level for the customer.

Information on treatment plants can also provide a partial explanation of a utility's relative operating costs and total costs. For example, a utility providing full treatment for most of its supply would have a significantly higher cost structure than one providing lesser treatment such as disinfection only.

<b>Indicator</b>	<b>A1</b> —Number of water treatment plants providing full treatment
<b>Definition</b>	The total number of water treatment plants providing full treatment during the reporting year (plants).
<b>General supporting notes</b>	<p><b>Water treatment plant</b> includes:</p> <ul style="list-style-type: none"> <li>✓ individual facilities receiving raw or partially treated water for treatment and ultimate delivery to customers—noting there could be more than one facility at a location</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ secondary or booster disinfection facilities.</li> </ul> <p>The <b>number of plants</b> includes:</p> <ul style="list-style-type: none"> <li>✓ plants that are owned by the utility or form part of a Build Own, Operate, Transfer (BOOT) contract between the utility and a third party (see Practice Note 4)</li> <li>✓ plants that remove colour and turbidity as well as provide filtration and disinfection</li> <li>✓ plants that may also include in addition to the above, taste and odour reduction, softening, pH correction and the targeted removal of elements and compounds such as iron, manganese, nitrates, and pesticides</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ plants that only include disinfection processes such as chlorination, chloramination, ozonation, and ultraviolet treatment.</li> </ul>



## 5.2 Other water assets

Information on water mains supports an understanding of the scale of a utility's water mains distribution and reticulation network and the spatial density of properties served. It also provides an indication of the ease or difficulty of delivery of water to customers and is used as a normaliser for a number of other indicators. The information is independent of source assets to facilitate a comparison of water schemes.

<b>Indicator</b>	<b>A2</b> —Length of water supply mains
<b>Definition</b>	The total length of water supply mains as at the end of the reporting year, in kilometres (km).
<b>General supporting notes</b>	<p><b>Water mains</b> include:</p> <ul style="list-style-type: none"> <li>✓ transfer mains</li> <li>✓ distribution mains</li> <li>✓ reticulation mains</li> <li>✓ recycled water distribution mains</li> <li>✓ recycled water reticulation mains</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ mains associated with property water service (mains to meter) connections</li> <li>✗ mains delivering recycled water for non-urban uses, e.g. agriculture reuse</li> <li>✗ discussed pipe lengths should not be counted, even if they are maintained by the water utility for possible future use</li> <li>✗ privately owned mains</li> <li>✗ mains associated with source works, e.g. bore field mains</li> <li>✗ mains and channels associated with sources that transfer raw water</li> <li>✗ recycled water mains not supplying water direct to customers</li> <li>✗ mains associated with facilities, e.g. mains within pump stations, storage facilities or treatments plants.</li> </ul>

<b>Indicator</b>	<b>A3</b> —Number of properties served per km of water main
<b>Definition</b>	The average number of properties connected to the water supply network per kilometre of water main (properties/km).
<b>General supporting notes</b>	<p><b>Water mains</b> includes:</p> <ul style="list-style-type: none"> <li>✓ transfer mains</li> <li>✓ distribution mains</li> <li>✓ reticulation mains</li> <li>✓ recycled water distribution mains</li> <li>✓ recycled water reticulation mains</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ mains associated with property water service (mains to meter) connections</li> <li>✗ mains delivering recycled water for non-urban uses, e.g. agriculture reuse</li> <li>✗ discussed pipe lengths should not be counted, even if they are maintained by the water utility for possible future use</li> <li>✗ privately owned mains</li> <li>✗ mains associated with source works, e.g. bore field mains</li> <li>✗ mains and channels associated with sources that transfer raw water</li> <li>✗ recycled water mains not supplying water direct to customers</li> <li>✗ mains associated with facilities, e.g. mains within pump stations, storage facilities or treatments plants.</li> </ul>
<b>Derivation</b>	$A3 = (C4 \times 1000) / A2$ $= ([C4—Total number of connected properties: water supply] \times 1000) / [A2—Length of water mains]$

### 5.3 Wastewater assets

Information on wastewater treatment plants supports an understanding of the scale of a utility's wastewater network and the spatial density of the properties served.

Information on treatment plants can also provide a partial explanation of a utility's relative operating costs and total costs. For example, a utility providing full treatment for most of its supply would have a significantly higher cost structure than one providing lesser treatment

Information on wastewater treatment plants supports an understanding of the scale of a utility's wastewater network and the spatial density of the properties served.

<b>Indicator</b>	<b>A4</b> —Number of wastewater treatment plants
<b>Definition</b>	The total number of wastewater treatment plants providing wastewater services to customers during the reporting year (plants).
<b>General supporting notes</b>	<p><b>Wastewater treatment plants</b> include:</p> <ul style="list-style-type: none"> <li>✓ primary</li> <li>✓ secondary</li> <li>✓ tertiary</li> <li>✓ Build Own, Operate, Transfer schemes (see Practice Note 4).</li> </ul>

<b>Indicator</b>	<b>A5</b> —Length of sewer mains and channels
<b>Definition</b>	The total length of sewer mains and channels at the end of the reporting year, in kilometres (km).
<b>General supporting notes</b>	<p><b>Mains and channels</b> include:</p> <ul style="list-style-type: none"> <li>✓ all trunk, pressure, and reticulation mains</li> <li>✓ wastewater and stormwater mains</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ property connection sewers</li> <li>✗ conduits and pipelines downstream from the treatment plant.</li> </ul>

<b>Indicator</b>	<b>A6</b> —Number of properties served per km of sewer main
<b>Definition</b>	The average number of properties connected to the sewer network per kilometre of sewer main (properties/km).
<b>General supporting notes</b>	<p><b>Mains and channels</b> include:</p> <ul style="list-style-type: none"> <li>✓ all trunk, pressure, and reticulation mains</li> <li>✓ wastewater and stormwater mains</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ property connection sewers</li> <li>✗ conduits and pipelines downstream from the treatment plant.</li> </ul>
<b>Derivation</b>	$A6 = (C8 \times 1000) / A5$ $= ([C8\text{—Total number of connected properties: wastewater}] \times 1000) / [A5\text{—Length of sewer mains and channels}]$

## 5.4 Water supply main breaks

Information about water main breaks supports an understanding of the overall water main system balance, customer service and the condition of the water main network. It provides insight into the performance of supply systems and informs urban planning and management policies and decisions. Also, it supports an understanding of the impact of 'non-management' factors—mains configuration, soil composition, climate, tree planting, age of infrastructure, water main depth, water main materials, and water main diameter.

<b>Indicator</b>	<b>IA8</b> —Number of water main breaks, bursts, and leaks	<b>A8</b> —Number of water main breaks, bursts, and leaks, per 100 km of water mains
<b>Definition</b>	The number of water main breaks, bursts, and leaks in the water distribution and reticulation mains during the reporting year (mains breaks).	The total number of water main breaks, bursts, and leaks per 100km of water distribution and reticulation mains during the reporting year (mains breaks/100 km).
<b>General supporting notes</b>	<p><b>Water main breaks</b> exclude:</p> <ul style="list-style-type: none"> <li>✘ mains to meter connection (property service)</li> <li>✘ weeps or seepages associated with above ground mains that can be fixed without shutting down main.</li> </ul>	
<b>Derivation</b>	$A8 = (IA8 / A2) \times 100$ $= ([IA8—Number of water main breaks, bursts and leaks] / [A2— Length of water supply mains]) \times 100$	

## 5.5 Water supply losses

Information on water supply losses supports an understanding of the performance of a utility's distribution network. Real losses represent a wasted resource and can increase operating costs for a utility.

<b>Indicator</b>	<b>A9</b> —Infrastructure leakage index (ILI)
<b>Definition</b>	The ratio of the utility's current annual real losses (CARL) to the unavoidable annual real losses (UARL) within the potable water supply system during the reporting year.
<b>General supporting notes</b>	<p><b>Current annual real losses (CARL)</b> include</p> <ul style="list-style-type: none"> <li>✓ Leakage and overflow from mains service reservoirs and service connections prior to customer meters</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ losses in the non-potable supply system.</li> </ul> <p>The <b>reported volume</b> should be estimated using standard water balance approaches detailed in the Water Services Association of Australia<sup>4</sup> (WSAA) and International Water Association<sup>5, 6</sup> (IWA) (see Practice Note 3).</p> <p>Regional water utilities should report the ILI for the infrastructure providing water services to the major towns only.</p> <p><b>Unavoidable annual real losses (UARL)</b> are a theoretical reference value representing the technical lower limit of leakage that could be achieved if all of today's best technology could be successfully applied.<sup>7</sup></p> <p>The <b>UARL</b> should be based on average system pressure measurements in the pressurised distribution system up to the point of customer metering.</p> $\text{UARL} = (18 \times L_m + 0.8 \times N_c) \times P$ <p>Where <math>L_m</math> = mains length (km)</p> <p style="padding-left: 40px;"><math>N_c</math> = number of service connections</p> <p style="padding-left: 40px;"><math>P</math> = average system pressure (m)</p> <p>The number of <b>service connections</b> is <b>not</b> the same as the number of metered accounts or <b>connected properties</b>.</p> <p>The number of service connections can be taken as being the number of metered accounts, minus the total of any sub-meters (after master meters, e.g. to shops and flats), plus the estimated number of unmetered service connections (e.g. fire service connections).</p> <p>It is <b>not</b> acceptable to use the total connected properties value (C4) for calculating the infrastructure leakage index.</p>

<sup>4</sup> Lambert A. and Hirner W. (2000): Losses from Water Supply Systems: Standard Terminology and Recommended Performance Measures.

<sup>5</sup> Water Services Association of Australia (2001). Benchmarking of Water Losses in Australia. ISSN 1 876088 96 6

<sup>6</sup> Alegre H., Hirner W., Baptista J.M. and Parena R. (2000) Performance Indicators for Water Supply Services. IWA Manual of Best Practice. ISBN 900222272

<sup>7</sup> American Water Works Association (2012). IWA/AWWA Water Audit Method.

<b>Indicator</b>	<b>A10</b> —Real losses: service connections
<b>Definition</b>	The average volume of leakage and overflow from the utility's potable water supply mains and service reservoirs per service connection during the reporting year (L/service connection/ day).
<b>General supporting notes</b>	<p><b>Real losses</b> include:</p> <ul style="list-style-type: none"> <li>✓ Leakage and overflows from mains, service reservoirs and service connections prior to customer meters</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ losses in the non-potable supply system.</li> </ul> <p>The number of <b>service connections</b> is <b>not</b> the same as the number of metered accounts or <b>connected properties</b>.</p> <p>The number of service connections can be taken as being the number of metered accounts, minus the total of any sub-meters (after master meters, e.g. to shops and flats), plus the estimated number of unmetered service connections (e.g. fire service connections).</p> <p>It is <b>not</b> acceptable to use the total connected properties value (C4) for calculating real losses per service connection.</p>

<b>Indicator</b>	<b>A11</b> —Real losses: water mains
<b>Definition</b>	The average volume of leakage and overflow from the utility's potable water supply mains and service reservoirs per kilometre of water mains during the reporting year (kL/km water supply main/day).
<b>General supporting notes</b>	<p><b>Real losses</b> include:</p> <ul style="list-style-type: none"> <li>✓ Leakage and overflows from mains, service reservoirs and service connections prior to customer meters</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ losses in the non-potable supply system.</li> </ul>
<b>Derivation</b>	$A11 = \text{Real losses} / [A2\text{—Length of water supply mains}]$

## 5.6 Sewer breaks and chokes

Information about sewer breaks and chokes supports an understanding of the overall wastewater system balance, and an understanding of customer service and the condition of the sewer network. It provides insight into the performance of wastewater and supply systems, and informs urban planning and management policies and decisions. Also, it supports an understanding of the impact of 'non-management' factors—sewer configuration, soil composition, climate, tree planting, age of infrastructure, sewer depth, sewer materials and sewer diameter.

<b>Indicator</b>	<b>A14</b> —Number of sewer mains breaks and chokes per 100 km
<b>Definition</b>	The number of breaks and chokes per 100 km of sewer mains during the reporting year (breaks and chokes/100km).
<b>General supporting notes</b>	<p><b>Wastewater mains breaks and chokes</b> include:</p> <ul style="list-style-type: none"> <li>✓ gravity sewer mains</li> <li>✓ pressure mains (including common effluent pipelines and rising mains)</li> <li>✓ vacuum system mains of any diameter</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ property connection sewers</li> <li>✗ pipelines carrying treated effluent</li> <li>✗ recycled water distribution and reticulation mains delivering water for urban areas; such mains are to be reported as water mains (A2).</li> </ul>
<b>Derivation</b>	$A14 = \text{Total number of sewerage mains breaks and chokes} / [A5\text{—Length of sewer mains and channels}]$

<b>Indicator</b>	<b>A15</b> —Number of property connection sewer breaks and chokes per 1,000 properties
<b>Definition</b>	The number of breaks and chokes in property connections per 1,000 properties during the reporting year (breaks and chokes/1,000 properties).
<b>General supporting notes</b>	<p><b>Sewer breaks and chokes</b> include:</p> <ul style="list-style-type: none"> <li>✓ the short sewer that connects the sewer main to the customer sanitary drain</li> <li>✓ the junction on the sewer main</li> <li>✓ property connection fitting</li> <li>✓ vertical riser</li> <li>✓ sufficient straight pipes to ensure the property connection fitting is within the lot to be serviced (refer to WSAA 02 Wastewater Code of Australia).</li> </ul> <p>The connection point (sometimes the inspection point) varies for different utilities and does not necessarily correspond to the customer boundary. The connection point is simply the point where the customer’s sanitary drain intersects with the utility’s ownership or maintenance of the property connection.</p> <p>Customer Asset      Utility Asset</p> <p>Customer sanitary drain      Connection point      Property connection      Reticulation main      Property boundary</p>
<b>Derivation</b>	$A15 = \text{Total number of property connection sewer breaks and chokes} / ([C8\text{—Total connected properties—wastewater}] / 1000)$





## 6 Customers

### 6.1 Connected properties and population

Information on connected properties and population is important for understanding and comparing the relative performance of utilities, and understanding the scale and composition of the water business. Connected property numbers are used as a normaliser for many indicators.

<b>Indicator</b>	<b>C1</b> —Population receiving services: water supply
<b>Definition</b>	The population receiving water supply services from the utility during the reporting year (people 000s).
<b>General supporting notes</b>	The figure may be premised on census data obtained from the Australian Bureau of Statistics.

<b>Indicator</b>	<b>C2</b> —Number of connected residential properties: water supply
<b>Definition</b>	The number of connected residential properties receiving water supply services from the utility during the reporting year (properties 000s).
<b>General supporting notes</b>	<p><b>Connected residential properties</b> include:</p> <ul style="list-style-type: none"> <li>✓ each apartment in a high-rise apartment complex</li> <li>✓ each property in a department of housing unit complex</li> <li>✓ each individual stand-alone residential property within a retirement village.</li> </ul> <p>Units in a block with a single meter are considered as individual connected residential properties, e.g. 30 units with a single meter, are considered 30 connected residential properties.</p> <p>Residential apartments in a building owned as an entire building should be counted as individual connected residential properties, e.g. 20 residential apartments in a building with 20 associated shares is considered as 20 connected residential properties.</p>

<b>Indicator</b>	<b>C3</b> —Number of connected non-residential properties: water supply
<b>Definition</b>	The number of connected non-residential properties receiving water supply services from the utility during the reporting year (properties 000s).
<b>General supporting notes</b>	<p><b>Connected non-residential properties</b> include:</p> <ul style="list-style-type: none"> <li>✓ commercial and municipal properties</li> <li>✓ shopping centres</li> <li>✓ schools, universities, and technical colleges (TAFEs),</li> <li>✓ hospitals and nursing homes</li> <li>✓ shopping centres with separate connections for each shop are to be counted as one non-residential connection.</li> </ul> <p>Each partitioned company within a factory building is counted as a connected non-residential property, e.g. 5 partitioned companies with separate water bills are considered 5 non-residential connections.</p> <p>Hotels, motels, and hostels with a few permanent residential tenants are counted as a connected non-residential property.</p> <p>Non-residential properties that extend over multiple blocks and have multiple separate connections are counted as one non-residential connection.</p>

<b>Indicator</b>	<b>C4</b> —Total number of connected properties: water supply
<b>Definition</b>	The total number of connected residential and non-residential properties receiving water supply services from the utility during the reporting year (properties 000s).
<b>Derivation</b>	<p><b>C4</b> = C2 + C3</p> <p>= [C2—Number of connected residential properties: water supply]</p> <p>+ [C3—Number of connected non-residential properties: water supply]</p>

<b>Indicator</b>	<b>C6</b> —Number of connected residential properties: wastewater
<b>Definition</b>	The number of connected residential properties receiving water services from the utility during the reporting year (properties 000s).
<b>General supporting notes</b>	<p><b>Connected residential properties</b> include:</p> <ul style="list-style-type: none"> <li>✓ each apartment in a high-rise apartment complex</li> <li>✓ each property in a department of housing unit complex</li> <li>✓ each individual stand-alone residential property within a retirement village.</li> </ul> <p>Units in a block with a single meter are considered as individual connected residential properties, e.g. 30 units with a single meter, are considered 30 connected residential properties.</p> <p>Residential apartments in a building owned as an entire building should be counted as individual connected residential properties, e.g. 20 residential apartments in a building with 20 associated shares is considered as 20 connected residential properties.</p>

<b>Indicator</b>	<b>C7</b> —Number of connected non-residential properties: wastewater
<b>Definition</b>	The number of connected non-residential properties receiving wastewater services from the utility during the reporting year (properties 000s).
<b>General supporting notes</b>	<p><b>Connected non-residential properties</b> include:</p> <ul style="list-style-type: none"> <li>✓ commercial and municipal properties</li> <li>✓ shopping centres</li> <li>✓ schools, universities, and technical colleges (TAFEs),</li> <li>✓ hospitals and nursing homes</li> <li>✓ shopping centres with separate connections for each shop are to be counted as one non-residential connection.</li> </ul> <p>Each partitioned company within a factory building is counted as a connected non-residential property, e.g. 5 partitioned companies with separate water bills are considered 5 non-residential connections.</p> <p>Hotels, motels, and hostels with a few permanent residential tenants are counted as a connected non-residential property.</p> <p>Non-residential properties that extend over multiple blocks and have multiple separate connections are counted as one non-residential connection.</p>

<b>Indicator</b>	<b>C8</b> —Total number of connected properties: wastewater
<b>Definition</b>	The total number of connected residential and non-residential properties receiving wastewater services from the utility during the reporting year (properties 000s).
<b>Derivation</b>	$C8 = C6 + C7$ $= [C6\text{—Number of connected residential properties: wastewater}]$ $+ [C7\text{—Number of connected non-residential properties: wastewater}]$

## 6.2 Water quality complaints

Information on the number of complaints provides insight into customer satisfaction with the quality of the service and its reliability provided by a utility. It also provides insight into the effectiveness of a utilities communications with its customers.

<b>Indicator</b>	<b>IC9</b> —Number of water quality complaints: water supply	<b>C9</b> —Number of water quality complaints per 1,000 properties: water supply
<b>Definition</b>	The total number of complaints received by the utility that relate to the quality of the water supplied, including water quality complaints resulting from operational practices during the reporting year (complaints).	The average number of complaints received by the utility, per 1,000 connected properties, that relate to water quality, including water quality complaints resulting from operational practices during the reporting year (complaints/1,000 properties).
<b>General supporting notes</b>	<p><b>Water quality complaints</b> include complaints in relation to:</p> <ul style="list-style-type: none"> <li>✓ water quality: discolouration; taste; odour; stained washing; illness; or cloudy water (caused by oxygenation)</li> <li>✓ recycled water;</li> <li>✓ any other types of water</li> </ul> <p>and exclude complaints in relation to:</p> <ul style="list-style-type: none"> <li>✗ service interruption;</li> <li>✗ adequacy of service.</li> <li>✗ restrictions</li> <li>✗ water pressure.</li> </ul> <p>The <b>number of complaints</b> includes:</p> <ul style="list-style-type: none"> <li>✓ complaints that the utility is responsible for or has control over, including third party contractors under the utility control</li> <li>✓ complaints from multiple customers in relation to the same issue</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ complaints regarding a matter that is not the responsibility of the utility or over which the utility has no control, e.g. issues that are the responsibility of the customer</li> <li>✗ queries on an issue.</li> </ul> <p>A complaint can be received by the water utility in person, by mail, fax, phone, email or text messaging.</p> <p>Multiple complaints from one customer on multiple issues should be counted as multiple complaints.</p> <p>Complaints from multiple customers in relation to the same issue should be counted as multiple complaints</p>	
<b>Derivation</b>	$C9 = IC9 / C4$ <p>= [IC9—Number of water quality complaints: water supply] / [C4—Total number of connected properties: water supply]</p>	

### 6.3 Water service complaints

<b>Indicator</b>	<b>IC10</b> —Number of water service complaints	<b>C10</b> —Number of water service complaints per 1,000 properties
<b>Definition</b>	The total number of water service complaints received by the utility during the reporting year (complaints).	The average number of water service complaints, per 1,000 connected properties, received by the utility during the reporting year (complaints/1,000 properties).
<b>General supporting notes</b>	<p><b>Water service</b> includes:</p> <ul style="list-style-type: none"> <li>✓ bursts</li> <li>✓ leaks</li> <li>✓ service interruptions</li> <li>✓ adequacy of service</li> <li>✓ water pressure</li> <li>✓ water reliability</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water quality</li> <li>✗ billing and accounts</li> <li>✗ government pricing policy</li> <li>✗ tariff structures.</li> </ul> <p>The <b>number of complaints</b> includes:</p> <ul style="list-style-type: none"> <li>✓ complaints that the utility is responsible for or has control over, including third party contractors under the utility control</li> <li>✓ complaints from multiple customers in relation to the same issue</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ complaints regarding a matter that is not the responsibility of the utility or over which the utility has no control—e.g. issues that are the responsibility of the customer</li> <li>✗ queries on an issue.</li> </ul> <p>A complaint can be received by the water utility in person, by mail, fax, phone, email or text messaging.</p> <p>Multiple complaints from one customer on multiple issues should be counted as multiple complaints</p> <p>Complaints from multiple customers in relation to the same issue should be counted as multiple complaints</p>	
<b>Derivation</b>	$C10 = IC10 / C4$ $= [IC10—Number of water service complaints]$ $/ [C4—Total number of connected properties: water supply]$	

## 6.4 Sewerage service complaints

Information about wastewater complaints provides insight into customer satisfaction with the wastewater service quality and reliability. It also supports an understanding of the suitability of the water treatment process for a utility and the reliability of the service.

<b>Indicator</b>	<b>IC11</b> —Number of sewerage service complaints	<b>C11</b> —Number of sewerage service complaints per 1,000 properties
<b>Definition</b>	The total number of complaints received by the utility that relate to wastewater service quality and reliability during the reporting year (complaints).	The average number of complaints received by the utility, per 1,000 connected properties, that relate to wastewater service quality and reliability during the reporting year (complaints/1,000 properties).
<b>General supporting notes</b>	<p><b>Complaints</b> include:</p> <ul style="list-style-type: none"> <li>✓ sewer chokes and overflows</li> <li>✓ trade waste services</li> <li>✓ wastewater odours</li> <li>✓ wastewater system reliability</li> <li>✓ all other wastewater issues</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ property connections</li> <li>✗ government pricing policy</li> <li>✗ tariff structures</li> <li>✗ other non-applicable areas of business.</li> </ul> <p>The <b>number of complaints</b> includes:</p> <ul style="list-style-type: none"> <li>✓ complaints that the utility is responsible for or has control over, including third party contractors under the utility control</li> <li>✓ complaints from multiple customers in relation to the same issue</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ complaints regarding a matter that is not the responsibility of the utility or over which the utility has no control—e.g. issues that are the responsibility of the customer</li> <li>✗ queries on an issue.</li> </ul> <p>A complaint can be received by the water utility in person, by mail, fax, phone, email or text messaging.</p> <p>Multiple complaints from one customer on multiple issues should be counted as multiple complaints</p> <p>Complaints from multiple customers in relation to the same issue should be counted as multiple complaints</p>	
<b>Derivation</b>	$\text{C11} = \text{IC11} / \text{C8}$ <p>= [IC11—Number of sewerage service complaints] / [C8—Total number of connected properties: wastewater]</p>	

## 6.5 Billing and account complaints

Information about billing and account complaints provides insight into customer satisfaction with the water and wastewater service quality and reliability.

<b>Indicator</b>	<b>IC12</b> —Number of billing and account complaints: water supply and sewerage	<b>C12</b> —Number of billing and account complaints per 1,000 properties: water supply and sewerage
<b>Definition</b>	The total number of complaints received by the utility that relate to billing and accounts during the reporting year (complaints).	The average number of complaints received by the utility, per 1,000 connected properties, that relate to billing and accounts during the reporting year (complaints/1,000 properties).
<b>General supporting notes</b>	<p><b>Complaints</b> include:</p> <ul style="list-style-type: none"> <li>✓ account payment</li> <li>✓ financial loss or overcharging</li> <li>✓ billing errors</li> <li>✓ affordability</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ government pricing policy</li> <li>✗ tariff structures</li> <li>✗ correctly calculated bill that is too high.</li> </ul> <p>The <b>number of complaints</b> includes:</p> <ul style="list-style-type: none"> <li>✓ complaints that the utility is responsible for or has control over, including third party contractors under the utility control</li> <li>✓ multiple contacts from a customer on the same issue are to be recorded as a complaint if the customer remains unsatisfied</li> <li>✓ a customer query that identifies a billing error</li> <li>✓ any call from a customer where they state they are making a complaint</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ complaints regarding a matter that is not the responsibility of the utility or over which the utility has no control such as issues that are the responsibility of the customer</li> <li>✗ queries on an issue.</li> </ul> <p>A complaint can be received by the water utility in person, by mail, fax, phone, email or text messaging.</p> <p>Multiple complaints from one customer on multiple issues should be counted as multiple complaints</p> <p>Complaints from multiple customers in relation to the same issue should be counted as multiple complaints</p>	
<b>Derivation</b>	$C12 = IC12 / C4$ $= [IC12— Number of billing and account complaints per 1,000 properties: water supply and sewerage]$ $/ [C4—Total number of connected properties: water supply]$	

## 6.6 Total water and wastewater complaints

<b>Indicator</b>	<b>IC13</b> —Number of water and sewerage complaints	<b>C13</b> —Number of water and sewerage complaints per 1,000 properties
<b>Definition</b>	The total number of complaints received by the utility during the reporting year (complaints).	The average number of complaints received by the utility, per 1,000 connected properties, during the reporting year (complaints/1,000 properties).
<b>General supporting notes</b>	<p>A <b>query</b> can be defined as ‘a request by a customer for information about a product or service provided by the service provider that does not reflect dissatisfaction’.</p> <p>A <b>complaint</b> is an ‘expression of dissatisfaction made to an organisation, related to its products, or the complaints-handling process itself, where a response or resolution is explicitly or implicitly expected’ (AS ISO 10002-2006).</p> <p>A <b>complaint</b> can be a written or verbal expression of dissatisfaction about an action, proposed action or failure to act by the utility, its employees or contractors.</p> <p><b>Complaints</b> include any matter or issue raised in relation to:</p> <ul style="list-style-type: none"> <li>✓ Bursts and leaks</li> <li>✓ service interruptions—when a customer reports a service interruption, this is not counted as a complaint unless the customer expresses dissatisfaction about the interruption.</li> <li>✓ adequacy of service</li> <li>✓ water pressure</li> <li>✓ water quality or reliability</li> <li>✓ wastewater service complaints</li> <li>✓ odours</li> <li>✓ affordability</li> <li>✓ billings</li> <li>✓ behaviour of a staff member or agent</li> </ul> <p>and excludes complaints in relation to:</p> <ul style="list-style-type: none"> <li>✗ government pricing policy</li> <li>✗ tariff structures</li> <li>✗ excessive bills where the bill was calculated correctly.</li> </ul> <p><b>The number of complaints</b> should:</p> <ul style="list-style-type: none"> <li>✓ include complaints from residents and visitors receiving the utility’s services</li> <li>✓ include complaints about third parties where the utility has control of their activities.</li> </ul> <p>A complaint can be received by the water utility in person, by mail, fax, phone, email or text messaging.</p> <p>Multiple complaints from one customer on multiple issues should be counted as multiple complaints</p> <p>Complaints from multiple customers in relation to the same issue should be counted as multiple complaints</p>	
<b>Derivation</b>	$C13 = IC13 / C4$ <p>= [IC13—Number of water and sewerage complaints] / [C4—Total number of connected properties: water supply]</p>	



## 6.7 Connect time to a telephone operator

Information about the percentage of calls answered by an operator within 30 seconds provides an insight into a utility's service quality and reliability.

<b>Indicator</b>	<b>C14</b> —Percentage of calls answered by an operator within 30 seconds
<b>Definition</b>	The percentage of calls answered by an operator within 30 seconds after the customer has selected a relevant operator menu option during the reporting year (%).
<b>General supporting notes</b>	<p><b>Total number of calls</b> includes:</p> <ul style="list-style-type: none"> <li>✓ all calls handled by an operator or customer service operator</li> <li>✓ calls handled by an interactive voice response (IVR) when the customer selects to speak to an operator or customer service officer</li> <li>✓ calls abandoned after the selection to speak to an operator but before 30 seconds has expired</li> <li>✓ after hours phone calls</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ IVR calls where the customer does not select an operator</li> <li>✗ the customers query is answered by the IVR</li> <li>✗ calls that are abandoned before the operator is selected</li> <li>✗ where a call-back is offered at a later time within the first 30 seconds via a call-back service.</li> </ul> <p><b>Calls answered in 30 seconds</b> includes:</p> <ul style="list-style-type: none"> <li>✓ calls that are answered within 30 seconds after being directed by an IVR and the customer service operator is able to respond to the query</li> <li>✓ calls not directed via a IVR that are responded to by a customer service operator within 30 seconds after being received by the switchboard</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ calls placed back in to the queue when a customer service operator is not able to respond</li> <li>✗ calls answered by an IVR system and do not require the assistance of a customer service operator.</li> </ul> <p>Reporting against this indicator is mandatory for utilities that operate a contact centre that is capable of automatically recording some or all of the responsiveness indicators (e.g. an automatic call distribution system). Utilities that have other systems to handle customer calls may report on their responsiveness on a voluntary basis.</p> <p>For state wide utilities where only one average connect time to an operator is supplied for the whole water business rather than a value for the metropolitan area only, a footnote should accompany the value.</p> <p>If a utility offers a call-back service they are encouraged to make a note of this service in the database when reporting for this indicator.</p> <p>(C14) Percentage of calls answered by an operator within 30 seconds (%) = (Calls answered within 30 seconds) x 100 / (Total number of calls)</p>

## 6.8 Unplanned water supply interruptions

Information about unplanned water supply interruptions assists with understanding the operation of the supply network and how effectively this is being managed by the utility. It is also a partial indicator of customer service and the condition of the water network.

<b>Indicator</b>	<b>C15</b> —Average duration of an unplanned interruption: water supply																												
<b>Definition</b>	The average duration for which a customer is without potable water, due to an unplanned supply interruption during the reporting year minutes (minutes).																												
<b>General supporting notes</b>	<p><b>Unplanned interruption</b> includes:</p> <ul style="list-style-type: none"> <li>✓ an interruption causing total loss of water supply due to any cause that the customer did not received at least 24 hours notification of</li> <li>✓ bursts or leaks in the property service (mains to meter connection) that require the mains to be shut down for repair</li> <li>✓ burst or leaks in the property service (mains to meter connection) that are owned* or maintained* by the water utility</li> <li>✓ interruptions that extend beyond the period notified to the customer— the entire length of the interruption is counted</li> <li>✓ interruptions caused by third parties</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ bursts or leaks in the property service (mains to meter connection) that do not require the mains to be shut down and are not owned or maintained by the water utility.</li> </ul> <p><b>Duration of an unplanned water supply interruption:</b></p> <ul style="list-style-type: none"> <li>• An interruption commences when the water utility is aware that water is no longer available at the customer’s first cold water tap and ceases when ‘normal’ service is restored (OFWAT Return Reporting Requirements).</li> <li>• Where the utility is aware of a water supply interruption through its internal systems alarms, the duration commences when the alarm is raised.</li> <li>• If a customer notifies the water utility they are without water, the duration commences at the time of notification. If the water utility is responding to a notification of a broken main, unless this notification also indicates a loss of supply, the duration commences once the break is isolated (i.e. if repairs are not being done under pressure).</li> </ul> <p><b>Example</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Interruption</th> <th style="text-align: center;">L = Length of interruption (Min)</th> <th style="text-align: center;">N = Number of customers affected</th> <th style="text-align: center;">L x N = Minutes off supply</th> </tr> </thead> <tbody> <tr> <td>i</td> <td style="text-align: center;">240</td> <td style="text-align: center;">20</td> <td style="text-align: center;">4,800</td> </tr> <tr> <td>ii</td> <td style="text-align: center;">300</td> <td style="text-align: center;">1,000</td> <td style="text-align: center;">300,000</td> </tr> <tr> <td>lii</td> <td style="text-align: center;">120</td> <td style="text-align: center;">400</td> <td style="text-align: center;">48,000</td> </tr> <tr> <td>iv</td> <td style="text-align: center;">60</td> <td style="text-align: center;">2</td> <td style="text-align: center;">120</td> </tr> <tr> <td>v</td> <td style="text-align: center;">410</td> <td style="text-align: center;">35</td> <td style="text-align: center;">14,350</td> </tr> <tr> <td><b>Total</b></td> <td></td> <td style="text-align: center;"><b>1,457</b></td> <td style="text-align: center;"><b>367,270</b></td> </tr> </tbody> </table> <p><b>Average duration of an unplanned interruption</b>                  = Total minutes off supply / Total number of customers affected                  = 367,270 / 1,457 <span style="float: right;"><b>252</b></span></p>	Interruption	L = Length of interruption (Min)	N = Number of customers affected	L x N = Minutes off supply	i	240	20	4,800	ii	300	1,000	300,000	lii	120	400	48,000	iv	60	2	120	v	410	35	14,350	<b>Total</b>		<b>1,457</b>	<b>367,270</b>
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## 6.9 Water interruption frequency

<b>Indicator</b>	<b>IC17</b> —Number of unplanned interruptions: water supply	<b>C17</b> —Number of unplanned interruptions per 1,000 properties
<b>Definition</b>	The total number of unplanned interruptions where customers are without potable water supply, during the reporting year (interruptions).	The average number of unplanned interruptions where customers are without potable water supply, per 1,000 connected properties, during the reporting year (interruptions/1,000 properties).
<b>General supporting notes</b>	<p><b>Average frequency of unplanned interruptions—water</b></p> <p><b>Customers affected</b> is the count of individual customers who experience loss of water supply due to an unplanned water supply interruption—e.g. a water supply interruption that causes loss of supply to 100 customers is 100 customers affected.</p> <p>excludes:</p> <ul style="list-style-type: none"> <li>✘ property service connection interruptions, unless the burst or leak requires the water main to be shut down for repair and therefore affects multiple customers, or unless the connection is owned or maintained by the water utility, and reported against in C15.</li> <li>✘ interruptions that cause some reduction to the level of service but where normal activities (e.g. shower, washing machine, toilet flushing etc.) are still possible</li> <li>✘ breaks in house connection branches</li> <li>✘ planned interruptions.</li> </ul> <p><b>Interruption</b></p> <p>Where the property is without a service due to any cause.</p> <p><b>Unplanned water supply interruption</b></p> <p>As defined in C15.</p> <p><b>Planned interruption</b></p> <p>An interruption for which the utility provided notification at least 24 hours in advance or as otherwise prescribed by regulatory requirements.</p>	
	<p><b>C17</b> = IC17 / C4</p> <p>= [IC17—Number of unplanned interruptions: water supply]</p> <p>/ [C4—Total number of connected properties: water supply]</p>	

## 6.10 Restrictions or legal action for non-payment of water bill

Information about restrictions or legal action applied to customers for non-payment of water bills assists with understanding the operational environment and how changes may impact customers.

<b>Indicator</b>	<b>IC18</b> —Number of restrictions for non-payment of water bills	<b>C18</b> —Number of restrictions for non-payment of water bills per 1,000 properties
<b>Definition</b>	The number of restrictions or disconnections applied to customers, by the utility, for non-payment of water bills during the reporting year (restrictions).	The average number of restrictions, or disconnections, per 1,000 connected properties, applied for non-payment of water bills, by the utility, during the reporting year (restrictions/1,000 properties).
<b>General supporting notes</b>	<p><b>Restrictions (or disconnections) include:</b></p> <ul style="list-style-type: none"> <li>✓ Fitting of a device to reduce water flows due to non-payment of accounts</li> <li>✓ Disconnection of a customer's supply due to non-payment of accounts</li> <li>✓ both residential and non-residential customers</li> </ul> <p>and exclude</p> <ul style="list-style-type: none"> <li>✗ disconnections carried out due to unsafe infrastructure connected to the water utility's system</li> <li>✗ customers who choose to disconnect from the water utilities water supply system</li> <li>✗ customers threaten with disconnection due to non-payment of accounts but where no actual disconnection or restrictor is applied.</li> </ul> <p>Multiple restrictions or disconnections for one customer should be counted as separate occasions.</p>	
	<p><b>C18</b> = IC18 / C4</p> <p>= [IC18—Number of restrictions for non-payment of water bills]</p> <p>/ [C4—Total number of connected properties: water supply]</p>	

<b>Indicator</b>	<b>IC19</b> —Number of legal actions taken for non-payment of water bills	<b>C19</b> —Number of legal actions taken for non-payment of water bills per 1000 properties
<b>Definition</b>	The number of legal actions taken by the utility for non-payment of water bills during the reporting year (legal actions).	The average number of legal actions taken by the utility for non-payment of water bills per 1,000 connected properties during the reporting year (legal actions/1,000 properties).
<b>General supporting notes</b>	<p><b>Legal action</b> includes:</p> <ul style="list-style-type: none"> <li>✓ legal action for non-payment of water bills after the issue of the summons</li> <li>✓ both residential and non-residential customers</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ legal action which has started but the legal summons has not yet been issued</li> <li>✗ customers that are threaten with legal action due to non-payment of account but no legal action is taken.</li> </ul> <p>Multiple legal actions for one customer should be counted as separate actions.</p>	
	<p><b>C19</b> = IC19 / C4</p> <p>= [IC19— Number of legal actions taken for non-payment of water bills]</p> <p>/ [C4—Total number of connected properties: water supply]</p>	

## 7 Environment

### 7.1 Comparative treatment levels

Information about comparative treatment levels assists with understanding the degree to which wastewater is required to be treated. This information gives an insight into a water utility's capital and operational costs.

<b>Indicator</b>	<b>IE1</b> —Volume of wastewater only treated to a primary level	<b>E1</b> — Percentage of wastewater only treated to a primary level
<b>Definition</b>	The volume of wastewater only treated to a primary level, during the reporting year in megalitres (ML).	The percentage of total wastewater collected by the utility that receives only treated to a primary level, during the reporting year (%).
<b>General supporting notes</b>	<p><b>Primary wastewater treatment</b> includes:</p> <ul style="list-style-type: none"> <li>✓ water on its first pass through the treatment plant</li> <li>✓ clarification (with or without chemical treatment to accomplish solid-liquid separation), grease removal and screens</li> </ul> <p>The <b>reported volume</b> excludes:</p> <ul style="list-style-type: none"> <li>✗ wastewater receiving primary treatment that then goes on to receive secondary or tertiary treatment</li> <li>✗ water treated multiple times due to onsite reuse</li> <li>✗ water collection in first flush systems.</li> </ul> <p>Additional information should be provided about the number of partial treatment days due to infrequent wet weather events.</p> <p>Where bypasses were known to have occurred during treatment the utility should provide their best estimate of volume receiving this level of treatment.</p>	
<b>Derivation</b>	$E1 = IE1 / W18 \times 100$ $= [IE1—Volume of wastewater only treated to a primary level] / [W18—Total volume of wastewater collected] \times 100$	

<b>Indicator</b>	<b>IE2</b> —Volume of wastewater only treated to a secondary level	<b>E2</b> —Percentage of wastewater only treated to a secondary level
<b>Definition</b>	The volume of wastewater only treated to a secondary level, during the reporting year in megalitres (ML).	The percentage of the total wastewater collected that is only treated to a secondary level, during the reporting year (%).
<b>General supporting notes</b>	<p><b>Secondary wastewater treatment</b> includes:</p> <ul style="list-style-type: none"> <li>✓ water on its first pass through the treatment plant</li> <li>✓ sand filtration</li> <li>✓ disinfection</li> <li>✓ a polishing step (to lower suspended solids and bacterial levels)</li> <li>✓ activated-sludge processes</li> <li>✓ anaerobic plus aerobic processes</li> <li>✓ biological filters and lagoons (aerated, facultative, maturation, or polishing)</li> </ul> <p>The reported volume excludes:</p> <ul style="list-style-type: none"> <li>✗ wastewater receiving secondary treatment that then goes on to receive tertiary treatment</li> <li>✗ water treated multiple times due to onsite reuse</li> <li>✗ water collection in first flush systems.</li> </ul> <p>Additional information should be provided about the number of partial treatment days due to infrequent wet weather events.</p> <p>Where bypasses were known to have occurred during treatment the utility should provide their best estimate of volume receiving this level of treatment.</p>	
<b>Derivation</b>	$E2 = IE2 / W18 \times 100$ $= [IE2\text{—Volume of wastewater only treated to a secondary level}] / [W18 \text{—Total volume of wastewater collected}] \times 100$	

<b>Indicator</b>	<b>IE3</b> —Volume of wastewater treated to a tertiary level	<b>E3</b> —Percentage of wastewater treated to a tertiary level
<b>Definition</b>	The volume of wastewater only treated to a tertiary level, during the reporting year in megalitres.(ML).	The percentage of the total wastewater collected that is only treated to a tertiary level, during the reporting year (%).
<b>General supporting notes</b>	<p><b>Tertiary or advanced wastewater treatment</b> includes:</p> <ul style="list-style-type: none"> <li>✓ water on its first pass through the treatment plant</li> <li>✓ biological nutrient removal plants</li> <li>✓ chemical dosing of secondary plants for nutrient removal (including lagoons)</li> <li>✓ enhanced pond treatment systems for nutrient removal</li> <li>✓ reverse osmosis and advanced filtration systems</li> <li>✓ membrane bioreactors and secondary treatment plus plots or wetlands for nutrient removal</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ water treated multiple times due to onsite reuse</li> <li>✗ water collection in first flush systems.</li> </ul> <p>Additional information should be provided about the number of partial treatment days due to infrequent wet weather events.</p> <p>Where bypasses were known to have occurred during treatment the utility should provide their best estimate of volume receiving this level of treatment.</p>	
<b>Derivation</b>	$E3 = IE3 / W18 \times 100$ $= [IE3\text{—Volume of wastewater only treated to a secondary level}] / [W18 \text{—Total volume of wastewater collected}] \times 100$	



### 7.3 Biosolids reused

Information about biosolids supports an understanding of the operation of the wastewater treatment plant and how organic solids derived from treatment processes are managed sustainably by the utility.

<b>Indicator</b>	<b>E8</b> —Percentage of biosolids reused
<b>Definition</b>	The percentage of dry weight biosolids reused during the reporting year (%).
<b>General supporting notes</b>	<p><b>Biosolids</b></p> <p>Primarily organic solids derived from wastewater treatment processes, which can be managed to sustainably utilise their nutrient, soil conditioning, energy or other value. Solids which do not meet these criteria are defined as wastewater sludge.</p> <p><b>Biosolids reuse</b></p> <p>Reuse involves managing biosolids safely and sustainably to beneficially utilise their nutrient, energy, or other values. This may include biosolids beneficially used for agriculture (e.g. fertiliser), soil conditioning, mine rehabilitation, and other applications recognised as reuse.</p> <p>The dry weight of biosolids reused may be greater than the dry weight of biosolids produced if the business is also reusing existing stockpiles.</p> <p><b>Total dry weight tonnes of biosolids produced</b></p> <p>For mechanical or other wastewater treatment processes where the biosolids are available for reuse within a short time frame (e.g. less than one year) the volumes produced for the financial year should be included.</p> <p>For wastewater treatment processes where the biosolids are <u>not</u> available for reuse within a short time frame (e.g. lagoon processes of 10–30 years), the water utility should account for the accumulation of solids for a financial year. It is suggested that the volume accumulated be calculated using one of the following methodologies:</p> <ul style="list-style-type: none"> <li>• using appropriate sampling techniques, determine the volume of solids entering the lagoon process (or equivalent) in a financial year. After accounting for those solids consumed due to biological activity, determine the total accumulation of solids for the financial year.</li> <li>• assess the existing depth of accumulated solids in all lagoons to determine an average annual rate of accumulation. This average figure should be used.</li> </ul> <p>An estimate of volume using the above methodologies is sufficient for reporting against this indicator.</p>

### 7.4 Net greenhouse gas emissions

Information about net greenhouse gas emissions supports an understanding of a utility's operation efficiency and how its water, wastewater and other activities contribute to greenhouse emissions. The information is also important for understanding and comparing the relative performance of utilities.

Indicator	IE9—Net greenhouse gas emissions: water supply	E9—Net greenhouse gas emissions per 1,000 properties: water supply	E9.1—Net greenhouse gas emissions per ML: water supply—bulk utility
Definition	The net greenhouse gas emissions generated by the utility, through all its operations relating to water supply during the reporting year (t CO2 equivalents.)	The net greenhouse gas emissions generated by the utility per 1,000 properties, through all its operations relating to water supply during the reporting year. (t CO2 equivalents/1,000 properties).	The net greenhouse gas emissions generated by the bulk water utility per megalitre of water supplied, through all its operations relating to water supply during the reporting year. (t CO2 equivalents/ML).
General supporting notes	<p><b>Greenhouse gas emissions</b> include:</p> <ul style="list-style-type: none"> <li>✓ emissions generated by the utility, directly (scope 1) and indirectly (scope 2), through all its operations relating to water supply</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ indirect emissions (scope 3).</li> </ul> <p><b>Water supply</b> includes:</p> <ul style="list-style-type: none"> <li>✓ bore fields</li> <li>✓ pipelines</li> <li>✓ water mains and channels associated with water sources and used to transfer of water from scheme to scheme.</li> </ul> <p>Conversion factors for greenhouse emissions should be based on those provided by the Department of the Environment—National Greenhouse Accounts Factors (July, 2018), available at:  <a href="https://www.environment.gov.au/system/files/resources/80f603e7-175b-4f97-8a9b-2d207f46594a/files/national-greenhouse-accounts-factors-july-2018.pdf">https://www.environment.gov.au/system/files/resources/80f603e7-175b-4f97-8a9b-2d207f46594a/files/national-greenhouse-accounts-factors-july-2018.pdf</a></p> <p>Electricity consumption records are required for this indicator. Electricity bills generally cover a period of time anywhere between one and six months. It is recommended utilities pro-rate their electricity usage in order to obtain a figure for the relevant financial year. If there is a need to extrapolate, the water utility should account for seasonal variations in electricity use. Ideally where pro rating is used, a suitable footnote should be included.</p> <p>In the event pro-rating cannot be done, the utility can provide data based on the 12 months that most closely align with the reporting year. These data should also be provided with a footnote.</p>		
Derivation	<p><b>E9</b> = IE9 / C4                      = [IE9—Net greenhouse gas emissions: water supply]                      / [C4—Total number of connected properties: water supply]</p>		
	<p><b>E9.1</b> = IE9 / W11                      = [IE9—Net greenhouse gas emissions: water supply]                      / [W11—Total volume of urban water supplied]</p>		

Indicator	IE10—Net greenhouse gas emissions: wastewater	E10—Net greenhouse gas emissions per 1,000 properties: wastewater	E10.1—Net greenhouse gas emissions per ML: wastewater—bulk utility
Definition	The net greenhouse gas emissions generated by the utility, through all its operations relating to wastewater during the reporting year (t CO2 equivalents).	The net greenhouse gas emissions generated by the utility, through all its operations relating to wastewater during the reporting year (t CO2 equivalents).	The net greenhouse gas emissions generated by the bulk water utility per megalitre of wastewater treated, through all its operations relating to wastewater during the reporting year (t CO2 equivalents/ML).
General supporting notes	<p><b>Greenhouse gas emissions</b> include:</p> <ul style="list-style-type: none"> <li>✓ emissions generated by the utility, directly (scope 1) and indirectly (scope 2), through all its operations relating to wastewater</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ indirect emissions (scope 3).</li> </ul> <p>Conversion factors for greenhouse emissions should be based on those provided by the Department of the Environment—National Greenhouse Accounts Factors (July 2018), available at: <a href="https://www.environment.gov.au/system/files/resources/80f603e7-175b-4f97-8a9b-2d207f46594a/files/national-greenhouse-accounts-factors-july-2018.pdf">https://www.environment.gov.au/system/files/resources/80f603e7-175b-4f97-8a9b-2d207f46594a/files/national-greenhouse-accounts-factors-july-2018.pdf</a></p> <p>Electricity consumption records are required for this indicator. Electricity bills generally cover a period of time anywhere between one and six months. It is recommended utilities pro-rate their electricity usage in order to obtain a figure for the relevant financial year. If there is a need to extrapolate, the water utility should account for seasonal variations in electricity use. Ideally where pro rating is used, a suitable footnote should be included.</p> <p>In the event pro-rating cannot be done, the utility can provide data based on the 12 months that most closely align with the reporting year. These data should also be provided with a footnote.</p>		
Derivation	$E10 = IE10 / C8$ $= [IE10—Net greenhouse gas emissions: wastewater]$ $/ [C8—Total number of connected properties: wastewater]$		
	$E10.1 = IE10 / W18$ $= [IE10—Net greenhouse gas emissions: wastewater]$ $/ [W18—Total volume of wastewater collected]$		

Indicator	IE11—Net greenhouse gas emissions: other	E11—Net greenhouse gas emissions per 1,000 properties: other	E11.1—Net greenhouse gas emissions per ML: other—bulk utility
Definition	<p>The net greenhouse gas emissions generated by the utility, through all its operations relating to other business activities during the reporting year (t CO2 equivalents).</p>	<p>The net greenhouse gas emissions generated by the utility per 1,000 properties, through all its operations relating to other business activities during the reporting year (t CO2 equivalents/1,000 properties).</p>	<p>The net greenhouse gas emissions generated by the bulk water utility per megalitre of water supplied, through all its operations relating to other business activities during the reporting year (t CO2 equivalents/ML).</p>
General supporting notes	<p><b>Greenhouse gas emissions</b> include:</p> <ul style="list-style-type: none"> <li>✓ emissions generated by the utility, directly (scope 1) and indirectly (scope 2), relating to "other" activities—e.g. transport (vehicles) and office buildings.</li> <li>✓ accredited sequestration activities. Please refer to the Department of Climate Change and Energy Efficiency – National Greenhouse Accounts (NGA) Factors (2011) for advice on accounting for sequestration</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✓ indirect emissions (scope 3).</li> </ul> <p>Sequestration is the removal of carbon from the atmosphere. The most common form of sequestration is through establishing tree plantations.</p> <p>Please refer to the Department of Climate Change and Energy Efficiency – National Greenhouse Accounts (NGA) Factors (2015) for advice on accounting for sequestration.</p> <p>Electricity consumption records are required for this indicator. Electricity bills generally cover a period of time anywhere between one and six months. It is recommended utilities pro-rate their electricity usage in order to obtain a figure for the relevant financial year. If there is a need to extrapolate, the water utility should account for seasonal variations in electricity use. Ideally where pro rating is used, a suitable footnote should be included.</p> <p>In the event pro-rating cannot be done, the utility can provide data based on the 12 months that most closely align with the reporting year. These data should also be provided with a footnote.</p>		
Derivation	<p><b>E11</b> = IE11 / C4                      = [IE11—Net greenhouse gas emissions: other]                      / [C4— Total number of connected properties: water supply]</p>		
	<p><b>E11.1</b>= IE11 / W11                      = [IE11—Net greenhouse gas emissions: other]                      / [W11—Total volume of urban water supplied]</p>		

<b>Indicator</b>	<b>IE12</b> —Total net greenhouse gas emissions	<b>E12</b> —Total net greenhouse gas emissions per 1,000 properties	<b>E12.1</b> —Total net greenhouse gas emissions per ML: bulk utility
<b>Definition</b>	The total net greenhouse gas emissions generated by the utility, through all its operations during the reporting year (t CO2 equivalents).	The total net greenhouse gas emissions generated by the utility per 1,000 properties, through all its operations during the reporting year. (t CO2 equivalents/1,000 properties).	The total net greenhouse gas emissions generated by the bulk water utility per megalitre of water supplied, through all its operations during the reporting year. (t CO2 equivalents/ML).
<b>Notes</b>	<p><b>Greenhouse gas emissions</b> includes:</p> <ul style="list-style-type: none"> <li>✓ emissions generated by the utility, directly (scope 1) and indirectly (scope 2), through all its operations relating to water supply</li> <li>✓ emissions generated by the utility, directly (scope 1) and indirectly (scope 2), through all its operations relating to wastewater</li> <li>✓ emissions generated by the utility, directly (scope 1) and indirectly (scope 2), relating to "other" activities such as transport (vehicles) and office buildings.</li> <li>✓ accredited sequestration activities. Please refer to the Department of Climate Change and Energy Efficiency – National Greenhouse Accounts (NGA) Factors (2011) for advice on accounting for sequestration</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ indirect emissions (scope 3).</li> </ul>		
<b>Derivation</b>	<p><b>IE12</b>= IE9 + IE10 + IE11</p> <p>= [IE9—Net greenhouse gas emissions: water supply]</p> <p>+ [IE10—Net greenhouse gas emissions: wastewater]</p> <p>+ [IE11—Net greenhouse gas emissions: other]</p>		
	<p><b>E12</b>= IE12 / C4</p> <p>= [IE12—Total net greenhouse gas emissions]</p> <p>/ [C4—Total connected properties—water supply]</p>		
	<p><b>E12.1</b> = IE12 / W11</p> <p>= [IE12—Total net greenhouse gas emissions]</p> <p>/ [W11—Total volume of urban water supplied]</p>		

## 8 Pricing

### 8.1 Tariffs

Residential water tariff structures are divided into fixed and pay-for-use charges. Information about the structures supports an understanding of the operation of water supply systems and is important for comparing the relative performance of utilities.

<b>Indicator</b>	<b>P1</b> —Tariff structure: water supply
<b>Definition</b>	A description of the of the utilities water supply tariff structures for residential customers during the reporting year.
<b>General supporting notes</b>	<p>A <b>tariff structure</b> is a set of rules and procedures that determines how to charge for different levels of water usage.</p> <p>Where a utility has multiple tariff structures the structure described should represent the major city or town in the utility's service area.</p> <p>Common structures include:</p> <ul style="list-style-type: none"> <li>✓ block</li> <li>✓ two part</li> <li>✓ flat rate consumption</li> <li>✓ tiered volumetric.</li> </ul>

<b>Indicator</b>	<b>P1.2</b> —Fixed charge: water supply
<b>Definition</b>	The fixed charge levied on a residential property by the utility for water supply services during the reporting year (\$).
<b>General supporting notes</b>	<p><b>Fixed charge</b> includes:</p> <ul style="list-style-type: none"> <li>✓ Fixed amount levied on a residential property per annum that does not vary according to amount of water used.</li> </ul> <p>The figures quoted should represent the major town in the utility's service area.</p>

<b>Indicators</b>	<b>P1.3</b> —Usage charge: step 1	<b>P1.3a</b> —Upper bound of usage: step 1
	<b>P1.4</b> —Usage charge: step 2	<b>P1.4a</b> —Upper bound of usage: step 2
	<b>P1.5</b> —Usage charge: step 3	<b>P1.5a</b> —Upper bound of usage: step 3
	<b>P1.6</b> —Usage charge: step 4	<b>P1.6a</b> —Upper bound of usage: step 4
	<b>P1.7</b> —Usage charge: step 5	<b>P1.7a</b> —Upper bound of usage: step 5
<b>Definition</b>	The usage charge associated with each step of the utility's residential tariff structure, during the reporting year (\$/kL).	The volume of water above which the next pricing step of the utility's residential tariff structure applies (kL).
<b>General supporting notes</b>	<p>The tariff structure should include any free water allowance provided by the utility</p> <p>The free water allowance should be reported as the first step (P1.3a) and associated with a \$0 usage charge (See example 1)</p> <p>Where a utility has multiple tariff structures the structure described should represent the major city or town in the utility's service area.</p>	

<b>Indicator</b>	<b>P1.12</b> —Special levies: water supply
<b>Definition</b>	The special levy amount charged directly to customers by the utility that are neither a fixed or pay-for-use charge for water services during the reporting year (\$).
<b>General supporting notes</b>	<p>Special levies excludes:</p> <ul style="list-style-type: none"> <li>✘ Amounts charged to customers as fixed charges (included in P1.2)</li> <li>✘ Amounts charge as stepped charges (included in P1.3 to P1.11)</li> </ul> <p>Where a utility has multiple tariff structures the structure described should represent the major city or town in the utility's service area.</p>

<b>Indicator</b>	<b>P1.13</b> —Income from special levies retained by the utility: water supply
<b>Definition</b>	Income from special levies retained by the utility and not passed on to a third party (yes/no).

<b>Indicator</b>	<b>P4</b> —Tariff structure: wastewater
<b>Definition</b>	A description of the utilities sewerage tariff structures for residential wastewater customers during the reporting year.
<b>General supporting notes</b>	<p>A brief report outlining the tariff structures applied to residential water customers for the collection of wastewater.</p> <p>Where a utility has multiple tariff structures the structure described should represent the major city or town in the utility's service area.</p> <p><b>Fixed charge—wastewater</b></p> <p>The fixed amount the business levies on a residential property per year, for wastewater. This is the component of each residential property's bill that does not vary with the amount of wastewater collected.</p> <p><b>Usage charge—wastewater</b></p> <p>The charge levied upon a residential customer for the per unit collection of wastewater. This is expressed as dollars per kilolitre.</p>

<b>Indicator</b>	<b>P4.1</b> —Fixed charge: wastewater
<b>Definition</b>	The fixed charge levied on a residential property by the utility for sewerage services during the reporting year (\$).
<b>General supporting notes</b>	<p><b>Fixed charge</b> includes:</p> <ul style="list-style-type: none"> <li>✓ Fixed amount levied on a residential property per annum for wastewater collection.</li> </ul> <p>The figures quoted should represent the major town in the utility's service area.</p>

<b>Indicator</b>	<b>P4.2</b> —Usage charge: wastewater
<b>Definition</b>	The volumetric usage charge levied on residential customers by the utility for wastewater collection, during the reporting year (\$/kL).
<b>General supporting notes</b>	<p><b>Usage charge</b> includes:</p> <ul style="list-style-type: none"> <li>✓ The per unit collection levied on residential customer for wastewater collection</li> </ul> <p>And excludes:</p> <ul style="list-style-type: none"> <li>✗ Amounts levied as fixed charge (included in P4.1).</li> </ul> <p>The figures quoted should represent the major town in the utility's service area.</p>



<b>Indicator</b>	<b>P4.3</b> —Special levies: wastewater
<b>Definition</b>	The special levy amount charged directly to customers by the utility that are neither a fixed or pay-for-use charge for water services during the reporting year (\$).
<b>General supporting notes</b>	The figures quoted should represent the major town in the utility’s service area. <b>Example</b> An environmental improvement levy is a special levy charge

<b>Indicator</b>	<b>P4.4</b> —Income from special levies retained by the utility: wastewater
<b>Definition</b>	Income from special levies retained by the utility and not passed on to a third party.

## 8.2 Annual bill

Information on annual bills (based on 200 kL residential annual water supplied) is important for understanding and comparing the relative performance of utilities. It provides a partial indicator of the affordability and value for money of a utility, normalised by water usage.

<b>Indicator</b>	<b>P2</b> —Annual residential bill based on 200 kL per annum: water supply
<b>Definition</b>	The annual residential water supply bill, based on the consumption of 200 kL of water during the reporting year (\$).
<b>General supporting notes</b>	<p>The <b>annual residential water bill</b> includes:</p> <ul style="list-style-type: none"> <li>✓ fixed charges</li> <li>✓ usage charges for a consumption of 200 kL</li> <li>✓ special levies.</li> </ul> <p><b>Example</b></p> <p>Water fixed charge = \$100/year</p> <p>Special levy = \$80/year</p> <p>Water pay-for-use charge = \$1/kL = \$1 x 200 kL = \$200</p> <p>Therefore, the annual residential bill for 200 kL = \$100 + \$80 + \$200 = \$380</p>

<b>Indicator</b>	<b>P5</b> —Annual residential bill based on 200 kL per annum: wastewater
<b>Definition</b>	The annual residential sewerage bill, based on the consumption of 200 kL of water during the reporting year (\$).
<b>General supporting notes</b>	The <b>annual residential water bill</b> includes: <ul style="list-style-type: none"> <li>✓ fixed charges</li> <li>✓ disposal charges for a consumption of 200 kL</li> <li>✓ special levies.</li> </ul>

<b>Indicator</b>	<b>P7</b> —Total annual residential bill based on 200 kL per annum
<b>Definition</b>	The total annual residential water supply and sewerage bill, based on the consumption of 200 kL of water during the reporting year (\$).
<b>General supporting notes</b>	The total <b>annual residential bill</b> includes: <ul style="list-style-type: none"> <li>✓ fixed charges</li> <li>✓ usage charges for a consumption of 200 kL</li> <li>✓ special levies.</li> </ul>
<b>Derivation</b>	$P7 = P2 + P5$ $= [P2\text{—Annual residential bill based on 200 kL per annum: water supply}]$ $+ [P5\text{—Annual residential bill based on 200 kL per annum: wastewater}]$

<b>Indicator</b>	<b>P3</b> —Typical residential bill: water supply
<b>Definition</b>	The annual residential water supply bill, based on the utility's customers' average annual residential usage during the reporting year (\$).
<b>General supporting notes</b>	<p>The annual residential water bill includes:</p> <ul style="list-style-type: none"> <li>✓ fixed charges</li> <li>✓ usage charges associated with the consumption of the utilities average annual residential water supply volume (W12)</li> <li>✓ special levies.</li> </ul> <p><b>Example</b></p> <p>Water fixed charge = \$100/year</p> <p>Special levy = \$80/year</p> <p>Average annual residential water supply volume (W12) = 350</p> <p>Water usage charge = \$1/kL = \$1 x 350 kL = \$350</p> <p>Therefore, the annual residential bill for 200 kL = \$100 + \$80 + \$350 = \$530</p>

<b>Indicator</b>	<b>P6</b> —Typical residential bill: wastewater
<b>Definition</b>	The annual residential sewerage bill, based on the utility's customers' average annual residential usage during the reporting year (\$).
<b>General supporting notes</b>	<p>The annual residential water bill includes:</p> <ul style="list-style-type: none"> <li>✓ fixed charges</li> <li>✓ disposal charges associated with the consumption of the utilities average annual residential water supply volume (W12)</li> <li>✓ special levies.</li> </ul>

<b>Indicator</b>	<b>P8</b> —Total typical residential bill
<b>Definition</b>	The annual residential water supply and sewerage bill, based on a utility's customers' average annual residential usage during the reporting year (\$).
<b>Definition</b>	<p>The annual residential water bill includes:</p> <ul style="list-style-type: none"> <li>✓ fixed charges</li> <li>✓ disposal charges associated with the consumption of the utilities average annual residential water supply volume (W12)</li> <li>✓ special levies.</li> </ul>
<b>General supporting notes</b>	<p><b>P7 = P3 + P6</b></p> <p>= [P3—Typical residential bill: water supply]</p> <p>+ [P6—Typical residential bill: wastewater]</p>

## 9 Finance

### 9.1 Revenue

Indicator	F1—Total revenue: water supply	F5—Revenue per property: water supply	F5.1—Revenue per ML: water supply—bulk utility
Definition	The total revenue generated from the utility's water businesses and related activities during the reporting year (\$ 000s).	Revenue from water supply services per property connected to the water supply system during the reporting year (\$/property).	Revenue from bulk water supply services per megalitre of bulk water supplied by the utility during the reporting year (\$/ML).
General supporting notes	<p><b>Revenue</b> includes:</p> <ul style="list-style-type: none"> <li>✓ revenue from pay-for-use and base-rate charges for provision of water (including recycled water) to residential and non-residential customers (AASB 15)</li> <li>✓ special levies</li> <li>✓ interest paid from customers for late payment</li> <li>✓ contributed cash and assets (otherwise known as gifted assets, developer charges or headworks contributions)</li> <li>✓ receipts from governments for specific agreed services (e.g. community service obligations)</li> <li>✓ other revenue from operations</li> <li>✓ bulk water sales (for those businesses that supply bulk water)</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ revenues, where possible or material (refer to AASB 108 Accounting Policies, Changes in Accounting Estimates and Errors for materiality definition)                             <ul style="list-style-type: none"> <li>• equity contributions from governments</li> <li>• investment activities</li> <li>• non-core utility activities (e.g. consulting, agriculture, property leases)</li> <li>• income from net asset sales.</li> </ul> </li> </ul> <p>Spikes in revenues caused by large asset sales or by building booms (i.e. unusual amounts of revenues from developer charges) or falls in revenues due to water restrictions may be explained by the use of footnotes.</p>		
Derivation	$F5 = F1 / C4$ $= [F1—Total revenue: water supply / [C4—Total number of connected properties: water supply]$		
	$F5.1 = F1 / W11 \times 1000$ $= [F1—Total revenue: water supply] / [W11—Total volume of urban water supplied] \times 1000$		

Indicator	F2—Total revenue: wastewater	F6—Revenue per property: wastewater	F6.1—Revenue per ML: wastewater—bulk utility
Definition	The total revenue generated from the utility's wastewater businesses and related activities during the reporting year (\$ 000s).	Revenue from wastewater services per property connected to the wastewater system during the reporting year (\$/property).	Revenue from bulk water supply services per megalitre of bulk wastewater treated by the utility during the reporting year (\$/ML).
General supporting notes	<p><b>Revenue</b> includes:</p> <ul style="list-style-type: none"> <li>✓ revenue from pay-for-use and base-rate charges for provision of water (including recycled water) to residential and non-residential customers (AASB 15)</li> <li>✓ special levies</li> <li>✓ interest paid from customers for late payment</li> <li>✓ contributed cash and assets (otherwise known as gifted assets, developer charges or headworks contributions)</li> <li>✓ receipts from governments for specific agreed services (e.g. community service obligations)</li> <li>✓ other revenue from operations</li> <li>✓ bulk water sales (for those businesses that supply bulk water)</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ revenues, where possible or material (refer to AASB 108 Accounting Policies, Changes in Accounting Estimates and Errors for materiality definition)                             <ul style="list-style-type: none"> <li>• equity contributions from governments</li> <li>• investment activities</li> <li>• non-core utility activities (e.g. consulting, agriculture, property leases)</li> <li>• income from net asset sales.</li> </ul> </li> </ul> <p>Spikes in revenues caused by large asset sales or by building booms (i.e. unusual amounts of revenues from developer charges) or falls in revenues due to water restrictions may be explained by the use of footnotes.</p>		
Derivation	<p><b>F6</b> = F2 / C8                      = [F1—Total revenue: water supply]                      / [C8—Total number of connected properties: wastewater]</p>		
	<p><b>F6.1</b> = F2 / W18 x 1000                      = [F1—Total revenue: water supply]                      / [W18—Total volume of wastewater collected] x 1000</p>		

Indicator	F3—Total income for the utility	F7—Total income per property	F7.1—Total income per ML: bulk utility
Definition	The total income from water and wastewater businesses and related activities received the utility during the reporting year (\$ 000s).	The total Income from water and wastewater businesses and related activities per property connected to the utility's water supply system during the reporting year (\$/property).	The total Income from water and wastewater businesses and related activities during per ML of bulk water supplied by the utility during the reporting year (\$/ML).
General supporting notes	<p><b>Income from water and sewerage businesses and related activities</b> includes:</p> <ul style="list-style-type: none"> <li>✓ any item that would be classified as income in the 'Income statement'</li> <li>✓ Where appropriate this will include non-metropolitan businesses.</li> </ul> <p><b>Related activities</b> includes:</p> <ul style="list-style-type: none"> <li>✓ developer charges</li> <li>✓ headworks</li> <li>✓ insurance recoveries</li> <li>✓ private works</li> <li>✓ water (including bulk water and recycling)</li> <li>✓ administration fees and charges (e.g. information statements, property plans)</li> <li>✓ income from net asset sales (AASB 116)</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ stormwater activities.</li> </ul> <p>Total income is not necessarily the sum of F1—Total revenue: water supply and F2—Total revenue: wastewater.</p>		
Derivation	$F7 = F3 / C4$ $= [F3—Total income for the utility] / [C4—Total number of connected properties: water supply]$		
	$F7.1 = F3 / W11 \times 1000$ $= [F1—Total revenue: water supply] / [W11—Total volume of urban water supplied] \times 1000$		

<b>Indicator</b>	<b>F4</b> —Percentage of residential revenue from usage charges: water supply
<b>Definition</b>	The percentage of residential revenue from water usage charges, compared to the total residential revenue from water usage, access, and environmental charges and levies for water supplied during the reporting year (%).
<b>General supporting notes</b>	<p><b>Revenue</b> includes:</p> <ul style="list-style-type: none"> <li>✓ revenue from pay-for-use and base-rate charges for provision of water (including recycled water) to residential and on-residential customers (AASB 15)</li> <li>✓ special levies</li> <li>✓ interest paid from customers for late payment</li> <li>✓ contributed cash and assets (otherwise known as gifted assets, developer charges or headworks contributions)</li> <li>✓ receipts from governments for specific agreed services (e.g. community service obligations)</li> <li>✓ other revenue from operations</li> <li>✓ bulk water sales (for those businesses that supply bulk water)</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ revenues, where possible or material (refer to AASB 108 Accounting Policies, Changes in Accounting Estimates and Errors for materiality definition)                             <ul style="list-style-type: none"> <li>• equity contributions from governments</li> <li>• investment activities</li> <li>• non-core utility activities (e.g. consulting, agriculture, property leases)</li> <li>• income from net asset sales.</li> </ul> </li> </ul> <p><b>F4</b> = <math>R_{usage} / (R_{usage} + R_{access} + R_{levies}) \times 100</math></p> <p>Where</p> <ul style="list-style-type: none"> <li><b>R<sub>usage</sub></b> = residential revenue from water usage charges (\$)</li> <li><b>R<sub>access</sub></b> = residential revenue from access charges (\$)</li> <li><b>R<sub>levies</sub></b> = environmental levies for water supply (\$)</li> </ul> <p>Spikes in revenues caused by large asset sales or by building booms (i.e. unusual amounts of revenues from developer charges) or falls in revenues due to water restrictions may be explained by the use of footnotes.</p> <p>Historically any abnormal revenue, as described by the relevant accounting standard, was overtly excluded under AASB 1031. Given the change to AASB 1031, exclusion of these revenues is problematic. If they are excluded, then this should be reflected through a footnote.</p> <p>Interest charged on late payments from customers is included.</p>

## 9.2 Written down replacement costs of fixed assets

Information on the written down value of fixed assets supports an understanding of the value of a utility’s water and wastewater assets. The written-down value represents the value of the fixed assets of the utility to deliver services and hence derive income.

<b>Indicator</b>	<b>F9</b> —Written-down replacement cost of fixed water supply assets
<b>Definition</b>	The value of the replacement cost of the utility's fixed assets which are required for delivery of water services and derivation of income for the reporting year (\$ 000s).
<b>General supporting notes</b>	The method used to determine the replacement cost should be noted in the indicator footnote.

<b>Indicator</b>	<b>F10</b> —Written-down replacement cost of fixed wastewater assets
<b>Definition</b>	The value of the replacement cost of the utility's fixed assets which are required for delivery of wastewater services and derivation of income for the reporting year (\$ 000s).
<b>General supporting notes</b>	The method used to determine the replacement cost should be noted in the indicator footnote.



### 9.3 Operating costs

Information on operation, maintenance and administration (OMA) costs supports an understanding of the operations of a water utility in relation to the number of properties serviced by the water business. It is divided into water supply and wastewater operating costs.

Indicator	IF11—Operating cost: water supply	F11—Operating cost per property: water supply	F11.1—Operating cost per ML: water supply—bulk utility
Definition	The operation, maintenance and administration (OAM) costs of the utility for the provision of water supply services during the reporting year (\$ 000s).	The operation, maintenance and administration (OAM) costs of the utility for the provision of water supply services per property connected to the water supply system during the reporting year (\$/property).	The operation, maintenance and administration (OAM) costs of the utility for the provision of bulk water services per megalitre of bulk water supplied by the utility during the reporting year (\$/ML).
General supporting notes	<p><b>Operating costs</b> (OMA) should, where possible or material (in assessing materiality refer to AASB 1031), include:</p> <ul style="list-style-type: none"> <li>✓ water resource access charge or resource rent</li> <li>✓ purchases of raw, treated or recycled water</li> <li>✓ salaries and wages, including overheads on salaries and wages</li> <li>✓ materials, chemicals and energy used</li> <li>✓ contracts</li> <li>✓ accommodation</li> <li>✓ all other operating costs that would normally be reported</li> <li>✓ items expensed from work in progress (capitalised expense items) and pensioner remission expenses (Community Service Obligations are likely to have an equivalent inclusion in revenue)</li> <li>✓ competitive neutrality adjustments, which include but are not limited to land tax, debits tax, stamp duties and council rates.</li> <li>✓ indirect costs – apportioned to water services using a consistent methodology for all reporting years.</li> <li>✓ costs associated with BOOT schemes should be reported according to accounting standards (see Practice Note 4)</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ all non-core business operating costs</li> <li>✗ depreciation</li> <li>✗ any write-downs of assets to recoverable amounts</li> <li>✗ write-offs retired or scrapped assets</li> <li>✗ the written-down value of assets sold.</li> </ul>		

<b>General supporting notes – continued</b>	<p>Write-offs could be equated to accelerated depreciation and therefore should be included within current cost depreciation. This will then be included as part of the calculation of total costs for the relevant period.</p> <p>When assets are sold, their book value should be included in current cost depreciation (as it may be accelerated depreciation). Selling expenses, although expected to be immaterial, should be included in operating costs.</p> <p>Interest should be excluded from operating cost as it is a means of servicing the capital cost of projects, rather than operating them.</p> <p>Where defined benefit schemes impact materially on operating costs, this should be reflected in a footnote.</p>
<b>Derivation</b>	<p><b>F11</b> = IF11 / C4</p> <p style="padding-left: 20px;">= [IF11—Operating cost: water supply]</p> <p style="padding-left: 20px;">/ [C4—Total number of connected properties: water supply]</p>
<b>Derivation</b>	<p><b>F11.1</b> = IF11 / W11 x 1000</p> <p style="padding-left: 20px;">= [IF11—Operating cost: water supply]</p> <p style="padding-left: 20px;">/ [W11—Total volume of urban water supplied]</p>

Indicator	IF12—Operating cost: wastewater	F12—Operating cost per property: wastewater	F12.1—Operating cost per ML: wastewater—bulk utility
<b>Definition</b>	The operation, maintenance and administration (OAM) costs of the utility for the provision of wastewater services during the reporting year (\$ 000s).	The operation, maintenance and administration (OAM) costs of the utility for the provision of wastewater services per property connected to the wastewater system during the reporting year (\$/property).	The operation, maintenance and administration (OAM) costs of the utility for the provision of bulk wastewater services per megalitre of bulk wastewater treated by the utility during the reporting year (\$/ML).
<b>General supporting notes</b>	<p><b>Operating costs</b> (OMA) should, where possible or material (in assessing materiality refer to AASB 1031), include:</p> <ul style="list-style-type: none"> <li>✓ charges for bulk treatment/transfer of sewerage</li> <li>✓ salaries and wages salaries and wages, including overheads on salaries and wages</li> <li>✓ materials, chemicals and energy used</li> <li>✓ contracts</li> <li>✓ accommodation</li> <li>✓ all other operating costs that would normally be reported</li> <li>✓ items expensed from work in progress (capitalised expense items) and pensioner remission expenses (Community Service Obligations are likely to have an equivalent inclusion in revenue)</li> </ul>		

<p><b>General supporting notes – continued</b></p>	<ul style="list-style-type: none"> <li>✓ competitive neutrality adjustments, which include but are not limited to land tax, debits tax, stamp duties and council rates.</li> <li>✓ indirect costs – apportioned to water services using a consistent methodology for all reporting years.</li> <li>✓ costs associated with BOOT schemes should be reported according to accounting standards (see Practice Note 4)</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✓ all non-core business operating costs</li> <li>✓ depreciation</li> <li>✓ any write-downs of assets to recoverable amounts</li> <li>✓ write-offs retired or scrapped assets</li> <li>✓ the written-down value of assets sold.</li> </ul> <p>Write-offs could be equated to accelerated depreciation and therefore should be included within current cost depreciation. This will then be included as part of the calculation of total costs for the relevant period.</p> <p>When assets are sold, their book value should be included in current cost depreciation (as it may be accelerated depreciation). Selling expenses, although expected to be immaterial, should be included in operating costs.</p> <p>Interest should be excluded from operating cost as it is a means of servicing the capital cost of projects, rather than operating them.</p> <p>Where defined benefit schemes impact materially on operating costs, this should be reflected in a footnote.</p>
<p><b>Derivation</b></p>	<p><b>F12</b> = IF12 / C8                  = [IF12— Operating cost: wastewater]                  / [C8—Total number of connected properties: wastewater]</p> <p><b>F12.1</b> = IF12 / W18 x 1000                  = [IF11—Operating cost: water supply]                  / [W18—Total volume of wastewater collected] x 1000</p>

<b>Indicator</b>	<b>F13</b> —Combined operating cost per property: water supply and wastewater	<b>F13.1</b> —Combined operating cost per ML: water supply and wastewater—bulk utility
<b>Definition</b>	The combined operation, maintenance and administration (OAM) costs of the utility for the provision of water supply and wastewater services per property connected to the water supply system during the reporting year (\$/property).	The operation, maintenance and administration (OAM) costs of the utility for the provision of bulk water supply and wastewater services per megalitre of bulk water supplied by the utility during the reporting year (\$/ML).
<b>General supporting notes</b>	<p><b>Operating costs</b> (OMA) should, where possible or material (in assessing materiality refer to AASB 1031), include:</p> <ul style="list-style-type: none"> <li>✓ water resource access charge or resource rent</li> <li>✓ purchases of raw, treated or recycled water</li> <li>✓ charges for bulk treatment/transfer of sewerage</li> <li>✓ salaries and wages, including overheads on salaries and wages</li> <li>✓ materials, chemicals and energy used</li> <li>✓ contracts</li> <li>✓ accommodation</li> <li>✓ all other operating costs that would normally be reported</li> <li>✓ items expensed from work in progress (capitalised expense items) and pensioner remission expenses (Community Service Obligations are likely to have an equivalent inclusion in revenue)</li> <li>✓ competitive neutrality adjustments, which include but are not limited to land tax, debits tax, stamp duties and council rates.</li> <li>✓ indirect costs – apportioned to water services using a consistent methodology for all reporting years.</li> <li>✓ costs associated with BOOT schemes should be reported according to accounting standards (see Practice Note 4)</li> </ul> <p>and exclude:</p> <ul style="list-style-type: none"> <li>✗ all non-core business operating costs</li> <li>✗ depreciation</li> <li>✗ any write-downs of assets to recoverable amounts</li> <li>✗ write-offs retired or scrapped assets</li> <li>✗ the written-down value of assets sold.</li> </ul> <p>Write-offs could be equated to accelerated depreciation and therefore should be included within current cost depreciation. This will then be included as part of the calculation of total costs for the relevant period.</p> <p>When assets are sold, their book value should be included in current cost depreciation (as it may be accelerated depreciation). Selling expenses, although expected to be immaterial, should be included in operating costs.</p> <p>Interest should be excluded from operating cost as it is a means of servicing the capital cost of projects, rather than operating them.</p> <p>Where defined benefit schemes impact materially on operating costs, this should be reflected in a footnote.</p>	

## 9.4 Capital expenditure

Information on capital expenditure supports an understanding of the size of the utility and its capital responsibilities. Capital expenditure programmes are influenced by the age of the current infrastructure and the stage of each asset's lifecycle.

Indicator	F14—Capital expenditure: water supply	F28—Capital expenditure per property: water supply	F28.1—Capital expenditure per ML: water supply—bulk utility
Definition	The capital expenditure of the utility on the provision of water supply services during the reporting year (\$ 000s).	The capital expenditure of the utility on the provision of water supply services per property connected to the water supply system during the reporting year (\$/property).	The capital expenditure of the utility on the provision of bulk water services per megalitre of bulk water supplied by the utility during the reporting year (\$/ML).
General supporting notes	<p><b>Capital expenditure</b> includes:</p> <ul style="list-style-type: none"> <li>✓ new works</li> <li>✓ renewals or replacements</li> <li>✓ other expenditure that would otherwise be referred to capital</li> <li>✓ plant and equipment</li> <li>✓ capital expenditure when it is recognised in the year it is incurred</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ gifted / development assets.</li> </ul> <p>Capital expenditure is recognised in the year that it is incurred.</p>		
Derivation	$F28 = F14 / C4$ $= [F14—Capital expenditure: water supply] / [C4—Total number of connected properties: water supply]$		
	$F28.1 = F14 / W11 \times 1000$ $= [F14—Capital expenditure: water supply] / [W11—Total volume of urban water supplied] \times 1000$		

<b>Indicator</b>	<b>F15</b> —Capital expenditure: wastewater	<b>F29</b> —Capital expenditure per property: wastewater	<b>F29.1</b> —Capital expenditure per ML: wastewater—bulk utility
<b>Definition</b>	Capital expenditure per ML: wastewater—bulk utility (\$ 000s).	The capital expenditure of the utility on the provision of wastewater services per property connected to the wastewater system during the reporting year (\$/property).	The capital expenditure of the utility on the provision of bulk wastewater services per megalitre of bulk wastewater treated by the utility during the reporting year (\$/ML).
<b>General supporting notes</b>	<p><b>Capital expenditure</b> includes:</p> <ul style="list-style-type: none"> <li>✓ new works</li> <li>✓ renewals or replacements</li> <li>✓ other expenditure that would otherwise be referred to as capital</li> <li>✓ plant and equipment.</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ gifted / development assets.</li> </ul> <p>Capital expenditure is recognised in the year that it is incurred.</p>		
<b>Derivations</b>	$F29 = F15 / C8$ $= [F15\text{—Capital expenditure: wastewater}] / [C8\text{—Total number of connected properties: wastewater}]$		
	$F29.1 = F15 / W18 \times 1000$ $= [F15\text{—Capital expenditure: wastewater}] / [W18\text{—Total volume of wastewater collected}] \times 1000$		

<b>Indicator</b>	<b>F16</b> —Total capital expenditure: water supply and wastewater
<b>Definition</b>	The total capital expenditure of the utility on the provision of water supply and wastewater services during the reporting year (\$ 000s).
<b>General supporting notes</b>	<p><b>Capital expenditure</b> includes:</p> <ul style="list-style-type: none"> <li>✓ new works</li> <li>✓ renewals or replacements</li> <li>✓ other expenditure that would otherwise be referred to as capital</li> <li>✓ recycling water assets</li> <li>✓ plant and equipment.</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ gifted / development assets.</li> </ul> <p>Capital expenditure is recognised in the year that it is incurred.</p>
<b>Derivations</b>	$F16 = F14 + F15$ $= [F14\text{—Capital expenditure: water supply}] + [F15\text{—Capital expenditure: wastewater}]$

<b>Indicator</b>	<b>F17</b> —Economic real rate of return: water supply	<b>F18</b> —Economic real rate of return: wastewater	<b>F19</b> —Economic real rate of return: water supply and wastewater
<b>Definition</b>	The ratio of the utilities water supply business revenue, less operating expenses, to the value of its operational assets for the business during the reporting year.	The ratio of the utilities wastewater business revenue, less operating expenses, to the value of its operational assets for the business during the reporting year.	The ratio of the utilities water supply and wastewater business revenue, less operating expenses, to the value of its operational assets for the business during the reporting year.
<b>General supporting notes</b>	<p>It is recognised that not all urban water utilities will be able to report on the basis of the written-down replacement cost. In this case the utility should record in the indicator footnote the approach used to value assets.</p> <p>Revenue from operations includes all developer cash and asset contributions for the water and sewerage business.</p> <p>Revenue from operations excludes interest income, grants for acquisition of assets and gain/loss on disposal of assets for the water and sewerage business.</p> <p>Current cost depreciation</p> <p>Expense should be based on the change in the value of the fixed assets plus plant and equipment during the reporting period.</p> <p>Economic real rate of return – water or sewerage =  <math display="block">\frac{\text{Revenue from water or sewerage operations} - \text{OMA} - \text{current cost depreciation}}{\text{value of fixed assets plus plant and equipment}}</math></p> <p>Utilities should allocate corporate overheads on a reasonable basis</p>		

## 9.6 Dividends

Information on dividends supports an understanding of dividends paid, payable or proposed to be paid in relation to current year profit for the water and wastewater business for the whole water utility.

Indicator name	F20—Dividends	F21—Dividend payout ratio
Definition	The dividends paid, payable or proposed to be paid by the utility in relation to profits from its water supply and wastewater business for the whole water utility for the reporting year (\$ 000s).	The ratio of the dividends paid, payable or proposed to be paid by the utility in relation to profits from its water supply and wastewater business to the utility's net profit after tax for the reporting year.
General supporting notes	<p><b>Dividends</b> include:</p> <ul style="list-style-type: none"> <li>✓ interim dividends paid during the financial year</li> <li>✓ final dividend declared and proposed to be paid in relation to the current financial year profits</li> <li>✓ where appropriate, this will include non-metropolitan businesses.</li> </ul> <p>State and territory-wide water utilities should report the total dividend for their entire operations.</p> <p><b>Example</b></p> <ul style="list-style-type: none"> <li>• The year being reported on is the year ending 30 June 2007.</li> <li>• A business has a net profit after tax for the year ended 30 June 2007 of \$50 000 000.</li> <li>• The business paid a final dividend for the year ended 30 June 2006 in October 2006 of \$15 000 000.</li> <li>• The business paid an interim dividend for the year ended 30 June 2007 in April 2007 of \$20 500 000.</li> <li>• The business paid a final dividend for the year ended 30 June 2007 in October 2007 of \$12 000 000. This dividend was "proposed" only in the financial statements for the year ended 30 June 2007 as the all relevant parties had not agreed as to the amount of the dividend.</li> </ul> <p>This is represented by the following timeline:</p>	



<b>Derivation</b>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;">30 June 2006</td> <td style="width: 20%;">31 Oct 2006</td> <td style="width: 20%;">30 April 2007</td> <td style="width: 20%;">30 June 2007</td> <td style="width: 20%;">31 Oct 2007</td> </tr> <tr> <td colspan="2" style="text-align: center;">Final 06 Div \$15M</td> <td style="text-align: center;">Int 07 Div \$20.5M</td> <td style="text-align: center;">NPAT \$50M</td> <td colspan="2" style="text-align: center;">Final 07 Proposed Div \$12M</td> </tr> </table> <p>The dividend paid for the 2007 financial year would be \$15M + \$20.5M = \$35.5M.                  The dividend paid/payable/proposed for the 2007 financial year would be \$20.5M + \$12M = \$32.5M.</p>	30 June 2006	31 Oct 2006	30 April 2007	30 June 2007	31 Oct 2007	Final 06 Div \$15M		Int 07 Div \$20.5M	NPAT \$50M	Final 07 Proposed Div \$12M	
30 June 2006	31 Oct 2006	30 April 2007	30 June 2007	31 Oct 2007								
Final 06 Div \$15M		Int 07 Div \$20.5M	NPAT \$50M	Final 07 Proposed Div \$12M								
<b>Derivation</b>	<p><b>F21</b> = F20 / F24                  = ([F20—Dividends]                  / [F24—Net profit after tax (NPAT)])</p>											

## 9.7 Net debt to equity

Information on the ratio of net debt to equity for the water and wastewater business of the whole water utility is important for understanding the operations of a utility.

<b>Indicator</b>	<p><b>F22</b>—Net debt to equity ratio</p>
<b>Definition</b>	<p>The net debt for the water supply and wastewater businesses of the whole utility to its equity for the reporting year.</p>
<b>General supporting notes</b>	<p><b>Net debt</b> includes:</p> <ul style="list-style-type: none"> <li>✓ interest bearing repayable borrowings</li> <li>✓ non-interest bearing repayable borrowings</li> <li>✓ interest bearing non-repayable borrowings</li> <li>✓ redeemable preference shares</li> <li>✓ finance leases</li> <li>✓ pre-payment of debts</li> <li>✓ offsetting assets, such as contributions to sinking funds</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ creditors and provisions.</li> </ul> <p>The data for this indicator should incorporate the figures for the <u>whole</u> water utility—it is not appropriate to apportion debt across business products.</p> <p>Pre-payment of debts is included in the investment component of the debt calculation.</p> <p>Net debt = (long term borrowings + short term borrowings) – (cash + investments)</p> <p>Equity = the total assets less total liabilities for the <u>whole</u> water utility</p> <p>Net debt to equity = Net debt / (total assets – total liabilities)</p>

## 9.8 Interest cover

Information on interest cover is important for understanding the ratio of earnings before interest and tax (EBIT) to net interest expense for the whole utility.

<b>Indicator</b>	<b>F23</b> —Interest cover ratio
<b>Definition</b>	The ratio of the utility's earnings before interest and tax (EBIT) to its net interest expense for the whole utility for the reporting year.
<b>General supporting notes</b>	<p>The <b>interest cover</b> for a loss-making utility is zero.</p> <p>If its net interest expense is zero (i.e. no interest expense or its interest income is greater than interest expense) for a profit-making utility, then <b>its interest cover</b> is infinite and should be reported as being greater than one (&gt;'1').</p> <p><b>Interest</b> includes:</p> <ul style="list-style-type: none"> <li>✓ net cost of short, medium and long-term loans.</li> </ul> <p><b>Borrowing costs</b> are defined in AASB 123, and may include:</p> <ul style="list-style-type: none"> <li>✓ interest on bank overdrafts and short, medium and long-term borrowings</li> <li>✓ amortisation of discounts or premiums relating to borrowings</li> <li>✓ amortisation of ancillary costs incurred in connection with the arrangement of borrowings</li> <li>✓ finance charges with respect to finance leases recognised in accordance with AASB 16 Leases</li> <li>✓ exchange differences arising from foreign currency borrowings to the extent that they are regarded as an adjustment to interest costs.</li> </ul> <p>AASB is applicable to reporting periods beginning on or after 1 January 2005. For periods prior to this, AASB 123 or AAS 34 should be applied.</p> <p>In addition to AASB 123, borrowing costs may also include:</p> <ul style="list-style-type: none"> <li>✓ administrative fees payable to relevant state treasuries, where applicable i.e. Treasury Corporation Victoria (TCV) fees (Victoria),</li> <li>✓ any levies or charges imposed by respective state treasuries for the purpose of competitive neutrality because of government guaranteed debt i.e. financial accommodation levy (Victoria).</li> </ul> <p><b>Net interest expense</b> is the utility's interest expense less its interest income. The net interest expense is taken as zero if the interest income is greater than the interest expense.</p> <p><b>Earnings before interest and tax (EBIT)</b></p> <p>Revenue from the <u>whole</u> of water utility operations less operating expenses (operation, maintenance and administration expense (OMA) + current cost depreciation) for the <u>whole</u> of water and wastewater business.</p>

<b>General supporting notes - continued</b>	<p><b>Revenue from operations</b> includes:</p> <ul style="list-style-type: none"> <li>✓ all developer cash and asset contributions for the water and wastewater businesses</li> </ul> <p>and excludes:</p> <ul style="list-style-type: none"> <li>✗ interest income</li> <li>✗ grants for acquisition of assets</li> <li>✗ gains/losses on the disposal of assets for the water and wastewater businesses.</li> </ul> <p>Depreciation expense should be based on written-down replacement cost.</p> <p>If EBIT is less than 0 then interest cover is nil. If net interest expense is zero and EBIT is more than 0 then the interest cover should be reported as '&gt;1'.</p> <p><b>F23</b>—Interest cover ratio = EBIT / Net interest expense</p> <p>The data for this indicator should reflect the figures for the water and wastewater businesses as a <u>whole</u>, i.e. they should reflect all the utility's activities. It is not appropriate to apportion interest across business areas.</p>
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## 9.9 Net profit after tax

Indicator	F24—Net profit after tax (NPAT)	F30—Net profit after tax ratio
Definition	The net profit after tax, disclosed in the utility's annual financial statements for the reporting year (\$ 000s).	The ratio of the net profit after tax, disclosed in the utility's annual financial statements, to its total income for the reporting year.
General supporting notes		
Derivation	$F30 = F24 / F3$ $= [F24\text{—Net profit after tax (NPAT)}]$ $/ [F3\text{—Total income for the utility}]$	

## 9.10 Community service obligations (CSOs)

Information on revenue from Community Service Obligations (CSOs) supports an understanding of the value of payments or revenue provided to a water utility for the delivery of non-commercial or community service outcome objectives of government.

Indicator	F25—Community service obligations (\$)	F8—Community service obligations ratio
Definition	<p>The dollar amount of any community service obligation subsidies provided by the government, to the utility, to allow for the provision of goods or services at less than total cost during the reporting year (\$ 000s).</p>	<p>The ratio of the dollar amount of any community service obligation subsidies provided by the government, to the utility, to allow for the provision of goods or services at less than total cost to its total income for the reporting year</p>
General supporting notes	<p>A <b>Community Service Obligation (CSO)</b> is payment is a subsidy provided by government to allow for the provision of a good or service at less than total cost, e.g. small regional community provided with water at less than total cost.</p> <p>A CSO must be:</p> <ol style="list-style-type: none"> <li>1. a non-commercial product or service                             <ul style="list-style-type: none"> <li>▪ It should be clearly established that a CSO relates to the provision of non-commercial products or services, that is, products and services whose provision is not in the commercial interests of a commercial business entity.</li> <li>▪ To qualify as CSOs, activities must be ones that would otherwise not be undertaken, or would be priced differently, by commercial entities (based on the entity earning normal commercial profit levels and the products or services being delivered on a cost-effective basis).</li> <li>▪ In some instances, the delivery of products and services may be commercially viable at levels below those desired by the government. Therefore, such services will contain both commercial and non-commercial elements. CSOs should relate only to the non-commercial element of the product or service.</li> </ul> </li> <li>2. purchased by the government on behalf of the community                             <ul style="list-style-type: none"> <li>▪ To qualify as a CSO, a product or service needs to be clearly purchased by the government for delivery to the community on its behalf to achieve a specific social or economic objective that has been established by the government.</li> </ul> </li> <li>3. Purchased from a commercial business entity                             <ul style="list-style-type: none"> <li>▪ To qualify as a CSO, a product or service must be purchased by the government from an appropriate commercial business entity.</li> </ul> </li> </ol>	

<p><b>General supporting notes</b></p>	<p>On the basis of the criteria outlined above, the following four categories of activities would qualify as CSO payments:</p> <ol style="list-style-type: none"> <li>i. payment by government for delivery of services to final consumers or industry at uniform prices, regardless of variations in the cost of supply (e.g. uniform water tariff)</li> <li>ii. payment by government for delivery, at no charge or below cost, of services or service levels which would not be provided on purely commercial grounds (e.g. remote community water services)</li> <li>iii. payment by government towards the cost of price concessions to particular groups of customers (e.g. various pensioner/senior concessions)</li> <li>iv. payment by government towards the cost of purchase of inputs at levels or types that differ from purely commercial levels in order to achieve other objectives (e.g. employing additional apprentices)</li> </ol> <p>The data for this indicator should reflect the figures for the water and wastewater businesses of the <u>whole</u> water utility. This is done in recognition of the inappropriateness of apportioning CSO payments across the business products.</p> <p>State- and territory-wide water utilities should report the CSO for their state-wide operations in a footnote.</p> <p><b>Examples</b></p> <ol style="list-style-type: none"> <li>1. Legislation requires a water utility to provide a \$100 reduction to the water supply bills for pensioners. The government meets the cost of \$60 of this reduction, with the remaining \$40 to be met by the water utility—The CSO value is \$60 as this is the amount paid by the government.</li> <li>2. Legislation states that certain properties (e.g. schools and churches) may be provided with a reduction in water supply and wastewater charges, but the government does not make any payments—as there are no payments by the government, such reductions in charges are not a CSO.</li> <li>3. Reductions in charges for services to any consumers, including pensioners and seniors, which are provided without the government paying for the reduction are a cross-subsidy and not a CSO.</li> </ol>
<p><b>Derivation</b></p>	<p><b>F8</b> = F25 / F3</p> <p>= [F25—Community service obligation]</p> <p>/ [F3—Total income for the utility]</p>

## 9.11 Capital works grants

Information on capital works grants assists with understanding the assistance in the form of government grants made to the water or wastewater business for capital works projects.

Indicator	F26—Capital works grants: water supply	F27—Capital works grants: wastewater
Definition	The dollar amount of funds received within the reported financial year from government for capital works related to water supply services (\$ 000s).	The dollar amount of funds received within the reported financial year from governments for capital works related to wastewater services (\$ 000s).
General supporting notes	<p><b>Capital works grants</b> include</p> <ul style="list-style-type: none"> <li>✓ Specific and non-specific projects.</li> </ul> <p><b>Examples</b></p> <ol style="list-style-type: none"> <li>1. A grant of \$1 million for a backlog water supply scheme for a town without a reticulated water supply is a capital works grant.</li> <li>2. A grant for construction of a new weir, which will not be owned by the water utility, <u>is not</u> a capital works grant.</li> </ol>	

## 10 Public health

### 10.1 Water quality compliance

Information about drinking water quality zones that were compliant with the Australian Drinking Water Guidelines (ADWG) or licence conditions imposed on the utility is important for understanding the overall performance of the utility's water treatment. It also assists to identify whether problems are localised or widespread. The indicators provide information on how well the utility is managing its water treatment facilities and distribution system.

<b>Indicator</b>	<b>H1</b> —Water quality guidelines
<b>Definition</b>	The water quality guidelines (standard) specified in the utility's licence (or franchise agreement) or required by the health regulatory agency or government against which the water utility measures verification of water quality.
<b>General supporting notes</b>	<p><b>Water quality standards</b> include:</p> <ul style="list-style-type: none"> <li>✓ National Health and Medical Research Council (NHMRC) 1987</li> <li>✓ Australian Drinking Water Guidelines (ADWG) 1996</li> <li>✓ Australian Drinking Water Guidelines (ADWG) 2004</li> <li>✓ World Health Organisation (WHO) 1984.</li> </ul> <p>In the absence of a formal requirement on the utility, the requirements of the ADWG should be used.</p>

<b>Indicator</b>	<b>H3</b> —Percentage of population where microbiological compliance was achieved
<b>Definition</b>	The percentage of the total population served within the zones of the water supply system where compliance with the microbiological requirements of the water quality guidelines or standard is met during the reporting year.
<b>General supporting notes</b>	<p>Generally, the methodology for calculating microbiological criteria used for determining compliance is specified by the health regulator in each jurisdiction and if so, this should be used.</p> <p>In the absence of a specification, the guidance in the ADWG should be used as interpreted below:</p>

**Microbiological compliance**

For each zone, at least 98 per cent of routinely monitored samples contain no E. coli per 100ML of water during the 12 month period<sup>8</sup>.

Note: The ADWG use E. coli as the indicator of faecal contamination. For utilities using these guidelines for verification of performance, E. coli is the required assessment indicator. Total coliforms were removed as an indicator of faecal contamination in the 2004 guidelines; however, some water businesses may still have requirements for verification of water quality using the combination of total coliforms and E. coli. If this is case, compliance against total coliforms and E. coli should be reported.

**Water supply system and water supply zones**

A water supply zone will generally be defined by each water business using criteria such as:

- a discrete area of similar water quality, e.g. served by one water treatment plant
- an area able to be described by its boundaries
- the nature and design of the water supply system (including the location of service reservoirs, pump stations, tanks, and trunk systems)
- the source and nature of the source of the drinking supply
- the treatment components of the supply system
- ADWG Framework for Management of Drinking Water Quality
- Issues identified in risk-based drinking water quality management plan.

Risk-based systems and plans in place in the water business demonstrate the water business' commitment to a systematic, thorough and focused approach to the management of drinking water across the total area of a water business' operations.

Risk-based plans are documented systems that require the following types of issues in relation to water quality to be addressed:

- corporate commitment to water quality
- risk management plans including assessment of the drinking water supply system
- preventative measures (including evaluation of multiple barriers and critical control points)
- operational procedures
- water quality results verification and assessment
- management of incidents and emergencies
- community and stakeholder liaison and education
- system documentation

<sup>8</sup> The ADWG use the indicator E. coli interchangeably with thermos-tolerant coliforms.



<p><b>General supporting notes—continued</b></p>	<ul style="list-style-type: none"> <li>• staff training in water quality</li> <li>• investigative studies and validation of processes</li> <li>• external audit of water quality systems</li> <li>• review and continual improvement of the system.</li> </ul> <p>For robustness, these systems should be externally assessed.</p> <p>Risk based plans/systems may include:</p> <ul style="list-style-type: none"> <li>• HACCP</li> <li>• ISO 9001</li> <li>• the WSAA ADWGA quality assessment process</li> <li>• ADWG Framework for Management of Drinking Water Quality.</li> </ul> <p><b>Example</b></p> <p>Three zones have populations of 50,000, 75,000 and 100,000 respectively. The zone with a population of 100,000 did not achieve microbiological compliance, however the other two zones did.</p> <p>The % of population where microbiological compliance was achieved = <math>(50,000 + 75,000) / (50,000 + 75,000 + 100,000) = 55.56\%</math>.</p>
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<p><b>Indicator</b></p>	<p><b>H4</b>—Number of zones where chemical compliance was achieved</p>	<p><b>H4a</b>—Total number of zones</p>
<p><b>Definition</b></p>	<p>The total number of zones within the utility's water supply system that achieved compliance with the health related chemical requirements of the water quality guidelines or standard during the reporting year (zones).</p>	<p>The total number of the water supply system zones used in the assessment of chemical compliance for the reporting year (zones).</p>
<p><b>General supporting notes</b></p>	<p>Generally, the methodology for calculating chemical and radiological criteria used for determining compliance is specified by the health regulator in each jurisdiction and if so, this should be used.</p> <p>In the absence of such specification, the guidance in the ADWG should be used as interpreted below:</p> <p><b>Health-related physical or chemical compliance</b></p> <p>It is neither physically nor economically feasible to test on an ongoing basis for all substances in a water supply system. Each water supply system will have its own key characteristics, and based on carrying out a risk assessment of those characteristics, a routine monitoring program for these characteristics will be determined.</p> <p>It is therefore common for water businesses to monitor regularly for contaminants such as disinfection by-products, whereas a wide range of other non-key characteristics will be monitored only irregularly or when changes in the supply system (e.g. seasonal changes) warrant increased routine monitoring frequency.</p>	

Some chemical parameters are likely to be monitored in each zone, while others may be monitored in source or treated waters supplying a number of zones.

Chemical contaminants in a water supply system are generally a chronic issue: ingestion must be above a guideline value for a long time before harm is caused. The ADWG therefore suggest that for health related parameters 'each excursion beyond a guideline value should be a trigger for further action <sup>9</sup>, and this generally means more extensive sampling to confirm contaminant levels above the guideline level. While the ADWG are not definitive, they also state that 'for all health related characteristics, a reasonable objective is to be confident that the 95th percentile of results over the preceding 12 months should be less than the guideline value'. This means that the upper bound of the 95th confidence interval for the percentile should be less than the guideline value.<sup>10</sup>

For very regularly monitored data (minimum 30 data points), the upper bound of the 95th percentile approximates the 95th percentile value and takes into account an occasional exceedance of the guideline value (which could be due to sampling error, laboratory error). For contaminants where 30 data points are available, WSAA is therefore adopting the 95th percentile value of a series of monitoring assessments for assessment of verification against the level recommended in the ADWG.

The less the parameter is monitored, the greater the statistical uncertainty of the upper-bound number. For irregularly monitored data points (e.g. fewer than 30 per year), the upper bound of the 95th percentile may be considerably higher than the maximum reading detected. If this system is used, this may result in water businesses publicly reporting exceedances of guideline levels when no monitored sample value exceeds the guideline limit. This would be very difficult to explain to the public. There are further uncertainties in using this mechanism for assessment as some of the assumptions about the underlying statistical principles (e.g. as normally distributed data) may not hold and the mechanisms for deriving most guideline values use assumptions that also have significant error in their estimation.

For these reasons stated, for irregularly monitored data points, the maximum value of the data should be used for assessment against the guideline value.

In summary, for health-related chemical and radiological parameters:

- For contaminants sampled 30 or more times during the year, the 95th percentile reading of each health related monitored physical-chemical parameter should be used for assessments against ADWG guideline levels;
- For contaminants sampled fewer than 30 times during the year, the maximum reading should be used for assessment of each health related monitored physical-chemical parameter against ADWG guideline levels; and
- In some jurisdictions, health regulatory agencies will specify to the utility the performance requirements necessary. If this is the case, this should be used rather than the ADWG guidance (the performance requirements must be footnoted in the report).

These should be assessed across each zone in a system and reported as the number of zones meeting requirements (23 zones (H4) meeting the requirements out of a total of 30 zones (H4a).

<sup>9</sup> Section 6.3.4 *Australian Drinking Water Guidelines 2011*

<sup>10</sup> Section 10.7.1 *Australian Drinking Water Guidelines 2011*

General  
supporting  
notes –  
continued

### Water supply system and water supply zones

A water supply zone will generally be defined by each water business using criteria such as:

- a discrete area of similar water quality, e.g. served by one water treatment plant
- an area able to be described by its boundaries
- the nature and design of the water supply system (including the location of service reservoirs, pump stations, tanks, and trunk systems)
- the source and nature of the source of the drinking supply
- the treatment components of the supply system
- ADWG Framework for Management of Drinking Water Quality
- a risk-based drinking water quality management plan.

Risk-based systems and plans in place in the water business demonstrate the water business' commitment to a systematic, thorough and focused approach to the management of drinking water across the total area of a water business' operations.

Risk-based plans are documented systems that require the following types of issues in relation to water quality to be addressed:

- corporate commitment to water quality
- risk management plans including assessment of the drinking water supply system
- preventative measures (including evaluation of multiple barriers and critical control points)
- operational procedures
- water quality results verification and assessment
- management of incidents and emergencies
- community and stakeholder liaison and education
- system documentation
- staff training in water quality
- investigative studies and validation of processes
- external audit of water quality systems
- review and continual improvement of the system.

For robustness, these systems should be externally assessed.

Risk based plans/systems may include:

- HACCP
- ISO 9001
- the WSAA ADWGA quality assessment process
- ADWG Framework for Management of Drinking Water Quality.

<b>General supporting notes – continued</b>	<p><b>Examples</b></p> <ol style="list-style-type: none"> <li>1. Evaluation of disinfection by-product data (12 THM readings in 12 months in ug/L) (295, 250, 209, 222, 214, 211, 138, 143, 87, 93, 90, 200).  As there are fewer than 30 readings, the maximum value is taken which is 295 ug/L(micrograms per litre). As 295ug/L exceeds the ADWG limit of 250ug/L. This sample set would be assessed as non-compliant.</li> <li>2. Evaluation of disinfection by-product data (32 THM readings in 12 months in ug/L) (295, 250, 209, 222, 214, 211, 138, 143, 87, 93, 90, 200, 209, 222, 214, 211, 138, 143, 87, 93, 90, 200, 209, 222, 214, 211, 138, 143, 87, 93, 90, 200).  As there are more than 30 readings in the 12 months, the 95th percentile is taken, which is 234ug/L. As this 234ug/L does not exceed the ADWG limit of 250ug/L, this sample set would be assessed as compliant.</li> <li>3. Evaluation of a system with 30 zones shows that there is a failure of THMs in two zones and a failure of selenium in a source water supplying six zones (one of which overlaps with the zone failing THM's), making a total of seven zones failing (five zone with THM's only), one zone with selenium only, and one zone failing both THM's and Selenium). Results would be reported as 23 zones (H4) meeting the requirements out of a total of 30 zones (H4a).</li> </ol>
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<b>Indicator</b>	<b>H5—Risk-based drinking water management plan externally assessed</b>
<b>Definition</b>	The risk-based drinking water management plan was externally assessed.
<b>General supporting notes</b>	<p>A water utility may answer 'yes' to this indicator when it has been audited by an external accredited assessor and received certification for ISO 9001, HACCP or assessed against the requirements of the WSAA ADWG. A quality assessment by a RABQSA certified auditor, or assessed by an external assessor against the requirements of the ADWG Framework for Management of Drinking Water Quality.</p> <p>For each of these certification systems, external third-party accredited assessment must have taken place within the past 12 months, or as specified by the requirements of the risk management system in place, or as specified by the relevant health regulator. The scope of these quality systems must cover the entire scope of water business water quality management systems. If the quality system covers a more limited area, the indicated quality system must be footnoted with a description of the area covered.</p> <p>NATA certification of laboratory analyses is <u>not</u> an approved water quality personnel management system. NATA accreditation applies to laboratory analytical work, which comprises a small area of the total water quality management system.</p> <p><b>Accredited assessment</b></p> <p>Assessment carried out by a person(s) external to the organisation and accredited by a certification body such as RABQSA (<a href="http://www.rabqsa.com">www.rabqsa.com</a>) or approved by a health regulator or WSAA.</p>



# 11 Practice Notes

## Practice Note 1 – Alignment of the water resource indicators with the Bureau's Category 7 Urban water information requirements.

In response to the findings and recommendations of the Commonwealth's Interagency Working Group on the provision of water information to the Commonwealth, the Bureau undertook a review of its urban water information requirements to remove duplication and streamline data provision.

The [Water Amendment \(Water Information\) Regulations 2017](#) was enacted on the 23 March 2017. The amendment simplified the data requirements of the *Water Regulations 2008* Category 7 (information about urban water management) and increased the transparency of the linkages between the data collected by the Bureau and its water information products and services.

The amended Category 7 requirements are aligned with the urban NPR's water resource indicators (W indicators). The [Urban Water Management Information Requirements](#) document, incorporated by reference in Part 7 of the [Water Regulations 2008](#) (the Regulations), sets out the detail for giving information under Category 7. Further explanatory material on the Category 7 requirements can be found in the [Category 7 Reporting Handbook](#).

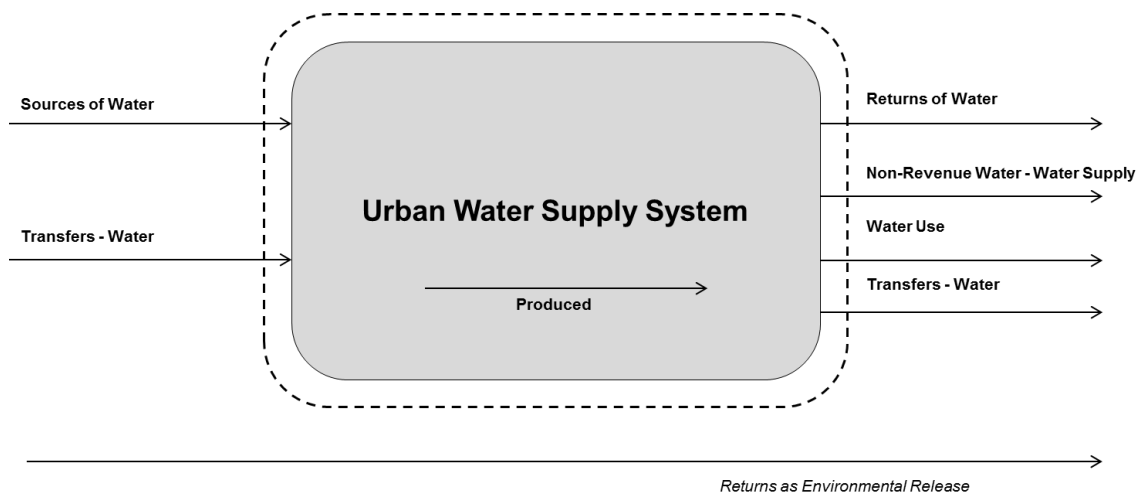
Utilities named in the Regulations' Persons Categories F and M who provide their W indicators to the urban national performance reporting framework will meet their obligation under the Regulations.

Utilities named in Persons Category L are required to provide a more detailed set of information about urban water management (U codes). U code data is a superset of the water resource indicators and contains additional, disaggregated, information as well as metadata and contextual information relating to urban water management. Where reporting boundaries are consistent, a utility can utilise their U code data to generate their W indicators. For further information on how to do this please contact the Bureau's water team [water@bom.gov.au](mailto:water@bom.gov.au).

## Practice Note 2 – The urban water supply system

An urban water supply system is a system used for the collection, transmission, treatment, storage and distribution of water extracted from water sources and supplied to consumers; e.g. residential properties, commercial premises and industrial operations.

The conceptualisation of the urban water supply system for the provision of urban water supply information is shown in Figure PN2-1. The figure illustrates the inflows and outflows of the system for which information is collected.

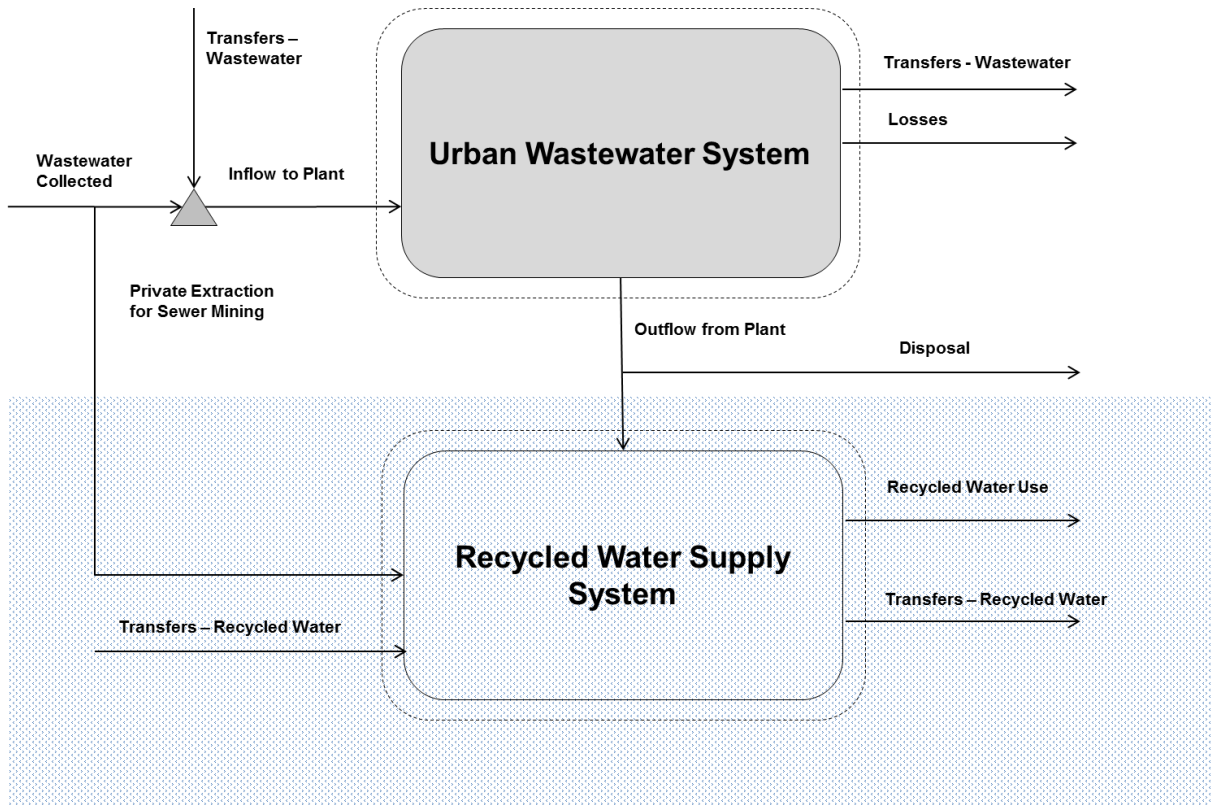


**Figure PN2.1 The urban water supply system**

### Urban wastewater system

An urban wastewater system is a system used for the collection, transmission, treatment, storage and disposal of wastewater collected by a utility. This includes residential properties, commercial premises and industrial operations.

The conceptualisation of the urban wastewater system for the provision or urban wastewater information is show in Figure PN2.2. The figure illustrates the inflows and outflows of the system for which information is collected. While recycled water is reported separately to the urban wastewater system, the figure depicts the recycled water system to demonstrate the interconnectivity of the two systems.



**Figure PN2.2 The urban wastewater system**

## Recycled water

An urban recycled water system is a system used for the collection, transmission, treatment, storage and supply of recycled water collected by a utility.

The conceptualisation of the urban recycled water system for the provision of urban recycled water information is shown in Figure PN2.3. The figure illustrates the inflows and outflow of the system for which information is collected. While the urban wastewater system is reported separately to the urban recycled water system, the figure depicts the urban wastewater system to illustrate the interconnectivity of the two systems.



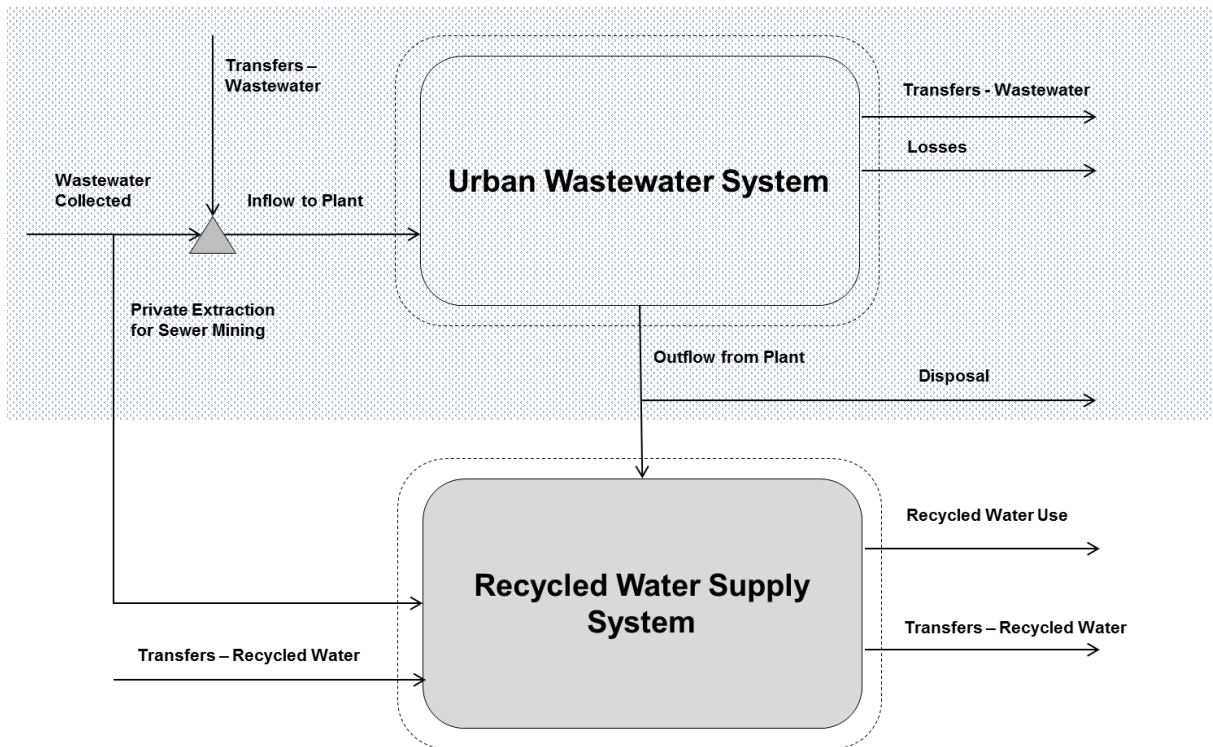


Figure PN2.3 The urban recycled water system

### Urban stormwater system

An urban stormwater system is a system used for the collection, transmission, treatment, storage and supply of stormwater water management by a utility.

The conceptualisation of the urban stormwater water system for the provision of urban stormwater information is shown in Figure PN2.4. The figure illustrates the outflows of the system for which information is collected.

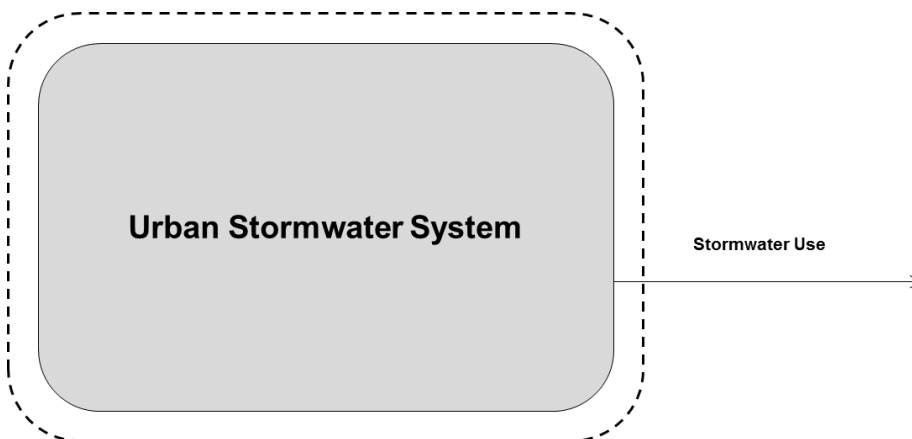


Figure PN2.4 The urban stormwater system

## Practice Note 3 – Infrastructure Leakage Index (ILI)

The infrastructure leakage index (ILI) is the ratio of a utility's current annual real losses (CARL) to its unavoidable annual real losses (UARL) within the potable water supply system during the reporting year.

While the ILI is subjective in nature it is useful for understanding trends in leakage and has been adopted for state and national comparisons (metric benchmarking), and has also been adopted by the International Water Association (IWA) as the preferred indicator for international comparisons. The ILI applies only to the potable supply system.

Typically, the ILI is calculated using standard software packages. These packages include:

- Benchloss: available through the Water Service Association of Australia
- CheckCalcs or PIFastCalcs: available through the Wide Bay Water Corporation
- System Leakage Management Plan (SLMP): available through the Queensland Water Directorate – Queensland only

The software used to calculate the ILI often provides the ability to report both operational and financial water loss performance indicators. Indicators A9, A10 and A11 refer only to real losses.

$$ILI = CARL / UARL$$

Where ILI is the infrastructure leakage index

CARL is the current annual real losses (L/service connection/day)

UARL is the unavoidable annual real losses (L/service connection/day)

### Estimating current annual real losses

To estimate CARL a utility may elect use the default values presented in Table PN3-1.

These defaults represent best practice for Australian conditions.

If a utility chooses to utilise values other than these defaults it must satisfy an auditor that the values used in the estimate of the utilities CARL are not excessive and that they are within the error band of  $\pm 25\%$ . As a minimum, for under-registration of retail meters, the utility must provide the auditor with a profile of the meter fleet, including age and type and the sampling regime used to determine meter accuracy.

Total water sourced for potable supply		Revenue Water		Bulk potable water exports	
		Authorised Consumption		Billed	Metered use
Non-revenue Water		Unbilled		Metered use	Water Use
		Apparent Losses		Unmetered use	
Water Losses		Real Losses		Unauthorised use	Water Losses
		Leakage on mains		Customer metering inaccuracy	
Water Losses		Leakage and overflows at storages		Leakage on service connections up to point of customer meter	
		Leakage on service connections up to point of customer meter			
Total potable water supplied					

Figure PN3.1 The urban water supply system

**Table PN3.1** Default values for the calculation of the Current Annual Real Loss

Parameter	Comments	Default value	Additional notes
Total potable water supplied	The total volume of potable water supplied is equal to the total volume water sourced for potable supply less the bulk potable water exports		
Unbilled unmetered authorised consumption	Any unmetered authorised consumption for which a bill is not issued to the consumer (e.g. process water at water treatment works, hydrants for mains flushing, fire services, etc.).	0.5% of water supplied	The default for unbilled unmetered authorised consumption does not include any allowance for process water at water treatment works, which should normally be metered.
Unauthorised consumption	Generally, this refers to illegal use.  The water utility should be consistent across reporting years in calculating its CARL and, where appropriate, have supporting documentation to verify assumptions for the purpose of auditing.	0.1% of Water Supplied	
Under-registration of retail meters	Under registration refers to the error associated with flow metering and the underestimation of the volume of water delivered to a utility's customers.	Residential meters = 2.0% of residential metered consumption  Non-residential meters = 2.0% of non-residential metered consumption	
Service connections	The number of service connections can be taken as being the number of metered accounts, minus the total of any sub-meters (after master meters, e.g. to shops and flats), plus the estimated number of unmetered service connections (e.g. fire service connections).		It is not acceptable to use the total connected properties value (C4) for calculating real losses performance indicators.

**Unavoidable annual real losses** (UARL) are a theoretical reference value representing the technical lower limit of leakage that could be achieved if all of today's best technology could be successfully applied.<sup>11</sup>

The **UARL** should be based on average system pressure measurements in the pressurised distribution system up to the point of customer metering.

$$\text{UARL} = (18 \times L_m + 0.8 \times N_c) \times P$$

Where  $L_m$  = mains length (km),

$N_c$  = number of service connections

$P$  = average system pressure (m)

The number of **service connections** is **not** the same as the number of metered accounts or **connected properties**.

The number of service connections can be taken as being the number of metered accounts, minus the total of any sub-meters (after master meters, e.g. to shops and flats), plus the estimated number of unmetered service connections (e.g. fire service connections).

It is **not** acceptable to use the total connected properties value (C4) for calculating the infrastructure leakage index.

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<sup>11</sup> American Water Works Association (2012). IWA/AWWA Water Audit Method.

## Practice Note 4 – Build, Own, Operate, and Transfer (BOOT) schemes

Public Private Partnerships (PPPS) are collaborations between the public and private sectors to fund and develop public infrastructure projects.

Build, Own, Operate, and Transfer (BOOT) schemes are a form of PPP. Under a BOOT scheme the contract between the government and the private sector corporation specifies that the asset will be transferred to government after a defined period.

For the purposes of the National Performance Framework BOOT schemes should be treated as if they are owned and operated by the water utility.

### Including BOOT schemes in operating costs

The costs associated with BOOT schemes should be reported according to accounting standards.

The utility should extract all capital costs from the operating cost of the BOOT and add the equivalent (likely to be estimated) replacement cost and depreciation values where appropriate in the survey reported values.

Operating costs for water utilities with one or more BOOT plants are divided into:

- a) operating costs for the BOOT scheme/s
- b) all other (non-BOOT) operating costs
- c) depreciation associated with all non-BOOT assets.

Item (a) represents the payment made by the water business to the BOOT operator (usually a contractor). This charge is made up of three components, which are determined by the BOOT operator, and may be able to be sourced from the original contract: the BOOT operator's operating costs, depreciation of the BOOT asset, and return on assets for the BOOT asset. These three components are dealt with as follows:

- the BOOT operator's operating costs are added to item (b) above to make the total operating costs for the water utility
- the depreciation of the BOOT asset is added to item (c) above to form the input to current cost depreciation, used in total costs.

The return on assets for the BOOT asset is used to determine the asset's value through back-calculation. This asset value is then added to the water businesses written down replacement cost of fixed assets. The return on assets for the BOOT asset is not included in the water utility's return on assets data.