Australian Government
National Water Commission

WATER SERVICES ASSOCIATION of Australia

National Performance Framework

2006 urban performance reporting indicators and definitions

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Purpose of this publication

This document incorporates National Water Initiative (NWI) indicators which are cross-referenced numerically to the National Water Commission's (the Commission) consultation paper published in February 2006—*Draft National Benchmarking Framework: Performance Reporting Model for Urban Water Utilities*.' For example:

Reported indicators	NWI indicator	NWI indicator number
***Number of water main breaks per 100 km of water main**	Yes	40

* Placed against specific indicators refers to 'new' indicators that have been defined since the last national benchmarking document was published.

REPORTING PERIOD

The reporting period is the financial year; 1 July–30 June.

REVISION HISTORY

This document is under constant revision to refine the definition, interpretation, calculation and examples of indicators to clarify how to interpret each indicator.

For consistency, each release of a national benchmarking document is accompanied by a set of indicator definitions for that particular year which provides the basis to supply data in that time period.

This document is based on the 2006 National Performance Reporting Framework with revisions to 17 May, 2006.

KEY INTERCHANGEABLE TERMS

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

1. 'Wastewater' and 'sewage'—the term 'sewage' has been used throughout the document.
2. Connected properties and customers.
3. Sewer blockages and sewer chokes.
4. Sewer spills and sewage overflows.
5. Treatment plants and treatment works.

Table of contents

Foreword

This data handbook contains performance indicators and definitions which have been developed as part of the commitment under the National Water Initiative (NWI) to report independently, publicly, and on an annual basis, benchmarking of pricing and service quality for metropolitan, non-metropolitan and rural water delivery agencies. The performance indicators and definitions contained in this data handbook are designed for reporting on the performance of urban water utilities which are not Water Services Association of Australia (WSAA) members and which have greater than 10 000 connections. For urban water utilities which are WSAA members, a separate data handbook applies.

The indicators provided in this data handbook are designed to:

- identify baseline performance of individual businesses and provide incentives for improvement over time
- make comparisons between businesses and jurisdictions by gauging the relative performance of water businesses
- inform customers about the level of service they are receiving
- inform the decision making processes of government, regulatory agencies and water businesses, and
- encourage greater transparency around pricing and price setting processes.

The performance indicators and definitions are grouped under the following headings: 1. Water resources; 2. Asset data; 3. Customers; 4. Environment; 5. Pricing and finance; and 6. Health.

In developing the performance indicators and definitions provided in this data handbook, the NWI Parties (the Commonwealth government and the governments of New South Wales, Queensland, Victoria, South Australia, Tasmania, Western Australia, the Australian Capital Territory and the Northern Territory), led by the National Water Commission (the Commission), consulted with water industry associations such as WSAA and the Australian Water Association (AWA). The NWI parties and the Commission also held a series of stakeholder forums where water utilities were able to provide feedback on the proposed performance indicators and definitions, and identify any additional issues which should be addressed. These stakeholder forums were an important part of developing a relevant and meaningful national framework.

Reporting against the performance indicators and definitions contained in this data handbook is important to ensure that the governments of New South Wales, Queensland, Victoria, South Australia, Tasmania, Western Australia, the Australian Capital Territory and the Northern Territory meet their commitments under the NWI.

Water resources

Sources of water

Reported indicators	NWI indicator	NWI indicator number
***Volume of water sourced from dams (ML)**	Yes	4
***Volume of water sourced from river extraction (ML)**	Yes	5
***Volume of water sourced from groundwater (ML)**	Yes	7
***Volume of water sourced from desalination (ML)**	Yes	6
***Volume of water sourced from recycling (ML)**	Yes	8
***Total sourced water (ML)**	Yes	9
***Volume of water received from bulk supplier (ML)**	Yes	10

RAW DATA COLLECTED

1. Volume of water sourced from dams (ML).
2. Volume of water sourced from river extraction (ML).
3. Volume of water sourced from groundwater (ML).
4. Volume of water sourced from desalination (ML).
5. Volume of water sourced from recycling (ML).
6. Volume of water received from bulk supplier (ML).
7. Total sourced water (ML).

PURPOSE

To report the volumes of water abstracted from various water sources to supply the utility's customers in the reporting period. It may also provide an indication of the diversity of supply sources, potential environmental issues, water treatment issues and a partial explanation for the relative operating and total cost of water of the utility compared to other utilities (e.g. a utility supplied mostly by desalination may have a higher cost structure than one relying mostly on gravity fed water from dams).

DEFINITIONS

Volume of water sourced from dams

The total volume of water (potable and non-potable) abstracted by the utility from dams during the reporting period.

A dam is defined as a barrier across flowing water (generally a river or stream) that obstructs, directs or retards the flow, often creating a reservoir, lake or impoundment. Typically the purpose of a dam is to significantly improve the security of supply and may hold water for many months to years. They are substantial structures and often affect the biological integrity of a river. They are generally used in calculations of system yield.

To avoid the possibility of double counting, where water is transferred from one dam to another, the initial volume of water transferred is counted and not any subsequent transfers/ extractions from the secondary dam.

Volume of water sourced from river extraction

The total volume of water abstracted by the utility from rivers during the reporting period.

A river is a natural stream of water that flows in a channel with more or less defined banks. This does not include engineered channels such as irrigation channels; however such channels may be sourced from either a river or a dam.

Where a dam is used for regulating river flows, and a river abstraction subsequently occurs, consideration of the river distance, environmental and social benefits should be undertaken to determine whether the abstraction is from a river or a dam.

For example, abstraction from a river many kilometres downstream of a dam would be regarded as a river abstraction. This is because the general community view is that there are environmental and social benefits of a river downstream of a dam (e.g. recreational activities, fishing etc). Where water is abstracted a short distance below a dam or with engineered channels or conduits with little social or environmental benefit, this would be regarded as an abstraction from a dam.

Off-river storage

It is common for agencies to pump water from a river into off-river storages that may include tanks, reservoirs or dams. Water may be stored in these off-river storages for hours, days, few months or even years. This is often designed to provide a regular water supply of consistent quality to a water treatment plant or to compensate for short term fluctuations in river flows. They are generally not used in calculations of system yield.

Supplies to off-river storages are defined as river abstractions.

Volume of water sourced from groundwater

The total volume of water abstracted from groundwater during the reporting period.

To avoid double counting, this excludes volumes sourced from groundwater supplies that have been artificially recharged using sources of water that have been counted elsewhere i.e. from rivers, desalination plants or sewerage plants (recycling). Other forms of artificial recharge (i.e. storm water) not counted elsewhere are to be included.

Volume of water sourced from desalination

The total volume of water sourced from desalination plants during the reporting period.

Volume of water sourced from recycling

The total volume of water supplied by the water utility sourced from recycled water during the reporting period This should be the sum of residential, industrial/commercial, municipal irrigation. Water supplied for agribusiness by the utility should also be included where potable water (or raw supply to the potable system) would normally be used.

Volume of water received from bulk supplier

The total volume of water (potable and non-potable) purchased from another utility or entity outside this utility's geographic area of responsibility. The volume of water will include water which is subsequently exported (sold) to another utility (see example 3).

Total sourced water

This is the sum of the volumes reported above as supplied from dams, river extraction, groundwater, desalination, recycling and bulk supplier.

UNITS

Megalitres (ML).

EXAMPLES

1. 20 ML of water is abstracted from a river and subsequently stored in an off-stream dam before being supplied to the service area of the utility. This

volume (20 ML) would be included in the volume of water sourced from rivers.

2. 100 ML of water is released from a dam via a concrete conduit to a pump station for a water treatment plant one kilometre downstream from the dam. This volume (100 ML) is reported as water sourced from dams.

3. 100 ML of water is released from a dam to a natural river system. The river system has recreational areas and other environmental benefits (e.g. fish passage). 20 kilometres downstream the water is abstracted from the river for a water treatment plant. This is reported as a river abstraction.

Uses of water supplied

Reported indicators	NWI indicator	NWI indicator number
***Total urban water supplied (ML)**	Yes	17
***Average annual residential water consumption (kL/property)**	Yes	49

RAW DATA COLLECTED

1. Environmental flows supplied (ML).
2. Residential water supplied (ML).
3. Commercial and municipal and industrial water supplied (ML).
4. Other water supplied (ML).
5. Municipal irrigation water supplied.
6. Volume bulk water exports.

PURPOSE

To report the distribution of total water consumption in the business. It may be used to calculate the average annual residential water consumption per property and water supplied per total property.

DEFINITIONS

Environmental flows supplied

Wholesale flow allocations to the environment, generally upstream of the master meter, for the reporting period.

Residential water consumption

Total metered and estimated non-metered, potable and non-potable consumption by residential properties for the reporting period. (If some volumes are estimated, this should be noted on the data).

Commercial, municipal and industrial water consumption

Total metered and estimated non-metered, potable and non-potable consumption by commercial, municipal and industrial properties for the reporting period. (If some volumes are estimated, this should be noted on the data.)

Other water supplied

Total estimated non-metered consumption by other users. This would include, but may not be limited to, an estimate of water used for fire fighting, mains flushing, losses due to customer meter errors, leakage, water taken by councils or contractors and any other consumption due to operations.

Volume of bulk water exports

The total volume of water (potable and non-potable) sold to another utility or another entity outside this utility's geographic area of responsibility. The volume of water will include water originated from another source (see example 1).

Total urban water supplied

The total metered volume of water (potable, non-potable and recycled water) supplied to customers over the reporting period plus estimated non-metered consumption. This comprises the sum of bulk water exports, residential water consumption, commercial/

municipal and industrial water consumption and other water supplied (includes estimated non-metered consumption).

UNITS

Megalitres (ML), kilolitres per property (kL/property).

CALCULATIONS

Total urban water supplied =

(Residential water consumption) + (Commercial and municipal and industrial water consumption) + (Other water supplied) + (municipal irrigation water supplied) + (Bulk water exports)

Average annual residential water consumption=

(Residential (potable, non-potable and recycled) water consumption) / (Residential water connected properties)

EXAMPLES

1. SEQWater sells 100 ML water sourced from dams to Brisbane Water who then treats the total volume. Brisbane Water then sells 60 ML to Logan Water who in turn sells a proportion of this to Gold Coast Water. In this example, SEQWater would include 100 ML water as bulk water exports and would report this water as sourced from dams. Brisbane water would include 100 ML water as bulk volume of water received from a bulk supplier but would not report the water as sourced from dams.

Sewage collected

Reported indicators	NWI indicator	NWI indicator number
Sewage collected per total property (kL/property)	Yes	10

RAW DATA COLLECTED

1. Total sewage collected (ML).

PURPOSE

To provide an overview of the volume of sewage collected by the utility.

DEFINITIONS

Total sewage collected

Total volume of sewage collected by the utility, measured as treatment plant inflow, plus sewage treated by another business on behalf of the water utility e.g. wholesaler. Where only treatment plant outflow is measured, record this value and comment appropriately. This measure should equal the sum of volumes reported for residential, non-residential and non-trade sewage collected and trade sewage collected.

***Note**:* Residential and non-residential sewage and trade sewage are defined as per either *The National Water Management Strategy Guidelines for Sewerage Systems 1994* or state-based legislation.

UNITS

Megalitres (ML), kilolitres per property (kL/property).

CALCULATIONS

Sewage collected per property =

(Total sewage collected) / (Total sewerage connected properties)

Uses of recycled water

Reported indicators	NWI indicator	NWI indicator number
***Recycled water – town water substitution (ML)**	Yes	19
***Recycled water – town water substitution (%)**	Yes	18

RAW DATA COLLECTED

1. Recycled water – town water substitution (ML).
2. Total urban water supplied (ML).

PURPOSE

To provide an overview of the distribution of recycled water consumption in the business.

DEFINITIONS

Recycled water – town water substitution (ML)

The volume of recycled water supplied to customers for town water use. This includes recycled water supplied to industry, commercial premises and municipal uses where potable water (or the raw potable supply) would previously have been used.

Recycled water – town water substitution (per centage)

The volume of recycled water supplied to customers for town water use. This includes recycled water supplied to industry, commercial premises and municipal uses where potable water (or the raw potable supply) would previously have been used and expressed as a per centage of the total urban water supplied (NWI indicator 17).

UNITS

Megalitres (ML).

Asset data

Water treatment plants

Reported indicators	NWI indicator	NWI indicator number
Number of water treatment plants providing full treatment	Yes	11

RAW DATA COLLECTED

1. Number of water treatment plants providing full treatment.

PURPOSE

To report the level of treatment and complexity of treatment provided to bring water quality to an acceptable level for the customer. This indicator can also provide a partial explanation of a utility's relative operating cost and total cost. e.g. a utility providing full treatment for most of its supply would have has a significantly higher cost structure than one providing lesser treatment, e.g. disinfection only or 'further treatment'.

DEFINITIONS

Water treatment plant

An individual location receiving raw or partially treated water for treatment and ultimate delivery to customers. There may be more than one water treatment plant at an individual facility. Secondary or booster disinfection plants are not included, even where they have pH treatment. Water treatment plants that provide fluoridation only should be classified as disinfection only.

Full treatment

Generally, the water treatment plant is a substantial structure involving multiple treatment methods to achieve high quality water. The treatment plant would generally include processes that remove colour and/or turbidity as well as providing filtration and disinfection. In addition to the above, it may include processes for taste and/or odour reduction, softening, pH correction and the targeted removal of elements and compounds such as iron, manganese, nitrates and pesticides (see example 3).

Note: Secondary disinfection plants should not be counted, even when they have pH correction as well.

EXAMPLES

1. Typical full treatment processes—generally in addition to pH correction, and/or taste reduction, and/or odour reduction—include coagulation, flocculation, sedimentation, filtration, disinfection, membrane filtration and reverse osmosis.

Note: For statewide utilities that separately report metropolitan and rural/regional services, only water treatment plants used to supply the metropolitan area should be included.

Other water assets

Reported indicators	NWI indicator	NWI indicator number
Length of water mains (km)	Yes	2
Properties served per kilometre of water main (000s properties/km)	Yes	3

RAW DATA COLLECTED

1. Length of water mains (km).
2. Number of water properties (000s).

PURPOSE

To report on the scale of the utility's water mains 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.

DEFINITIONS

Note:

1. For statewide utilities that separately report both metropolitan and rural/regional services, only water pumping stations, water mains and water distribution storage facilities used to supply the metropolitan area should be included.
2. Where the water business has joint ownership of a pumping station, the pumping station should be counted in the water business's asset numbers.

Length of water mains

The total length of potable and non-potable water mains, including all transfer, distribution and reticulation mains.

Exclude:

- Mains associated with property water service (mains to meter) connections.
- Mains delivering recycled water.
- Disused pipe lengths should not be counted, even if they are maintained by the water business for possible future use.

UNITS

Kilometres (km), connected properties per km.

CALCULATIONS

Properties served (per km of water main) =

(Total water connected properties) / Length of water mains

Sewerage assets

Reported indicators	NWI indicator	NWI indicator number
Length of sewerage mains and channels (km)	Yes	13
Properties served per km of sewer main	Yes	14

RAW DATA COLLECTED

1. Length of sewerage mains and channels.
2. Total sewerage connected properties (000s).

PURPOSE

To report on the scale of the utilities sewerage network and the spatial density of properties served. The number of outfalls provides an indication of the number of environments receiving discharges from sewage treatment plants.

DEFINITIONS

Number of sewage treatment plants

The total number of sewage treatment plants providing sewage services to customers. This includes all primary, secondary and tertiary level treatment plants.

Length of sewer mains and channels

The total length of mains and channels, including all trunk, pressure and reticulation mains. It does not include lengths associated with property connection sewers or conduits carrying treated effluent.

Note: Combined sewerage and stormwater mains are included. Conduits and pipelines, (e.g. feeding paddocks for grass and land filtration), downstream from the treatment plant should be excluded.

UNITS

Kilometres (km), properties per km.

CALCULATIONS

Properties served per km of sewer main =

(Total sewerage connected properties / Length of sewer mains and channels)

Water main breaks

Reported indicators	NWI indicator	NWI indicator number
***Water main breaks (per 100 km of water main)**	Yes	40

RAW DATA COLLECTED

1. Total number of priority 1 and priority 2 water main breaks.

Note:

While this is not a new measure, the interpretation and definition of 'main breaks' has changed since *WSAAfacts 2005*.

PURPOSE

To report the number of breaks in potable and non-potable water mains, as a proportion of the total length of potable water mains serviced by the water utility. It is a partial indicator of customer service, the condition of the water network and/or the mode of operating the system (e.g. operating pressure).

DEFINITIONS

Water main breaks

An unplanned event in which water is lost which is attributable to failure of a pipe, hydrant, valve, fitting or joint material (being the mains and trunk infrastructure, excluding the mains to meter connections) regardless of cause. A break or leak may not necessarily result in loss of supply.

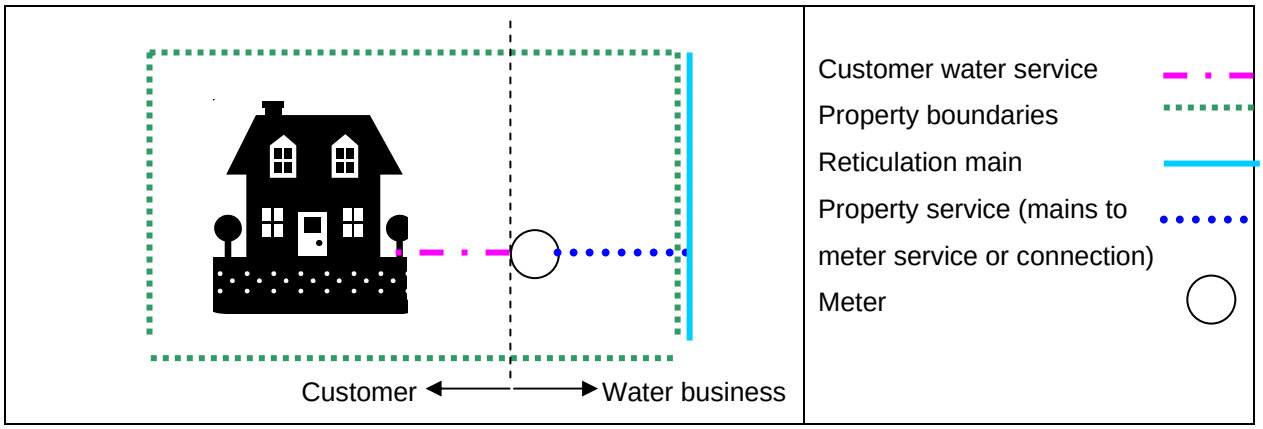
Exclude

Breaks in the property service (i.e. mains to meter connection).

Breaks in recycled water mains.

A burst or leak which causes no discernable impact on customers, property or the environment.

Note: The 'property service' includes any water infrastructure between the water main and the internal plumbing of the property. It may be owned by the water business, and is often referred to as the 'mains to meter' service or connection. All water plumbing downstream of the meter is usually the property owner's asset.



Priority 1 water main breaks and leaks

Priority 1 means a break or leak which causes, or has the potential to cause, substantial damage or harm to customers, water quality, flow rate, property or the environment.

Priority 2 water main breaks and leaks

Priority 2 means a break or leak which causes, or has the potential to cause, minor damage or harm to customers, water quality, flow rate, property or the environment.

CALCULATIONS

Water main breaks per 100 km of water main =

(Total number of priority 1 plus priority 2 water main breaks) / (Total length of water mains/100)

Water loss

Reported indicators	NWI indicator	NWI indicator number
Infrastructure leakage index	Yes	50
***Water losses (litres/connection/day)**	Yes	50A
***Water losses (kL/km water main/day**	Yes	50B

RAW DATA COLLECTED

1. Infrastructure leakage index.
2. Water losses (L/connection/d).
3. Water losses (kL/km water main/d).

PURPOSE

To report the utility's water losses. Losses in the water distribution network can be real or apparent and include leakage (real loss), errors in meter readings (apparent loss) and unauthorised usage (apparent loss). The infrastructure leakage index and water losses per connection per day are indicators of how effectively the network is being managed, the condition and age of the infrastructure or of a combination of the two. Real losses reduce the effective capacity of a water supply system and may result in unnecessary operating costs.

DEFINITIONS

Infrastructure leakage index

In determining the infrastructure leakage index, a number of assumptions are required. These include, but are not limited to:

- Rate of leakage of leaks.
- Rate of loss of water from breaks and reservoir overflows.
- Meter errors.
- Components of the water balance.

Water utilities may elect to use the default values prescribed below, or determine the actual value for its water business. Should the latter be chosen the water utility will need to satisfy the auditor that the input is within the error bands of ±10%. Defaults have been chosen to provide a higher ILI result.

Defaults

1. Retail meter errors
   - Residential meter error = 1.5 per cent BACMR (billed authorised consumption, metered residential).
   - Non-residential meter error = 2.0 per cent BACMN (billed authorised consumption, metered non-residential).

   If a water utility uses a value greater than the default, sufficient data must be provided to satisfy the auditor as to the accuracy of the value used. As a minimum the following must be provided:
   - A profile of the meter fleet, including age and type.
   - The sampling regime used to determine accuracy (see example 1).

2. Water balance components
    - Unbilled metered authorised consumption — 0 per cent water supplied.
    - Unbilled unmetered authorised consumption — 0.5 per cent water supplied.
    - Unauthorised consumption – 0.1 per cent water supplied.

Meter non-registration

An additional sum may be added to the residential meter error to account for meter non-registration (0.5 per cent BACMR).

Components of the water balance

Definitions:

- Unbilled authorised consumption: Any consumption for which a bill is not issued to the consumer. It can be metered e.g. hydrants for mains flushing, or non-metered e.g. fire services.
- Unauthorised consumption: Generally this refers to illegal use.

The water utility should be consistent across reporting years in applying any assumptions and, where appropriate, have supporting documentation to verify assumptions for the purpose of auditing.

Water losses

A component of the ILI, water losses refers to current annual real losses (the numerator of the ILI). Real losses include water lost through all types of leaks, bursts and overflows, i.e. physical water losses from the pressurised system up to the point of measurement of customer use. The current annual volume of real losses is the remainder after subtracting billed authorised consumption, unbilled authorised consumption and apparent losses from the system input volume.

<table>
<tr><td rowspan="4">System input</td><td>Billed authorised consumption</td></tr>
<tr><td>Unbilled authorised consumption</td></tr>
<tr><td>Apparent losses</td></tr>
<tr><td>Real losses</td></tr>
</table>

Service connections

The number of service connections is not always the same as the number of metered accounts or properties. As per the Benchloss software definition, ‘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 (including fire connections)’.

Note

1. Statewide utilities that separately report both metropolitan and rural/regional services should only report the Infrastructure leakage index and water losses associated with the infrastructure providing water services to the major metropolitan area.

2. Regional water utilities should report the infrastructure leakage index and water losses associated with the infrastructure providing water services to the major town(s) only.
3. The Benchloss software, used to calculate the Infrastructure Leakage Index (ILI) covers both operational performance (OP) and financial performance (FP). WSAA requires only the ILI, which is calculated in the OP section as ILI = CARL/UARL, where CARL is the current annual real losses and UARL is the unavoidable annual real losses.

UNITS

The ILI is a ratio and has no units.

L/connection/d.

kL/km water main/annum.

CALCULATIONS

Infrastructure leakage index =

Current Annual Real Loss / Unavoidable Annual Real Loss

The index is calculated using the Benchloss software.

Water losses (L/connection/d) =

Current Annual Real Loss (kL) / (Number of connections ('000s) x 365)

Water losses (kL / km water main / annum) =

Current Annual Real Loss (kL) / km water main

EXAMPLES

1. Estimated customer meter error—the water utility should be able to demonstrate an appropriate meter testing program, which enables the determination of meter error and can be adjusted using appropriate statistical analysis.

Sewer main breaks and chokes

Reported indicators	NWI indicator	NWI indicator number
Sewer main breaks and chokes (per 1000 properties).	Yes	56

RAW DATA COLLECTED

1. Total number of sewerage reticulation main breaks and chokes.
2. Total number of property connection sewer breaks and chokes.

PURPOSE

To report the number of sewer main breaks and chokes compared to the number of properties connected to the sewerage system operated by the water utility. It is divided into reticulation mains and property connection sewers, as the cause and frequency of breaks in the two types of main are quite different. It is a partial indicator of customer service and the condition of the sewerage network and may also be used to compare customer service.

DEFINITIONS

Choke

A confirmed partial or total blockage that may or may not result in a spill to the external environment from the sewer system.

Sewer reticulation main

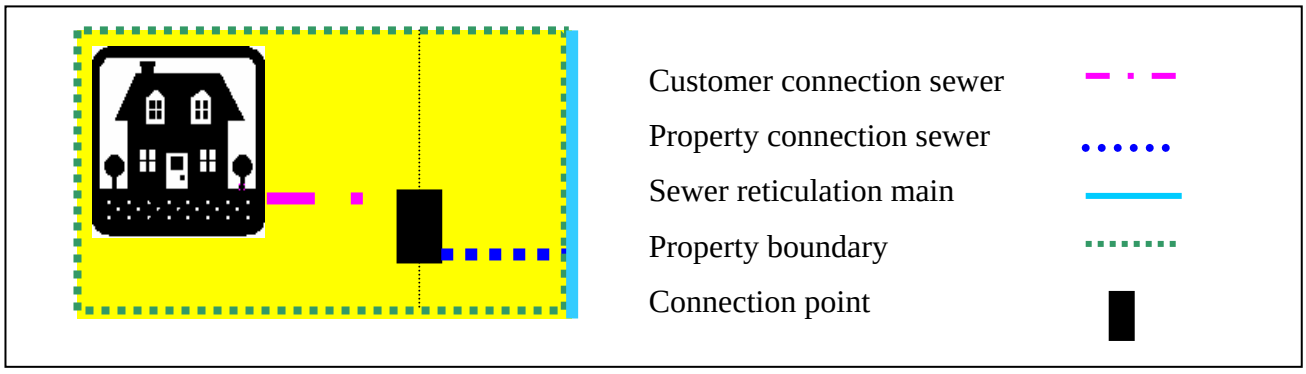
Sewer reticulation mains includes all gravity sewer mains, all pressure mains (including common effluent pipelines, rising mains etc) and all vacuum system mains of any diameter. This excludes property connection sewers and pipelines carrying treated effluent.

Property connection sewer

A short sewer, owned and operated by the sewerage agency, which connects the main sewer and the customer sanitary drain. It includes a junction on the main sewer, a property connection fitting, a vertical riser (in some cases) and sufficient straight pipes to ensure the property connection fitting is within the lot to be serviced (refer to the *WSAA 02 Sewerage Code of Australia*).

Breaks or leaks

A break or leak is a failure of the sewer main which results in an interruption to the sewerage service.



UNITS

Per cent (%).

CALCULATIONS

Total number of sewer main breaks and chokes per 1000 properties =

Total number of sewer main breaks and chokes / (Total sewerage connected properties /1000)

The customers

Connected properties and population

Reported indicators	NWI indicator	NWI indicator number
Total connected properties – water supply (000s)	Yes	1
Total connected properties – sewerage (000s)	Yes	12

RAW DATA COLLECTED

1. Connected Residential properties – water supply (000s).
2. Connected non-residential properties – water supply (000s).
3. Connected residential properties – sewerage (000s).
4. Connected non-residential properties – sewerage (000s).

PURPOSE

To report on the scale and composition of the water business. Connected property numbers are also used as a normaliser for many indicators.

DEFINITIONS

Water/sewerage properties

(See figure 1)

A connected water/sewerage property is:

- ✓ connected to the licensee's water/sewerage system
- ✓ the subject of billing for water supply/sewerage collection—fixed and/or consumption (see examples 1, 2 and 3), and
- ✓ any property which, at the end of the reporting period, is connected to the water/sewerage system and is separately billed for water/sewerage services—fixed and/or consumption (see examples 1, 2 and 3).

This includes:

- ✓ a connected non-rateable property, and
- ✓ a connected but non-metered property.

It does NOT include:

- × a body corporate
- × a rated but unconnected property, or
- × a non-real property or strata garages i.e. a master meter for a block of separately metered strata title flats.

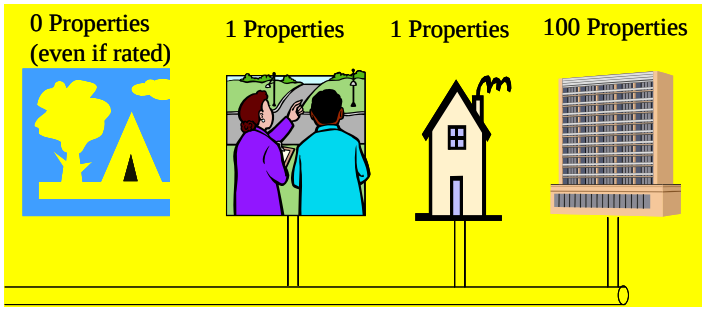


Figure 1

UNITS

Thousands (000s), hectares (ha).

CALCULATIONS

Total connected properties receiving water/sewerage services =

(Residential connected properties) + (Non-residential connected properties)

EXAMPLES

1. A block of 30 units with a single meter = 30 connected properties.
2. A factory building housing five partitioned companies, all with separate water bills = five non-residential connected properties.
3. Properties are classified according to their main purpose. For example, a hotel which has a few permanent residential tenants (short term, long term or strata titled apartments) is classed as one non-residential connected property, likewise a shopping centre, or a serviced apartment/hotel complex = one non-residential connected property.
4. A TAFE property which extends over two blocks and has six separate connections = one non-residential connected property. Similarly, a school or hospital is also counted as 1 non-residential connected property.
5. A high-rise apartment residence which has individual connections for each apartment. Each apartment is a separate residential connected property. This also applies to department of housing units/flats.
6. A shopping centre where each shop within the complex has a separate connection = one non-residential connected property.
7. A property which is not connected (i.e. no mains to meter connection), but is on a street with a main running along it, is not counted as a connected property. Similarly, if a vacant lot is being charged/rated, but is not physically connected, it is not to be counted as a connected property.
8. A nursing home/retirement home is counted as one non-residential connected property.
9. With respect to retirement villages, communal buildings count as one non-residential property, whereas stand-alone buildings for residents are each counted as residential properties. For example, 20 stand-alone buildings for residents and a communal building are counted as 20 residential connected properties and one non-residential connected property.
10. Residential apartment buildings where individual residents are shareholders in a company owning the entire building rather than holding individual apartment titles should be counted as individual flats/units. For example, 20 residential

units in a building with 20 associated shares = 20 residential connected properties.

11. Where combined commercial/residential dwellings exist, the property should be classified according to its primary purpose where one bill is issued. If two separate bills are issued for the commercial and residential parts of the property, then the property is counted as one residential connected property and one non-residential connected property.

Sewage odour complaints

Reported indicators	NWI indicator	NWI indicator number
***Number of sewage odour complaints (per 1000 properties)**	Yes	41

RAW DATA COLLECTED

1. Total number of sewage odour complaints

Note:

While this is not a new measure, the interpretation and definition of 'odour complaint' has changed since *WSAAfacts 2005.*

PURPOSE

A partial indicator to report customer satisfaction with the sewerage service. It may also indicate problems with the treatment plant (i.e. the type of process or the operation of the plant), possible septicity of sewage (odours at sewage pumping stations), sewer main breaks and chokes or sewer overflows to the environment.

DEFINITIONS

Complaint

A complaint is a written or verbal expression of dissatisfaction about an action, proposed action or failure to act by the water business, its employees or contractors.

Complaints from separate customers arising from the same cause count as separate complaints.

Includes complaints received by the water business in person, by mail, fax, phone, email or text messaging.

Total number of sewer odour complaints

This includes all complaints received, except in the instance that the business can prove beyond reasonable doubt that the odour was attributable to an external source.

Note:

Any contact that results in an odour issue (other than those attributable to an external source) is counted as a complaint.

EXAMPLES

1. The water utility receives an odour complaint. The utility does not believe their operations are the source of the odour; however they cannot ascertain the odours source. This IS counted as an odour complaint.
2. The water utility receives an odour complaint and upon investigation discovers the source is a deceased animal located adjacent to the water utility's infrastructure.

   This IS NOT counted as an odour complaint as the actual source has been identified as not being the responsibility of the water utility.

CALCULATIONS

Sewage odour complaints (per 1000 properties) =

Total number of sewage odour complaints / (Total sewerage connected properties / 1000)

Sewerage service complaints

Reported indicators	NWI indicator	NWI indicator number
***Sewerage service complaints (per 1000 properties).**	Yes	43

PURPOSE

To report sewerage service quality and reliability and provide a partial indicator of customer satisfaction with the sewerage service.

DEFINITIONS

Complaint

A complaint is a written or verbal expression of dissatisfaction about an action, proposed action or failure to act by the water utility, its employees or contractors.

Complaints from separate customers arising from the same cause count as separate complaints.

Includes complaints received by the water utility in person, by mail, fax, phone, email or text messaging.

Sewerage service complaints

The total number of complaints received by the water utility that relate to sewerage service quality and reliability. This does not include odour complaints.

It does include all complaints concerning:

- ✓ sewer blockages
- ✓ spills, and
- ✓ sewerage system reliability.

When a customer reports a blockage or spill, this is not counted as a complaint unless the customer expresses dissatisfaction about the interruption.

When a customer reports a service interruption, this is not counted as a complaint unless the customer expresses dissatisfaction about the interruption.

It does not include complaints relating to:

- ✗ sewage odours.

Total water complaints

Reported indicators	NWI indicator	NWI indicator number
***Total water service complaints per 1000 properties.**	Yes	36

PURPOSE

To report customer satisfaction with the water supply service and provide an indicator of service quality and reliability.

DEFINITIONS

Complaint

A complaint is a written or verbal expression of dissatisfaction about an action, proposed action or failure to act by the water utility, its employees or contractors.

Complaints from separate customers arising from the same cause count as separate complaints.

Includes complaints received by the water utility in person, by mail, fax, phone, email or text messaging.

Total water complaints

The total number of complaints received by the water utility that relate to water. This includes all complaints concerning:

- ✓ bursts
- ✓ leaks
- ✓ service interruptions
- ✓ adequacy of service
- ✓ water pressure
- ✓ water quality or reliability
- ✓ affordability
- ✓ billings, and
- ✓ behaviour of staff or agents.

When a customer reports a service interruption, this is not counted as a complaint unless the customer expresses dissatisfaction about the interruption.

It does not include complaints relating to:

- × government pricing policy, or
- × tariff structures.

Billing and account complaints

Reported indicators	NWI indicator	NWI indicator number
***Billing and account complaints – water and sewerage (per 1000 properties)**	Yes	26

PURPOSE

To report the level of billing and account complaints received for the utility's water supply and sewerage services.

DEFINITIONS

Complaint

A complaint is a written or verbal expression of dissatisfaction about an action, proposed action or failure to act by the water business, its employees or contractors.

Complaints from separate customers arising from the same cause count as separate complaints.

This includes complaints received by the water business in person, by mail, fax, phone, email or text messaging.

Account and billing complaints

This includes all complaints concerning:

- ✓ account payment
- ✓ financial loss or overcharging, and
- ✓ billing errors.

Where a customer rings to query an account (e.g. could you please explain how the variable sewerage component of my bill is calculated, or could you explain how my bill is calculated) this is not to be recorded as a complaint unless the customer identifies that they have rung to make a complaint. If the customer rings to make an enquiry but remains dissatisfied or the enquiry identifies an error in the bill this should be recorded as a complaint.

If a customer makes repeated contact on the same billing issue this should be recorded as a complaint.

If an operator is doubtful whether the customer is making an enquiry or a complaint they should ask the customer if they want a complaint to be recorded.

It does not include complaints relating to:

- × government pricing policy
- × price of water is too low/high
- × tariff structures, or
- × a correctly calculated bill is too high.

Total sewerage complaints

Reported indicators	NWI indicator	NWI indicator number
***Total sewerage complaints (per 1000 properties).**	Yes	43

PURPOSE

To report customer satisfaction with sewerage service and provide a partial indicator of service quality and reliability.

DEFINITIONS

Complaint

A complaint is a written or verbal expression of dissatisfaction about an action, proposed action or failure to act by the water business, its employees or contractors.

Complaints from separate customers arising from the same cause count as separate complaints.

Includes complaints received by the water business in person, by mail, fax, phone, email or text messaging.

Total complaints

The total number of complaints received by the sewerage utility that relate to sewage. Includes all complaints concerning:

- ✓ account payment and billing
- ✓ affordability
- ✓ behaviour of staff or agents
- ✓ sewerage services
- ✓ sewerage odours
- ✓ trade waste services, and
- ✓ all other sewerage issues.

Where a customer rings to query an account (e.g. could you please explain how the variable sewerage component of my bill is calculated, or could you explain how my bill is calculated) this is not be recorded as a complaint unless the customer identifies that they have rung to make a complaint. If the customer rings to make an enquiry but remains dissatisfied or the enquiry identifies an error in the bill this should be recorded as a complaint.

If a customer makes repeated contact on the same billing issue this should be recorded as a complaint.

If an operator is doubtful whether the customer is making an enquiry or wishing to lodge a complaint they should ask the customer if they want a complaint to be recorded.

It does not include complaints relating to:

- × government pricing policy, or
- × tariff structures.

Average connect time to a telephone operator

Reported indicators	NWI indicator	NWI indicator number
Average connect time to a telephone operator (seconds).	Yes	48

RAW DATA COLLECTED

1. Average connect time to operator (seconds).

PURPOSE

To report the average time a customer waits to be connected to an operator and is an element of customer service.

DEFINITIONS

Average connect time to a telephone operator

The average time taken for a caller to be connected to an operator should they elect to, or be required to do so (see example 1). It does not include calls that are resolved by an automated system, or hang-ups.

Note

If appropriate, statewide utilities that separately report both metropolitan and rural/ regional services should report only calls related to the provision of metropolitan services. In the case 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.

1. The connect time starts when the call gets connected — this could be by a person (in which case the connect time would be zero), by an 'auto attendant' (IVR) or by a message informing the caller they have been put in a queue. The connect time finishes when the caller is answered by a person. If the caller hangs up before they speak to a person, the call is not counted. Similarly, if the caller's question is answered by an IVR, meaning they don't need to speak to an operator, the call is not counted.

UNITS

Seconds (sec).

CALCULATIONS

Average connect time to operator =

Sum of individual wait times of callers / Total number of callers

EXAMPLES

1. A customer telephones a water utility. The call is initially responded via an automated response, from which the customer elects to speak with an operator. The connect time to operator is calculated as the time from when the call was connected by the automated response to the time the customer is answered by an operator.

Average duration of unplanned water supply interruptions

Reported indicators	NWI indicator	NWI indicator number
***Average duration of an unplanned interruption-water (minutes)**	Yes	38

RAW DATA COLLECTED

1. Average duration of an unplanned water supply interruption (min).

PURPOSE

To report average duration a customer is without a drinking water supply for the reporting period. It is a partial indicator of customer service and the condition of the water network, and how effectively the operation of the network is being managed (e.g. whether operating pressures are too high).

DEFINITIONS

Water supply interruption *(*customer service)

A water supply interruption is any event causing a total loss of water supply due to any cause. Interruptions include those caused by bursts or leaks in the property service (mains to meter connection). This differs from the asset performance definition for water supply interruptions, which excludes property service interruptions as, whilst the property service is managed differently from an asset performance perspective, the end result is a loss of service to the customer.

Unplanned water supply interruption

This is when the customer has NOT received at least 24 hours notification of the interruption. It also includes situations where the duration of a planned interruption exceeds that which was originally notified. In this circumstance the length of the entire interruption is counted (see example 1). All un-notified interruptions caused by third parties should be included. This differs from the asset performance definition, which excludes interruptions caused by third parties as this is not necessarily a result of asset failure, as the end result is a loss of service to the customer.

(a) Duration of an unplanned water supply interruption

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) i.e. when the last valve has been opened (see examples 2 and 3).

Where the utility is aware of a water supply interruption via internal systems alarms, the duration commences when the alarm is raised.

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 (if repairs are not being done under pressure).

Average duration of an unplanned water supply interruption

The average duration for which a customer is without supply due to an unplanned interruption.

UNITS

Minutes (min).

CALCULATIONS

Average duration of an unplanned water supply interruption =

Total minutes of interruption x number of customers affected/ total number of customers

EXAMPLES

1. A water utility advises customers that an interruption to service will occur and will last for three hours. The interruption actually lasts five hours. The unplanned interruption duration is five hours.
2. A customer calls the water utility advising that they have no water. The interruption commences at the time the call is received.
3. A customer calls the water utility advising of a broken main. The interruption commences when staff arrive at the main and isolate the main break.

Mains are shut down due to fire fighting requirements. This interruption is included and commences at the time the mains are shut down.

Sewerage service interruptions

Reported indicators	NWI indicator	NWI indicator number
***Average break/ choke repair time – sewerage (hr)**	Yes	44

RAW DATA COLLECTED

1. Average sewerage break/choke repair time (hr).

PURPOSE

To report for how long, on average, a customer is without sewerage services for the reporting period. It is a partial indicator of customer service and the condition of the sewerage network.

DEFINITIONS

Average sewerage break/choke repair time

The average time taken to repair a sewerage main, from the time of arrival on site to restoration of a sewerage service to customers. This may include bypassing of the broken main.

Note: This does not include repair times relating to breaks, chokes and leaks in the property connection sewers or site restoration.

Choke

A partial blockage that may or may not result in a spill to the external environment from the sewer system.

Sewerage service interruption (customer service)

A sewerage service interruption is any event causing a significant reduction of sewerage service due to any cause. Interruptions include those caused by breaks or chokes in the property connection sewer.

Unplanned sewerage service interruption

This is when the customer has NOT received at least 24 hours notification of the interruption. It also includes situations where the duration of a planned interruption exceeds that which was originally notified. In this circumstance the length of the entire interruption is counted. All un-notified interruptions caused by third parties should be included.

Duration of an unplanned sewerage service interruption

An interruption commences when the water utility is aware that sewerage services are no longer available and ceases when 'normal' service is restored

Average duration of an unplanned sewerage interruption

The average duration for which a customer is without a sewerage service supply due to unplanned work.

UNITS

Hours (hr).

Customer interruption frequency

Reported indicators	NWI indicator	NWI indicator number
Customer interruption frequency – water	Yes	37

PURPOSE

To report how frequently customers are without access to the water supply service. It is a partial indicator of service quality, reliability and customer satisfaction.

DEFINITIONS

Customer interruption frequency

Average customer-interruption frequency.

A water supply customer-interruption is a loss of water supply to an individual customer due to an unplanned water supply interruption. For example, a water supply interruption which causes loss of supply to 100 customers is 100 customer-interruptions.

CALCULATIONS

The customer interruption frequency is calculated by dividing the total number of customer-interruptions by the total number of connected properties serviced by the water utility.

Includes: each occurrence of unplanned interruptions to supply.

Excludes: some reduction to the level of service but where normal activities (shower, washing machine, toilet flushing etc.) are still possible, breaks in house connection branches or planned interruptions.

Interruption: Where the property is without a service due to any cause. Unplanned Interruption: An interruption caused by a fault in the utility's system.

Planned interruption: An interruption for which the utility has provided at least 24 hours' advanced notification (or as otherwise prescribed by regulatory requirements).

Restrictions or legal action for non-payment of water bill

Reported indicators	NWI indicator	NWI indicator number
***Customers to which restrictions or legal action applied for non-payment of water bill (per 1000 properties).**	Yes	23

PURPOSE

To report on the incidence of water restrictions or legal action applied for non-payment of a water bill.

DEFINITIONS

The total number of restrictions or legal action applied for non-payment of water bills in the reporting period.

Includes all cases where restriction devices are fitted to reduce water flows to a customer due to non-payment of accounts.

If a water business disconnects rather uses a restriction devices this is also counted.

Includes restrictions or legal action taken against both residential and non-residential customers.

It does not include:

- where a business threatens to restrict a supply, but does not undertake the fitting of a restrictor
- disconnections carried out due to unsafe infrastructure connected to the water utility's system, and
- customers who choose to disconnect from the water utility's supply (e.g. a due to preference for a tank water supply).

Environment

Comparative sewage treatment levels

Reported indicators	NWI indicator	NWI indicator number
Per cent of sewage treated to a primary level.	Yes	45
Per cent of sewage treated to a secondary level.	Yes	46
Per cent of sewage treated to a tertiary level.	Yes	47

RAW DATA COLLECTED

1. Per cent of sewage treated to a primary level only.
2. Per cent of sewage treated to a secondary level only.
3. Per cent of sewage treated to a tertiary level.

PURPOSE

To report the degree to which sewage is required to be treated. This is an important cost driver for the water utility with respect to both capital costs and operating costs.

DEFINITIONS

Primary treatment

The first major treatment process in a sewage treatment facility, principally designed to remove a substantial amount of suspended matter, but little or no colloidal or dissolved matter (see example 1).

Secondary treatment

Typically, a biological treatment process that is designed to remove approximately 85 per cent of the Biological Oxygen Demand (BOD) and influent suspended solids (see example 2). Some nutrients may incidentally be removed, and ammonia may be converted to nitrate.

Tertiary treatment

Principally designed to remove nutrients, such as phosphorus (typically <2 mg/L) and/or nitrogen (typically <15 mg/L). A high per centage of effluent suspended solids (typically >95 per cent) are also removed (see example 3). Tertiary treatment may additionally target other contaminants of concern, e.g. toxicants and salt.

UNITS

Per cent (%).

CALCULATIONS

Per cent of sewage treated to a primary level =

(Total volume of sewage collected receiving only primary treatment x 100%) / Total volume of sewage collected

Per cent of sewage treated to a secondary level =

(Total volume of sewage collected receiving secondary treatment but not including that secondary treated sewage that is further treated to tertiary level x 100%) / Total volume of sewage collected.

Per cent of sewage treated to a tertiary level =

(Total volume of sewage collected receiving tertiary treatment x 100%) / Total volume of sewage collected.

Note:

These definitions are intended to avoid double counting.

EXAMPLES

1. Typical primary sewage treatment processes may include clarification (with or without chemical treatment, to accomplish solid-liquid separation), grease removal and screens.
2. Typical secondary sewage treatment processes may include sand filtration, disinfection, a polishing step (to lower suspended solids and bacterial levels), activated-sludge processes, anaerobic plus aerobic processes, biological filters and lagoons (aerated, facultative, maturation or polishing).
3. Typical tertiary sewage treatment processes may include biological nutrient removal plants, chemical dosing of secondary plants for nutrient removal (including lagoons), enhanced pond treatment systems for nutrient removal, reverse osmosis and advanced filtration systems, membrane bioreactors and secondary treatment plus grass plots or wetlands for nutrient removal.

Sewage treatment plant compliance

Reported indicators	NWI indicator	NWI indicator number
Per cent of sewage volume treated that was compliant.	Yes	53

RAW DATA COLLECTED

1. Per cent of sewage volume treated that was compliant (ML)

PURPOSE

Reporting of sewage treatment plant compliance against the licence limits demonstrates the water utility's ongoing commitment to protection of the environment to which the treatment plant discharges.

Sewage treatment plants are generally licensed to ensure that effluent discharges are compatible with receiving waterways or land based re-use. Three approaches are used by environmental regulators in regard to the setting of licence limits. These take into account:

- potential toxicity of effluent contaminants
- The overall environmental load and the capacity of the receiving environment to accept additional loads of nutrients, and
- treatment plant performance (operating practices).

Toxicity is generally addressed by setting definitive maximum limits.

Load limits are generally set for a period of time and often relate to particular nutrients. These limits may be to prevent eutrophication in receiving waters. In this case per centile and median limits are often applied.

Regulators also apply per centile limits to take into account the variability of operation of a sewage treatment plant and their expectations of treatment plant performance.

DEFINITIONS

Sewage treatment plant compliance

The sewage treatment plant compliance is the number of scheduled samples that complied in the reporting period divided by the total number of scheduled samples in the reporting period (see examples 1, 2 and 3).

The sampling schedule is that specified in the utility's licence.

UNITS

Megalitres (ML), per cent (%).

CALCULATIONS

Sewage treatment plant compliance per reporting period =

$$\frac{\textit{(No. of scheduled samples complying with licence limits)}}{\textit{Total No. of scheduled samples in reporting period}}$$

Note: Where the licence limit specifies a 90th per centile limit for the treatment plant for the reporting period and the number of samples complying divided by the total number of scheduled samples is greater than 90%, then as compliance for that treatment plant is greater than the licence limit, compliance is deemed to be 100%.

Compliance for a utility with more than one treatment plant is calculated as the weighted average of sewage treated at all treatment plants that complied per reporting period =

$$\frac{\textit{(STP1 compliance x volume treated + STP2 compliance x volume treated + ……..)}}{\textit{Total volume treated for all treatment plants in reporting period}}$$

EXAMPLES

1. Treatment plant A

For treatment plant (A), the sewage treatment plant licence specifies routine sampling at twice per month over a 12 month period and specifies a 90th per centile limit for the year.

Of the 24 samples taken over the 12 month period, three exceed the 90th per centile limit. The compliance for treatment plant (A) is therefore 21/24 i.e. compliance is 87.5%.

2. Treatment plant B

For treatment plant (B), the sewage treatment plant licence specifies routine sampling at twice per month over a 12 month period and specifies a 90th per centile limit for the year.

Of the 24 samples taken over the 12 month period, one exceeds the limit (i.e. 96% of samples comply). The compliance for treatment plant (B) is therefore 100% as it meets the 90th per centile limit for the 12 month period.

3. Treatment plant C

For treatment plant (C), the sewage treatment plant licence specifies routine sampling at once per month and specifies a maximum limit for any scheduled sample taken over the 12 month period.

Of the 12 samples taken over the 12 month period, one exceeds the maximum limit for the parameter. Treatment plant (B) is therefore compliant for 11/12 months i.e. compliance is 92%.

4. Limits for separable sections of the treatment plant specified in licence

Where the licence specifies limits for separable sections of the treatment plant, the following approach should be adopted:

Sample ‘y’ is non-compliant and was taken from a separable section of the treatment plant. In this case, a reasonable estimate of the affected volume of sewage should be made, with assumptions documented for the purposes of auditing.

5.Utility with two treatment plants

A utility has two treatment plants (STP-B) and (STP-C).

The licence for STP-B specifies a 90th per centile limit for the 12 month period. Over this period, STP-B treated a volume of 1000 ML for which 11 samples out of 12 (i.e. 96%) complied. Therefore the compliance for STP-B is 100% as it meets the 90th per centile limit under the licence conditions.

The licence for STP-C specifies a maximum limit for any scheduled sample taken over the 12 month period. STP-C treated a volume of 3000 ML for which 11 out of 12 samples complied (i.e. 92%). Therefore the compliance for STP-C is 92%.

For this utility, compliance for the 12 month period is calculated as the weighted average of the per centage of sewage treated that was compliant for each treatment plant. This is calculated for this utility as follows:

Compliance = (100% x 1000ML + 92% x 3000ML) / (1000ML + 3000ML) = 94%

Number of sewage treatment plants compliant at all times

Reported indicators	NWI indicator	NWI indicator number
Number of sewage treatment plants compliant at all times.	Yes	52

PURPOSE

To report on the number of sewage treatment plants which were compliant with the licence conditions related to sewage treatment plant effluent at all times during the reporting period. This gives an indication of the overall performance of the utility's sewage treatment and, if problems exist, whether they are localised or widespread. This indicator, together with NWI indicators 41, 53, 54 and 55 provides information on how well the utility is managing its treatment facilities.

DEFINITIONS

Sewage treatment plants

Refer to sewerage assets.

Compliance

Compliance is where the sewage treatment works effluent meets the licence condition prescribed by the environmental regulator. Non-compliance is where the sewage treatment works effluent does not meet such standards or where a financial or other penalty has been imposed or where the business has had any successful litigation against it by the environmental regulator.

UNITS

Number of sewage treatment plants compliant at all times per total number of sewage treatment plants.

CALCULATIONS

= (number of sewage treatment plants compliant at all times) / (total number of sewage treatment plants)

Public disclosure of your sewage treatment plant performance

Reported indicators	NWI indicator	NWI indicator number
***Public disclosure of your sewage treatment plant's performance**	Yes	55

PURPOSE

To report on whether the performance of the utility's sewage treatment plants is publicly disclosed and demonstrates transparency and accountability to the community, government and regulators.

DEFINITIONS

Sewage treatment plants

Refer to sewerage assets.

Public disclosure

Public disclosure is demonstrated by publishing the sewage treatment plant performance for the current financial year. Such disclosure could be on a public website or in a report available to the public and should include detailed results for key parameters in the treatment plant licence. For example, Biochemical Oxygen Demand (BOD) and Suspended Solids (SS). Reported test results should be on the basis of tests carried out by a National Association of Testing Authorities (NATA)-accredited laboratory or approved equivalent.

UNITS

Yes/no.

Compliance with environmental regulator – sewerage

Reported indicators	NWI indicator	NWI indicator number
Compliance with environmental regulator – sewerage (yes/no)	Yes	54
Brief explanation if no	Yes	54

RAW DATA COLLECTED

1. Compliance with environmental regulator – sewerage (yes/no).
2. Brief explanation if no.

PURPOSE

To report on whether the compliance requirements of the environmental regulator were met for all sewerage systems, including reticulation networks.

DEFINITIONS

Non-compliance

For the purpose of reporting in this benchmarking exercise 'non-compliance' is defined as where the business:

- does not meet any standards prescribed by the environmental regulator (or equivalent) in the utility's licence (or equivalent instrument), or
- has received any financial or other penalty, or had any successful litigation against it by the environmental regulator (or equivalent) or its representative.

The water utility may provide a brief summary to detail any non-compliance. The actual incident may have occurred in a previous financial year to the penalty.

UNITS

Yes/no.

Water recycling

Reported indicators	NWI indicator	NWI indicator number
Recycled water (ML)	Yes	60
***Recycled water (per cent of effluent recycled)**	Yes	59

RAW DATA COLLECTED

1. Recycled water (ML).
2. Recycled water (% of effluent recycled).

PURPOSE

To report on the proportion of the sewage collected and treated that is recycled other than that which is used in the recycling process.

DEFINITIONS

Recycled water (per cent of effluent recycled)

The percentage of all treated effluent that is used by either the water utility itself, a business supplied by the water utility, or supplied through a third pipe system for urban reuse. Evaporation is excluded. The parameters are the total sewage collected and the volume of effluent recycled (see examples 1, 2 and 3)**.**

Recycled water can be provided for onsite reuse, agriculture, irrigation, industry, potable or other use external to the treatment process.

Volumes of recycled water substituting raw water abstraction

Volumes of recycled water supplied where the volume replaces existing raw/potable water use resulting in a reduction of volumes of water abstracted from a raw water source (see examples 4 and 5.

Volumes of recycled water substituting potable water use

Volumes of recycled water where the volume replaces existing potable water use resulting in a reduction of volumes abstracted from the potable water supply (see example 5).

Note:

1. Recycled water supplied to clubs, sporting fields, or other businesses is included.
2. Environmental flows are included if they are approved by the EPA and substitute raw water abstraction.

UNITS

Per cent (%).

CALCULATIONS

Recycled water (%of effluent recycled) =

(Volume of recycled water used) / (Volume of influent – Net Evaporation) x 100%

Note:

Net evaporation can be calculated either by using outlet meters (where present) or through meteorological data. Meteorological data should be taken form the Bureau of Meteorology weather station closest to the location of the pond or alternatively by weather stations on site operated by the member. Where member's weather stations are used, these need to be subjected to appropriate quality control processes.

Per cent of recycled water substituting raw water abstraction =

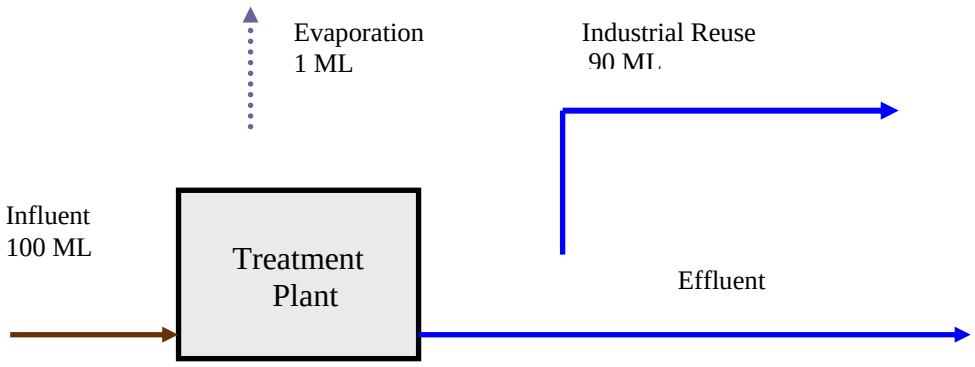
(Volume or recycled water substituting raw water abstraction) x 100% / (Volume of recycled water)

Per cent of recycled water substituting potable water use =

(Volume of recycled water substituting potable water use) x 100% / (Volume of recycled water)

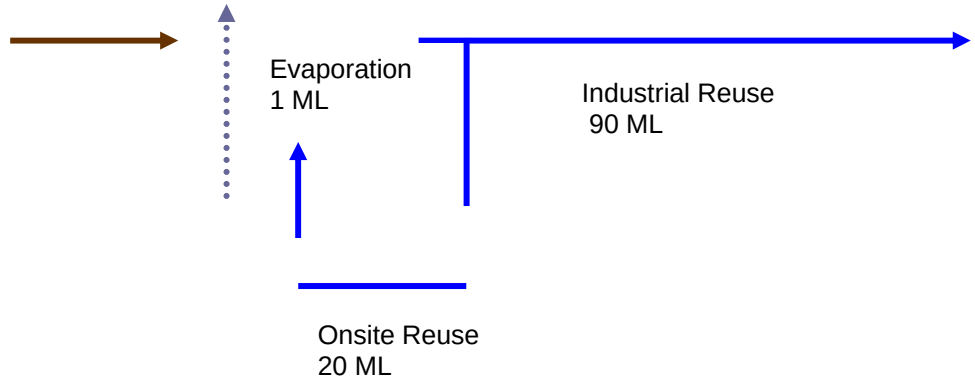
EXAMPLES

1. Reclaimed water is supplied to industry for use. No onsite reuse occurs.



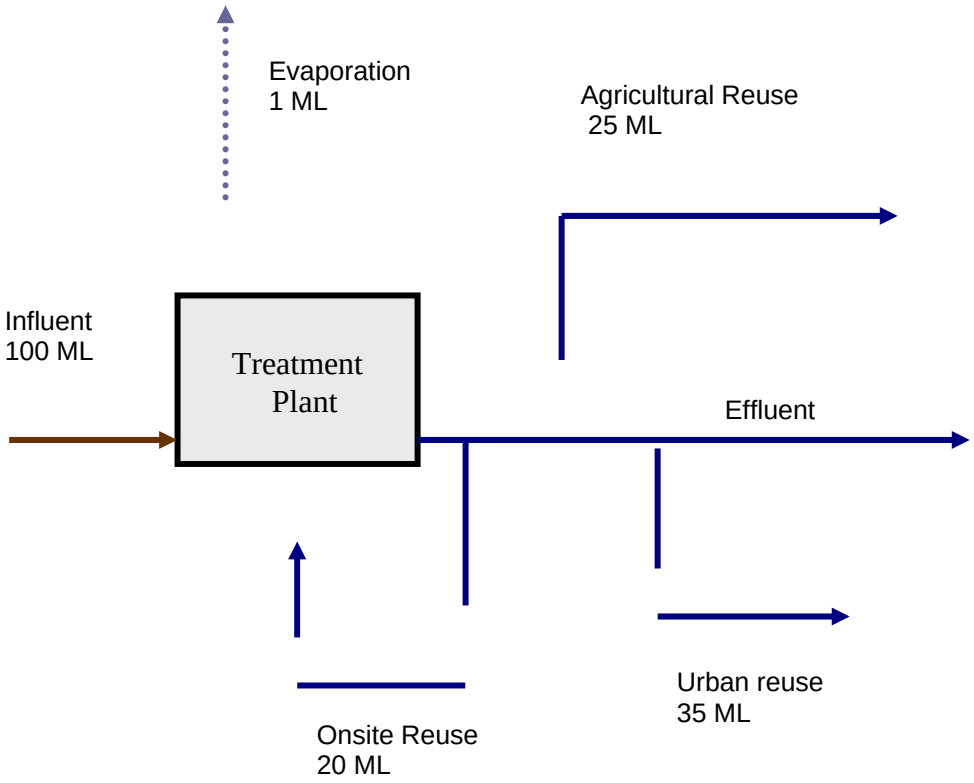
Per cent of Water Recycled = $\frac{\text{Volume of Water Reclaimed}}{\text{Volume of Influent – Net Evaporation}} = \frac{90}{(100-1)} = 91\%$

2. Reclaimed water is used on site and supplied to industry for use.



Per cent of Water Recycled = $\frac{\text{Volume of Water Reclaimed}}{\text{Volume of Influent – Net Evaporation}} = \frac{(20+90)}{(100-1)} = 111.1\%$

3. Reclaimed water is used on site, supplied for agricultural reuse and supplied for urban reuse through a third pipe system to urban households for toilet flushing and garden watering and for irrigation of open space community facilities.



Per cent of Water Recycled = $\frac{\text{Volume of Water Reclaimed}}{\text{Volume of Influent – Net Evaporation}}$ = $\frac{(20+25+35)}{(100-1)}$ = *80.8%*

3. A market garden historically abstracts 40 ML of river water per year for irrigation purposes. In the reporting period, the water utility supplies 30 ML of recycled water to the market garden, which subsequently abstracts only 10 ML of river water. The volume of recycled water substituting raw water abstraction is 30 ML.

4. Water consumed per residential property within a water utility's service area is 220 kL/a. The water business supplies 30 000 kL of recycled water to 1000 properties via a third pipe system for toilet flushing and garden watering. Whilst the total water supplied per property remains unchanged, potable water consumption for properties also supplied with recycled water decreases by 30 kL per year. The 30 000 kL of recycled water supplied therefore is included as BOTH volumes of recycled water substituting raw water abstraction AND volumes of recycled water substituting potable water use.

Biosolids reuse

Reported indicators	NWI indicator	NWI indicator number
Per cent of biosolids reused	Yes	61

RAW DATA COLLECTED

1. Per cent of biosolids reused.

PURPOSE

To report on the level of reuse of biosolids.

DEFINITIONS

Biosolids

The stabilised organic solids derived from sewage treatment processes.

Biosolids reuse

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.

The dry weight of biosolids reused may be greater than the dry weight of biosolids produced if the business is also reusing existing stockpiles.

Total dry weight tonnes of biosolids produced

For mechanical or other sewage treatment processes where the biosolids are available for reuse within a short time frame (e.g. less than one month) the volumes produced for the financial year should be included.

For sewage treatment processes where the biosolids are NOT 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 over a financial year. It is suggested that the volume accumulated be calculated using one of the following methodologies:

a) Using appropriate sampling techniques, determine the volume of solids entering the lagoon process (or equivalent) per annum. After accounting for those solids consumed due to biological activity, determine the total accumulation of solids for the financial year..

b) Assess the existing depth of accumulated solids in all lagoons to determine an average annual rate of accumulation. This average figure should then be used.

UNITS

Per cent (%).

CALCULATIONS

Per cent of biosolids reused =

(Total dry weight tonnes of biosolids reused / Total dry weight tonnes of biosolids produced) x 100%

Net greenhouse gas emissions

Reported Indicators	NWI indicator	NWI indicator number
Net greenhouse gas emissions (net tonnes CO_2-equivalents)	Yes	51

RAW DATA COLLECTED

1. Net greenhouse gas emissions (net tonnes CO_2-equivalents).

PURPOSE

To report the contribution of water and sewerage activities to greenhouse gases. It is important not to consider a single indicator on its own, but rather to look at the total environmental footprint. For example, increased sewage treatment levels can provide water quality benefits, but will also consume additional energy, resulting in greater net greenhouse gas emissions.

DEFINITIONS

Net greenhouse gas emissions

The net greenhouse gas emissions generated by the water utility, directly and indirectly, through all its operations, allowing for sequestration. Conversion factors should be based on those provided by the AGO (Australian Greenhouse Office) specific to the water utility's location.

Sequestration

The amount of carbon sequestered per unit time (e.g. 12 months), i.e. a measure of the increase in the amount of carbon removed from the atmosphere over the period. Generally, sequestration is achieved through establishing tree plantations; however it can also be accomplished by other means, including chemical treatment and deep ocean air injection.

Sequestered carbon =

(Carbon bank @ t_{1+x}) – (Carbon bank @ t_x)

Where t = time

All carbon values are in (CO_2-e) units

Estimating carbon sequestration

Carbon accounting for sinks is based on the stock exchange approach. To determine carbon sequestration, the change in carbon stocks over a period of time is calculated using the formula $DC_i = C_{i-1}$

Where C_i = carbon stocks in year i

DC_i = change in carbon stocks in year i

C_{i-1} = carbon stocks in the year before year i

Three methods of estimating carbon to different levels of accuracy and cost exist, as specified in the Australian Greenhouse Office Website at www.greenhouse.gov.au/challenge/tools/workbook/factorsmethod_section2-2html#5.2"

The method used should be specified.

Note:

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 that water utilities pro-rate the electricity usage in order to obtain a figure for the relevant financial year. If there is a need to extrapolate, the Water business should account for seasonal variations in electricity use. Ideally where prorating is used, a suitable footnote will be included.

In the event that prorating cannot be done, the utility can provide data based on the 12 months period that most closely aligns with the reporting year. This data should also be provided with a footnote.

Note:

1. This indicator should be reported for the whole of the business.
2. The emissions generated by all aspects of the water utility should be reported, i.e. emissions should be determined not just from the emissions associated with operations of the water and sewerage business, but also from sources such as head office lighting, heating, etc.
3. For whole of state/territory businesses, emissions should relate only to the metropolitan area. The exception to this is in respect of credits for emissions of the amount of carbon sequestered. Sequestration can occur in any location — metro, rural, interstate or international. Or indeed, the sequestration may have been undertaken by a third party and the credit purchased by the water business.
4. Greencount (© WSAA 2005), greenhouse gas emissions evaluation software, is now available to assist members with the calculation of this indicator. Greencount methodology is consistent with standard practices of the Australian Greenhouse Office but improves on standard methodologies in a number of areas and defines the key sources of emissions that need to be included in source calculations.

UNITS

Net tonnes CO_2-equivalents.

CO_2-e refers to carbon dioxide equivalents, *i.e.* greenhouse gases expressed as carbon dioxide.

Sewer overflows

Reported indicators	NWI indicator	NWI indicator number
Sewer overflows to the environment (per 100km of main)	Yes	57

RAW DATA COLLECTED

1. Total number of sewer overflows

PURPOSE

To report sewer overflows which may adversely impact on water quality, human health and ecosystem stability, in the last case where they occur in sensitive areas. Thus it is important to be aware of the frequency of their occurrence. The number of overflows may be used as an indicator of the condition of the sewerage network, as an indication of how effectively the network is being managed and may also be used to compare customer service.

DEFINITIONS

Overflow

When untreated sewage spills or discharges and escapes from the sewerage system (i.e. pumping stations, pipes, maintenance holes or designed overflow structures) to the external environment.

Overflows are those caused by system faults originating in the system under the water utility's responsibility. This does NOT include:

- overflows caused by a blockage in the property connection sewer, or
- spills, discharges or overflows contained within emergency storages where no pollution of the environment occurs e.g. an emergency storage tunnel.

Total number of sewer overflows

The number of sewer overflows in wet AND dry weather during the reporting period, of which the utility is aware and can attribute to its infrastructure. It should include both contained and uncontained spills.

CALCULATIONS

Number of sewer overflows per 100km of sewer main =

Total number of sewer overflows / (Total length of sewer mains x 100)

Pricing and finance

Residential tariff structure

Reported indicators (NWI indicators 20, 21, 24 & 25)		Water	Sewerage	Water and sewerage combined
1. Fixed charge	**a) Minimum ($)**	✓	✓	✓
	b) Basis ($)	✓	✓	✓
	c) Free water allowance (kL)	✓		
2. Pay for use charge	**a) Price per kilolitre ($/kL)**	✓	✓	✓
	b) Steps, to accommodate varying "block" tariffs (kL)	✓	✓	✓
3. *Special levies ($)	**a) Amount ($)**	✓	✓	✓
	b) Income from Special Levy retained by utility? (Yes/No)			
4. Number of meter readings per annum		✓		
5. Number of bills per annum		✓	✓	✓
6. Typical residential bill	**a) Fixed ($)**	✓	✓	✓
	b) Pay for use ($)	✓	✓	✓
	c) Total ($)	✓	✓	✓
7. Annual residential bill based on 250kL consumption	**a) Fixed ($)**	✓	✓	✓
	b) Pay for use ($)	✓	✓	✓
	c) Total ($)	✓	✓	✓

Raw data collected		Water	Sewerage
1. Fixed charge	a) Minimum ($)	✓	✓
	b) Basis ($)	✓	✓
	c) Free water allowance (kL)	✓	
2. Pay for use charge	a) Price per kilolitre ($/kL)	✓	✓
	b) Steps, to accommodate varying "block" tariffs (kL)	✓	✓
3. Special levies ($)	a) Amount ($)	✓	✓
	b) Is income from special levy retained by utility (yes/no)	✓	✓
4. Number of meter readings per annum		✓	
5. Number of bills per annum		✓	✓
6. Typical residential bill	a) Fixed ($)	✓	✓
	b) Pay for use ($)	✓	✓
	c) Total ($)	✓	✓

7. Annual residential bill based on 250kL consumption	a) Fixed ($)	✓	✓
	b) Pay for use ($)	✓	✓
	c) Total ($)	✓	✓

PURPOSE

This indicator covers tariff structures for residential customers. The tariff is divided into fixed and pay for use charges.

DEFINITIONS

Fixed charge

The fixed amount the business levies on a residential property per year. This is the component of each residential property's bill that does not vary with the amount of water used or sewage produced.

The basis for the fixed charge is to be provided (e.g. per centage of property value, meter sizes).

Pay for use charge

The charge per unit of consumption levied upon a residential customer for their use. This is expressed as dollars per kilolitre.

Steps

There may be steps in the pay for use charge as usage increases past certain levels, meaning the same charge may not apply to each unit used by the customer. The steps of the pricing structure, usually in kilolitres, are the points where the usage charge applied to each customer changes. The steps identified should include free consumption allowances.

Special levies

Special levies are any charges that are directly levied upon properties, and are neither a fixed or pay for use charge for water or sewage (*e.g.* environmental improvement levy).

Typical residential bill

The dollar amount of the typical RESIDENTIAL water or sewerage bill for the financial year. This is to be broken down into the fixed and pay for use components of the bill (see example 1). This information is premised on the average annual residential consumption for a full-paying customer.

Calculation:

Typical residential bill =

Residential sewerage charge + residential water access charge + residential water usage charge for the average residential consumption.

Number of meter reads per year

The number of times a residential customer's meter is read per year.

Annual residential bill based on 250kL/annum consumption

The typical residential customer's bill based on an annual consumption of 250kL. The figure should be presented with the fixed charge component separated from the pay for use charge component (see example 2).

UNITS

Dollars ($), kilolitres (kL), dollars per kilolitre ($/kL).

EXAMPLES

1. Typical residential bill, where:
   - Sewerage fixed charge = $100 p.a. (no consumption charge)
   - Water fixed charge = $50 p.a.
   - Average volume of water consumed per residential property = 300kL (calculated from "Typical annual residential consumption per property", page 9)
   - Water pay for use charge = $1/kL = $1 x 300kL = $300

   Therefore typical residential bill = $100 + $50 + $300 = $450
2. Annual residential bill based on 250kL consumption, where:
   - Sewerage fixed charge = $100 p.a. (no consumption charge)
   - Water fixed charge = $50 p.a.
   - Water pay for use charge = $1/kL = $1 x 250kL = $250

   Therefore annual residential bill for 250 kL = $100 + $50 + $250 = $400

Revenue

Reported indicators	NWI indicator	NWI indicator number
***Total revenue - water ($000)**	Yes	62
***Total revenue - sewerage ($000)**	Yes	64
***Residential revenue from usage charges — water (%)**	Yes	22

RAW DATA COLLECTED

1. Total revenue — water ($000s).
2. Total revenue — sewerage ($000s).
3. Nominal revenue for water supply services ($000s).
4. Nominal revenue for sewerage services ($000s).

PURPOSE

To report the total revenue of the water utility and real revenue per property for each of water supply and sewerage.

DEFINITIONS

Revenue

The water utility should report operating revenue. Revenue will include, but may not be limited to, the following:

- ✓ Revenue from pay for use and base rate charges for provision of water and sewerage services to residential and non-residential customers.
- ✓ Special levies.
- ✓ Revenue from asset sales.
- ✓ All developer contributed cash and assets (otherwise known as gifted assets or headworks contributions).
- ✓ Receipts from governments for specific agreed services (e.g. CSOs).
- ✓ Other revenue from operations which would otherwise be included.
- ✓ Revenue from bulk water sales (for those businesses that supply bulk water).

Revenues, where possible or material (in assessing materiality, refer to Australian Accounting Standard AASB1031 - Materiality), should EXCLUDE the following:

- × Funds received for specific capital works from governments or other parties.
- × Equity contributions from governments.

Residential Revenue from water usage charges (%)

The water utility should report the residential revenue from water usage charges as a per centage of the residential revenue from water usage charges, access charges and any environmental levies for water supply.

Note:

1. 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.

UNITS

Thousands of dollars ($000s), dollars per property ($/property).

CALCULATIONS

Residential Revenue from water usage charges (%) =

Residential revenue from water usage charges x 100 / (residential revenue from water usage charges + residential revenue from access charges + environmental levies for water supply)

Nominal revenue per property for water/ sewerage services =

Nominal revenue per property for water supply services + nominal revenue per property for sewerage services.

Real revenue per property for combined water supply/sewerage services/ =

(Nominal revenue for combined water supply/sewerage services / Total water supply/sewerage connected properties) x CPI inflator

Note:

The total number of properties receiving services is often the number of water connected properties.

Revenue from Community Service Obligations (CSOs)

Reported Indicators	NWI indicator	NWI indicator number
*** Revenue from Community Service Obligations (%)**	Yes	74

PURPOSE

To report the proportion of the utility's revenue that is obtained from Community Service Obligations (CSOs).

DEFINITIONS

Community Service Obligation (CSO)

Refer to definition of 'Community Service Obligation (CSO)' – NWI 73

Total Revenue

Refer to definition of 'Total Revenue' – NWI 62 and 64

Per centage of Revenue from Community Service Obligation (CSO)

The revenue from CSOs divided by the total revenue (including CSOs).

Note The data for this indicator should reflect the figures for the WHOLE of the water and sewerage businesses. This is done in recognition of the inappropriateness of apportioning CSOs across the business products.

UNITS

Thousands of dollars ($000s).

CALCULATIONS

Revenue from CSOs (%) =

(Revenue from CSOs) x 100% / Total Revenue

Costs

Reported indicators	NWI indicator	NWI indicator number
***Operating cost – water**	Yes	75
***Operating cost – sewerage**	Yes	77
***Total cost – water ($/property)**	Yes	76
***Total cost - sewerage ($/property)**	Yes	78

RAW DATA COLLECTED

1. Nominal operating cost for water supply services ($000s).
2. Nominal operating cost for sewerage services ($000s).
3. Nominal operating cost for water supply and sewerage services ($000).
4. Current cost depreciation for water supply services ($000s).
5. Current cost depreciation for sewerage services ($000s).
6. Current cost depreciation for water supply and sewerage services ($000s).

PURPOSE

To report the operating costs (operation, maintenance and administration – OMA) of a water utility in relation to the number of properties serviced by the water business. It is divided into water supply and sewerage operating costs. Interpretation of the operating costs should be viewed in the context of the service delivery results of the water utility.

DEFINITIONS

Operating cost

Operating costs (operation, maintenance and administration – OMA) should, where possible or material (in assessing materiality refer to Australian Accounting Standard AASB1031– Materiality), include the following:

- ✓ Water resource access charge or resource rent tax (water supply only).
- ✓ Purchases of raw or treated water (water supply only).
- ✓ Charges for bulk treatment/transfer of sewerage (sewerage only).
- ✓ Salaries and wages.
- ✓ Overheads on salaries and wages.
- ✓ Materials/chemicals/energy.
- ✓ Contracts.
- ✓ Accommodation.
- ✓ All other operating costs that would normally be reported.
- ✓ Items expensed from work in progress (capitalised expense items) and pensioner remission expenses (CSOs). (CSOs are likely to have an equivalent inclusion in revenue).
- ✓ Competitive neutrality (CN) adjustments, they may include but not be limited to, land tax, debits tax, stamp duties and council rates.
- ✓ Notional adjustments associated with the water business' management of defined benefit superannuation schemes.

Operating costs should EXCLUDE the following: (see note below)

- All non-core business operating costs.
- All costs associated with the supply of water to non-metropolitan customers (for metropolitan reporting by statewide utilities). This should be done linearly, based on volume of sales to these customers (see example 1).
- Depreciation.
- Any write-downs of assets to recoverable amounts.
- Write-offs retired or scrapped assets.
- The written down value of assets sold.

Note: These 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.

When assets are sold, their book value should be included in current cost depreciation (as it may be accelerated depreciation) and selling expenses, whilst expected to be immaterial, should be included in operating costs.

In apportioning indirect costs, the business should apply a consistent methodology for all reporting years.

Treatment of Built, Owned, Operated, and Transferred (BOOT) schemes

Costs associated with BOOT schemes should be reported according to Accounting Standards.

All infrastructure should be treated as if owned and operated by the member water business. Hence, the member 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 document.

Operating costs for water businesses 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 business.
- 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 (RoA) 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 RoA for the BOOT asset is not included in the water business's RoA data

Notes

1. Where a metropolitan business provides services to non-metropolitan customers, costs associated with the provision of non-metropolitan services should be excluded (see example 1).

2. Costs will be reported in real dollars using the headline rate of CPI for the water business's state capital city, as published by the Australian Bureau of Statistics or Statistics New Zealand, as the inflator. The reporting period is the Australian financial year, i.e. July 1 to June 30.
3. The term 'abnormal items' is no longer used in accounting standards. Where members have costs which they would previously have classified as abnormal, the costs should be included, and an explanation in a footnote, as accounting standard AASB 1018 requires.
4. Interest should be excluded from operating costs as it is reported separately.

UNITS

Thousands of dollars ($000s), dollars per property ($/property).

CALCULATIONS

Total cost for water supply/sewerage services ($/property)=

(operating cost for water supply/sewerage services + Current cost depreciation for water supply/sewerage assets) / Total connected properties receiving water supply/sewerage services)

Nominal operating cost for water supply/sewerage services/ ($/property) =

(Nominal operating cost for water supply/sewerage services / Total connected properties receiving water supply/sewerage services)

EXAMPLES

1. Total operating cost for metropolitan areas, where:
   - volume of sales to metropolitan areas = 90GL
   - volume of sales to non-metropolitan areas = 10GL

     Therefore total volume of sales = (90 + 10) = 100GL
   - Total operating costs = $1,000,000

Therefore total operating costs for metropolitan areas =

(90/100GL) x $1 000 000 = $900 000

Economic real rate of return – water and sewerage

Reported indicators	NWI indicator	NWI indicator number
***Economic real rate of return – water and sewerage**	Yes	68

PURPOSE

To demonstrate that the water and sewerage businesses meet the requirements of National Competition Policy to achieve full cost recovery.

DEFINITIONS

Economic real rate of return

Revenue from water and sewerage business operations less operating expenses (OMA + current cost depreciation) for the water and sewerage business divided by written down replacement cost (WDRC) of operational assets for the water and sewerage business.

Note:

It is recognised that not all urban water utilities will be able to report on the basis of WDRC for 2006-07, in which case the utility should note the approach used to value assets. It should be noted that the roundtable group and WSAA are seeking consistency in the approach to asset valuation in the future.

Revenue from operations includes all developer cash and asset contributions for the water and sewerage business.

Revenue from operations excludes interest income, grants for acquisition of assets and gain/loss on disposal of assets for the water and sewerage business.

Current cost depreciation expense should be based on the change in the WDRC of the fixed assets over the reporting period.

Written down replacement cost of fixed assets (WDRC)

The current cost of replacing the service potential of fixed water and sewerage business assets based on current technology. The WDRC may not be the same value as reported in the utility's annual financial statements.

UNITS

Per cent (%).

Calculations

Economic Real Rate of Return =

(Revenue from operations – OMA – current cost depreciation) x 100% / Written down replacement cost

Utilities should allocate corporate overheads on a reasonable basis.

Economic real rate of return – water

Reported indicators	NWI indicator	NWI indicator number
***Economic real rate of return for water supply**	Yes	66

PURPOSE

To demonstrate that the water supply business meets the requirements of National Competition Policy to achieve full cost recovery.

DEFINITIONS

Economic real rate of return

Revenue from water business operations less operating expenses (operation, maintenance and administration expenses (OMA) + current cost depreciation) for the water business divided by written down replacement cost (WDRC) of operational assets for the water business.

Note:

It is recognised that not all urban water utilities will be able to report on the basis of WDRC for 2006-07, in which case the utility should note the approach used to value assets. It should be noted that the roundtable group and WSAA are seeking consistency in the approach to asset valuation in the future.

Revenue from operations includes all developer cash and asset contributions for the water business.

Revenue from operations excludes interest income, grants for acquisition of assets and gain/loss on disposal of assets for the water business.

Current cost depreciation expense should be based on the change in the WDRC of the fixed assets over the reporting period.

Written down replacement cost of fixed assets (WDRC)

The current cost of replacing the service potential of fixed water business assets based on current technology. The WDRC may not be the same value as reported in the utility's annual financial statements.

UNITS

Per cent (%).

Calculations

Economic Real Rate of Return =

(Revenue from operations – OMA – current cost depreciation) x 100% / Written down replacement cost of fixed assets plus plant and equipment

Utilities should allocate corporate overheads on a reasonable basis.

Economic real rate of return – sewerage

Reported indicators	NWI indicator	NWI indicator number
***Economic real rate of return – sewerage**	Yes	66

PURPOSE

To demonstrate that the sewerage business meets the requirements of National Competition Policy to achieve full cost recovery.

DEFINITIONS

Economic real rate of return

Revenue from sewerage business operations less operating expenses (OMA + current cost depreciation) for the sewerage business divided by written down replacement cost (WDRC) of operational assets for the sewerage business.

Note

It is recognised that not all urban water utilities will be able to report on the basis of WDRC for 2006-07, in which case the utility should note the approach used to value assets. It should be noted that the roundtable group and WSAA is seeking consistency in the approach to asset valuation in the future.

Revenue from operations includes all developer cash and asset contributions for the sewerage business.

Revenue from operations excludes interest income, grants for acquisition of assets and gain/loss on disposal of assets for the sewerage business.

Current cost depreciation expense should be based on the change in the WDRC of the fixed assets over the reporting period.

Written down replacement cost of fixed assets (WDRC)

The current cost of replacing the service potential of fixed sewerage business assets based on current technology. The WDRC may not be the same value as reported in the utility's annual financial statements.

UNITS

Per cent (%).

Calculations

Economic Real Rate of Return =

(Revenue from operations – OMA – current cost depreciation) x 100% / Written down replacement cost

Utilities should allocate corporate overheads on a reasonable basis.

Dividends

Reported indicators	NWI indicator	NWI indicator number
Dividend paid ($000s)	Yes	72

RAW DATA COLLECTED

1. Whole water business nominal dividend paid ($000s).

DEFINITIONS

Dividend paid

The actual dividend paid in the financial year for the WHOLE business. (***Note:*** for most businesses this will be the final dividend paid for the previous financial year and the interim dividend paid for the financial year being reported).

Note

1. Data for this indicator should reflect the figures for the WHOLE business. This is done in recognition of the inappropriateness of apportioning dividend payments across the business products. Accordingly, net profit after tax used in determining the dividend payout ratio should also be that for the WHOLE business.
2. Declared dividend refers to the interim dividend paid during the financial year and the final dividend for the current financial year which is proposed to be paid in relation to the current year profit.

UNITS

Thousands of dollars ($000s).

Net debt to equity

Reported indicators	NWI indicator	NWI indicator number
***Net debt to equity %**	Yes	69

DEFINITIONS

Debt

Debt includes

- interest bearing repayable borrowings
- non-interest bearing repayable borrowings
- interest bearing non-repayable borrowings
- redeemable preference shares, and
- finance leases.

Debt excludes creditors and provisions, but offsetting assets, such as contributions to sinking funds, are not deducted.

Net debt

The net debt for the WHOLE business for the reporting year.

Net debt = (long term borrowings + short term borrowings) – (cash + investments)

Equity

Equity is the total assets less total liabilities for the WHOLE business.

UNITS

Per centage (%).

CALCULATIONS

Whole business net debt to equity =

Net debt x 100% / (Total Assets - Total Liabilities)

Note

The data for this indicator should reflect the figures for the WHOLE of the water and sewerage businesses. This is done in recognition of the inappropriateness of apportioning debt across the business products. Pre-payment of debts are included in the investment component of the debt calculation.

Interest cover

Reported indicators	NWI indicator	NWI indicator number
***Interest cover**	Yes	70

DEFINITIONS

Note The data for this indicator should reflect the figures for the WHOLE of the water and sewerage businesses. This is done in recognition of the inappropriateness of apportioning interest across the business products.

Interest

Interest includes:

- net cost of short term loans
- net cost of medium term loans, and
- net cost of long term loans..

As per Australian Accountancy Standard Board (AASB) 123, *borrowing costs*,

'Borrowing' costs may include:

- interest on bank overdrafts and short, medium and long-term borrowings
- amortisation of discounts or premiums relating to borrowings
- amortisation of ancillary costs incurred in connection with the arrangement of borrowings
- Finance charges with respect to finance leases recognised in accordance with AASB 117 *Leases*, and
- exchange differences arising from foreign currency borrowings to the extent that they are regarded as an adjustment to interest costs.

Note: 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.

In addition to AASB 123, 'borrowing' costs may also include:

- administrative fees payable to relevant state treasuries, where applicable i.e. Treasury Corporation Victoria (TCV) fees Victoria, and
- 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.

Net interest = (Interest expense – Interest income).

Interest cover

The earnings before interest and tax (EBIT) divided by net interest for the WHOLE business. The interest cover is nil for a loss-making utility.

Earnings before interest and tax (EBIT)

Revenue from the WHOLE of water and sewerage business operations less operating expenses (operation, maintenance and administration expense (OMA) + current cost depreciation) for the WHOLE of water and sewerage business.

Revenue from operations includes all developer cash and asset contributions for the water and sewerage business.

Revenue from operations excludes interest income, grants for acquisition of assets and gain/loss on disposal of assets for the water and sewerage business.

Depreciation expense should be based on written down replacement cost (WDRC).

Note

If EBIT is <0 then interest cover is nil.

Net profit after tax

Reported indicators	NWI indicator	NWI indicator number
***Net profit after tax**	Yes	71

Report the net profit after tax disclosed in the utility's annual financial statements.

Community Service Obligations (CSOs)

Reported indicators	NWI indicator	NWI indicator number
***Community Service Obligations ($000s)**	Yes	73

PURPOSE

To report the extent of the provision of the non-commercial or community service outcome objectives of Government delivered by the water service provider.

DEFINITION

A community service obligation is the amount received or receivable from governments for specific agreed services to the community.

A CSO must be:

1. A non-commercial product or service

   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.

   That is, 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).

   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. Clearly, CSOs should only relate to the non-commercial element of the product or service.

2. Purchased by the Government on behalf of the Community

   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.

3. Purchased from a commercial business entity

   To qualify as a CSO, a product or service must be purchased by the government from an appropriate commercial business entity.

On the basis of the criteria outlined above, the following four categories of activities would qualify as CSOs:

- 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)
- 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)
- payment by government towards the cost of price concessions to particular groups of customers (e.g. various pensioner/senior concessions), and
- 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).

Note

The data for this indicator should reflect the figures for the WHOLE of the water and sewerage businesses. This is done in recognition of the inappropriateness of apportioning CSOs across the business products.

UNITS

Thousands of dollars ($000s).

Note

Reductions in charges for services to any consumers, including pensioners and seniors which are provided without payment for the reduction by government would be a cross subsidy and not a CSO.

EXAMPLE

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:

- As the $100 reduction is required by legislation it is a CSO.

2**.** Legislation states that certain properties (e.g. schools and churches) may be provided with a reduction in water supply and sewerage charges:

- As any such reductions are permitted by legislation, they are a CSO.

Capital works grants – water

Reported indicators	NWI indicator	NWI indicator number
***Capital works grants – water ($000s)**	Yes	63

PURPOSE

To report the magnitude of assistance in the form of government grants made to the water business for capital works projects.

DEFINITIONS

Capital works grants

Capital works grants are funds received and receivable from governments for specific capital works.

UNITS

Thousands of dollars ($000s).

EXAMPLES

(1) E.g. a grant of $1M for a backlog water supply scheme for a town without a reticulated water supply IS a capital works grant.

(2) E.g. a grant for construction of a new weir, which will not be owned by the water utility IS NOT a capital works grant.

Capital works grants – sewerage

Reported indicators	NWI indicator	NWI indicator number
***Capital works grants – sewerage ($000s)**	Yes	65

PURPOSE

To report the magnitude of assistance in the form of government grants made to the sewerage business for capital works projects.

DEFINITIONS

Capital works grants

Capital works grants are funds received from governments for specific capital works.

UNITS

Thousands of dollars ($000s).

Public health

Water quality compliance

Reported indicators	NWI indicator	NWI indicator number
***Water quality guidelines**	Yes	28
***Number of zones where microbiological compliance was achieved (e.g. 23/24)**	Yes	32
***% of population where microbiological compliance was achieved**	Yes	33
***Number of zones where chemical compliance was achieved (e.g. 23 / 24)**	Yes	34
***Risk-based drinking water management plan assessed externally?**	Yes	30
***Risk-based drinking water management plan (yes/no)**	Yes	29
***Public disclosure of drinking water performance (yes/no)**	Yes	31

RAW DATA COLLECTED

1. *Water quality guidelines.
2. *Microbiological verification achieved in zones (e.g. 23/24).
3. *Microbiological verification (% population compliant).
4. *Health related chemical / radiological verification achieved (e.g. 23/24).
5. *Risk Management Plan (yes/no).
6. *Public disclosure of drinking water performance (yes/no).

PURPOSE

To report on the number of water treatment plants which were compliant with the *Australian Drinking Water Guidelines (2004)* or licence conditions imposed on thee utility. This gives an indication of the overall performance of the utility's water treatment and, if problems exist, whether they are localised or widespread. NWI indicators 28, 29, 30, 31, 32, 33, 34 and 35 provide information on how well the utility is managing its water treatment facilities.

Water quality systems and the guidelines or standards to which a water utility is required to report compliance may significantly influence the level of capital investment and operating costs.

DEFINITIONS

Water quality guidelines

The water quality guidelines (standard) specified in the licence (or franchise agreement) or required by the health regulatory agency or government against which the water utility measures verification of water quality (see example 1). In the absence of a formal requirement on the water utility, the requirements of the *Australian Drinking Water Guidelines (2004)* should be used.

Number of zones where microbiological compliance achieved

Assessment with the microbiological requirements of the water quality guidelines/standard in each zone of the water supply system. For example, report as 9/11.

Per centage population served where microbiological compliance was achieved

Similar criterion to NWI 32 above, but based on the per centage of the total population served being within the complying zones—e.g. 95%.

Health-related chemical compliance achieved

Verification assessment with health related parameters of the water quality guideline/standard for in each zone of the water supply system.

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 etc).
- The source and nature of the source of the drinking supply.
- The treatment components of the supply system.

Risk-based drinking water quality management plan

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

For robustness, these systems should be externally assessed.

Risk based plans/systems may include:

- HACCP.
- ISO 9001.
- The WSAA *National Water Quality Framework Continuous Improvement Tool*.

External assessment of risk-based drinking water quality management plan

For interpretation, 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 *National Water Quality Framework Continuous Improvement Tool*.

For each of these systems, external third party accredited assessment must have taken place within the past 12 months. 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.

NATA certification of laboratory analyses is NOT an approved water quality management system. NATA accreditation applies to laboratory analytical work which comprises a small area of the total water quality management system.

Accredited assessment

Assessment carried out by a person(s) external to the organisation and accredited by a certification body such as RABQSA (www.rabqsa.com) or approved by a health regulator or WSAA.

Public disclosure of drinking water quality performance

Public disclosure is demonstrated by publishing the utility's water treatment plant performance for the current financial year. Such disclosure could be on a public website or in a report available to the public and should include detailed results for parameters specified in the utility's treatment plant licence or in the *Australian Drinking Water Guidelines (2004)*. Reported test results should be on the basis of tests carried out by a NATA accredited laboratory or approved equivalent.

UNITS

For risk based plans/systems state the names of each system accredited or independently assessed (e.g. ISO 9001, HACCP, NWQFCIT etc).

For microbiological verification state the number of zones where the defined criteria have been achieved (e.g. 23/24).

For health-related chemical/radiological verification state the number of zones where the defined criteria have been achieved (e.g. 23/24).

For public disclosure of drinking water quality performance – yes/no

CALCULATIONS

Generally the methodology for calculating microbiological and health related chemical/radiological criteria used for determining compliance is specified by the health regulator in each jurisdiction and if so, this should be used.

In the absence of such specification, the guidance in the *Australian Drinking Water Guidelines (2004)* should be used as interpreted below:

Microbiological compliance

For each zone, at least 98% of routinely monitored samples contain no E.*coli*[1] per 100ML of water over the 12 month period.

[1] The 2004 ADWG use the indicator E.*coli* interchangeably with Thermotolerant Coliforms.

Note: The *Australian Drinking Water Guidelines* (*2004)* use E.*coli* as the indicator of faecal contamination and 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.

Health-related physical or chemical compliance

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.

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 only be monitored irregularly—or when changes in the supply system (e.g. seasonal) warrant increased routine monitoring frequency.

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—with ingestion above a guideline value for long time periods required before harm is caused. *Australian Drinking Water Guidelines* (*2004)* therefore suggest that for health related parameters 'each excursion beyond a guideline value should be a trigger for further action[2]'—and this generally means more extensive sampling to confirm contaminant levels above the guideline level. While the ADWG is not definitive they also state that 'for all health related characteristics, a reasonable objective is to be confident that the 95th per centile 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 per centile should be less than the guideline value[3].

For very regularly (minimum 30 data points) monitored data, the upper bound of the 95th per centile approximates the 95th per centile value and takes into account an occasional excursion above the guideline value (which could be due to sampling error, laboratory error etc). For contaminants where 30 data points are available, WSAA is therefore adopting the 95th per centile value of a series of monitoring assessments for assessment of verification against the *Australian Drinking Water Guidelines* (*2004)* level.

The less the parameter is monitored, the greater the statistically uncertainty of the upper bound number. For irregularly monitored data points (e.g. <30 per year), the upper bound of the 95th per centile may be considerably higher than the maximum reading detected. If this system is used, this may result in water businesses publicly reporting exceedences of guideline levels when no monitored sample value exceeds the guideline limit, and 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 (normality of data etc.) may not hold and the mechanisms for deriving most guideline values use assumptions that also have significant error in their estimation.

For these reasons, for irregularly monitored data points, the maximum value of the data set to use for assessment against the guideline value.

[2] Section 6.3.4 *Australian Drinking Water Guidelines 2004*
[3] Section 10.7.1 *Australian Drinking Water Guidelines 2004*

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

- For contaminants sampled 30 or greater times during the year, the 95th per centile reading of each health related monitored physical-chemical parameter should be used for assessments against *Australian Drinking Water Guidelines* (*2004)* guideline levels.
- For contaminants sampled less than 30 times during the year, the maximum reading should be used for assessment of each health related monitored physical-chemical parameter against *Australian Drinking Water Guidelines* (*2004)* guideline levels.

  These should be assessed across each zone in a system and reported as the fraction of zones meeting requirements (e.g. 23/24).

EXAMPLES

1. Water quality standards include National Health and Medical Research Council (NHMRC) 1987, *Australian Drinking Water Guidelines (ADWG) 1996*, *Australian Drinking Water Guidelines (ADWG) 2004* and World Health Organisation (WHO) 1984

2. Approved quality systems include Hazard Analysis and Critical Control Point (HACCP), ISO9001 and The WSAA *National Water Quality Framework Continuous Improvement Tool*.

3. 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 less than 30 readings, the maximum value is taken which is 295 ug/L. As 295ug/L exceeds the *Australian Drinking Water Guidelines* (*2004)* limit of 250 ug/L. This sample set would be assessed as non compliant.

4. 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 greater than 30 readings in the 12-month period, the 95th per centile is taken which is 234 ug/L. As this 234 ug/L does not exceed the ADDG limit of 250 ug/L, this sample set would be assessed as compliant.

5. Evaluation of a system with 30 zones shows that there is a failure of THM's 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 23/30 zones meeting requirements.

