

Network Environmental Performance Measures and Guide 2024



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Te Whakataukāki a Taumata Arowai

Ko te wai ahau

Ko ahau te wai

He whakaaturanga tātou nō te wai

Ko te ora te wai ko te ora o te tangata

He taonga te wai me tiaki

Ko wai tātou

Ko wai tātou

I am water, water is me

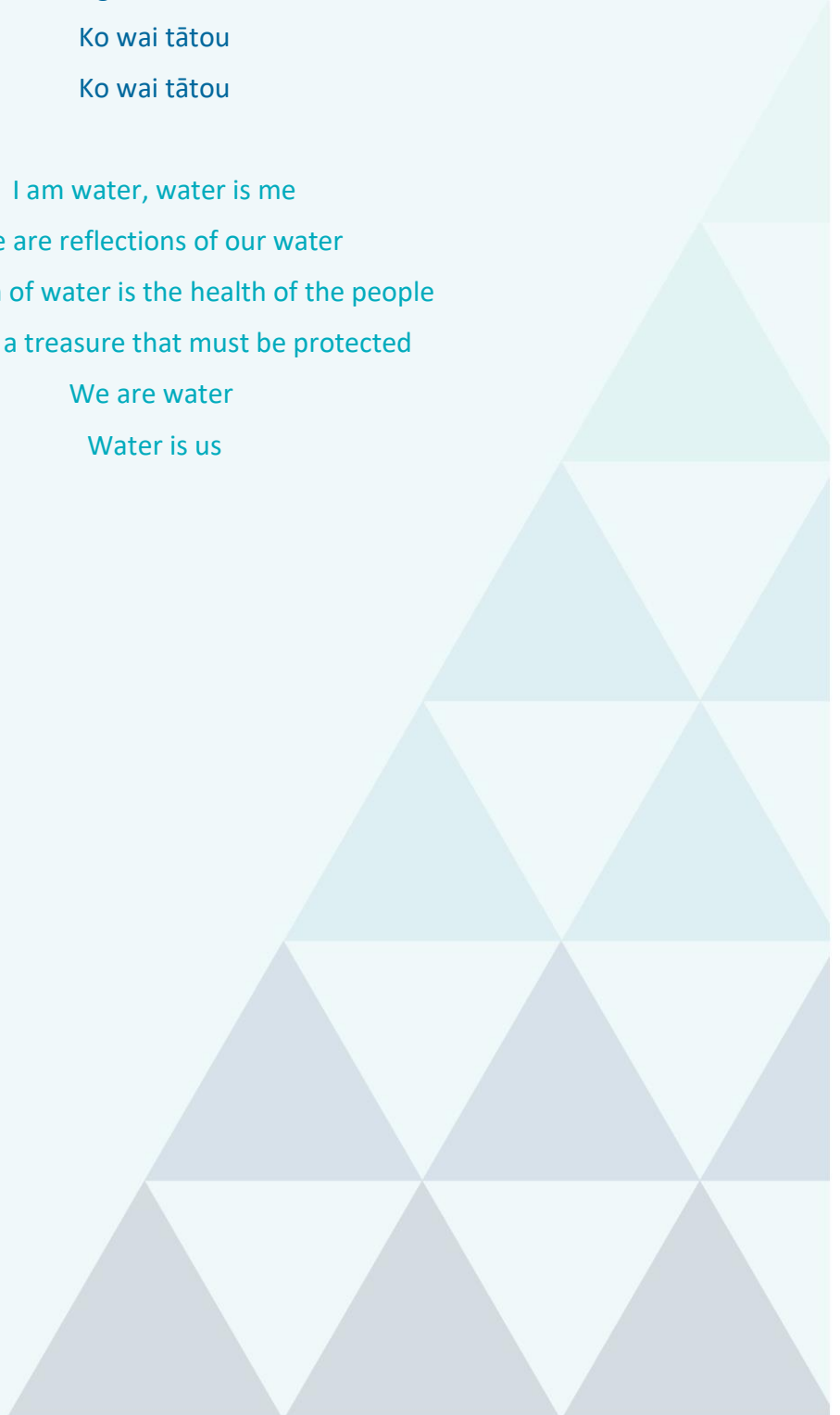
We are reflections of our water

The health of water is the health of the people

Water is a treasure that must be protected

We are water

Water is us



Contents

1. OVERVIEW	4
1.1 Goals and purpose	4
1.2 Legislation	5
1.3 Acknowledgements	5
1.4 Drinking water	6
1.5 Wastewater	6
1.6 Key terms	6
1.7 What does 'Environmental Performance' mean?	8
1.8 Who needs to capture and report data?	8
1.9 When do you need to capture and report data?	9
1.10 What do you need to capture and report?	9
1.11 How do you send this information to us?	9
1.12 Data confidence	10
1.13 Summary of Measures	11
 2. DRINKING WATER MEASURES AND DEFINITIONS	 17
2.1 General asset information	17
2.2 Environmental and public health is protected	18
2.3 Services are reliable	21
2.4 Resources are used efficiently	24
2.5 Services are resilient	27
2.6 Services are economically sustainable	28
 3. WASTEWATER MEASURES, DEFINITIONS AND REGISTER (NEW IN 2024)	 29
3.1 General asset information	30
3.2 Environmental and public health is protected	31
3.3 Services are reliable	36
3.4 Resources are used efficiently	39
3.5 Services are resilient	40
 Appendix 1: Abbreviations	 41
Appendix 2: Summarised extract of the Water Services Act 2021	42

1. Overview

This document is intended to provide guidance and information for network operators who are required to keep records and report to Taumata Arowai on the environmental performance of their drinking water and wastewater networks.

It sets out:

- **who** needs to keep records and report against the Network Environmental Performance Measures (Measures)
- **what** Measures need reporting against
- **when** these requirements come into effect
- **when and how** network operators need to report to us.

The document also provides definitions of the terms used in the Measures, to help ensure network operators provide consistent data. This will help us to give the water sector and the public high-quality and standardised performance reports, so we can show fair comparisons between different network operators in our annual Network Environmental Performance Report (Network Report).

1.1 Goals and purpose

The environmental performance of networks affects local communities, and directly impacts the local environment and public health. It may impact the quality of drinking water and wastewater services, and in turn, the resilience of our freshwater sources.

The goal of monitoring and reporting on public water networks is to provide transparency about the performance of these networks.

Robust data collection and reporting are key to providing a clear, detailed picture of our networks. It supports the ability of operators to effectively manage their networks and build a system that delivers safe drinking water and minimises potential impacts on the environment and public health. This reporting will contribute to the continuous improvement of the quality of water services across Aotearoa New Zealand.

The data we receive on environmental performance measures will be summarised in the publicly available Network Report that we will publish each year, in accordance with [section 141](#) and [section 147](#) of the Water Services Act 2021 (the Act).

The Network Report will also contain examples of best practices, specific risks or concerns that relate to network performance or practices, and comparisons of how networks across the country are performing. We might also publish the source data on our website.

Environmental performance reporting will also benefit network operators, by building a clear comparative picture of how networks are performing. This can be used as an evidence base for decision-making, for example to guide future investment programmes and support resource consent applications.

Some examples of things that can be the focus of monitoring and reporting requirements are:

- resource consents, rates of water-take from source water, and discharges from treatment plants
- environmental discharges, overflows, and by-products from treatment
- condition of equipment, reliability and recovery of services – including water security and emergency preparedness
- water losses and water restrictions
- reasons for faults, and time-taken to respond and repair them
- energy use of treatment plants
- disposal of biosolids
- high-level information on operating costs and capital expenditure for upgrades.

We developed five outcomes that guide our approach to reporting and aid our understanding of the environmental performance of networks.

1. Environmental and public health is protected.
2. Services are reliable.
3. Resources are used efficiently.
4. Services are resilient.
5. Services are economically sustainable.

While there are clear links between the first outcome: environmental and public health is protected and environmental performance, the following aspects are also important components of environmental performance.

- **Efficient networks** minimise water takes which ensures we are preserving, restoring and looking after water bodies.
- **Reliable networks** support healthy communities and the natural environment. Poorly maintained networks that regularly fail are likely to result in higher water wastage and a higher risk of contaminants entering the network.
- **Resilient networks** can withstand and recover quickly from adverse events such as extreme weather. Networks that perform poorly are likely to increase the risks to the environment and human health during these events.
- **Economically sustainable networks** can balance revenue, expenditure and costs to those who use water services, while ensuring community and environmental impacts are managed.

1.2 Legislation

The Act requires certain water network operators to capture data and report to Taumata Arowai on the environmental performance of their drinking water, wastewater, and stormwater networks. See [section 1.8](#) of this document for further details regarding the scope of this.

This requirement arises from the “Environmental Performance Measures Record Keeping Requirements for Network Operators Notice 2024” which comes into effect on **1 July 2024** and will remain in effect until such time as it is either amended, superseded, or rescinded.

The 2024 Notice supersedes earlier Notices. More information about this and other Notices can be found on our [website](#).

See [section 1.9](#) of this document for more details on when these requirements come into effect.

Abbreviations used in this document are explained in [Appendix 1](#).

A summary of the relevant parts of the Act, used in this document, can be found in [Appendix 2](#).

1.3 Acknowledgements

Taumata Arowai acknowledges the significant value and impact of work undertaken by Water New Zealand to support the water services sector for many years. In particular, their annual [Network Performance Review](#) (NPR) has sourced data from up to 63 of the 67 local authorities since 2008.

Taumata Arowai has considered, and where appropriate, aligned several measures, definitions, and data collection processes used in this guide, with the NPR. This is to help maintain continuity and give credit to the groundwork laid by Water New Zealand and its contributors.

Several of the diagrams and guidance material used in this guide have been sourced from Water New Zealand.

1.4 Drinking water

From 1 July 2022, drinking water network operators were required to capture and report data relating to Measures under the “Environmental Performance Measures Record Keeping Requirements for Drinking Water Network Operators Notice 2022”. From 1 July 2023 additional drinking water Measures were also adopted.

See [section 1.9](#) for details on reporting periods, and when data must be submitted to Taumata Arowai.

All drinking water Measures and their definitions are detailed in [Section 2](#).

1.5 Wastewater

From 1 July 2024, wastewater network operators are required to report certain Measures to us by 30 September 2024. This is a mandatory requirement under the “Environmental Performance Measures Record Keeping Requirements for Drinking Water and Wastewater Network Operators Notice 2024”.

There are also requirements to capture and report certain wastewater Measures for the year 1 July 2024 to 30 June 2025, and report these to us by 30 September 2025.

See [section 1.9](#) for details on reporting periods, and when data must be submitted to Taumata Arowai.

All wastewater Measures and their definitions, and when requirements to capture and report data comes into effect, are detailed in [Section 3](#).

1.6 Key terms

In this guide, and the associated reporting template, unless the context requires otherwise:

- **Act:** means the [Water Services Act 2021](#).
- **Biosolids:** means solids or semi-solids (sludge) from the wastewater treatment process, which have been physically and/or chemically treated to produce a semi-solid, nutrient-rich product. Further guidance can be found in Water New Zealand’s [Biosolids Guidelines](#).
- **Comments field:** means a field in the reporting template which allows you to provide supporting context, or reasons why data is not provided, or provide additional information if you feel it is useful to explain your plans and processes.
- **Data confidence:** see [section 1.12](#) for more guidance on this. When you complete the reporting Template, select a value from the drop-down boxes to indicate the degrees of confidence around your data.
- **Data points:** means individual data points that network operators need to collect and report on, in accordance with [section 146](#) of the Act.
- **Data source:** is used to describe where the data is sourced from. Examples include an asset management system or water balance report.
- **Drinking water network:** is defined in [section 140](#) of the Act. In the context of this guide, this means a drinking water supply (operated by a network operator), with all the elements comprising a system, from treatment to customer(s) within a drinking water supply, including:
 - drinking water treatment plant(s)
 - distribution system (including storage and piped network).

For further details see [section 1.8](#) of this document.

- **Hinekōrako:** means the online self-service portal that network operators can use to share information with Taumata Arowai.

- **Network level:** some measures are to be reported at an individual network level. Data should be captured and reported for each individual network.
- **Network environmental performance measures (Measures):** are set by Taumata Arowai under [section 145](#) of the Act and published in this document.
- **Network operator:** is defined in sections 5, 11 and 140 of the Act. This means a local authority, council-controlled organisation, or Government organisation, which operates a network under the scope of this document, or anyone operating a network on their behalf. For further details see [section 1.8](#) of this document.
- **Network Report (Report):** means the annual Network Environmental Performance Report prepared by Taumata Arowai under [section 147](#) of the Act.

• **Notes:** advisory notes have been included throughout this guide to assist with your understanding. They are not a requirement, nor should they be taken as legal advice or an interpretation of legislation, but serve solely to assist readers in their understanding of this document.

- **Organisational level:** some measures need to be reported at an organisation level, and data should be captured and reported at an aggregated level for all water services operated by the organisation, i.e.
 - for local councils or council-controlled organisations, this relates to all water services operated across their district (previously described as 'District level'),
 - for Government departments or the New Zealand Defence Force, this relates to all water services operated by the department or agency (previously described as 'Department level').
- **Overflow:** means instances where untreated or partially-treated wastewater (or stormwater contaminated with wastewater), spills, surcharges, discharges or otherwise escapes from a wastewater network to the external environment. This may be due to different causes and may be released via either constructed (engineered) or unconstructed overflow points.
Engineered overflow points are designed and intended to act as an emergency relief valve during instances of capacity overload in the network, whereas unconstructed overflow points are not (but inadvertently performs this function).
- **Reference code:** corresponds to definitions for each data point.
- **Reporting template:** means an Excel spreadsheet or a form in Hinekōrako, which will be made available to network operators to complete and submit their data.
- **Septage:** means sewage, or a mix of sewage and greywater. Septage may be collected from a septic system and transported via vacuum tanker and then discharged into a wastewater network for treatment and disposal.
- **Sludge** means a residual, semi-solid or solid material resulting from drinking water or wastewater treatment processes.
- **Treated wastewater:** means treated wastewater leaving a wastewater treatment plant ready for discharge into the receiving environment. In other documents the term 'effluent' is sometimes used interchangeably with 'treated wastewater', but effluent may also be used to refer to livestock liquid waste (e.g. dairy effluent). To avoid any confusion, in this guide we will use the term 'treated wastewater'.
- **Wastewater:** means any combination of two or more of the following wastes: sewage, greywater or industrial and trade waste:
 - **Sewage:** means human excrement and urine.
 - **Greywater:** means liquid waste from domestic sources including sinks, basins, baths, showers and similar fixtures, but does not include sewage, or industrial and trade waste.
 - **Industrial or trade waste:** means liquid waste, with or without matter in suspension, from the receipt, manufacture or processing of materials as part of a commercial, industrial or trade process, but excludes sewage and greywater.

- **Wastewater network:** is defined in [section 5](#) of the Act. This means a wastewater system (operated by a network operator) used to collect, store, transmit through reticulation, treat, and discharge wastewater, including the:
 - distribution system (including a piped network and storage)
 - wastewater treatment plant.

For further details see [section 1.8](#) of this document.

- **Wastewater treatment plant (or WWTP):** means a centralised system used to treat received wastewater. Various physical, biological and chemical processes may be used to remove contaminants and make wastewater suitable for discharge to the natural environment or for reuse. This may include the recovery of biosolids, energy, water, or nutrients.

1.7 What does ‘Environmental Performance’ mean?

The Act does not define ‘environmental performance’. However, the following definition has been developed for the purposes of the Measures.

Environmental performance relates to the effects of water services networks (including the operation of infrastructure and associated processes) on the environment.

In this context, ‘environment’ takes its meaning from the definition in the [Resource Management Act 1991](#).

Environmental performance consequently includes consideration of a network’s effects on:

- (a) ecosystems
- (b) natural and physical resources, including their innate mauri and mana
- (c) people and communities, including the ability of mana whenua to exercise kaitiakitanga, and
- (d) social, economic, aesthetic, and cultural conditions that affect (a) to (c), including mātauranga Māori and tikanga Māori.

1.8 Who needs to capture and report data?

Certain network operators must capture and report on their network’s environmental performance each year.

This includes all drinking water and wastewater networks that are operated or supervised by:

- Local authorities, council-controlled organisations (CCOs), or subsidiaries of CCOs,
- Government departments (such as the Department of Conservation, Department of Corrections or Ministry of Education), or
- the New Zealand Defence Force,
- or any person who operates a network, or any aspect of a network, for, or on behalf of, an organisation specified above.

Note: Due to the operational nature of Government departments and the New Zealand Defence Force there are some Measures which they **do not** need to capture and report on. Details of which Measures are required to be reported by which network operators is detailed in sections 2 and 3 of this guide.

For drinking water networks, the following are **excluded** from needing to capture and report against the Measures:

- any network that supports a peak population of less than 100 people (including usual consumer numbers)
- drinking water networks where the water is sourced from rainwater collection tanks only.

For wastewater networks, our current focus is on wastewater treatment plants and their associated network. Therefore, operators **do not** need to report on other wastewater networks, including discrete onsite self-contained wastewater systems, or instances where septage is temporarily stored and removed to an off-site wastewater treatment plant.

Note: Where drinking water or wastewater networks are operated by government departments or the New Zealand Defence Force but are directly connected to a wider municipal system operated by a council or CCO, they **do not** need to report on these.

1.9 When do you need to capture and report data?

Data collection period and reporting timeframe

The annual data collection period typically runs from **1 July** until **30 June** of the following year. This is referred to as a 'reporting period' within this document.

Data must be reported to us no later than **30 September** of that year, for the preceding reporting period.

For example: for the data collection period between 1 July 2024 and 30 June 2025, data is due to us by no later than 30 September 2025.

Introduction of new requirements

We intend to gradually increase and improve the data being reported over the first few years of this programme, to reflect both the information needs of decision makers and the ability of network operators to collect this information.

Collecting and providing Measures data became mandatory for drinking water network operators from 1 July 2022. All drinking water Measures are detailed in [Section 2](#).

Collecting and providing Measures data will be mandatory for wastewater network operators from 1 July 2024. All wastewater Measures, and details around when requirements to monitor and report on them comes into effect, are detailed in [Section 3](#).

1.10 What do you need to capture and report?

[Section 2](#) of this guide provides a list of Measures and definitions for **drinking water network operators** to capture and report on.

[Section 3](#) of this guide provides a list of Measures and definitions for **wastewater network operators** to capture and report on.

1.11 How do you send this information to us?

At the end of the reporting period all network operators will be sent a copy of, or link to, the reporting Template to complete for the reporting period.

The reporting template **must** be completed and submitted to us by the 30 September for the previous reporting period.

1.12 Data confidence

For each measure, you need to indicate your degree of 'data confidence'. This acknowledges that not all techniques for measuring and collecting data are 100% reliable.

This is particularly important if your data is not supported by a formal data recording process, so please provide your best estimate, along with your 'degree of confidence'.

The following table provides guidance in assessing data confidence:

	Highly reliable/ Audited	Reliable/ Verified	Less reliable	Uncertain	Very uncertain
Processes	Formal process to collect and analyse data. Process is documented and always followed by all staff.	Strong process to collect data. May not be fully documented but usually undertaken by most staff.	Process to collect data established. May not be fully documented but usually undertaken by most staff.	Semi-formal process usually followed. Poor documentation. Process to collect data followed about half the time.	Ad hoc procedures to collect data. Minimal or no process documentation. Process followed occasionally.
Asset Data	Very high level of data confidence. Data is believed to be 95–100% complete and +/- 5% accurate. Regular data audits verify high level of accuracy in data received.	Good level of data confidence. Data is believed to be 80–95% complete and +/- 10% to 15% accurate. Some minor data extrapolation or assumptions have been applied. Occasional data audits verify reasonable level of confidence.	Average level of data confidence. Data is believed to be 50–80% complete and +/- 15 to 20% accurate. Some data extrapolation has been applied based on supported assumptions. Occasional data audits verify reasonable level of confidence.	Not sure of data confidence, or data confidence is good for some data. Most of the dataset is based on extrapolation of incomplete data set with unsupported assumptions.	Very low data confidence. Data based on very large unsupported assumptions, cursory inspection, and analysis. Data may have been developed by extrapolation from small, unverified data sets.

1.13 Summary of Measures

All Measures are summarised in the following tables. Each data point includes a hyperlink which takes you to the relevant section of the guide for more information.

Key:

N = Report measures at network level

O = Report measures at organisation level

Note: *Some measures only need to be reported by councils or council-controlled organisations (CCOs) but not by government departments or the New Zealand Defence Force.

Drinking water Measures

Outcome	Performance Measure	Ref. code	Data points (and units of measure, where applicable)	Report at
General asset information	Drinking water network information	D-A1	Number of drinking water networks	O
		D-A2	Number of drinking water treatment plants	O
		D-A3	Number of reservoirs	O
		D-A4	Number of pump stations	O
		D-A5	Total length of drinking water pipe (km)	O
		D-A6	Number of drinking water abstraction points	N
		D-A7	Drinking water network source type	N
Environmental and public health is protected	Drinking water network connections	D-EH1	Number of residential connections in the drinking water network	N
		D-EH2	Number of non-residential connections in the drinking water network	N
		D-EH3	Total population served by the drinking water network	N
	Volume of water abstracted (m ³ /year)	D-EH4	Water supplied to the drinking water network	N
		D-EH5	Water imported from other suppliers	O
		D-EH6	Water exported to other suppliers	O
		D-EH7	Non-residential water use	O
	Resource consent compliance	D-EH8	Number of resource consents that are held	N
		D-EH9	Type(s) of resources consent	N
		D-EH10	Resource consent reference number(s)	N
		D-EH11	Expiry dates for resource consent(s)	N
		D-EH12	Have consent conditions been met for rate of take and volume of abstraction	N
		D-EH13	Consented rate of take for each abstraction point (L/s)	N
		D-EH14	Maximum daily consented volume of water-take (m³/day)	N
		D-EH15	Maximum annual consented volume of water-take (m³/year)	N
		D-EH16	Failure to meet resource consent conditions - provide comments	N
	Drinking water treatment byproducts	D-EH17	Sludge (tonnes/year)	N
		D-EH18	Backwash water (m³/year)	N
		D-EH19	Screenings (tonnes/year)	N
		D-EH20	Disposal route	N
	Fish passage and screening	D-EH21	Has an assessment been made for all water-takes whether fish passage is impeded within a natural water body	N

		D-EH22	<u>Have operational or management processes been put in place to prevent fish ingress</u>	N
Services are reliable	Fault attendance and resolution	D-R1	<u>Median hours to attend to an urgent fault</u>	O
		D-R2	<u>Median hours to attend to a non-urgent fault</u>	O
		D-R3	<u>Median hours to resolve an urgent fault</u>	O
		D-R4	<u>Median hours to resolve a non-urgent fault</u>	O
	System interruptions	D-R5	<u>Number of planned interruptions</u>	O
		D-R6	<u>Number of third-party incidents</u>	O
		D-R7	<u>Number of unplanned interruptions</u>	O
		D-R8	<u>Number of urban service connections that experience an unplanned interruption for longer than eight hours</u>	O
	Asset condition	D-R9	<u>% of pipes that have received a condition grading</u>	O
		D-R10	<u>% of pipes in poor or very poor condition</u>	O
		D-R12	<u>Average age of water pipes</u>	O
		D-R13	<u>% of above-ground assets that have received a condition grading</u>	O
		D-R14	<u>% of above-ground assets in poor or very poor condition</u>	O
	Water pressure	D-R15	<u>Average system pressure (kPa)</u>	N
		D-R16	<u>Are there set pressure levels of service?</u>	N
		D-R17	<u>Reference level of pressure (kPa, if set)</u>	N
		D-R18	<u>Number of properties below reference level of pressure</u>	N
	Water restriction days	D-R19	<u>Number of days that water restrictions were applied</u>	O
		D-R20	<u>Proportion of affected connections</u>	O
	Sufficient firefighting water is available	D-R21	<u>Have you adopted the FENZ Code of Practice (SNZ PAS 4509:2008)?</u>	O
		D-R22	<u>% of fire hydrants tested in the previous five years</u>	O
Resources are used efficiently	Drinking water network water losses	D-RE1	<u>Estimated total drinking water network water loss (m³/year)</u>	N
		D-RE2	<u>Current annual real loss (CARL)</u>	N
		D-RE2b	<u>Optional: Unavoidable Annual Real Losses (UARL)</u>	N
		D-RE3	<u>Infrastructure Leakage Index (ILI)</u>	N
	Use of water resources	D-RE4*	<u>Median residential water consumption (L/day/connection)</u>	N
		D-RE5	<u>Do you have a water conservation education programme in place?</u>	O
		D-RE6*	<u>Number of residential connections with water meters</u>	O
		D-RE7*	<u>Number of non-residential connections with water meters</u>	O
		D-RE8	<u>Number of abstraction points with water meters installed</u>	O
		D-RE9	<u>Frequency that water abstraction meters are calibrated/verified (years)</u>	O
		D-RE10	<u>Number of water abstraction meters connected to telemetry systems</u>	O
		D-RE11	<u>Days for which a complete telemetry dataset has been recorded</u>	O
	Energy efficiency	D-RE12*	<u>Electricity use</u>	O
		D-RE13*	<u>Energy use from other fuels</u>	O
		D-RE14*	<u>Energy generation</u>	O

	Alternative water use	D-RE15	<u>Volume of recycled water supplied to residential customers</u>	0
		D-RE16	<u>Volume of recycled water supplied to non-residential customers</u>	0
		D-RE17	<u>Volume of recycled water supplied to managed aquifer recharge</u>	0
		D-RE18	<u>Volume of urban stormwater reused in network</u>	0
Services are resilient	Critical assets	D-RL1	<u>Have you undertaken an assessment to identify critical assets? Provide comments about your critical assets?</u>	0
	Emergency response planning and preparedness	D-RL2	<u>Has an emergency response plan been developed? Provide comments about your disaster response plan</u>	0
		D-RL3	<u>Has a business continuity plan been developed? Provide comments about your business continuity plan</u>	0
		D-RL4	<u>Date the emergency response plan was last reviewed.</u>	0
		D-RL5	<u>Date the business continuity plan was last reviewed.</u>	0
		D-RL6	<u>Date when an emergency response exercise was last conducted.</u>	0
		D-RL7	<u>Date when a business continuity plan exercise was last conducted.</u>	0
	Water security	D-RL8	<u>Do you have a strategic plan to address future changes in water supply demand. Provide comments.</u>	0
	Water restrictions	D-RL9	<u>Number of days that outdoor water use was restricted across each network.</u>	0
		D-RL10	<u>Number of days that outdoor water use was banned across the network.</u>	0
		D-RL11	<u>Were other restrictions imposed across the network. Provide comments about why restrictions were imposed.</u>	0
Services are economically sustainable	Actual Expenditure, for the reporting period	D-ES1	<u>Total capital expenditure relating to drinking water by:</u>	0
		D-ES1a	<ul style="list-style-type: none"> <u>meeting additional demand</u> 	0
		D-ES1b	<ul style="list-style-type: none"> <u>replacing existing assets, improving the level of service</u> 	0
		D-ES2	<u>Total operating expenditure relating to drinking water</u>	0
	Forecast expenditure, for the next reporting period	D-ES3	<u>Total forecast drinking water capital expenditure</u>	0
		D-ES4	<u>Total forecast operational expenditure</u>	0
	Revenue, for the reporting period*	D-ES5	<u>Total revenue received, relating to drinking water</u>	0

Summary of wastewater measures

Key:

N = Report measures at network level

O = Report measures at organisation level

Note: *Some measures only need to be reported by councils or council-controlled organisations (CCOs) but not by government departments or the New Zealand Defence Force.

Wastewater Static Measures – reported for the first year as at 1 July 2024

Outcome	Performance Measure	Ref. code	Data points (and units of measure, where applicable)	Report at
General asset information	Wastewater network information	W-A1	<u>Number of wastewater pump stations</u>	O
		W-A2	<u>Total length of wastewater pipes (km)</u>	O
		W-A3	<u>Total length of combined wastewater and stormwater pipes (km)</u>	O
		W-A4	<u>Total length of pressured wastewater pipes (km)</u>	O
		W-A5	<u>Total length of vacuum wastewater pipes (km)</u>	O
	Wastewater treatment	W-A8	<u>Number of wastewater treatment plants</u>	O
		W-A9	<u>Wastewater treatment process(es)</u>	N
		W-A10	<u>Treated wastewater discharge receiving environment</u>	N
Environmental and public health is protected	Wastewater network connections	W-EH1*	<u>Number of residential connections in the wastewater network to gravity sewers</u>	O
		W-EH2*	<u>Number of residential connections in the wastewater network to pressure sewers</u>	O
		W-EH3*	<u>Number of residential connections in the wastewater network to vacuum sewers</u>	O
		W-EH4*	<u>Number of non-residential connections in the wastewater network to gravity sewers</u>	O
		W-EH5*	<u>Number of non-residential connections in the wastewater network to pressure sewers</u>	O
		W-EH6*	<u>Number of non-residential connections in the wastewater network to vacuum sewers</u>	O
		W-EH7*	<u>Total population served by the wastewater network</u>	O
	Resource consents compliance	W-EH8	<u>Number of resource consents held for wastewater treatment plant</u>	N
		W-EH9	<u>Type of resource consent(s)</u>	N
		W-EH10	<u>Resource consent reference number(s)</u>	N
		W-EH11	<u>Resource consent expiry date(s)</u>	N
		W-EH12	<u>Consent status(s)</u>	N
		W-EH13	<u>Wastewater overflow regulation approach(s) under local regional plan</u>	N
		W-EH14	<u>Number of consents held for wastewater overflows in the network</u>	N
		W-EH15	<u>Resource consent reference numbers for wastewater overflows</u>	N
		W-EH16	<u>Resource consent expiry date for wastewater overflows</u>	N
	Wastewater overflows	W-EH27	<u>Are overflows recorded through verbal reports?</u>	O
		W-EH28	<u>Are overflows recorded through SCADA monitoring?</u>	O
		W-EH29	<u>Are overflows calculated through hydraulic models?</u>	O

		W-EH30	<u>Are overflows calculated through calibrated hydraulic models?</u>	O
	Inflow and infiltration	W-EH36	<u>Wastewater treatment plant - peak to nominal flow ratio</u>	N
		W-EH37	<u>What design standards do you use for calculating the capacity of wastewater network?</u>	N
		W-EH38	<u>Levels of service for preventing wastewater overflows due to stormwater ingress</u>	N
	Trade waste	W-EH39	<u>Number of trade waste consents</u>	O
Services are resilient	Critical assets	W-RL1	<u>Have you undertaken an assessment to identify critical wastewater assets?</u>	O

Wastewater Continuous Measures - first reported in 2025

Outcome	Performance Measure	Ref. code	Data points (and units of measure, where applicable)	Report at
General asset information	Wastewater network information	W-A6	<u>Wastewater imported for treatment from other wastewater network(s) (m³/year)</u>	O
		W-A7	<u>Wastewater exported for treatment by another wastewater network (m³/year)</u>	O
	Wastewater treatment	W-A11	<u>Volume of wastewater treated at treatment plant (average dry weather and peak flows) (m³/year)</u>	N
		W-A12	<u>Volume of trade waste at treatment plant</u>	N
		W-A13	<u>Volume of septage imported for treatment (m³/year)</u>	N
		W-A14	<u>Volume of treated wastewater applied to land (m³/year)</u>	N
Environmental and public health is protected	Wastewater overflows	W-EH21	<u>Number of overflows caused by blockages</u>	O
		W-EH22	<u>Number of times that wastewater overflows were caused by plant failure or equipment damage</u>	O
		W-EH23	<u>Number of times that wastewater overflows were caused by capacity being exceeded in the wastewater network</u>	O
		W-EH24	<u>Number of times that wastewater overflows were caused by capacity being exceeded in combined wastewater and stormwater pipes/networks</u>	O
		W-EH25	<u>Number of wastewater overflows resulting from causes not identified above</u>	O
		W-EH26*	<u>Number of wastewater overflows on private properties attributable to service provider.</u>	O
		W-EH31	<u>Number of hours where the treatment plant processes are fully bypassed (hours)</u>	O
	Trade waste	W-EH40	<u>Number of times that Trade waste consents were breached</u>	O
		W-EH41	<u>Describe any actions undertaken due to trade waste consent holders breaching consent conditions</u>	O
Services are reliable	Fault attendance and resolution	W-R1	<u>Median time (hours) to attend to a fault</u>	O
		W-R2	<u>Median time (hours) to resolve a fault</u>	O
	Systems interruption	W-R7	<u>Number of planned interruptions</u>	O
		W-R8	<u>Number of third-party incidents</u>	O
	Asset conditions	W-R14	<u>% of wastewater pipes that have received a condition grading</u>	O

		W-R15	<u>% of wastewater pipes in poor or very poor condition</u>	O
		W-R16	<u>Average age of wastewater pipes (years)</u>	O
		W-R17	<u>% of the wastewater pipes that have had CCTV inspections carried out in the last five years</u>	O
		W-R18	<u>% of above-ground assets that have received a condition grading</u>	O
		W-R19	<u>% of above-ground assets in poor or very poor condition</u>	O
Resources are used efficiently	Energy efficiency	W-RE1	<u>Electricity use (kWh)</u>	N
		W-RE2	<u>Energy use from other fuels (GJ)</u>	N
	Process emissions	W-RE4	<u>Wastewater treatment wetland emissions (tCO₂e/yr)</u>	N
		W-RE5	<u>Wastewater effluent disposal emissions (tCO₂e/yr)</u>	N
		W-RE6	<u>Wastewater sludge treatment emissions (tCO₂e/yr)</u>	N
		W-RE7	<u>Wastewater sludge disposal emissions (tCO₂e/yr)</u>	N
	Biosolids	W-RE9	<u>Production of biosolids (m³)</u>	N
		W-RE10	<u>% of dry solids in biosolids</u>	N
		W-RE11	<u>% disposal of biosolids to onsite stockpile ratio</u>	N
		W-RE12	<u>Disposal of biosolids in year to landfill (tonnes)</u>	N
		W-RE13	<u>Disposal of biosolids composting and reuse (tonnes)</u>	N
		W-RE14	<u>Disposal of biosolids to other routes (tonnes)</u>	N
		W-RE15	<u>Last year plant/pond was desludged (if applicable)</u>	N

2. Drinking water measures and definitions

Standardised definitions for each of the Measures and data points helps to collect information consistently, so we can make fair comparisons between drinking water network operators in the Network Report.

We understand that these data points might not always allow network operators to capture their full performance story, so we encourage you to provide supporting commentary where appropriate.

Note: Each of the following Measures has a reference code associated with it, for guidance purposes.
For example: **D-A1** refers to information about the number of drinking water networks operated by you.

2.1 General asset information

Drinking water network information

D-A1 Number of drinking water networks (report at an organisational level): the number of distinct drinking water network supply systems, operated by a drinking water Network Operator.

Note: There may be only one, or several networks, within a territorial authority's district, or operated by a department or the New Zealand Defence Force.

e.g. New Plymouth District Council operates four discrete networks that are geographically dispersed and service separate settlements in Ōkato, New Plymouth, Ōakura and Inglewood.

Note: A common water source does not necessarily constitute a common network.

e.g. Water from the Roding Dam, which is operated by Nelson City Council, also supplies water to the nearby town of Richmond which is in the Tasman District. Despite sharing a common source, these two networks are operated by two different councils, so are both reported separately.

D-A2 Number of drinking water treatment plants (report at an organisation level): a drinking water treatment plant is defined as the location of equipment that directly enables any form of treatment that improves water quality, towards making the water safe to drink. Examples of water treatment plants include a cartridge filter, ultraviolet (UV) unit, a sand filter, a clarifier, or a chlorine dosing system.

Where multiple treatment components are used in a collective process, or located in a common building, compound, or discrete geographic area, these are considered a single treatment plant.

D-A3 Number of reservoirs (report at an organisation level): the total number of drinking water supply reservoirs, operated by the network operator. This excludes raw water storage but includes bulk storage reservoirs and sub-surface suction tanks.

It includes distribution system reservoirs, tanks, treated water tanks, and reservoirs, but does not include bulk raw water storage facilities, or small break-pressure rural tanks.

If one site or location has more than one tank or reservoir, then count each tank or reservoir separately.

D-A4 Number of pump stations (report at an organisation level): this includes any pump stations used to deliver treated drinking water after the final stage of the water treatment process. It does not include pump stations as part of a treatment plant which only delivers treated water into the water distribution system.

D-A5 Total length of drinking water pipes (report at an organisation level): total length (in km) of public water mains, excluding private laterals. This includes all trunks, reticulation mains and service-leads up to the meter or point of supply for the supply of potable water.

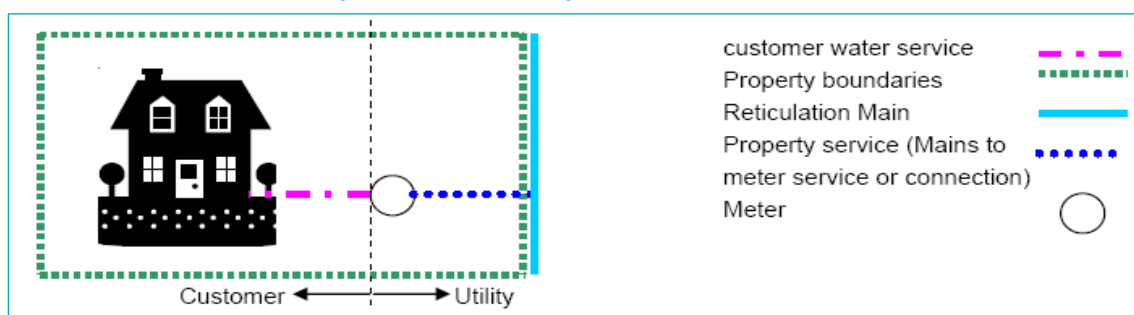
- **Do not** include lengths associated with customer's water services within private property boundaries (as indicated on the figure below), or source works such as bore fields not associated with the reticulated water supply network.
- **Do not** count disused pipe lengths, even if they are maintained for possible future use.

D-A6 Number of drinking abstraction points (report at a network level): total number of physical points where water is abstracted to supply the network. This may include multiple bores, or multiple abstraction points within the same surface water body. May also include multiple different water sources, including groundwater and surface water.

D-A7 Drinking water source-type (report at a network level): select the primary drinking water source from each network from bore, infiltration gallery, lake, spring or river/stream/creek.

Please add any other sources in comments field.

2.2 Environmental and public health is protected



Drinking water network connections

Note: The total number of **residential connections** provides a proxy for water serviced properties.

The total number of connections should be determined by providing the total number of household units:

- connected to the network operator's network
- the subject of separate billing for the drinking water supply (fixed and/or consumption).

Include your method for determining the number of serviced connections in multi-unit buildings in the comments field.

A single residential building will usually contain a single household unit.

Multi-unit buildings should be counted based on the number of separate household units. The approach used to determine this figure is to be specified in the comments field. This may be determined based on the number of household units that are separately billed or rated.

Example: a multi-unit apartment building may have only one supply connection but with 100 apartments, each receiving a separate water bill or rates bill will be counted as 100.

If a multi-unit complex like a retirement village receives a single bill, but consists of multiple household units, these should be included, where information is available to do so.

A tenanted property which is separately metered and in respect of which the tenant is liable for water usage counts as one property. For example, the owner and tenant of a single rented property are not counted as separate connections.

Include connections to non-rateable properties, but **do not** include vacant lots that are connected, or rated but unconnected properties.

D-EH1 Number of residential connections in the drinking water network (report at a network level): total number of residential connections serviced by a reticulated drinking water network.

D-EH2 Number of non-residential connections in the drinking water network (report at a network level): total number of non-residential connections serviced by a reticulated drinking water network.

Non-residential is defined as any business or other activity that is not identified as residential.

Where a single non-residential connection services multiple tenancies, but multiple accounts are issued, the number of connections (in this case 1), not the number of accounts, should be recorded.

D-EH3 Total population served by the drinking water network (report at a network level): the number of consumers served by each drinking water network. This should be consistent with values entered in our database (Hinekōrako), and calculated using the approach outlined [here](#).

Volume of water abstracted

D-EH4 Water supplied to the drinking water network (report at a network level): total volume of water (m³/year) supplied in the area under the network operator's jurisdiction.

'Water Supplied' is illustrated in the standard Water Balance diagram below. The diagram should be read from left to right.

If multiple networks are operated, provide information for each network separately.

Own sources	System input (allow for bulk metering errors)	Water exported			Billed water exported to other systems	Revenue water
			Authorised consumption	Billed authorised consumption	Billed metered consumption by registered customers	
					Billed unmetered consumption by registered customers	
Water imported		Water supplied	Water losses	Unbilled authorised consumption	Metered	Non-revenue water
					Unmetered	
				Apparent losses	Unauthorised consumption	
				Real losses	Customer meter under-registration	
					Leakage on Mains	
	Leakage & Overflows at service reservoirs					
	Leakage on service connections (up to property boundary)					

D-EH5 Water imported from other suppliers (report at an organisation level): the volume of water (m³/year) imported from a separate supplier that is used to supply the drinking water network(s). This is 'Water Imported' in terms of the standard water balance shown above.

D-EH6 Water exported to other suppliers (report at an organisation level): the volume of water (m³/year) provided by the network operator that is exported for use to other water networks. This is 'Water Exported' in terms of the standard water balance shown above.

D-EH7 Non-residential water use (report at a network level): the water consumption (m³/year) for non-residential properties, including rural and agricultural uses, and outdoor areas.

If rural schemes include a known number of residential properties, which are not separately metered. An estimate of residential consumption should be subtracted from non-residential water consumption. This water use can be determined by multiplying the number of residential properties in the rural scheme, by the estimated average daily residential water consumption.

If multiple networks are operated, provide information for each network separately.

Resource consent compliance

Note: Only include details for resource consents which relate to the current operation of the drinking water network i.e.:

- **Do not** include 'Building consents'
- **Do not** include any consents which have been replaced, superseded or are otherwise no longer in active use.

D-EH8 Number of resource consents that are held (report at a network level): provide the total number of resource consents related to the current operation of the drinking water network (as below).

D-EH9 Type(s) of resource consents held for drinking water networks (report at a network level): for each of the consents identified in D-EH9 above, describe whether the consent relates to:

- Water-take permits – take, use, dam, and divert.
- discharge permits – to land, air, and water.
- coastal permits – construction, deposit, disturb, and alter.
- land use consent – build, excavation, and damage to habitat.

If your consent type is not one of those listed above, further information should be provided in the comments field.

D-EH10 Resource consent reference number(s) (report at a network level): list the resource consent reference number for each of the resource consents listed above.

D-EH11 Expiry dates for resource consents: enter the expiry date for each consent relating to the drinking water network.

Note: the expiry date should be provided even if the consent has expired (as long as no replacement consent has been issued).

D-EH12 Have consent conditions been met for rate of take and volume of abstraction? (report at a network level): yes or no.

D-EH13 Consented rate of take for each abstraction point (report at a network level): the consented instantaneous rate (L/s) for each abstraction point.

D-EH14 Maximum daily consented volume of water-take (report at a network level): the maximum daily consented water-take volume (m³/day).

D-EH15 Maximum annual consented volume of water-take (report at a network level): the maximum annual consented water-take volume (m³/year).

D-EH16 Failure to meet resource consent conditions (report at a network level): If consent conditions have not been met for one or more of the above categories, further information should be provided in the comments field.

Drinking water treatment by-products

D-EH17 Sludge (report at a network level): the amount of sludge produced (tonnes/year) from the removal of sediment and algae in the raw water and from coagulation of dissolved minerals and use of coagulation and flocculation chemicals, from the treatment of raw water.

D-EH18 Backwash water (report at a network level): the amount of water (m³/year) pumped backward through filter media etc as part of the treatment of raw water.

D-EH19 Screenings (tonnes) (report at a network level): the amount of screenings (tonnes/year), such as rags, paper, plastics, gravel and metals, removed as part of the treatment of raw water.

D-EH20 Disposal route (report at a network level): select the primary route where by-products (such as sludge, backwash and screenings) are disposed to (such as freshwater, marine, land, stockpile, landfill, or other).

If there are several different routes, select the primary route and provide further information about other routes in the comments field.

Fish passage and screening

D-EH21 Has an assessment been made for all water-takes whether fish passage is impeded within a natural water body? (report at a network level): yes or no. Please add an explanation in the comments field.

D-EH22 Have operational or management processes been put in place to prevent fish ingress? (report at a network level): yes or no. Please add an explanation in the comments field, about preventing fish from entering the network infrastructure.

2.3 Services are reliable

Fault attendance and resolution

D-R1 Median hours to attend an urgent fault (report at an organisation level): the median time from when a network operator receives notification of an 'urgent fault' or unplanned service interruption to a drinking water network, to when service personnel reach the site in response (hours).

An 'urgent fault' is one that directly results in a complete loss of service for one or more connections. For example, a complete interruption of supply, or provision of water that is not safe or likely to be unsafe to drink.

This measure only refers to confirmed faults with the network, not all customer complaints. For example, time taken to attend a customer complaint, which is later determined to be on the customer-side of the boundary does not need to be captured.

Extreme events, such as civil defence events may skew overall trends in performance. Any such events should be clearly identified in the comments section.

D-R2 Median hours to attend a non-urgent fault (report at an organisation level): the median time from when a network operator receives notification of a non-urgent fault or unplanned service interruption to a drinking water network, to when service personnel reach the site in response.

A non-urgent fault is any fault that is not considered an urgent fault. Examples include, reduced pressure of supply, or an aesthetic issue with the water supply if it can be confirmed the water is still safe to drink.

D-R3 Median hours to resolve an urgent fault (report at an organisation level): the median time from when a network operator receives notification of an urgent fault or unplanned service interruption (as per D-R1) to the time that service personnel confirm permanent return to service. A permanent resolution/return to service does not necessarily imply asset reinstatement, as this does not impact on the service itself.

This measure only refers to confirmed faults with the network, not all customer complaints. For example, time taken to attend a customer complaint, which is later determined to be on the customer side of the boundary does not need to be captured.

D-R4 Median hours to resolve a non-urgent fault (report at an organisation level): the median time from when a network operator receives notification of a non-urgent fault or unplanned service interruption (as per D-R2) to the time that service personnel confirm permanent return to service. A permanent resolution and/or return to service does not necessarily imply asset reinstatement, as this does not impact on the service itself.

Systems interruptions

A network interruption is any event causing a total loss (cessation or outage) of water supply.

An interruption can affect just one customer, or it can affect many customers, but it is only counted once:

- Example: one break may affect 30 dwellings in a street, but only one interruption is recorded.

- **Do not** count interruptions that occur after the customer's water connection within privately owned pipes, or interruptions caused by meter or water restrictor replacement programmes.

D-R5 Number of planned interruptions (report at an organisation level): total number of planned drinking water network interruptions for maintenance or renewal works, excluding water meter or water restrictor replacements.

D-R6 Number of third-party incidents (report at an organisation level): the number of unplanned interruptions to service caused by third-parties i.e. not the network operator or its contractor(s).

D-R7 Number of unplanned interruptions (report at an organisation level): the total number of unplanned interruptions to the water supply, such as an asset failure in the public reticulated network.

Include comments if this was due to causes other than main breaks or bursts etc.

D-R8 Number of urban service connections that experience an unplanned interruption for longer than eight hours (report at an organisation level): total number of unplanned interruptions to the water supply which lasted longer than eight hours.

Asset condition

D-R9 % of pipes that have received a condition grading (report at an organisation level): the proportion (as a %) of pipes and associated equipment (both above-ground and underground), by length, which have received a condition grade using a standardised grading structure or methodology.

All pipes and associated equipment that have received a condition grade should be included, regardless of the mix of attributes being used to assign the grades. For example, not only pipes assessed using direct inspection methods should be included, but also pipes that have received a condition grading based on interpolation of age or other factors.

Provide information on the approach used to determine the condition grading in the comments field.

D-R10 % of pipes in poor or very poor condition (report at an organisation level): the proportion (as a %) of pipes and associated equipment (both above ground and underground), by length, which have received a poor or very poor condition grade.

This value should be a percentage of all pipes, not a percentage of pipes that have received a condition assessment.

The definitions of poor, and very poor condition, should align with the definitions provided in the IPWEA's International Infrastructure Management Manual:

- **poor condition** – consider renewal
- **very poor condition** – approaching unserviceable.

If condition grades used do not adhere to these definitions, specify the alternate condition grading approach, or definition in the comments.

For asbestos-cement pipes; further guidance is provided in the definition of poor and very poor condition assets in the Water New Zealand, National Asbestos Cement Pressure Pipe Manual. These categories may also provide guidance for other pipe materials and so are provided here for reference:

- **poor condition assets** - less than 25% of the life of a new asbestos cement pipe remaining
- **very poor condition assets** - pipe failure due to deterioration can be expected within a few years and some pipe failures may have already occurred.

D-R12 Average age of water pipes (report at an organisation level): the weighted-average age of all water pipes and associated equipment within all the network operators' drinking water networks. This should be calculated by considering the length and age (in years) of pipes as follows:

$$\frac{\sum(\text{length of pipe} \times \text{age of pipe})}{\sum \text{length of pipe}}$$

D-R13 % of above-ground assets that have received a condition grading (report at an organisation level): the proportion (as a %) of above-ground assets, of the kinds listed below, that have received a condition grade using a standardised grading structure or methodology:

- drinking water treatment plant buildings, including ancillary buildings
- above ground service reservoirs, including contact tanks within the distribution zone
- pumping stations, including above ground ancillary buildings (such as detached chemical storage sheds).

The individual condition grading of components of each of these assets does not need to be considered.

Provide information on the approach used to determine the condition grading in the comments field.

D-R14 % of above-ground assets in poor or very poor condition (report at an organisation level): the proportion (as a %) of above-ground assets that have received a poor or very poor condition, as per the International Infrastructure Management Manual:

- **poor condition** – consider renewal
- **very poor condition** – approaching unserviceable.

If condition grades used do not follow these definitions, specify the alternate condition grading approach or definition in the comments.

Further guidance is provided in the definition of poor and very poor condition assets in the [Water New Zealand, visual assessment manual for utility assets](#). The manual expands on the International Infrastructure Management Manual definitions, provided here for reference:

- **poor condition assets** – either not working or is working poorly because of damage or deterioration. Condition or structure is poor, or structural integrity is in question.
- **very poor condition assets** – needs urgent attention.

The individual condition grading of components of each of these assets do not need to be considered.

This value should be a percentage of all assets, not a percentage of assets that have received a condition assessment.

Water pressure

D-R15 Average system pressure (kPa) (report at a network level): methods for calculating the average distribution system pressure are outlined in Appendix E of Water New Zealand's [Water Loss Guidelines \(February 2010\)](#) or [Water loss Guidelines \(August 2023\)](#).

If multiple drinking water networks are operated, provide information for each network separately.

D-R16 Are there set pressure levels of service (report at a network level): has a reference level for water pressure been set? A yes or no response is required.

The reference level may have been set to respond to customer levels of service, for backflow prevention, or to meet firefighting requirements.

If yes, provide information in the comments field on the reference level set.

D-R17 Reference level of pressure (report at a network level): if a reference pressure level has been set (kPa), please provide this.

D-R18 Number of properties below reference level of pressure (report at a network level): the total number of properties which are serviced at less than the reference pressure level.

Water restriction days

D-R19 Water restriction days (report at an organisation level): the total number of days when water restrictions were in place across some or all of the district or department area.

D-R20 Proportion of affected properties (report at an organisation level): the proportion (as a %) of customers affected by water restrictions (with each individual connection counted as a connected property).

For example, if a water supplier provides water to 4,000 connections, and 1,000 connections had water restrictions, this would be 25% (1,000/4,000).

Sufficient firefighting water is available

D-R21 Have you adopted the Fire and Emergency New Zealand Code of Practice (SNZ PAS 4509:2008)? (report at an organisation level): yes or no.

D-R22 % of Fire hydrants tested in the previous five years? if the answer to D-R21, is yes, then what is the total % of key fire hydrants that have been tested **within the last five years?** (in accordance with Clause G5 of Appendix G Firefighting Water Supplies Code of Practice SNZ PAS 4509:2008).

e.g. if you tested 20% of all key fire hydrants every year for the last five-years, then you will have tested 100% of them within the last five-years.

or, if you tested 10% of them every year for the last five-years, then you will have tested 50% within the last five-years.

2.4 Resources are used efficiently

Drinking water network water losses

D-RE1 Estimated total drinking water network water loss (report at a network level): the total loss of drinking water across the network (m³/year) is calculated as the difference between the **System Input** and the **Authorised Consumption**. This is illustrated in the water balance diagram below.

If multiple networks are operated, please provide information for each network separately.

Further guidance material on water loss can be found on the [Water New Zealand website](#).

The following diagram shows a simplified Water Balance Table (not drawn to any scale):

Water enters as System Input (allow for known errors)	Authorised consumption can be billed or unbilled.	Billed authorised consumption	Revenue water
	The unbilled portion becomes part of Non- Revenue Water.	Unbilled authorised consumption	Non-revenue water
	Water Losses (which form the remainder of Non- Revenue Water) are either:	Apparent Losses water which is used but is not paid for (e.g. theft, customer meter errors)	
		Real Losses leaks, bursts, and overflows from the systems of water suppliers	

Water enters as **System Input** and becomes either **Authorised Consumption** or **Water Losses**.

Authorised Consumption can be billed or unbilled. The unbilled portion becomes part of Non-Revenue Water.

Water Losses (which form the remainder of **Non-Revenue Water**) are either:

- **Apparent Losses** – water which is used but is not paid for (theft, customer meter errors), or
- **Real Losses** – leaks, bursts, and overflows from the systems of Water Suppliers.

Note: The term ‘Unaccounted for Water’ (UFW) is not recommended as the definition of UFW varies widely.

D-RE2 Current Annual Real Losses (CARL) (m³/year) (report at a network level): ‘Water losses’ is the total amount of water lost through all types of leaks, bursts, and overflows. This will depend on a several factors, such as frequencies, flow rates, and average duration of individual leaks and overflows. ‘Water losses’ includes all water losses from the pressurised system, and overflows from service reservoirs, up to the point of measurement (or estimation) of customer consumption.

‘Real Losses’ is the difference between the total ‘Water Losses’ and ‘Apparent Losses’.

‘Apparent Losses’ relate to unauthorised consumption (theft or illegal use) plus under-registration of customer meters i.e. where the amount of water being supplied to a connection is unknown because that connection has been missed off the metering programme.

Optional: D-RE2b Unavoidable Annual Real Losses (UARL) (m³/year) (report at a network level): is the lowest technically achievable Annual Real Losses for a specific, well managed infrastructure, in good condition.

Note: The UARL concept is similar to the calculation of ‘par’ score for a golf course, based on the length of fairways (around 1 shot per 180 metres) and the number of greens (2 shots per green).

Results can vary widely, and depending upon the density of service connections, so can either be measured in litres/service connection/day or m³/km of mains/day. However, all results should be aggregated for a network total result in m³/year.

Note: You do not need to provide your UARL results, but if you choose to enter this in the data capture spreadsheet the network ILI will automatically be calculated for you.

D-RE3 Infrastructure Leakage Index (ILI) (report at network level): The ratio CARL/UARL is called the Infrastructure Leakage Index (or ILI) and is a good performance indicator for comparing real losses between water suppliers both nationally and internationally. It measures how effectively infrastructure activities are being managed.

The four main components of managing water loss from public water supply networks are:

- pressure management,
- speed and quality of repairs,
- active leakage control, and
- pipe materials management.

The calculation of ILI is outlined in the Water New Zealand [Water Loss Guidelines](#), [Water Loss Guidelines \(Overview\)](#), and [Benchmarking of water losses](#) which are all available from their [water loss guidelines webpage](#) which also includes software tools for you to download.

ILI was developed to allow comparisons of leakage management performance between different systems with different infrastructure characteristics (connection density, length of service connections, average pressure etc). ILI should always be interpreted with some measure of pressure, and only used for tracking progress, provided all justifiable pressure reduction is achieved.

ILI is the ratio of Current Annual Real Losses (CARL) to Unavoidable Annual Real Losses (UARL), as follows:

$\text{Infrastructure Leakage Index} = \frac{\text{Current Annual Real Losses (m}^3\text{/year)}}{\text{Unavoidable Annual Real Losses (m}^3\text{/year)}}$

If multiple networks are operated, provide information for each network separately.

Use of water resources

D-RE4 Median residential water consumption (litres/connection/day) (report at a network level)

(*Council/CCOs only): if water consumption, based on residential water metering, is not available, provide median water use per connection.

If multiple networks are operated, provide information for each network separately.

D-RE5 Do you have a water conservation education programme in place? (report at an organisation level): yes or no.

Describe the education programme (if there is one in place) in the comments field.

D-RE6 Number of residential connections with water meters (report at an organisation level)

(*Council/CCOs only): the number of residential water meters installed.

If a single meter is installed on a multi-unit complex, this is only counted as one meter.

D-RE7 Number of non-residential connections with water meters (report at an organisation level)

(*Council/CCOs only): the number of non-residential water meters installed. If a commercial premises maintains multiple sub-meters within the tenancy and these are maintained by the water supplier each meter should be counted.

D-RE8 Number of abstraction points with water meters installed (report at an organisation level): the number of water abstraction meters that are calibrated or verified.

D-RE9 Frequency that water abstraction meters are calibrated/verified (report at an organisation level): the frequency of calibration or verification of water abstraction meters (years).

D-RE10 Number of water abstraction meters connected to telemetry systems (report at an organisation level): the number of water abstraction meters that are connected to telemetry systems (number).

D-RE11 Number of days for which a complete telemetry dataset has been recorded (report at an organisation level): the number of days for which a complete telemetry dataset has been recorded (days).

Energy efficiency

D-RE12 Grid electricity use (kWh/year) (report at an organisation level) (*Council/CCOs only): the total amount of grid-sourced electricity consumed by the drinking water network's pumps, water treatment plants, and other network components.

Do not include electricity-use related to fleet vehicles or offices. If they cannot easily be separated, please provide an estimate and note this in the data confidence field.

Do not include electricity generated onsite, for example through solar panels or micro-turbines.

Do not include sources of energy other than electricity (including biomass, diesel, and gas). These should be separately reported in the field below.

D-RE13 Energy use (GJ/year) (report at an organisation level) (*Council/CCOs only): the total energy consumed from external sources **other than electricity**, by water system pumps, water treatment plants, and other network components. This could include fuel provided by biomass, diesel, or gas.

Do not include energy use related to fleet vehicles or offices.

D-RE14 Energy generated (GJ/year) (report at an organisation level) (*Council/CCOs only): the total amount of energy which is generated onsite. This could include energy generated by micro-turbines or through co-location of renewables on site.

Include the source of energy generation in the comments section.

Alternative water use

Note: ‘Recycled water’ in this context means treated wastewater reused for purposes such as irrigation of parks and recreation areas, or industrial dust suppression etc.

D-RE15 Volume of recycled water supplied to residential customers (m³/year) (report at an organisation level): the total amount of recycled water supplied to residential customers.

D-RE16 Volume of recycled water supplied to non-residential customers (m³/year) (report at an organisation level): the total amount of recycled water supplied to non-residential customers.

D-RE17 Volume of recycled water supplied to recharge/managed aquifer(s) (m³/year) (report at an organisation level): the total amount of water supplied to supplied to recharge an aquifer(s).

D-RE18 Volume of stormwater reused in network (m³/year) (report at an organisation level): the total amount of urban stormwater which is reused in the drinking water network.

2.5 Services are resilient

Critical assets

D-RL1 Have you undertaken an assessment to identify critical drinking water assets? (report at an organisation level): a yes or no response, to show whether you have undertaken a comprehensive assessment to determine critical assets.

The [Infrastructure Asset Grading Guidelines 1999 – Water Assets](#) defines critical water assets as ‘...an asset where failure would have significant consequences, either in the ability of the system to provide services to customers or the effect on the environment’.

Critical assets are assets with financial, business, or service level consequences of failure high enough to justify a more rigorous approach to proactive inspection, maintenance, and renewal. This might include pumping stations, trunk mains, pipe-bridges, and service reservoirs.

There are no specific rules for identification of critical assets, so it is a matter of technical assessment and judgement, based on the level of risk arising and the consequences of failure.

More guidance can also be found in the [IPWEA’s International Infrastructure Management Manual](#).

Emergency response planning and preparedness

Note: This section previously referred to ‘disaster response plans’. However, we recognise that ‘emergency response plans’ (ERP) is the more accepted terminology and have amended the following text accordingly.

We also acknowledge that the term ‘emergency’ covers a much broader range of events - i.e. we plan for emergencies, in the hope that they don’t become disasters.

For guidance and reference purposes, the [Civil Defence Emergency Management Act 2002](#) provides a definition and examples of what might constitute an ‘emergency’, as does the [National Emergency Management Agency](#).

D-RL2 Has an emergency response plan been developed? (report at an organisation level): yes or no.

Provide details about your emergency response plan in the comments field.

D-RL3 Has a business continuity plan been developed? (report at an organisation level): yes or no.

Provide details about your business continuity plan in the comments field.

D-RL4 Date the emergency response plan was last reviewed (report at an organisation level): enter the date (DD/MM/YY), or year if not known.

D-RL5 Date the business continuity plan was last reviewed (report at an organisation level): enter the date (DD/MM/YY), or year if not known.

D-RL6 Date when an emergency response exercise was last conducted (report at an organisation level): enter the date (DD/MM/YY), or year if not known.

D-RL7 Date when a business continuity plan exercise was last conducted (report at an organisation level): enter the date (DD/MM/YY), or year if not known.

Water security

D-RL8 Do you have a strategic plan to address future changes in water supply demand? (report at an organisation level): yes or no.

Provide details about how you will address future changes in water supply demand in the comments field.

Water restrictions

D-RL9 Number of days that outdoor water use was restricted (report at an organisation level): number of days.

D-RL10 Number of days that outdoor water use was banned (report at an organisation level): number of days.

D-RL11 Were other water restrictions imposed (report at an organisation level)? (e.g. indoor residential water use, commercial use): Provide details in the comments field about what water restrictions were imposed.

2.6 Services are economically sustainable

Expenditure (for the reporting period)

D-ES1 Total capital expenditure (report at an organisation level): actual capital spend (in \$000s) relating to drinking water (during the reporting period) split by:

- a) meeting additional demand, and
- b) replacing existing assets or improving the level of service.

D-ES2 Total operating expenditure (report at an organisation level): actual operating spend (in \$000s) relating to drinking water during the reporting period.

Forecast expenditure

D-ES3 Total forecast drinking water capital expenditure (for the next one year reporting period) (report at an organisation level): forecast capital spend (in \$000s) relating to drinking water.

D-ES4 Total forecast operational expenditure for the next reporting period (one year) (report at an organisation level): forecast operating spend (in \$000s) relating to drinking water.

Revenue

D-ES5 Total revenue relating to drinking water (during the reporting period) (report at an organisation level): (*Council/CCOs only): total revenue received (in \$000s) relating to drinking water.

Note: for CCOs this should be the total amount of drinking water revenue collected by the council(s) in all forms (including, but not limited to, volumetric charges, rates, targeted rates, development contributions).

If the total amount provided to fund the CCO for drinking water operations is different to this, further information should be provided in the comments field.

3. Wastewater measures, definitions and register (new in 2024)

To support network operators, the adoption of wastewater measures will be phased in as follows. The phasing of these measures is also summarised in [section 1.13](#).

This approach provides wastewater operators a 'soft launch' into reporting on Measures, whilst also allowing us to capture and report some valuable data in our 2023/24 Report and Public Register of Wastewater Networks.

Static measures - as at 1 July 2024 for the first year, and every year thereafter

The first set of wastewater measures are essentially qualitative 'static' metrics.

For the first year of reporting, all network operators will need to provide this data, as at 1 July 2024, to us by no later than 30 September 2024.

You will also need to provide or confirm this data every year thereafter as part of the normal reporting process.

Continuous measures - between 1 July 2024 and 30 June 2025, and every year thereafter

The second set of wastewater measures are more quantitative and will require continuous monitoring throughout the year.

For the first year of reporting, all network operators will need to provide this data, for the period 1 July 2024 to 30 June 2025, to us no later than 30 September 2025.

You will also need to provide this data every year thereafter as part of the normal reporting process.

Note: Under [section 144](#) of the Act, Taumata Arowai must establish and maintain a Public Register of Wastewater Networks.

Therefore, in addition to publishing an annual Network Report Taumata Arowai will also take some of the information which network operators provide as part of the following data submission process and make this publicly available as a Register on our [website](#).

Standardised definitions for each of the following environmental performance measures and data points helps to collect information consistently, so we can make fair comparisons between wastewater network operators in the Network Report.

We understand that these data points might not always allow network operators to capture their full performance story, so we encourage you to provide supporting commentary where appropriate.

3.1 General asset information

Note: each of the following measures has a reference code associated with it, for guidance purposes, e.g. **W-A1** refers to the 'Number of wastewater pump stations'.

Wastewater network information - static measures, as at 1 July 2024 for the first year, and every year thereafter

W-A1 Number of wastewater pump stations (report at an organisation level): the total number of wastewater pump stations **before the first stage of wastewater treatment processes** transporting wastewater, regardless of whether the station is off or on the wastewater treatment plant site. Pump stations thereafter should be excluded as they are considered a component of the wastewater treatment plant.

W-A2 Length of wastewater pipe (report at an organisation level): the total length of wastewater pipes (km) in the area serviced by your network. This includes all trunks, reticulation mains and service-leads from the customer's boundary.

- **Do not** include lengths associated with customer's water services, within private property boundaries.
- **Do not** include disused pipe lengths, even if they are maintained for possible future use.

W-A3 Length of combined wastewater and stormwater pipes (report at an organisation level): as above, for any pipes designed to receive both wastewater and stormwater. These should also be included in the total length of wastewater pipes.

W-A4 Length of pressured wastewater pipes (report at an organisation level): the total length (km) of wastewater pipes which are positively-pressurised (i.e. using pumps rather than gravity). These should also be included in the total length of wastewater pipes.

W-A5 Length of vacuum wastewater pipes (report at an organisation level): the total length (km) of wastewater pipes which are negatively-pressurised (i.e. using vacuum pumps). These should also be included in the total length of wastewater pipes.

W-A8 Number of wastewater treatment plants (report at an organisation level): the total number of WWTPs in your organisation.

Wastewater network information - continuous measures, between 1 July 2024 to 30 June 2025, and every year thereafter

W-A6 Wastewater imported for treatment from other wastewater network(s) (report at an organisation level): volume (m³/year) of wastewater produced outside the organisation's jurisdiction that is piped in for treatment at the WWTP (if any).

W-A7 Wastewater exported for treatment by another wastewater network (report at an organisation level): total volume (m³/year) of wastewater produced in area under the organisation's jurisdiction that is piped to a separate WWTP (if any).

Wastewater treatment - static measures, as at 1 July 2024 for the first year, and every year thereafter

W-A9 Wastewater treatment process(s) (report at a network level): means the 'type' of treatment process(s) used e.g. pre-treatment, primary, secondary or tertiary.

You need to report on the highest treatment level that the plant provides.

Typical treatment processes might include:

- **Pre-treatment** usually involves screening large debris and grit prior to further treatment processes.
- **Primary treatment** usually involves the settling of particles and the floating of material such as fats, oils and greases to the surface.
- **Secondary treatment** is usually a biological treatment process, usually taking place in an aeration basin or oxidation pond, and may also include trickling filters.
- **Tertiary treatment** usually involves the removal of residual nutrients, micro-organisms/pathogens, or dissolved heavy metals and nitrogen or potassium-based chemicals, potentially with temperature stabilisation, some form of polisher/clarifier (coagulation and flocculation), or filtration, or UV disinfection.

W-A10 Receiving environment for treated wastewater (report at a plant level): where does your treated wastewater discharge to? e.g. river, lake, marine, land, estuary, wetland.

Wastewater treatment - continuous measures, between 1 July 2024 to 30 June 2025, and every year thereafter

W-A11 Volume of wastewater treated at treatment plant (report at a network level): total incoming volume (m³/year) of wastewater treated.

W-A12 Volume of trade waste treated at treatment plant (report at a network level): total incoming volume (m³/year) of trade waste treated.

Do not include:

- domestic wastewater
- properties which may be 'consented' or 'permitted' as trade waste producers but where no identified charge is made
- any trade waste producers who have their own plants with standalone wastewater treatment and discharge resource consents, as these are not part of the public network.

W-A13 Volume of septage imported for treatment (report at a network level): total volume (m³/year) of septage produced outside the organisation's piped-network that imported for treatment at the WWTP (if any) e.g. any tankered waste.

W-A14 Volume of treated wastewater applied to land (report at a network level): total volume (m³/year).

3.2 Environmental and public health is protected

Wastewater network connections - static measures, as at 1 July 2024 for the first year, and every year thereafter

Note: The total number of **residential connections** provides a proxy for the number of wastewater serviced properties.

The total number of connections should be determined by providing the total number of household units:

- connected to the network operator's network
- the subject of separate billing for the wastewater (fixed and/or consumption).

Include your method for determining the number of serviced connections in multi-unit buildings in the comments field.

A single residential building will usually contain a single household unit.

Multi-unit buildings should be counted, or estimated based on the number of separate household units. This may be determined based on the number of household units that are separately billed/rated.

The approach used to determine this figure must be specified in the comments field.

Example: a multi-unit apartment building with only one supply connection but with 100 apartments, each receiving a separate water charge or rates bill will be counted as 100.

If a multi-unit complex (e.g. retirement village) receives a single bill but consists of multiple household units, these should be included where information is available to do so.

Include connections to non-rateable properties, but **do not** include vacant lots that are connected or rated but unconnected properties.

The total number of **non-residential connections** serviced by a wastewater network, includes any businesses or other activities that are not identified as residential.

Where a single non-residential connection services multiple tenancies, and multiple accounts are issued, the number of accounts (not the number of connections) should be recorded.

W-EH1 Number of residential wastewater connections to gravity wastewater pipes (report at an organisation level) (*Council/CCOs only): the total number of residential connections to wastewater pipes which transfer wastewater via a natural downhill flow.

W-EH2 Number of residential wastewater connections to positive-pressure wastewater pipes (report at an organisation level) (*Council/CCOs only): the total number of residential connections to wastewater pipes which are positively-pressurised or use pumps.

W-EH3 Number of residential wastewater connections to vacuum wastewater pipes (report at an organisation level) (*Council/CCOs only): the total number of residential connections to wastewater pipes which are negatively pressurised.

W-EH4 Number of non-residential wastewater connections to gravity wastewater pipes (report at an organisation level) (*Council/CCOs only): the total number of non-residential connections to pipes which transfer wastewater via a natural downhill flow.

W-EH5 Number of non-residential wastewater connections to positive-pressure wastewater pipes (report at an organisation level) (*Council/CCOs only): the total number of non-residential connections to wastewater pipes which are positively-pressurised or use pumps.

W-EH6 Number of non-residential wastewater connections to vacuum wastewater pipes (report at an organisation level) (*Council/CCOs only): the total number of non-residential connections to wastewater pipes which are negatively-pressurised.

W-EH7 Total population served by the wastewater network (report at an organisation level) (*Council/CCOs only): the total number of residential customers served by the wastewater network(s). Depending on the community size, and availability and confidence of data, this may be calculated using an approach similar to that outlined in our [Guidance to determine water supply population](#).

Resource consents compliance - static measures, as at 1 July 2024 for the first year, and every year thereafter

Note: ONLY include details for resource consents which relate to current operation of the wastewater network.

- **Do not** include 'Building consents'.
- **Do not** include any consents which have been replaced, superseded or surrendered.

W-EH8 Number of resource consents held for wastewater treatment plant (report at a network level): provide the total number of resource consents which relate to the operation of the wastewater network.

Note: if you hold a consent that covers more than one activity or receiving environment (i.e. a consent that covers discharge to water, land and air) this should be counted as one consent.

Include details in the comments field.

W-EH9 Type(s) of resource consents held for the wastewater treatment plant (report at a network level): for each of the listed consents identified in EH8 above, describe what type of consent this primarily relates to e.g. discharge to air, land or water, land-use consent, wastewater overflows, or coastal permit.

If it relates to multiple types, please select the primary type and provide further information around the other consent types in the comments field.

W-EH10 Resource consent reference number(s) (report at a network level): provide each resource consent reference number as issued by the regional council consent authority.

W-EH11 Resource consent expiry date(s) (report at a network level): enter the expiry date for each consent relating to the wastewater network.

Note: the expiry date should be provided even if the consent has expired (as long as no replacement consent has been issued).

W-EH12 Consent status (report at a network level): enter the status of each consent - e.g. active, expired, operating under s124 RMA, or 'no discharge consent is held'.

Note: If you are legally able to continue operating under an expired discharge consent while an application for a new consent is being processed, select 'operating under s124 RMA'.

Only select 'expired' if the network is not currently legally operating under a consent.

W-EH13 Wastewater overflow regulation approach(s) under local regional plan (report at a network level):

Note: there may be different approaches depending on the cause of the overflow (e.g. by blockages, by plant failure or equipment damage, or by capacity being exceeded in the wastewater network).

In the comments section, list those which are permitted, controlled, restricted discretionary, prohibited activity under regional plan, or resource consent is required but no consent is held.

W-EH14 Number of consents held for wastewater overflows in the network (report at a network level): provide the number of wastewater overflow consents issued, which relate to the operation of the wastewater network.

W-EH15 Resource consent reference numbers for wastewater overflows (report at a network level):

provide each consent reference number (as issued by the regional council consent authority) relating to the wastewater network/plant.

W-EH16 Resource consent expiry date for wastewater overflows (report at a network level): enter the expiry date for the consent relating to the wastewater overflows.

Wastewater overflows - static measures, as at 1 July 2024 for the first year, and every year thereafter

Notes

- To be counted, an overflow needs to last at least three-minutes in duration to be classed as an event - this is to eliminate potential sensor 'noise'.
- A monitored site which has overflowed within a single 24-hour period is counted as one event.
- If an overflow continues for longer than 24-hours it will be counted as a separate overflow event for each 24-hour period.
- A new overflow event starts after a continuous 24-hour period **without** an overflow.

W-EH27 Are overflows recorded through verbal reports? (report at an organisation level): yes or no.

W-EH28 Are overflows recorded through SCADA monitoring? (report at an organisation level): yes or no.

Note: 'Supervisory control and data acquisition' (SCADA) is a system of software and hardware that allows organisations to monitor and control processes using real-time data - either locally or at remote locations.

W-EH29 Are overflows calculated through hydraulic models? (report at an organisation level): yes or no.

W-EH30 Are overflows calculated through calibrated hydraulic models? (report at an organisation level): yes or no.

Wastewater overflows - continuous measures, between 1 July 2024 to 30 June 2025, and every year thereafter

W-EH21 Number of overflows caused by blockages (report at an organisation level): the total number of times the wastewater network overflowed due to blockages (sometimes referred to as 'dry weather' overflows or blockages) e.g. due to fat, oil, grease build-up, or tree root intrusion.

- **Do not** include overflows resulting from stormwater infiltration (often referred to as 'wet weather overflows').
- **Do not** include overflows caused by blockages in wastewater service connections on private properties (i.e. prior to mains connections).
- However, **do include** overflows that occur in the public system and surcharge onto private properties.

W-EH22 Number of overflows caused by plant failure or equipment damage (report at an organisation level): the total number of times the wastewater network overflowed due to a plant failure or equipment damage (sometimes referred to as 'dry weather' overflows or failures) e.g. pump station ragging, power outages (including those from the electricity supplier's network), or mechanical pump failure etc.

Note: See W-EH21 (above) for exclusions and inclusions.

W-EH23 Number of times that wastewater overflows were caused by capacity being exceeded in the wastewater network (report at an organisation level): the total number of times the wastewater network overflowed due to its capacity being exceeded. This might be due to an excessive ingress of stormwater or groundwater (sometimes referred to as 'wet weather overflows') e.g. overflows (both contained and uncontained) from pump stations, pipes, manholes, and engineered overflow structures.

Such events may, or may not, be authorised by resource consent, and should still be included.

- **Do not** include instances caused by blockages, plant failure or equipment damage, or engineered spills to designed storage facilities where no pollution of the environment occurs such as an emergency storage tunnel.

Overflows may be determined from either monitoring, field observation or modelling data (e.g. SCADA alarms or hydraulic models).

W-EH24 Number of times that wastewater overflows were caused by capacity being exceeded in combined wastewater and stormwater pipes/networks (report at an organisation level): the total number of times the combined stormwater and wastewater network overflowed due to its capacity being exceeded, possibly due to the ingress of stormwater or groundwater.

W-EH25 Number of wastewater overflows resulting from causes not identified above (report at an organisation level): the total number of times the wastewater network overflowed due to reasons other than those listed above.

Please describe the cause(s) of the overflow in the comments field.

W-EH26 Number of wastewater overflows on private properties attributable to service provider (report at an organisation level) (*Council/CCOs only):

W-EH31 Number of hours where the wastewater treatment plant processes are fully bypassed (report at an organisation level): number of hours that the WWTP was fully bypassed e.g. due to faults or maintenance.

Note: if the wastewater has been screened it should still be counted.

Inflow and infiltration - static measures, as at 1 July 2024 for the first year, and every year thereafter

W-EH36 Wastewater treatment plant - peak to nominal flow ratio (report at a network level): the ratio of peak-flow (which might include any stormwater ingress) to nominal-flow:

Peak-flow (the highest instantaneous peak-flow recorded coming into the plant)
Average nominal-flow (the average instantaneous flow on days without precipitation)

W-EH37 What design standards do you use for calculating network capacity of wastewater networks? (report at a network level): the network should be designed to handle a certain capacity for diluted wastewater during high rainfall events.

If the design is based on the frequency of overflows, then provide the Annual Exceedance Probability (%). Otherwise, specify the average nominal-flow and associated peaking factor used to determine peak-flows. Include details of the approach and relevant units in the comments field.

W-EH38 Levels of service for preventing wastewater overflows due to stormwater ingress (report at a network level): list the way in which you measure the rarity of a rainfall event e.g. using Average Recurrence Interval (ARI) or Annual Exceedance Probability (AEP).

ARI is defined as: 'The average or expected value of the periods between exceedances of a given rainfall total accumulated over a given duration.' It is implicit in this definition that the periods between exceedances are generally random.

AEP is defined as: 'The probability that a given rainfall total accumulated over a given duration will be exceeded in any one year.'

Trade waste - static measures, as at 1 July 2024 for the first year, and every year thereafter

Note: “Trade Waste” means liquid waste, with or without matter in suspension, from the receipt, manufacture or processing of materials as part of a commercial, industrial or trade process, but excludes sewage and greywater.

Trade waste could be discharged into a public system, where it is treated along with the municipal wastewater. It can come from a large variety of sources and industries, with their own unique characteristics. Because trade waste can contain a range of contaminants which are not usually present in residential wastewater, trade waste agreements or bylaws may be used to control and protect WWTPs, public health and the environment.

The properties of each trade waste source may be factored when there is an identified charge for its treatment (e.g. uniform annual charge, volume or strength based, or some other specific charge).

Conditions for the collection, treatment, and discharge of trade waste into the public wastewater system may be specified in bylaws and/or individual trade waste agreements. More information on trade waste can be found in individual local authority’s trade waste bylaw, or the model trade waste bylaw NZS 9201.23:2004.

W-EH39 Number of trade waste consents (report at an organisation level): provide the total number of trade waste consents or permits issued.

Trade waste - continuous measures, between 1 July 2024 to 30 June 2025, and every year thereafter

W-EH40 Number of times that trade waste consents were breached (report at an organisation level): provide the total number of instances where a company has breached the trade waste consents or specified conditions.

W-EH41 Describe any actions undertaken due to trade waste consent conditions being breached (report at an organisation level): describe any actions undertaken to address such breaches.

3.3 Services are reliable

Fault attendance and resolution - continuous measures, between 1 July 2024 to 30 June 2025, and every year thereafter

The following measures only refer to **confirmed faults within the network**, not all customer complaints. For example, the time taken to attend a customer complaint that is later determined to be on the customer-side of the boundary does not need to be captured.

Extreme events, such as declared civil defence emergencies, may skew performance trends, so please identify these in the comments section.

W-R1 Median time (hours) to attend to a fault (report at an organisation level): the median time from when a network operator receives notification of a fault or unplanned service interruption to a wastewater network, to when service personnel reach the site in response.

W-R2 Median time (hours) to resolve a fault (report at an organisation level): the median time from when a network operator receives notification of a fault or unplanned service interruption, to when the service personnel confirms permanent return to service. A permanent return to service does not necessarily imply asset reinstatement, as this does not impact on the service itself.

Systems interruption - continuous measures, between 1 July 2024 to 30 June 2025, and every year thereafter

A 'wastewater interruption' is any event causing a total inability of customers being able to flush, or otherwise dispose of items to the wastewater system, due to an asset failure in the public reticulated network.

A single interruption can affect one or more customers but is only counted once.

- **For example:** one break might affect 30 properties in a street, but only one interruption should be recorded.
- **Do not** count interruptions that occur on the customer's property (i.e. within privately owned pipes, on their boundary).

W-R7 Planned interruptions (report at an organisation level): the total number of 'planned' wastewater network interruptions for maintenance or renewal works.

- **Do not** include situations where the duration of a planned interruption exceeds that which was originally notified.
- **For example:** if the organisation advised customers that an interruption to service would last three hours, but the interruption actually lasted five hours, this should be counted as an unplanned interruption.

If a property experiences more than one interruption, each event should be counted.

W-R8 Number of third-party incidents (report at an organisation level): the number of unplanned interruptions to service caused by third-parties i.e. not the network operator or its contractor(s).

Asset condition - continuous measures, between 1 July 2024 to 30 June 2025, and every year thereafter

W-R14 % of wastewater pipes that have received a condition grading (report at an organisation level): the proportion (%) of pipes and associated equipment (both above-ground and underground), by length, which have received a condition grade using a standardised grading structure or methodology.

All pipes that have received a condition grade should be included, regardless of the mix of attributes being used to assign the grades. For example, not only pipes assessed using direct inspection methods should be included, but also pipes that have received a condition grading based on interpolation of age or other factors.

Provide information on the approach used to determine the condition grading in the comments field.

W-R15 % of wastewater pipes in poor or very poor condition (report at an organisation level): the proportion (%) of pipes and associated equipment (both above-ground and underground), by length, which have received a poor or very poor condition grade.

This value should be a percentage of all pipes, not just the percentage of pipes that have received a condition assessment.

The definition of poor and very poor condition should align with the definitions provided in the [IPWEA International Infrastructure Management Manual \(IIMM\)](#).

- **Poor condition** – consider renewal.
- **Very poor condition** – approaching unserviceable.

If your condition grades are different to the above definitions, specify the alternate condition grading approach or definition in the comments.

For asbestos-cement pipes, further guidance is provided in the definition of poor and very poor condition assets in the [Water New Zealand, National Asbestos Cement Pressure Pipe Manual](#). These categories may also provide guidance for other pipe materials and so are provided here for reference.

- **Poor condition assets** - less than 25 % of the life of a new asbestos cement pipe remaining.
- **Very poor condition assets** - pipe failure due to deterioration can be expected within a few years and some pipe failures may have already occurred.

W-R16 Average age of wastewater pipes (report at an organisation level): the weighted-average age of all pipes and associated equipment in the wastewater network. This should be calculated by using the length and age (in years) of pipes as follows:

$\frac{\sum(\text{length of pipe} \times \text{age of pipe})}{\sum \text{length of pipe}}$
--

W-R17 % of the wastewater network that has had CCTV inspections carried out in the last five years (report at an organisation level): the proportion (%) of pipes and associated equipment (both above-ground and underground), by length, which have received a CCTV inspection in the last five years.

Include CCTV inspections conducted following the inspection of new pipes, as well as any inspections conducted as part of maintenance or renewal works.

W-R18 % of above-ground assets that have received a condition grading (report at an organisation level): the proportion (%) of above-ground assets, of the kinds listed below, that have received a condition grade using a standardised grading structure or methodology.

- Wastewater treatment plant buildings, including ancillary buildings.
- Above-ground storage tanks, bunds or reservoirs.
- Pumping stations, including above-ground ancillary buildings (such as detached sheds).

The individual condition grading of components of each of these assets does not need to be considered.

Provide information on the approach used to determine the condition grading in the comments field.

W-R19 % of above-ground assets in poor or very poor condition (report at an organisation level): the proportion (%) of above ground assets that have received a poor or very poor condition, in alignment with the definition in the International Infrastructure Management Manual.

- **Poor condition** – consider renewal.
- **Very poor condition** – approaching unserviceable.

If condition grades used do not follow these definitions, specify the alternate condition grading approach or definition in the comments.

Further guidance is provided in the definition of poor and very poor condition assets in the [Water New Zealand, visual assessment manual for utility assets](#). The manual expands on the International Infrastructure Management Manual definitions, provided here for reference.

- **Poor condition assets** – either not working or is working poorly because of damage or deterioration. Condition or structure is poor or structural integrity is in question.
- **Very poor condition assets** – needs urgent attention.

The individual condition grading of components of each of these assets need not be considered.

This value should be a percentage of all assets, not a percentage of assets that have received a condition assessment.

3.4 Resources are used efficiently

Energy efficiency - continuous measures, between 1 July 2024 to 30 June 2025, and every year thereafter

W-RE1 Electricity use (kWh) (report at a network level): how much electricity (kWh) was used to operate the wastewater network (e.g. wastewater pumps and WWTP).

- **Do not** include energy use related to fleet vehicles or offices.

W-RE2 Energy use from other fuels (GJ) (report at a network level): how much 'non-electricity' energy (GJ) was used to operate the wastewater network (e.g. diesel, oil, gas).

Process emissions - continuous measures, between 1 July 2024 to 30 June 2025, and every year thereafter

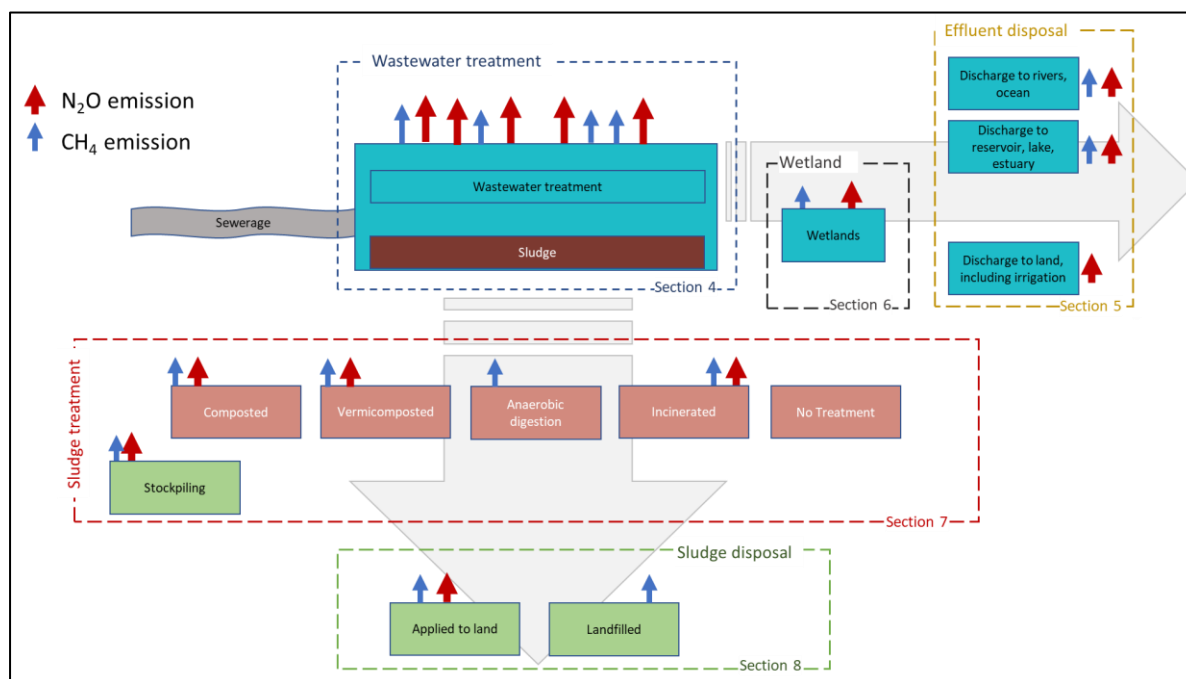
Greenhouse gas emissions may be produced by the WWTP.

The number of tonnes of carbon dioxide equivalent greenhouse gas emissions (tCO₂e) is calculated by summing the amount of methane and nitrous oxide.

Guidelines for accounting for these emissions are available in [Carbon accounting guidelines for wastewater treatment](#): CH₄ and N₂O.

Boundaries for the emissions sources from WWTP are shown in the figure below.

Include emissions from WWTP and treated wastewater disposal, and any other relevant emissions reporting categories relevant to your operations.



W-RE4 Wastewater treatment wetland emissions (report at a network level): number of tonnes of CO₂-equivalent emissions produced (tCO₂e/year).

W-RE5 Treated wastewater disposal emissions (report at a network level): number of tonnes of CO₂-equivalent emissions produced (tCO₂e/year).

W-RE6 Sludge treatment emissions (report at a network level): number of tonnes of CO₂-equivalent emissions produced (tCO₂e/year).

W-RE7 Biosolids disposal emissions (report at a network level): number of tonnes of CO₂-equivalent emissions produced (tCO₂e/year).

Biosolids - continuous measures, between 1 July 2024 to 30 June 2025, and every year thereafter

W-RE9 Production of biosolids (report at a network level): the total volume (m³) of biosolids produced each year by wastewater treatment (following processing, including dewatering and digestion processes) and prior to subsequent storage or discharge off-site.

W-RE10 % of dry solids in biosolids (report at a network level): what is the average % of dry solids in wet biosolids material, as listed above (%).

W-RE11 % disposal of biosolids to onsite stockpile ratio (report at a network level): the proportion of biosolids that remains onsite (rather than being removed), compared to the overall amount of biosolids produced in the reporting year (%).

W-RE12 Disposal of biosolids to landfill (report at a network level): quantity sent to landfill in the reporting year (tonnes).

W-RE13 Disposal of biosolids to composting and reuse (report at a network level): quantity of biosolids (tonnes) sent to be composted and reused, in the reporting year.

If biosolids are reused, please advise how and where, in the comments field.

Note: Landfill-capping is a form of reuse. However, sludge-reduction mechanisms and stockpiling are not.

W-RE14 Disposal of biosolids to other routes (report at a network level): quantity of biosolids (tonnes) sent to other locations, in the reporting year.

W-RE15 Date the pond was last desludged (if applicable) (report at a network level): enter the last year (YYYY) that the oxidation pond was last emptied of sludge, either in-part, or completely.

3.5 Services are resilient

Critical assets - static measures, as at 1 July 2024 for the first year, and every year thereafter

W-RL1 Have you undertaken an assessment to identify critical wastewater assets? (report at an organisation level): a 'yes or no' response, to show whether you have undertaken a comprehensive assessment to determine critical assets.

The [Infrastructure Asset Grading Guidelines 1999 – Water Assets](#) defines critical assets as '...an asset where failure would have significant consequences, either in the ability of the system to provide services to customers or the effect on the environment'. Critical assets are those for which the financial, business, or service level consequences of failure are sufficiently high, to justify a more rigorous approach to proactive inspection, maintenance and renewal (e.g. pumping stations, major collection wastewater pipes, or pipe-bridges). There are no specific rules for the identification of critical assets, so it is a matter of technical assessment and judgement, based on the level of risk arising and the consequences of failure.

More guidance can also be found in the [IPWEA International Infrastructure Management Manual](#) (IIMM).

Appendix 1: Abbreviations

Abbreviation	Description
Act	Water Services Act 2021
AEP	Annual Exceedance Probability - the probability that a given rainfall total accumulated over a given duration will be exceeded in any one year.
ARI	Average Recurrence Interval - the average or expected value of the periods between exceedances of a given rainfall total accumulated over a given duration.
CARL	Current Annual Real Loss
CCO	Council-controlled organisation
IPWEA	Institute of Public Works Engineers Australasia, who produce the 'International Infrastructure Management Manual.'
ILI	Infrastructure Leakage Index
Measures	Network Environmental Performance Measures – provided for in section 145 of the Act. For guidance purposes here, this means measures used to monitor certain key aspects of network environmental performance that Taumata Arowai is interested in.
Network Report	Network Environmental Performance Report – as per sections 141 and 147 of the Act. The data we receive on Measures will be summarised into the Network Report, which we will publish each year.
NPR	Network Performance Review, which was previously produced by Water New Zealand
SCADA	Supervisory control and data acquisition - is a system of software and hardware that allows organisations to monitor and control processes using real-time data - either locally or at remote locations.
tCO₂e	Tonnes of carbon dioxide (CO ₂) equivalent
UARL	Unavoidable Annual Real Losses
UFW	Unaccounted for Water
WWTP	Wastewater treatment plant

Appendix 2: Summarised extract of the Water Services Act 2021

Note: The following section is provided solely to assist with your understanding and should not be taken as legal advice or an interpretation of the legislation or your duties under the Act.

Sections 5, 11 and 140 define which network operators are required to collect and report on Measures.

Section 141 Why - Taumata Arowai must monitor and report on the environmental performance of networks and network operators, in accordance with the provisions of Part 3, Subpart 8 of the Act.

Section 142 How - Taumata Arowai may collect data on the environmental performance of networks and network operators.

Section 143 Compliance and penalties for network operators who fail to provide data on their Measures.

Section 144 Network Register which publicly identifies network operators and their networks.

Section 145 Measures that relate to networks and network operators.

Section 146 Record keeping requirements for network operators, in relation to Measures.

Section 147 Network Environmental Performance Report (Network Report) on the environmental performance of Networks and network operators. The Measures will be used to inform the annual Network Report.

Section 148 Reporting on the environmental performance of networks and network operators is supplementary to other public reports produced by Taumata Arowai.