Network Environmental Performance Report

2024/25

Water Services Authority
Taumata Arowai

Te Whakatauākī 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 the water is the health of the people
Water is a treasure that must be protected
We are water
Water is us

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Executive summary and recommendations

The **Network Environmental Performance Report 2024/25** provides New Zealand's first complete national picture of public drinking water and wastewater network performance. It draws on data from 559 public drinking water networks and more than 320 public wastewater networks, enabling comparison across regions and tracking of performance over time.

Key issues

The report identifies five main issues across the national water services system.

- **Wastewater networks are under pressure.** Operators reported 11,535 wastewater overflows in the past year, around 31 each day. These are commonly linked to capacity constraints, blockages, wet weather, infiltration and ingress, and poor asset condition.
- **Wastewater asset condition is poorly understood.** CCTV inspection levels are well below best-practice levels. While only 17% of metropolitan wastewater pipe length is reported to be in poor or very poor condition, this is likely to be an underestimate.
- **Wastewater consenting and compliance are weak points.** About half of wastewater treatment plants will need a new resource consent within 10 years, and some are operating on expired consents. Non-compliance with consent conditions appears widespread.
- **Drinking water performance remains uneven.** More than 32% of local government operators have at least one network in the very inefficient band of the International Leakage Index. Metering coverage is increasing but still uneven, and some network operators are taking significant volumes of water above consented limits.
- **Data quality limits confidence.** Data completeness has improved but key measures of supply, water loss, consumption, asset condition, overflows and financial performance remain affected by weak measurement systems and inconsistent reporting.

Implications of the issues

Taken together, these findings point to potential systemic risks for public health, environmental outcomes, network resilience and long-term investment planning.

- **Wastewater overflows pose public health and environmental risk.** Wastewater overflows increase risks to communities and receiving environments, particularly during wet weather.
- **Infrastructure resilience is under strain.** Poor asset condition, urban growth, capacity constraints and increasingly intense rainfall are compounding pressure across wastewater and stormwater systems.
- **Freshwater resources face avoidable pressure.** Water loss and uneven demand management increase pressure on water sources, especially where demand is growing or consents are expired, nearing expiry, or being exceeded.
- **Planning and investment are less targeted than they need to be.** Weak data and limited asset-condition information make it harder for operators, regulators and other decision-makers to identify risk, prioritise investment and monitor improvement over time.

The Authority's response

The Authority is strengthening its system oversight role in response to the issues identified in the report. Its response includes progressing the wastewater environmental performance standards, developing new National Engineering Design Standards, improved stormwater monitoring and future regulatory tools.

Where the evidence points to significant issues, the Authority will use its oversight role to signal where attention is needed by the organisations best placed to respond. This may include supporting more nationally consistent monitoring, enforcement and reporting of non-compliance.

The sector is entering a period of significant change

As water organisations are established, new financing tools become available and greater standardisation is introduced, there is an opportunity to improve network performance over time. This report provides an important evidence base to help new and existing organisations better understand performance, target maintenance and investment and support better long-term outcomes. Strengthening these networks will help protect our environment, safeguard public health and build greater resilience for the future.

Recommendations

The Authority recommends that network operators:

- prioritise routine and preventative maintenance to reduce wastewater overflow risk before issues arise.
- carry out public education campaigns where preventable blockages contribute to poor performance.
- target investment to the areas of greatest need, including meeting regulatory requirements such as discharge quality limits under the wastewater standards.
- address poor asset condition and the wet weather, capacity, infiltration and ingress issues that increase overflow risk.
- continue to reduce water loss, improve metering and pressure management where appropriate, and plan for future water availability, network renewal and growing demand.
- strengthen fit-for-purpose monitoring, inspection and data quality practices across drinking water and wastewater networks.

Other organisations have a role in strengthening the oversight of the network.

- This report and its underlying data can support the Commerce Commission to investigate the quality, accuracy, and completeness of sector information in more detail. This including how providers are performing, how they invest in and manage their assets, and whether requirements are needed to improve transparency and accountability in a way that delivers reliable, high quality services for communities.
- Regional Councils and the Ministry for Cities, Environment, Regions and Transport provides policy advice and administers legislation related to drinking water, wastewater and stormwater services infrastructure.
- The Office of the Auditor General has a role in auditing the financial statements of public sector organisations including local councils and any council-controlled organisations.

Contents

Tables

Figures

Part one: Introduction

This report is a step towards better understanding of water networks

The Water Services Authority has an active role in system oversight, standard-setting and public transparency in relation to the environmental performance of drinking water, wastewater and stormwater networks.

This report provides a nationally consistent view of how New Zealand's water services are operating and performing across all publicly-owned (council and government) water networks.

Improving our understanding of New Zealand's water services through year on year reporting

Year 1 – Set foundations	Year 2 – Learn and improve	Year 3 – Embed and apply THIS REPORT	Future reports – Extend
Started measuring the unknown You cannot monitor and compare without consistent information. This first report established a nationally consistent reporting framework.	**Expanding our understanding** Built on the experience of the first report to introduce more consistency to how our networks are monitored and reported.	**Illustrate key system risks** Focus on insights on key measures where they provide valuable insights on drinking water and wastewater networks.	
Prioritising effort First compulsory measures aimed at understanding drinking water networks. Invited optional waste and stormwater reporting.	**Growing our understanding** Extended compulsory measures to one-off information about wastewater networks and signposted future continuous monitoring measures to advance our understanding of these networks.	**New wastewater information** Treatment plant discharges, consent expiry and compliance, overflow causes, and overflow monitoring methods.	Over time, build a comprehensive picture of performance across all networks – drinking water, wastewater and stormwater.
Recommended a focus on improving our understanding As this was the first time New Zealand's water operators had to consistently measure and report their performance, there were significant gaps in information and capacity.	**Recommended water loss strategies implemented** This report included findings of an external review on data quality on key drinking water measures and highlighted importance of continued improvements in operators data quality. It also drew insights from the data, and made recommendations addressing water loss.	**Evidence based recommendations** This report starts to make year-on-year comparisons and includes recommendations to network operators on preventing key issues affecting New Zealanders, such as wastewater overflows.	

New Zealand is building a more mature picture of water services performance. This is the third year the Authority has published this report, and the first to include a complete set of wastewater information. As network operators and the Authority continue to improve how performance information is monitored, collected and reported, the value of the insights and recommendations in this report will continue to grow.

This evidence base is particularly important as councils implement the Government's Local Water Done Well reforms, including the establishment of new water organisations in some regions, with different funding, planning and service delivery arrangements. The findings in this report provide an important baseline for new and existing service providers to identify priority risks, target investment and track performance over time.

Our legislative framework guides and informs our approach to how we consider, assess and meet Treaty of Waitangi obligations through our Treaty obligations Framework. The Authority, along with the Māori Advisory Group, continues to monitor and assess how these obligations apply to our oversight role within the regulatory framework and acknowledges the role of iwi/Māori across the country.

This report focuses on the state of network infrastructure and how its performance affects the environment. It complements the Authority's Drinking Water Regulation Report, which provides an annual overview of the safety of New Zealand's drinking water.

How to read this report

This report is structured into seven parts.

- **Executive summary** (above) outlines the key findings and recommendations.
- **Part One** – this introduction, covers how reporting is developing over time and the scope of this report.
- **Part Two** – provides insights across the water system, showing how networks are interconnected, how their performance affects the environment, the scale and condition of the national asset base and financial performance.
- **Part Three** – expands on last year's drinking water data to provide insights into drinking water network performance, across water taken, supplied and lost, and the coverage and role of metering. It also covers the extent to which drinking water operators have complied with water-take consents.
- **Part Four** – provides data collected on wastewater for the first time, covering discharge treatment and receiving environments, overflows, monitoring and consent compliance.
- **Part Five** – briefly covers stormwater systems, including how they work, the growing pressures and risks they face, and how stormwater performance affects wastewater and drinking water networks.
- **Part Six** – assesses the comprehensiveness and reliability of data reported to the Authority, what has improved, and where important gaps or reliability concerns remain.
- **Appendix 1** – provides a full list of network operators that submitted data for the 2024/25 reporting year
- **Appendix 2** – provides comparisons of local government network operators against key performance measures in the 2024/25 reporting year.

How we prepared this report

The Authority collects information on the environmental performance of drinking water, wastewater and stormwater networks, and network operators through self-reported data provided under the Network Environmental Performance Measures and Guide 2025.[1]

The data captured in this report represents information on public (council, water organisation and Crown-owned operator) drinking water and wastewater networks covering the 2024/25 financial year (ending 30 June 2025).

We have a complete dataset this year with all 71 network operators submitting data. This is a significant milestone for public transparency. Further commentary on data completeness is included in Part Six below. The full dataset underpinning this report is available on the Authority's website.[2]

As well as the self-reported information, the Authority has also drawn on desktop research, information from regional councils, and other sources where applicable.

1 Network Environmental Performance Measures and Guide 2025 Network environmental performance reporting | The Water Services Authority - Taumata Arowai

2 Water services insights and performance reports | The Water Services Authority - Taumata Arowai

Part two:
Insights across the water system

This section of the report summarises what we know about New Zealand's water networks, where they are located and how they are being operated. While improvements have been made by operators in reporting information about their network assets, there remains room for improvement in the way they assess and monitor their network condition.

As well as drinking water asset condition information provided in previous releases of the Network Environmental Performance Report, for the first time we include asset condition information on wastewater. The findings of this are concerning, showing that most wastewater operators are not carrying out an appropriate level of inspections.

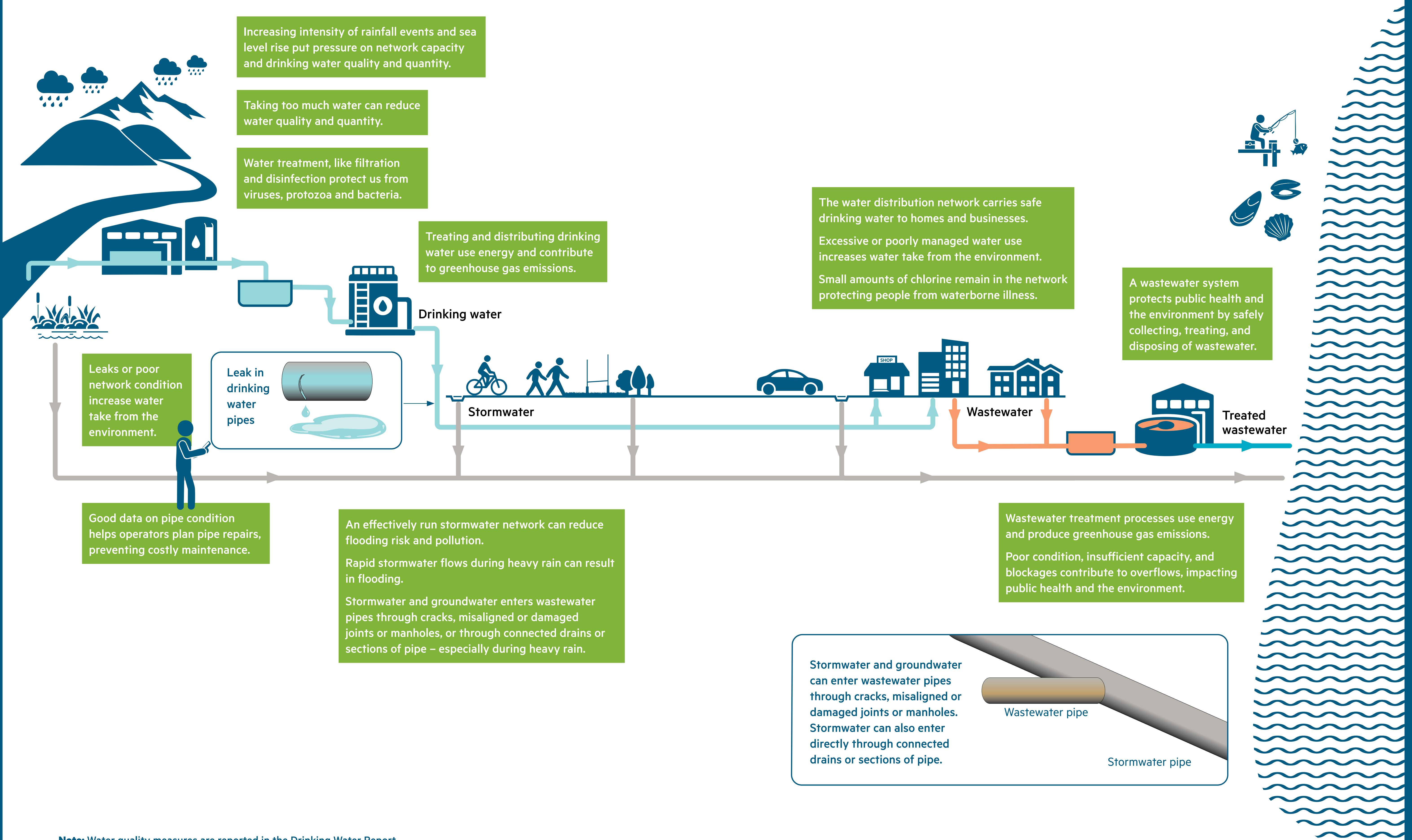
Understanding the condition of a network helps identify risks. It also helps network operators plan how and when assets should be maintained or renewed. This section of the report demonstrates that network operators are responding to the need to renew or replace aging infrastructure and are expanding networks due to the increased demand coming from urban growth. Future reports will monitor progress as operators catch up on infrastructure deficits.

Our drinking water, wastewater and stormwater networks are interconnected

The drinking water network distributes water to people, households or businesses, while the wastewater and stormwater systems move water and waste away.

While this report includes separate chapters that delve deeper into the performance of drinking water, wastewater and stormwater networks, it is also helpful to consider them together as these networks can impact on each other. For example, too much stormwater can cause wastewater systems to overflow into the environment, or pollution from wastewater and stormwater can affect the quality of drinking water sources.

How network performance affects the environment



Note: Water quality measures are reported in the Drinking Water Report.

What we know about New Zealand's water networks

Publicly owned services run by councils, water organisations and the Government cater for 84% of the population. This includes 331 wastewater and 559 drinking water networks. Table 1 shows that local government is the largest water services supplier and operator and these supplies tend to be more complex networks. Crown-owned operators generally treat and distribute water within a single property.

Table 1: Network operators that reported and the networks/populations they service

Network operator	Number responded	Drinking water		Wastewater	
		Total networks	Population servicing	Total networks	Population servicing
City and district councils (including council-controlled organisations)	66	427	4,686,500	326	4,477,000
Government departments	3	123	30,400	3	1,800
New Zealand Defence Force	1	7	10,500	2	N/A
Regional councils	1	2	600	0	0
Total	71	559	4,728,000	331	4,478,800

The scale of infrastructure varies depending on terrain and the population serviced

The scale of New Zealand's drinking water and wastewater networks is shown in Table 2. To meet the needs of New Zealand's dispersed population over difficult terrain, public drinking water supplies have a high number of reservoirs, pump stations and water treatment plants. Longer pipes are also needed to get drinking water further distances from sometimes multiple water sources in remote locations, compared to pipes to wastewater treatment plants that are often closer to population centres.

Table 2: Scope of drinking water and wastewater infrastructure in New Zealand

Type of water	# networks	# treatment plants	Length of pipes	Pump stations	# residential connections	# non-residential connections
Drinking water	559	687	56,000km	1,054	1,601,000	146,000
Wastewater	331	318	35,000km	6,317	1,568,000	103,000

As shown in Figure 1, treatment plants for metro urban areas service many more people than in rural areas. This means that network operators supplying urban areas will have costs spread over a larger number of ratepayers than those in provincial or rural areas.

Population density categories – metro, provincial and rural – used throughout this report are based on the list provided of councils by Local Government New Zealand and population size, as follows:

- Metropolitan (metro) – 90,000 or more
- Provincial – from 20,000 and less than 90,000
- Rural – less than 20,000.

Figure 1: Number of people per drinking water and wastewater treatment plants across different population densities[3]

	Metro	Provincial	Rural
Drinking water	Average one treatment plant per **25,000** people	Average one treatment plant per **4,300** people	Average one treatment plant per **1,400** people
Wastewater	Average one treatment plant per **64,000** people	Average one treatment plant per **6,300** people	Average one treatment plant per **1,600** people

Asset condition

Asset condition is often poor and not well understood, particularly for wastewater networks

Asset condition reflects the physical state or integrity of an asset at a specific moment in time. For the purposes of this report, the network assets are pipes, treatment plants, pumping stations and any other associated equipment. Understanding the condition of a network helps identify risks. It also helps asset managers plan how and when assets should be maintained or renewed.

Poor asset condition in drinking water networks may lead to pipes that leak, creating opportunities for contaminants to enter the drinking water. For wastewater networks, poor asset condition can result in potential for blockages and overflows.

Different network operators use different methods to assess asset condition depending on their funding and capability. Last year's external review undertaken as part of this reporting process identified nine different approaches to assessing condition – ranging from desktop research or modelling to physical inspections. Best practice is to combine different assessment methods, for example a desktop review, followed by performing field assessments on higher-risk assets to gain more information.

Analysis of the information provided by network operators shows that **15% of total drinking water and wastewater pipes are in poor condition**. While this implies most assets are in good condition, the results is likely limited given the reliability of assessment methods used and the relatively low levels of regular physical and/or CCTV inspections undertaken.

Drinking water condition gradings have improved but condition is still poor in many places

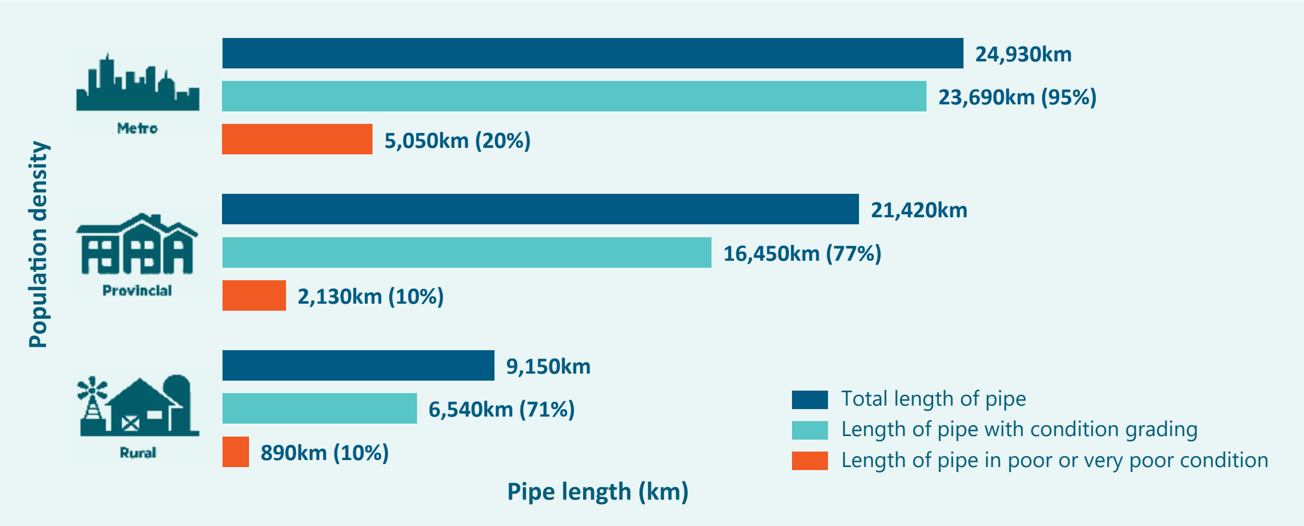
Figure 2 shows the differences across different types of local government network operators in the proportion of pipes they have been able to assign condition grades to, compared to the proportion they consider are in 'poor condition'. Compared to last year, councils reported that the total length of pipes that have had their condition graded has increased from 81% to 84%. This continued increase in the length of pipes with a grading (which was just 55% in 2022/23) is encouraging as condition grading will help network operators better target investment, prevent network failures and forecast their costs for renewing the network.

However, a sizeable proportion of the drinking water network is in poor condition – and we know this with greater certainty this year because of the greater extent graded.

3 Note: The Network Environmental Performance Report 2023/24 understated the number of people served by wastewater treatment plants in metro areas due to incomplete data from network operators. This has increased the number of people per wastewater treatment plant from 40,000 in 2023/24 to 64,000 in 2024/25.

Figure 2 also shows that network operators responsible for larger metro populations' drinking water pipes have generally assigned condition grades to more of their pipes (around 95%), compared to rural or provincial areas (between 71% and 77%).

Figure 2: Drinking water pipe condition



We hold relatively little information about the condition of drinking water supply networks owned by crown-owned operators. For those that reported:

- The Department of Corrections has indicated a full condition grading for water supply pipelines, with a low proportion (5%) in poor condition.
- The New Zealand Defence Force has reported that while most (92%) of its network is graded, over half (56%) of its network is in poor condition.
- The Department of Conservation (DoC) manages two networked supplies at Whakapapa and Aoraki. DoC did not report for Aoraki, as pipe condition assessments were not at that stage underway. Reporting on Whakapapa shows pipes are fully graded with 72% in poor or very poor condition, and an average age of 82 years

Insufficient inspections of wastewater pipes are carried out and condition is poor in many places

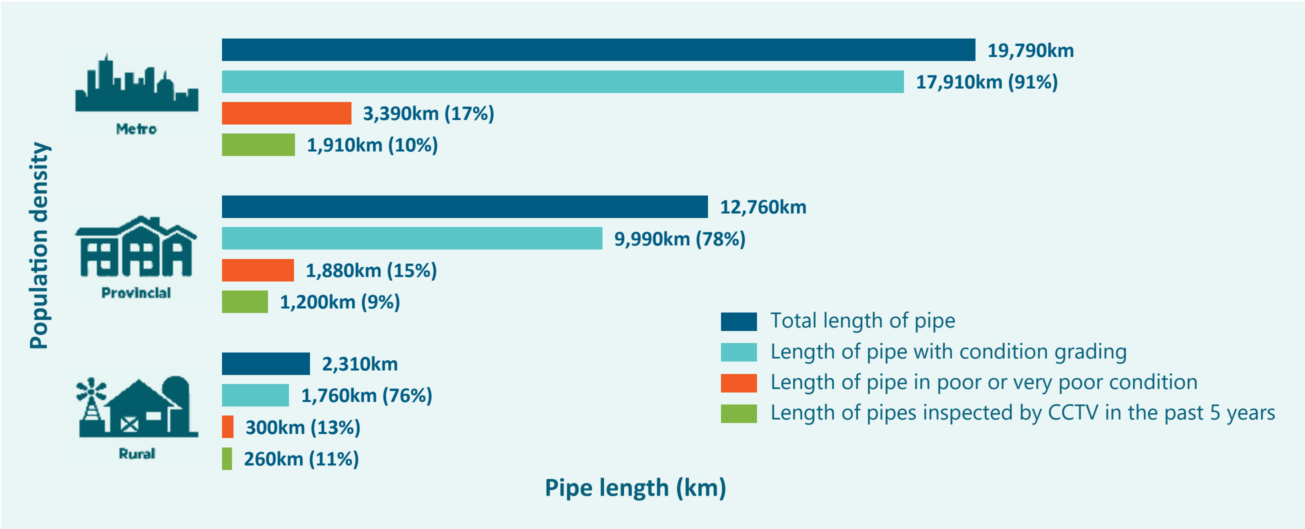
The reliability of the asset condition information for wastewater assets is of concern given that most councils do not adequately inspect their pipes. International benchmarking indicates CCTV inspection should be completed for 30% of pipe infrastructure every five years.[4] However, only 10% (3,370km) of the total wastewater network (34,890km) has been CCTV inspected in the last five years.

When broken down by population density, metro councils reported that 17% of their wastewater pipes – representing 3,390km of the network – are in poor or very poor condition (see Figure 3). Metro areas have the greatest volumes of wastewater and also the greatest levels of overflows.

The absence of good information on asset condition may mean that assets in poor condition are not prioritised for repair or replacement. The information we have received on wastewater overflows demonstrates that poorly maintained wastewater networks are vulnerable when put under pressure during periods of heavy rainfall.

4 New Zealand Gravity Pipe Inspection Manual: Water New Zealand

Figure 3: Wastewater pipe condition



Lower proportion of above-ground assets have been assessed

Above-ground assets are easier to access, and we would expect a higher proportion of these assets to have received an asset condition grading; this is not the case. Across all network operators, a slightly higher portion of pipes had been graded compared to their above-ground assets. On average, 75% of above-ground assets were assessed compared to 78% of pipes.

The information provided by network operators shows that asset condition assessments for above-ground assets have been completed by 23 councils for drinking water and 24 councils for wastewater, out of a total of 67 councils. This indicates that most councils may not have assessed the condition of their above-ground assets. The median of above-ground assets reported to be in poor condition is 4% – down from 5% last year.

Financial performance of drinking water networks

Network operators need to plan and budget for the expenditure required to operate, maintain and improve network performance. This includes timely maintenance, renewals and repairs to keep assets fit for purpose and to protect the integrity of drinking water, wastewater and stormwater networks.

Network operators have provided financial information on the actual operating and capital cost for the provision of drinking water networks for the year ended 30 June 2025.

Spending on operational and capital expenditure can vary year-to-year and be driven by different factors. For example, older infrastructure may require more operational maintenance or repair, while fast-growing areas may need more capital to respond to growth. The councils that spent the most on capital and operational costs were large network operators.

As shown in Table 4, 74% of drinking water capital expenditure across network providers is going towards renewing and replacing existing assets, compared to 26% targeted at meeting extra demand.

Table 3: Drinking water network capital expenditure

Capital Expenditure	July 2023 – June 2024	July 2024 – June 2025
Additional demand	$285m (27%)	$290m (26%)
Renewal and replacement	$782m (73%)	$826m (74%)
Total capital expenditure	$1,067m	$1,116m

Figure 4 shows that metro network operators spend about 1.5 times as much on capital expenditure as on operating costs, while provincial operators spend about 1.2 times as much. In contrast, rural network operators spend less on capital than on operating costs, with capital expenditure at about 0.5 times operating expenditure. Investment by metro councils is likely to help large urban areas begin addressing historical underinvestment in infrastructure, whereas rural operators may not be investing enough in renewing and replacing existing assets to address poor performing networks.

The funding challenge is greater in rural areas; the annual cost per person is 2.9 times higher than in metro areas, and smaller populations mean network performance is likely to improve more slowly.

Figure 5 shows the capital and operating costs per person per year by councils of different population density, and this information shows the significantly high cost per person in rural areas.

As new water organisations are established with ringfenced funding for water services, we expect to see investment in water infrastructure increased in coming years.

Figure 4: Drinking water network actual total operating and capital expenditure 2024/25

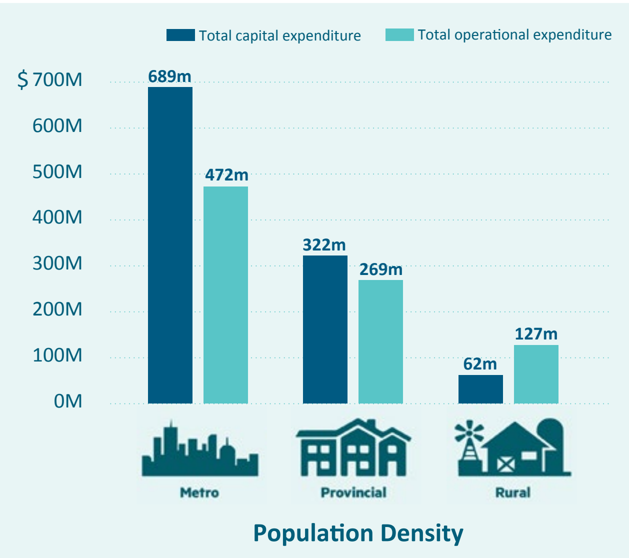
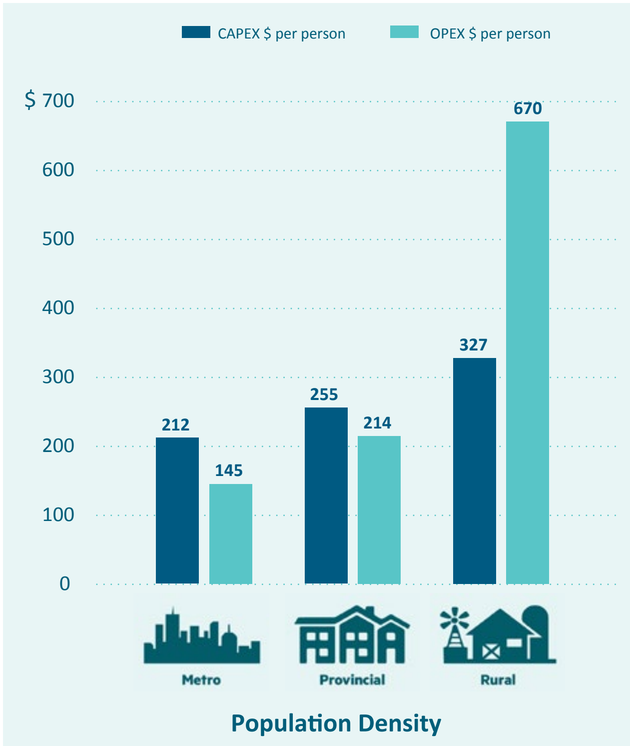


Figure 5: Drinking water network median actual operating and capital cost per person per year



The financial data for drinking water capital and operating expenditure is not reliable

For a breakdown of capital and operational expenditure council by council see Appendix 2.

When we look at capital and operating expenditure information supplied by individual organisations we see anomalies in the data. We continue to find examples where the quality of the data provided by network operators is either incomplete, has data entry error, or has significantly changed from year-to-year. We have shared the financial data in this report with the Commerce Commission, so they can support the improvement in data quality as the economic regulator for water services.

The Office of the Auditor general plays a role in auditing financial statements of public organisations including CCOs. The Deputy Auditor General's observations from audits of councils' 2024-34 Water Service Delivery Plans (long-term plans), noted that "The documents show that reporting on financial information for capital and operating expenditure across drinking water, wastewater, and stormwater is improving in scale and visibility, but remains uneven in quality, comparability, and usefulness for decision-making."[5]

We are only able to report on one year of data due to the quality of the financial data provided by network operators.

While we are seeing improvements in the quality of the financial information provided, there is a need for further improvement so that it is standardised and complete, and so the public can have confidence in the information being published in the Network Environmental Performance Report. For this reason, the financial information should only be used to provide an indication of the amount of actual spend on drinking water at a high level.

Commerce Commission and the Authority's complementary roles

The complementary roles of the **Water Services Authority** and the **Commerce Commission** support a more effective and efficient regulatory system for water services. The Authority works with, regulates and provides system oversight, to improve outcomes for drinking water safety and the environmental performance of wastewater, drinking water and stormwater networks.

The Commerce Commission's role is to regulate the economic performance of water services in the long-term interests of consumers. It does this by increasing transparency, monitoring performance, and using regulatory tools – to incentivise efficient investment, good asset management, and delivery of services that reflects consumer demands.

5 Controller and Auditor General 2025. Observations from our audits of councils' 2024-34 long-term plans.

Part three:
Drinking water network performance

A well-performing drinking water network is supported through timely asset renewals and appropriate pressure management. Effective network management ensures consumer safety and reduces the volume of water taken from the environment by reducing the volume of treated water required. It also lowers operational costs over time by shifting expenditure from costly reactive work to planned maintenance and renewal programmes.

Keeping good records of network repairs and maintenance activities is an essential part of understanding how the system performs and where to prioritise renewals. Network performance tools (such as water metering and pressure monitoring) can also help operators to better understand their network and intervene before failures occur. Drinking water performance depends on a multi-barrier approach, with multiple safeguards needed to make water safe and keep it safe from source to tap.

In this part, we review New Zealand's public drinking water networks based on data reported by network operators. We include an analysis of water-take consent data, and expand on last year's report by including data on the number and volume of exceedances of drinking water-take consents.

This section focuses on the extent to which drinking water-take stays within consented limits, how much drinking water is supplied, used and lost, and tools to manage and monitor drinking water flows across the network.

Drinking water abstraction and resource consent limits

Regional councils issue resource consents for water take and use

Water taken from the environment for the treatment and supply of drinking water, along with other uses, can affect the water quality and temperature of the water source, as well as the surrounding habitats and the stability of their ecosystems.[6]

While most of the volume of our water comes from surface water, around 71% of networks source their water from groundwater (i.e. from bores and springs).[7] The high volume of surface water is the result of the Auckland supply (AUC003), which supplies 1.37 million people with water abstracted from surface water sources.

To sustainably manage source water resources, network operators are generally required to hold resource consents for water take. These consents typically contain limits as to how much water can be abstracted within a given timeframe. Many water abstraction consents include conditions that reduce allowable water takes when surface water flow rates or groundwater levels are low. While the Authority does not collect data on the volume of water abstracted (taken) from the environment by water suppliers, information can be found through Stats NZ reports on water takes.[8]

Data on actual water takes is typically collected by the regional councils that are responsible for issuing, monitoring and enforcing consents. Regularly taking more water than allowed can reduce downstream flow rates of streams and rivers, as well as the sustainability of aquifers. The impacts of abstraction can be exacerbated by sustained periods of dry weather, particularly droughts and especially in summer. During dry periods, source water levels and flow rates decrease, while treated water use typically increases. This means that suppliers are more likely to exceed their water-take limits during droughts and periods of high demand.

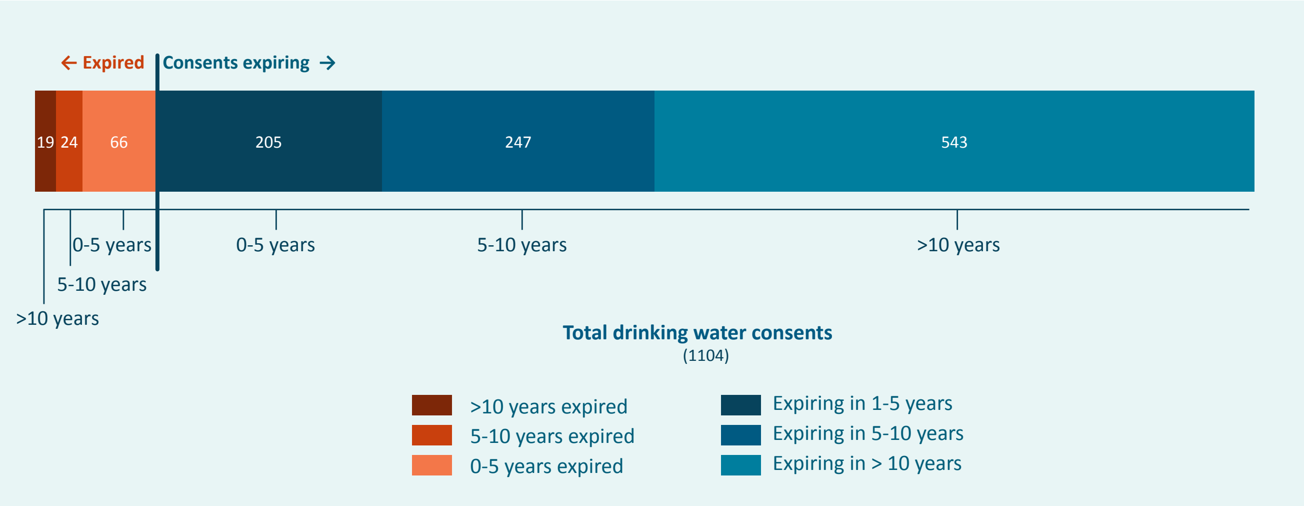
A large proportion of water-take consents have either expired or are due to expire over the next decade, as shown in Figure 6. Expiring abstraction consents represent a system risk for network operators, as they will need to consider whether to renew these consents or replace them with abstraction from alternative water sources. Consent renewals may include more conditions around environmental standards, and alternative water sources are likely to require significant investment requirements. As these consents come up for renewal, forward planning for future water use becomes increasingly important in the context of climate change, population growth and intensifying pressure on freshwater sources.

6 Issue 3: Changing water flows affect our freshwater | Ministry for the Environment

7 Network Environmental Performance Report 2023/24.

8 Maximum volume that can be taken annually, and the maximum rate of water take by primary use, primary source and region for consents that involve consumptive water takes. Consented freshwater takes | Stats NZ

Figure 6: Drinking water consent expiry



Consent non-compliances decreased slightly but some high-volume exceedances reported

There are two main types of consent conditions: abstraction flow rate at a given instance; and total abstraction volume within a certain timeframe. An instance of non-compliance with these consent conditions may be minor and technical, or more serious regarding potential harm. Both non-compliances and exceedances are reported here, noting that multiple exceedance events can occur within a single non-compliance event.

During the 2024/25 reporting period, operators reported that 8% of consents were not complied with, a decrease from 13% in 2023/24. This year, there were 77 consent non-compliances across 28 suppliers. Of the consent non-compliances, 30 were related to an exceedance in the total volume of water abstracted, and 47 to an exceedance in the allowable rate of water take. Thames Coromandel District Council had 14 non-compliances, the highest number of any operator (TCDC advises that they are minor and associated with population influx during the summer period).

The number of exceedances has remained similar to the previous year's reporting. In 2023/2024, operators reported 123 exceedances relating to abstraction consents, and in 2024/2025 there were 121 exceedances reported. Of these 121 exceedances, most (98) were from rural or provincial suppliers.

For the first time, operators reported the volume of water taken above consented limits. Twenty-one network operators reported a combined total of 644,810 m^3 of water abstracted beyond what consents allow. Although this is approximately 0.1% of the total water supplied to distribution networks in this reporting year, it is a similar volume equivalent to approximately 281 Olympic swimming pools. The largest exceedances were recorded by Hauraki District Council, with 302,435 m^3 or 43% of the total exceedance volume, and Ashburton District Council, with 258,374m^3 or 38% of the total exceedance volume.[9]

Drinking water supplied, used and lost

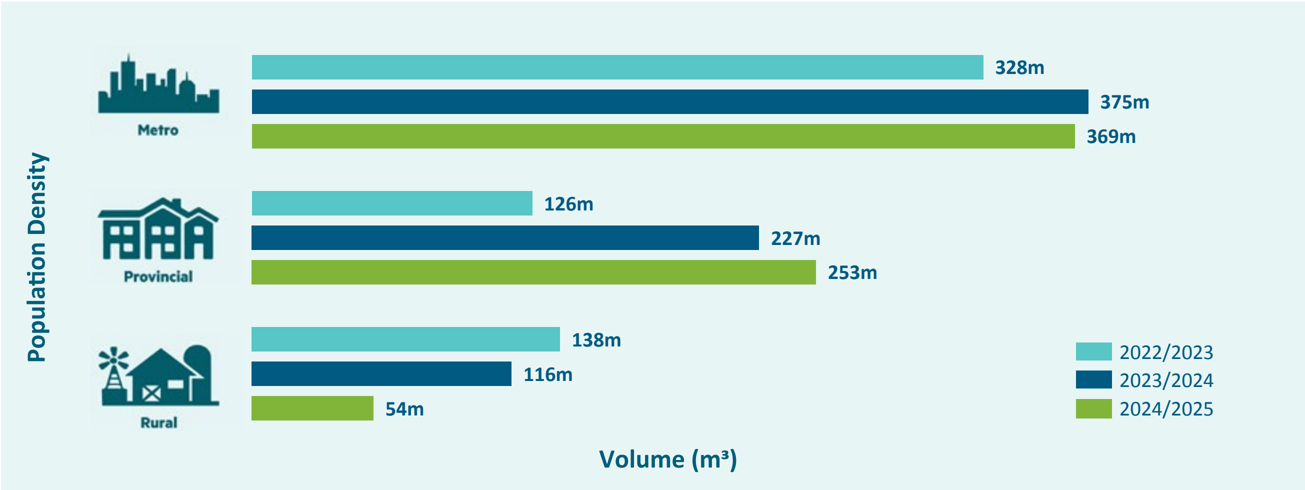
The volume of water supplied to distribution networks has decreased

The amount of water supplied from water treatment plants to consumers via distribution networks is dependent on a range of factors, including population growth, network management, pipe leakage, consumer behaviour and climate conditions. With only three years of data, the analysis in this section is limited to the short-term trends that we have been able to observe to date.

9 Hauraki District Council noted that the district was impacted by drought conditions. Hauraki Plains is supplied by the Kerepēhi and Waitakaruru water treatment plants. During drought conditions, abstraction limits at Waitakaruru meant Kerepēhi supplied most of the area's demand. Ashburton District Council advised that the Methven exceedance related to one of two linked sources supplying the same water system, including a mixed-use rural network. Water take from the other source fell below the consented limit.

Figure 7 shows the volume of water supplied to networks by reporting year and population density. In comparing the volume of water supplied in the 2023/24 reporting year with the current 2024/25 year, 220 supplies saw a decrease in the amount of water supplied to distribution networks. Of the 172 supplies that recorded an increase in supply, 25 had an increase of at least 50% from the 2023/24 year. In particular, we noted that there were large fluctuations in the reported amount of water supplied for rural and provincial networks. The response rate for data on drinking water supplied to networks was relatively high at 98% compared with 79% last year. Overall, the total amount of water supplied to drinking water supplies across New Zealand in 2025 was 677,926,163 m^3 – a 6.8% decrease from the previous reporting year.

Figure 7: Volume of water supplied to networks

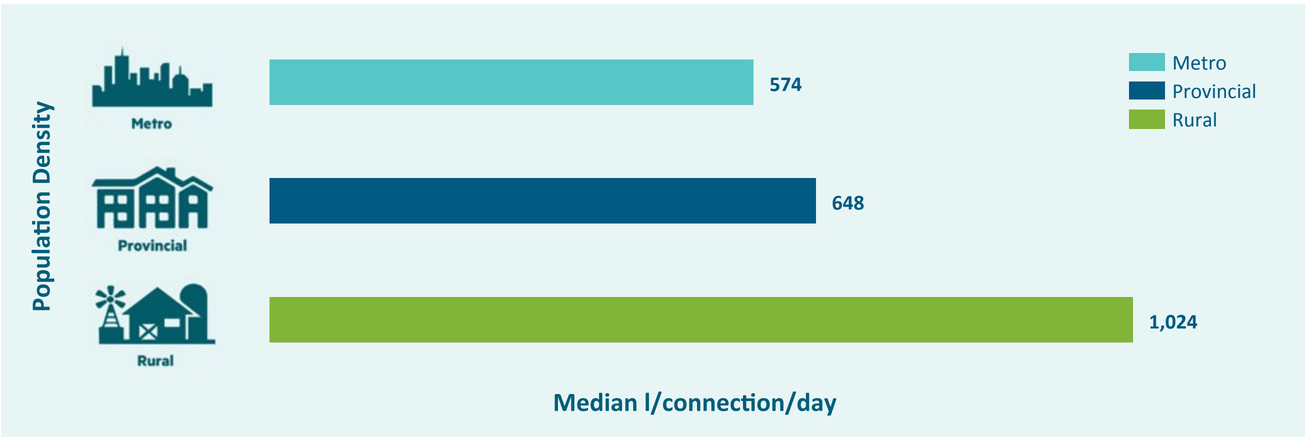


Median household water consumption per connection has increased

The overall median water use per household connection was calculated as 678 litres per connection per day in 2024 /25 compared with 604 litres per connection per day in 2023/24. Figure 8 provides a breakdown by population density.

We saw a significant increase in the number of network operators providing residential water consumption data – from 59% in 2023/24 to over 96% in 2024/25. However, there remain concerns around the accuracy of reported results from networks that have either limited or no automated water monitoring systems in place.

Figure 8: Water consumption for 2024/25



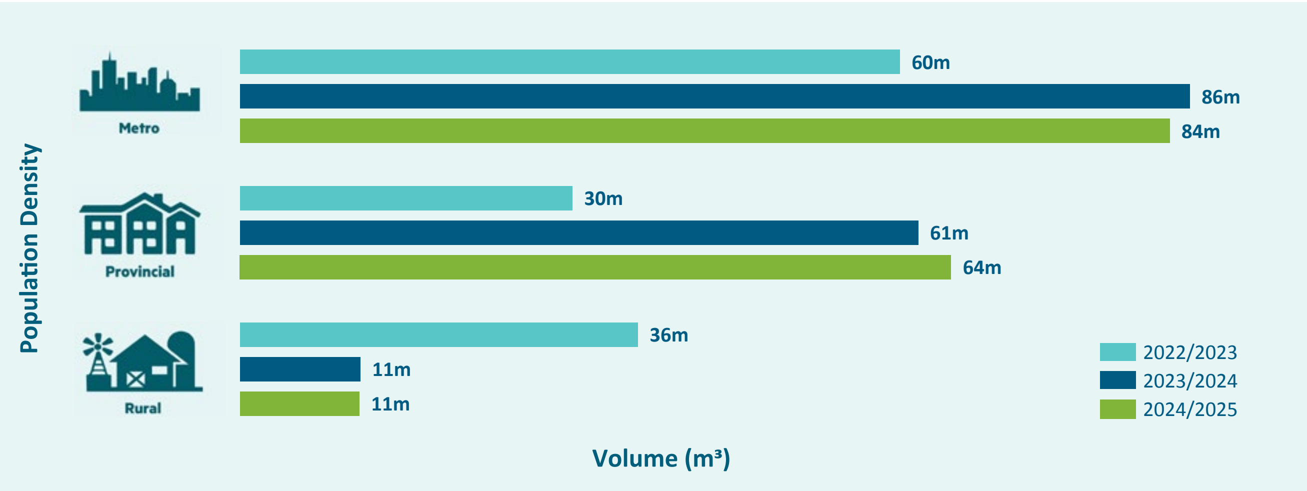
Estimating water loss in drinking water networks

Ensuring that we take no more water than is necessary helps to reduce pressure on the environment, as well as the costs associated with maintaining and operating the networks. However, some water loss is unavoidable as no network is perfect, so some seepage of water will occur through service connections and valves. Where networks are in poor condition, the volume of water lost through leaks and mains breaks is likely to be higher than in well-maintained networks.

The Authority is exploring options for reporting on water loss in the future, including reporting on "non-revenue water", which includes unbilled use by consumers. An example of non-revenue water is when water use is estimated in networks without metered connections.

The estimated volume of water loss by population density is provided in Figure 9. While this may look like an increase in reported water losses, we note that in many cases it instead reflects better, more accurate reporting methods rather than an actual rise in water loss. As more water meters are installed across drinking water networks, the data on residential water use will rely less on estimates and more on data that shows how much water is actually being used. As organisations improve their reporting each year, the accuracy of the information should also improve.

Figure 9: Estimated volume of water loss



Using the Infrastructure Leakage Index (ILI) to analyse network performance

Comparing the percentage of water loss should be treated with care as estimating water loss can be complex and will vary depending on different factors (such as the amount of water used).[10] As residential water meters are installed in networks across New Zealand, we will start to build a national-level view of this data. For the 2024/25 reporting year, we have reviewed water loss data in the context of infrastructure-related losses.

The ILI was developed by the International Water Association to consider the characteristics of network infrastructure that can affect water loss (such as the number of connections, pipeline length and pressure).[11] Because the ILI is a ratio, it can be used to compare water loss between operators, if the same calculation method is used. The ILI provides a high-level indication of network efficiency, and alongside condition assessments, it can help to identify the extent of maintenance, renewals or replacement work that may be needed.[12]

10 Water loss is a part of non-revenue water, which includes unbilled consumption by consumers. An example of non-revenue water is when water use is estimated in networks without metered connections.

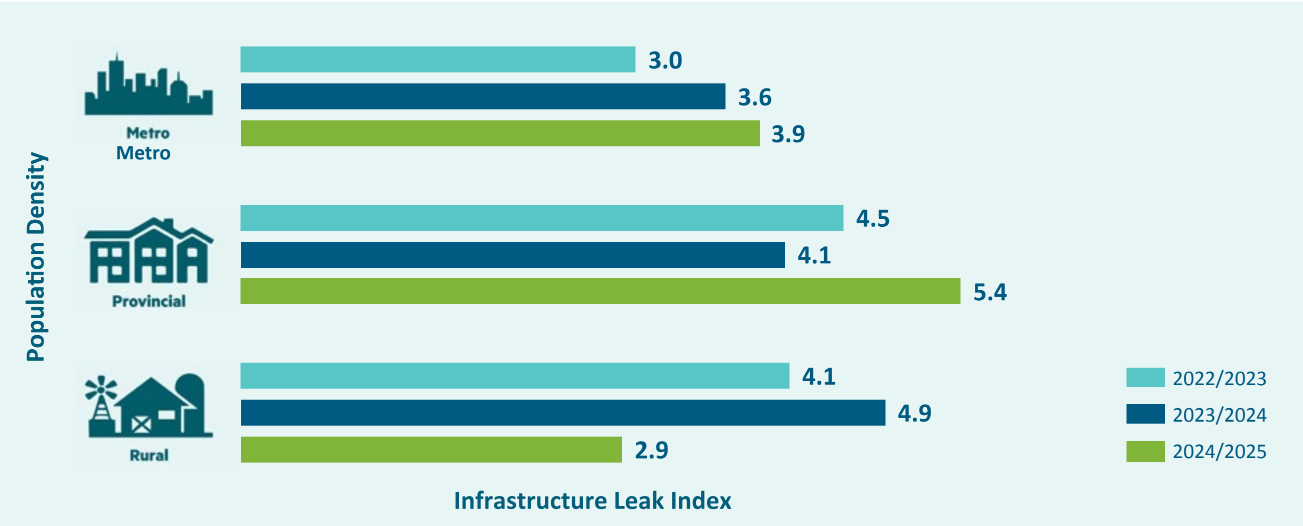
11 The ratio of the current loss (CARL) to unavoidable loss (UARL) is used to calculate the ILI. CARL measures the leakage from the network due to failures in the network like broken mains, leaking valves or overflows from reservoirs. This excludes water loss that was likely to be avoidable. UARL is the proportion of water loss considered to be unavoidable. This measure recognises there will always be some level of loss due to water moving through the network under pressure, even in a well-maintained and good-quality network.

12 The Infrastructure Leakage Index (ILI) is included in this report as an internationally recognised indicator of drinking water network leakage performance. However, there may be other suitable performance measures that we may focus on in future. The Authority will continue to review the use of ILI, alongside other measures of water loss and network performance, for future editions of this report.

An ILI greater than 4 and less than 8 indicates poor leakage management, and an ILI of 8 or higher indicates very inefficient use of resources.

Figure 10 provides a summary of council performance on the ILI, and Figure 11 shows the ILI by district on a map. Of the 271 council networks that reported data in both 2023/24 and 2024/25, 60% showed a decrease in the ILI from the previous reporting year. While 27 % of networks reported an ILI below 2, 36% had an ILI of 4 or higher. The average Metro ILI is based on reporting networks only, with one outlier excluded because it disproportionately skewed the average and was considered not to be a credible result. Although a significant decrease in the ILI for rural networks was observed – from 4.99 in 2023/24 to 2.99 in 2024/25 – we note that this may not represent a substantial lift in network management capability and asset condition. Instead, it shows an increase in the quality of data being captured and reported.

Figure 10: Average ILI 2023-2025



Trends in drinking water network management

Good network management helps to reduce water loss

Effective network management involves monitoring, operating, controlling, planning and maintaining the drinking water system to ensure water is delivered at the correct pressure, in the right quantity and at a safe quality. Good practice includes monitoring flows to identify leaks, ensuring pipes are correctly sized and flushed to maintain water quality, and managing pressure to reduce wear on the network and extend asset life.

Poor pressure management can affect the supply of water to consumers

Pressure management refers to the continuous monitoring and control of water pressure within the network. Because pressure varies as households and businesses use water, monitoring provides essential information on how the system performs under different conditions. Managing pressure is also important for managing water loss – as it will increase or decrease in line with the amount of pressure applied.

Good pressure management of networks can help to reduce the number of unplanned interruptions, and ensures that the condition of network assets aligns with their expected lifespans. On the other hand, poor pressure management can create significant risks:

- **low pressure** can result in inadequate supply to consumers and increase the likelihood of backflow, which may allow contaminants to enter the network
- **high pressure** can increase the likelihood of pipeline failures, particularly where pipes already have defects, deterioration or are subject to pressure fluctuations, leading to service disruptions, water loss and costly repairs.

Accurate pressure control relies on well maintained and calibrated equipment. The Fire and Emergency (FENZ) Code of Practice requires a minimum of **100 kPa**.

This year's data shows that of the 306 network operators with reported pressure data, only 14 are operating at their reference level. Eighty-four percent are operating at pressures above their reference level and 11% below reference. Table 5 below shows the average system pressures by population density.

Figure 11: ILI by district

Infrastructure Leakage Index (ILI)

Median ILI score per district

Band / Definition	Districts
Less than 0.5 or greater than 40 Unlikely to be real	0
Less than 2 Reducing further loss may be uneconomic	13
2-4 Water loss can be improved	23
4-8 Poor leakage management	15
Greater than 8 Very inefficient use of resources, indicative of poor maintenance and system condition. Leakage reduction programmes imperative and a high priority	6
No data	

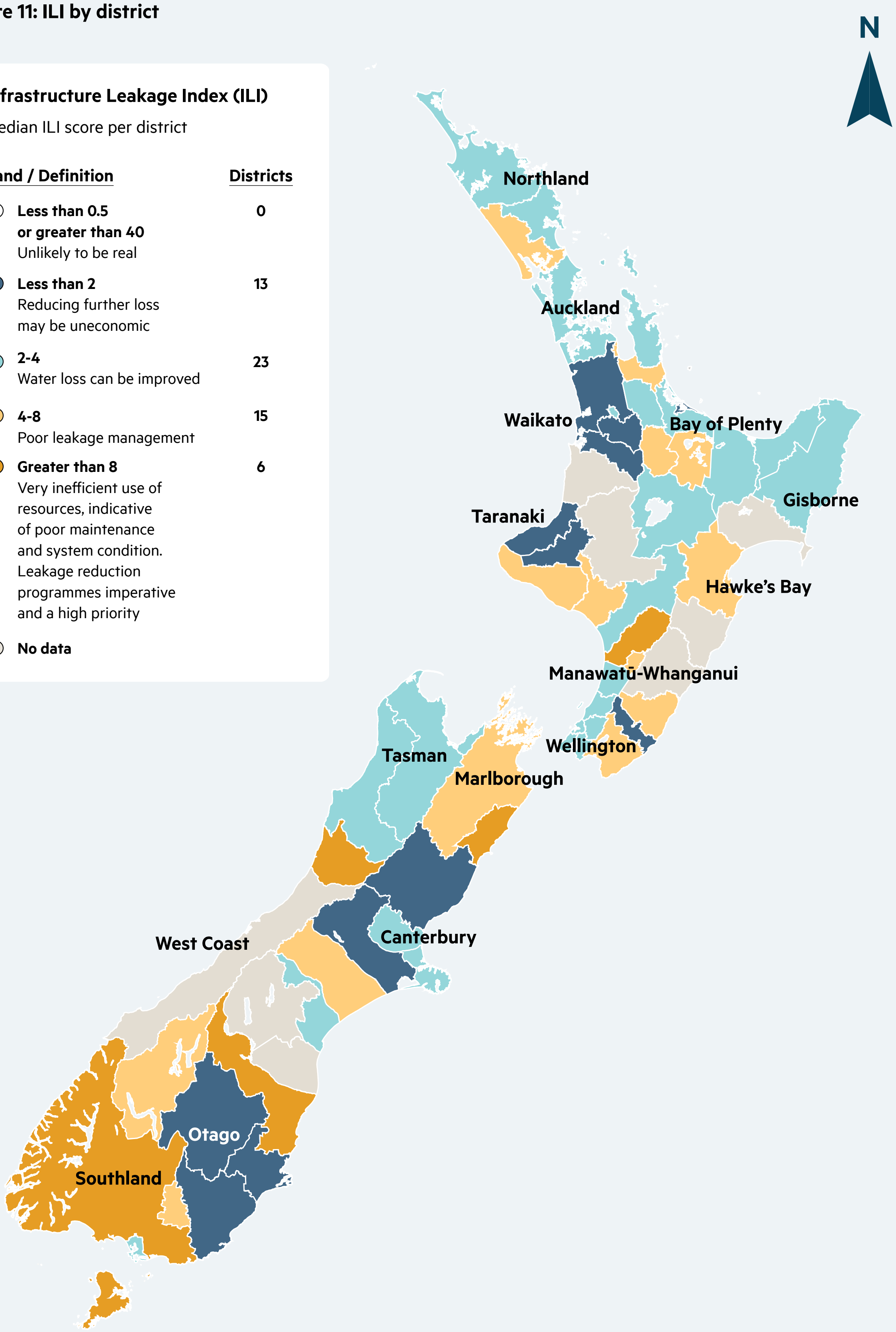


Table 4: Average system pressure compared with reference levels

Population density	# Supplies	Average System Pressure (kPa)	Average Reference Level (kPa)	# Supplies Above Reference	# Supplies Below Reference	# Supplies At Reference
Metro	33	542.7	263.5	33	0	0
Provincial	203	458.6	222.7	180	15	8
Rural	58	422.9	242.8	39	15	4
Government	10	352	356.3	6	4	0
Regional	2	300	300	0	0	2

Notably, all 33 of the metro suppliers are operating at pressures above their reference levels. This ranged from the Longburn supply in Palmerston North operating at 37 kPa above reference, through to the West Taieri supply in Dunedin operating at 900 kPa to 600 kPa above this network's reference.

Metering can help reduce demand and manage networks but coverage remains uneven

Implementing water meters provides network operators with a more accurate measure of the water supplied and consumed. By understanding the actual water consumed, network operators can put in place initiatives to manage the amount of water supplied to networks. Volumetric charging – where consumers are charged for water based on the volume of water used – can provide an incentive to consumers to reduce their use.

Meter data can also help operators identify how much water people use and an indication of where leaks may be occurring. This information supports better prioritisation and repair of leaks, targeted initiatives to reduce demand, more effective analysis of network performance, and allocation of costs to users where charging arrangements are in place.

Metering is a key enabler of better network management, and when implemented along with volumetric charging can help to reduce demand. However, coverage of water meters across New Zealand remains uneven.

Of the 69 councils and crown-owned operators, 25 have water meters fitted on at least 50% of the residential connections in their drinking water networks, and 19 have them on at least 90% of residential connections. Overall, there are 980,273 residential meters in drinking water networks across New Zealand.

Table 5 shows that for metro and provincial organisations that fall within this category, the estimated water consumed per connection is in most cases below the median level of water consumed per connection for the network as a whole (678 litres per connection per day for residential areas). This is an indication of the value of implementing water meters in reducing water consumption.

Table 5: Organisations with water meters installed on at least 90% of residential network connections

Population Density	Residential connections with meters	Estimated use (L/connection/day)
Metro		
Christchurch City Council	94%	440
Tauranga City Council	100%	448
Watercare	100%	568
Whangarei District Council	100%	441
Provincial		
Central Otago District Council	100%	793
Kāpiti Coast District Council	100%	495
Marlborough District Council	100%	521
Masterton District Council	94%	863
Nelson City Council	100%	455
South Wairarapa District Council	100%	590
Tasman District Council	95%	564
Waikato District Council	100%	557
Waipā District Council	100%	548
Western Bay of Plenty District Council	100%	426
Whakatāne District Council	100%	656
Rural		
Carterton District Council	100%	586
Hauraki District Council	100%	1,781
Kaipara District Council	100%	1,322
Rangitikei District Council	100%	1,104

Table 7 shows there was only a 5% increase in metro residential water meters from 2023/24 and 2024/25, with small increases in provincial and rural networks.

Table 6: Number of water meters installed

	2023/24		2024/25	
Population Density	Residential Meters	Non-Residential Meters	Residential Meters	Non-Residential Meters
Metro	64% (527,600)	86% (56,700)	69% (705,000)	91% (68,300)
Provincial	49% (235,600)	72% (38,400)	49% (240,600)	81% (42,000)
Rural	40% (30,500)	38% (5,000)	40% (34,700)	42% (6,500)
Total	57% (793,700)	75% (100,100)	61% (980,300)	82% (116,800)

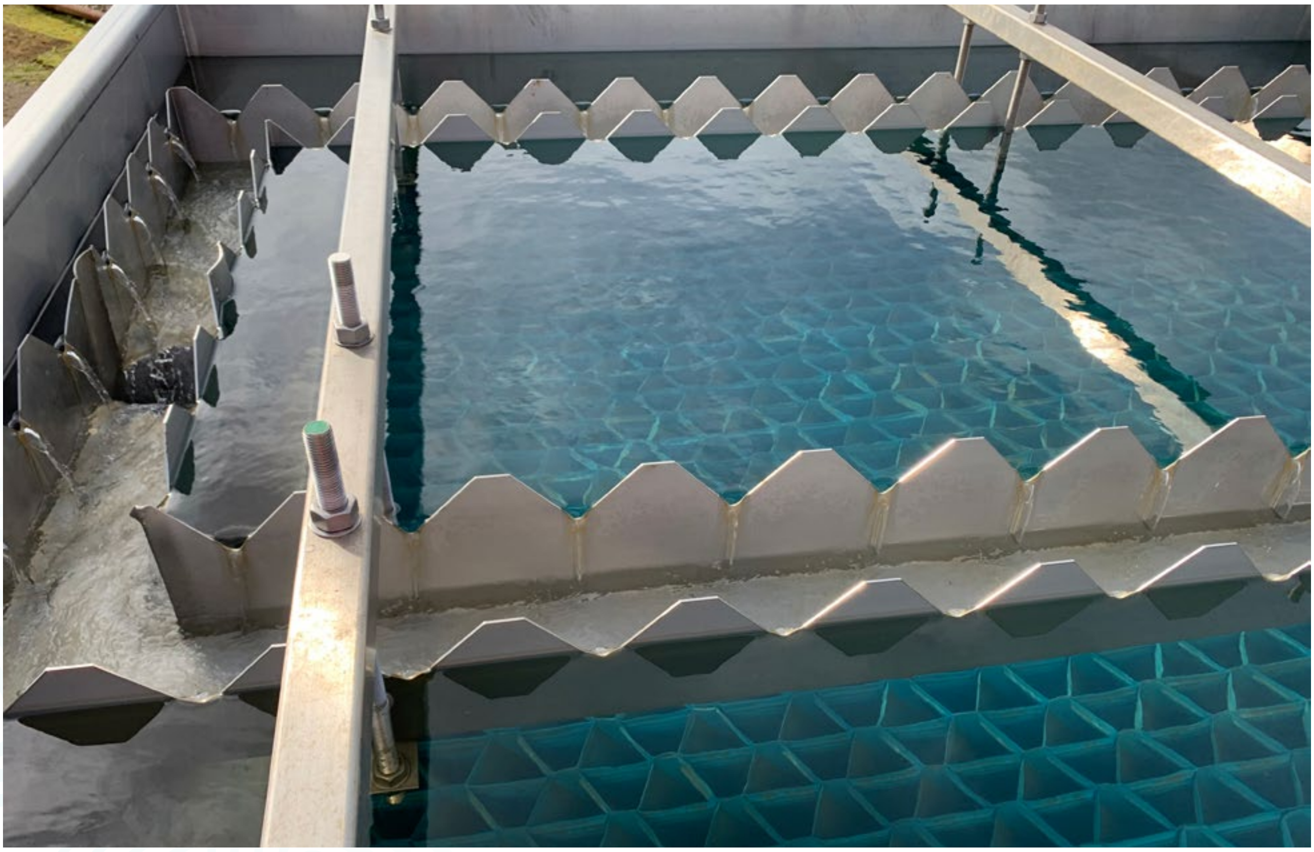
Planning ahead for future impacts to water infrastructure

There are a growing number of challenges facing water operators that are placing pressure on the supply and delivery of drinking water. These include climate change and extreme weather events affecting source water supplies, as well as population growth and increased demand from consumers. To ensure a sufficient and reliable water supply, planning to respond to future growth and risks is an important part of network management.

With over 240 water-take consents due to expire in the next 10 years, water operators will need to consider whether the existing abstraction limits will be sufficient for future population changes, or if new water sources may be required to meet the demands of the network.

Managing the volume of water consumed is a key part of supporting the sustainable management of water sources. Network management tools (such as metering and volumetric charging) can help operators to understand consumer behaviour by providing accurate usage data.

Network operators can also reduce the volume of water abstracted from their sources by managing water loss in distribution networks. The ILI provides operators with an understanding of how the condition of their network affects the rate of water lost. Some factors (such as high operating pressures) can result in shorter lifespans of network assets, resulting in more frequent mains breaks and service disruptions. By understanding the ILI of their networks, operators can identify where preventative maintenance work may be required to reduce the volume of water lost.



Part four:
Wastewater network environmental performance

A well-performing wastewater network protects public health and the environment by safely collecting, treating and disposing of wastewater. However, the performance of network infrastructure has been facing ongoing challenges as a consequence of poor asset condition, consent compliance and a range of other factors. This has resulted in patchy and sometimes poor environmental outcomes over time, together with ongoing risks to public health. These risks have affected water quality, recreational activities and food gathering and production, including the ability of iwi/Māori to engage in tikanga practices.

The Water Services Authority has prioritised an ongoing work programme to respond to these challenges. In 2025, the first set of wastewater environmental performance standards came into force, targeting wastewater treatment plant consent conditions, risk management for network overflows, and beneficial reuse of the biosolids from wastewater treatment.

As the standards are progressively implemented through the upgrade and re-consenting of network infrastructure, it will result in improved environmental performance, better assessment and reduction of public health risks, increased compliance with consents, and benchmarking of performance through higher-quality information.

This section profiles the environmental performance of New Zealand's public wastewater networks based on data reported to us by network operators against our first set of wastewater performance measures, including:

- discharges from wastewater treatment plants, including treatment levels and receiving environments
- compliance with resource consent conditions, including patterns of enforcement over the past three years
- wastewater overflows – their drivers, impacts and implications for network management
- overflow monitoring and calculation methodologies – how operators detect, estimate and report on overflows.

Discharges from wastewater treatment plants

Wastewater treatment plants are the primary mechanism through which wastewater is treated and discharged to the environment. There are a broad range of different treatment arrangements servicing cities, towns and small communities throughout New Zealand, discharging to a broad range of environments, including the ocean, estuaries, freshwater bodies and to land.

Conditions in resource consents set the requirements for treatment. There is very high variability in existing consent conditions, with some treatment plants having few or no treatment requirements, and others having strict requirements for certain measures. This variability compounds the challenges facing the overall system and management of environmental performance and public health outcomes, and means we do not have a nationally-consistent picture of performance.

Expiry and re-consenting of wastewater treatment plants

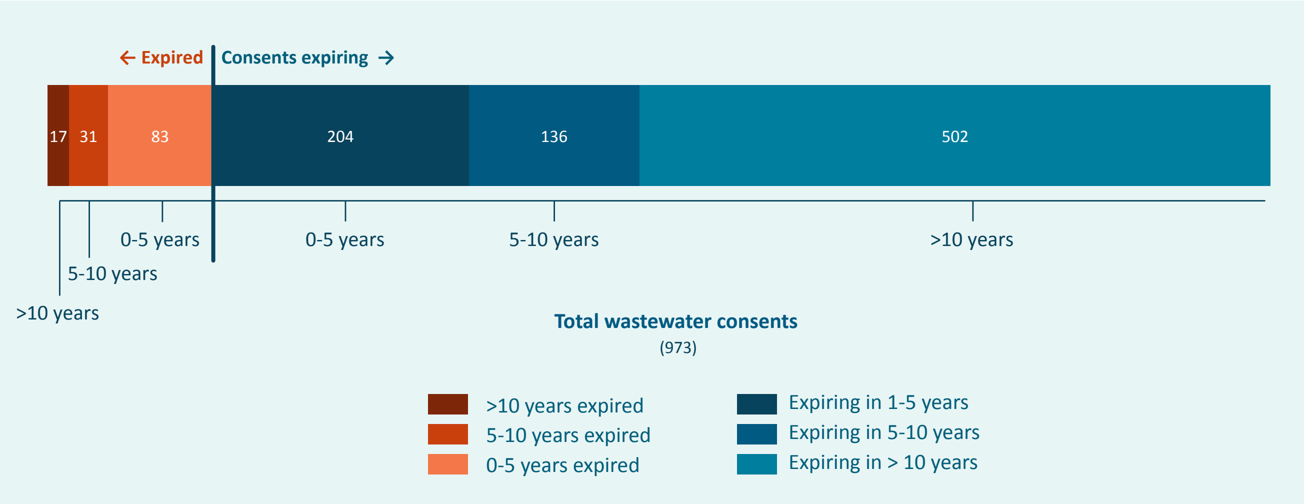
The re-consenting of wastewater treatment plants is a significant challenge for New Zealand. A large proportion of plants are currently operating on expired consents. Alongside this, there is a bow wave of consents expiring over the next decade, with a significant proportion of publicly owned treatment plants requiring re-consenting over this time.

In total, network operators provided data on 973 consents held for wastewater treatment plants. Figure 12 shows the range of expiry dates for wastewater consents. Approximately 22% of wastewater treatment plants are operating on expired consents, with approximately 48% of plants requiring re-consenting within 10 years.

Wastewater treatment plants are operating on expired consents for an average of 5.5 years – some for more than 20 years. In some cases, the original consents were granted prior to the enactment of the Resource Management Act 1991. Where plants have been operating on expired consents for a long time, there are greater risks to public health or the environment because performance requirements were significantly lower at the time the consent was originally granted.

New national wastewater environmental performance standards will bring certainty and consistency to the sector and set limits on the timeframes for re-consenting of wastewater treatment plants – a new consent must be issued within two years of its expiry.[13] Alongside this, where a consent is granted that complies with the wastewater environmental performance standards framework it must be issued for 35 years.

Figure 12: Wastewater consent expiry



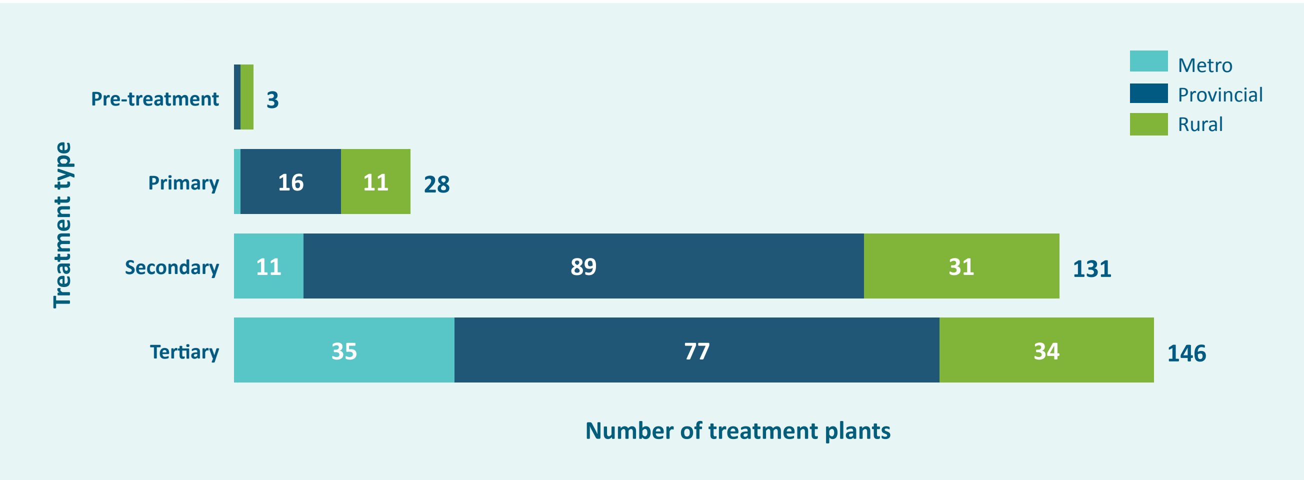
Levels of treatment

Wastewater treatment varies widely across New Zealand and ranges from the basic screening of particles through to advanced biological treatment, nutrient reduction or pathogen treatment (e.g. via ultraviolet treatment).

Wastewater treatment is broadly categorised into three stages: **primary** treatment (physical removal of solids and settleable material), **secondary** treatment (biological removal of organic contaminants), and **tertiary** treatment (advanced polishing processes such as filtration, nutrient removal and ultraviolet disinfection to achieve higher effluent quality).

Most of the wastewater plants that are servicing New Zealand's cities have tertiary treatment in place. By volume, a significant proportion of wastewater that is produced in metro areas is treated to a tertiary level (>99.6% of discharge volume).

Figure 13: Number of wastewater treatment plants by treatment level



13 From December 2028 onwards per section 2 of the regulations.

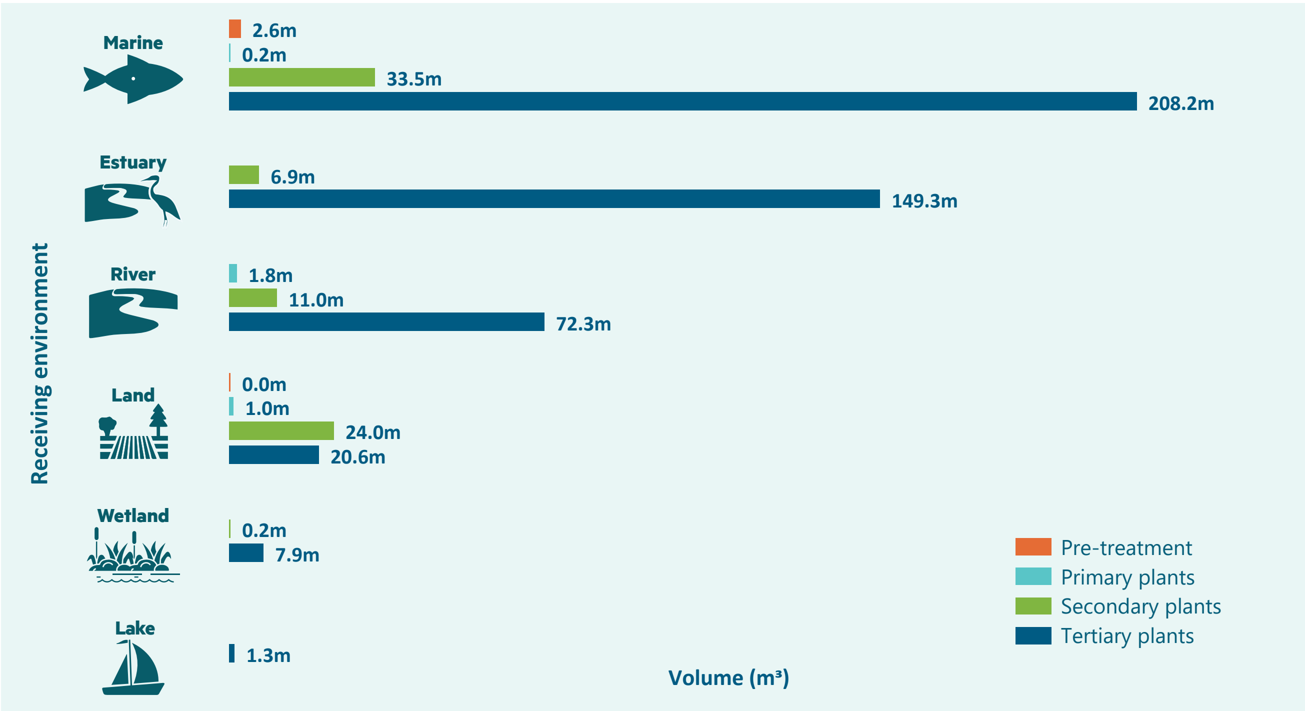
Discharge location

The coastal environment is the main receiving environment for wastewater

Figure 14 shows the volume of discharge for wastewater treatment plants in relation to different types of receiving environments (such as marine environments, freshwater bodies or land). This data illustrates the points below.

- The bulk of discharges from treatment plants goes into the coastal environment, with 74.1% of all wastewater volume discharged to marine and estuarine areas. This is consistent with the geographic distribution of many of New Zealand's cities and towns on the coast, with discharge arrangements to open ocean, nearshore, river mouths or estuaries.
- River-based receiving environments account for 15.1% of discharge volume.
- Discharge to land (8.4%) is low relative to other discharge locations. This is consistent with this type of treatment and discharge being employed primarily for smaller communities.
- Only 0.2% of treated wastewater is discharged to lakes. This is consistent with the vulnerability of lakes to all types of discharges, including from wastewater treatment plants.

Figure 14: Discharge volume by receiving environment



Compliance with resource consent conditions for discharges

Non-compliance with consent conditions is widespread and compliance action is variable

Compliance of wastewater treatment plants with consent conditions over previous years, together with compliance action taken by regional councils, has been an ongoing focus. This includes work commissioned by the Department of Internal Affairs into regulatory compliance, and technical advice commissioned by the Water Services Authority as part of the development of wastewater environmental performance standards.

Following a number of high-profile incidents[14] relating to publicly owned wastewater treatment plants and networks, the Authority requested information from all regional councils about regulatory compliance and enforcement levels over the past three years (2022 to 2025). National-level information indicates non-compliance with wastewater resource consent conditions is widespread across the three-year period, with the practice varying substantially between regions in how non-compliance is recorded and what enforcement action is taken. This information does not form part of the data collated as part of the Network Environmental Performance Measures and is too inconsistent to report this year.

14 These incidents included the Moa Point wastewater treatment plant incident in February 2026, ongoing non-compliance of the Bromley treatment plant, and regular overflows from the Warkworth wastewater network into Mahurangi harbour.

However, in line with its system oversight role, the Authority intends to increase its focus on how compliance is monitored and enforced by regional councils for future reports.

Wastewater overflows and bypasses

Overflows happen when untreated wastewater is discharged from the reticulated network to land or water.[15] Overflows can be caused by a range of factors, including those below.

- **Volume of water exceeding network capacity** – this can occur during heavy rainfall when there is more water than pipes can carry.
- **Blockages** – such as build-up of fat and oil, tree roots or flushing inappropriate products, which can prevent wastewater from flowing properly.
- **Plant or equipment failures** – including broken pipes and pump breakdowns, or failures arising from inadequate equipment or maintenance.
- **Combined capacity exceedance** – combined wastewater and stormwater pipes can overflow during heavy rain because both systems use the same pipe network – this only occurs in a small number of areas in New Zealand.

Wastewater overflows can pose a significant risk to public health and the environment and can result in communities not being able to swim or collect seafood in particular areas. The discharge of untreated wastewater in public places (e.g. onto a road or park) can pose a high risk to human health.

Bypasses happen when untreated or partially treated wastewater is temporarily and intentionally diverted from a wastewater treatment plant and is discharged into the environment. For example, this can occur during maintenance or during heavy rainfall events.[16] Bypasses are built into the wastewater network to prevent sensitive treatment plant equipment from being damaged.

This is the first year we have received information on the number of wastewater overflows and the factors that contribute to them. This information enables us to identify the most common drivers of overflows, and what they imply for network management and reducing environmental risks.

While data on bypasses was collected and is available through the public dataset released on the website, detailed commentary on them is not included in this report because of reliability concerns with the data. There may not be a sufficiently clear understanding of the definition of bypass, which is something that requires particular focus in future years.

Note: The February 2026 Moa Point wastewater treatment plant incident, where high volumes of untreated wastewater were discharged to the sea, fell outside the reporting period for this report. This incident is subject to an ongoing inquiry. Only overflows or bypasses that occurred during the 2024/25 reporting period are included in the data reported here.

Capacity constraints are a key driver of overflows

A national look at wastewater overflows reveals a clear pattern in metro areas: capacity constraints are a leading driver of overflows, especially in our largest urban centres. Figure 15 covers the contributing factors leading to overflows broken down by population density. At first glance, blockages appear to dominate in metro areas, with 17.9 blockages per 100km of pipe, but a closer examination tells a different story.

A large share of overflows in metro areas appear to fall into the multiple causes category, recorded at 12.6 overflows per 100km. This is because almost all of these come from Watercare, which reported 2,433 overflows attributed to 'other' factors. A high proportion of these overflows reportedly occurred in locations where capacity is constrained and there are combined wastewater and stormwater connections, indicating that capacity and network design are underlying drivers.[17]

When extreme outliers are removed, rural areas consistently show the lowest numbers of overflow rates across most categories.[18] This may be reflective of lower population density, reduced pressure on infrastructure, fewer large-scale stormwater interactions and reduced monitoring due to a lack of resources. It also reinforces a key point: urban networks face the greatest strain, both from population demand and from the increasing intensity of rainfall events.

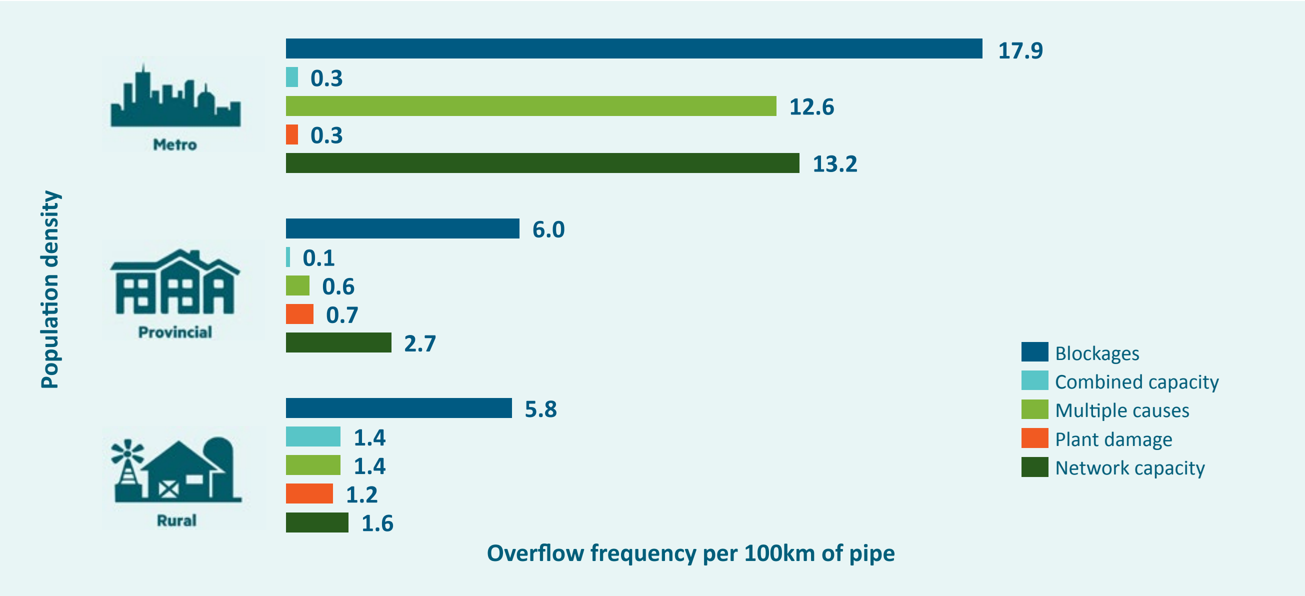
15 Overflows can also occur within the network, impacting connected properties and contaminating land and buildings. See also: Management of overflows and bypasses standard | The Water Services Authority – Taumata Arowai

16 A full definition is provided here: Water Services (Wastewater Environmental Performance Standards) Regulations 2025 | New Zealand Legislation

17 Watercare reported 2,433 overflows attributed to "other" factors. Many of these overflows are likely associated with blockages where field crews were unable to recover the debris to determine the underlying cause. A significant proportion of these incidents reportedly occurred in locations where capacity is constrained and there are combined wastewater and stormwater connections, indicating that capacity and network design could be contributing factors.

18 Buller District Council reported 1,041 per 100 km overflows compared to an average of 12.5 overflows per 100 km for rural networks excluding Buller District Council. Buller District Council's result has been excluded from the summary graph so that the result for the wider rural network is clear. The Council advised that the high number of reported wastewater overflows is largely attributable to stormwater ingress and the characteristics of the wastewater networks. The Council further advised that fluctuations in rainfall intensity may result in multiple short-duration overflow events being recorded during a single rainfall event.

Figure 15: Wastewater overflows per 100km of pipe, cause and population density



Blockages are also a leading contributor to overflows and they are preventable

While capacity is the dominant issue, blockages remain a significant and avoidable contributor to overflows. Metro areas experience 17.9 blockages per 100km of pipe, nearly three times the rate of provincial (6) and rural (5.8) areas.

Many blockages are caused by inappropriate items being flushed, including wet wipes and cooking fats. Unlike capacity constraints, which cannot be addressed through public behaviour change alone, some blockages can be reduced through changes at the household level. This highlights the importance of ongoing public education alongside infrastructure investment.

Extreme weather exposes infrastructure vulnerabilities

The concentration of capacity-related overflows in metro areas reflects how storms can act as a stress test for urban wastewater systems. In heavy rain, groundwater and stormwater can enter wastewater through directly connected pipework, or through leaks or breaks. This results in wastewater systems exceeding their designed capacity. Failures cascade across the network resulting in overflow into receiving environments.

This pattern highlights the combined challenges associated with insufficient network capacity in the face of increasing urban populations, while rainfall intensity increases in a changing climate. As well as operators' maintenance and renewal programmes – set up to improve capacity and to upgrade aged and deteriorated sections of the network – there is an important role for public education in preventing stormwater from being discharged directly into the wastewater network. For example, through incorrectly plumbed roof gutters or inadequately protected gully traps.

Monitoring and reporting of overflows

Requirements for monitoring and reporting wastewater overflows and bypasses are provided in regional plans or through consent conditions. When an overflow or bypass occurs, network operators are generally required to document and report on it.

Wastewater environmental performance standards will require the operators of public wastewater networks to conduct a comprehensive risk assessment of overflows from a network as part of consent conditions, and publicly report on those overflows based on risk. These requirements will come into force on 1 July 2028, unless a council operator chooses to implement the approach sooner.

This sign provides an example of public health signage in relation to a wastewater discharge point.

How do wastewater operators understand overflow risk in their networks?

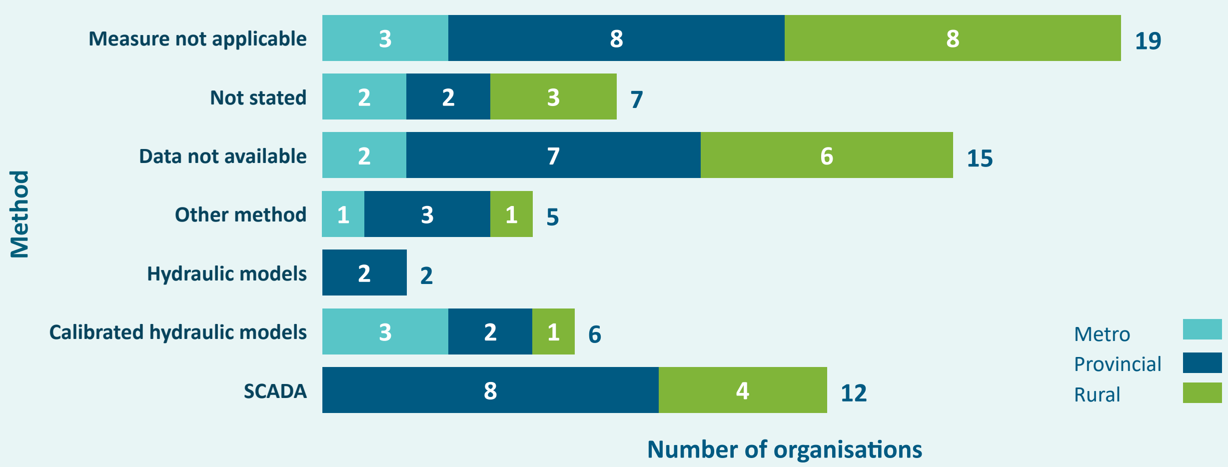
The accuracy of wastewater overflow reporting depends on the type of monitoring that takes place. Network operators use multiple methods to calculate overflows. Some of the most reliable methods are described below.

Supervisory Control and Data Acquisition (SCADA) Some wastewater overflows are monitored using telemetry systems that transmit level, flow, and alarm data from remote assets to the central SCADA system for real-time monitoring, alarming, reporting, and operational response.

A **calibrated hydraulic model** is a predictive tool – essentially a computer simulation of a wastewater network – that has been tuned to match actual operation. They use real data, including wastewater flow and rainfall, to show how the wastewater system works under different conditions. Engineers compare the model's predictions with reality, then make adjustments to the model (calibration). Models can be a reliable tool that help to predict wastewater system capacity and how it will perform during storms, including for overflows. Hydraulic models often make use of SCADA to improve the accuracy of the model's predictions.

We asked network operators to tell us whether and how they monitor and record overflow events, including the methods described in Box 1, and others including other hydraulic models or instances where data is not available, another method was used, or it was not stated. Operators reported on the primary method they used for monitoring (summarised in Figure 16).

Figure 16: Wastewater overflows by monitoring and calculation method



Some metro councils did not specify an overflow calculation method

Results of the analysis of overflow calculation methodologies among network operators (Figure 16) show that some metro councils, accounting for the greatest number of overflows, employ more sophisticated methods. Others have not specified a method.

Metro councils: Of 11 metro councils, three (27%) reported using calibrated hydraulic models, including Watercare. Several others reported that data was not available. While most of these data gaps may be associated with low overflow numbers, Wellington Water Ltd reported 2,011 wastewater overflows and uses a mixed model to measure overflows, noting it was not appropriate to attribute a single measurement method to each overflow.

Provincial councils: Methods varied across the 32 provincial operators. Eight reported using SCADA and nine that data was not available, with the remainder using a range of other methods. Although provincial operators make up the largest group, they account for only 11% of total overflows.

Rural councils: They reported having little data about overflows – with only four reporting using SCADA and nine that this measure was not applicable or data was not available.

Part five:
Stormwater

This section covers stormwater systems and how they function across urban catchments, as well as the growing pressures and risks they face.

The performance of stormwater systems has an impact on the other water services covered in this report and, as national-level data becomes available, will be an increasing focus of future reports.

The Authority is developing tools to monitor and improve stormwater performance over time. These include setting performance measures, developing standards and guidance, and working with operators to improve planning, monitoring and risk management.

Stormwater is the water that runs off surfaces when it rains. The term 'stormwater network' refers to the infrastructure and processes that enable stormwater management in urban areas.[19] In a natural environment, rainwater runoff is absorbed into soil, flows into natural waterways, or recharges aquifers and eventually flows to sea.

In most urban areas, runoff is collected by stormwater networks and carried to rivers, lakes or the sea These networks are typically comprised of pipes, drains, green infrastructure (such as rain gardens) and overland flow paths (such as channels and depressions) in the landscape where water can flow. Stormwater networks can help to manage both the volume of runoff – reducing flood risk – and the quality of runoff (minimising the discharge of harmful contaminants into the environment).

The Authority intends to set Network Environmental Performance Measures for stormwater, but until then, the data available is limited. There is no nationally consistent set of stormwater performance measures, and data capability and maturity are uneven across the sector. The issue is not only that information is incomplete, but that operators have different levels of monitoring, asset knowledge and analytical capability. This limits the ability to form a reliable national picture of stormwater performance and risk.

The Water Services Authority has tools to help improve stormwater performance over time. These include setting future stormwater performance measures, developing standards and guidance, and working with operators to improve planning, monitoring and risk management. Together, these tools are intended to support more consistent stormwater management and better environmental outcomes.

Stormwater networks are dynamic and interconnected systems

Stormwater networks are complex and dynamic systems that consist of both piped and open infrastructure. Open infrastructure includes overland flow paths (such as channels and depressions) in the landscape where water can flow, waterbodies like streams or ponds, and blue/green devices, including raingardens or bioretention areas. In contrast, drinking water and wastewater are contained within a closed engineered system.

Well-managed stormwater networks have widespread benefits, protecting public infrastructure, private property, the environment, and managing impacts on wastewater and drinking water networks. Management of stormwater can also be mātauranga-informed, considering the principle of ki uta ki tai (from the mountains to the sea), with a focus on long-term intergenerational wellbeing.[20]

Ownership, management and financing of stormwater systems varies across the country with some new water organisations taking responsibility for stormwater networks, while in other cases councils will continue to deliver stormwater services in-house.

Local decisions about how stormwater should be managed were required in mid-2025 via Water Services Delivery Plans, including requirements around ring-fencing (to spend revenue and funding received for water services on water services) and transparency of revenue, funding and expenses.

As part of our growing role in system oversight to stormwater, we will monitor delivery arrangements for urban networks.

19 Water Services Act 2021 – New Zealand legislation.

20 Report on Wastewater Treatment Arrangements that Respond to Māori Values Case-studies-report-final.pdf

Stormwater networks face increasing pressure and are a growing system risk

Stormwater networks are under increasing pressure from urban development, more hard surfaces and more intense rainfall.[21] These changes increase the volume and speed of runoff, placing greater demand on pipes, drains, overland flow paths and receiving environments. Where stormwater networks cannot manage this volume effectively, the impacts can be immediate and visible, including flooding of homes and properties, disruption to roads and communities, and contamination of waterways used for recreation or food gathering.

Stormwater can also directly carry contaminants into rivers, lakes and coastal waters, not only by contributing to wastewater overflows. In urban areas, stormwater usually bypasses treatment plants and can wash nutrients, sediment, heavy metals, hydrocarbons, pathogens and other contaminants from roads, roofs and other hard surfaces into receiving environments. This means unmanaged stormwater can affect water quality in its own right, as well as increasing pressure on wastewater networks.

Stormwater systems are also more difficult to monitor than drinking water and wastewater networks because they are open, catchment-driven systems. Their performance depends not only on built infrastructure, but also on land use, topography, ground conditions, receiving environments and how rainfall moves across the catchment. This makes it harder to isolate faults, measure performance consistently and compare results between operators.

Even with these limitations, the evidence in this report and related Authority work indicates that pressures on stormwater systems are increasing over time. As rainfall patterns shift and urban catchments continue to intensify, stormwater is becoming a growing system risk that affects environmental outcomes, infrastructure resilience and the performance of other parts of the water system.

The performance of stormwater and wastewater networks are interconnected

Stormwater and wastewater networks are designed for different purposes, but their performance is closely linked, particularly during wet weather events. Effective stormwater management helps reduce pressure on wastewater systems by limiting unwanted inflows and reducing the risk of wastewater overflows. Improving stormwater outcomes is therefore an important contributor to overall three waters environmental performance.

During rainfall events, stormwater can enter wastewater networks through damaged pipes and joints, groundwater infiltration, joint wastewater and stormwater pipes, and inappropriate or illegal connections. These extra flows can exceed the capacity of pipes, pump stations and treatment plants, resulting in overflows of untreated wastewater to the environment. As outlined in Part Four, most wastewater overflows nationally occur during peak wet weather flows when network capacity is exceeded.

Where stormwater networks are unable to manage rainfall volumes effectively, flooding of streets and properties can occur. Flooding can disrupt wastewater operations, increase inflow and infiltration, accelerate asset deterioration, and place extra stress on aging infrastructure. Excessive stormwater entering wastewater systems can also reduce treatment effectiveness, increasing the discharge of contaminants to rivers, streams and coastal waters, with associated risks to public health and the environment.

Climate change and urban growth place extra pressure on networks

Climate change is placing increasing pressure on stormwater networks. Although consistent national data on stormwater performance is limited, insurance data and recent severe weather events indicate that storms are becoming more frequent and intense. Heavier rainfall and rising sea levels are increasing flood risks, particularly in coastal areas.

As rainfall patterns change, the interdependence between stormwater and wastewater networks becomes more significant. Poor performance in one part of the system can quickly affect the other, particularly during extreme weather events, increasing the likelihood of flooding, wastewater overflows and environmental impacts.

Urban development is adding to these pressures. The expansion of hard, impervious surfaces causes rainfall to run off more quickly and in greater volumes than many existing networks were designed to manage. In areas where stormwater, wastewater and drinking water infrastructure already has limited capacity, urban growth can further increase the risk of wastewater overflows and drinking water contamination during heavy rainfall events.

21 Stormwater – an introduction | Earth Sciences New Zealand | NIWA

Part six:
Continuous improvement in data quality

Reporting improvements, particularly in key drinking water measures, are an encouraging sign of increasing network operator maturity. However, in some areas persistent issues with data quality continues to constrain our ability to assess trends. Strengthened data management is integral to effective network operation and should remain a priority. Where poor data quality is evident, this raises concerns about the extent to which operators understand their networks because it suggests limitations in the information they hold about their assets.

This section of the report focuses on data quality, including completeness and confidence in operator-reported data. This is important context for those who wish to undertake their own analysis and conclusions utilising the full data release that underpins this report.

To evaluate environmental performance, we rely on good quality data from network operators. Robust and reliable data and evidence is also required for **effective operation, maintenance, renewal and investment**. Robust information enables network operators to accurately identify where improvements are required, and to measure the effectiveness of action taken to improve the performance of the network.

Due to the importance of good data and its value to both network management and transparency, data quality has been a focus of the Authority since taking on the role of network environmental performance reporting.

First two years: drinking water data quality issues and improvements

The Network Environmental Performance Report 2022/2023 found that network operators did not hold good information about their drinking water networks. To provide greater insight, we undertook an external review in advance of the publication of Network Environmental Performance Report 2023/2024, with a focus on key measures of the performance of the drinking water network. The review found data reported was accurate for only around 35-40% of sampled councils for in-scope measures. Consequences of the lack of accurate data may include a lack of visibility over network risks, limitations identifying where investment is required, or challenges in tracking whether actions are improving performance.

As a result, we recommended that operators improve their understanding of their assets and key risks to their networks.[1] This can be done by investing in the appropriate equipment and systems, and ensuring staff capability and capacity is appropriate for the data management task required.

We also committed to improving our own data collection systems and processes. So, to support improvement in data quality for this year's report, we have implemented the following changes:

- improved the data collection spreadsheet with clearer guidance on required data and formats, simplifying the template for operators
- changed the methodology for confidence rating from a rating being required for each datapoint to requiring a rating for the performance measure at both the organisation and network levels[22]
- checked high-priority data with operators, investigating and correcting likely inaccuracies by identifying outliers (values well above or below comparable operators.[23]

This year's report assesses drinking water data quality for the third year and includes new wastewater information

This year's report looks at the completeness and accuracy of the data of the third year of information collected under the Network Environmental Performance Measures and provides some commentary around developments. This year's report also reports on an increased number of performance measures, including now a full suite of wastewater measures. This year's data quality assessment makes some findings about the quality of wastewater information provided by the sector.

22 Memo

23 Need a definition of high priority data that was verified

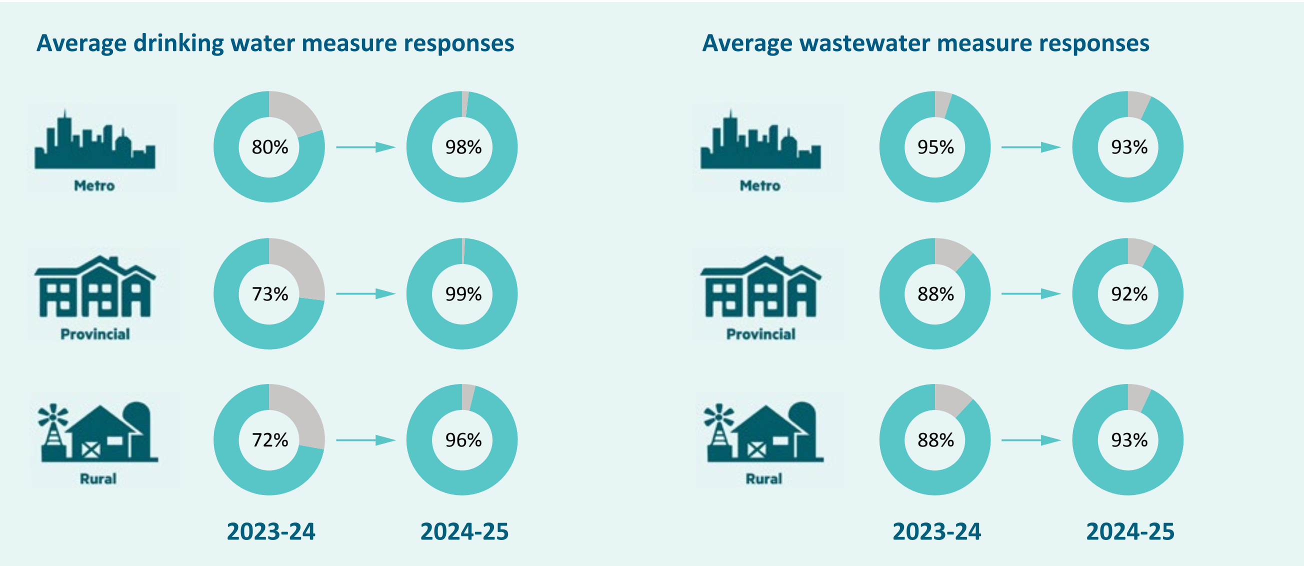
Data completeness assessment

Data completeness has improved but quality requires further improvement

Figure 17 provides a breakdown of the completeness of the information provided by metro, provincial and rural councils for drinking water and wastewater networks over the last two years. It shows the percentage of performance measures that received a complete response. The number of performance measures network operators have been required to complete has increased each year.

While there are still gaps in the information we receive, the level of completeness has improved markedly since last year and this year, particularly for drinking water. Notably, there has been a big jump in the completeness of provincial council results for drinking water – increasing from 73% to 99% completeness. A large increase is also noted for rural drinking water results – increasing from 72% to 96% – and all wastewater network results are now above 90%.

Figure 17: Completeness of drinking water and wastewater performance measure responses



Data quality assessment

We have found that while **most network operators** rated the quality of their data as reliable, there are significant areas where there are **data reliability concerns**.

When we look at the data provided by network operators, we see areas where there is insufficient evidence that the data provided is reliable. In many cases the data provided is based on a desktop analysis or historical data. Key examples include:

1. The assessment of asset condition of wastewater pipes without physical evidence (such as CCTV evidence) within the last five years. Most network operators rated the asset condition data for wastewater as reliable, while also reporting low proportion having been assessed using CCTV footage in the last five years (see page 14).
2. Difficulties calculating water loss across the networks because of a lack of appropriate monitoring equipment (see also Part 3).
3. The absence of reporting on wastewater bypasses – possibly indicating mixed levels of understanding of the differences between overflows and bypasses.

Taken together, these limitations mean the report's findings are best understood as a robust high-level picture of national system performance, while confidence in some network-level results and year-on-year trend analysis remains constrained.

With the introduction of information disclosure requirements by the Commerce Commission and the continuing focus by the Authority on data quality, we expect to see ongoing improvements in the reliability and comprehensiveness of data.

Appendix 1:
Network operators that submitted data for 2024/25

Ashburton District Council	New Zealand Defence Force
Auckland Council	Ōpōtiki District Council
Buller District Council	Ōtorohanga District Council
Carterton District Council	Palmerston North City Council
Central Hawke's Bay District Council	Papakura
Central Otago District Council	Queenstown Lakes District Council
Chatham Islands Council	Rangitikei District Council
Christchurch City Council	Rotorua Lakes Council
Clutha District Council	Ruapehu District Council
Department of Corrections	Selwyn District Council
Dunedin City Council	South Taranaki District Council
Far North District Council	South Waikato District Council
Gisborne District Council	South Wairarapa District Council
Gore District Council	Southland District Council
Greater Wellington Regional Council	Stratford District Council
Grey District Council	Tararua District Council
Hamilton City Council	Tasman District Council
Hastings District Council	Taupō District Council
Hauraki District Council	Tauranga City Council
Horowhenua District Council	Thames Coromandel District Council
Hurunui District Council	Timaru District Council
Invercargill City Council	Waikato District Council
Kaikōura District Council	Waimakariri District Council
Kaipara District Council	Waimate District Council
Kāpiti Coast District Council	Waipā District Council
Kawerau District Council	Wairoa District Council
Mackenzie District Council	Waitaki District Council
Manawatū District Council	Waitomo District Council
Marlborough District Council	Watercare
Masterton District Council	Wellington Water Ltd.
Matamata Piako District Council	Western Bay of Plenty District Council
Ministry of Education	Westland District Council
Napier City Council	Whakatāne District Council
Nelson City Council	Whanganui District Council
New Plymouth District Council	Whangarei District Council

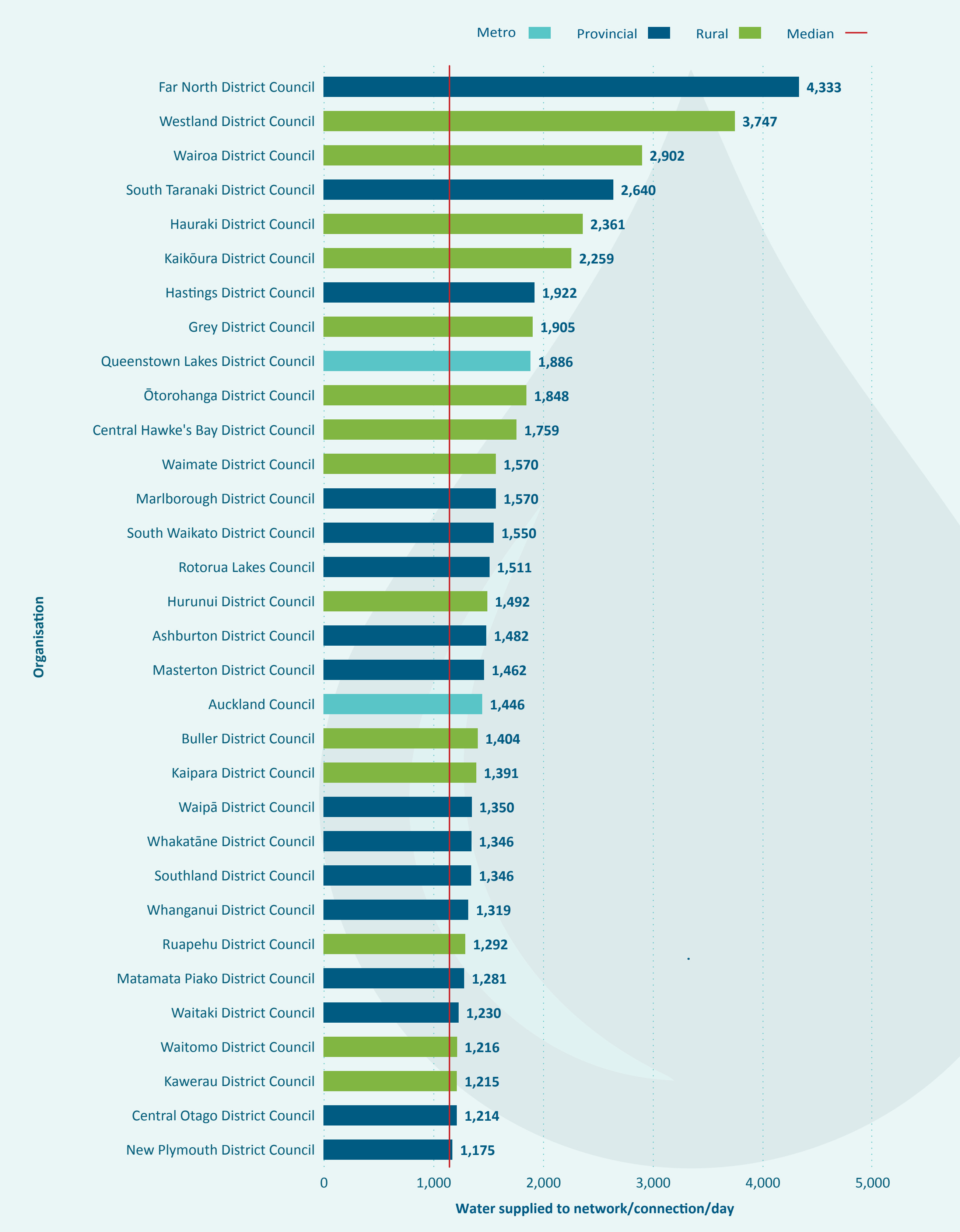
Appendix 2:
Individual council performance on key measures

The following graphs provide an overview of data for each council, or water organisation for some key measures. The graphs do not include Government or regional council operators as these operators supply water for different purposes and are not directly comparable.

Some councils have not provided a response to some key performance measures

Where a specific network operator is not listed within the figures in this appendix , this indicates this organisation may not have submitted on an element required or the data did not meet the quality thresholds required to identify their performance against that key measure.

Figure 18: Water supplied to the drinking water network (L/connection/day) per council[24]



24 The key response rate for the data that contributes to the calculation of this measure is:

- 75.2% D-EH4 water sent to network
- 99.5% D-EH1.1 number of residential connections
- 98.9% D-EH2.1 number non-residential connections

Figure 18: Water supplied to the drinking water network (L/connection/day) per council[22]

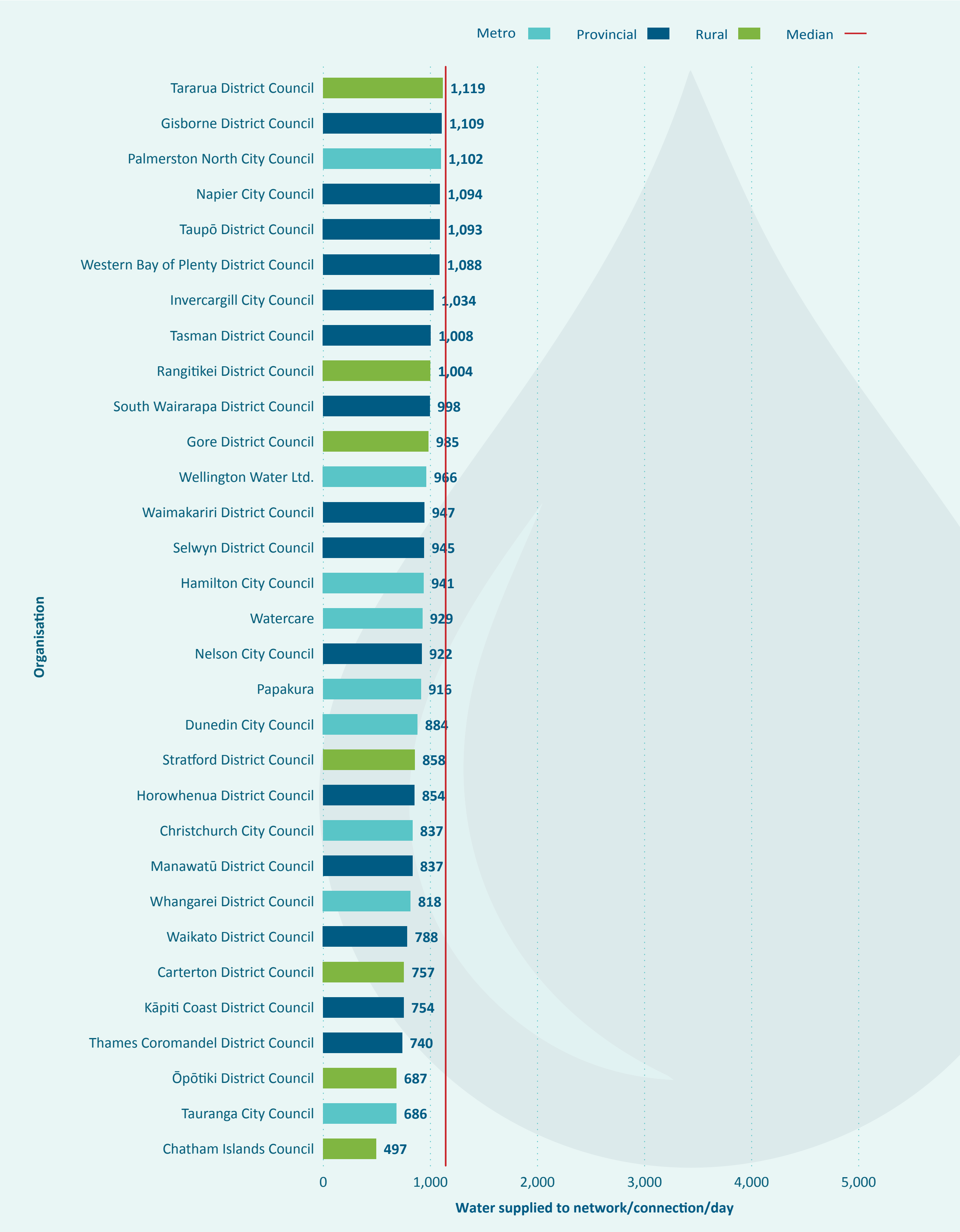
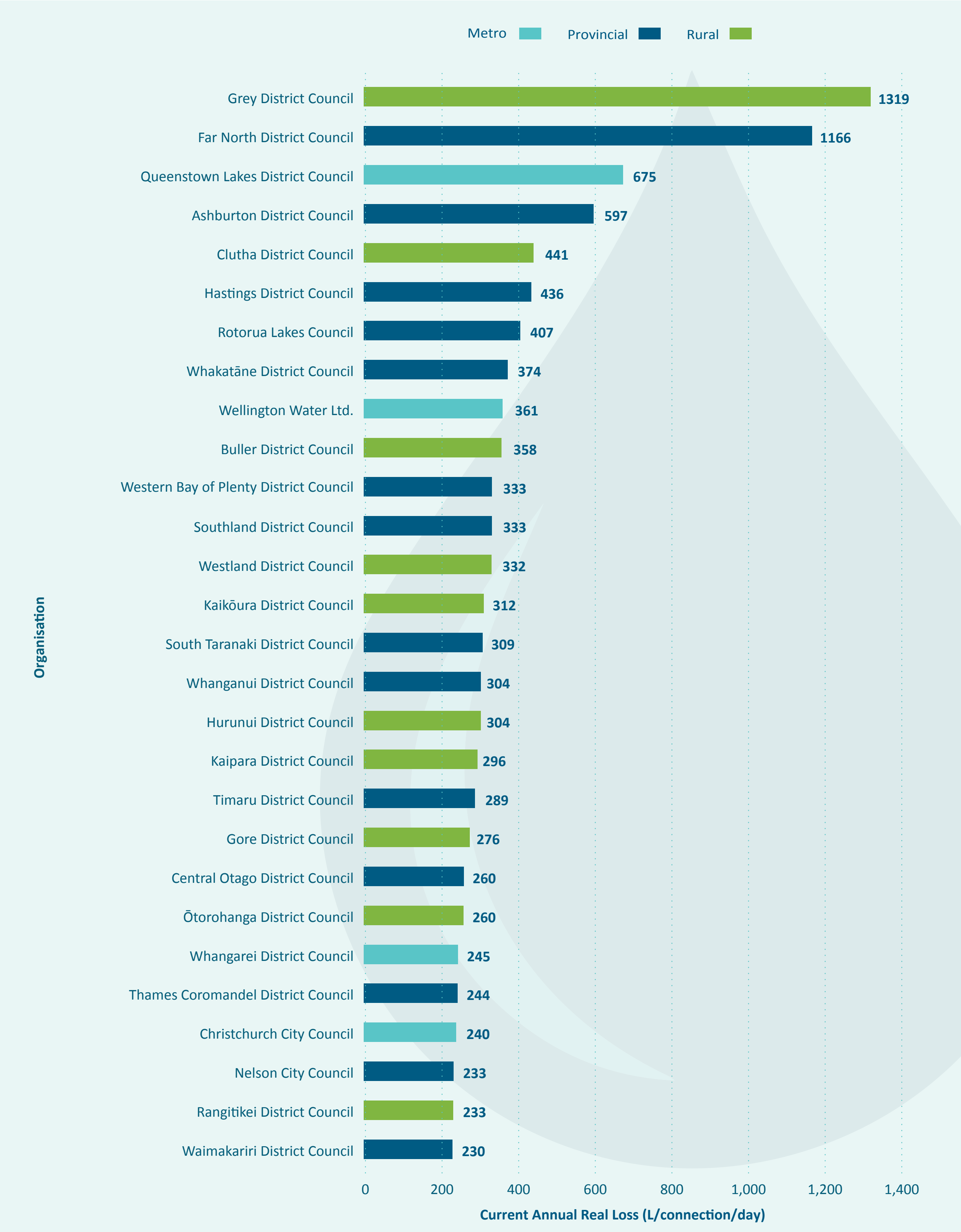


Figure 19: Current Annual Real Loss (L/connection/day) per council[25]



25 The response rate for the data that contributes to the calculation of this measure is:

- 97.2% D-RE2.1 CARL
- 99.5% D-EH1.1 number residential connections
- 98.9% D-EH2.1 number non-residential connections

Figure 19: Current Annual Real Loss (L/connection/day) per council[23]

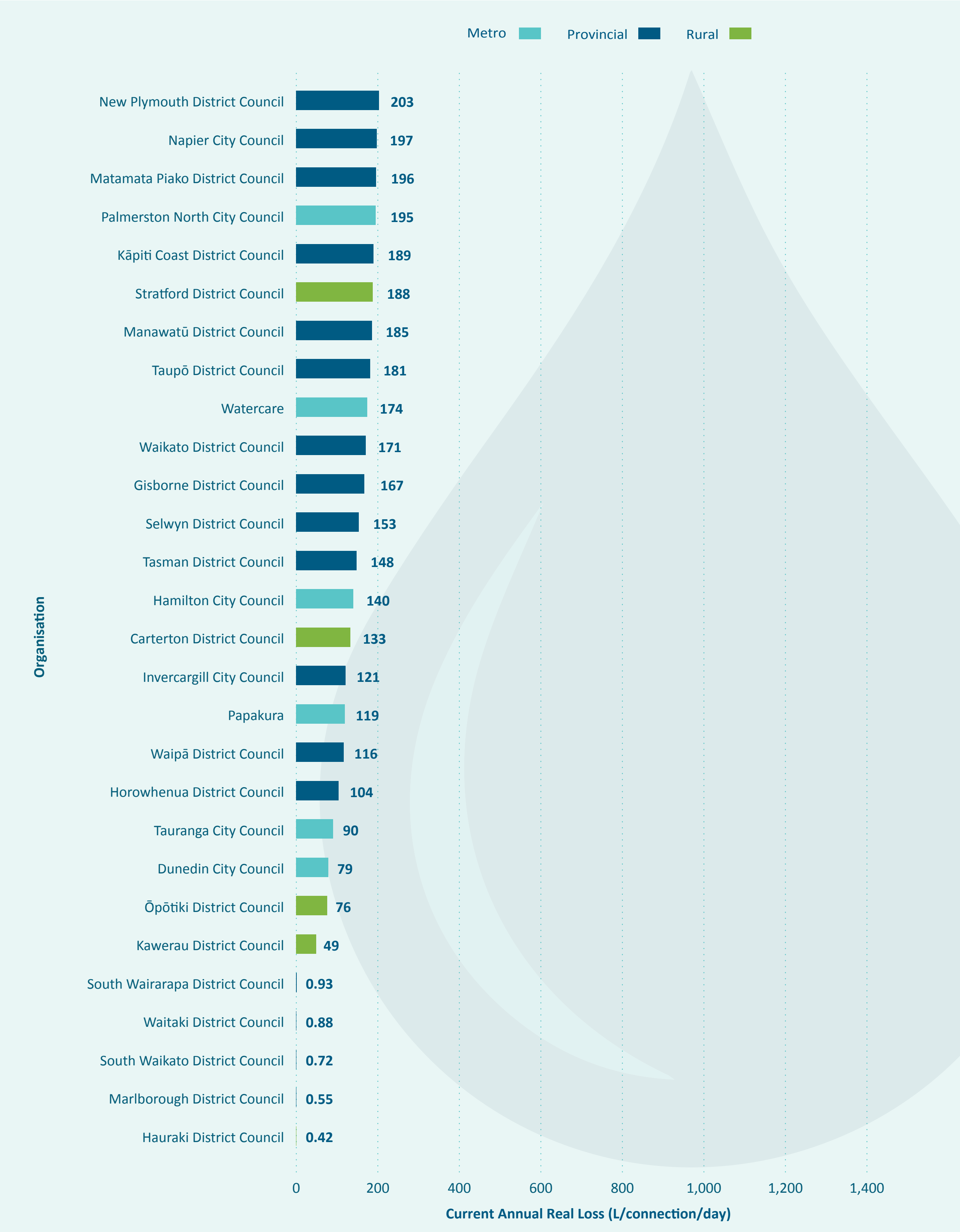
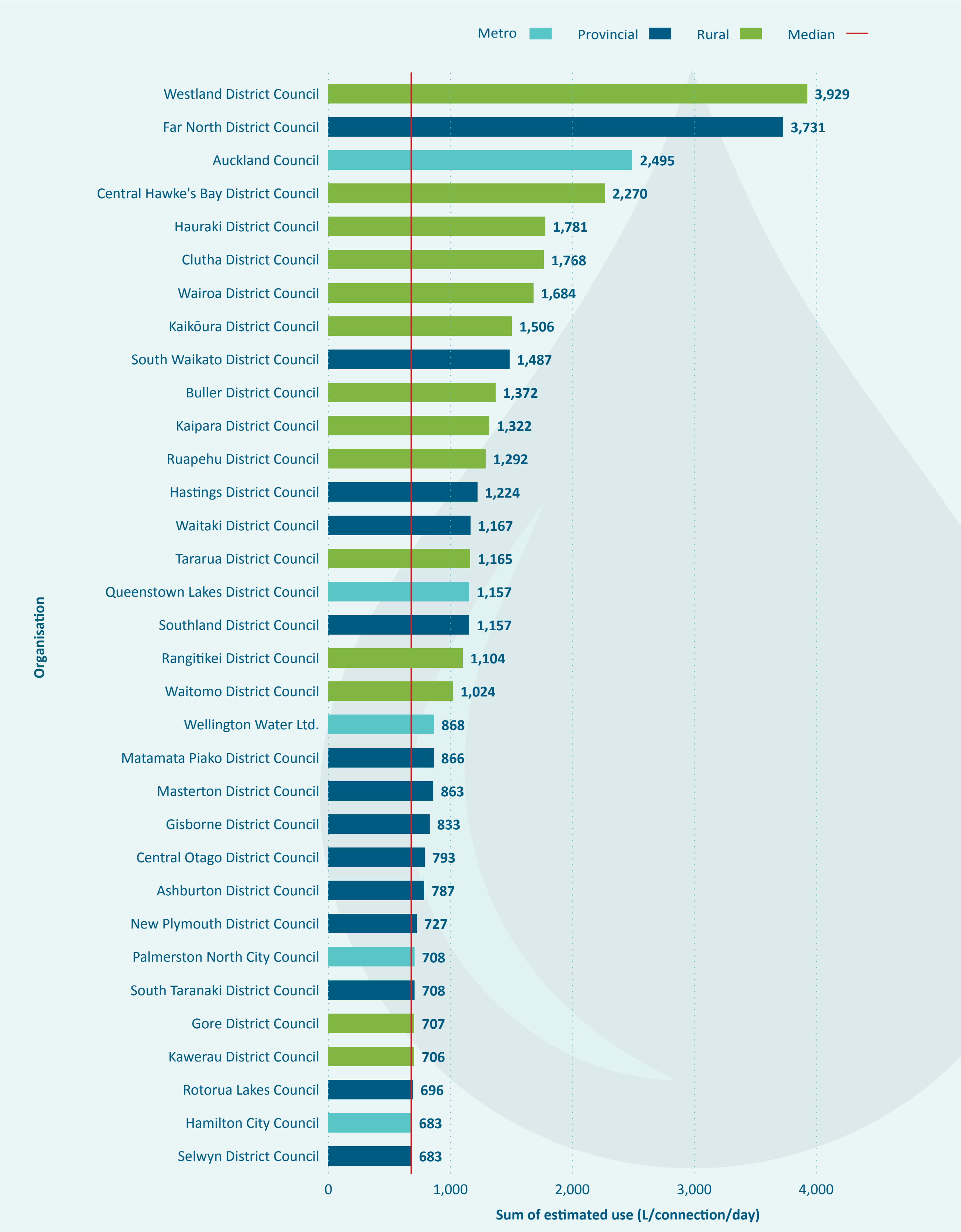


Figure 20: Residential water use per connection per day[26]



26 The response rate for the data that contributes to the calculation of this measure was:

- 97.9% D-EH7 non-residential water use 97.9%
- 75.2% D-EH4 water sent to network
- 97.2% D-RE2.1 CARL
- 96.8% D-RE2.2 UARL
- 96.8% D-RE1 Estimated loss

Figure 20: Residential water use per connection per day[24]

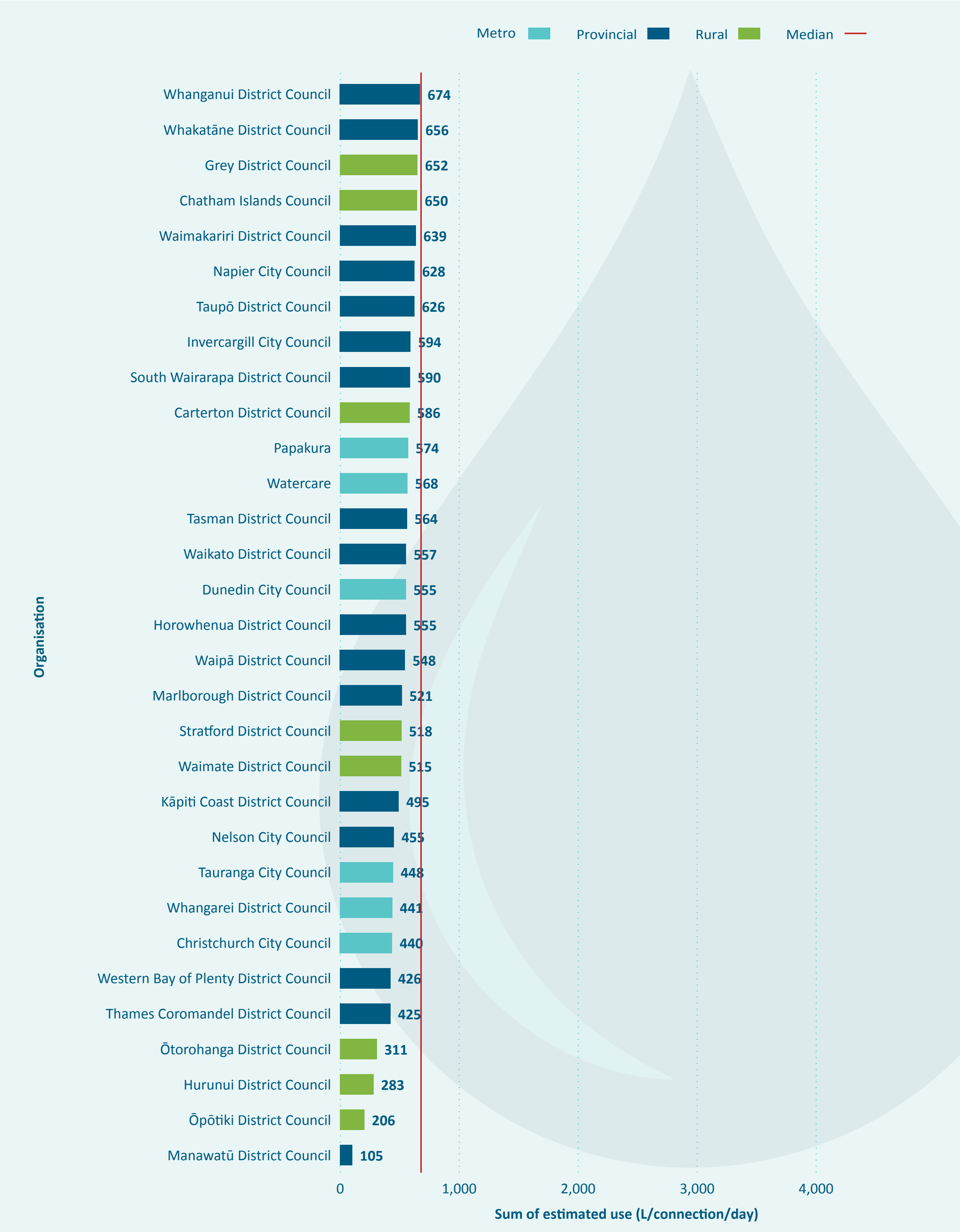
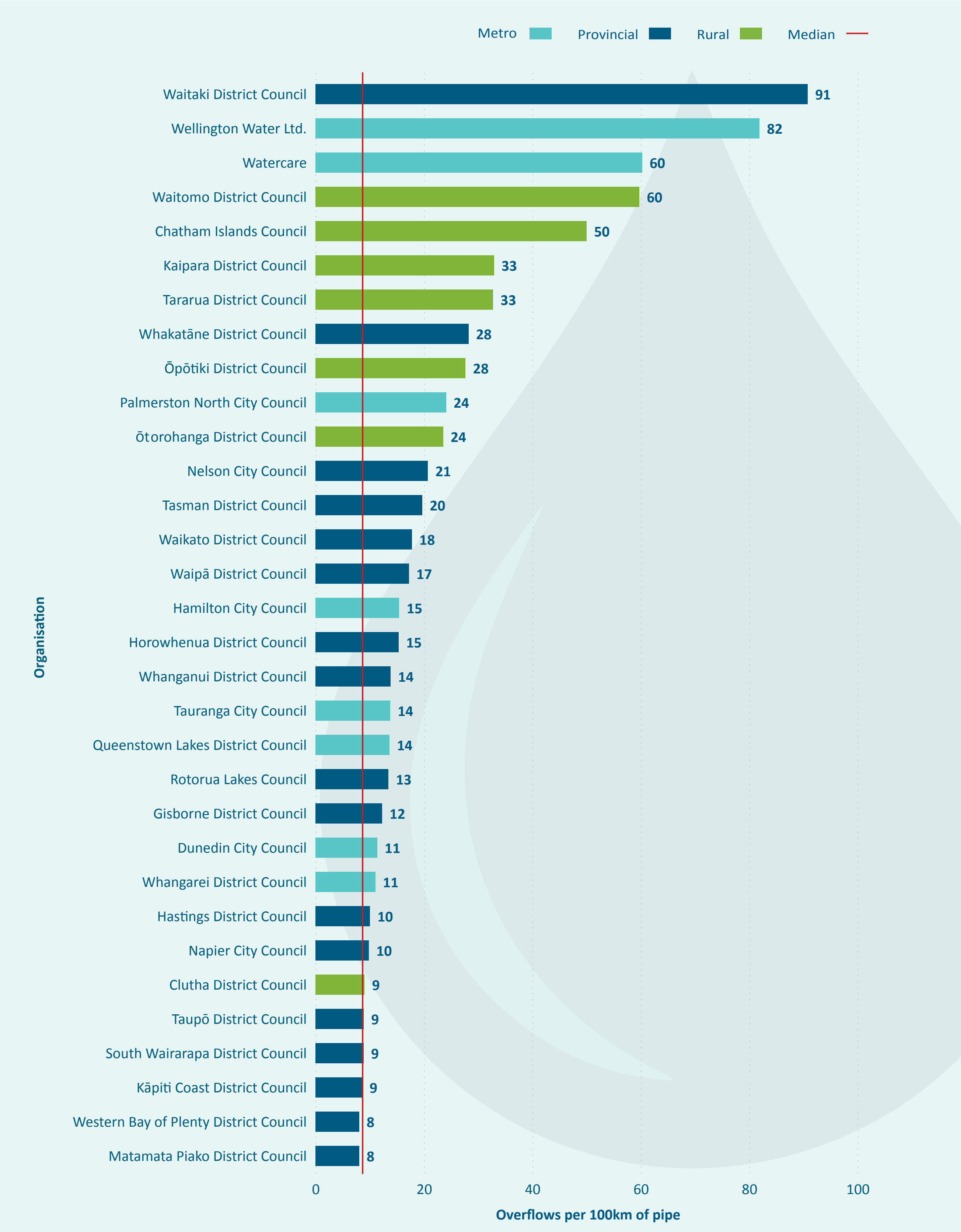


Figure 21: Overflows per 100km of wastewater pipe (new for 2025)[27]



27 The response rate for the data that contributes to the calculation of these figures ranged from 85.9% to 94.4% for overflow cause and from 83.1% to 95.8% for length of pipe.

Figure 21: Overflows per 100km of wastewater pipe (new for 2025)[25]

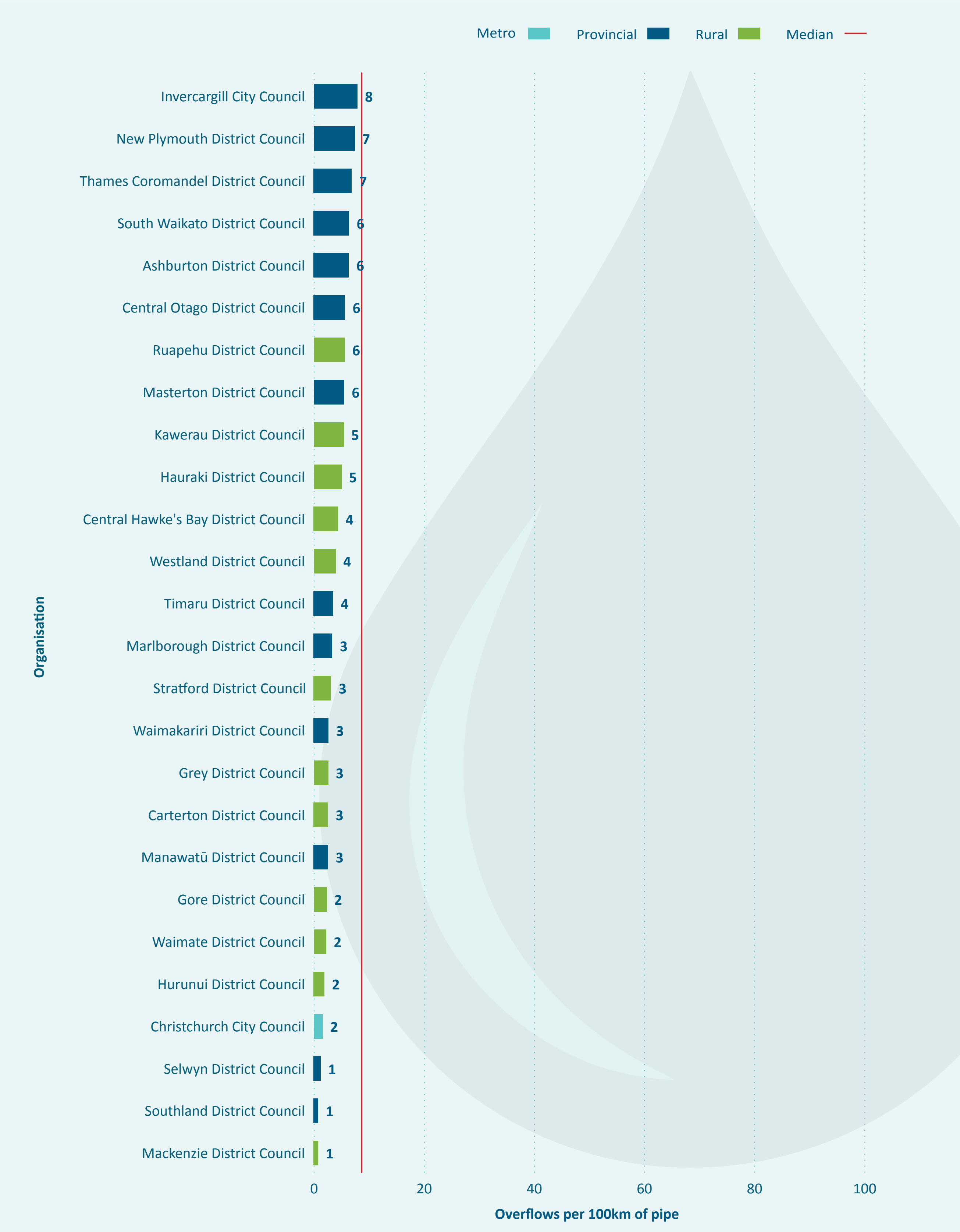
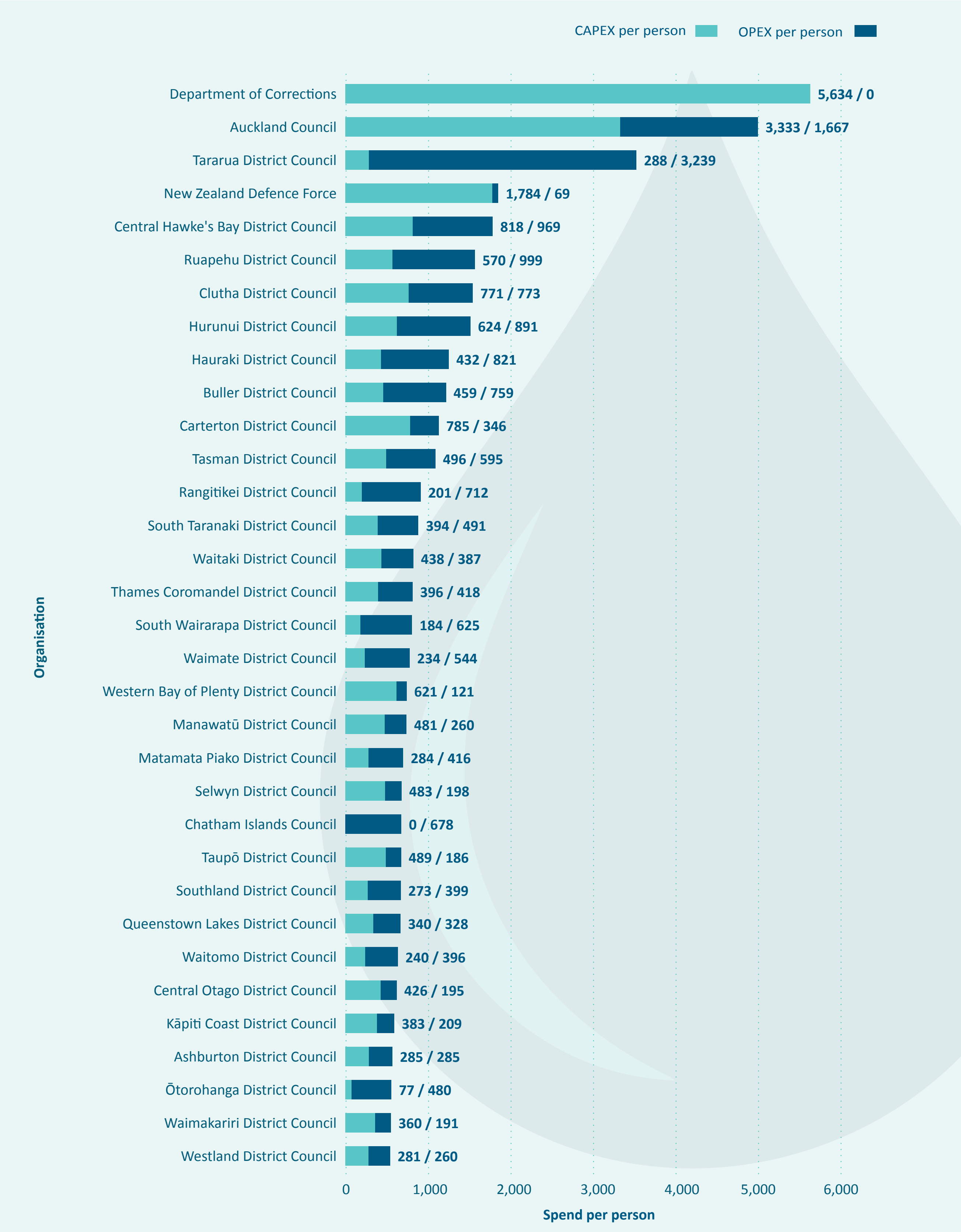
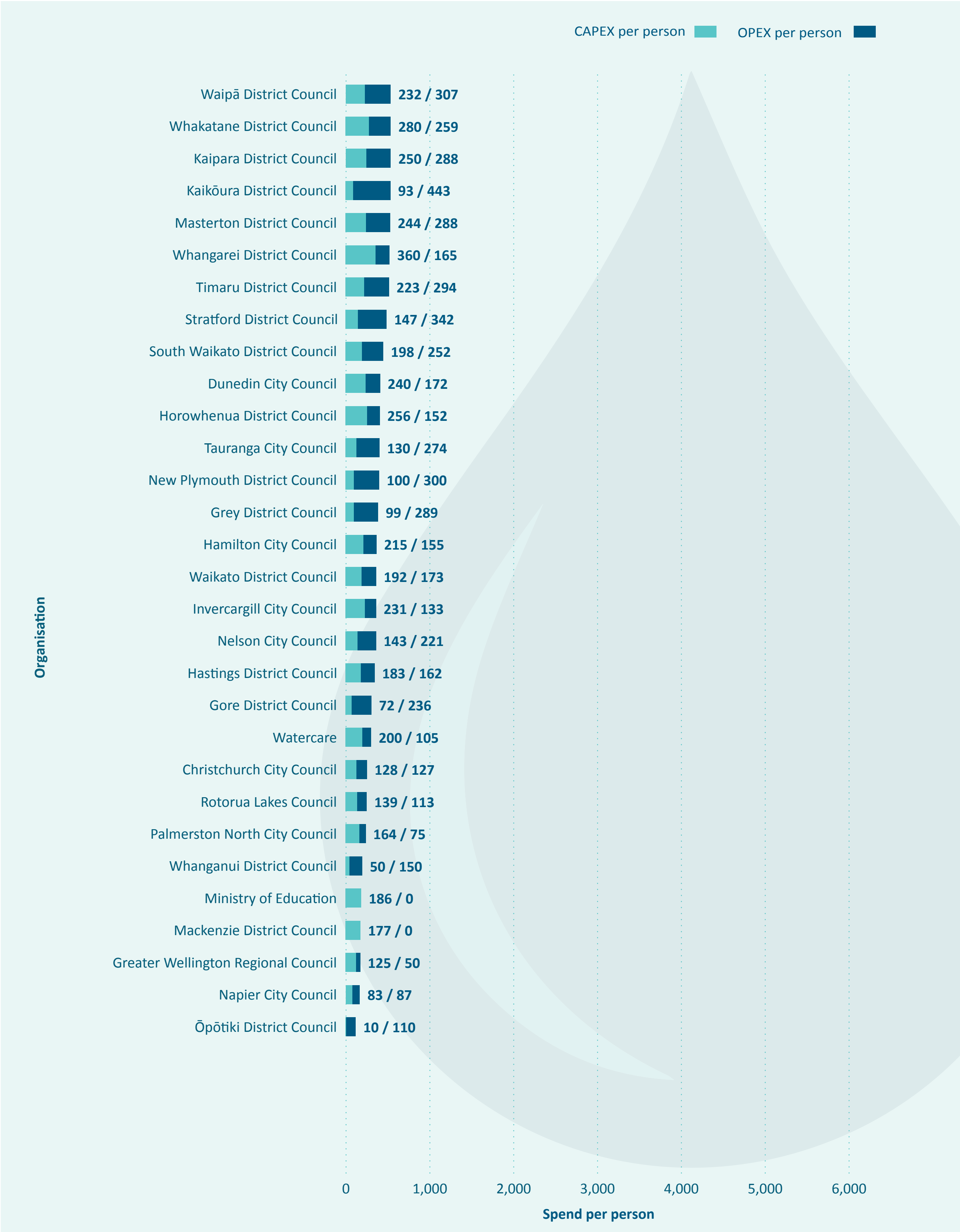


Figure 22: Drinking Water Capital (CAPEX) and Operational (OPEX) spend per person per year[28]



28 The response rate for the data that contributes to the calculation of this measure was:
94.3% D-ES2 total OPEX
97.1% Response rate D-E3 total forecast CAPEX
99.5% Response rate D-EH3 population served

Figure 22: Drinking Water Capital (CAPEX) and Operational (OPEX) spend per person per year[26]

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