Watercare
An Auckland Council Organisation

Auckland Water Management Plan

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Document preparation, review and authorisation record

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Glossary

AGS	Auckland growth scenario
AMP	Asset Management Plan
CCO	Council-controlled organisation
Drought Management Plan	Auckland Metropolitan Drought Management Plan
KM	Kilometres
l/p/d	Litres per person per day
LoS	Level of Service
m^3/day	Metres cubed per day
MLD	Megalitres per day
PCC	Per capita consumption
RMA	Resource Management Act
SOI	Statement of Intent
WAFU	Water available for use
Water Efficiency Plan	Auckland Water Efficiency Plan
WMP	Water Management Plan
WRP	Waikato Regional Plan
WTP	Water Treatment Plant

1. Introduction

Watercare Services Limited ("**Watercare**") is a lifeline utility providing water and wastewater services to 1.7 million people in Auckland and parts of northern Waikato. Its services are vital for life, keep people safe and helps communities to flourish. Watercare supplies reliable, high-quality drinking water to homes and businesses. It then collects, treats and manages their wastewater in environmentally responsible ways.

Watercare plans and builds infrastructure to ensure growth is supported today and into the future. As a council-controlled organisation ("**CCO**"), it is fully owned by Auckland Council. It is also a limited liability company registered under the Companies Act 1993. Principal regulators include Auckland Council, the Commerce Commission, Waikato Regional Council, the Ministry of Health and Taumata Arowai. Watercare's services and programmes are funded through user charges and borrowings. The Local Government (Water Services Preliminary Arrangements) (Watercare Charter) Order 2025 imposes minimum service quality standards and financial performance objectives to incentivise Watercare to provide quality services while operating efficiently.

Auckland is growing at an unprecedented pace. Over the next 30 years the population could grow by around another 600,000 people to reach 2.3 million. This means around another 240,000 dwellings and another 350,000 jobs. Over the next 10 years, Watercare plans to invest $13.8 billion in water and wastewater infrastructure for Auckland.

Watercare produces approximately 160,000,000 cubic metres per year ("**m3/year**") of water. Auckland's metropolitan water supply is currently collected from ten storage lakes, one aquifer and the Waikato River. The water is treated at eight Water Treatment Plants ("**WTPs**") and distributed through approximately 9,400 kilometres ("**km**") of treated water mains, 86 reservoirs and 82 pump stations to some 497,000 connections. This document is the Water Management Plan ("**WMP**") required by the Waikato Regional Plan ("**WRP**") as part of requirements associated with taking water from the Waikato River for use in the Auckland metropolitan water supply. The WMP excludes non-metropolitan supplies which will typically have their own water management plans.

This WMP, as required by Section 8.1.2.2 of the WRP, sets out a long-term strategy for Auckland's metropolitan water supply and its communities; demonstrating that the volume of water required, including any increase over that previously authorised, has been justified and that the water take will be used efficiently and effectively. In doing so Section 8.1.2.2 requires a WMP to provide the following information:

1. *A description of the water supply system including system operation, distribution extent, levels of service ("**LoS**"), water use measurement, maintenance and asset management procedures.*

2. *A comprehensive assessment of existing demand and future demand for water with regard to an assessment of reasonable population growth within the planning horizon to meet the following:*

    a) *reasonable domestic needs.*

    b) *public health needs in accordance with requirements under any Act of Parliament or regulation.*

    c) *reasonable community needs (e.g. for public amenities).*

    d) *reasonable commercial, rural supply and industrial needs.*

    e) *an assessment as to how each of the assessments required by clauses a) to d) above is predicted to vary over time.*

    f) *a justification for each of the assessments required by clauses a) to e) above including reference to any relevant planning instruments promulgated under the Resource Management act 1991 that provide for future growth or relevant documents promulgated under the Local Government Act 2002 such as Long-Term Plans, growth strategies or spatial plans.*

3. *Any existing or proposed water pricing procedures and any linkages with wastewater pricing or management.*

4. *How water reticulation networks are planned and managed to minimise their water losses as far as practicable.*

5. *A description of patterns of water use practices and/or behaviour in all sectors of use (and distribution) with the objective of maximising water use efficiency and reducing water use, as far as practicable.*

6. *Water saving targets for the full range of demand conditions including demand saving targets for council owned facilities, domestic demand targets and demand saving targets for commercial and industrial customers.*

7. *Key performance indicators for each of the water saving targets.*

8. *Any external auditing and benchmarking procedures that have been adopted.*

9. *A drought management plan that includes:*

    a) *steps to be taken to reduce consumption during water shortage conditions, including those uses that will be restricted at the same time as priority SW-B users (in accordance with Policy 18 and Standard 3.3.4.27) and steps to be taken to implement those restrictions.*

    b) *Targets for the water savings expected to be achieved via the restriction of activities identified in a) above, which shall align as closely as possible to the restrictions for SW-B users provided for in Standard 3.3.4.27.*

c) *public and commercial user education programmes.*

d) *steps taken to reduce consumption when demand is approaching the maximum take volume specified under the relevant resource consent.*

e) *Enforcement procedures*

10. *Actions, performance measures and a timeline for implementing actions. The actions and performance measures identified will depend on the circumstances of each applicant.*
11. *Any consultation undertaken with key stakeholders and outcomes of such consultation.*
12. *Details of an appropriate water conservation and demand management plan review process.*
13. *Identification of any anticipated increases in water demand over the term of the consent and ability to stage water take volumes to more closely reflect demand requirements over time.*
14. *Ability to reduce the amount of water used by existing industrial and agricultural users, as a result of improvements in the efficiency of the use of water, in order to meet any increase in water demand over the term of the consent.*
15. *Identification of any single industrial, commercial or agricultural use of water that uses more than 15 cubic metres of water per day (not being water used for human drinking purposes or human sanitation purposes).*
16. *Identification of future domestic or municipal supply take needs over and above authorised domestic or municipal supply takes required to meet growth and development that is provided for in planning instruments promulgated under the Resource Management Act 1991 or relevant documents promulgated under the Local Government Act 2002, such as Long Term Plans, growth strategies or spatial plans (or similar).*

    The projected future needs shall be identified in terms of:

    a) *Location of take; and*

    b) *Volume of take (including any seasonal variations); and*

    c) *The date at which the water is likely to be required.*

Each of the 16 matters listed in Section 8.1.2.2 is addressed sequentially in Chapters 2 – 17 of this WMP which is structured as follows:

Chapter 2: Provides a description of the Auckland water supply system.

Chapter 3: Provides a comprehensive assessment of existing and future demand for water. This chapter identifies the growth in demand and the need for additional water supplies to meet that demand while providing for peak, outage and headroom requirements.

Chapter 4: Outlines the pricing mechanism implemented by Watercare as part of managing the Auckland water supply system.

Chapter 5: Provides an overview of how Watercare actively monitors and manages the water reticulation network for the Auckland water supply to minimise water losses, including reference to the Auckland Water Efficiency Plan (2021 to 2025) ("**Water Efficiency Plan**").

Chapter 6: Provides describes patterns of water use within the Watercare network, including residential and commercial consumption, customers supplied, per capita consumption changes and the influence of pricing and other factors on consumption.

Chapter 7: Outlines Watercare's ambitious water savings target for Auckland water use and the strategies adopted to achieve those targets.

Chapter 8: Outlines the key performance indicators for the water savings targets contained in Chapter 7 and sets out how Watercare will report on those key performance indicators.

Chapter 9: Provides a summary of benchmarking relevant to the Watercare water supply network to identify how the efficiency and effectiveness of its water supply system compare with those of other domestic and international metropolitan centres.

Chapter 10: Contains the Auckland Metropolitan Drought Management Plan ("**Drought Management Plan**").

Chapter 11: Outlines the options to improve the efficiency and effectiveness of the use of water within the Auckland water supply network, in particular referring to the Water Efficiency Plan.

Chapter 12: Summarises the consultation Watercare must follow with respect to any of its publications.

Chapter 13: Outlines the review process for the water conservation and demand management matters contained in this WMP.

Chapter 14: Identifies how Chapter 3 addresses clause (13) which is concerned with the increase in water demand over the term of the consent, and the ability to conjunctively manage water takes within the Watercare network to ensure that

increasing demand and demand peaks are met while using water effectively and efficiently.

Chapter 15: Identifies how the comprehensive demand management programme of actions outlined in the Water Efficiency Plan ensures that the amount of water used by existing and new industrial and agricultural users is consistent with and appropriate for a major metropolitan water supply.

Chapter 16: Sets out information relating to industrial, commercial and agricultural users connected to the Auckland water supply which use more than 15 m^3/day and that the Water Efficiency Plan is the preferred mechanism for driving improvements in the efficiency of use of water in Auckland.

Chapter 17: Outlines how the demand assessment contained in Chapter 3 addresses those matters required by clause (16).

The WMP uses current information, and references documents such as the:

- Auckland Plan 2050.
- Watercare Annual Report 2025.
- Watercare Asset Management Plan 2024-2041.
- Watercare Auckland Efficiency Plan 2021-2025 and
- Watercare Auckland Drought Management Plan 2023.

These are living documents and will continue to be revised as needed.

2. Auckland's metropolitan water supply system

WRP Requirement:

1) A description of the water supply system including system operation, distribution extent, levels of service, water use measurement, maintenance and asset management procedures.

2.1 Overview

Watercare delivers approximately 160,000,000 m^3/year of water to about 1.7 million people connected to the metropolitan water supply system. Auckland's metropolitan water supply is collected from ten water storage lakes, one aquifer and the Waikato River. This water is treated at eight water treatment plants and distributed through more than 9,400 km of water pipes, 86 reservoirs and 82 pump stations to some 497,000 connections. The layout of the bulk water supply system is shown in Figure 1, and more detail on each aspect is provided in the following section.

The network continues to increase in length as population grows and the network expands.

2.2 System Operation and Distribution Extent

2.2.1 Water Sources and Yields

Raw water sources for the Auckland metropolitan water supply include ten water storage lakes located in the Hūnua Ranges and Hays Creek southeast of Auckland; and the Waitākere Ranges west of Auckland, together with direct abstractions from the Waikato River and one aquifer in Pukekohe. The Onehunga WTP, supplied by an aquifer, is currently offline but is planned to be upgraded and returned to service around 2029-2030.

These individual sources are operated conjunctively, meaning that they are operated as a single system to optimise the use of water, and ensure that the capacity of overall supply can be maintained. It means, for example, that when rainfall derived inflow to the water storage lakes decreases, use of the Waikato source is increased to maintain total system storage. When the storage lakes are near capacity and inflows are high, water from the water storage lakes is used preferentially ahead of Waikato River water due to higher pumping costs from the Waikato River.

The Waikato River take is a critical component of Watercare's conjunctive use system, ensuring a drought resilient supply (see Section 3.5.8). It is particularly relevant as Auckland has a relatively low total system storage volume covering approximately 220 days of usage (2026).

'Deployable output' is the average rate at which water can reliably be abstracted from a water source for water supply purposes. In practical terms it represents the water resources available in the total storage system to continue to supply water through a drought of a given severity, taking into account the factors affecting availability (such as water quality and consent conditions).

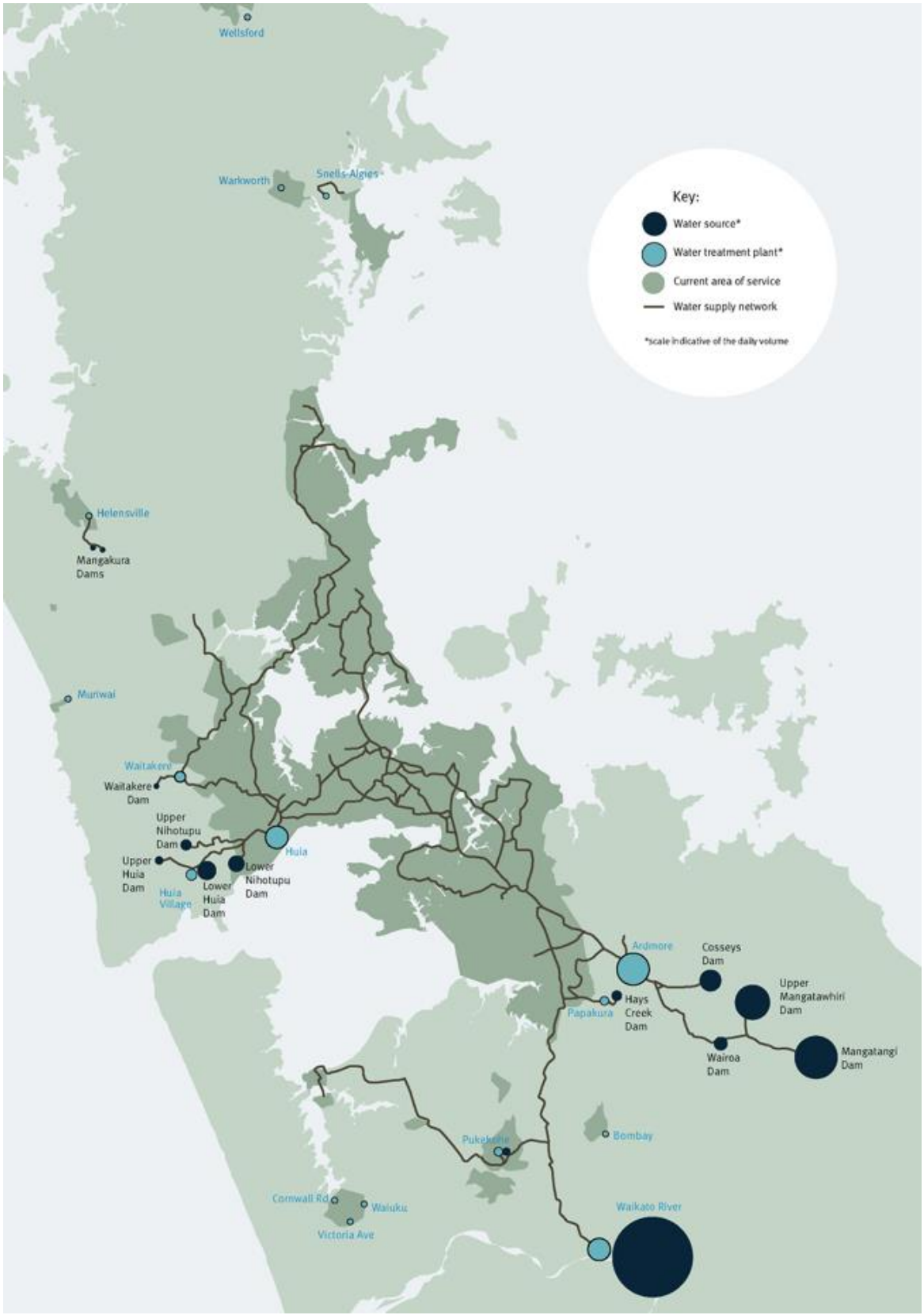

Figure 1: Auckland Bulk Water Supply System

Deployable output is based on the inflows anticipated for the drought standard which has been adopted for the system. The deployable outputs for Watercare's water sources have been calculated based on the Watercare LoS of:

- Demand restrictions within the metropolitan supply area are not required more frequently than 1 in 20 years ("peak level of service"); and
- Annual average demand within the metropolitan supply area can be met in a drought with a 1 percent probability of occurrence leaving 15 percent residual capacity in the Auckland water supply lakes ("drought level of service").

The 'peak supply / demand balance' is designed to show the forecast peak demand without restrictions during a dry summer with a return period of 1 in 20 years (or 5 percent per year), corresponding to the peak level of service. Under drier conditions (leading to higher demand), Watercare could expect to recommend to Auckland Council the imposition of restrictions to reduce peak demand. The 'annual drought supply / demand balance' is designed to show the forecast annual average demand and water available for use during a drought year corresponding to Watercare's drought level of service.

A comprehensive analysis of sourceworks was conducted in 2020, estimating outages and headroom allowances and annual and peak supply and demand balances into the future [1]. The gross yield (deployable output) of the system is currently constrained by the annual drought supply and demand balance, limited by an annual average of 515 MLD. However planned and unplanned temporary events (outage) can reduce source yields. The net yield of the system is calculated by subtracting an estimate of system outage from Deployable Output, giving a total volume of water available for use ("**WAFU**").

This was updated in 2024 with the latest system configurations and constraints following the previously established methodology, extending out to 2040. The results of this analysis are shown in five-year intervals in Table 1 (all numbers in megalitres per day, "**MLD**").

Table 1: Summary of annual drought supply demand balance

	2025	2030	2035	2040
Deployable output of existing sources	515	520	520	520
Water available for use (WAFU)	500	499	497	496
Baseline demand forecast[2]	454	484	515	543
Baseline demand forecast 75th percentile headroom	456	494	525	557
Surplus (WAFU-Demand including headroom)	44	5	-28	-61

[1] Waikato River Water Take Proposal: Outage, headroom and the supply / demand balance; Prepared for Watercare Services Ltd by Beca Limited and Tonkin + Taylor Limited, 9 December 2020.

[2] Dry year average day demand with demand management

Note: A Climate Change assessment is currently being reviewed, and results are not available at the time of writing this report. The Climate Change assessment may alter the Deployable Output volumes in Table 1 above.

The estimated peak supply demand balance (as determined by the 2024 review) is shown in Table 2 (all numbers in MLD).

Table 2: Summary of peak supply demand balance at 5-year intervals

	2025	2030[3]	2035[4]	2040
Deployable output of existing sources	730	741	790	790
Water available for use (WAFU)	705	716	765	765
Baseline demand forecast[5]	576	615	654	690
Baseline demand forecast 75th percentile headroom	584	630	669	708
Surplus (WAFU-Demand including headroom)	121	86	96	57

The combined water yield and water treatment plant capacities available at present demonstrate that there is a close margin between source availability, WTP capacity and water supply demand and that additional capacity is required.

2.2.2 Water Treatment Plants

Watercare currently operates eight WTPs to supply the metropolitan system. This combination of WTPs offers flexibility to use different raw water sources. Details of the WTPs are as follows:

- Waikato WTP is located adjacent to the Waikato River abstraction site and has a peak production of 175 MLD[6]. The treatment process at the Waikato WTP comprises coagulation, clarification, ultra-filtration membranes, activated carbon filtration, disinfection and treated water correction.
- Waikato 50 WTP is located adjacent to the Waikato WTP and Waikato River abstraction site, with a peak production capacity of 50 MLD. Commissioned in 2021, the treatment process

[3] Assumes Onehunga WTP back in service with a peak summer capacity of 11MLD.

[4] Assumes Waikato A WTP is built to stage 1, with a 255 MLD capacity.

[5] Dry year peak day demand with demand management

6 Under current conditions the capacity of this WTP is infrastructure limited (both treatment and conveyance), rather than consent limited

comprises coagulation, clarification, ultra-filtration membranes, activated carbon filtration, disinfection and treated water correction.

- Ardmore WTP is the largest WTP and is located to the southeast of Auckland, with a peak production capacity of 350 MLD. The Ardmore WTP receives raw water from the four storage lakes in the Hūnua Ranges, namely Mangatangi, Upper Mangatawhiri, Wairoa and Cosseys. The treatment process at Ardmore WTP is carbon dosing (optional), coagulation, clarification, sand filtration, disinfection and treated water correction.
- Papakura WTP is located to the southeast of Auckland, receiving water from the Hays Creek storage lake. It was commissioned in 2021 with upgrades in 2023 with a peak production capacity of 12 MLD. The treatment process comprises coagulation, clarification, membrane filtration, advanced oxidation (UV peroxide), activated carbon filtration, disinfection and treated water correction.
- Pukekohe WTP is located to the southwest of Auckland and receives raw water from the Dublin Street and Crisp Avenue bores, with a peak production capacity of 5 MLD. It was commissioned in 2020 however it was shut down in 2023 due to flooding caused by the Auckland Anniversary floods. It was returned to service in December 2024. Bore water is chlorinated to aid in the removal of naturally occurring iron and manganese, followed by membrane filtration for the removal of the precipitated iron and manganese. Water then undergoes ultraviolet (UV) disinfection and residual chlorine levels are then adjusted to acceptable levels along with treated water correction.
- Huia WTP is located west of Auckland and receives raw water from four storage lakes in the Waitākere Ranges, namely Upper Nihotupu, Lower Nihotupu, Upper Huia and Lower Huia. The peak production capacity is 120 MLD. The treatment process at Huia WTP is carbon dosing (optional), coagulation, clarification, sand filtration, disinfection and treated water correction. Watercare is planning to replace the Huia treatment plant[7] with a new (maximum) 160 ML/day peak capacity system, subject to securing appropriate resource consents and detailed design.
- Waitākere WTP is located west of Auckland and receives raw water from the Waitākere water storage lakes, with a peak production capacity of 21 MLD. Due to the high quality of the water in the Waitākere sources, the treatment process at Waitākere WTP is carbon dosing (optional), coagulation, clarification, sand filtration, disinfection and treated water correction.
- Huia Village WTP is a small treatment works having a peak production capacity of 300 m^3/day and is used to meet local demand. Raw water is sourced from the Lower Huia water storage lake. This treatment plant services the local community at Huia Village and whilst it draws water from a metropolitan source, it is not connected with the rest of the treated water network; therefore, it is not included in the treatment capacities listed in Table 2.

[7] The replacement plant is unlikely to be available for 7 – 10 years.

2.2.3 Water Transmission and Network Supply

Bulk water is conveyed from the water sources to the WTPs through large concrete lined tunnels, aqueducts and a predominantly concrete lined steel pipeline network.

Once treated, the water is conveyed and distributed through an extensive network of pipelines to the various customer supply areas. The pipeline network extends from the Waikato WTP in the south to Orewa in the north. The pipe assets comprise some 524 km of bulk water mains, and more than 9,400 km of distribution network, with the pipes typically being between 50 and 200 mm in diameter for local reticulation.

The treated water systems also include some 82 pump stations and 86 reservoirs. After treatment, water is gravity fed or pumped to reservoirs located at high elevations. The reservoirs provide system resilience and balance normal diurnal variations in network demand and meet emergency supply situations, such as for firefighting. The metropolitan water supply system stores approximately 24 hours of demand across the region.

The metropolitan network is divided into zones to maintain pressure across the widely variable topography. Hydrants are installed on all the pipe networks (except the bulk system) for fire-fighting and operational purposes such as flushing and draining pipes.

2.2.4 Pressure Points

Several of the conveyance systems are critical to the security of water supply and could result in major consequences should failure occur. These include the following:

- **The Wairoa Tunnel** – which delivers the combined raw water from the Wairoa, Upper Mangatawhiri and Mangatangi water storage lakes to Ardmore WTP. Failure of this tunnel would result in a loss of supply of up to 295,000 m^3/day. Delivery of raw water to Ardmore WTP would thus be reduced to 140,000 m^3/day (limited to six weeks) from the Cosseys storage lakes and could result in critical water supply shortfall to the Auckland Region, depending on the time of year and duration of the incident.
- **The Ardmore WTP** – which provides about 58 percent of the region's treated water. The potential failure of this plant is one of the major risks to the system in view of its large contribution to meeting the Auckland Region water demand. This significant risk can only be mitigated by rebalancing the supply from other WTPs to make up the difference.
- **The Huia Aqueduct** – which is located upstream of the Huia WTP. Failure of this infrastructure will result in loss of full plant capacity (currently up to 120 MLD). The loss in water supply would need to be made up by rebalancing the supply from other WTPs to make up the difference.

The water take from the Waikato River reduces the exposure to these and other water supply risks. This is because the Waikato River supply has a huge supply catchment, is not constrained by storage limitations, has its own dedicated WTP, and offers greater flexibility of supply.

However, currently a single pipeline carries all water from the Waikato WTP complex before joining the metropolitan network near Papakura (as indicated in Figure 1). Failure of this infrastructure will result in loss of the Waikato water supply, which would need to be made up by rebalancing the supply from other WTPs to make up the difference. To utilise full consented abstraction volume and improve system resilience, Watercare will construct a second water supply pipeline.

In that sense, as well as providing for future growth in Auckland, the Waikato River provides resilience and additional security of supply for the metropolitan water supply network.

2.3 Levels of Service

Watercare's Statement of Intent 2025-2028 ("**SOI**") and interim regulatory Charter (2025–2028) set out its public expression of activities, intentions, objectives and legislative expression to its shareholder, the Auckland Council. Central to implementing the SOI, is the Watercare Asset Management Plan 2021-2041 ("**AMP**") which sets out the tactical plan for achieving its strategic goals.

The AMP sets out several principles applicable to the management of the Watercare water network systems that define the LoS provided. These include:

- Auckland's metropolitan water supply system is designed and operated to meet the following two LoS (as outlined in the Drought Management Plan):
    - Annual average demand within the metropolitan supply area can be met in a severe drought (modelled to have a 1 percent probability of occurring in any year) while leaving 15 percent residual capacity in its water supply
    - Proactive demand restrictions will be required no more frequently than that required for an event with a five percent probability of occurring in any given year
- Metropolitan WTP resilience will be managed to enable an outage of a single WTP excluding the Ardmore WTP, without a reduction in water demand.
- Water demand management will be implemented to achieve the average day consumption should the Ardmore plant be limited to the minimum production of 140 MLD. Further restrictions will be implemented if the Ardmore WTP is out of service and contingency reservoir storage cannot be maintained.
- Increasing 24-hour treated water reservoir storage to improve system resilience as demand increases.
- In conjunction with water treatment and treated water reservoir storage capacity, the overall water transmission system will provide, wherever possible, redundancy against a transmission asset failure.

Maintaining these LoS is a key driver for Watercare's investment in water supply infrastructure.

2.4 Water Use Measurement

Watercare uses universal metering to measure water use by all legal connections on the Auckland metropolitan water supply network. Watercare has a combination of smart meters and mechanical meters. Smart meters transmit daily and all other water meters are read at least every second month and water consumption for alternative months is estimated.

Watercare also measures water at all sources, WTPs and bulk supply points around the city.

Water metering supplies essential data to manage Auckland's water system. Accurate water usage statistics help encourage efficient use, guide new source planning, optimize network operations, and manage revenues and costs.

2.4.1 Maintenance and Asset Management Procedures

Watercare maintains a comprehensive AMP to manage the company's infrastructure cost-effectively to achieve long term strategic goals.

The AMP sets out in detail the asset management procedures applicable to the Auckland Metropolitan Water Supply System and includes detail on the following:

- Operations and maintenance strategies to ensure that water and wastewater systems are operated to ensure that the expected LoS and that compliance with regulatory and resource consent conditions are achieved in a cost-effective manner.
- Asset renewal strategy, including asset replacement and rehabilitation programmes to monitor the condition and performance of assets to plan for their replacement.
- Significant water strategic programmes required to meet Auckland's future growth, including source augmentation, water treatment upgrades and water transmission initiatives, grouped by geographic area for the Southern, North-west, Central, North Shore, Hibiscus Coast, and non-metropolitan water supplies.
- Wastewater strategic programmes, outlining the significant programmes required to meet Auckland's future growth, including regional and sub-regional connectivity, wastewater treatment upgrades and wastewater transmission upgrades; and
- Financial projections that set out funding strategies and price path calculation methodology for major strategic projects and programmes, the planned operational and capital expenditure required to deliver reliable water and wastewater services across the Auckland region and how that will be funded.

Watercare takes an enterprise-wide approach to managing risks and opportunities through a formal enterprise risk management framework and by supporting processes which align with AS/NZS ISO 31000:2018 (Risk Management – Principles and Guidelines). Risks are analysed, prioritised for treatment, and then appropriate risk mitigation measures are applied.

The Watercare asset management system, as outlined in the AMP, is illustrated in Figure 2. Watercare aims to align our asset management system to the international standard for Asset Management - ISO 55000 series.

Watercare assets with a high criticality and / or which would have severe consequences if the asset failed, are placed on planned maintenance schedules. Non-critical assets with minor consequences if the asset failed, are repaired or replaced when they fail. This “unplanned” maintenance approach is the least whole-of-life-cost maintenance strategy for non-critical assets. Watercare balances maintenance budgets between planned and unplanned maintenance activities to reduce overall maintenance costs and minimise unplanned service disruption to our customers. To this end Watercare has implemented predictive modelling of asset condition to inform priorities for a planned approach to asset renewals.

To account for both planned and unplanned maintenance, flexibility in source availability is needed to ensure supply to customers is maintained and to enable consent limits to be met.

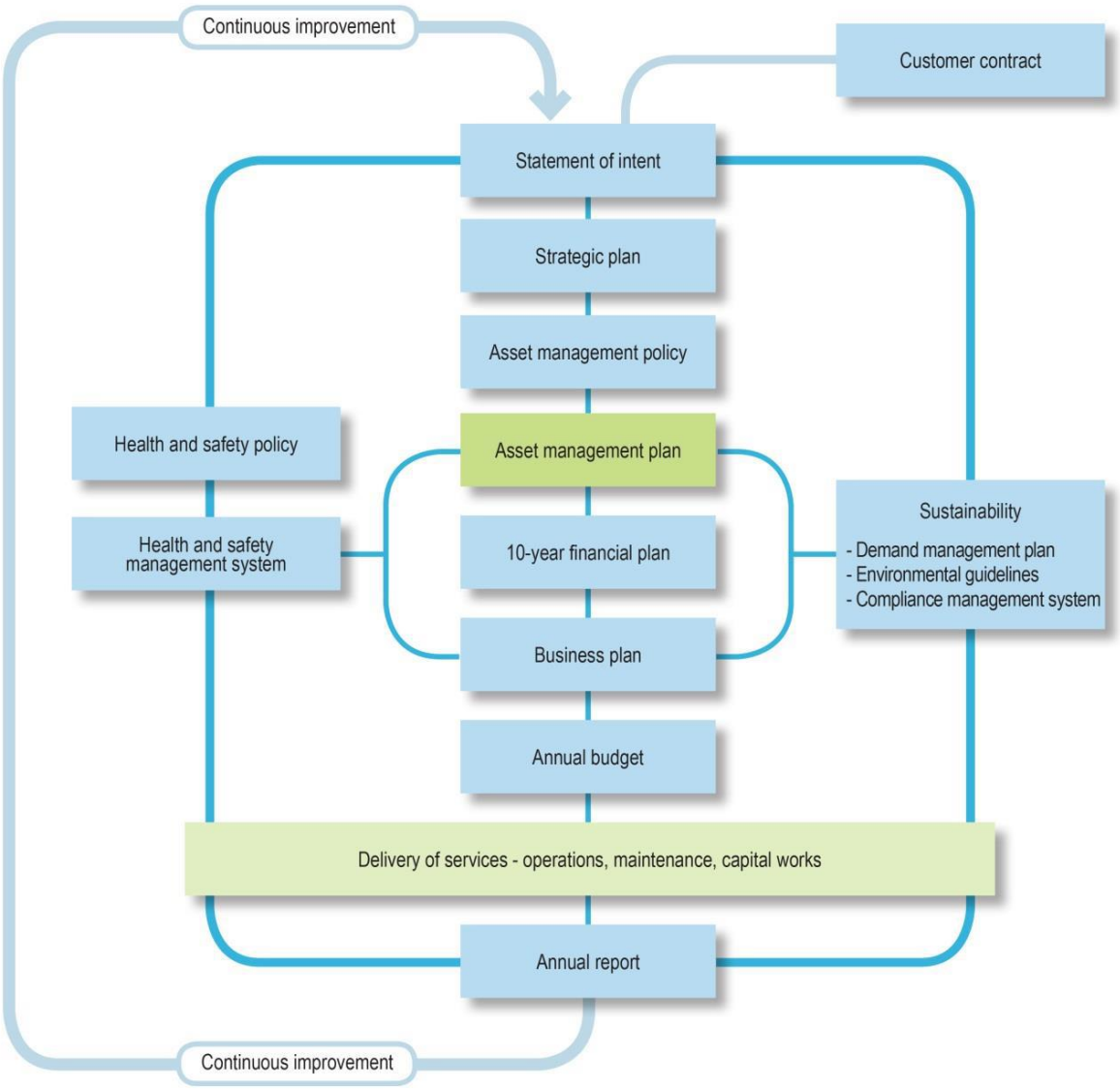

Figure 2: The Watercare Asset Management Approach

3. Auckland metropolitan water demand assessment

WRP Requirement:

2) A comprehensive assessment of existing demand and future demand for water with regard to an assessment of reasonable population growth within the planning horizon to meet the following:

a) reasonable domestic needs;

b) public health needs in accordance with requirements under any Act of Parliament or regulation;

c) reasonable community needs (e.g. for public amenities);

d) reasonable commercial, rural supply and industrial needs;

e) an assessment as to how each of the assessments required by clauses a) to d) above is predicted to vary over time;

f) a justification for each of the assessments required by clauses a) to e) above including reference to any relevant planning instruments promulgated under the Resource Management act 1991 that provide for future growth or relevant documents promulgated under the Local Government Act 2002 such as Long Term Plans, growth strategies or spatial plans.

3.1 Overview

Auckland's diverse employment, large market, and strong business clustering give it a unique advantage for attracting high-value economic activity, skilled migrants, and international investment to raise living standards across New Zealand.

Auckland serves as New Zealand’s principal commercial hub, leading key sectors such as finance, insurance, transport, logistics, and business services. The city is also the country’s largest manufacturing centre, with expanding clusters in marine industries, advanced materials, and the food and beverage sector. Secure and reliable water services are critical to the economic, social, environmental and cultural well-being of Auckland’s people and communities, and are a basic human right. It is also a crucial element in the Auckland Council’s long-term vision for Auckland to thrive and succeed over the next 25 years as set out in the Auckland Plan 2050 and Auckland Water Strategy 2022-2050. Secure water supplies are also essential for northern Waikato communities where access to other water sources can be limited.

3.2 Current Water Supply Situation

As outlined in Chapter 2, Watercare currently supplies Auckland with approximately 160,000,000 m^3/year. Key associated statistics are summarised in Table 3[8] below. The period 2020-2023 was excluded due to Covid impacts and unusually high rainfall in 2023, making it unrepresentative of typical demand.

Table 3: Water supply and demand statistics

Parameter	Quantity
Average daily water demand (2024-2026)	439,000 m^3/day
Maximum 3-day peak water demand (2024)	517,000 m^3/day
Gross per capita demand Financial Year 2025	255 l/p/d
Maximum anticipated peak water demand (2050)[9]	740,000 – 780,000 m^3/day
Average anticipated daily water demand (2050)[10]	600,000 m^3/day

3.2.1 Legislative Requirements

Legislation prescribes how the water and wastewater networks are managed, to ensure that public health and the environment is protected. Table 4 lists several Acts of Parliament that affect the delivery of the water and wastewater services by Watercare and provides a summary of the specific requirements under these Acts.

Table 4: Relevant Legislation

Legislation	Requirement
Resource Management Act 1991	• Promote sustainable management of natural and physical resources • That the taking of water and the discharge of wastewater to the natural environment are undertaken in compliance with resource consent conditions
Local Government Act 2002	• Obligation to maintain public water services unless that service supplies water to 200 or fewer persons.

[8] Watercare Services Limited, Asset Management Plan 2018 – 2038

[9] Anticipated water demand for 2050 is a high-level estimate, extrapolated from the same projection data that informed the Watercare Business Plan 2025 – 2034 (page 47).

[10] See previous footnote above.

Legislation	Requirement
	• Obligation for council to adopt a significance policy setting out (among other requirements) a list of assets council considers to be 'strategic assets'. Strategic assets are those assets vital for delivery of council's services to the community. Therefore, council has determined the water and wastewater schemes to be 'strategic assets'.
Civil Defence Emergency Management Act 2002	• Requires lifeline utilities to ensure they are able to function to the fullest possible extent, and have plans in place, to cope during an emergency • Participate in/provide information for Civil Defence Emergency Management strategy and plans
Local Government (Auckland Council) Act 2009	• Local activities must be identified in the Long-term Plan (LTP) • Manage water and wastewater operations efficiently to keep costs to customers (collectively) at a minimum while maintaining effective management and maintenance of the long-term integrity of its assets • Must not pay any dividend or distribute any surplus in any way, directly or indirectly, to any owner or shareholder • Give written notice for road opening (unless for emergency work) • Must have regard for public safety in relation to its structures
Health and Safety at Work Act 2015	• The main purpose of this Act is to provide for a balanced framework to secure the health and safety of workers and workplaces
Water Services Act 2021	• Ensure that drinking water suppliers provide safe drinking water to consumers • Develop and implement drinking water safety plans • Develop and implement a source water risk management framework

Legislation	Requirement
Local Government (Water Services Preliminary Arrangements) Act 2024	• Requires territorial authorities to prepare water services delivery plans • Provides a financially sustainable model for Watercare to be financially separate from Auckland Council and an interim economic regulation regime for Watercare that is administered by a Crown monitor
Local Government (Water Services Preliminary Arrangements) (Watercare Charter) Order 2025	• Minimum service quality standards and financial performance objectives to incentivise Watercare to provide quality service while operating efficiently • Thresholds for maximum allowable revenue so that expected increases in average combined water supply and wastewater services bills not exceed 7.2 percent (2026 and 2027) and 5.5 percent (2028) • Minimum rates of increase in infrastructure growth charges • Reporting and publishing requirements to ensure that the Crown monitor has sufficient information to perform their role and to ensure Watercare's public accountability.
Local Government (Water Services) Act 2025	• Framework for local government to provide water services in a flexible, cost-effective, financially sustainable, and accountable manner • Not use the water services assets as security, or divest ownership to a non-local government organisation, lose control of, sell, or otherwise dispose of the significant infrastructure for providing water services • Not restrict or stop water supply to a property unless all criteria under the Act are met. • Obligation to provide fire hydrants in the public water supply networks

3.2.2 Water Users

Watercare provides water services to more than 490,000 service connections across Auckland. Of the total water consumed, 74 percent is used by residential customers, with the remaining 26 percent used by commercial customers.

Commercial water use spans a diverse range of activities. The largest commercial sectors include council parks and open spaces, schools, and the food and beverage sector, alongside manufacturing and other process industries. Commercial customers range from large industrial and institutional sites to smaller businesses distributed across the metropolitan area.

During the Auckland drought, Watercare worked proactively with commercial customers, particularly within the manufacturing and food and beverage sectors, to support changes to production processes. These initiatives have resulted in more efficient water use and reduced demand, demonstrating the sector's ability to respond to water scarcity through operational improvements.

A small number of rural and agricultural customers on the outskirts of the metropolitan area are supplied directly from the metropolitan water supply system. Many larger agricultural operations rely on their own water sources and are not supplied by Watercare.

The remainder of water supplied is accounted for as non-revenue water, including operational use, fire-fighting, and losses. Non-revenue water levels are low by New Zealand standards and compare favourably with international best practice.

While the future proportion of demand across different customer groups cannot be predicted with high accuracy and precision, population growth is expected to be the main driver of overall water demand, as it underpins growth across both residential and commercial sectors. However, ongoing changes in Auckland's housing mix — including increased intensification, smaller dwellings, and a greater share of apartments and townhouses — are expected to reduce average residential water use per household and per capita over time, partially offsetting the demand impacts of population growth. Further information on water use, including per-capita demand, is provided below. Refer to chapter 6.

3.2.3 Gross Per Capita Consumption (PCC)

In accordance with the Auckland Water Strategy, Watercare is committed to achieving a gross per capita consumption ("**PCC**") target of 225 litres per person per day ("**l/p/d**") by 2050. Gross PCC is defined as the total volume of water supplied divided by the total connected population, and includes residential, commercial and non-revenue water use.

Gross PCC in Auckland was 257 l/p/d in 2024-2025, having declined significantly from levels as high as 425 l/p/d in the 1980s. This long-term reduction reflects the introduction of targeted water efficiency and conservation measures from the early 1990s onwards, including universal metering, a user-pays pricing structure, leakage reduction programmes, and ongoing public education initiatives. The economic recession in 2008–09 also contributed to a temporary reduction in per capita demand. The decoupling of population growth from water consumption is illustrated in Figure 3.

Watercare continues to actively pursue further reductions in per capita water consumption, as outlined in Chapter 7 of the Water Efficiency Plan. In addition to gross PCC, interim regulation requires Watercare to also report residential PCC, which measures average residential water use per person per day and excludes commercial and non-revenue water. Reporting residential PCC provides

greater visibility of household water use and supports more targeted demand management initiatives.

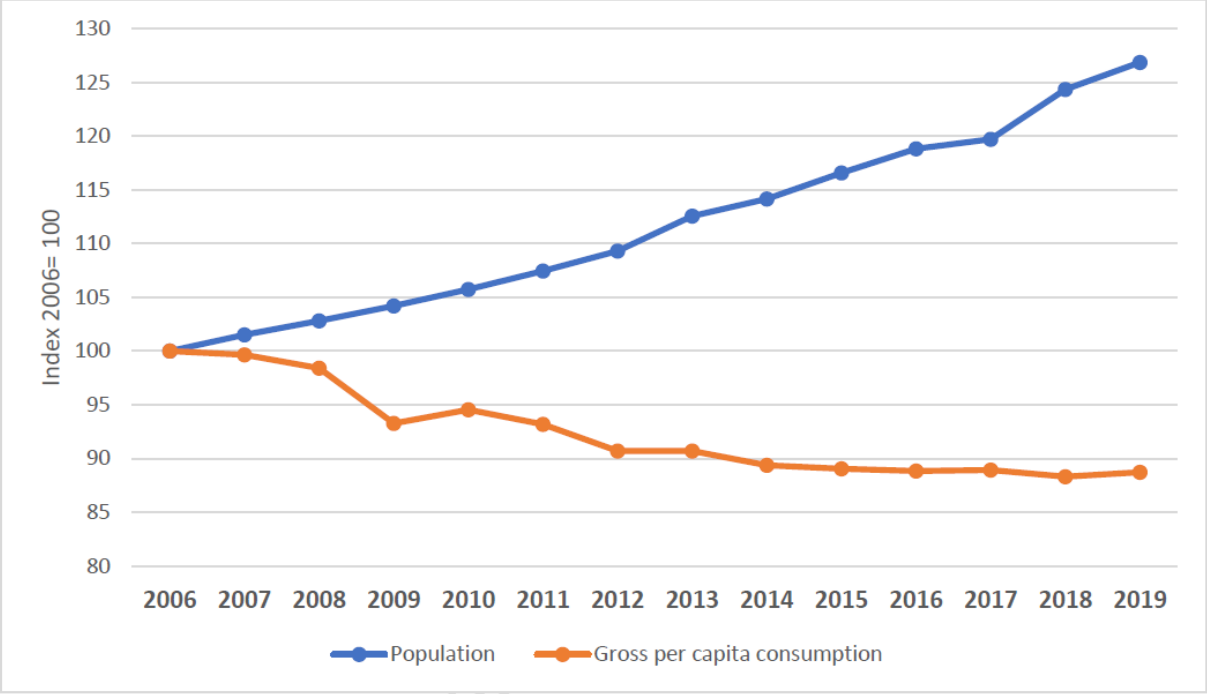

Figure 3: Gross per capita consumption vs population growth from 2006 to 2019.

More detail on the per capita water usage of Watercare's supply network relative to other domestic and international metropolitan centres is provided in Chapter 9.

3.3 Future Water Needs

3.3.1 Planning Period

Watercare's' assets are designed to have a 50-year capacity life and a 100-year serviceable life. On that basis, it would be appropriate to secure water availability for that same planning horizon. However, that is a very long timeframe with respect to resource consents. For resource consent purposes, a 35-year planning period is currently the maximum resource consent duration allowed by Section 123 of the Resource Management Act 1991 ("**RMA**"), as well as the proposed Natural Environmental Bill 2025. This is also a similar planning horizon used in the Auckland Plan (30-year). This is unlikely to change under the new planning systems. However, long-life infrastructure might have the maximum consent period increased to 50 years. Currently water and wastewater assets are not defined in legislation as long-life infrastructure.

3.3.2 Population Growth

An earlier estimation carried out by Watercare suggests Auckland's population currently stands at approximately 1.7 million people, with approximately 1.55 million connected to Watercare's

metropolitan water supply network in 2023. This is estimated to have grown to around 1.7 million people in 2025.

That Auckland's population will continue to grow is beyond dispute – the only question is at what rate. Auckland Council's Auckland Growth Scenario 2023 ("**AGS**") population data that informed the Future Development Strategy identifies projected population growth in Auckland through to 2052, based on a medium growth scenario, as shown in Figure 4. The AGS data is based on a bespoke population projection created for Auckland Council by Statistics NZ in 2023.

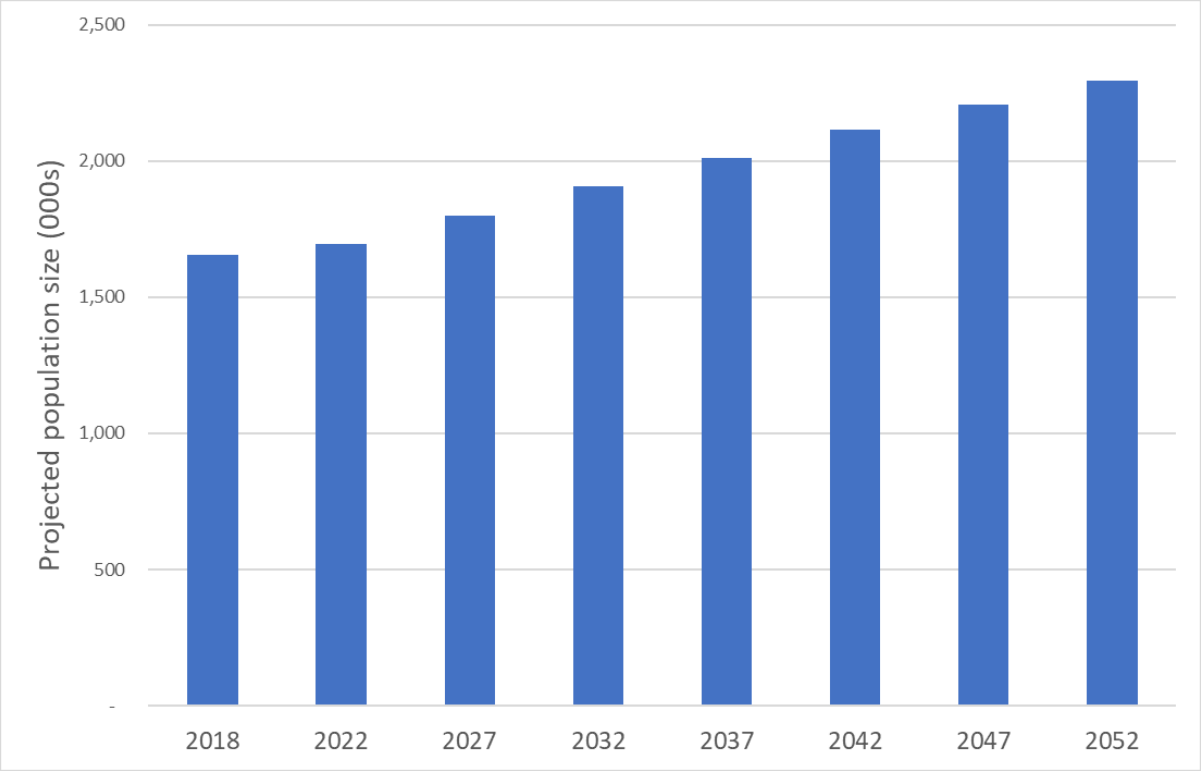

Figure 4: Projected total population in Auckland, at five-year intervals (2018 to 2052)

Under the medium growth scenario there would be around 2.3 million people by 2052, with more than 2.2 million people connected to the metropolitan supply network.

Irrespective of the population projection used, the population serviced by the Watercare network will continue to grow significantly and additional water sources will become necessary in order to meet the demand requirements.

Watercare is required to manage its operations efficiently "with a view to keeping the overall costs of water supply and wastewater services to its customers (collectively) at the minimum levels consistent with the effective conduct of its undertakings and the maintenance of the long-term integrity of its assets"[11]. Watercare has been directed by Auckland Council to use the AGS population projections as the basis for long-term planning. Watercare also incorporates historical

[11] Section 57(1)(a), Local Government (Auckland Council) Act 2009.

records upon which to base its planning in addition to the medium growth scenario, while paying close attention to growth trends. Should higher growth take place, Watercare will bring forward the implementation of alternative strategies to ensure water demands are met. To do this it is important that Watercare has visibility of the growth expectations as they change, to ensure that sufficient lead time is allowed to construct and commission any new infrastructure before the demand is to be met.

It is also important that allowance for contingencies be built into the calculations of Auckland's future water supply needs. Some of those contingencies are foreseeable, and some not.

For example, planned (and unplanned) maintenance serves to reduce water availability. While maintenance is generally scheduled in "off peak" times when water shortages are less likely, this cannot be guaranteed. Furthermore, the possibility of a major longer-term interruption to supply (e.g., from earthquake or storm damage to key infrastructure) cannot be ruled out. For these reasons, it is normal practice to include a contingency figure when projecting future demands.

Watercare has reviewed the planned and unplanned events that reduce the reliability of supply and quantified the risk of these events using an established international methodology[12]. The resultant reduction in supply is called "outage" and has been estimated at 17 MLD for annual average daily water supply and 25 MLD for peak supply based on the 2024 outage review.

Watercare has also investigated an appropriate buffer that a prudent water company should allow between supply and demand to cater for specified uncertainties (except those due to outages) in the overall supply demand balance. This is referred to as "headroom" and was also calculated using an established international methodology[13]. For example, the factors used in the headroom calculation include the following:

- Degradation of source water quality.
- Accuracy of supply side data (hydrological records etc.).
- Uncertainty of the effects of climate change on yield.
- Accuracy of demand data (for example metering data).
- Demand forecast variation.
- Uncertainty of the effects of climate change on demand.

Since headroom represents uncertainty, the resulting headroom calculation will vary over time, beginning at 0 MLD at the present, and increasing into the future. For example, the 75th percentile peak headroom allowance for 2030 is estimated at approximately 15 MLD, rising to 27 MLD by 2050.

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12 For example, UK Water Industry Research. (2009). Estimating the Water Savings for Baseline Water Efficiency Activities. London: UK Water Industry Research Limited.

13 For example, UKWIR 2002, "An Improved Methodology for Assessing Headroom". 02/WR/13/2.

Similarly, the 75th percentile annual drought headroom is estimated at approximately 9 MLD for 2030, rising to 23 MLD by 2050. This needs to be accounted for in future water demand estimates.

It is noted that meeting peak demand cannot practicably be achieved simply by modifying the existing WTPs and conveyance infrastructure to enable a greater instantaneous volume to be sourced from each existing source. Doing so would require replacing a substantial amount of the existing infrastructure and may not represent the best value for money. It would also reduce the sustainable yield of any affected storage reservoir, which, in turn, would increase the average volume required from other sources such as the Waikato River.

Whilst population growth is the most important component in any assessment of future water needs, there are numerous other variables that can have a profound effect on those assessments. These include:

- Economic conditions.
- The relative proportion of residential, industrial, commercial, municipal, and other uses, and how fast these sectors grow.
- How much per capita demand can be reduced by water conservation initiatives and other public education measures.
- How outages, headroom and other contingencies are applied.

The discussion below includes comments on these and a number of related matters.

3.3.3 Other Factors

Watercare acknowledges that there is always uncertainty when using projections for future planning purposes and tend to underestimate what will happen in practice, including for example (but not limited to):

- The planning assumptions used for population growth will affect the water volume required. For example, under a high growth scenario, more water would be required by 2050 to meet demand than that required under a medium growth scenario.
- If a high growth scenario occurs in practice, then the volume required to meet demand in 2050 would only achieve the peak demand through to around 2030 and average demand through to around 2040[14].

[14] Informed by the bespoke very high growth scenario produced by StatsNZ in 2023, this assumes all other factors remain constant, including percentage of connected population, per capita consumption, climate condition, and current planned investment programmes.

- It needs to be acknowledged that the "high or very high" population growth projections are not "upper bound" or "highest possible" scenarios and that other population growth scenarios could eventuate.
- Despite Watercare's programme to meet the 15 percent demand reduction target outlined in Chapter 7, reducing water use is not entirely within Watercare's control. Auckland's per capita use is already amongst the lowest in New Zealand and the effects of the economic environment are difficult to quantify. Should economic conditions improve, it is not unreasonable to expect PCC to increase. Should there be no further reductions in PCC, Auckland would require an additional 68,000 m3/day and 65,000 m3/day under the medium growth scenario for average and peak demand[15] by 2040, respectively.
- In addition, climate change projections suggest increasing average air temperatures. If temperatures increase, it is not unreasonable to expect PCC to increase, as hotter days tend to lead to an increase in consumption. Similar water volumes could be expected as if economic conditions improve. However, Watercare does not want to be too conservative in its assumptions. These scenarios broadly are included in the headroom allowances in the projected estimates.

Watercare uses conservative growth forecasts to ensure effective management.

In addition, a distinction needs to be made between the time when a financial commitment to a capital expenditure project is made (as set out in the AMP) and when it is prudent to secure access to the natural resources necessary to facilitate that investment. Watercare's AMP includes timing and funding allowances for the consenting process, which can add five to seven years to a project prior to any detailed design work progressing.

The AMP is a funding document that includes Watercare's anticipated capital expenditure projects over the next 20 years. It is a forecasting tool and Watercare regularly (at least every 3 years) adjusts project timeframes depending on the company's overall requirements and changing circumstances. Put simply, Watercare considers that it is prudent to be identifying demand requirements on an ongoing basis and to obtaining consent when appropriate for the next source of water needed by Auckland so as to ensure security of supply.

3.3.4 Requirement for Water from the Waikato River

Of necessity, the water supply system must satisfy both peak and average demand. The attraction of the Waikato River source over "water storage lake" sources is that its availability is, in practical terms, comparatively drought resilient. Whereas water storage lakes will reduce during periods of extended dry weather when inflows decline, the Waikato River has a very large catchment area, and experiences smaller flow changes in comparison. However, the Waikato Resource Consent

[15] Informed by the supply-demand balance analysis adopted for the 2024-2034 Business Plan.

AUTH131259.01.02 requires that if the 7-day average flow in the lower Waikato River drops below 163.5 m^3/s (90 percent of Q5) at the Waikato Regional Council Rangiriri flow site for 10 or more consecutive days, the average daily net take volume across any consecutive two day period must not exceed 127,500 m^3/day, and additional consent restrictions apply at higher abstraction rates.

In 2022 Watercare was granted a 20-year resource consent for up to 150 MLD (net) from the Waikato River, ensuring a reliable water supply as the Auckland region grows. This is in addition to the original consent for 150 MLD taking the total abstraction to 300 MLD (net). In seeking this consent Watercare agreed to reduce reliance on the Waikato River by increasing the contribution of other water sources. However, Watercare notes that the existing two consents will be renewed as required and appropriate when they expire.

Annual population growth (medium scenario) is estimated to increase the average demand for water of at least 5,000 m^3/day each year. Watercare will likely require additional abstraction from the Waikato River by around 2035 to continue to meet Watercare's drought LoS, although the exact date and rate of annual increase in demand cannot be predicted with absolute certainty. This is in line with the above existing consents.

3.4 Auckland Plan

The Auckland Plan 2050 is a long-term spatial plan to ensure Auckland grows in a way that will meet the opportunities and challenges of the future. It is required by legislation to contribute to Auckland's social, economic, environmental and cultural well-being. The specific requirements of the plan are set out in sections 79 and 80 of the Local Government (Auckland Council) Act 2009.

The Auckland Plan sets a strategic direction for Auckland and its communities that integrates social, economic, environmental, and cultural objective and outlines a high-level development strategy to achieve that direction and objectives. The spatial plan must identify the existing and future location and mix of critical infrastructure, services, and investment within Auckland, including services relating to water supply. The plan sets high level direction for Auckland but does not contain a detailed set of actions.

The Auckland Plan recognises the Waikato River as an integral part of the network for supply of water to Auckland and that additions to the Waikato Water Treatment Plant will be required during the planning period to 2050. It also recognises that the AMP plays a critical role in setting the framework for a safe and resilient Auckland water supply. The Auckland Plan therefore contributes to the water management strategy followed by Watercare for meeting future water demand.

3.5 Summary

Auckland's population will continue to grow, accompanied by an ongoing need for a secure supply of water. Watercare utilises the Waikato River as a reliable water source for municipal supply prior, with additional source(s) expected to be required in the 2040's. Based on population growth and

prudent management of infrastructure, there is a reasonable expectation that provision for municipal water supply demand can continue to be sourced from the Waikato River.

Watercare will continue to assess what allocation of water from the Waikato River will be sufficient to ensure both reliability of water supply to Auckland and that future opportunities for water allocation to others are not foreclosed upon. It will also continue to assess alternative options for the supply of water to meet the demand for water from the Watercare network but recognises that in the short to medium term, the Waikato River will continue to be the preferred water source to meet growth in demand, in line with existing consent conditions.

4. Water pricing procedures

WRP Requirement:

3) Any existing or proposed water pricing procedures and any linkages with wastewater pricing or management.

All legal connections to the water supply network are metered, all water meters are read at least every second month and water consumption for alternative months is estimated. In combination with metering, Watercare utilises pricing structures as a means of providing financial incentives for people and businesses to reduce their consumption of water, while ensuring that its obligations under the Local Government (Water Services) Act and Local Government (Water Services) (repeals and amendments) Act are met.[16] This is supported by the implementation of smart meters as reported in section 5.2.

Universal water metering and volumetric charging for water use has been found from research and experience worldwide to be an effective means of significantly reducing water use. Water use reduction occurs where:

- Water charges are transparent and water users tend to elect not to undertake certain water use activities which have a low value for them.
- Water users are likely to deal with leaks and water losses to avoid unnecessary water charges.
- In the longer term, some users find it economic to replace old appliances and technologies with modern water efficient equipment.

Water metering allows regular monitoring of individual properties. Significant increases in water use are readily identified enabling a response to identify and repair the potential leak.

All consumers throughout the Auckland metropolitan area are charged according to the volume of water used, with charges being updated on an annual basis. A domestic and non-domestic volumetric rate of $2.296 (including GST) per 1,000 litres consumed is applicable throughout the region, effective for the period 1 July 2025.

As well as charging for the water supplied to properties, Watercare also charges for the wastewater leaving the property, with GST inclusive fixed charges ranging from $332 (domestic users) through to $110,040.08 (high industry use) and volumetric rates ranging from $3.994 for domestic customers through to $6.17 per 1,000 litres for business users (depending on the type of business use). Residential wastewater volume is calculated at 78.5 percent of in the incoming water volume,

[16] For example, section 57(1)(a) of the Act requires Watercare to manage "*its operations efficiently with a view to keeping the overall costs of water supply and waste-water services to its customers (collectively) at the minimum levels consistent with the effective conduct of its undertakings and the maintenance of the long-term integrity of its assets*".

providing further incentive to minimise water use. The charging regime is reviewed annually and updated as necessary.

5. Managing reticulation networks to minimise water losses

WRP Requirement:

4) How water reticulation networks are planned and managed to minimise their water losses as far as practicable.

5.1 Overview

Watercare actively monitors and manages the water reticulation network for the Auckland water supply to minimise water losses. The general approach and current initiatives of that active management are summarised below.

5.2 General Approach

The following provides a summary of the strategy set out in Water Efficiency Plan.

Strategy 1: Making every drop of water count by reducing loss, seeks to reduce Watercare's losses, Watercare's current water loss is 116 litres per connection per day.

Strategy 2: Creating smart networks:

- District Meter Areas: Watercare continues to invest in new district meter areas which makes it's monitored areas smaller and enables a quicker reaction to leakage outbreaks and thus reducing leak runtimes and water loss.
- Pressure Reduction: Watercare has been retrofitting controllers to its pressure reducing valves and increasing its pressure monitoring across the network. This is allowing improved control and optimisation of the water pressures. This is reducing water loss and leak numbers.
- Leakage Management System: Watercare has developed a leakage management system to indicate on a daily basis where leaks have occurred and enabling effective targeting of active leakage detection resources.
- Active leak detection – We use proactive leak detection in the areas in which we notice higher losses. Contractors use acoustic methods to detect leaks.
- Innovation in leak detection – Watercare is active in working with our peers in New Zealand and overseas to keep abreast of the latest technology and how it might benefit our leakage detection and reduction efforts.
- Using smart meters – Watercare continues to roll out Smart meters across its networks with a focus over the next few years on replacing our commercial customers meters
- Customer data – Customer leaks also represent a significant source of water loss. Smart meters will help customers identify their own leaks earlier than traditional mechanical meters. With the

mechanical meters, customers may only become aware that there is a leak when they notice that their bi-monthly bill is unexpectedly high.

6. Patterns of water use

WRP Requirement:

5) A description of patterns of water use practices and/or behaviour in all sectors of use (and distribution) with the objective of maximising water use efficiency and reducing water use, as far as practicable.

6.1 Overview

By getting a better understanding of water use practices and/or behaviours, and the factors which influence those practices and behaviours, opportunities for improving water efficiency can be identified and monitored for their effectiveness. A broad range of work has been done to better understand the patterns of water use practices and behaviours in all sectors.

6.2 Water Supplied

This section provides an overview of how water is used in Auckland, how population has increased and the volumes of water supplied to meet Aucklanders' needs. As can be seen in Figure 5, the Watercare network of water supply sources, water treatment plant infrastructure and water use throughout the network is complex and involves a wide range of components. Note: this image is indicative and proportional. This necessitates management of the network in a conjunctive manner and means that at any source, treatment plant or use location can have implications beyond a particular water source. It is important to note that the matters addressed in this WMP do not relate solely to any particular water source within the network, and that each source must be considered as an integral part of the broader system for maintaining supply to Auckland and North Waikato.

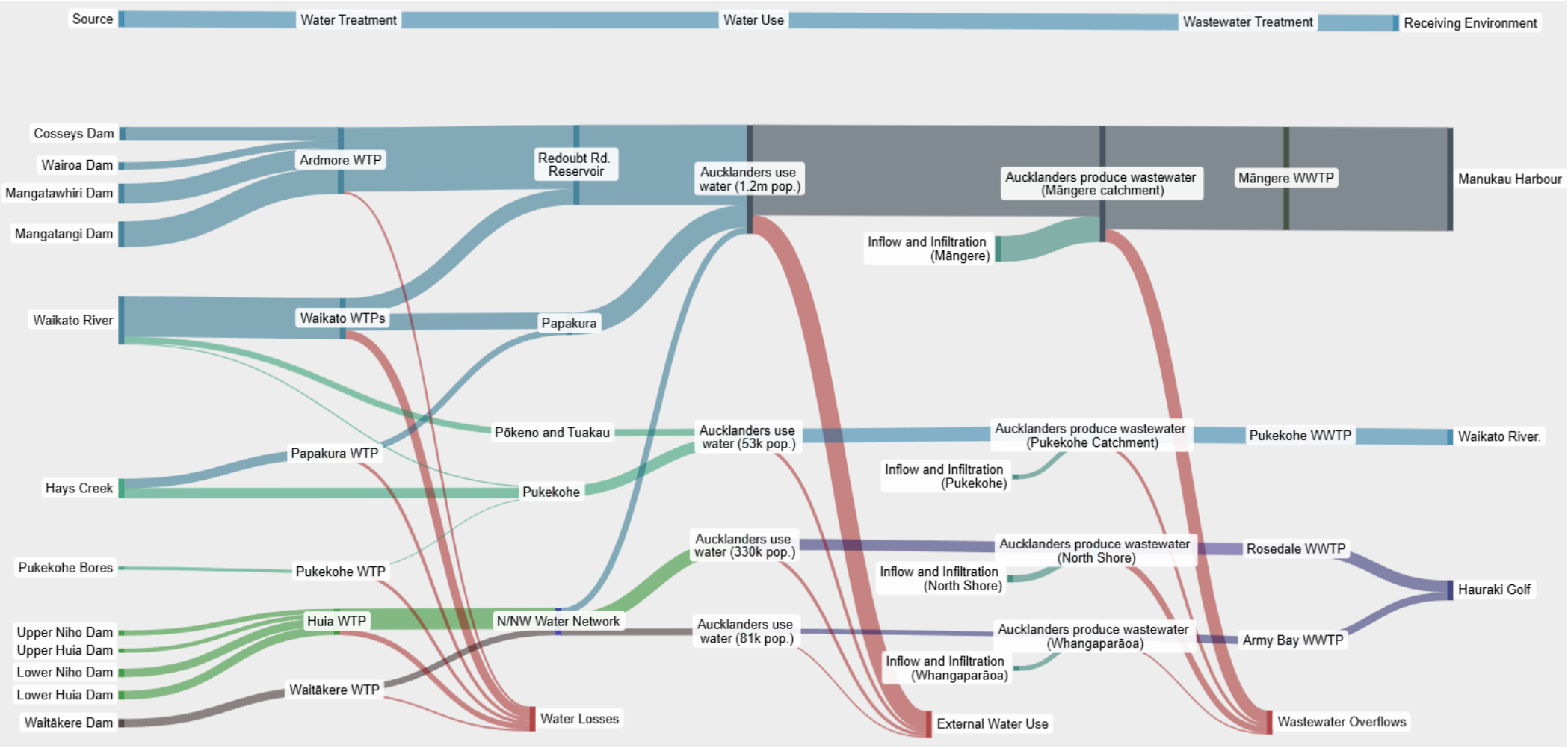


Figure 5: Watercare Metropolitan Big Water Picture 2026

6.2.1 Customer Base

Watercare supplies water to a wide customer base including residential, commercial, industrial, institutional and agricultural users. The majority of water is used by Watercare's residential customers, although there is also a substantial demand from the industrial, commercial and institutional sectors, grouped under "Commercial".

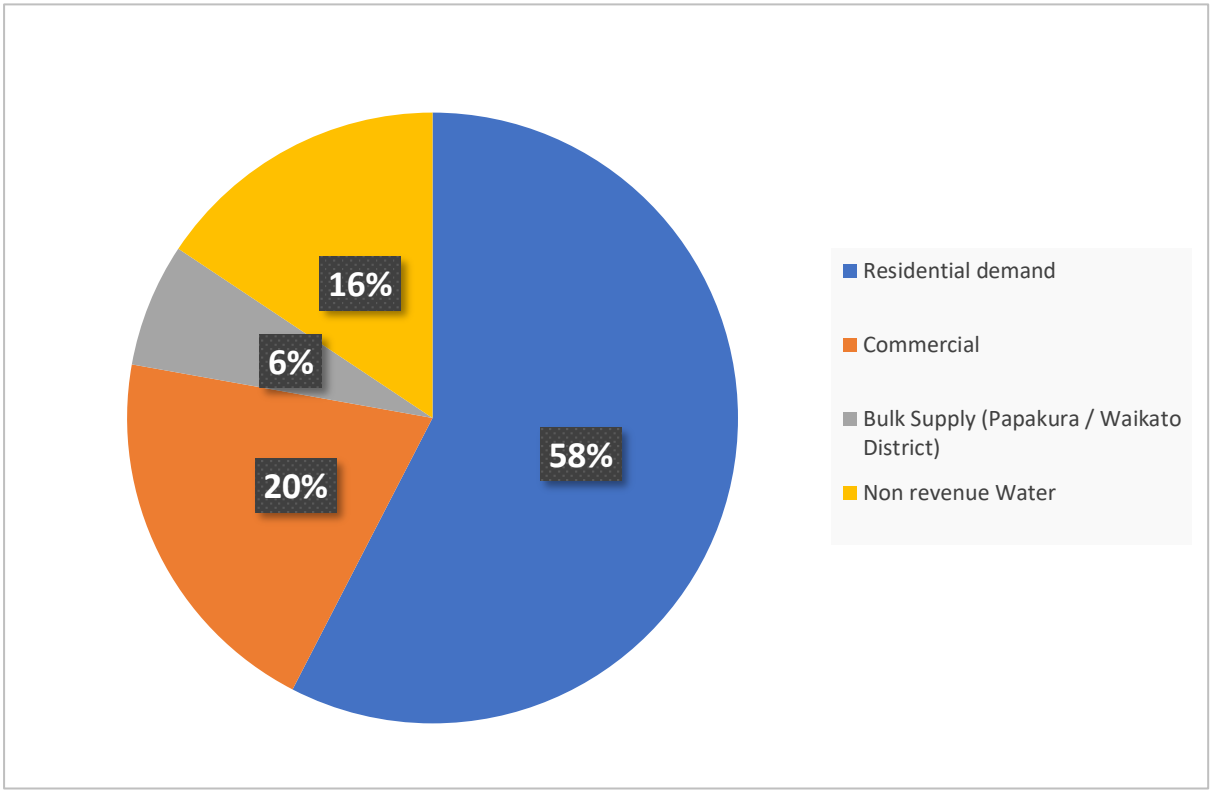


Figure 6: **Typical volume consumption by customer type (2025)**

Water losses are also included in Figure 6, which is leakage through the water supply network.

In Papakura, Watercare provides bulk services to Veolia Water that manages the local network and retails services to the local community.

6.2.2 Volume of Water Supplied

Watercare currently supplies metropolitan Auckland 160,000,000 m^3/year of water. Water demand has a strong correlation to rainfall and temperature and as Auckland is a city with a growing population this has resulted in significant year on year demand increases, as indicated in Figure 7**Error! Reference source not found.** for the period 2010 – 2020.

6.3 Peak and average demand

Monthly average demand is shown in Figure 7**Error! Reference source not found.**. It illustrates that total demand and summer peak demand has grown significantly over the period 2010 – 2020, demand has significantly reduced during the summer months due to restrictions implemented in May 2020 and the reduction in population growth due to Covid restrictions. However, winter (July) demand has also shown a steady increase, after Covid restrictions were removed and the population started to grow again. The peak demand reduction and baseline winter demand increase has resulted in a steady annual average demand that is highly reliant on weather patterns. Forecasted annual average demand is due to keep increasing at an average rate of around 5,000 m3/day over the next few years.

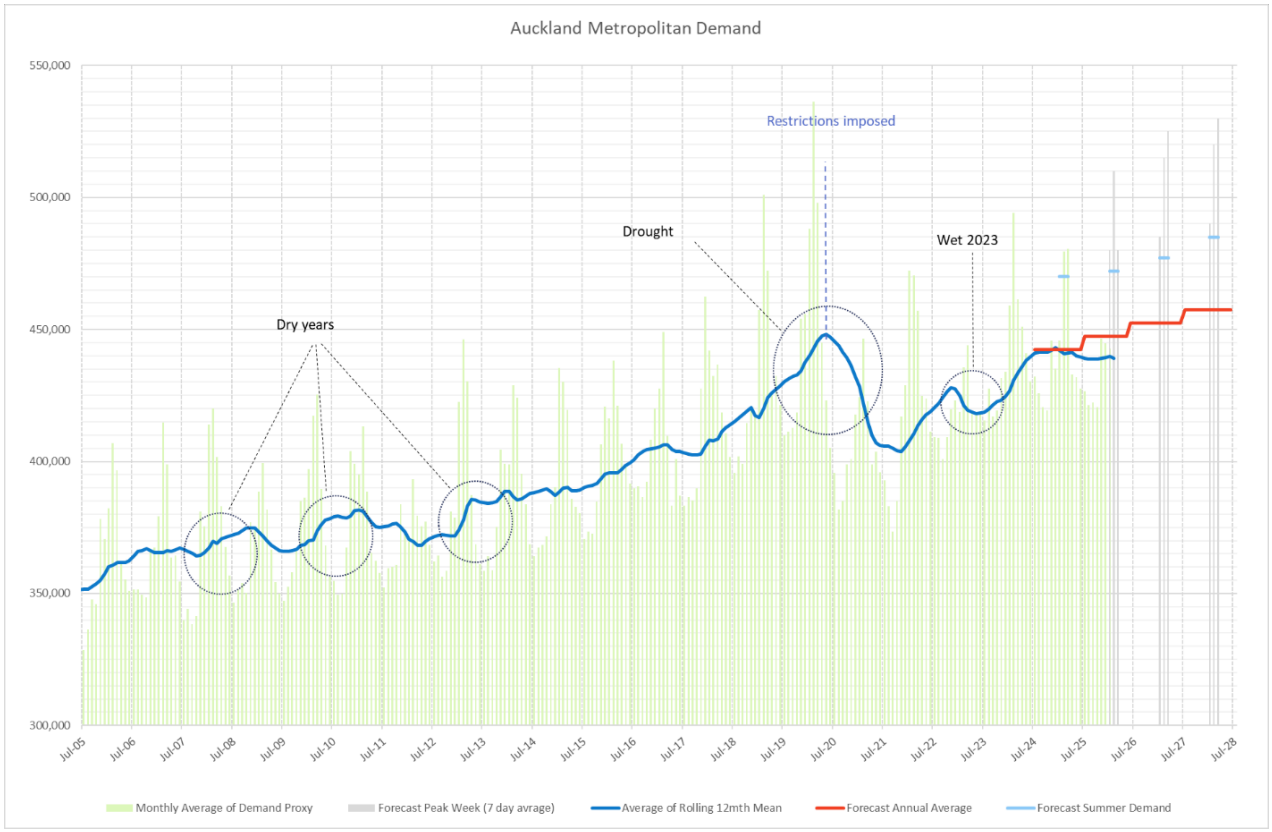


Figure 7: Monthly Average Demand for financial years 2005 to 2025, plus forecasted average and peak demand

6.4 Overview of Per Capita Consumption

6.4.1 Overview

Based on PCC calculations, it is clear that within the next 10-20 years, Auckland's current water sources will be insufficient to supply the region's growing population. An additional water source – plus treatment and transmission capability – will need to be brought on stream. After an exhaustive examination of over 80 options, Watercare has confirmed that the Waikato WTP will be duplicated

and second pipeline installed to abstract full consented volumes and future proof Auckland's water supply due to growth.

Despite changes in population, the demand for water has not increased proportionately due reduction achieved in gross PCC, from over 400 litres/person/day forty years ago to approximately 257 litres/person/day in 2025. The change in PCC over the period 1990 to 2025 is illustrated in Figure 8, with the red line showing the change in PCC.

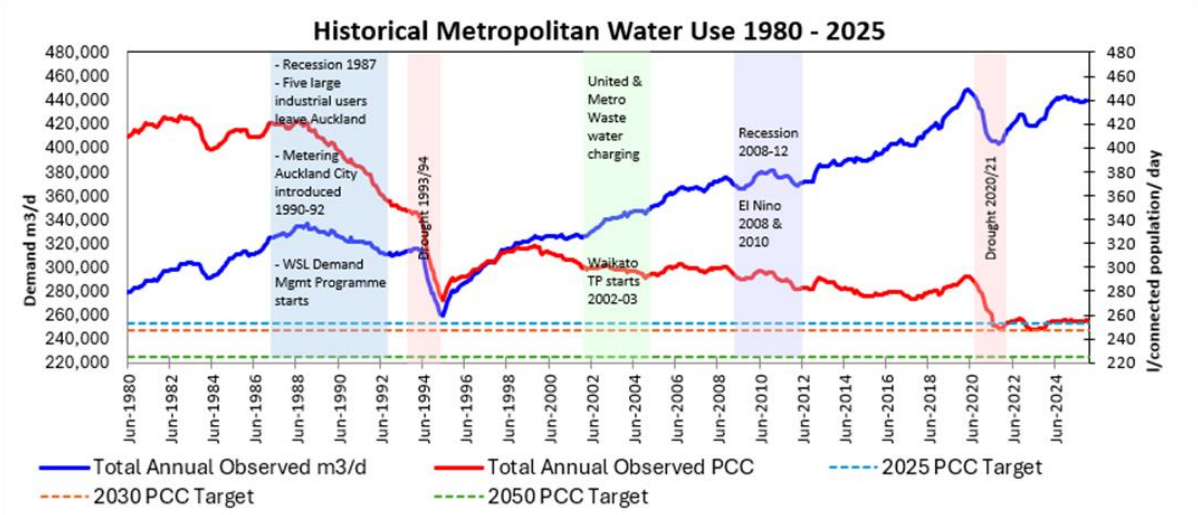


Figure 8: Auckland's historical water use (2025)

Figure 8 shows that significant events, such as the 1994 drought, recession in 2008/09 and recent drought in 20/21, and programmes such as demand management measures including the introduction of universal metering can influence and change water use.

The calculation of gross PCC for Auckland is based on the metropolitan supply area, i.e. those customers who are connected to the main metropolitan supply. There are also areas outside of the metropolitan area that Watercare supplies, such as Helensville, Waiuku and Warkworth. The gross PCC target is based on the consumption of customers connected to the metropolitan network.

Figure 9 shows the sustained reduction in gross PCC since 2004. Watercare achieved its 2025 PCC target of 253 l/p/d (±2.5 percent), with actual performance of 257 l/p/d in 2025, confirming delivery of the targeted 15 percent reduction from 2004 levels.

Gross PCC is influenced by a range of factors, including population estimates, residential and commercial consumption, climate conditions, Watercare's own operational water use, and leakage.

Having met the 2025 target, Watercare will now work to the glidepath set out in the Auckland Water Strategy, which aims to reduce gross PCC to 225 l/p/d by 2050. Continued demand management initiatives will be required to maintain the downward trend in per capita water use and avoid stabilisation at higher consumption levels. Investment in smart meter rollout and how we enable customers to access this information through an app or portal will enable further reduction. This is outlined in our water efficiency plan - https://www.watercare.co.nz/home/about-us/sustainability-and-community/water-efficiency-plan

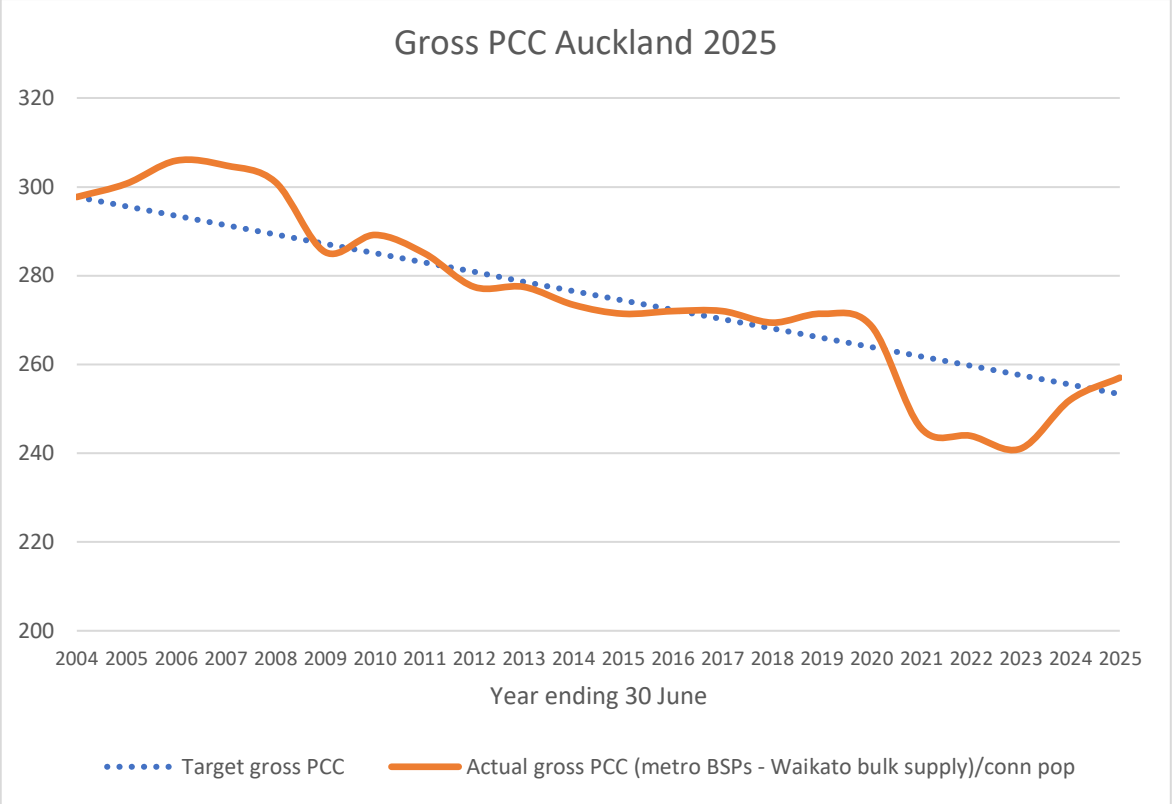


Figure 9: Auckland's demand management savings pathway

6.4.2 Residential Per Capita Consumption

Residential PCC has reduced from approximately 167 L/p/d in 2012 to about 160 L/p/d in 2025 in Auckland. Variations in annual residential usage are impacted by water efficiency and by the weather over the summer, with water usage increasing during a drier or hotter summer in comparison with a normal year. Table 5 provides PCC examples from New Zealand for context.

Table 5: PCC in Auckland and other New Zealand cities

City	l/p/d	Metering status	Notes
Auckland	140-170	Fully metered	Lowest of major cities, reflects true household use
Tauranga	~180-200	Fully metered	Higher outdoor use, strong demand management
Hamilton	~220-240	Mostly unmetered	Figure includes leakage
Christchurch	~240-260	Unmetered (excess use charging only)	Abundant supply, large sections
Wellington City	~350	Largely unmetered	Includes private and public leaks

Unmetered districts (range)	300-800	Unmetered	National upper bound

6.4.3 Influence of Pricing on Per Capita Consumption

All water supplied in the Auckland region is fully metered. Consistent with the Local Water Done Well framework, Watercare applies a uniform volumetric price for water supplied to residential and commercial customers. This approach reflects core pricing principles, including fairness, transparency, and cost reflectivity, by ensuring customers pay in proportion to the water they use.

Watercare's water charges are set to recover the efficient costs of providing safe and reliable water services. This includes the costs of operating, maintaining, renewing and expanding infrastructure; meeting regulatory, environmental and public health requirements; and investing to support growth, resilience and long-term service sustainability. Charges are reviewed annually to ensure they remain aligned with updated cost forecasts, investment needs, and applicable pricing principles under the Local Water Done Well regime.

The introduction of universal metering and volumetric charging in Auckland resulted in a significant and sustained reduction in water demand, demonstrating the effectiveness of usage-based pricing in supporting efficient water use. Metering continues to play a central role in Watercare's demand management approach.

Building on this foundation, Watercare is progressively rolling out smart water meters across the Auckland region. The Watercare app provides customers with more timely and detailed information about their water consumption, supporting greater awareness of usage patterns, earlier identification of leaks, and more informed water-use decisions. International and domestic experience indicates that improved visibility of consumption can drive behavioural change, and Watercare expects the smart meter programme to enable a further step change in water-use efficiency over time.

6.4.4 Influence of the Economy on Per Capita Consumption

Water demand in Auckland is shaped by population growth, economic activity, urban form, technology, and access to information about water use. Population growth and business activity increase total demand, even as per-capita consumption declines. Housing type and urban density influence usage patterns, with higher-density development generally associated with lower per-capita water use, particularly for outdoor purposes. Technological improvements, including more water-efficient appliances and building standards, have progressively reduced water use per unit of service over time. The availability of alternative water sources, such as rainwater harvesting and greywater systems, can also reduce reliance on reticulated supply. Improved access to consumption information—through universal metering and the rollout of smart meters—supports

earlier leak detection, increases customer awareness of usage patterns, and encourages behavioural change that improves overall water-use efficiency.

6.4.5 Influence of Climate on Per Capita Consumption

Water demand in Auckland is influenced by climate variability and the frequency and severity of drought conditions. Extended dry periods increase outdoor water use and heighten competition for available water resources (refer to Figure 8), while also raising public awareness of water scarcity. During droughts, conservation messaging, water-use restrictions, and heightened perceptions of supply risk tend to reinforce demand-reducing behaviours, independent of other economic or structural factors. Over the longer term, climate change is expected to increase demand volatility by intensifying dry periods and altering seasonal usage patterns, placing greater emphasis on demand management and system resilience.

6.4.6 Improving Our Understanding of Per Capita Consumption in Auckland

Watercare continues to monitor and review consumption data to identify trends and uses this information to inform its approach to demand management. Growth investment, for water planning and construction, is based on PCC data. As indicated in the Water Efficiency Plan, trends in usage are integral to informing strategies for driving efficient water use in Auckland.

6.5 Residential Consumption

Watercare commissioned BRANZ to update its understanding of residential water use in Auckland homes, with the most recent study completed in 2022 (Figure 10). The updated findings show that improvements in appliance efficiency have been the primary driver of changes in household water use. In particular, the increasing uptake of smarter and more water-efficient washing machines—especially front-loading models—has led to a notable reduction in water demand. Water use attributed to washing machines has decreased from around 23 percent of household consumption to approximately 13 percent, reflecting the shift away from less efficient top-loading machines.

The Watercare app helps residential customers better understand their water use, whether they have a smart meter or a manual meter. By showing easy-to-understand usage information over time, the app makes it simpler to track consumption, spot changes, and be more mindful of everyday water use.

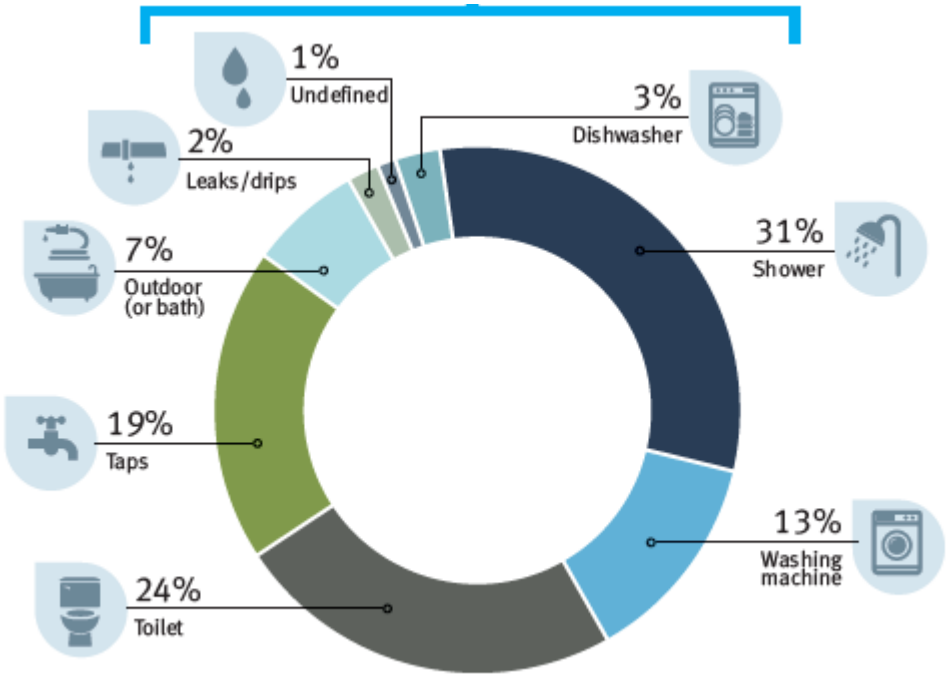


Figure 10: Breakdown of water use in an Auckland home- BRANZ study 2022.

The initiatives to drive reduction in demand is outlined in our water efficiency plan

6.6 Commercial Consumption

Commercial water uses accounts for approximately 20 percent of water use in Auckland. The vast majority of Watercare commercial customers (approximately 88 percent) use less than 2,000 litres of water per day, with a small number of commercial users in Auckland (less than 2 percent) consuming more than 15,000 litres of water per day (Figure 11). There is a regional difference, with more of the large commercial customers being in central and south Auckland. Approximately 60 percent of annual commercial water use is by less than 2 percent of commercial customers.

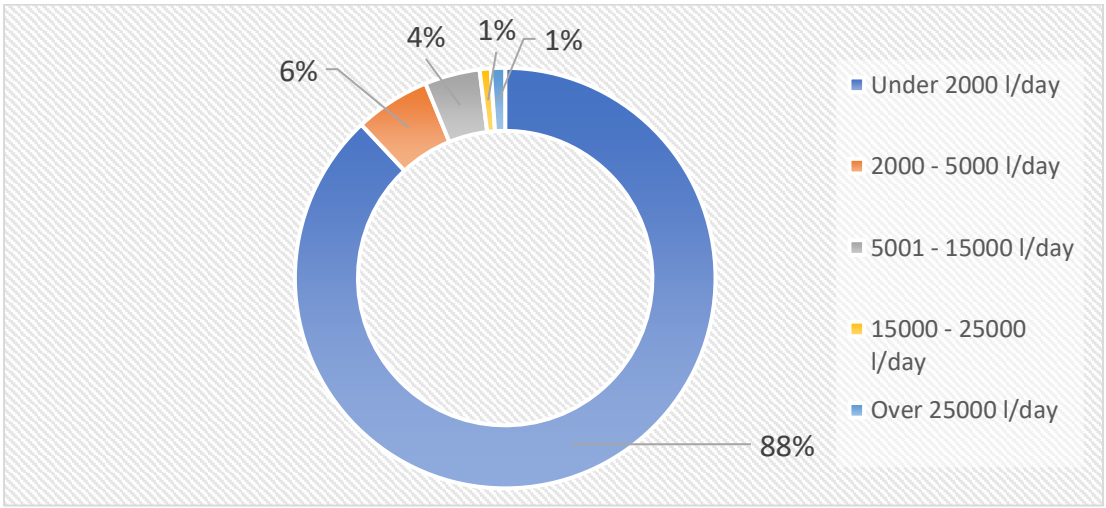


Figure 11: Breakdown of daily water use across commercial users in 2025.

Figure 12 below, shows the trends in total daily water use by customer category from 2022 to 2025. It is apparent that total water usage in most categories vary as demands change on specific groups, with a general trend upward in 2025. Whilst the category trends vary, the overall water demand from the commercial sector has varied by less than 1 percent across this 4-year period. It also shows that the categories use the most water overall are food and beverage manufacturing (including abattoirs), whilst the "commercial" category has the highest overall daily use, this is due to the sheer number of businesses that fall into this category rather than high individual business use.

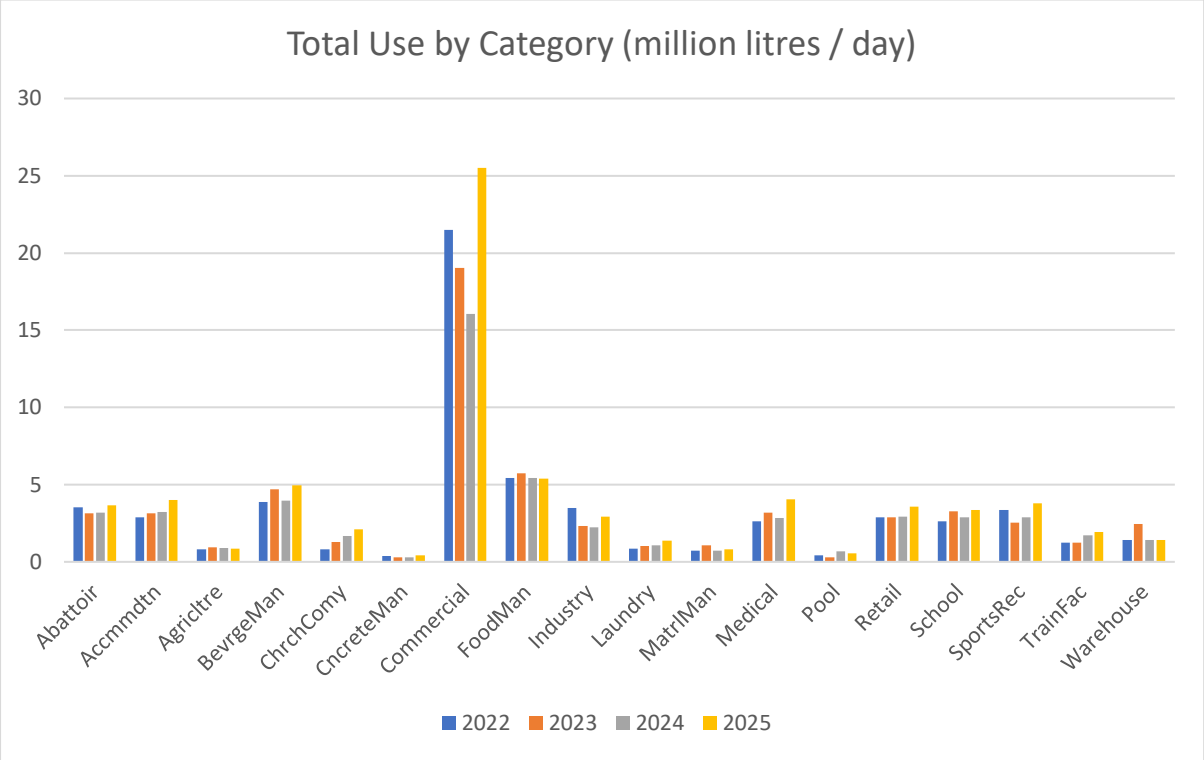


Figure 12: Total annual water usage per commercial 2022 to 2025

Watercare promotes best practices for commercial water efficiency but does not have a specific target. The Auckland Water Strategy aims to reduce gross PCC to 225 l/p/d by 2050, and Watercare is working towards this goal.

Key initiatives in seeking to achieve these efficiency gains include:

- Top 100 commercial water users – Watercare's top 100 customer accounts use ~13 percent of all water consumed in Auckland. We will continue to engage with them individually to provide advice on ways to become more water efficient.
- Re-use – introduce opportunities for re-use, both externally and internally at Watercare, encouraging industry to think about 'cascades of quality' in their water use. We will work more proactively with targeted industrial customers to promote the use of recycled or non-potable water sources when treated water of drinking quality is not required.

- Water audits – Watercare are introducing complete commercial water audits to make the best use of water and minimise waste.
- Schools and educational material – doubling our school education programme to reach 80 Auckland schools (about 15,000 Auckland children) each year and Watercare is seeking to develop water efficiency as a component of the New Zealand school curriculum.
- Iwi groups – engage with iwi in Tāmaki Makaurau to leverage the knowledge to help us get the message across to all of Auckland about the need to conserve water. We will learn and demonstrate how water can be saved in new ways. This will grow the knowledge of all people and makes our water saving mahi (work) more effective.
- Community co-design – identify local water efficiency challenges and, based on learnings from programmes that have proven effective overseas, we will plan and put into action projects to drive water efficiency.

More details of the wider approach and initiatives can be found in the Water Efficiency Plan which is also provided in the Watercare Auckland Efficiency Plan 2021-2025. This plan is currently being reviewed and updated.

7. Water saving targets

WRP Requirement:

6) Water saving targets for the full range of demand conditions including demand saving targets for council owned facilities, domestic demand targets and demand saving targets for commercial and industrial customers.

7.1 Water Savings Target

The Auckland Water Strategy sets clear water efficiency and demand-management targets to reduce per-capita water consumption over time, supporting long-term water security, climate resilience, and growth. These targets are delivered through a combination of network loss reduction, smarter use of water by households and businesses, and sustained behaviour-change and efficiency programmes that reduce demand without compromising wellbeing. Targets are 225 l/p/day by 2050 as outlined in our SOI for Gross PCC and water loss.

7.2 Background

The purpose of the Water Efficiency Plan is to embed water efficiency as an always-on, long-term practice that supports Auckland's water security, reflects the value of water, and aligns with community expectations. The plan is not intended to defer investment**,** but to ensure water is used wisely and efficiently across the system as Auckland grows and faces increasing pressures from climate change.

Consistent with the plan's background, the focus has evolved toward residential water use as a more meaningful indicator of performance**,** recognising that residential consumption is where Watercare can most directly influence behaviour and outcomes, while commercial demand more closely reflects Auckland's broader economic activity.

In the commercial sector, the plan emphasises the efficient use of water as part of normal business operations, supporting productivity while reducing avoidable waste. In the residential sector, the focus is on improving water education and literacy, enabling Aucklanders to use water wisely and reinforcing the understanding of water as a taonga that must be protected for future generations.

Overall, the Water Efficiency Plan provides a structured, ongoing framework to drive behavioural change, improve system efficiency, and support long-term water resilience, in line with Auckland's water security targets and the Auckland Water Strategy.

7.3 Savings Required

The Water Efficiency Plan sets out four overarching strategies that, together, will support improved water efficiency across Watercare and its customers and contribute to working towards our long-term Gross PCC target of 225 l/p/d by 2050.

Strategy One: Making Every Drop Count programme is dedicated to reducing non-revenue water through improved leakage management, asset performance, and operational practices.

The remaining three strategies focus on fostering behavioural change and strengthening system and network management. While they do not include standalone numerical targets, they play an important role in driving overall water efficiency improvements and supporting progress towards the Gross PCC target over time. These strategies, along with the associated programmes of work, are described in more detail in the Water Efficiency Plan.

8. Key performance indicators for water savings targets

WRP Requirement:

7. Key performance indicators for each of the water saving targets.

Chapter 7.1 identifies the overall water savings targets adopted by Watercare.

In respect of the overall water savings target, Watercare will review and publish the following key performance indicators on an annual basis:

- Gross PCC and progress against the 2050 reduction target.
- An estimate of residential PCC
- Commentary on any trends as they emerge.
- Benchmarking these results both nationally and internationally.

The percentage of real water loss from Watercare's networked reticulation system and the average consumption of drinking water per day per resident are identified as performance indicators in the Watercare SOI. Performance against those indicators is reported annually in the Watercare Annual Report.

9. Auditing and benchmarking procedures

WRP Requirement:

8) Any external auditing and benchmarking procedures that have been adopted.

9.1 Overview

Watercare periodically benchmarks the PCC, against that of other metropolitan centres in New Zealand, and internationally. Watercare uses these benchmarking exercises to understand the relative performance of Auckland water use, and to identify areas where Auckland's performance could be improved.

The Water Efficiency Plan shows recent benchmarking results (Figure 13), indicating that Auckland's PCC is competitive with other cities. In 2020 Auckland's PCC was about 156 l/p/d, compared to Melbourne (160 l/p/d, 2019) and Sydney (210 l/p/d, 2018) for example.

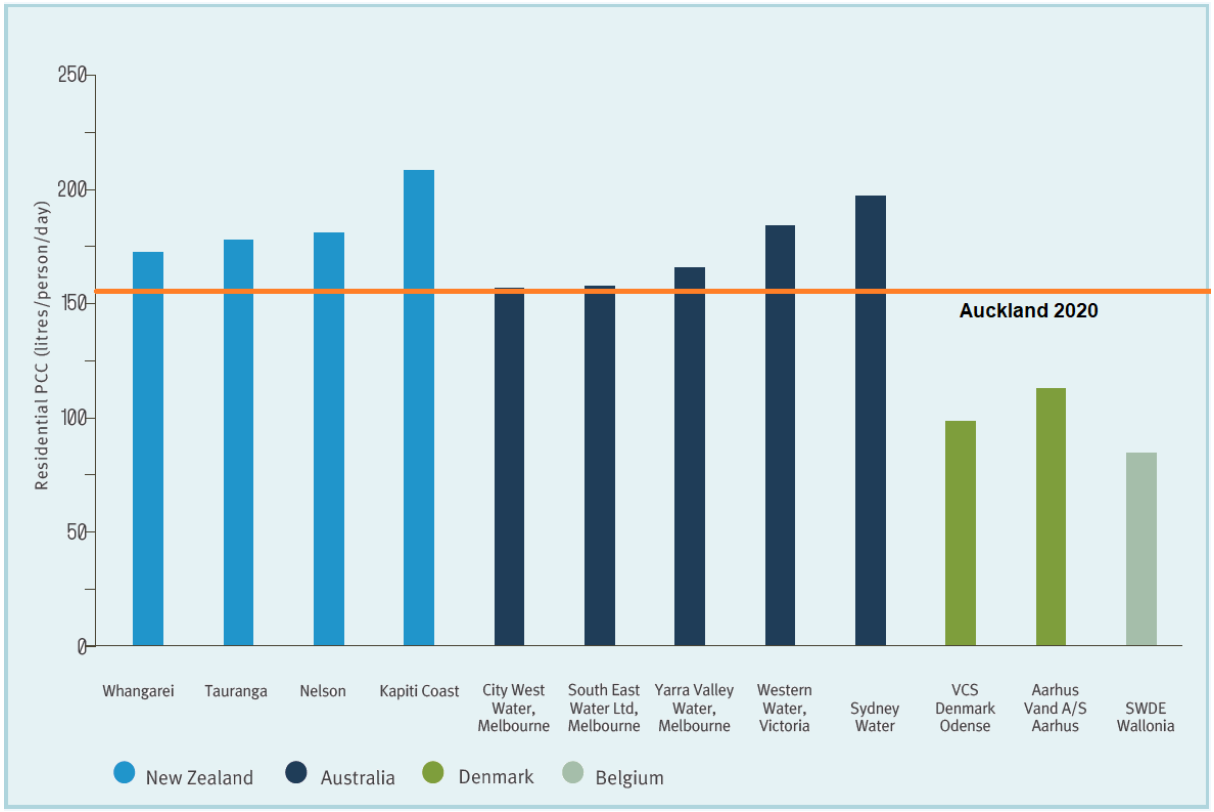


Figure 13: Auckland residential PCC benchmarked against similar cities

Comparison of gross PCC figures is complex, as the figure includes industrial, commercial and other uses which are not consistent between cities and reporting dates differ.

This benchmark is an indication of how well Aucklanders are doing, which is influenced by measures in place in Auckland like metering, pricing and demand management initiatives. However, climate

and other factors have an impact on the quantity of water used in different cities. Therefore, it is important to treat any comparisons of PCC with caution.

9.1.1 New Zealand Benchmarking

a) Water New Zealand

The Water New Zealand *2021/2022 National Performance Review* benchmarks financial and non-financial performance measures, one of which is residential water consumption. The average residential use per connection across several local authorities participating in the review is shown in Figure 14. This figure shows that the average Auckland residential consumption compares well with other major centres in New Zealand and is one of the lowest per capita consumption levels recorded in New Zealand.

Residential consumption per connection for the 2024 June financial year is 525 l/p/d. Figure 14 shows how Watercare is well below the national median based on Water NZ data gathered in 2021-2022.

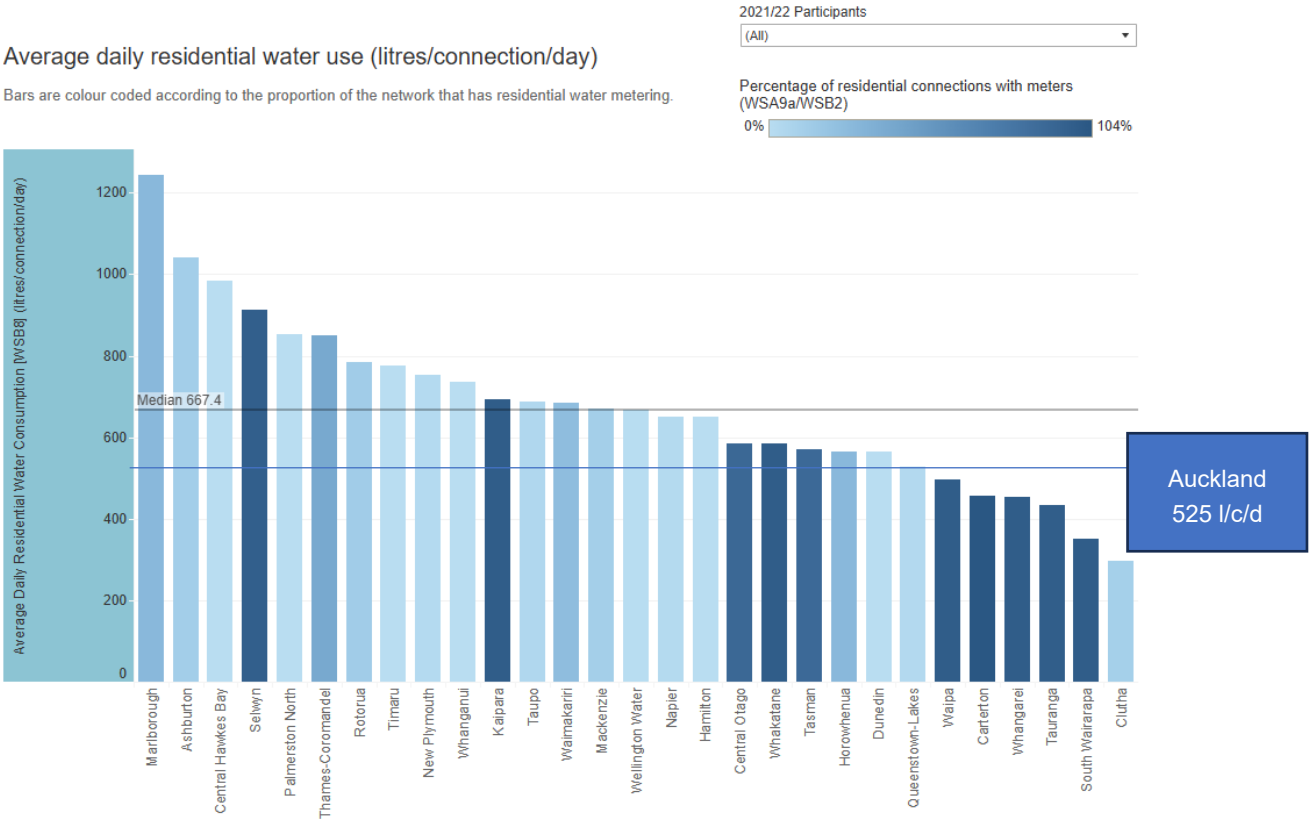


Figure 14: Average daily residential water consumption per connection in New Zealand

b) Auditor General

As noted above, it is difficult to draw conclusions from comparisons of gross PCC as it includes a wide range of demand and external influencing factors. Residential PCC, although harder to

measure, provides more insight about water use. This is calculated by dividing the total residential consumption by the total connected population. The Water New Zealand *2018/2019 National Performance Review* provides a comparison of residential consumption across New Zealand.

The Auditor General of New Zealand maintains an overview of water management in New Zealand and in February published a statement on water management in New Zealand. In September 2018, the Auditor General reported to Parliament an audit of three District Councils and one City Council to understand the challenges they face in supplying drinking water to their communities. While recent focus has been on the quality of drinking water, it is important that communities also have confidence that councils are working to ensure that the supply of drinking water is reliable and sustainable.

While these recent audits have not involved Watercare, Watercare maintains a close watch on the Auditor Generals reporting to assess whether adjustments are required to its water management activities. Based on the recent audit reports, Watercare's approach to managing its water network and water supply assets is consistent with industry best practice and aligns with the expectations identified in the Auditor Generals overview.

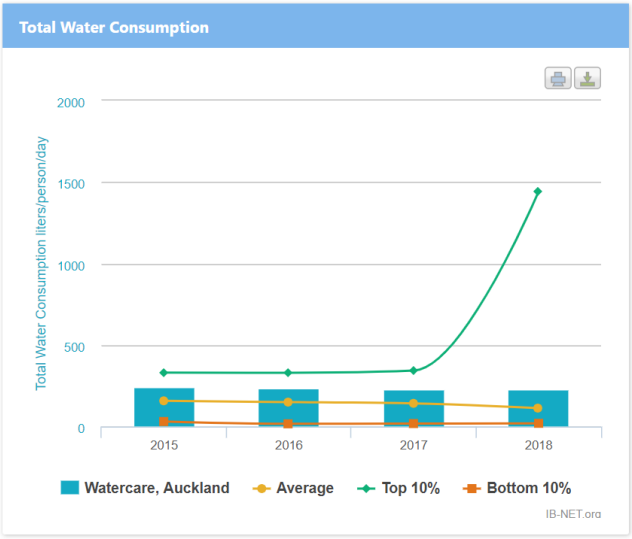
9.1.2 International Benchmarking

a) IBNET

The International Benchmarking Network for Water and Sanitation Utilities ("IBNET") is the world's largest database for water and sanitation utilities performance data. It is administered by the World Bank and data is drawn from across the world. IBNET can be used to compare data from a range of New Zealand water service providers with over 1,400 utilities from around the world.

Using IBNET, the present Watercare water consumption (commercial and residential) and non-revenue water rates are compared against the whole IBNET database in Figure 15 and Figure 16 respectively.

These figures show that the Watercare water consumption data and non-revenue water statistics compare favourably with international utility results. Water consumption is close to average internationally, while non-revenue data is comparable to the best 10 percent of performance internationally.



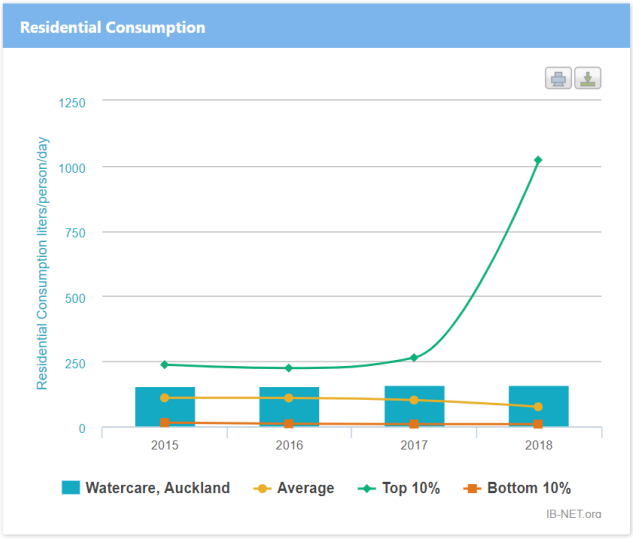
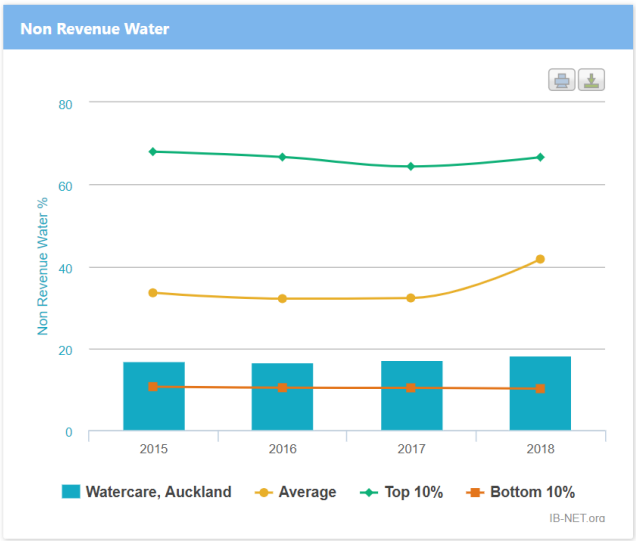


Figure 15: Water Consumption IBNET Comparison



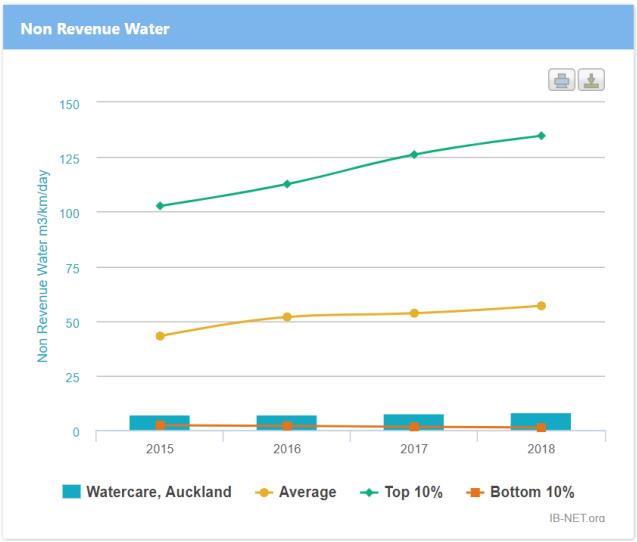


Figure 16: Non-Revenue Water IBNET Comparison

b) *<u>European</u>*

Per the World Bank Institute Banding system (Figure 17) Watercare is in “Category A” due to average zonal night pressure of 68m.

Technical Performance Category		ILI	Liters/connection/day (when the system is pressurized) at an average pressure of:				
			10 m	20 m	30 m	40 m	50 m
Developed Country Situation	A	1 - 2		< 50	< 75	< 100	< 125
	B	2 - 4		50-100	75-150	100-200	125-250
	C	4 - 8		100-200	150-300	200-400	250-500
	D	> 8		> 200	> 300	> 400	> 500
Developing Country Situation	A	1 - 4	< 50	< 100	< 150	< 200	< 250
	B	4 - 8	50-100	100-200	150-300	200-400	250-500
	C	8 - 16	100-200	200-400	300-600	400-800	500-1000
	D	> 16	> 200	> 400	> 600	> 800	> 1000

A	Further loss reduction may be uneconomic unless there are shortages; careful analysis needed to identify cost effective improvement
B	Potential for marked improvements; consider pressure management; better active leakage control practices, and better network maintenance
C	Poor leakage record; tolerable only if water is plentiful and cheap; even then, analyze level and nature of leakage and intensify leakage reduction efforts
D	Horrendously inefficient use of resources; leakage reduction programs imperative and high priority

Figure 17: World Bank Institute Banding System table

For the last five years Watercare has been actively decreasing the size of district meter areas and extending active pressure management of the network, which has saved over 10 MLD. This is coupled with the development of a leakage management system which has led to improved targeting of leak detection resources as part of our proactive leakage detection efforts. This is reflected in Watercare's current leakage performance is outlined in Table 6.

Table 6: Leakage performance

Leakage performance	Result
Infrastructure leakage index	2.1
Real losses (%)	12.9%
Real losses (l/c/d)	116.5

Figure 18 and Figure 19 show Watercare's performance compared to New Zealand and European countries using International Water Association real loss calculations.

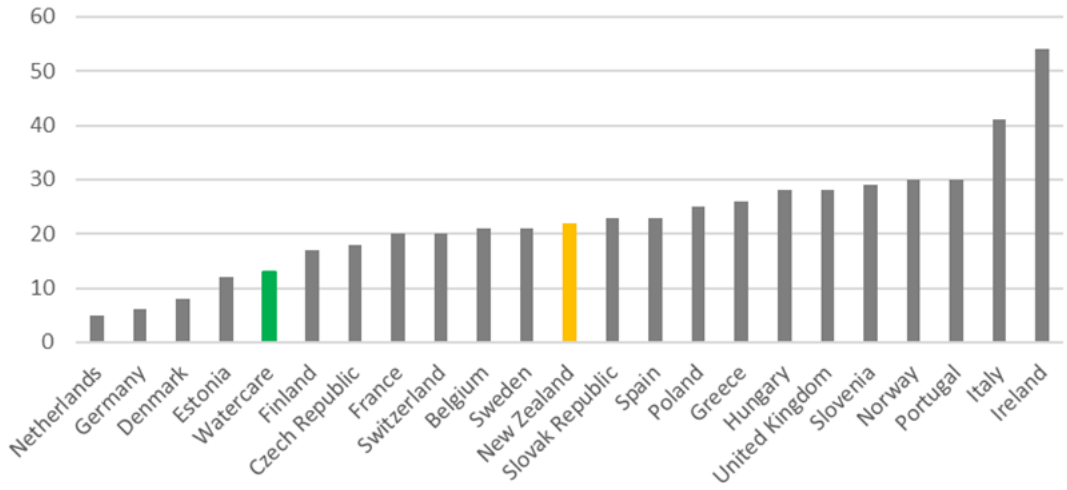


Figure 18: Water system leakage data for Watercare and European OCED[17]

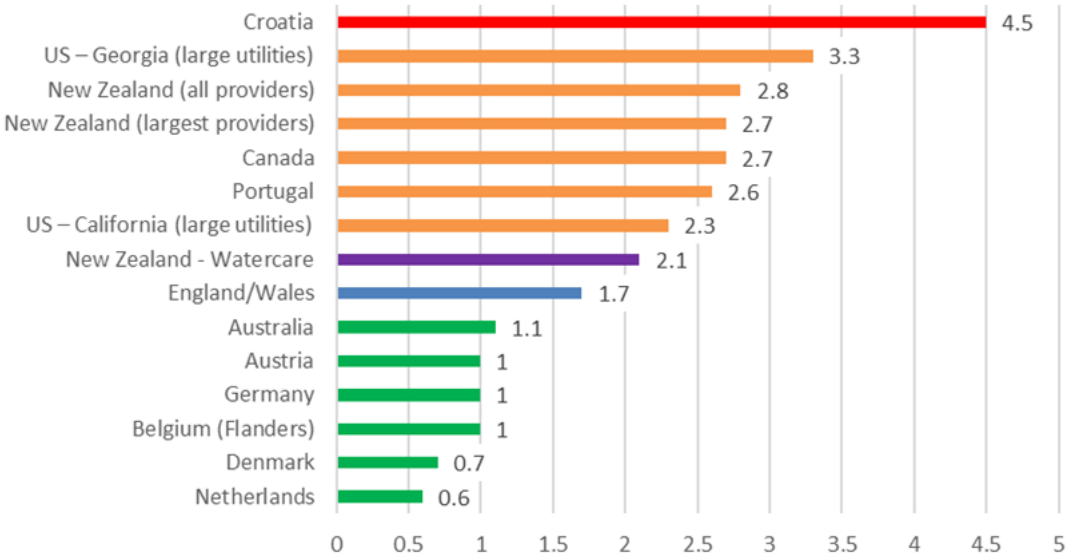


Figure 19: Infrastructure leakage index values[18]

[17] Source: EurEau (2021) NZ national estimate (22 percent) reflects 133 million metres cubed loss out of 596 million metres cubed supplied (calculated from online data in Taumata Arowai 2022-23 report)

[18] Source: Winarni, W (2009) 'Infrastructure leakage index as water losses indicator, *Civil Engineering Dimension*, 11(2), pp126-134.

10. Drought management plan

WRP Requirement:

9) A drought management plan that includes:

a) steps to be taken to reduce consumption during water shortage conditions, including those uses that will be restricted at the same time as priority SW-B users (in accordance with Policy 18 and Standard 3.3.4.27) and steps to be taken to implement those restrictions;

b) targets for the water savings expected to be achieved via the restriction of activities identified in a) above, which shall align as closely as possible to the restrictions for SW-B users provided for in Standard 3.3.4.27

c) public and commercial user education programmes

d) steps taken to reduce consumption when demand is approaching the maximum take volume specified under the relevant resource consent

e) enforcement procedures.

10.1 Overview

The Drought Management Plan recognises that Auckland's water supply system provides water from integrated storage and run-of-river sources for Watercare's Auckland metropolitan area and for that reason it does not relate to flows in particular rivers or streams but responds to the threats resulting from shortages in the sources contributing to overall supply. The Drought Management Plan is therefore based around ensuring that water supply is maintained for essential and other services, while providing environmental protection for the various sources contributing to the overall supply.

In particular, the Drought Management Plan is implemented when the storage levels in the storage dams in the Waitākere and Hūnua Ranges drop below designated trigger levels. This will not necessarily coincide with water shortage conditions in the Waikato River. When the trigger levels are reached, a series of measures will be implemented to reduce use, progressively becoming more stringent as the severity of the drought increases.

The Watercare Auckland Drought Management Plan 2023 is currently undergoing a review and update and will be approved by relevant stakeholders in 2026.

10.2 Background

Watercare defines drought as a shortage of rainfall that has caused or threatens to cause depletion in water storage lakes or other raw water sources to levels that may lead to an imbalance between supply and demand. An extended meteorological drought that affects urban water supply is termed 'hydrological drought'.

10.2.1 Auckland's Drought Management

As stated in Section 2.3, Watercare's water supply system is designed and operated to meet two Council-endorsed LoS which require Watercare to supply unrestricted demand unless circumstances impact their capacity to do so.

- LoS 1 – often referred to as the Drought Standard
  Annual average demand within the metropolitan supply area can be met in a severe drought (modelled to have a 1 percent probability of occurring in any year) while leaving 15 percent residual capacity in its water supply lakes. Watercare can supply the required volume of potable water to meet demand during a severe drought while keeping the combined lake storage volume of all Auckland's water supply dams (total system storage or TSS) above 15 percent. Watercare would expect to impose some restrictions during this event (see LoS 2).
- LoS 2 – demand restrictions
  Proactive demand restrictions will be required no more frequently than that required for an event with a 5 percent probability of occurring in any given year. The modelled peak supply/demand balance is designed to show the forecast peak demand (without restrictions) during a dry summer with a 5 percent (1 in 20) probability. Under drier conditions (leading to higher demand), Watercare could impose restrictions to reduce peak demand while continuing to meet the LoS.

10.2.2 Trigger for Water Restrictions

As Watercare is not solely dependent upon the Waikato River and Watercare's stored water sources are more susceptible to drought conditions, the key driver for determining droughts, and therefore triggering the Drought Management Plan, is the total system storage provided by the water supply dams. Total system storage is influenced by the Waikato River abstraction insofar as this source enables water in the dams to be preserved for later use.

The current drought triggers used are shown in Figure 20.

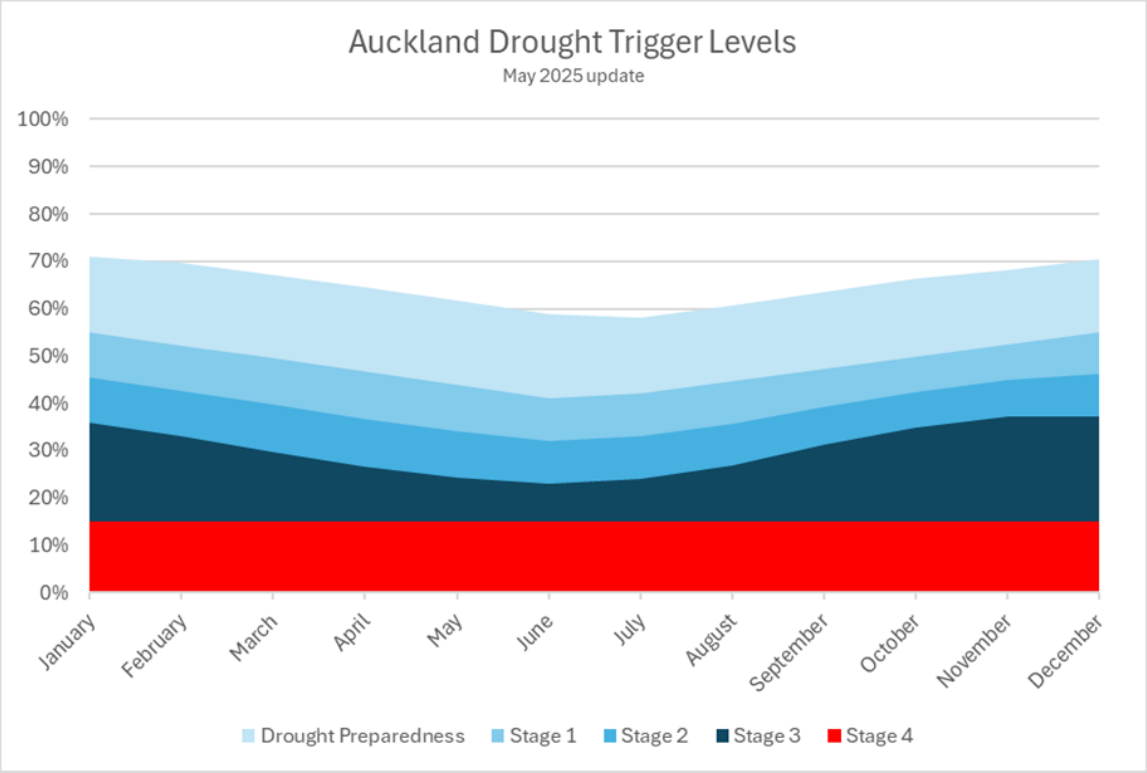


Figure 20: Drought response trigger levels (2025)

10.3 Steps to be Taken for Drought Management

Steps are outlined in the Watercare Auckland Drought Management Plan 2023.

10.4 Enforcement Procedures

With the establishment of the Auckland Council under the Local Government (Auckland Council) Act 2009, Council retains the sole ability to pass bylaws in respect to water supply. Traditionally drought events are managed through passing bylaws that restrict the use of water and a state of drought can also be enacted under the Civil Defence Emergency Management (CDEM) Act 2002, which recognises the importance of lifeline utilities, such as water, to the well-being of society. Stage 1 and above restrictions set out in the Drought Management Plan can be imposed by Auckland Council under clause 12 of the Council's Water Supply and Wastewater Network Bylaw 2021, if the Council (on the advice of Watercare) determines that its ability to maintain an adequate supply of drinking water is or maybe at risk (because of drought, emergency or any other reason).

11. Actions and performance measures

RPV6 Requirement:

10. *Actions, performance measures and a timeline for implementing actions. The actions and performance measures identified will depend on the circumstances of each applicant.*

Watercare has investigated several different options to improve the efficiency and effectiveness of the use of water within the Auckland water supply network. The present water efficiency strategy is set out in detail in the Water Efficiency Plan and is not repeated here.

12. Consultation

WRP Requirement:

11) Any consultation undertaken with key stakeholders and outcomes of such consultation.

Watercare is an Auckland Council CCO and its various reports, such as the SOI, annual report, AMP, Water Efficiency Plan and Drought Management Plan, are publicly available and open to public review. Watercare consults widely regarding its work programmes and strategies, and the Water Efficiency Plan and Drought Management Plan have been prepared on the basis of full participation and support of the public.

13. Water conservation and demand management review

WRP Requirement:

12) *Details of an appropriate water conservation and demand management plan review process.*

The water conservation and demand management measures contained in this WMP are kept under ongoing review as part of reporting against the performance measures set out in its SOI.

The long-term target to achieve a Gross PCC of 225 l/p/d is outlined in earlier sections of this report and detailed in the Water Efficiency Plan.

The Drought Management Plan will be reviewed and updated every 24 months or as required, and after any event that requires all or parts of the Drought Management Plan to be used. It will also be reviewed and updated every time the incident management plan is reviewed or updated.

The WMP will be updated as necessary to incorporate changes in demand predictions, efficiency gains and drought management requirements.

14. Anticipated increases in water demand

RPV6 Requirement:

13) Identification of any anticipated increases in water demand over the term of the consent and ability to stage water take volumes to more closely reflect demand requirements over time.

Chapter 3 of this WMP outlines in detail the anticipated increases in water demand over the period to 2050.

As identified in Chapter 2 of this WMP, raw water sources for the Auckland water supply include ten storage dams located in the Hūnua Ranges southeast of Auckland and the Waitākere Ranges west of Auckland, with direct abstractions from the Waikato River, with groundwater at Onehunga currently out of service.

These individual sources are operated conjunctively, meaning that they are operated as a single system in order to optimise the use of water, and ensure that the capacity of overall supply can be maintained, even during prolonged periods of drought. It means, for example, that when rainfall derived inflow to the storage dams decreases, use of the Waikato source is increased to preserve storage. When the storage dams are near capacity and inflows are high, water from the dams is used preferentially ahead of Waikato River water to reduce operating costs due to higher pumping needs from the Waikato River.

The Waikato River take is a critical component of Watercare's conjunctive use system, ensuring that the storage available within the overall system can be used effectively and efficiently. Water take volumes are managed to closely reflect demand and storage requirements over time, while providing security for future water supply.

The allocation of water for the Waikato take is based on demand requirements over a long period. Such periods are necessary to ensure that appropriate infrastructure can be planned and implemented in a cost effective and timely manner to meet demand requirements while ensuring a secure supply outlook. While providing for population growth, it is difficult to predict with certainty the timing over which that population growth (or resultant water demand) will occur. It is therefore necessary to make allowance for a long term planned approach, rather than providing for an absolute level of future-proofing. However, the high degree of certainty that the allocation of water from the Waikato River will be required on an ongoing basis makes it imperative from supply management perspective that there is certainty the full allocation can be called upon as and when it is required.

Given the high degree of certainty that water will be required over the period to 2050, and given the importance having certainty that an appropriate allocation is locked in as a concrete component of Auckland's water supply mix in the short to medium term, there is considered to be no resource

management reason why attempting to stage water volumes to reflect demand requirements in a more fine grained manner would be beneficial or necessary. Rather it would be an arbitrary exercise, which would introduce undesirable uncertainty and complexity into the process of planning how Auckland's future domestic and municipal supply needs are to be met.

15. Ability to reduce the amount of water use by existing industrial and agricultural users to meet the projected increase in water demand

RPV6 Requirement:

14) Ability to reduce the amount of water used by existing industrial and agricultural users, as a result of improvements in the efficiency of the use of water, in order to meet any increase in water demand over the term of the consent

As outlined in the Water Efficiency Plan, industrial uses account for part of the commercial water use in the Watercare network. These uses are predominantly small volumes of water, with approximately 88 percent of the commercial water use being for volumes of less than 2,000 litres per day. Industrial uses include a range of activities such as beverage manufacture, concrete manufacture, food manufacture and abattoirs which can be expected as typical in a city such as Auckland.

Agricultural uses are also small in relation to the overall metropolitan water supply, representing approximately 0.40 percent of the total volume.

The Water Efficiency Plan identifies measures to be adopted to encourage efficient use of water which apply across all classes of water use. The range of water uses supplied through the Watercare network is what can typically be expected for a municipal water supply servicing a metropolitan area like Auckland. Because of that, a comprehensive water efficiency strategy addressing all water use activities such as that set out in the Water Efficiency Plan is the preferred approach to drive improvements in the efficiency of the use of water in Auckland.

In addition to Watercare's efforts to encourage water efficiency, many commercial users of water have implemented their own requirements to demonstrate sustainable operating models, which includes monitoring and managing water use.

Examples in Auckland include businesses investigating and introducing water re-use technologies and alternative water sources (rain tanks and desalination) where potable water is not required to be used. Where potable water is required, many are investigating ways to reduce their usage where possible.

One of the biggest challenges for commercial users wanting to monitor and manage their water use is the ability to see detailed water use data. Over the next three years, Watercare will be installing smart meters across all our commercial customers; this will not only provide the detailed water use insights that customers are looking for but will also significantly increase the ability to detect potential leaks much earlier, reducing the amount of water lost through leak events.

16. Large industrial, commercial and agricultural users

RPV6 Requirement:

15. *Identification of any single industrial, commercial or agricultural use of water that uses more than 15 cubic metres of water per day (not being water used for human drinking purposes or human sanitation purposes).*

In 2025, commercial uses of water in the Watercare network account for 25.8 million kL around20 percent of all water use. 15.5 million kL (~65 percent) of water used by commercial customers is attributed to only 758 (~2 percent) of those customers; these comprise of significant industrial, commercial and agricultural uses of water that average more than 15m^3 per day. Approximately 88 percent of commercial customers use of water is for volumes less than 2m^3 per day.

Figure 21 shows the average daily water usage by account class, for the top two percent of commercial accounts in the year 2025 (these exclude the "beverage" account class). Each of these uses is typical of a large metropolitan area like Auckland and can be expected to occur within any metropolitan water supply network in New Zealand and around the world.

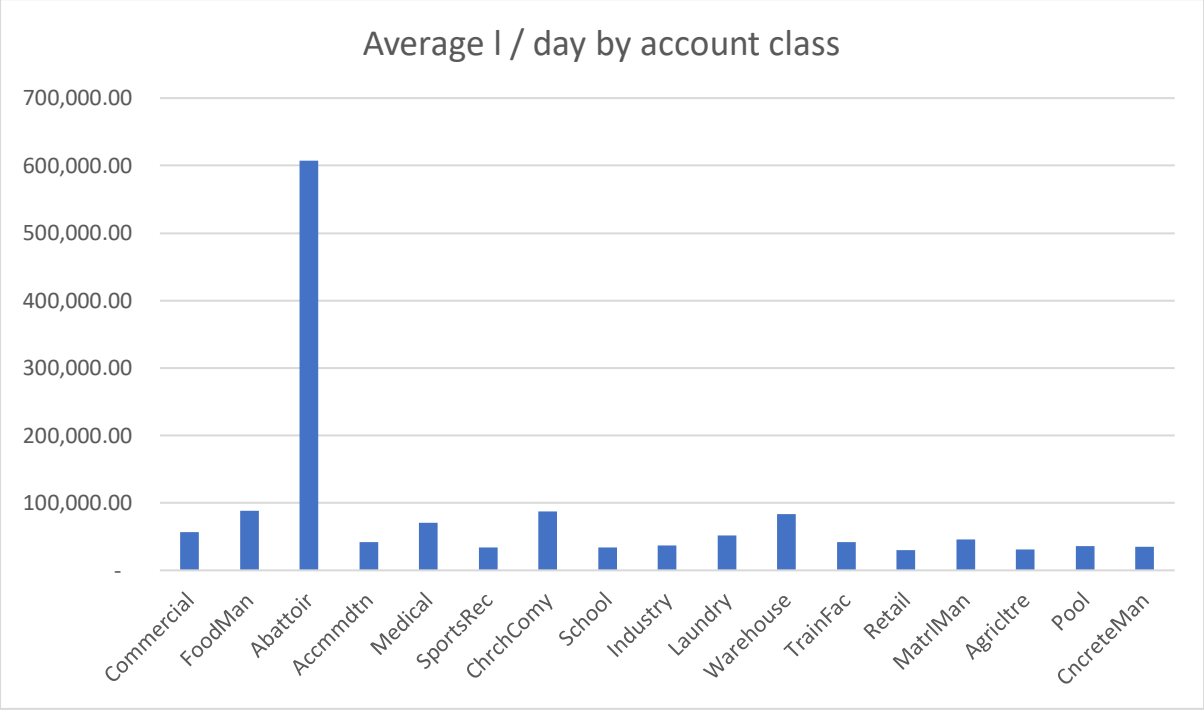


Figure 21: Average daily water usage CY2025 for users exceeding 15m^3 / day.

The Water Efficiency Plan identifies measures to be adopted to encourage efficient use of water which apply across all classes of water use. The range of water uses supplied through the Watercare network is what can typically be expected for a municipal water supply servicing a metropolitan area like Auckland. Because of that, a comprehensive water efficiency strategy addressing all water use

activities such as that set out in the Water Efficiency Plan is the preferred approach to drive improvements in the efficiency of the use of water in Auckland.

17. Future domestic and municipal supply needs required to meet growth and development that is provided for in planning instruments

RPV6 Requirement:

16) *Identification of future domestic or municipal supply take needs over and above authorised domestic or municipal supply takes required to meet growth and development that is provided for in planning instruments promulgated under the Resource Management Act 1991 or relevant documents promulgated under the Local Government Act 2002, such as Long Term Plans, growth strategies or spatial plans (or similar).*

The projected future needs shall be identified in terms of:

a) location of take; and

b) volume of take (including any seasonal variations); and

c) the date at which the water is likely to be required.

Chapter 3 of this WMP outlines in detail the projected future needs of Watercare's water supply network. That analysis includes consideration of the water required to meet growth and development that is provided for in planning instruments promulgated under the RMA with a particular focus on the Auckland Plan and the Auckland Unitary Plan (Operative in Part).