Te Rautaki Whakarato a Awaroa me Parakai

Helensville and Parakai Servicing Strategy

I whakaputaina i te Hanuere 2025 | Published January 2025

Watercare

Ngā whakarite | Preparation

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Ngā mihi | Acknowledgements

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Ngā Maunga Whakahii o Kaipara, as the post-settlement entity of the ngā marae e rima situated around the strategic area of Ngāti Whātua o Kaipara, were consulted through the development of this document as the mana whenua representative and kaitiaki of the strategic area. This document was prepared by Watercare's Strategic Planning team. As consultants to Watercare, Aurecon and Stantec led early technical input to the plan and supported the mana whenua engagement. We also acknowledge the contributions from Rodney Local Board and the community in providing feedback which has been incorporated into this strategy.

This is the third published version of this document. The first, published in December 2023 was offered as a pilot publication and community feedback we received shaped the second version. Input from Ngā Maunga Whakahii o Kaipara informs this third version.

Please note: in this version of the document, we refer to Ngā Maunga Whakahii o Kaipara (to represent Ngati Whatua of the southern Kaipara.

He mihi

Tēnei au ka noho ki
te hiwi o Paehoka.
Ka titiro whakararo
ki te kautawa o Awaroa
ki te kautawa o Mangakura -
he pekanga nō te awa rangatira
o Kaipara.
Kei waho rā te pūahatanga
o ngā wai tapu ka puta
ki te whanga nui
o Te Kaipara.
I reira ka tere atu
ki Manukapua, te mahuetanga iho
o te motu o Tāporapora,
kātahi ka puta atu ki
Te Moana-Tāpokopoko-a-Tāwhaki.
Ka whakapaipai te kuaka i a ia anō
ki ngā repo o Te Awaroa ki Parakai;
ki ngā repo i hora i tōna wā.
Ka mutu taku mātaitanga i konei
i tēnei whenua i karapotihia
e te rākau rangatira,
e te kauri o te Wao-nui-nui-a-Tāne.

A tribute

Here I sit
on the hilltop of Paehoka.
I look down upon
the Awaroa
and Mangakura streams -
both tributaries of the great
Kaipara River.
There is the outlet
where the sacred waters flow
into the huge harbour
of Te Kaipara.
From there the waters run
to Manukapua, the remnants
of the island of Tāporapora
until they discharge into the
the Tasman Sea.
The godwit preens itself
in the wetlands from Helensville to Parakai;
the wetlands that lavished there in days gone by.
My survey ends here on
this land that was once surrounded
by stands of the noble giant -
Kauri of the Great-forest-of-Tāne.

Ngā ihirangi | Contents

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Whakarāpopototanga matua
Executive summary

This document sets out a long-term strategy to ensure that we are able to continue to provide safe and reliable services in line with our commitments to the Auckland Water Strategy and in the context of complexities we are facing with climate change. We hope to describe our servicing options in a way that is easily understood, so that we can make decisions about the future in partnership with the communities we serve. This document will influence pathways and implementation by clearly describing the issues faced so that we are all better informed, and can own and find ways to resolve the problems at hand together.

This strategy is a living document, and the third published version since December 2023. The first version was offered as a pilot publication, and community feedback that we received at that time shaped the second version. Ngāti Whātua o Kaipara whanau members were given the document prior to Cyclone Gabrielle, which demonstrated the climate impacts, and they provided initial feedback in April 2024. Guidance and consideration from the Nohoanga Kaumatua roopu associated with Ngā Maunga Whakahii o Kaipara was again sought, and has informed this third version. We acknowledge and thank mana whenua and the public of Awaroa and Parakai for the ongoing improvement of our servicing strategy.

We ask that communities, experts, mana whenua continue to work with us to keep our understanding of the shifting challenges that we face front of mind, so that we can do our best to protect public health and minimise environmental harm. There will be times when we need decisions made so we can step forward without regrets; these will be based on our best assumptions and thinking at the time, but only if we continue to keep this strategy alive, updated and communicated with our partners and the public.

Together, Te Awaroa (Helensville) and Parakai township communities have a current population of just under 5,000 residents with an expectation that by 2050, the population will be around 6,500 people. Our engagements in the area showed us that the community would like to see the townships grow and thrive, and they are seeking confidence in both water and wastewater services. Residents are looking for good collaboration in communicating the efforts to enhance the environment and grow its resilience to extreme weather events and sea level rise. We hope this document will go some way to demonstrate that we (Watercare) are listening. During engagements with Kaipara College students, we learned that young people from the area also hope for a growing, thriving town over the medium and long-term, despite challenges emerging from climate change. They were also interested in other infrastructure enablers, namely telecommunications and transport, seeking a shared understanding and partnered approach between utilities/CCOs who will need to work together to support the realisation of these aspirations for the area.

We provide water supply services and wastewater (sewage) services for Te Awaroa (Helensville) and Parakai. We acknowledge that the cultural values of water and wastewater have unique and important differences. This knowledge is still to be understood by the industry. We recognise that application of it into the delivery of our water and wastewater services requires ongoing direction under the guidance of mana whenua. In our current practices, we view them as an integrated system and anticipate wastewater flows by understanding water use.

We face a number of challenges in providing drinking water services in the area. With the projected population growth and climate change, and limited and ageing assets, we are preparing to make some important decisions with the local community about where their water is going to come from in the future and how their wastewater is managed.

The publication of this servicing strategy comes at the same time as the Council is developing a shoreline adaptation plan (SAP) across the Kaipara region. We will ensure that our plans align with Council's overall strategy.

Challenges and options

Te Awaroa (Helensville) and Parakai have been supplied with water from the Mangakura Dams since the early 1900s. The Sandhills Wetland water source was added to the water supply in 1975. Given that these are surface-water sources, the supply is not resilient enough in the context of climate change impacts and we face increasing demand due to housing development and population growth in the area. In the short term, we need to renew our water take consent, which is due to expire in 2026. We are also exploring reliable alternative water sources to accommodate for the growth in the area and for the generations to come.

Our wastewater service in the area is not without challenges either. Our wastewater infrastructure and consents require action in the short term. We need to renew our Wastewater Treatment Plant (WWTP) discharge consent, which is due to expire in 2027. The plant had been facing significant capacity and treatment challenges but was upgraded to modern technology which has been treating wastewater to a high standard since 2023. The location of the wastewater treatment pond in the tidal range of te Awa Kaipara (the Kaipara River) makes it prone to high tides in the short term and rising sea levels in the medium term, posing a significant resilience risk. We also want to minimise our impact on the environment. In the medium to long term, we need to investigate ways to reduce our discharges into the Kaipara River through options, including land treatment and wastewater reuse. Should recycling and reuse of highly treated and purified wastewater be pursued, this will allow us to reduce discharges into the Kaipara Moana (Kaipara Harbour) environment.

Our overarching strategy for communities that are not connected to the Auckland metropolitan water and wastewater network is to pursue local solutions rather than connect to the metropolitan network. In doing this we believe we improve local resilience by reducing reliance on long, piped systems to distant infrastructure. We also acknowledge our commitment to initially explore all local alternatives so that we can gradually decrease Auckland's reliance on te Awa Waikato (the Waikato River) as a water source. We will continue with this approach unless there is a substantial risk to public health or the environment resulting from the current way of operating.

Ngā whai pānga o ngā iwi
Iwi interests

The cultural information in this document belongs to the iwi that helped create this pilot servicing strategy. To protect Mātauranga Māori, this cultural information shouldn't be shared beyond the context of this strategy without talking to and getting approval from the local iwi who own this information.

It is important to include cultural values and associations in any works programme. This means consistently using a partnership and co-management approach for each strategy area.

It is necessary to engage with the relevant iwi groups early and meaningfully. This ensures that as a member of the Auckland Council family we meet our obligations to ngā mana whenua o Tāmaki Makaurau and te Tiriti o Waitangi. As kaitiaki, iwi play a key role in shaping and supporting this servicing strategy.

We are grateful for the ongoing manaakitanga of Ngāti Whātua o Kaipara who have supported the development of this servicing strategy. We note the ongoing and constructive dialogue since 2004 through the Auckland Water Review and the national Water Programme of Action. Also we acknowledge continued work over the decades by the Watercare mana whenua Roopu chaired by Kaumatua Haahi Walker supported by Pita Pou, William Kapea and Wayne Knox (Kawerau a Maki). Our engagement in 2022 and 2023 with iwi and previous mana whenua discussions indicate that six other iwi may also have a direct interest in this area.

Te tūhonohono ki ngā mana whenua | Engagement with mana whenua

Broadly our wānanga (workshop) for this area suggested that our partnership discussions should predominantly be with Ngāti Whātua o Kaipara with Ngā Maunga Whakahii o Kaipara being the post-settlement governance entity with kaitiaki interest in this rohe. Wānanga events over a number of weeks were attended by iwi partners and an iwi-appointed subject-matter expert. These events identified key priorities for mana whenua, including:

Mauri o te wai: Preserving the life force and vitality of our ara wai (waterways), pūwaha (river mouths), whanga (harbours) and moana (marine bodies), and ensuring we can continue to fish and collect food from them the way we have for generations. Te mauri o te wai (water's life essence) is about the health and wellbeing of all our water sources and also the whenua (land).

Mana whakahaere (mandate): Ensuring service management is conducted respectfully. Consider incorporating mātauranga Māori (Māori knowledge) whenever and wherever it is appropriate. When determining solutions and making decisions, ensure there is alignment and adherence to Māori cultural protocols.

Te whakarauora ara wai: Restoration of waterways, marine bodies and the whenua, and the rehabilitation or preservation of ecology in those environs. By embedding mātauranga Māori into the way we work, we can include reciprocity as a measure

to mitigate the potential of ever-increasing damage to the environment. Currently there is no evidence that reciprocity is practiced in the way things are done. Therefore, we are unable to measure the balance of damage versus betterment to the natural environment, especially from a mātauranga Māori perspective.

Hangaia he tauherenga whaimana: Taking, and creating opportunities to build meaningful relationships and alliances based on kaitiakitanga (protection of the environment), mahi tahi (working collaboratively) and recognising and valuing the contributions of each party in the relationship. It is important that the two-way tauherenga whaimana (authentic connection) is built on pono (honesty) and tika (fairness).

Toitū te whenua, toitū te wai: Recognising that this work goes beyond short-term projects and 30-year plans. This work is about restoring the health and wellbeing of our land and water resources for the benefit of descendants yet unborn. We must ensure the sustainability of a healthy environment by passing down the wisdom and practices of our tūpuna to emerging generations.

The mana whenua stance that all waterways are important adds a level of certainty to the need for a partnership approach to achieve iwi-approved service management. Ngā Maunga Whakahii o Kaipara also identified the Sandhills Wetland as a sensitive environmental asset. This is supported by annual assessments of the stream environment by Watercare, which concur that the wetland is a viable fish habitat providing refuge for native eels. In future revisions of this document, we will continue to develop more detailed considerations from Ngā Maunga Whakahii o Kaipara with their approval, including a location-specific te mana o te wai or te mauri o te wai statement, whakapapa, history mātauranga and tikanga, the role and responsibilities of iwi as kaitiaki, Te Ao Māori (Māori world view) and kaitiakitanga (guardianship).

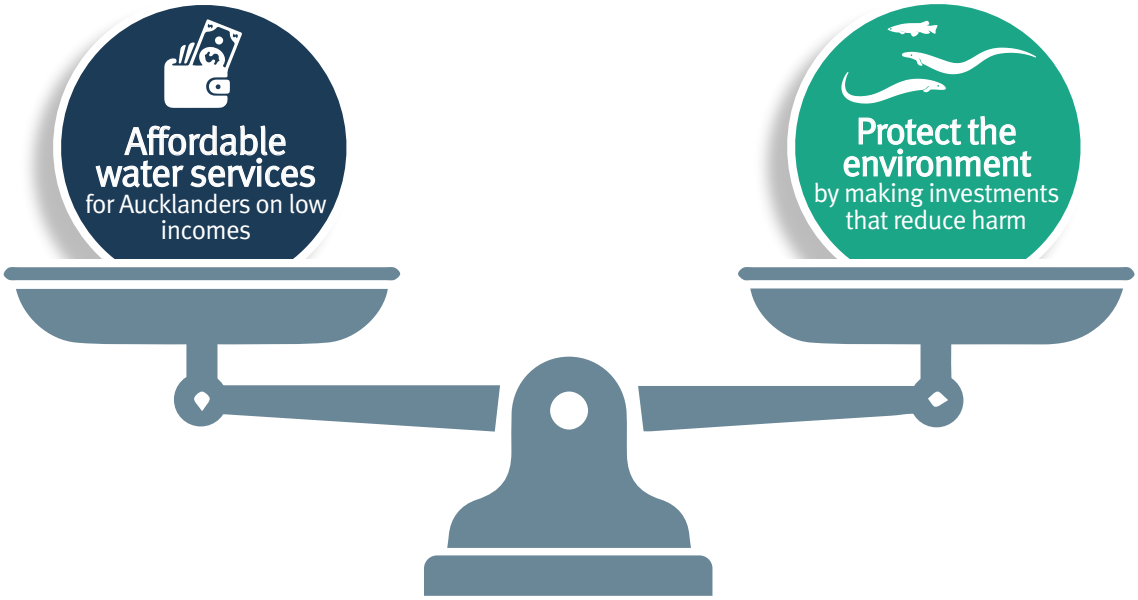
Te mahi me te hapori
Working with the community

Through this strategy, Watercare is committing to making decisions that balance our commitment to te Mana o te Wai with ensuring that our services remain affordable. Careful planning for growth will be important to the prosperity and wellbeing of the area and the health of people and their environment. The public has an important role to play in engaging with us and to ensure that we get this balance right.

As we consider future needs for water and wastewater services, we are taking a long-term and inter-generational approach, thinking about sustainable services for at least the next 70 years. When we build things like reservoirs, pipes, pumps, and treatment plants, they stay in place for decades. Decisions that we make today will affect the generations to come, and it's important to work together with the community to make the right choice of trade-offs.

Input from Ngā Maunga Whakahii o Kaipara recognises that affordability issues impact our ability to completely resolve issues associated with our legacy infrastructure. We still need to find a way forward together to protect the environment, in a way that is affordable to Te Awaroa (Helensville) and Parakai and fair to the rest of Auckland.

Sharing this document give us a reference point to guide continued dialogue. We want to ensure everyone can access this servicing strategy and understand the water and wastewater issues and opportunities in Te Awaroa (Helensville) and Parakai, and our approach to addressing them. While Watercare is tasked with providing critical water and wastewater services, to make sure that we are successful we need the community to participate and hold themselves accountable also, to ensure that we meet our objectives together. We all play a part in making things better. We also want to hear whether this is a good strategy, whether there are better ideas out there and what we may have missed. This strategy will help to prepare us all for the complex kōrero that we need to have about water and wastewater services in this area. We are committed to transparency and accountability and are happy to be challenged with ideas for improvement.



Tirohanga whānui, te whakatakanga, ngā aronga me ngā whāinga

Vision and mission, goals and objectives

The services we provide are reliable and contribute to protecting and improving the health and wellbeing of the community and the ecosystem, in the face of changing climate and population dynamics.

This servicing strategy plays an important role in informing our plans and operations.

It is the overarching document that outlines the long-term vision, objectives and goals for water and wastewater services in the area by considering factors like population growth, environmental considerations, regulatory requirements, and infrastructure needs. Our plans including facility plans, network plans and ultimately our tactical investment plan. Our Asset Management Plan translates these into actionable steps and specific projects.

All of these components work together to make sure we have reliable and safe water and wastewater services that can provide for more people, cater for future generations, are good for the environment, and follow the rules.

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Ngā whāinga rautaki whakarato
Servicing strategy objectives

Mana whenua engagement: We're collaborating closely with local Māori communities to ensure that their perspectives and values shape our plans. This approach brings diverse insights to the table, enriching our strategies with cultural wisdom and community voices.

Community engagement: We're all ears when it comes to understanding what the community needs and aspires to. Our aim is to create services that match community needs, making sure everyone benefits from our efforts.

Public health and community wellbeing: The public's safety and wellbeing are top priorities. By providing services that keep the public healthy, we contribute to a thriving and secure community.

Population growth: As the community grows, we're working hard to prepare for the increased demand on our resources and services. Balancing this growth with protecting the natural environment is a key challenge that we are addressing. We integrate land use and water planning at a regional, catchment and site scale as per our commitment to the Auckland Water Strategy (see Appendix 1).

Environmental enhancement: Our commitment to nature is unwavering. We're not just providing water and wastewater services – we're also dedicated to preserving and improving the environment as we go along.

Carbon reduction: We're taking steps to reduce greenhouse gas emissions from our activities. While it might mean changes in our practices, we think the benefit to the environment is worth the effort.

Sustainability: Making decisions that stand the test of time is important to us. While it may require some adjustments, the result is a more resilient and lasting approach to providing water services to communities and protecting the environment.

Meeting our statutory obligations: While it might mean added steps in our processes, it's a necessary aspect of delivering trustworthy services.

Affordability and cost-effectiveness: We strive to provide excellent services without breaking the bank. Finding this balance ensures quality without financially overburdening the community.

Climate change: This decade and the ones that follow are likely to bring unprecedented extreme weather. We need to muster all our foresight and adaptive ability to ensure that our services remain dependable when disaster strikes.

In making decisions, we consider various factors and trade-offs. Sustainability will require changes in our approach, and affordability will involve careful resource allocation. While we aim to strike the best balance we can with the information we have, these objectives sometimes need to be weighed against each other to make the best decisions for the community and the environment. We want these trade-offs to be more transparent, to help build an understanding of how decisions are made.

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Rohe whakarato: Awaroa me Parakai

Service area: Helensville and Parakai

Kupu whakataki | Introduction

This servicing strategy covers the communities of Te Awaroa (Helensville) and Parakai, situated on the Kaipara Awa (river) some 40 kilometres north-west of Auckland in the Rodney Local Board area. Known to mana whenua Ngāti Whātua ngā marae e rima members as Te Awaroa, the township takes its name from the tributary stream Awaroa that meets the Kaipara Awa there. The land gifted by the tupuna of Ngāti Whātua hapu Rangatira was established on the 'spur in the hills,' slightly higher than its surrounding wetland and flats areas, which have been prone to flooding. With its source at the confluence of Ahukuramu and Kumeū rivers, the Kaipara Awa snakes its way towards Kaipara Moana (Harbour) eventually feeding into the Tasman Sea. Its numerous tributaries and historic events are heard in the kōrero from Ngāti Whātua o Kaipara mana whenua on marae.

The closest of these is Haranui Marae, going past Otakanini and Kaipātiki whenua blocks toward South Head. It is now remembered in the historic block Kaipātiki now remembered in the Kaipātiki Reserve that is opposite the WWTP discussed in this document. Going toward Waimauku, Wharepapa and Ohirangi acting as water reservoirs and Reweti Marae is passed. Taking a 30-minute drive using the SH16 Kaipara Coast Highway are Kakanui, Araparera and Puatahi marae.

Nearly 5,000 people call Te Awaroa (Helensville) and Parakai home. Among them, Kaipara College educates around 800 students, some of whom come from nearby towns, including a few from Auckland. There are about 1800 homes and more than 200 local businesses in the area. People here share a strong sense of belonging with inter-generational connections to the land and history. In addition, new residential developments in the region are attracting newcomers for reasons such as affordable housing (compared with Auckland), employment opportunities in light industry, services, and retail sectors, and also retirement options.

Te Awaroa (Helensville), known for its historic charm, is home to the iconic Helensville Railway Station, a heritage-listed building dating back to 1915. The area also boasts the Kaipara Coast Sculpture Gardens, a serene spot where art and nature converge. Just a short drive away, four kilometres to the north, Parakai is famous for its natural thermal springs and the Parakai Springs Water Park, providing an escape for relaxation and aquatic adventures. These twin towns not only serve as gateways to the beautiful Kaipara Harbour but also offer a glimpse into New Zealand's rich history and the rejuvenating power of its geothermal wonders.

Kaipara Harbour, surveyed by Cdmr B. Drury and HMS Pandora officers, 1852-1858. Map no. 2560, image supplied by Ngā Maunga Whakahii o Kaipara

We provide both water supply and wastewater services for Te Awaroa (Helensville) and Parakai, and we work collaboratively with our colleagues from Auckland Council and Healthy Waters team to provide these lifeline services. While we acknowledge that culturally water and wastewater systems may have important differences, we see them as an integrated

This history can be accessed on their website: https://www.kaiparamoana.com/k-rero-o-mua-our-history.

Ngā Maunga Whakahii o Kaipara feedback on the draft strategic document, May 2024.

system. For example, we anticipate wastewater flows by understanding water use. Moreover, we see the potential environmental benefits of recycling both water and biosolids produced in the wastewater treatment process.

We estimate that each person uses approximately 150 litres of water per day in Te Awaroa (Helensville) and Parakai. Approximately 80 per cent of the water used in households becomes wastewater; this means that each person produces approximately 120 litres of wastewater every day. When it rains, rainwater also enters the wastewater network through incorrectly installed downpipes and unauthorised connections. From time to time, as networks age or other issues materialise, our network pipes may allow groundwater into the system too. In the Te Awaroa (Helensville) and Parakai network, stormwater inflow into the wastewater network (including on homeowners' private land) makes up to half of the volume of the wastewater that we would normally treat in dry weather. Wastewater and stormwater that enter into the network need to be treated at the WWTP before being discharged into the environment.

It is important that people recognise that the less water they use, the more they benefit the environment. Taking care of this precious taonga puts less strain on the water supply and means less wastewater being produced. The behaviour of our public also contributes to the proper functioning of the wastewater network. Flushing unwanted objects down the toilet not only can cause clogging of private wastewater pipes, but also increases our operational costs related to removing blockages. Therefore, it is in the community's best interest to be mindful of what goes into the wastewater network. By minimising the introduction of rainwater and other non-wanted items, we can reduce maintenance requirements, control operational costs, and enhance the overall efficiency of our WWTP.

This will help us to be more efficient with our wastewater treatment and limiting untreated discharge into the environment. Balancing our need to invest in the wastewater network for environmental protection with keeping costs affordable for the community requires cooperation from everyone. Every resident plays a crucial role in creating a sustainable and efficient wastewater management system for Helensville and Parakai communities.

Ngā tāhuhu kōrero mō te whakakāinga me te whakarerekētanga o te Putunga Wai o te awa o Kaipara | History of Kaipara River Catchment occupation and modification

The Kaipara River catchment, with a history of over seven centuries of human occupation, has been primarily shaped by Māori presence and European influences dating back nearly 180 years. Human activities in the catchment have left a mark on its vegetation, archaeological sites, historic structures, place names, and cultural associations.

In the pre-European era, the te Taou hapū of Ngāti Whātua and te Kawerau ā Maki had strong connections to the catchment. Māori occupation involved land modification, including the use of fire for land clearance, earthworks, and food cultivation. They harvested a variety of resources from the land, waterways and wetlands. Numerous place names throughout the catchment reflect the Māori connection, and these names still hold significance for local Māori communities.

> *'The name Kaipara appears to have applied traditionally to the Harbour and in particular to its southern arm. The Kaipara River itself had many different names that applied to its component parts. For example, the meandering bends in the river near Helensville were known as Tungoutungou while the section near the main river bridge was known as Te Pu a Tangihua. Further upriver were the shoals known as Kaiwaka, and the meander north of Rewiti which was known as Tua te tua.'*

Helensville township was known as Te Awaroa, 'the Valley of the Long Winding River.' Ngā Maunga Whakahii o Kaipara have a long and rich history which intersects with other hapū and eventually colonial settlers.

The lower Kaipara River and its tributaries were significantly impacted by European settlement, especially in the mid-1800s when organised European communities began to establish themselves. Timber milling became a major industry, and this activity, along with agriculture, led to permanent changes in the landscape and water bodies. European settlement also introduced the practice of drainage and land clearance for agriculture, impacting water tables and water flows.

Exotic forestry operations, such as the development of Riverhead State Forest and Woodhill State Forest, further influenced water tables and water bodies. The growth of dairy farming and the development of creameries in the early 20th century had a significant impact on water resources. The introduction of bore wells and drainage works became common on farms.

The catchment continued to evolve with urbanisation and residential development, particularly in the Kumeu-Huapai and Waimauku areas. The expansion of market gardening, orcharding and viticulture, along with the impacts of bore installations and farm dams, continues to increase water demand and water allocation challenges. Legacy wastewater issues have had negative impacts on Te Awaroa (Helensville) and Parakai residents. Iwi feedback notes that '…investment will establish a certainty from which our mokopuna can grow, evolve, and prosper as intended by our tupuna [grandparents or ancestors] who gifted land for township infrastructure.'

Te taupori me ngā whakawhanaketanga | Population and development

Today Te Awaroa (Helensville) and Parakai are identified as rural settlement areas of Auckland. The area has a range of different land-use zones: primarily residential, with some business land.

There is some growth in residential population and demand for services and expected plan changes for this area. While private developments are happening in the area, the recently approved Auckland Future Development Strategy suggests that full build out of the future urban-zoned areas in Helensville is to be scheduled to after 2035. This is to align with our provision of water and wastewater services, and the expected upgrade requirements of the treatment plants as a result of their respective consenting processes.

Te matapae tatau ā-iwi mō Awaroa me Parakai | Helensville and Parakai population forecast

Currently, the communities have a population of jusdt under 5,000 residents in total. Forecasts indicate a growing population in Te Awaroa (Helensville) and Parakai over the next 30 years. Based on our water and wastewater connections and proposed new developments in the area, we estimate that there will be approximately 6,500 people living in the area by 2050 (see chart below). In the short term, our population forecast carries a reasonable level of certainty. However, it is crucial to acknowledge that the long-term forecast is susceptible to shifts influenced by regulatory and planning measures.

In addition, the effects of climate change could make some of the low-lying areas around the Kaipara River uninhabitable, necessitating a strategic retreat from existing residential areas. Although these will become clearer in the future, it is vital that we proactively engage in discussions with the Te Awaroa (Helensville) and Parakai communities, and continue to monitor the policies to prepare for such scenarios in the future.

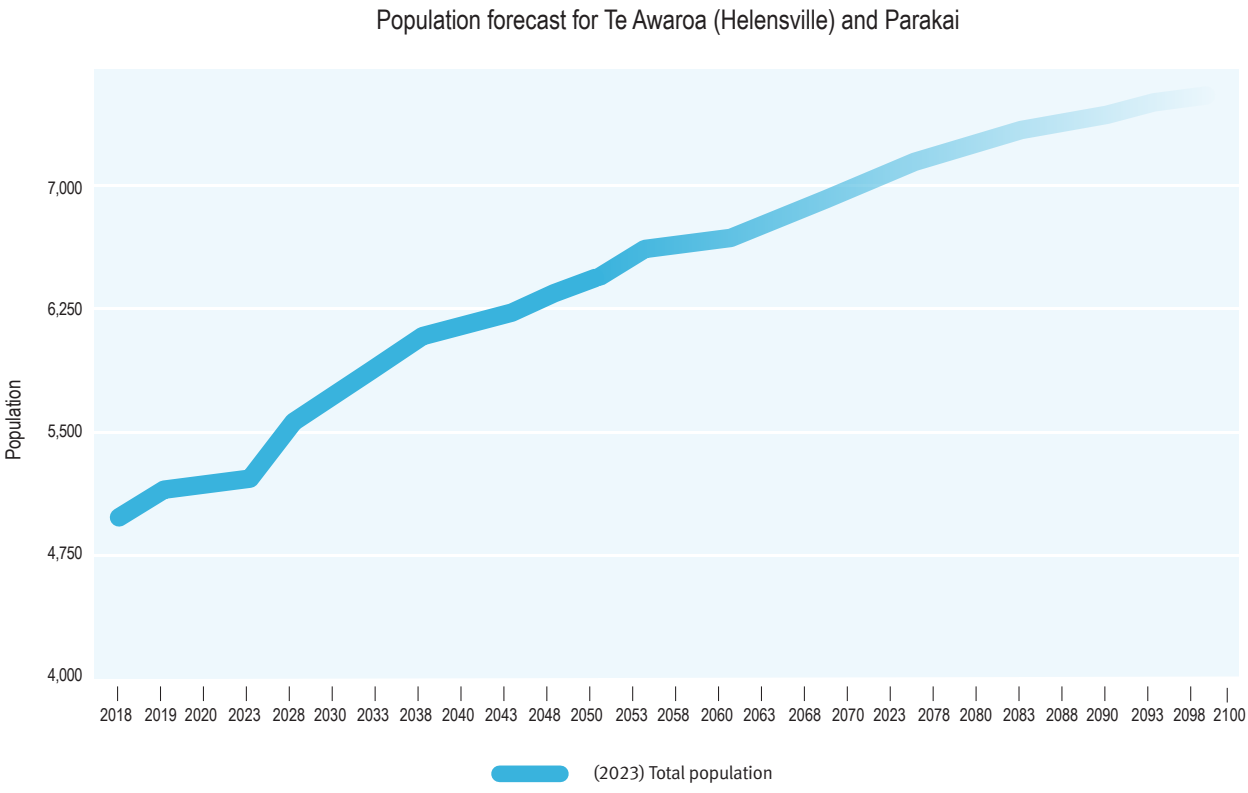


Figure 1 - Population forecast for Te Awaroa (Helensville) and Parakai

Note: This uses Auckland Council's population data released in 2024.
All population projections are theoretical estimates, however uncertainty is greater after 2051.

The orange area below shows the area under consideration in this strategy:

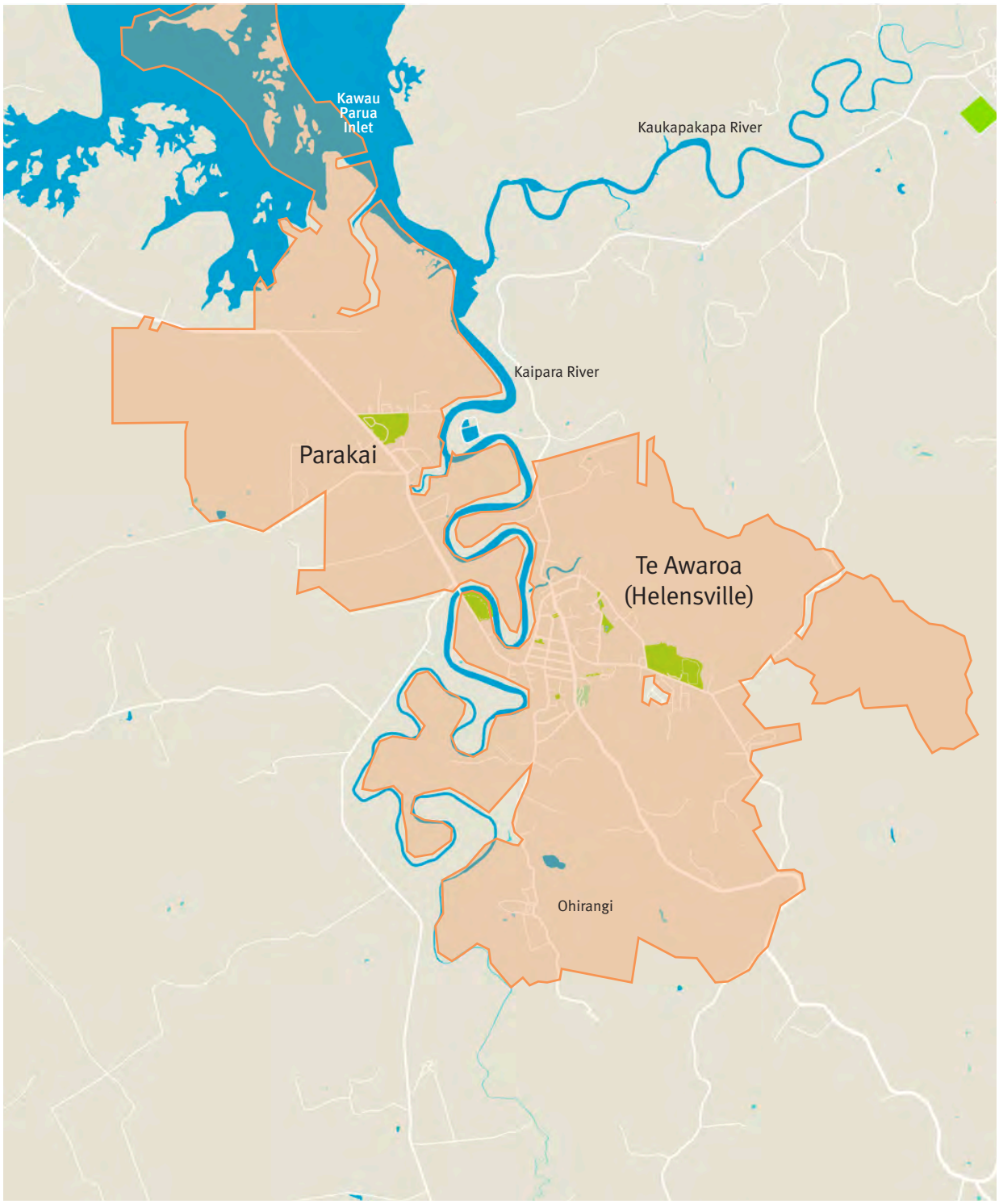


Figure 2 - Te Awaroa (Helensville) and Parakai servicing strategy area

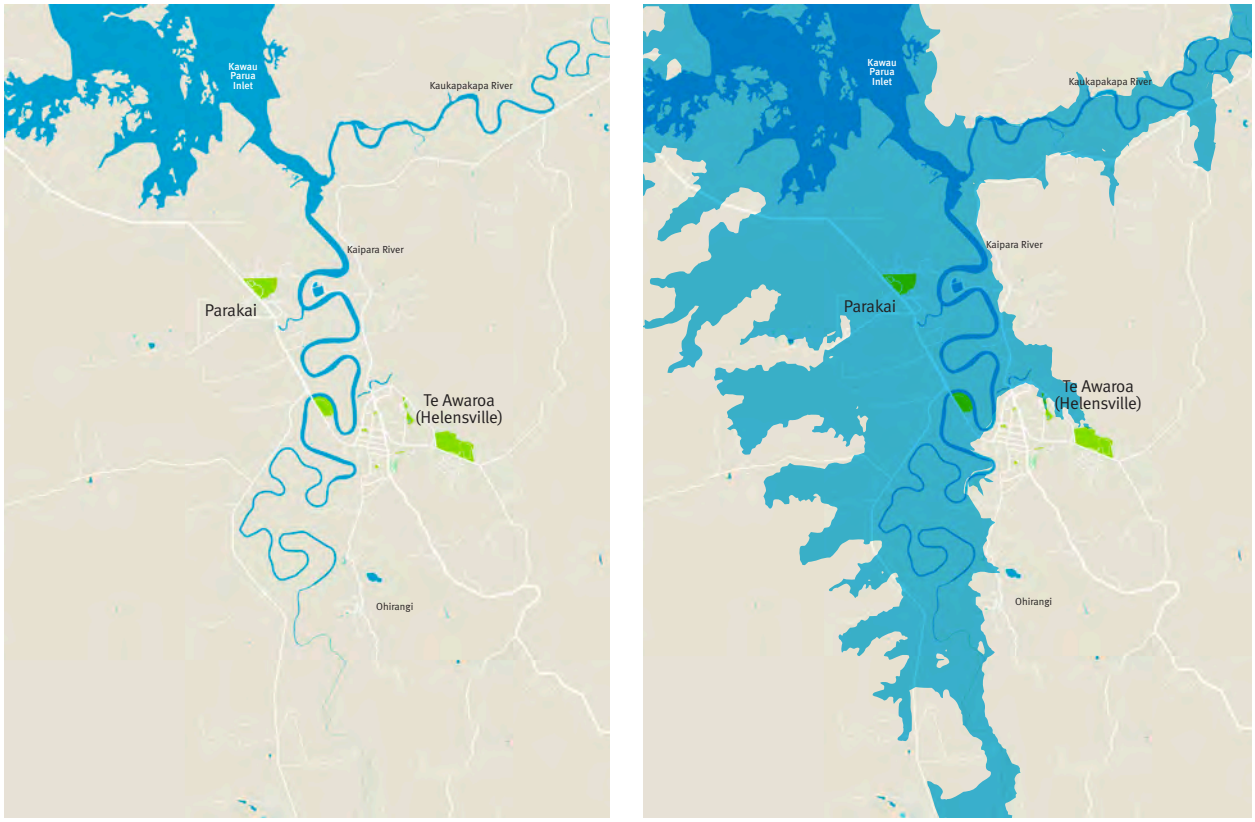
Demand for water in the area is usually higher during drier summer months and the holiday season. The increasing population will naturally increase the demand for water and production of wastewater, for which we need to prepare by planning for our infrastructure to stay ahead of growth.

Ngā whakaaweawe ā-hurihanga āhuarangi, taupori hoki
Climate change and population impacts

In addition to the growing population, we need to be prepared for the impacts of climate change including more variable rainfall and extended drought periods, which will impact on the availability and quality of surface-water sources, as noted above.

The seasonal distribution of rainfall is projected to change noticeably in Auckland, with spring rainfall expected to decline and autumn rainfall expected to increase. Increasingly dry periods in spring and summer, combined with heavier rain in autumn and winter, means that although the total annual rainfall may not change significantly, we will still need to plan for the challenge of increased frequency and intensity of droughts, storms and floods. We anticipate greater vulnerability to El Niño and La Niña weather patterns, meaning that we must prepare for increasing situations of not enough and too much water as we plan our investments in the future.

Low-lying areas at risk of sea-level rise in Helensville and Parakai



Current sea levels | **One metre sea-level rise**

Figure 3 - Flood risk areas

Climate change will impact surface-water supplies such as Te Awaroa (Helensville)'s, and rainwater tanks, particularly for those with smaller tanks, which are more likely to spill over in wet periods and run dry in dry periods than larger tanks. Intensification can make it difficult for households to collect sufficient rain (with limited room for large enough tanks) to support full domestic water use.

Figure 4 - Mangakura Dam Feb 2023

An alternative source of water is needed for Te Awaroa (Helensville) and Parakai to increase the resilience against climate change and projected population growth in the area. The water supply situation may be made worse by water take consent conditions limiting the amount of water that can be taken, or requiring stream compensation flows. These types of conditions can enhance the natural environment, but are likely to reduce the availability of water for use, increasing the need for an alternative source.

Climate change also has an impact on water demand. Aucklanders use more water when it is hot and dry, particularly those who live in homes with gardens and pools. This is also true of some businesses and organisations like schools and councils which need to keep lawns, sports fields and parks thriving in dry weather.

Our wastewater treatment plant in Helensville is at a high risk of impact from climate change too. Sea-level rise and tidal inundation within the next 20 years will have severe impacts on the WWTP. We are looking at options for the wastewater treatment plant and while we have not come up with a solution yet, the most likely scenario is retreating from where it is and building a new treatment plant in a better location.

Wai

Water

Tāhuhu kōrero mō ngā putunga wai | History of municipal water supply

From the early 1900s the growing borough of Te Awaroa (Helensville) had begun to experience water shortages. Several sources were inspected and in 1913 a concrete water supply dam was constructed on the upper Mangakura Stream, just south of the town. This source became insufficient for the township's needs within a decade. Investigations into the possibility of taking underground water from the sand country west of Te Pua were undertaken in 1930; however, the iron and other mineral contents of such water made it unsuitable. In 1934 a second larger dam was constructed on the Mangakura Stream greatly increasing storage capacity. The construction of a larger lower-level earth dam on the Mangakura Stream was proposed from the mid-1950s and commissioned in 1964, raising the total storage capacity to approximately 107 million litres. In 1975 a pumping station utilising the underground water resources of the Sandhills Wetland was finally constructed near Bradley Road, Wharepapa.

Te pūnaha putunga wai ināianei | Water supply system today

Te Awaroa (Helensville)'s water supply system is an operationally and geographically separated system from the wider Auckland metropolitan system. Water is abstracted from the two sources of Mangakura Dams and Sandhills Wetland. Both sources supply the Water Treatment Plant (WTP), where water is treated and stored onsite in two treated water reservoirs. The WTP operates to maintain levels in the reservoirs at a set point. From the reservoirs, water is supplied to the distribution system under gravity.

As of 2022, we supplied water to about 1,700 connection points and a population of approximately 4,600. Note that the number of people connected to our network is lower than the total population (approximately 90 per cent) because people can choose to stay off the network and use their own water tank.

Te Awaroa (Helensville) and Parakai water supply system

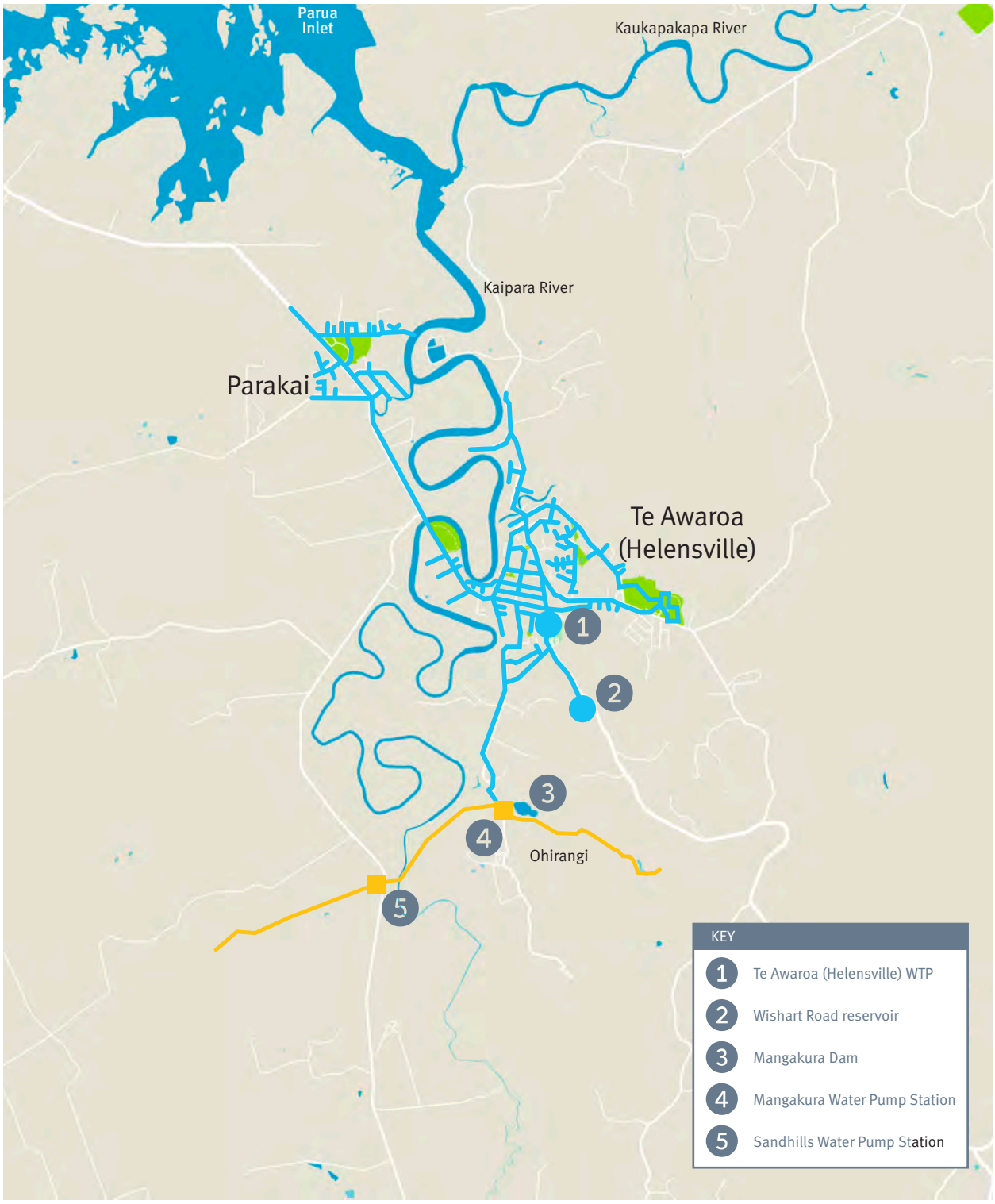


Figure 5 - Te Awaroa (Helensville) and Parakai water supply network

Figure 6 - Mangakura Dam weir

Te kounga wai | Water quality

The water quality from the dam and spring-fed wetland can vary significantly following large rainfall events. Raw water quality data shows that the water abstracted from both sources contains high levels of iron and manganese, and both sources are subject to elevated levels of cyanobacteria and naturally-occurring organic compounds.

Algae and cyanobacteria levels are variable in the Mangakura Dam and can lead to elevated levels of odour-causing compounds, which can cause water to taste different, mainly throughout the warmer months of the year.

Te tōtika o te wai | Water efficiency

Before we consider new water sources, we should know that everyone in the community is playing their part by not wasting water. We need everyone to actively see water as a taonga [treasure] which should be used wisely. With our partners and stakeholders, we also want to actively encourage people to collect their own rainwater off roofs, particularly if they have gardens (this has the dual benefit of reducing demand for water as well as potentially improving stormwater outcomes).

We use universal metering to measure water use by all legal connections on the water supply network. All water meters are read every second month and water consumption for alternative months is estimated.

Water metering assists us in providing the data which is required to manage and operate the water supply system. Suitable water-use statistics contribute to promoting the wise and efficient use of available water, optimising network design and operation, and managing revenues and costs.

Watercare has a water efficiency plan covering all of Auckland, committing us to achieve our gross per-capita target of 253 litres per person per day by 2025. There are four pillars to this plan, as follows:

- Focus Area 1: Reducing leakage
- Focus Area 2: Improving oversight from source to tap
- Focus Area 3: Pressure management
- Focus Area 4: Residential, community and commercial water efficiency.

The responsibility for being water efficient falls to both Watercare and our customers. With improved digital oversight of our network and our customers' consumption, we are increasingly able to provide useful advice on how we all might waste less water over time.

Post 2025, Watercare's water efficiency commitments align with the Auckland Water Strategy Water Security Targets:

Consumption (demand)

2025	**≤253 litres consumption per person per day (gross per capita consumption, network)**
2030	**≤247 litres consumption per person per day (gross per capita consumption, network)**
2050	**≤225 litres consumption per person per day (gross per capita consumption, network)**

Figure 7 - Helensville and Parakai water sources are at risk from severe weather events

Te whakamahi me te wāteatanga o te wai | Water use and availability

Figure 8 below shows the amount of water we abstracted and treated from all water sources in the area and the amount that was used during the last five years. The green line shows total consumption, which is rising due to increasing demand.

Total consumption is rising due to increased residential and commercial consumption

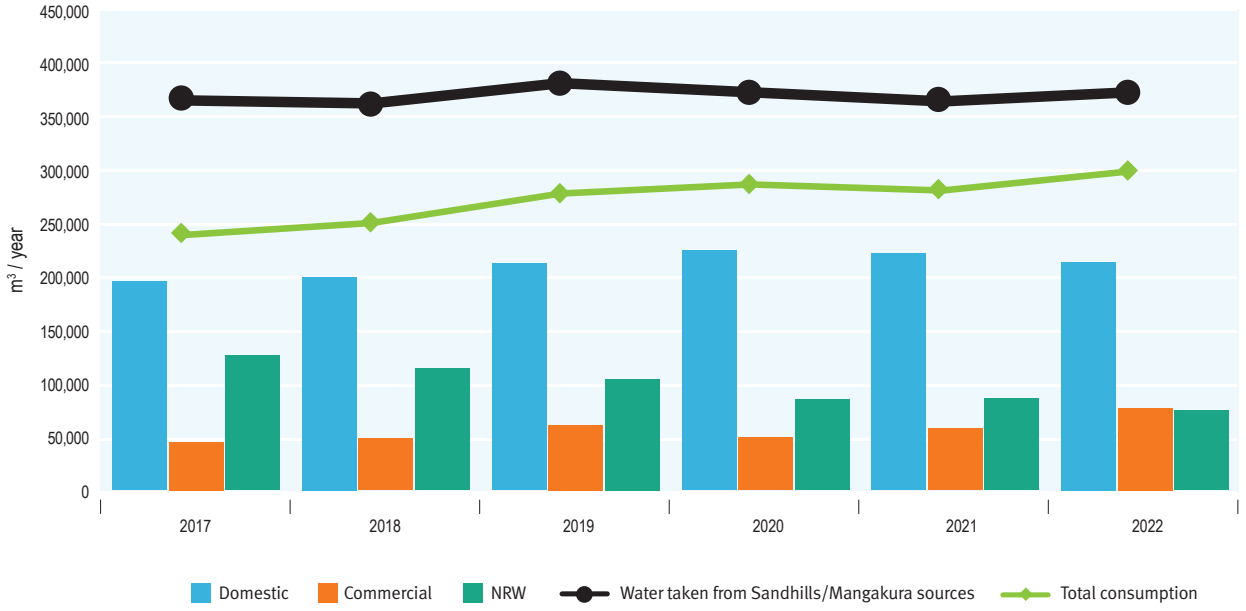


Figure 8 - Water supply and consumption in Te Awaroa (Helensville) and Parakai

We have become more efficient with our water use over time by reducing water waste. This reduction has been achieved through reducing leakages, implementing compliance monitoring to reduce unauthorised use and water conservation within the community. Although we are more efficient with our water use, we will still need a new source due to growth, and to improve our resilience against climate change impacts on supply.

The average water use during the period 2017 to 2022 is summarised in the table and pie chart below:

Water Use	thousands of litres per day	megalitres per year
Domestic	578	211
Commercial	156	57
Tankers	16	6
Irrigation (non-potable water)	5	2
Network non-revenue water	271	99
Total	1027	375

Wai me tōna hiahiatia āpōpō | Future demand

The water demand in Helensville and Parakai will be driven (at least in part) by:

- **Urbanisation and population growth**

  The number of residents in the area is a key driver of water demand. As the population increases, so does the demand for water for residential, commercial and construction purposes.

- **Climate and weather patterns**

  Extended dry periods mean we need to provide additional storage capacity and resilient supply that is not dependent on surface water. We need to prepare to provide water for tanker filling for emergency supply to residents' houses with rain tanks during droughts.

- **Network losses**

  Water losses in the network result in increased demand for water from our sources. In Te Awaroa (Helensville) and Parakai currently we lose approximately 20 per cent of the water through the network before it reaches residents' houses. We will gradually renew the older parts of the network to reduce these losses.

- **rain tanks, water efficiency initiatives and other innovations**

  We will need to consider rain tanks, water efficiency and new technology as appropriate to support resilience and balance the emphasis on large public infrastructure options.

Based on the projected population of 6,500 in 2050, peak daily water demand will increase to approximately 2,470 m^3 per day on average [fig below]. Our current water take consents allow us to take a maximum of 2,500 m^3 of water per day from the two water sources in Helensville.

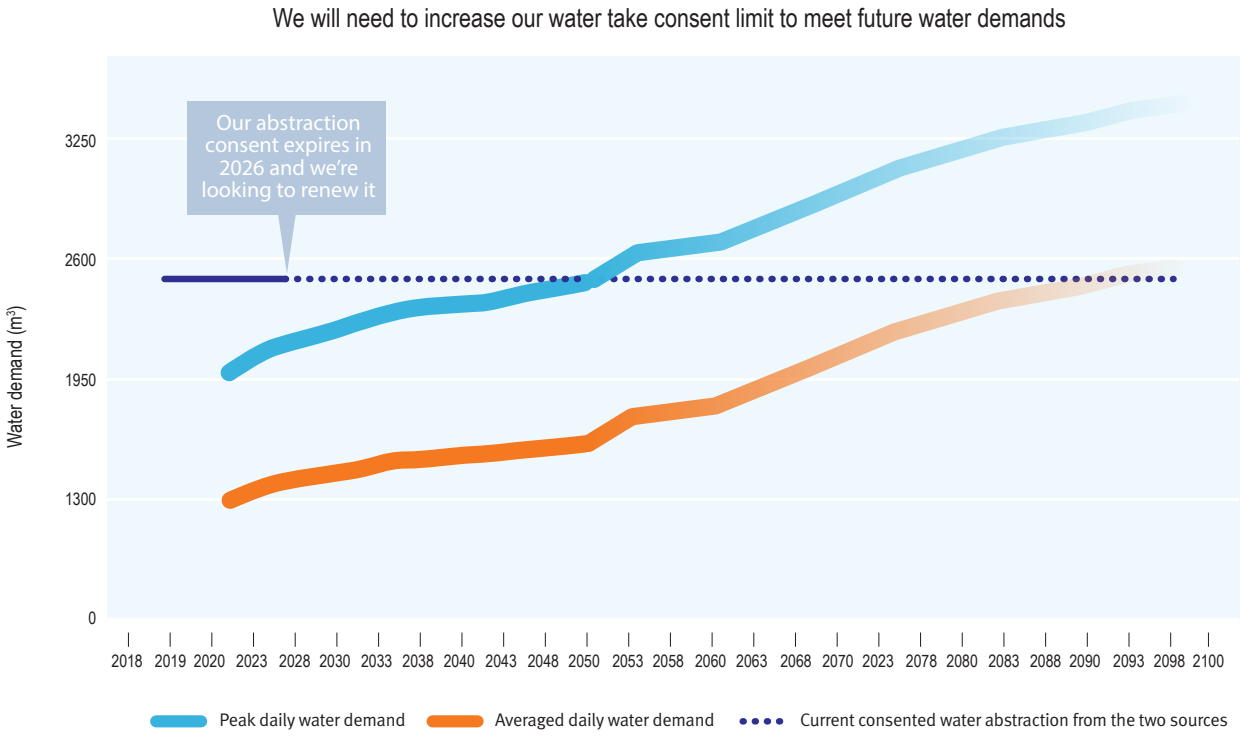


Figure 9 - Future water demand: based on Council population projections until 2050, then average growth scenarios

While currently there is adequate water from our Ohirangi and Sandhills sources most of the time, both are surface water and are highly susceptible to the impacts of climate change, as we have seen in the past few years. Extended dry periods reduce the amount of water available to take for town supply, and severe storms can significantly increase debris, mud and sediments in the water, making it challenging for our treatment plant to adequately treat the water.

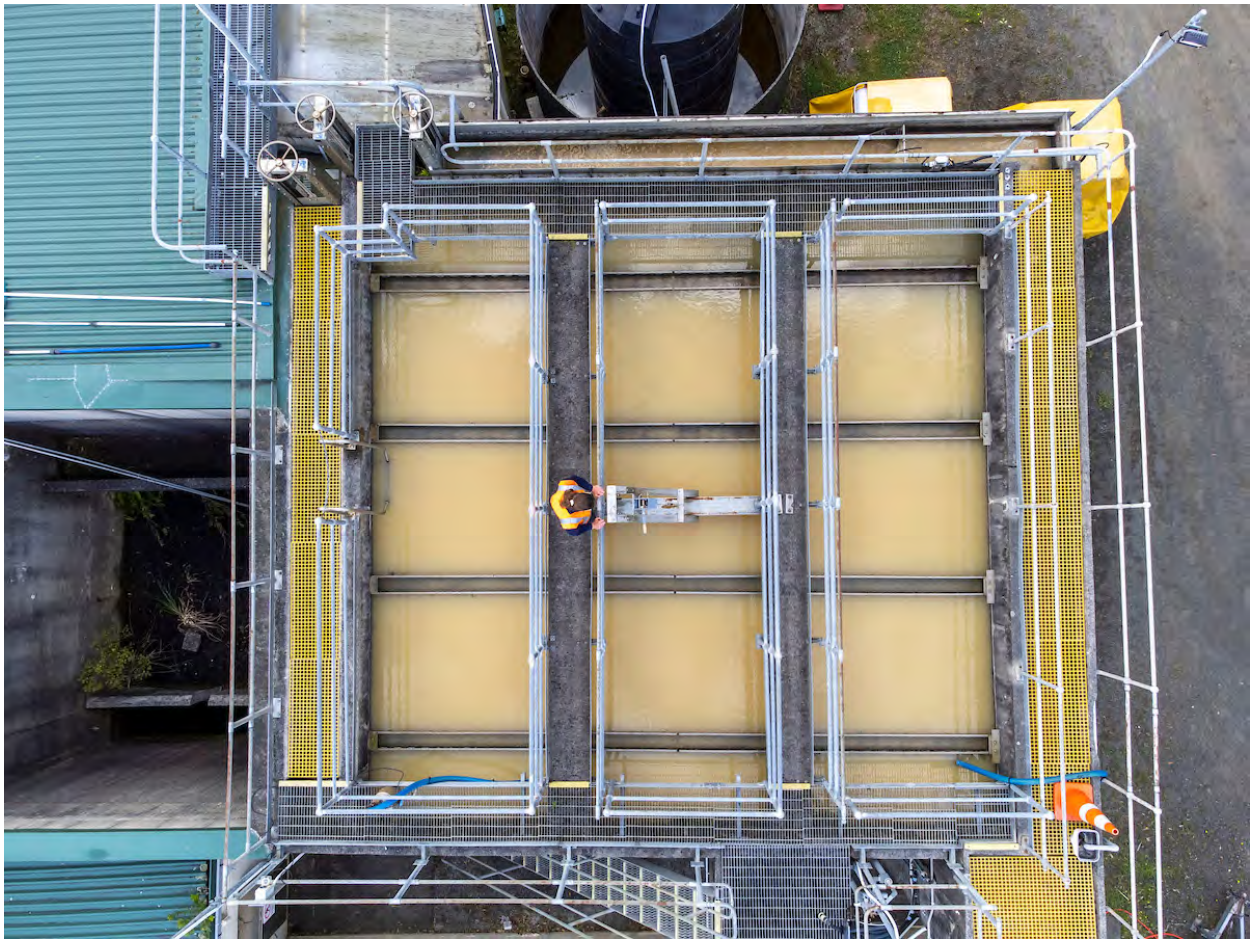


Figure 10 - Helensville WTP after storm, February 2023

Multiple local solutions – such as rain tanks, water efficiency initiatives and other innovations - may be better options for the future than large public infrastructure options. This will require working with the community to develop the most resilient strategy for the Te Awaroa (Helensville) and Parakai area.

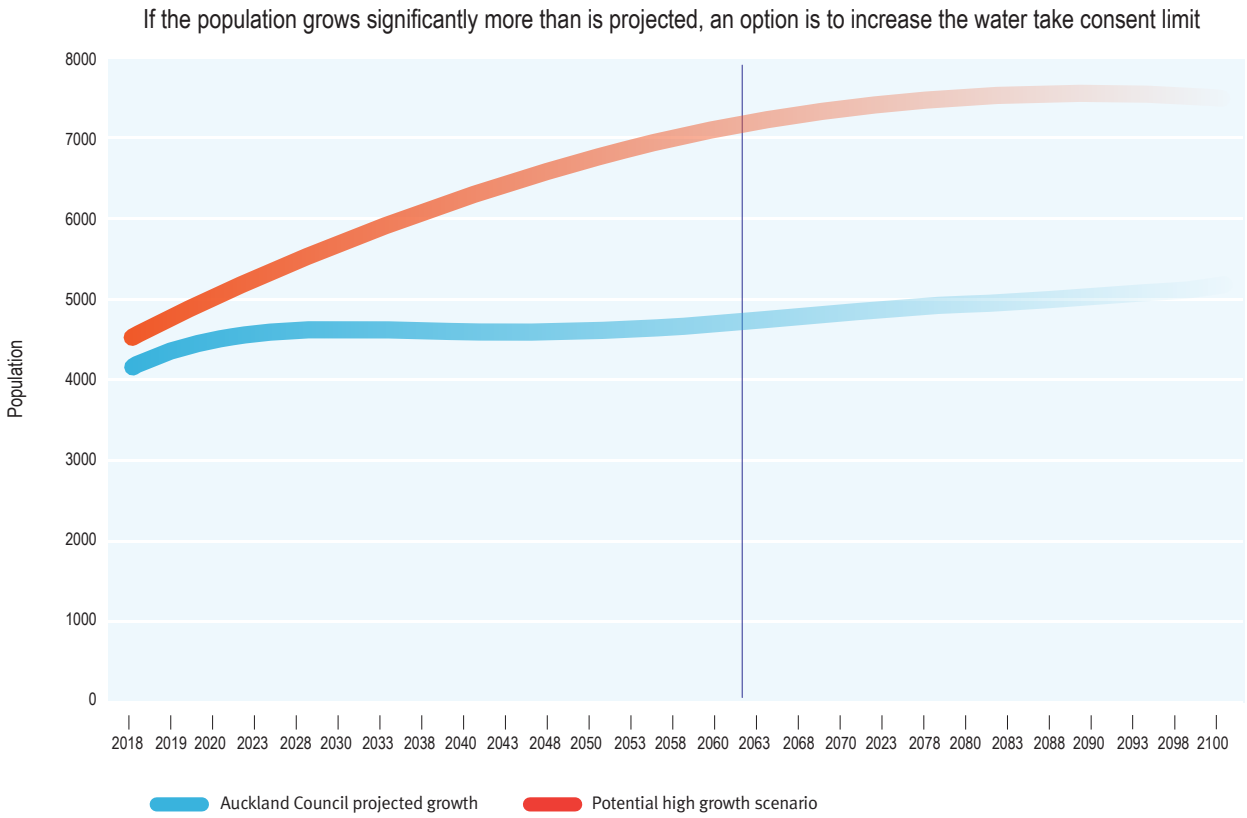


Figure 11 -Growth projected to 2100, based on Council population projections until 2050, then average growth scenarios

Whakarāpopototanga o ngā kōwhiringa putunga wai

Summary of water supply options

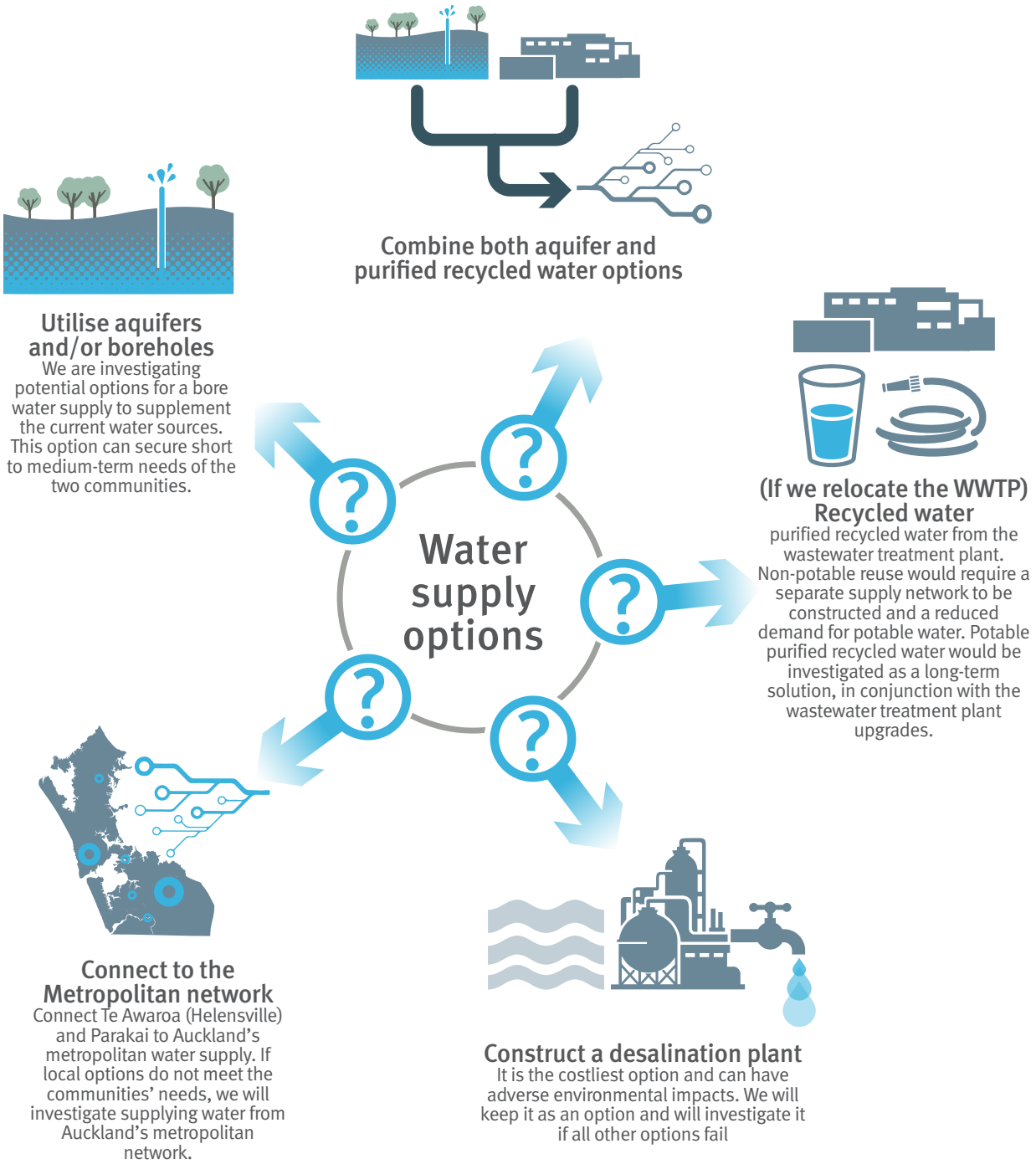


Figure 12 - Identified options for Te Awaroa (Helensville) water supply

Wai manawa whenua | Groundwater

The aquifer in Te Awaroa (Helensville) and Parakai is accessed by the local community privately for residential supply and by private water suppliers, for those not connected to the Watercare water network. An Auckland Council study showed that the groundwater level at Te Awaroa (Helensville) in 2020 indicated no noticeable effect of the drought. This result was somewhat counter-intuitive as shallow, unconfined sands would be expected to be greatly affected by climatic conditions. Overall, the impact of the 2020 drought on water levels in the Te Awaroa (Helensville) aquifer was less significant than many other aquifers in the region. This indicates that a groundwater source may be a suitable option to provide the resilience that our water supply needs.

We have been investigating a number of potential locations for using groundwater. This work is ongoing and requires careful consideration, including impacts of groundwater take on seawater intrusion into the aquifer, water allocation and long-term availability, and distance from our treatment plant. We also note that groundwater is a limited resource which is shared by all the users within the aquifer (allocation regulation is undertaken by Auckland Council). As a source of water for the region, groundwater could be an important part of the solution.

Wai hangarua | Recycled water

Recycled water has considerable potential in the medium to long term as an integrated water solution that provides benefits to both water and wastewater systems. As a source:

- It provides a climate-resilient supply that is relatively non-rainfall dependent.
- It is resource efficient as it preserves natural sources of water and maximises the amount of water flows in the natural creeks and waterways.
- It reduces the volume of treated wastewater discharged to the harbour.

As will be discussed in the wastewater section, we may need to relocate our wastewater treatment plant from its current location due to the potential risks we will face within the next 10 to 20 years. This creates an opportunity to develop an integrated water and wastewater system, where highly treated and purified wastewater would be beneficially reused. Options include (1) a local system to directly use Te Awaroa (Helensville)'s purified wastewater for local use, and (2) a regional system where purified wastewater from neighbouring wastewater treatment plants is stored at a central storage facility and used as a water source when needed.

We agree with our partners and stakeholders that it is important to consider water options from a circular perspective. We will investigate our water options to consider how we might use recycled water on land and for other non-potable uses in order to offset demand for drinking water and reducing flows into the Kaipara awa (with Kaipara Moana eventually receiving this water). We acknowledge that this has been a long-term discussion with iwi over more than two decades, and this kōrero includes the perspectives of those who are no longer with us. Descendants carry on the conversations with Watercare, and we (Watercare) acknowledge that the overall decisions in terms of the servicing strategy sits with ourselves, mana whenua Ngā Maunga Whakahii o Kaipara, and recognised whanaunga hapu, iwi, the wider community and local government.

Further engagement with local iwi and the Te Awaroa (Helensville) and Parakai communities will be needed on the topic to understand whether these or any other options would be feasible. In addition, there is currently no regulatory framework for the potable use of purified recycled water. Further engagement with the regulators of water supply in Aotearoa New Zealand will be required before implementing this option.

Te tango ōpapa tote | Desalination

Desalination is often considered as an option if none of the more natural solutions are possible. This is because desalination has a high cost and is very energy intensive. The cost of desalination increases - in the short-term at least - if it needs to be accompanied by a new renewable energy source (such as solar or wind).

While we keep desalination as an option for the future, it is probably not a suitable one for Helensville. Desalination sources typically need a deep-water intake to take in high-quality salt water, with minimal variability in salt concentration. The estuarine nature of the waters in the Kaipara Harbour means that the harbour does not have a stable salinity, is not

deep enough, or does not have a suitable geology for the construction of an intake. A suitable site is also needed to discharge the hypersaline brine by-product of the process. The sensitive aquatic environments of estuaries tend to be unsuitable for this. The construction of an intake and outfall for desalination is very costly, which means it is usually only viable for a very large plant. If desalination were feasible, it is more likely to be part of a bigger solution to supply water for the wider Auckland region.

Te tūhono ki te Pūnaha Wai Tāone Nui | Connecting to the metropolitan system

If it isn't possible to find a local source of water to provide the level of water security that Te Awaroa (Helensville) and Parakai communities need, supplementary supplies could be obtained from the metropolitan system. This option is not ideal or preferred, as it will increase the demand on our metropolitan water supply and sources, and will also need a long pipeline, which is costly in terms of both money, disruption, potential water loss during conveyance and carbon-emission equivalents. As noted in our introduction, the preferred approach to servicing non-metropolitan communities is to find local options unless there is a very strong health or environmental reason to do otherwise.

Te whakaputu ua me ngā kurawai | Rainwater harvesting and tanks

Rainwater tanks provide non-reticulated water and augment supplies to about 200 premises in and around Helensville and Parakai. There is a Watercare tanker filling station for drinking water located on Mill Road.

This type of storage has been relied on for most rural and coastal areas in New Zealand. In terms of eco-conservation benefits it is an effective utilisation method of natural resources. In times of low rainfall, the Helensville community sources additional drinking water from private supplier collection points to top up the rainwater tanks. Experience elsewhere has been that during drought, communities might need to wait weeks for top-up water to be supplied. Rainwater harvesting has some benefits, but it can be expensive to retrofit existing households with such systems, particularly in intensively developed areas. However, it could be a viable source of supplementary water for new dwellings. The introduction of rainwater harvesting would need the support of the relevant stakeholders, and tanks would need to be of a size large enough to make a difference during the hottest and driest months of summer. Depending on the uptake and make-up of any rain tank installation provision for the community, peak-day volumes and maintaining pressure for firefighting would need to be considered to ensure that there is sufficient water if all rain tanks were not available for use.

He mea hei whakaaro ake | Considerations

The level of water resiliency for the Te Awaroa (Helensville) and Parakai communities is relatively low. This is mainly attributed to the limited size of the catchment areas and a reliance on surface-water sources for public supply. Consequently, water availability is more vulnerable to fluctuations in rainfall patterns, increasing the risk for climate-dependent yields. This means that while there may be enough water to supply the communities and expected growth over the shorter term, the likelihood of these communities experiencing restrictions or outages in a drought or storm might be higher than for other areas of Auckland.

Renewal of the water take (consent expires in 2026) may require compensation flows in Ohirangi and Mangakura streams. Reconsenting of the take from the Sandhills Wetland may be subject to improved monitoring and understanding of the drought resilience of the source, stream ecological values, as well as water demand and usage.

Local iwi have identified Sandhills Wetland as an environmental taonga (treasure). In addition, Ohirangi Stream provides a safe and suitable natural habitat for local fish and native eels. We note that our take flows would never be so high as to reduce the stream flows to a level that would endanger fish life. Our future activities will consider these kinds of important ecological aspects and the environment that we are operating in, to ensure we are reducing our impact on the environment.

Waipara
Wastewater

Ngā tāhuhu kōrero mō ngā tikanga tiaki waipara | History of wastewater treatment

The Te Awaroa (Helensville) wastewater treatment system was built in the 1970s. Watercare inherited the WWTP in 2010 when the Rodney District Council amalgamated with the rest of Auckland's local councils to form Auckland Council. At that time, the treatment plant used two oxidation ponds to treat the wastewater of Te Awaroa (Helensville) and Parakai before discharging the treated wastewater into the Kaipara River, a major tributary of the Kaipara Harbour.

A discharge permit allowed the discharge from the treatment plant to the Kaipara River subject to meeting specific criteria, including discharge volume and discharge quality limits. Despite making substantial changes to how the treatment plant operated and its technology, we struggled to achieve the discharge standards of the resource consent due to the treatment plant receiving high inflows during storm events. As a result, we upgraded the treatment plant in 2023 by installing containerised treatment systems onsite. The upgrade has resulted in a significant improvement in the quality of treated wastewater that we discharge.

Ngā pūnaha tiaki waipara ināianei | Wastewater system today

The wastewater system currently serves a population of approximately 5,000 people in Te Awaroa (Helensville) and Parakai. It consists of two collection networks and eight pump stations. The picture below shows the Te Awaroa (Helensville) and Parakai wastewater network.

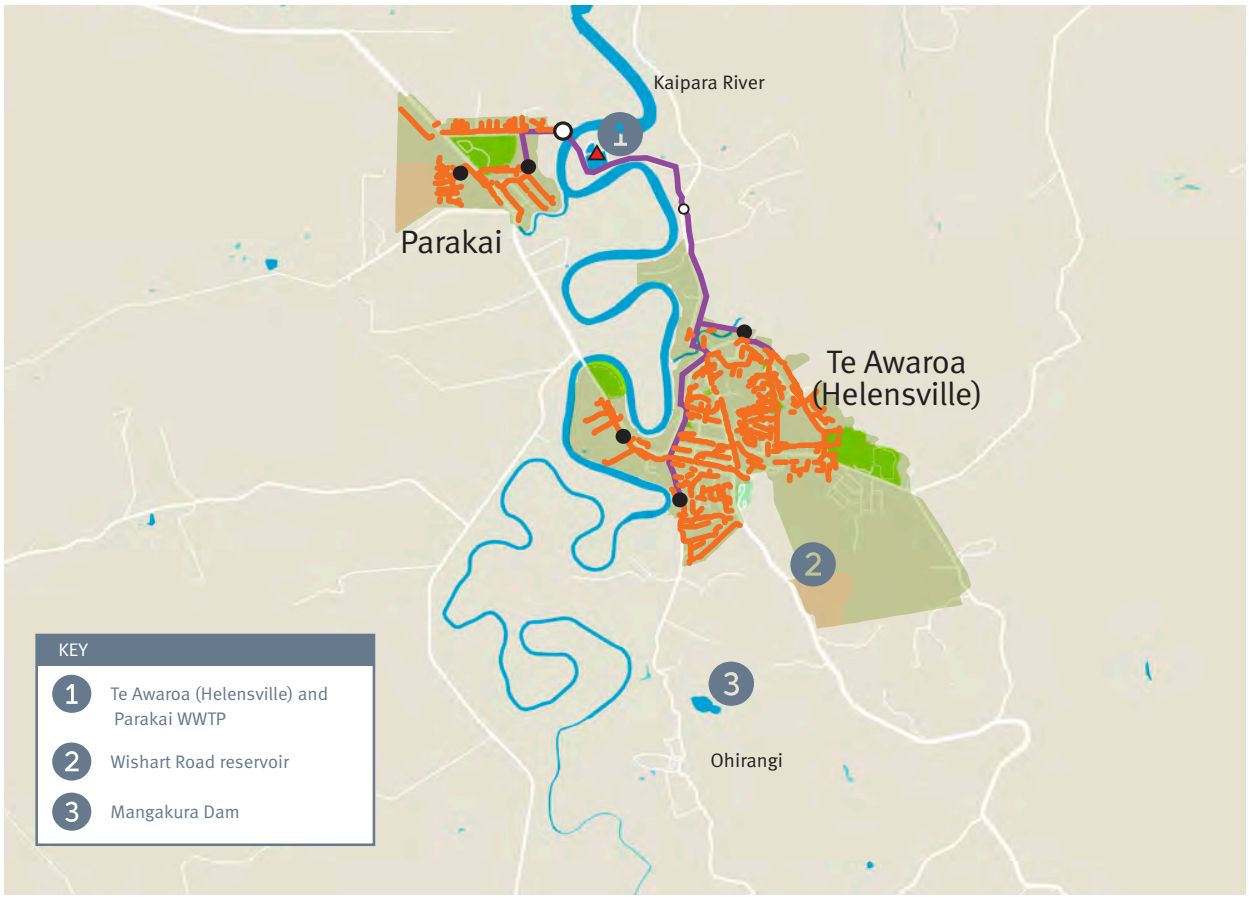


Figure 13 - Te Awaroa (Helensville)and Parakai wastewater system

There are eight engineered overflow points (EOP) in the network (five in the Te Awaroa (Helensville) network and three in the Parakai network). These are regulated under a regional network discharge consent (NDC). See the box below for more information on the NDC.

Wastewater overflows from the network into the river are particularly offensive to our Te Tiriti partner within their tribal rohe. Mana whenua aspirations are that wastewater spills into the Kaipara River are reduced.

The Network Discharge Consent (NDC)

The NDC was granted on 17 June 2014, for 35 years. It permits 'an average of no more than two wet-weather overflow events per engineered overflow point per year, or an alternative discharge frequency that can be shown to be the best practicable option if two overflows cannot be achieved for an engineered overflow point.'

The NDC requires preparation of an annual network performance report and a six-yearly wastewater network strategy which should include a remedial plan for the wastewater networks. The remedial plan outlines the work to be undertaken in the next six-year period, to move the wastewater network closer to compliance with the terms of the discharge consent limit of two overflows per engineered overflow point on average per year. The first wastewater network strategy was completed in 2023 and can be accessed through [www.watercare.co.nz/Water-and-wastewater/Wastewater-network-strategy-2023].

The two wastewater networks convey wastewater to the Te Awaroa (Helensville) WWTP, located on the right bank in the bend of the Kaipara River, across from Parakai, five kilometres from the harbour.

Te wāhi ka tukuna atu ai te waipara | Receiving environment – where treated wastewater goes

The current discharge consent condition for the WWTP permits a maximum of 5,500,000 litres of treated wastewater per day to be discharged into Kaipara River on an outgoing tide. The discharge consent expires in 2027.

Kaipara River is of moderate size, draining a catchment of 270 square kilometres extending to the Waitākere Ranges in the south and Riverhead Forest in the east. It flows to Kaipara Moana (Kaipara Harbour).

Kaipara River is a taonga and treated wastewater discharges reduce availability and safety of kaimoana (seafood) due to disrupting the natural salinity levels and quality of the water. The Kaipara River is sacred to iwi and we need to further protect and progressively reduce discharges for the generations to come.

Figure 14 - Te Awaroa (Helensville) WWTP June 2023

Ka pai haere te kounga wai i te whanga ki te mātārae o Kaipara
Water quality improves as we move away from Kaipara Bank towards Kaipara Head

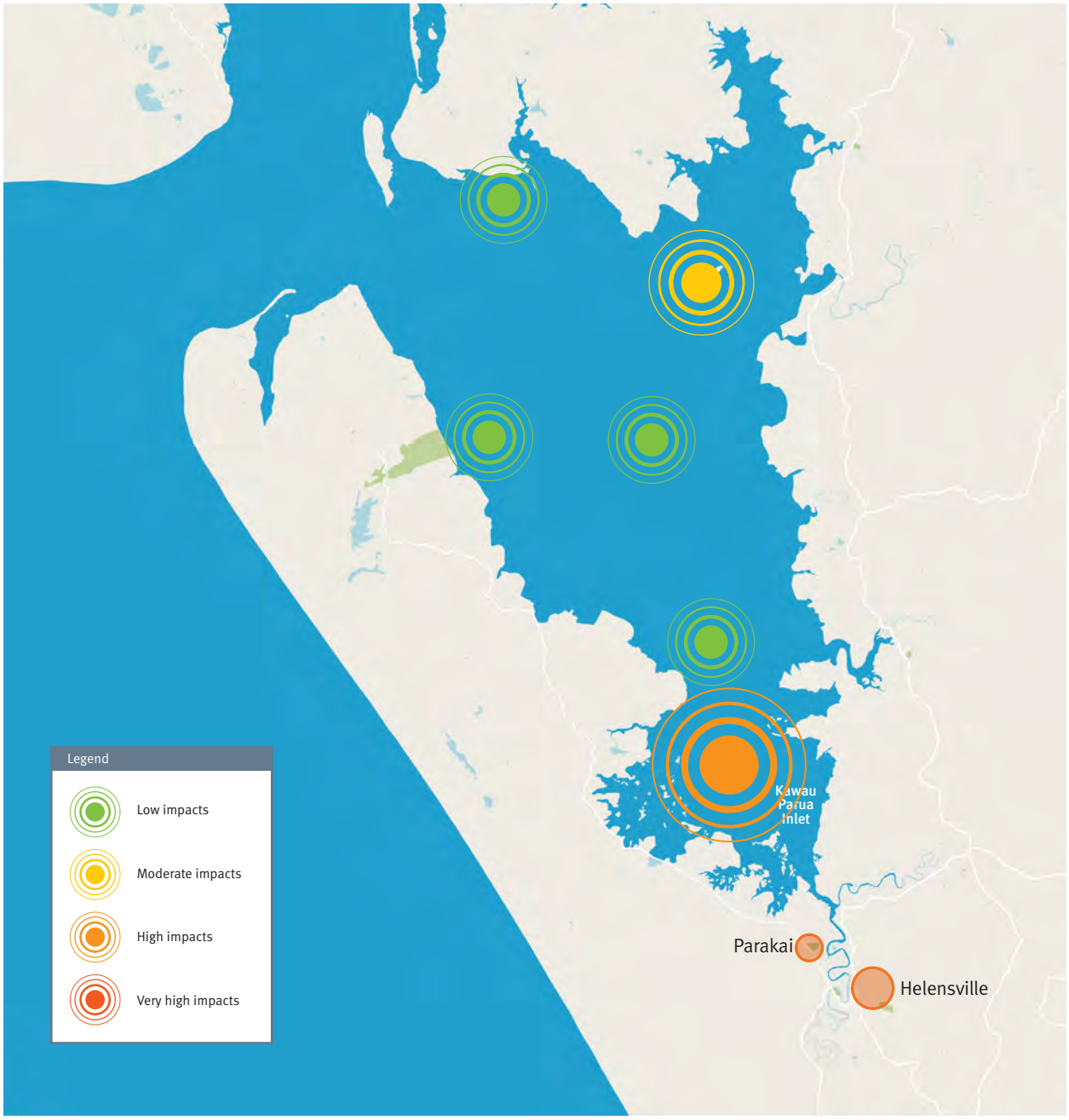


Figure 15 – Estuary health indicator of Kaipara Harbour

The environmental condition of Kaipara Harbour shows an improvement as one moves farther from the mouth of the Kaipara River towards Kaipara Head (Figure 15). The reduced health in proximity to the river mouth can be primarily attributed to the extensive modification of the river catchment area, where approximately 90 per cent of the land cover is no longer comprised of native wetlands or vegetation. This change has led to elevated levels of soil erosion and sedimentation in both the river and the downstream section of the harbour. There are no Safeswim monitored beaches in Te Awaroa (Helensville) or Parakai so regular environmental monitoring is not available.

[Source: www.lawa.org.nz/explore-data/auckland-region/estuaries/kaipara-harbour-south/]

Many organisations have done a lot of work to improve the health of the Kaipara Moana and its tributary awa. What happens on land has an impact on rivers and harbours and it can take years of work for damage to be remediated. We acknowledge the work of different groups in the Hoteo catchment, including Ngāti Whatua o Kaipara, Auckland Council, private landowners, and the Department of Conservation. Ngāti Whatua o Kaipara have also worked to improve the health of Kaipara Moana through the Kaipara Remediation Programme (for more on this, see https://kmr.org.nz/). While we cannot know all the work that has been done by local iwi, organisations and Council to improve the outcomes for rivers and harbours around Kaipara, we hope that our acknowledgement goes some way to ensure that they know their ongoing work is valued.

Te whakahou i te punaha tiaki waipara | Wastewater treatment plant upgrade

As an old and rural wastewater treatment system, the WWTP had received inadequate care and attention for decades. There were high sludge levels in the ponds, increasing anaerobic digestion and ammonia load. As a result, the plant had been performing poorly for years, causing breach of its discharge consent conditions.

We committed to improve the situation to meet our regulatory obligations and protect the public and ecosystem health. In addition to improving the access road, de-sludging and other remedial works, we invested $17 million to upgrade the WWTP to an innovative technology. This was completed in 2023 and has vastly improved the quality of the treated wastewater by effectively removing ammoniacal nitrogen, which is a toxic pollutant to humans and the ecosystem. The upgrade means the plant is now better able to cope with peak flows in wet weather.

The technology was tested at our innovation centre at the Māngere WWTP, which gave us confidence that it was the right solution for Te Awaroa (Helensville) and Parakai..

Figure 16 - Upgrading the for Te Awaroa (Helensville) Wastewater Treatment Plant

Figure 17 - for Te Awaroa (Helensville) WWTP June 2023

Te matapae mō ngā pēhi ā-waipara | Wastewater demand

Figure below shows the monthly average wastewater volumes that have been received by and discharged from the for Te Awaroa (Helensville) WWTP since January 2022. It shows the significant impact of wet weather on the wastewater system in Te Awaroa (Helensville) and Parakai.

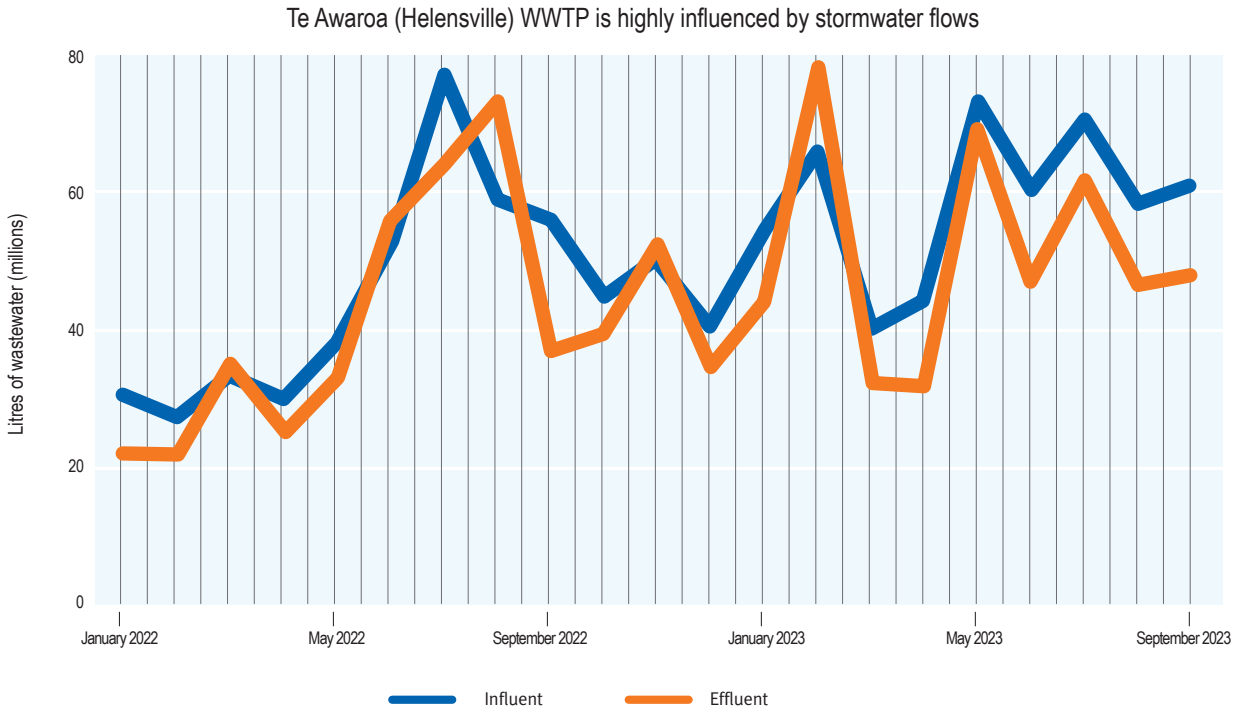


Figure 18 - Average monthly wastewater flowing to and from Te Awaroa (Helensville) WWTP

As discussed earlier, assuming no significant change in the development momentum, our population forecast modelling indicates that approximately 6,500 people will be living in the area by 2050. Allowing a gross per-capita wastewater production of 435 litres per person per day (including 50 per cent stormwater inflow and infiltration), adding 1,500 people to the community served would produce 652,500 litres of wastewater each day, during rainy periods.

The plant installed as part of the recent upgrades can treat 1,500,000 litres of wastewater each day, so we have sufficient wastewater treatment capacity. In addition, the new technology allows additional containerised modules to be simply attached to the existing ones, if more treatment capacity were needed. Our challenges are in the discharge of treated wastewater, and resilience against natural hazards.

Ngā whakataki, angitū hoki e hāngai ana ki te pūnaha waipara

Wastewater system challenges and opportunities

Te wāhi e tū ai te hanganga tiaki waipara | Location of the treatment plant

The Te Awaroa (Helensville) wastewater treatment ponds were commissioned in 1975, during a period when oxidation ponds were globally accepted as an effective wastewater treatment system. The oxidation ponds in Māngere were commissioned in September 1960 and other regions in New Zealand followed suit. Being adjacent to the receiving environment was a key consideration for a pond system to be low cost and efficient, at a time when we had limited knowledge about climate change and its potential implications. Therefore, our Te Awaroa (Helensville) WWTP was constructed on the banks of the Kaipara River.

Being located within an oxbow bend of Kaipara River puts the treatment plant at a high risk when the river is flowing fast and high. Recent investigations have indicated deteriorating conditions of the pond embankments. While there is no immediate risk to the integrity of the treatment plant or the network, the experience of the events in summer 2023 taught us that a combination of natural events (for example, a king tide and a hurricane at the same time) could bring about a hazardous situation.

Te urunga me te tōpunitanga o te waipara | Stormwater inflow and infiltration

The plant is susceptible to significant wet weather peak flows due to the high levels of infiltration and stormwater inflow into the wastewater system. During the events of 2023 summer, the plant had to bypass the majority of the inflow, meaning that untreated wastewater flowed into the environment. We believe that combined with high groundwater levels, deterioration in the pipes is causing operational problems for the plant.

While the recent upgrade to our WWTP addresses wet weather flows to a large extent, we will continue to reduce stormwater inflow and infiltration into the wastewater network to improve the effectiveness of our wastewater system. We are also committed to working with customers to identify issues with their private drainage, which makes up approximately half of the pipe network by length and needs to be addressed in parallel, if inflow and infiltration issues are to be minimised.

Te taiao ka tukuna ai te wai | Receiving environment

As discussed above, Kaipara river is a taonga and we need to contribute to improving the mauri of the awa. This can be achieved through careful considerations including reducing stormwater infiltration and enhancing the treatment plant's capacity so that untreated wastewater does not enters the river. We need to consider new ways of discharge (including discharge to land) or recycling and reuse of the highly treated and purified wastewater for beneficial use.

Ngā kōwhiringa ratonga waipara
Wastewater servicing options

As discussed above, Te Awaroa (Helensville) WWTP has enough capacity to support growth in the area for the next 30 years. However, it is an ageing asset and located at a highly risky location, susceptible to natural hazards. In the short term we will renew our discharge consent, and we will closely monitor the condition of the treatment ponds and perform any remedial works required to ensure the WWTP is operating safely.

We will also start the conversation with the community to discuss future options that include:

- Remediating and reinforcing the existing WWTP at its current location to safeguard it against climate change impacts in the medium to long-term.
- Abandoning the existing WWTP and building a new plant somewhere else in Helensville.
- Abandoning the existing WWTP and connecting Te Awaroa (Helensville) and Parakai wastewater networks to the metropolitan network.

As part of this discussion, we will explore potential future disposal options.

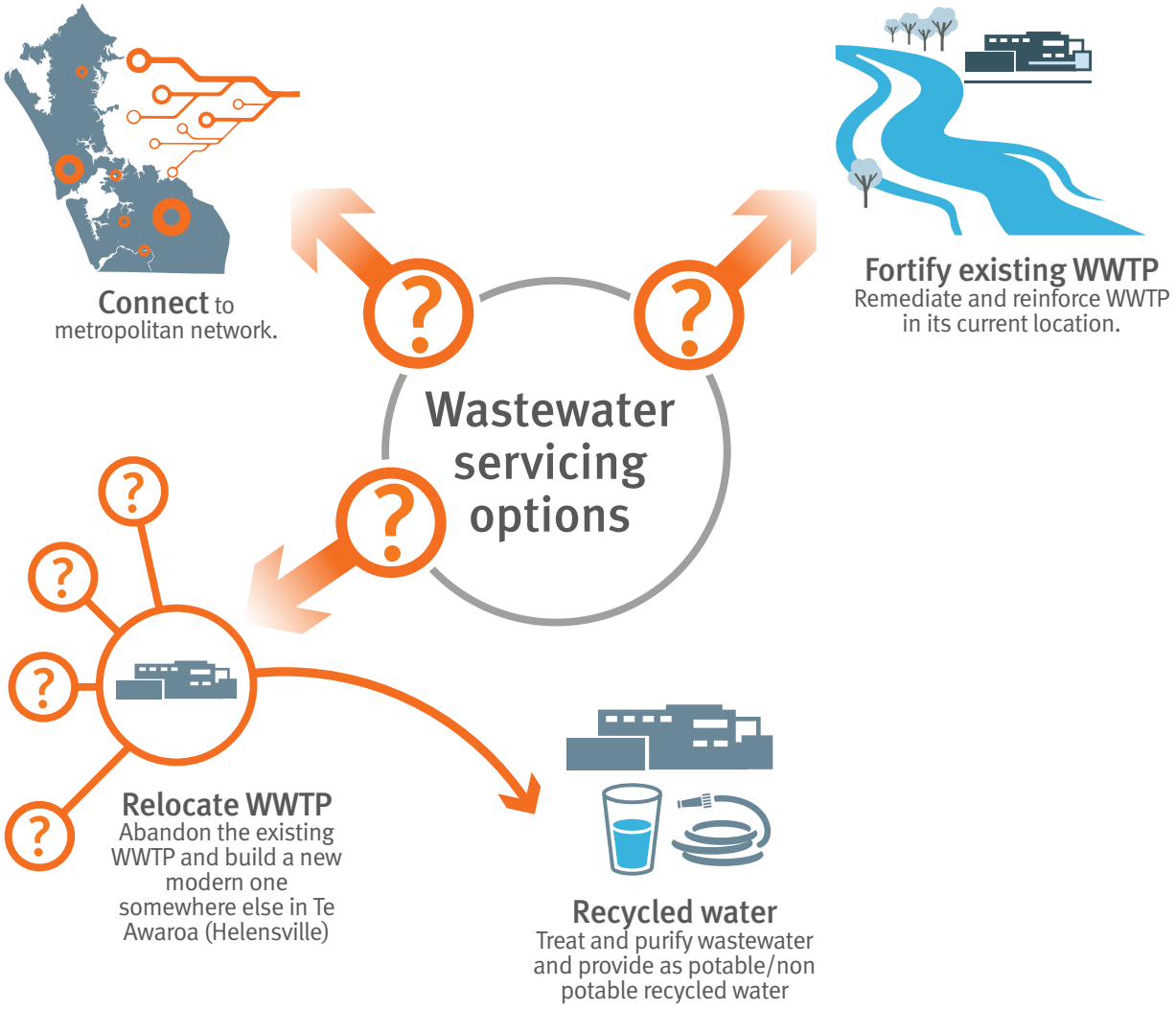


Figure 18 - Identified options for Te Awaroa (Helensville) and Parakai wastewater disposal

Biosolids

Biosolids are a by-product of the wastewater treatment process. They are a sludgy substance which is generated by the bacteria used to break down the harmful parts of wastewater so that treated water can be safely discharged into the environment.

Figure 19 - Membrane aerated biofilm reactor (MABR) at Te Awaroa (Helensville)'s wastewater treatment plant

In Te Awaroa (Helensville) and Parakai, biosolids are not created in the same way as they are in more developed areas. Wastewater at the WWTP is conveyed into a pond system and the solids are removed intermittently. This process is manageable at the current population level of Parakai and Te Awaroa (Helensville). At the time a new WWTP is designed, and if it is developed using wastewater treatment which produces biosolids, we will develop a biosolids disposal/reuse strategy aligned to the new plant and population requirements. Options for this scale of plant include transfer to a larger facility, vermiculture, land application, and composting (among others).

Te whakamahere urutau
Adaptive planning

We can't predict all the changes we will face in any future state, but we do forecast service delivery based on current expectation and anticipated condition. There will be factors which impact our communities that are beyond our control. This means we need to keep our servicing options open for as long as possible while we identify the foundations for future decisions. Adapting to future scenarios requires a flexible approach that avoids the risk of locking decisions and investments into agreements that cannot be changed, or are not fit for purpose in future, for example building inappropriate infrastructure.

The Dynamic Adaptive Policy Pathways (DAPP) approach develops a series of actions over time (pathways). It is based on the idea of making decisions as conditions change, before severe damage occurs and as existing policies and decisions prove no longer fit for purpose.

Adaptation is a pathway. The end point is not only determined by what is known or anticipated at present, but also by what might be experienced and learnt when the future unfolds, and by responses to events. We develop a series of tipping-point triggers. For example, as the sea-level rises, the frequency of hazard events (such as flooding) might approach an agreed trigger. At this point we need to make decisions or take additional or different actions, and perhaps choose an alternative pathway to adapt to the new situation.

By exploring different pathways early and testing the consequences, we can design an adaptive plan that includes a mix of short-term actions and long-term options.

The plan is monitored against the tipping-point trigger for signals that a decision point is approaching to:

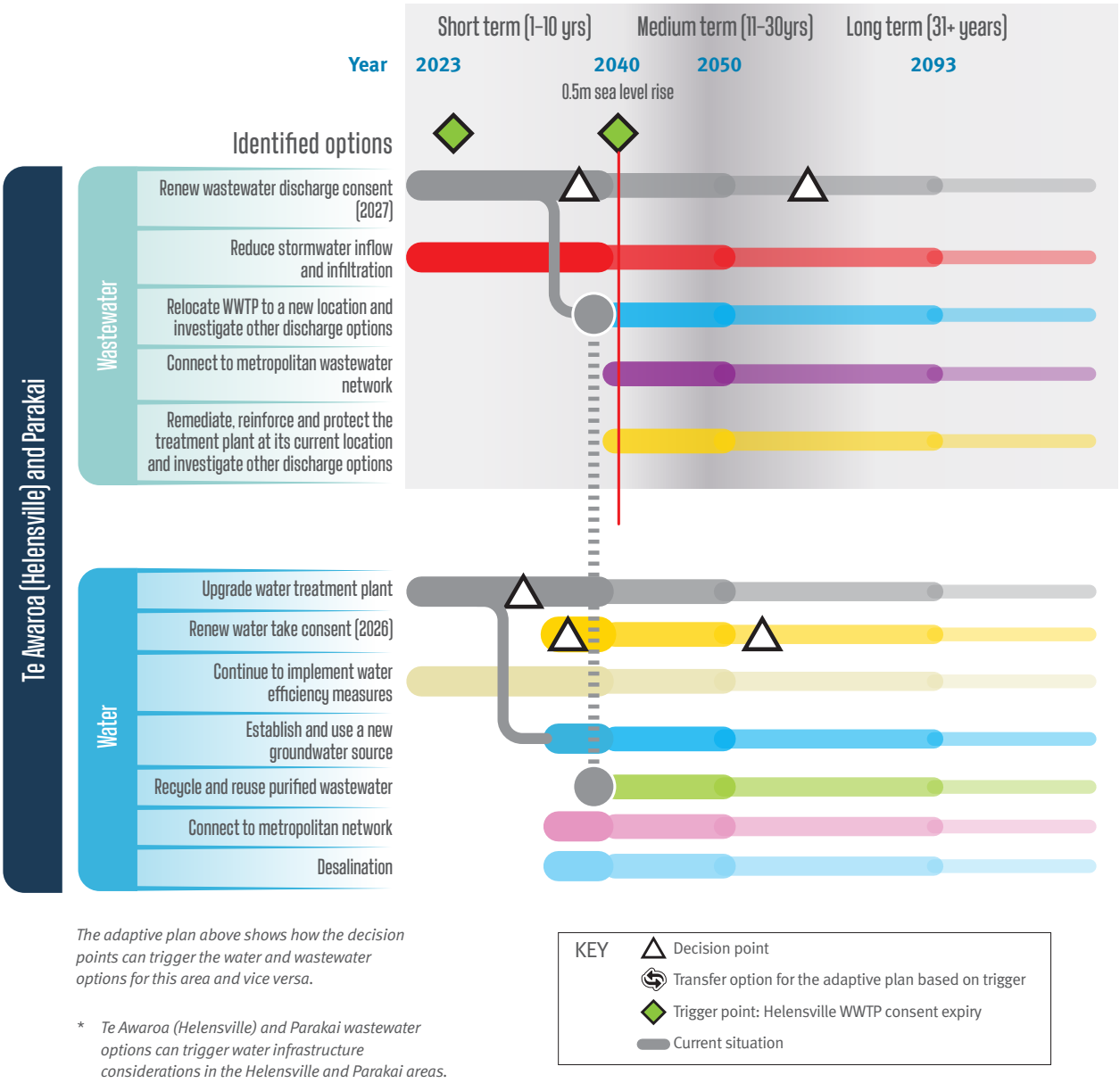
- Implement the next step of a pathway
- Shift to an alternative pathway
- Reassess the objectives of the plan itself.

Adaptive strategies need to be targeted and specific, with the chosen strategy and pathway taking into account the unique character and values of the servicing area. The development of adaptive strategies requires consideration of escalating risk, the values and associations of iwi/mana whenua, cooperation with other infrastructure providers, and the objectives of the local community.

Adaptive strategies are recommended across the short (0 to 10 years), medium (11 to 30 years) and long (31+ years) timeframes. However, it is important to note that the timing of when a change in strategy is required can be uncertain. Some specific signals and triggers are identified in this strategy. We have endeavoured to provide high-level indications of potential impacts that would lead to a change in strategy, and this would be when further formal engagement with the community is most likely.

Te rautaki urutau a Awaroa me Parakai | Te Awaroa (Helensville) and Parakai adaptive strategy

The following diagram contains a list of the water and wastewater options and their respective trigger points:



The adaptive plan above shows how the decision points can trigger the water and wastewater options for this area and vice versa.

* *Te Awaroa (Helensville) and Parakai wastewater options can trigger water infrastructure considerations in the Helensville and Parakai areas.*

Figure 20 - Adaptive planning pathways for Te Awaroa (Helensville) and Parakai

Ngā kōwhiringa ratonga wai | Water servicing options

We are currently in the process of upgrading our water treatment facility to meet the evolving needs of this community. In the short -term, we plan to renew our water take consent and continue to explore the most suitable location for a new groundwater bore to supplement the water supply and improve its resilience in the face of climate change impacts.

We are also committed to our Water Efficiency Plan, and the Auckland Water Strategy targets, and continue to implement measures to maximise the utilisation of extracted and treated water, aligning with our dedication to environmental responsibility.

Looking ahead to the medium to long term, our approach involves close monitoring of the area's growth and development. Should population growth exceed our projections, we are prepared to explore additional water supply options. This proactive approach allows us to stay ahead of the demographic shifts and ensures a sustainable and reliable water supply to our community.

Ngā kōwhiringa ratonga waipara | Wastewater servicing options

We have recently completed a comprehensive upgrade to our WWTP, significantly fortifying it against the challenges posed by wet-weather conditions. The upgraded plant has the capacity to accommodate the anticipated growth in population over the medium term. In the short term. we need to renew our discharge consent, and diligently monitor the state of our ageing ponds (undertaking any remedial works needed to ensure safe and optimal functionality).

We need to start a conversation with the community about the future of the WWTP: in the medium term, the impacts of climate change mean that we will need to either abandon the existing plant or reinforce it to cope with the effects of sea-level rise and tidal inundation.

Looking further ahead, we recognise the importance of engaging in a dialogue with the community to collectively decide on the future course of the WWTP and the wastewater network. We are gearing up to address potential impacts of climate change, specifically considering the implications of rising sea levels and tidal inundation. This involves a crucial decision-making process as to whether to invest in reinforcing the existing wastewater infrastructure to withstand these environmental shifts or explore alternative solutions, such as abandoning and retreating to a different location.

Whakakapinga | Conclusion

We hope that this servicing strategy has clearly articulated the complex factors that will influence the future of Te Awaroa (Helensville) and Parakai. We recognise that Te Awaroa (Helensville) and Parakai residents have the aspiration to retain the village and rural township character of the area. These factors inform the timing and nature of what is developed and when, to ensure reliable, environmentally-aware and affordable water and wastewater services for decades to come. We aspire for these decisions to be made in partnership with mana whenua and through deep engagement with communities in the spirit of transparency and openness.

We have signalled in this strategy that there are a number of options around water supply scenarios for Te Awaroa (Helensville) and Parakai. Independence from the metropolitan water network offers a certain type of resilience to these communities, however, we will need to future-proof and adapt our current water sources against population growth and drought. This tipping-point trigger may include legislative requirements or an appropriate wastewater solution.

We have described the options for wastewater management, which in the short term will require a new consent, and upgrading the existing treatment plant and the alternative disposal options. In the longer term, it is likely that a mix of solutions will emerge as the water and wastewater needs of the new community members in developing areas are realised and the true impacts of climate change are felt in the area.

Whatever option we decide upon, the wastewater network requires responsible management from private properties to prevent clogs and reduce maintenance costs. Community cooperation in minimising rainwater and unwanted items in the system is crucial for efficient wastewater treatment, limiting untreated discharges into the environment. Balancing environmental protection with cost affordability requires the involvement of every resident in creating a sustainable wastewater management system for the current community and generations to come.

We want to reiterate our commitment to our objectives in writing this servicing strategy as identified at the outset: having purposeful conversations with our partners and the community which help us make wise investments at the right time, providing services for a healthy and growing population, adapting to and mitigating the impacts of climate change, and maintaining a focus on protecting the local environment. To even begin to achieve these aspirations, we need to set out our servicing strategy as a foundation for the conversations and decisions for which we need to make space.

Kāhore he aha i hangaia, i puta noa mai rānei kia noho wehe i tēnei ao.
Ahakoa matangaro, ka rangona tōna mauri.

Nothing in this world was created or simply emerged to exist in isolation.
Even the invisible can be detected by its impact on something else.

Rereata Mākiha quotes Tūkāki Waititi

This quote relates to the connection of all things and the impact of one thing on another and then another. Mātauranga Māori teaches us to coexist with our environment and to nurture and respect its mauri. Recognising the deep connections Māori have to their land is important for future water and wastewater planning, especially given the disproportionate impacts on tangata whenua. Decisions made in this context not only affect the environment but also disrupt the spiritual and metaphysical bonds between the living and the dead, which are central to Māori identity and well-being.

Arotake o te rautaki whakarato | Review of servicing strategy

In setting out our servicing strategy as a foundation for conversations and decisions, we welcome feedback on this document. We are interested to know whether there is agreement on the stated facts and, if so, whether the options we have described are appropriate, sufficient and not missing key alternatives or opportunities for Te Awaroa and Parakai communities.

The Te Awaroa (Helensville) and Parakai servicing strategy will be regularly reviewed if suggested by iwi, or required as a result of a specific trigger or signal which would necessitate adjustments. These reviews will consider new information related to hazards, climate change, asset data, and cultural and environmental factors. These reviews are the most likely opportunity for formal engagement with and feedback from the community.

In addition, the future review schedule will allow for addressing and incorporating any potential impacts resulting from changes to the Resource Management Act into the future plans and implementation of the servicing strategy.

Any concerns or further improvements can be sent to watercareservicingstrategy@water.co.nz for consideration.

Watercare