Te Rautaki Whakarato a Beachlands, Maraetai me Whitford

Beachlands, Maraetai and Whitford Village Servicing Strategy

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Watercare

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Beachlands, Maraetai and Whitford Servicing Strategy (Note)

Cover image: Maraetai Beach – Sky View Photography NZ Ltd

He mihi

Kia tukua te reo aa ngaa hau mihi ata
maa te tai pari i uru ake ai
a Tainui waka
ki Te Tuuranga Waka a Manawatere.
Teeraa te poohutukawa
i pania ki te kaakaramea –
ka tohua ko te pai o
taua rohe hei kaainga noho.
Ka rere taku reo ki uta
maa te awa i tau ai te waka tupuna.
Ko Tuuranga te rerenga wai ka kitea tonutia
te toka i herea ai a Tainui.
Kei te puuaha nei ko Waikoopua.
Ko te uranga o te raa ko Kauriwhakiwhaki, aa
ka rere tonu ai ko Maraetai
ko Umupuia.
Ko te rohe whenua teenei
i muia ki te iwi Tuurehu i toona waa.
Ka tau too maatou reo mihi ki konei, ka whakatau.

Let the winds that greet the dawn, take the words
via the incoming tide on which once came
the ancestral canoe, Tainui,
to Cockle Bay.
There stands the poohutukawa tree
that was smeared with red ochre –
indicating the appeal of
that place as one to be made home of.
My greetings head inland
via the tributary on which the ancestral canoe landed.
Tuuranga is the waterway at which you'll still see
the anchor stone to which Tainui was tethered.
At the river mouth is Whitford.
Towards the rising of the sun is Beachlands,
further on is Maraetai and then, beyond,
Duders Beach.
This is the territory on which
the Tuurehu once dwelled.
It is here that our greetings come to rest.

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Ki te ora te wai, ka ora te whenua, ka ora te tangata.

When the water is healthy, the land and the people are healthy.

Figure 1: Te Puru Park, Beachlands

This document sets out a long-term strategy to ensure we continue to provide safe and reliable services to the Beachlands and Maraetai communities. We will also consider the servicing of Whitford Village in this strategy. Beachlands and Maraetai are located about 24 kilometres east of central Auckland, along Whitford-Maraetai Road. Whitford is situated about 5 kilometres east of South Auckland's Flat Bush. All communities are in the Franklin Local Board area. The Beachlands and Maraetai communities currently have a combined population of about 9,600 and Whitford Village has around 100 people. This area has been designated for growth in the Auckland Unitary Plan.

We do not provide drinking water services to Beachlands, Maraetai or Whitford, but this document provides a summary of the water challenges in the area. Our overarching strategy for communities that are not connected to the metropolitan water network is that their growth will be accommodated by local solutions, rather than by connecting to the larger network. In doing this we acknowledge our commitment to initially explore all local alternatives so that we can gradually decrease Auckland's reliance on te awa o Waikato (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.

Our wastewater service in the area is not without challenges either. Our wastewater infrastructure and consents will require action in the short term. We need to renew Beachlands Wastewater Treatment Plant's discharge consent, which is due to expire in 2025. The plant is currently operating at close to peak capacity with no room to treat additional wastewater from potential future growth in the area. We will need to change the consent conditions to allow for increased discharges from the treatment plant, after the plant is upgraded to accommodate the treatment of additional flows. We will also be closely monitoring the developments in the area and working collaboratively with the private sector to ensure that the best servicing solutions are devised for the community. In the medium to long term, we will be investigating ways to reduce our discharges into Te Puru Stream through options such as land discharge. Reducing discharges to the environment will enable us to pursue recycling and reuse of highly treated and purified wastewater.

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Te mahi tahi me ngaa mana whenua o Beachlands, Maraetai me Whitford

Partnering with mana whenua in Beachlands, Maraetai and Whitford

We are committed to working alongside mana whenua in our efforts to promote the health and wellbeing of the land we share and the people who live on it. The hapuu and iwi of Taamaki Makaurau hold important values as kaitiaki, fulfilling roles as protectors, guardians, and stewards. These responsibilities encompass their deep connections to ancestral lands, water bodies, waahi tapu (sacred sites), and other precious cultural treasures, as well as the overall wellness of the entire iwi.

Auckland Council, as set out in the Auckland Plan 2050, looks to recognise and provide for Te Tiriti o Waitangi (The Treaty of Waitangi) outcomes. Treaty principles provide guidance for decision-making, partnership and collaboration between the 19 iwi of Taamaki Makaurau and the Government. For our strategy, this means we recognise that water is significantly important to mana whenua and we want to engage with iwi about our work in their area on an ongoing basis. Watercare is a signatory to the National Policy Statement for Freshwater Management (NPS-FM), formalising our commitment to te mana o te wai, and in our daily water and wastewater work we strive to minimise our impact on the environment. Through our vision statement, Ki te ora te wai, ka ora te whenua, ka ora te tangata, we are actively embodying te ao Maaori principles.

Mana whenua in the Beachlands, Maraetai and Whitford Village rohe (area) include Ngaai Tai ki Taamaki (referred to as Ngaai Tai), Ngaati Whanaunga, Te Aakitai Waiohua and Ngaati Paoa Trust Board.

We sought feedback from mana whenua on our strategy for the Beachlands, Maraetai and Whitford Village rohe through the following ways:

- Utilising feedback from previous engagements with iwi and hapuu relating to consents within their rohe
- Via the Watercare Mana Whenua Kaitiaki forum.

Mana whenua in the Beachlands, Maraetai and Whitford Village area were keen to participate in the conversation. We know that our conversation is ongoing and our relationship is enduring. Our intention in this strategy is to be guided by iwi and hapuu in this area to ensure that the autonomy of each iwi is represented and respected, as well as their collective views relating to Maatauranga Maaori.

Ngaai Tai have developed Environmental Management Plans (EMP), and these will contribute to the ongoing development of our servicing strategy in the Beachlands, Maraetai and Whitford Village area. We will take **Take Taiaomaurikura – Ngaai Tai ki Taamaki taiao plan** as a reference point for Ngaai Tai interests in the area and continue to work to align our strategies with the plans and aspirations of iwi and hapuu.

The Mana Whenua Kaitiaki Forum was also introduced to this servicing strategy. The forum advised that they would prefer for us to focus on individual iwi regarding this kaupapa (policy) as local iwi are the kaitiaki in their respective area.

We hope this strategy serves to facilitate the ongoing conversation with iwi and hapuu in the area.

Figure 2: Watercare staff, Ngaai Tai and other guests during an overnight marae stay at Umupuia Marae, Matariki 2023

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Te mahi me te hapori
Working with the community

Watercare is committed 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 community has an important role to play in making sure that we achieve this balance.

We operate within a dynamic regulatory environment and statutory framework in New Zealand. We need to navigate various changing regulatory and statutory frameworks including the Resource Management Act, the Health Act, the NPS-FM, while delivering essential water and wastewater services.

Furthermore, the interaction of environmental, cultural, public health, and community factors makes decision-making more complex. It requires a robust strategic approach to meet the needs of the community while complying with current legal requirements.

As we consider what water and wastewater services the community needs in the future, we are taking a long-term and inter-generational approach, focussing on ensuring sustainable services are provided 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.

Sharing this document gives 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 the Beachlands, Maraetai and Whitford Village area, and our approach to addressing them. This strategy will prepare us and our communities for the complex conversations 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.

Figure 3: Beachlands Wastewater Treatment Plant

Tirohanga whaanui, te whakatakanga, ngaa aronga me ngaa whaainga

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 issues, regulatory requirements and infrastructure needs. Our plans include 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 drinking water and wastewater services that can provide for more people, cater for future generations, are good for the environment, and comply with the standards and regulations.

Ngaa whaainga rautaki whakarato
Servicing strategy objectives

Mana whenua engagement: We're collaborating closely with local Maaori communities to ensure that their perspectives and values help 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 those needs and ensure everyone benefits from our efforts.

Public health and community wellbeing: The public's safety and well being 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 and protecting the natural environment is a key challenge we're addressing. We integrate land use and water planning at a regional, catchment and site scale in accordance with our commitment to the Auckland Water Strategy (see Appendix 1).

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

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

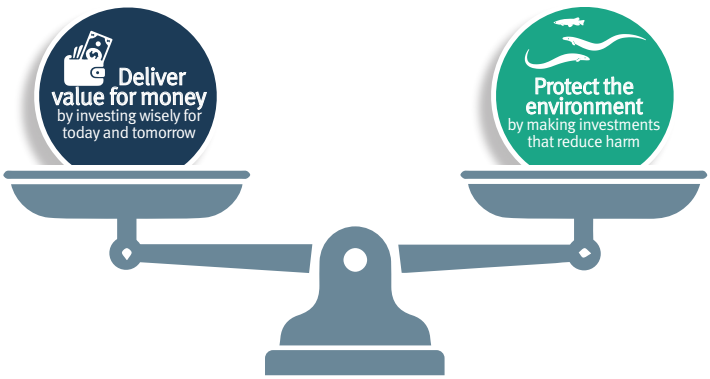
Sustainability: Making decisions that stand the test of time is important to us. Although it might require some adjustments, the result will be a more resilient and lasting approach to providing water services to communities and protecting the environment.

Meeting our statutory obligations: Adding extra steps to our processes is necessary when delivering trustworthy services.

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

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 enable us 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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Te aromatawai ratonga aa-rohe: Beachlands, Maraetai me Whitford

Service area: Beachlands, Maraetai and Whitford Village

Kupu whakataki | Introduction

Beachlands is a coastal settlement that was a holiday destination in its earlier colonial history. Prior to colonisation, Ngaai Tai occupied this area. An archaeological investigation in 2001 notes that:

> *'the Beachlands-Maraetai area is historically associated with Ngai Tai, whose ancestral links can be traced back to members of the Tainui canoe. Initially, the Tainui landed near Cape Runaway on the East Cape, but they subsequently journeyed northwards into the Hauraki Gulf. Once there the leaders decided to explore the west coast on the other side of the isthmus. En route, a small group of these migrants decided to stop off at the western end of the Tamaki estuary where they intermarried with local inhabitants to establish the tribe known more commonly as Ngaai Tai.'*

The area has grown significantly in the last decade. Additional developments are proposed for the Beachlands area, with rezoning applications under way to allow for higher-density residential developments. Significant places within the area include the Oomana Regional Park, Te Puru Reserve, Motukaraka, Pine Harbour Marina and the Formosa Country Club and golf course. There has been one major development in the Beachlands area: the New Avenues development. Pine Harbour Marina has undergone some development within the past decade also.

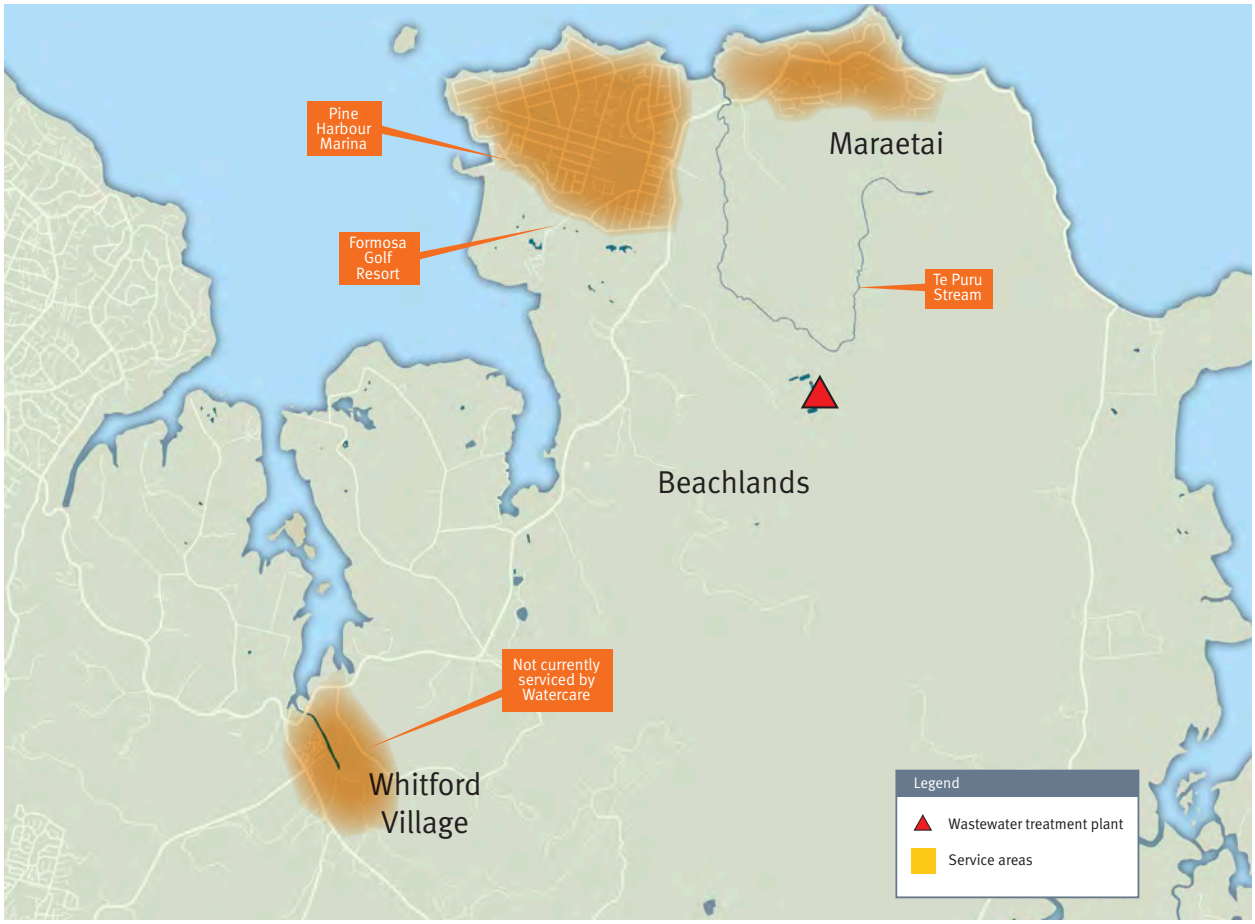


Figure 4: Beachlands, Maraetai and Whitford Village

This servicing strategy covers the communities of Beachlands, Maraetai and Whitford Village, all of which are situated within the Franklin Local Board area. Specifically, the Beachlands catchment area encompasses two seaside suburbs, located roughly 24 kilometres east of central Auckland along Whitford-Maraetai Road. Whitford Village is approximately 5 kilometres east of Flat Bush in South Auckland. The wastewater site for Beachlands is situated within the Whitford Precinct (Whitford Catchment), which spans approximately 3,735 hectares of rural land, entirely within the Tuuranga, Waikoopua, Te Puru and Beachlands stream catchments.

Beachlands is serviced by one wastewater scheme which connects Beachlands and Maraetai to a wastewater treatment plant located approximately 3.5 kilometres from the outskirts of Beachlands. We collect, treat and return highly treated water to the environment, onto land, which then makes its way into Te Puru Stream.

Figure 5: Beachlands and Maraetai wastewater system

There is no public water supply network serving the Beachlands community. Residents rely on boreholes, rainwater tanks and private tanker services. We provide services indirectly through tanker filling stations. Water supply contractors collect water from our filling station to top up customers' rainwater tanks in dry weather or when necessary. We don't provide water or wastewater services in Whitford. A private developer in Whitford is currently providing wastewater services for their Whitford development.

Te taupori me ngaa whakawhanaketanga | Population and development

We have conducted growth forecast planning for the short (2023 – 2033), medium (2034 – 2058) and long term (2059 - 2100) in the Beachlands, Maraetai and Whitford Village area. The Auckland Unitary Plan has designated some future urban-zoned land in Beachlands as a growth area. We anticipate increasing demand for water and wastewater services in the medium term, to cater for population growth and to protect the environment and local waterways.

Beachlands' population has been relatively static over the years; however, there are plans for large-scale developments that have the potential to double the population in the area. The developers' aspirations indicate that this will occur within the next decade.

While some growth is expected in the short term, we anticipate more significant population growth in the medium and long term. In the latter, there is potential for expanded development in Beachlands and Whitford Village if infrastructure constraints, including transportation, are addressed.

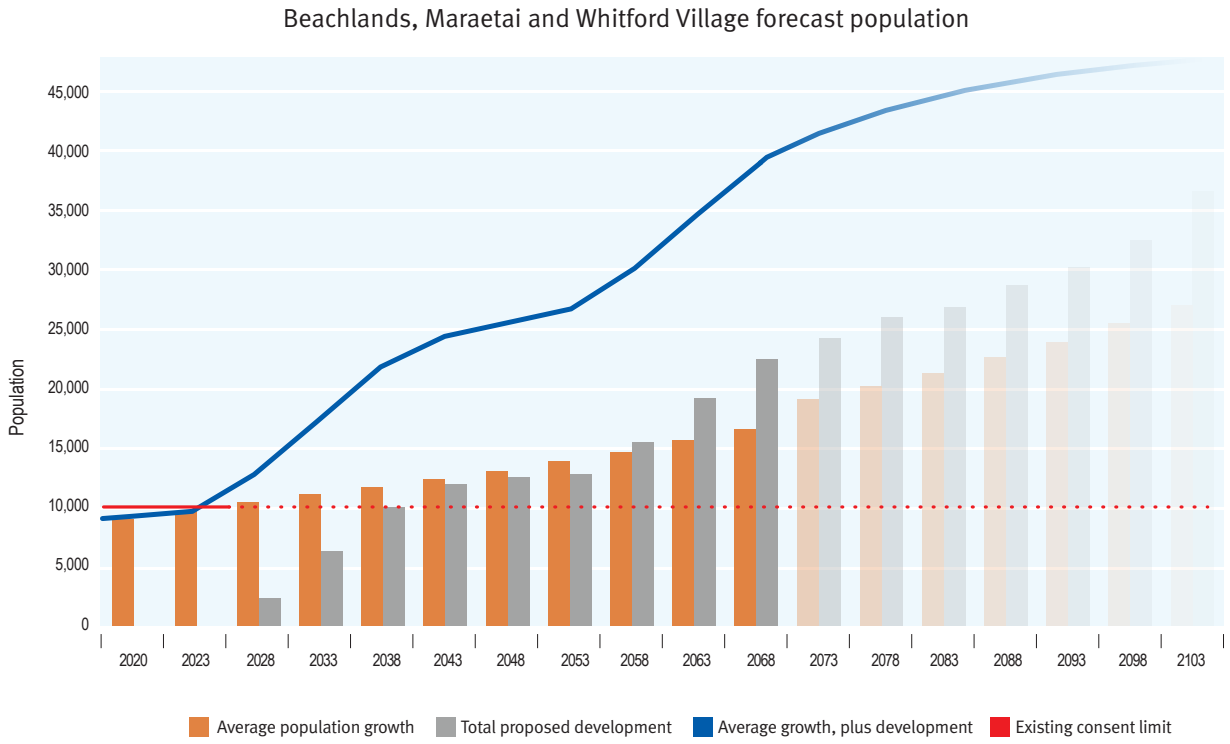


Figure 6: Population projections – Beachlands, Maraetai and Whitford Village

Current data indicates that currently there is a population of around 9,600 and in the next 10 years, an estimated 17,400 people will require water supply and wastewater treatment services in the Beachlands, Maraetai and Whitford Village areas. For the medium term (35 years) until 2058, an estimated population of 30,000 will require wastewater, and potentially water supply, services.

Kua whakaraarangi i raro nei ngaa mahere whakawhanake moo te rohe

Major development plans in the area are detailed below

Te Panonitanga aa-Mahere 78 | Plan Change 78

The proposed plan change responds to the Government's National Policy Statement on Urban Development 2020 (amended in 2022) and the Resource Management Act. These mandates include allowing more development in the city centre and near transportation hubs, promoting development in local centres, introducing Medium-Density Residential Standards for three-storey housing, and adjusting development intensity based on specific factors when needed.

Auckland Council has identified that more housing in Beachlands would strain the local roads, especially as existing public transport services are limited. Beachlands relies heavily on Whitford-Maraetai Road for work and school. To accommodate an increase in population, a new ferry terminal, better public transport, and road improvements will be needed. There are insufficient local jobs, so people have to travel elsewhere, but current public transport cannot handle this. So, the council has applied a rule called "Qualifying Matters" to Beachlands. This rule aims to slow down building where the infrastructure is not currently able to support it. In addition to this, Watercare has a Qualifying Matters rule for the wastewater treatment plant due to consent conditions which include daily discharge flow and population limit. In addition to this, Watercare has worked with Auckland Council to include a Qualifying Matter for the capacity constraint at the wastewater treatment plant due to consent conditions which include daily discharge flow limits and a population limit.

Te Panonitanga aa-Mahere Tuumataiti 88 | Private Plan Change 88

Private plan change 88 (PC 88), which was accepted for notification by Auckland Council, seeks to rezone approximately 307 hectares of land south of the Beachlands township. PC 88 has a potential residential yield of 3,000 to 4,000 dwellings across the suggested live zone and future urban-zoned land. The yield includes a mix of residential, industrial and recreational properties, with a variety of housing types including apartments, three-storey walk-ups, terraces, townhouses and detached dwellings.

For more details about the development we are anticipating for the Beachlands, Maraetai and Whitford Village area, please see Appendix 4.

Figure 7: Proposed location of new groundwater bores (wells) (source: Auckland Council)

As a water and wastewater service provider, our role is to support growth where the Council indicates we need to focus our resources. Land zoning and planning regulations fall under the remit of Auckland Council. In the case of Plan change 88 - the private developer has proposed the establishment of a private water supply network, drawing from groundwater sources, and a private wastewater treatment network. Feedback from Franklin Local Board and the Beachlands-Maraetai community has indicated that there is a preference for wastewater assets to be owned and managed by Watercare. Our commitment remains to collaborate with private developers to agree on a solution that caters to the area's future population while also safeguarding and enhancing the ecosystem of the Beachlands area. In doing so, we will need ongoing dialogue with the Beachlands-Maraetai community to make sure we are investing in the right things, at the right times, while ensuring that our services remain affordable.

Wai: Te taataritanga aa-hiahiatia, aa-putunga hoki

Water: Demand and supply analysis

At present, we do not offer water services directly to the Beachlands, Maraetai and Whitford Village communities. Instead, residents within this area depend on the Pine Harbour private supplier (Pine Harbour Water), private bores, and rainwater harvesting for their drinking-water needs. We have identified different consumption scenarios (low, medium and high) for all regions where water services might be needed. The following section covers the current water supply in the area.

Ngaa putunga wai o te rohe i naaia tonu nei
Current water sources in the area

Wai manawa whenua | Groundwater

The aquifer systems in the Beachlands area are within graywacke rock formations. This type of rock does not generally make for a good aquifer because it is not a straightforward process to access the water through the non-porous rock. Most groundwater flow is through fractures in the rock. While bores in this type of aquifer can meet domestic water needs, high-yielding bores normally need to intercept fracture zones that transmit water.

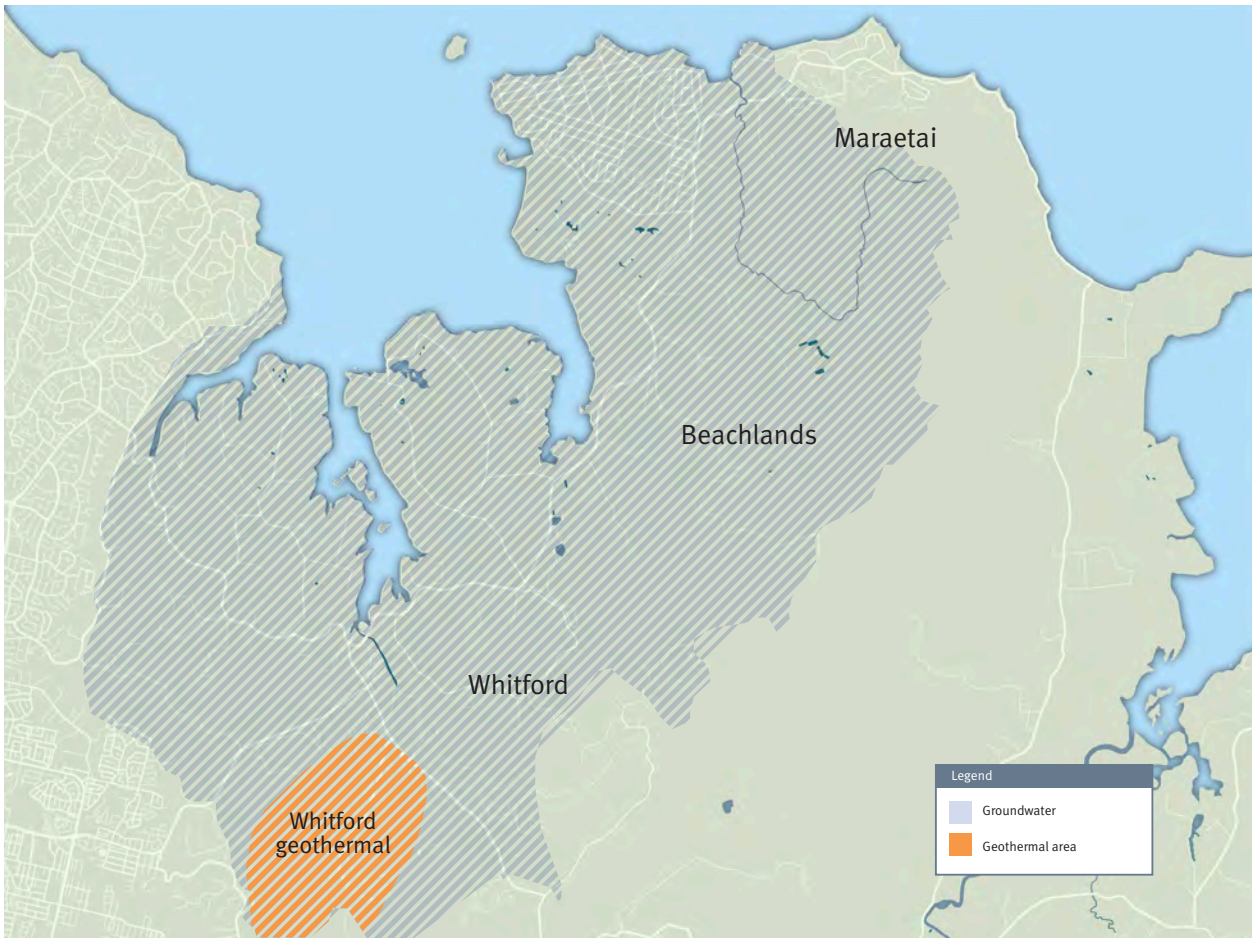


Figure 8: Aquifers in the Beachlands-Maraetai area (source: Auckland Council GEOMAPS)

The aquifer is accessed by the local community privately for domestic supply and by private water supplier, Pine Harbour Water, which abstracts, treats and distributes to its customers via its supply network. Pine Harbour Water also has a tanker filling station near Jack Lachlan Drive.

The Beachlands South private developer proposes to supply the PC 88 plan change area by drilling three new bores and increasing abstraction from the existing Pine Harbour bore to meet the demand of their planned development.

Groundwater is a limited resource. Any application to extract water from an aquifer shared by others requires careful consideration. Allocation regulation is undertaken by Auckland Council.

Figure 9: Poohutukawa Bay, Beachlands

Ngaa kura wai: Te hopu wai-ua me te putunga aa-taraka kawe wai | Water tanks: Rainwater harvesting and tanker top-ups

In the Beachlands, Maraetai and Whitford Village area, residents collect rainwater for use in the home. This not only offers some stormwater management benefits but also some degree of self-sufficiency when rainfall is plentiful. Roof-collected rainwater is prone to contamination from debris, birds and rodents and should be properly treated before use.

Our surveys of people in the Beachlands, Maraetai and Whitford Village area conducted between 2018 and 2023 suggest that most people in Beachlands have rainwater tanks, and many have up to three tanks. Most have at least one tank that can hold more than 20,000 litres. Notably, one in 10 people surveyed were not certain of the capacity of their tanks.

When there is insufficient rainfall, residents supplement their rainwater tanks with water from private supplier collection points, supplied by Pine Harbour Water's tanker filling station near Jack Lachlan Drive, or use treated water from our supply network. Our tanker filling station is located in East Taamaki. During extended dry spells, wait times as long as two weeks for water top-ups have been observed. We will consider the feasibility of providing a tanker-filling station for Beachlands.

Ngaa awa | Streams

On a smaller scale, people who own land with streams running through it can use these streams as a source of water. This is allowed by the Resource Management Act, specifically under Section 14(3)(b), which states that they can be used for '(i) an individual's reasonable domestic needs; or (ii) the reasonable needs of a person's animals for drinking water. Auckland Council regulates the use of these streams for consumptive use.

Te Puru Stream is one of the major streams in the area, but the water quality is not suitable for drinking without treatment. The stream's water quality is affected by other land activities including run-off from adjacent farms. Water returned to the environment from our treatment plant has been assessed as having minor environmental effects on the stream from a regulatory perspective. An environmental survey conducted in 2021 found that the water quality and biological health of the stream were relatively poor, and these had not significantly changed compared with the results of the previous surveys since 2000. Water quality reflects the agricultural land use in the catchment area in which Te Puru Stream is located.

Ngaa whakaaweawe aa-hurihanga aahuarangi, taupori hoki ki te putunga me te hiahiatia | Climate change and population impacts on supply and demand

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, mean 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; this means that we must prepare for increasing situations of not enough as well as too much water, as we plan our investments in the future.

Climate change will impact supply from rainwater tanks, particularly for those with smaller tanks (which are more likely than larger tanks to spill in wet periods and run out in dry periods). Intensification makes it difficult for households to collect sufficient rain (with large enough tanks) that will support full domestic water use, though there is good opportunity to offset public supply. For the development areas, rainwater tanks will provide supplementary water supply and crucial stormwater management during periods of heavy rain, but an alternative source of water for household use is likely to be needed for the Beachlands, Maraetai and Whitford Village developments.

With long-term growth projected within this area, we expect water demand to peak at about 13.4 million litres a day in the long term (31+ years). Water demand for Whitford Village could peak to about 248,000 litres per day in the long term.

Water efficiency (in terms of litres used per person per day) can be improved if new housing stock is fitted with water-efficient fittings and appliances. Water consumption will be strongly influenced by outdoor design elements as well, like whether the developments have gardens and swimming pools.

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

Ngaa whakataki o te tuku wai inu ki te rohe

Challenges of providing drinking water to the area

Kaahore te kounga wai i te tino moohiotia | Water quality is not well understood

There is currently no dedicated Watercare bulk supply pipeline or reticulation infrastructure to service the Beachlands-Maraetai and Whitford Village communities. Only a small section of Beachlands has a reticulation network supplied by the private Pine Harbour Water bore. The availability and quality of water in this area is not fully understood.

Pine Harbour Water is a private water supplier, with a private network sourcing water from the aquifer. The water supplied by Pine Harbour Water underwent testing in 2021 and has been classified as a 'Class 1 supply'. This means that it is unaffected by surface conditions. This water maintains compliance with the Drinking Water Quality Assurance Rules outlined in the Water Services Act 2022.

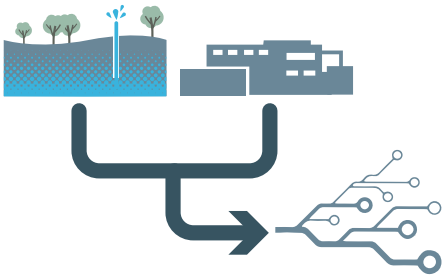
Assessing the water quality from these sources is fundamental when identifying any drinking-water concerns that could affect the health of the community. However, when considering a complete potable water supply network for the Beachlands, Maraetai and Whitford Village communities, there are current potential sources which include: accessing groundwater, purified recycled water, desalination, or connection to the metropolitan water network. Future water supply options to augment this supply are not feasible in the short term. None of these options, except retaining the status quo, can be implemented in the short term (zero to ten years).

We note that there are considerable complexities in establishing and funding a water supply network in an established community. We would not consider doing so unless there were no better options and the community wanted this. Any alternative options would not be implemented in the short term but could be possible in the medium term (11 to 30 years) or long term (31+ years).

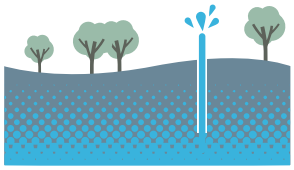
Figure 10: Formosa Country Club and golf course

Whakaraapopototanga o ngaa koowhiringa putunga wai

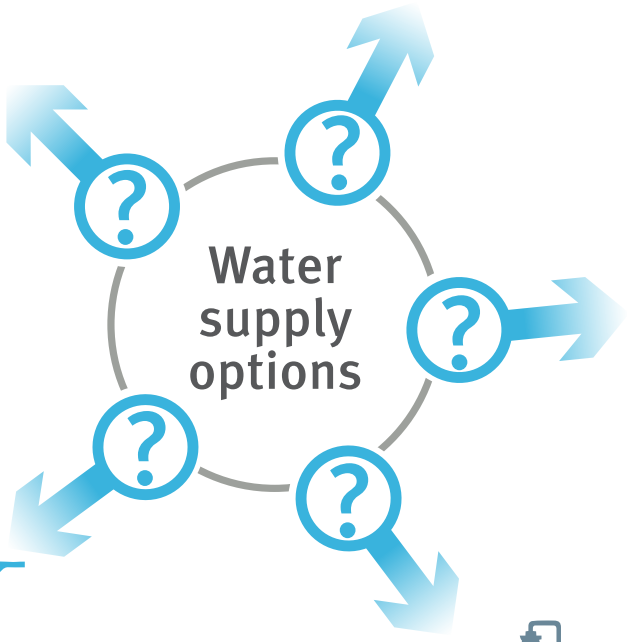
Summary of water supply options

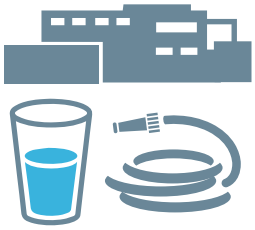


Combine both aquifer and purified recycled water options
and construct a Watercare piped water supply network.



Utilise aquifers and/or boreholes
and a new distribution network as the water supply for each community. Depending on availability of supply, this could be a stand-alone or combined solution to boost supply. Managed aquifer recharge with recycled water may also be considered in conjunction with wastewater treatment plant upgrades.





Provide potable and/or non-potable
purified recycled water from the wastewater treatment plant. Non-potable reuse would require a separate supply network to be constructed and a reduced demand for potable water. Potable purified recycled water would be investigated as a long-term solution, in conjunction with the wastewater treatment plant upgrades.

Connect Beachlands, Maraetai and Whitford
to the Watercare supply, by construction of a water supply network and connecting to one of the following: Ormiston Road bulk water main, the East Taamaki Reservoir, or the transmission water network at Alfriston.

Construct a desalination plant
near the coast in rural Whitford to treat water and supply via a new distribution network to the Beachlands, Maraetai and Whitford Village communities.

Waipara: Ngaa koowhiringa whakahaere

Wastewater: Management options

There are currently about 3,400 residential dwellings connected to the Beachlands wastewater network. Every year, each household discharges an average of around 235 litres per day to the plant. Establishing a long-term strategy and working with our communities are crucial to ensure wastewater services support the well being of local communities and protect the natural environment.

Hanganga Raawekeweke Waipara o Beachlands | Beachlands Wastewater Treatment Plant

We operate the Beachlands Wastewater Treatment Plant. In 2014 Watercare increased the plant capacity and upgraded the network to improve resiliency. The wastewater treatment plant is currently designed for a population of 10,000 people, with the discharge consent limit of 2,800,000 litres per day. Treated wastewater is discharged onto land, then through a farm pond, and eventually into the Te Puru Stream. For more information on the particular discharge consents of the plant, please see Appendix 2.

The plant includes a storm buffer pond (to manage peak flow), which is used when the influent flow exceeds the capacity of the secondary treatment process. It also has a post-treatment buffer pond that is used when the treated wastewater flow exceeds the consent limit. The plant is affected by wet-weather events. To review the buffer pond's capacity to cope during heavy rainfall events over the last five years, see Figure 8 below.

Figure 11: Location of the Beachlands Wastewater Treatment Plant and the boundary of Watercare's land which is available for future upgrades

The key design parameters used for developing wastewater demand forecasts are as follows:

- Current wastewater production: The per-capita amount of wastewater treated from the existing Beachlands catchments stands at 166 litres per person per day.
- Population growth: We assume a similar consumption rate for the anticipated population growth in the Beachlands area.
- Additional allowance: We allocate another 15 per cent to cover other needs, including those arising from commercial, community and light business, and mixed-use developments. This also accounts for facilities such as schools and other organisations in the area.

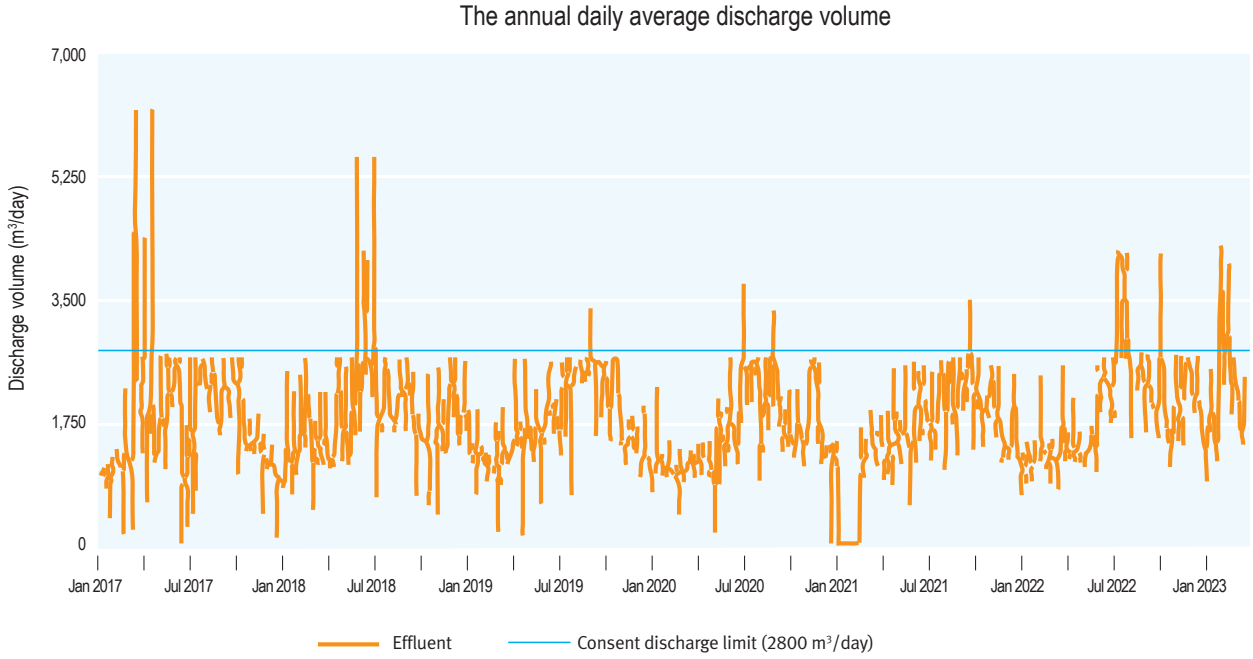


Figure 12: The annual daily average discharge volume and the annual daily peak discharge volume

Outflow	2017	2018	2019	2020	2021	2022	2023*
Average daily flow	1770	1898	1795	1636	1612	1968	2283
Peak daily flow	6305	5619	3420	3768	3601	4257	4331

Table based on calendar years: January–December
** 2023 figures based on daily flows from January–March 2023, which includes the Auckland January floods*

For the majority of the time, the treatment plant operates under the consent capacity limits; however, during wet-weather events, we sometimes have to discharge daily flows that are above these limits. For information about wastewater network spills and the broader Auckland wastewater network strategy, please see Appendix 3.

In the long-term growth scenario, the anticipated daily dry-weather wastewater production for both the existing communities and proposed developments is 8.6 million litres. Whitford Village and the new Whitford developments are likely to contribute around 171,000 litres per day to this dry-weather wastewater flow.

An inspection of the Beachlands and Maraetai wastewater catchment conducted in 2021 found that 88 out of about 1,600 inspected properties had visible issues that allowed stormwater to enter into the wastewater network, such as low gully traps or water tank overflow pipes connected to gully traps. For each house that has its stormwater connected to the wastewater network, it is equivalent in flow to approximately 30 houses' wastewater flows. We also note that the older parts of this community's dwellings lack a comprehensive system of stormwater network pipes, which adds to the complexity of managing wastewater during periods of heavy rainfall.

The network is more than 40 years old, and the monitoring data indicates that there have been several pipe breaks within the network. This will be contributing to the wet-weather event responses seen at the treatment plant.

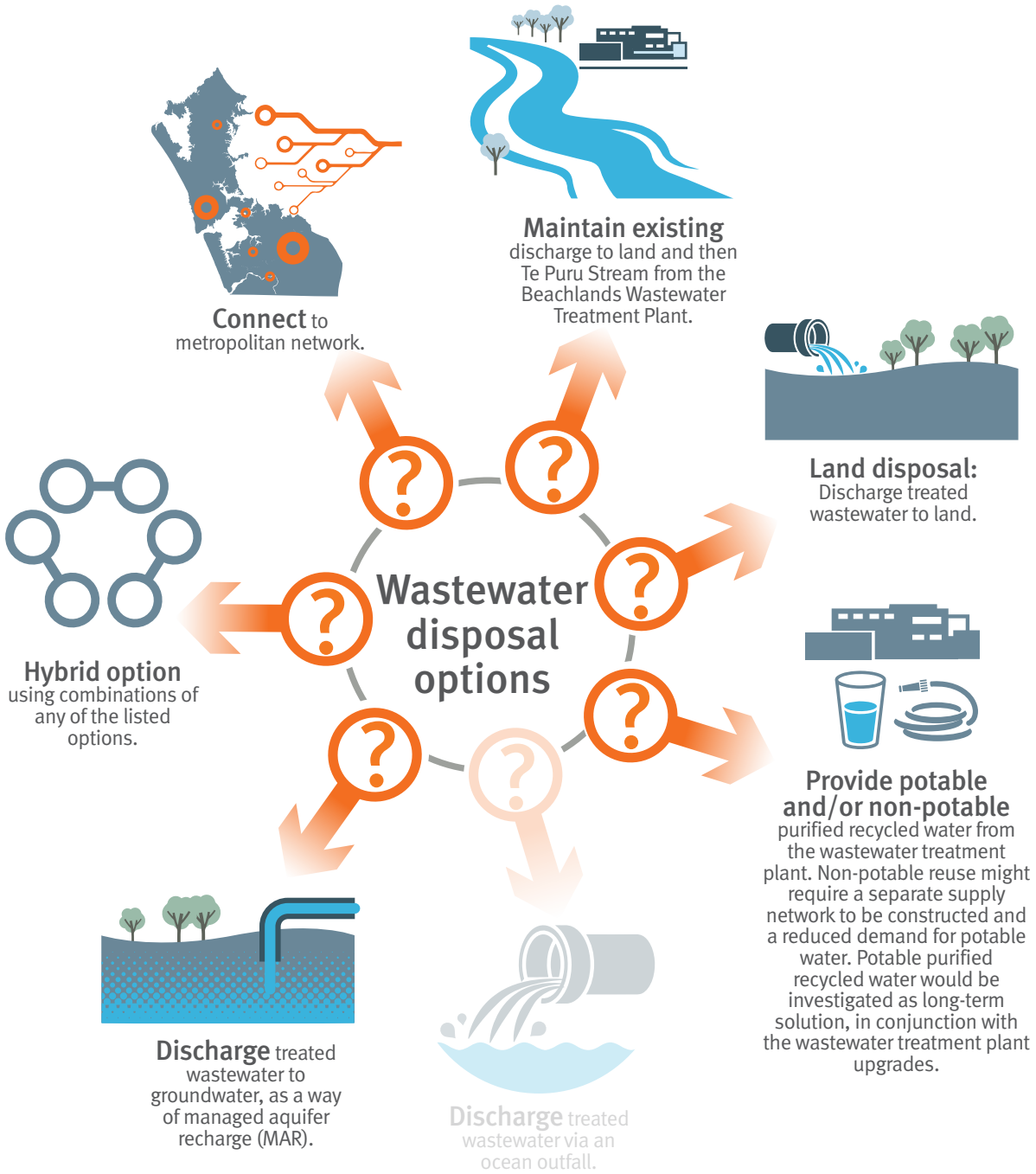


Figure 13: Identified options for Beachlands Wastewater disposal. Note that discharging treated wastewater via an ocean outfall is our least preferred option.

In the short term, we seek to maintain the current option to return water to the environment locally and to ensure that an improved treatment quality is achieved. Improved treatment quality will be consistent across all options except for a connection back to the metropolitan network.

In the medium to long term, we will investigate options including recharge, and building a wastewater pipeline from Beachlands to connect to the metropolitan network, purified recycled water, or managed aquifer recharge. As noted earlier, our preference is for growth to be accommodated by local solutions rather than connecting to the metropolitan network. Other options that we will investigate include land treatment of wastewater at the Beachlands treatment plant site. This option will reduce the amount of treated wastewater discharging to the river and eventually the ocean, which is a sensitive receiving environment with many constraints.

Biosolids

A significant part of the wastewater treatment process consists of good bugs eating up the food (carbon and nitrogen) that comes into the wastewater treatment plant. These good bugs are much like what is doing the work in a home composting system. Once the bugs have finished doing their work they are removed as a wet sludge. At Beachlands WWTP this wet sludge is then sun dried naturally on adjacent engineered drying beds - removing almost 90% of their weight. They are then taken by truck to landfill.

Figure 14: De-watered (sun-dried) biosolidst

As we look ahead, the dried biosolids from Beachlands will continue to be taken to landfill for disposal. However we note that our future biosolids strategy may provide alternative options for biosolids disposal and beneficial use, so it is possible that we may incorporate Beachlands biosolids into a reuse programme which could include application to land as a fertiliser, depending on the outcomes of further research and engagement, and local demand for the product generated.

At the current population level of Beachlands, this relatively efficient drying and disposal process is manageable due to the favourable amount of land available. As the population grows we may eventually need to develop an alternative system to manage biosolids.

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 expectation based on current expectation and anticipated conditions. There will be factors that impact the requirements of the Beachlands, Maraetai and Whitford Village 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, e.g. 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 (e.g. 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 adaptative 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 Beachlands, Maraetai me Whitford | Beachlands, Maraetai and Whitford Village adaptive strategy

All of the triggers for pathways are related to wastewater options at Beachlands. The wastewater treatment plant (WWTP) consent has three key limits associated with it:

1. **An expiry date of 2025**
2. **A flow limit of 2,800,000 litres per day**
3. **A population limit of 10,000 people**

Ideally all of these factors will remain consistent. In reality this is only true when the consent is granted. As soon as it is granted the flow and population number can vary. Any new consent is very unlikely to have a population limit in future.

The servicing strategy has been developed in part because the current consent expires in two years. It will take detailed statutory efforts to reapply for a discharge consent for the WWTP.

The options around the WWTP are noted in the servicing strategy and the adaptive plan. There are a number of options around the continued wastewater servicing for the Beachlands and Maraetai communities. Some of these may trigger wider servicing options around the provision of water supply or the servicing of Whitford Village.

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.

* *Beachlands and Maraetai wastewater options can trigger water infrastructure considerations in Beachlands, Maraetai and Whitford Village area.*

Figure 15: Adaptive plan for Beachlands, Maraetai and Whitford Village

Ngaa koowhiringa ratonga wai | Water servicing options

The preferred water servicing option is to connect each community to the water supply point from the nearest aquifer (high yielding bore) to augment the community's current supply. The Beachlands, Maraetai and Whitford Village area has the potential to tap into aquifers for water supply, but this requires further investigation. Using aquifers presents the opportunity to adopt quicker solutions compared with other options such as building large storage reservoirs and transmission mains or implementing desalination projects which involves substantial investment and longer timelines.

Ngaa koowhiringa ratonga waipara | Wastewater servicing options

The preferred wastewater servicing option is to increase the capacity of the Beachlands Wastewater Treatment Plant to accommodate waste from there and Maraetai, including Formosa Country Club and golf course, as well as having sufficient capacity for future growth potential that could possibly include Whitford. This would be carried out in a phased approach; the first step would be to resolve the immediate capacity problems and then explore the longer-term servicing options. Watercare would work with Auckland Council who regulate development, the developer, and the community on any of these options going forward.

If the wastewater servicing option were to pipe wastewater flows from Beachlands back to the metropolitan network at East Taamaki, the pipe would pass through Whitford Village and that community would then be connected to the public service.

With strong public interest in building a water pipe, this could be constructed at the same time as a wastewater pipe. This pipe would be conditional: first, on the wastewater option; and second, around the interest and funding discussions for a public water supply.

If the wastewater servicing option were a reuse choice, and there was strong interest in a public water supply, this could be implemented. This option would be conditional: first, on the reuse supply and second, around the interest and required funding discussions for the public water supply as a water treatment plant. This could also lead to the managed aquifer recharge wastewater option.

Without these triggers, water supply for Beachlands is unlikely. It would probably require external intervention from Taumata Arowai or the Ministry of Health requiring a water service to be provided.

For Whitford Village, the provision of a public wastewater supply would be triggered by the pipe option for Beachlands. This would also trigger the discussion around a public water supply, as above.

Outside of this, it would likely take an external trigger such as the Ministry of Health or the Ministry for the Environment requiring a public wastewater service to be provided. This service would either be a local solution (improved over the existing situation) or a pipe connection to the Beachlands network.

If Beachlands were provided a public water solution as above, then a public water solution with a piped connection to Whitford Village could be constructed as well. This option would be conditional on Beachlands having a public water supply, on the wastewater solution for Whitford being a pipe to Beachlands and it would also depend on the interest and required funding discussions for the public water supply at Whitford Village.

Figure 16: Beachlands' urban development

Aromatawai raru tuupono me te whakamahere tuupono

Risk assessment and contingency planning

There are a number of risk factors we are preparing for in the Beachlands, Maraetai and Whitford Village area. The following section describes these.

The main issue is that the wastewater treatment plant receives too much stormwater during periods of heavy rain and this has a negative impact on the environment.

Private development plans may also present some risk for us. The Beachlands South private developer is currently proposing to provide a private water supply and wastewater network, including a stand-alone wastewater treatment plant.

This emphasises the importance of close collaboration with the private developer to find a solution that addresses the needs of all stakeholders while ensuring the long-term health of both people and the environment. We are working constructively with the developer to find the best solutions for the community in the long run.

We will continue to assess the situation and develop management plans for other risks as they arise.

Figure 17: Whitford's rural highway

Ngaa aituaa aa-taiao me te tuupono aahuarangi kerekere

Natural disasters and extreme weather events

Extreme weather events are the most significant natural hazards for the Beachlands, Maraetai and Whitford Village area.

Te ua me te aawhaa | Rain and storms

The escalating intensity of extreme rainfall events places additional stress on our wastewater network, increasing the risk of inflow and infiltration of stormwater into the wastewater network. Larger or more frequent wet-weather overflows have the potential to adversely affect the ecosystems in our receiving environments, such as beaches which have already had water-quality alerts during wet-weather episodes. These alerts are indicative of faecal contamination levels that exceed the Ministry of Health's recommended standards for safe swimming. It is crucial to anticipate how these dynamics might evolve in the future, considering the interplay of factors such as climate change, shifts in land use, pollution and other relevant influences.

During extreme weather conditions landslips can occur and roads can become inaccessible. This in turn makes it difficult for water tankers to deliver water in emergency situations.

Te parawhenua me te horonga whenua | Coastal inundation and erosion

Future coastal inundation (sea-level rise) and the resulting erosion are significant issues for Auckland's coastal communities, particularly those with significant infrastructure near the coast. In addition, the east coast of Auckland (which could affect Beachlands and Maraetai) is more sensitive to climate-change-related inundation and erosion due to different exposure, geology, landforms, tidal ranges and changes to wave heights and storm surge. (See Figure Y below, for climate change hazards.)

Te tauraki | Drought

During the 2020/2021 drought in Auckland, the situation was especially challenging for residents in Beachlands who relied on rainwater tanks. Their tanks ran low due to the prolonged dry period, leaving people with limited access to water for their daily needs. Long wait times for water tanker deliveries added to the difficulties faced by Beachlands' residents, emphasising the vulnerability of people on tank water during extended dry periods.

NIWA's climate change and drought models provide important insights into these types of scenarios. These models predict that New Zealand is likely to experience more frequent and prolonged droughts due to climate change. This means that, in the future, areas like Beachlands might face even greater challenges when it comes to securing a reliable water supply.

Taa maatou urupare | Our response

Infrastructure servicing plans will be upgraded in order to adapt to and mitigate risk, ensuring, as best we can, reliable water and wastewater services for the communities of Beachlands, Maraetai and Whitford Village. We also collaborate in emergency and civil defense planning and are looking to make the wastewater treatment plant as resilient as possible by constructing assets, such as emergency generators and solar panels, as well as ensuring access to independent water supply.

Te hurihanga Aahuarangi | Climate change

FLOODING

This flood map from Auckland Council shows the extent of flooding expected around the Beachlands, Maraetai and Whitford Village area during severe rainfall events. However, areas that are not highlighted may also experience flooding. There are two layers:

- Flood plains show areas predicted to be covered by flood water as a result of a 1-in-100-year rain event by river or surface flooding.
- Flood-prone areas are low points in the ground that may flood. They are often associated with roads or railway embankments, or places where water can become trapped and pool if their outlet is blocked. These areas are also associated with 1-in-100-year rainfall events.

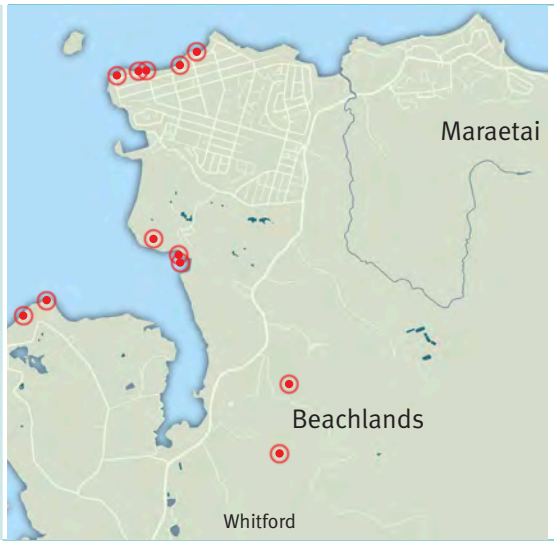
For wastewater, flooding will increase our wet-weather discharges and we will need to monitor this and improve our wastewater infrastructure to reduce stormwater infiltration.

COASTAL INUNDATION

Climate change related to sea-level rise will have no effect on the Beachlands Wastewater Treatment Plant, or the community generally. However, it will cause sections of Te Puru Reserve to be inundated. This will require the protection or relocation of the primary pump station between the Beachlands-Maraetai community and the treatment plant. Similarly, for Whitford Village, sea-level rise will have a limited effect on the community.

Coastal inundation effects are unlikely to materially impact Watercare's services within the immediate period in Beachlands and Whitford; however, more detailed investigations into these potential effects will be adopted as part of our climate change adaptation strategy.

LANDSLIDE



Beachlands and Whitford are susceptible to landslides.

The GNS Landslide Database identifies 13 large landslides that have occurred within the strategy area historically. The primary landslide triggers in New Zealand are earthquakes (44%) and rainfall (39%). As Beachlands is not susceptible to earthquakes, it is most likely that the historic landslides were triggered by heavy rainfall events.

None of the historic landslides have occurred near Watercare's assets; so, in the short term, this may not be an issue. If we build other infrastructure in the medium and long term, we will need to consider the potential impact of unstable land.

Whakakapinga | Conclusion

We hope that this servicing strategy has clearly articulated the complex and important factors that will influence the future of the Beachlands, Maraetai and Whitford Village 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 options around water supply scenarios for Beachlands and Maraetai. Independence from the metropolitan water network offers a certain type of resilience to the community. The prospect of droughts and projected population growth in the area necessitate proactive consideration of water solutions that will give communities confidence that they will have access to the water they need. Currently we will continue the approach of private supply until there is a requirement to implement a public supply solution. This tipping-point trigger may include legislative requirements or an appropriate wastewater solution.

We have described the options for wastewater disposal, 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.

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 strategic plan as a foundation for the conversations and decisions for which we need to make space.

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 in the Beachlands, Maraetai and Whitford Village area.

Ngaa mahi ka whai ake | Next steps

The Beachlands, Maraetai and Whitford Village area's servicing strategy is a pilot initiative, the first of its kind, to be developed and shared with the community. Its purpose is to enhance the best-practice development process, including mana whenua partnership and community engagement, as well as the creation of long-term adaptative strategies. The Beachlands, Maraetai and Whitford Village servicing strategy is dynamic and subject to ongoing review by the infrastructure strategy and planning team, and mana whenua partners.

To sustainably manage this strategy, adaptive approaches will be integrated into relevant Asset Management Plans and decision-making. Implementing these strategies will involve continuous collaboration among Watercare departments to support iwi/tangata whenua as partners. Throughout the development of the servicing strategy, work programmes will be established as options to be selected, assessed and further refined. Each work programme or project will undergo a thorough assessment and business case evaluation.

Arotake o te rautaki whakarato | Review of servicing strategy

The Beachlands, Maraetai and Whitford Village servicing strategy is a document that is intended to support ongoing conversations with the community. It 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 each servicing strategy area, such as 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.

Aapitihanga: Raraunga tautoko, ngaa mahere me ngaa meka hangarau, ngaa tuhinga aa-ture whaipaanga me ngaa whakaaetanga

Appendices: Supporting data, maps and technical details, relevant legal documents and permits.

Aapitihanga 1: Te Rautaki Wai moo Taamaki Makaurau
Appendix 1: Auckland Water Strategy

The Auckland Water Strategy was published by Auckland Council in early 2022. It sets out the strategic direction in relation to responsibilities and aspirations for Auckland's water services over the next 30 years. It provides a long-term holistic view of water in Auckland, ensuring we act as guardians for the wellbeing of water now and in the future.

The Auckland Water Strategy is designed to guide the city to 2050. It covers land-use change, population growth, climate change, working in partnership with mana whenua, and technological change. It directs investment and activities across the council group. The council has committed to ensuring that decisions are made in alignment with the strategy.

The strategy contains eight strategic shifts:

1. **Te Tiriti Partnership**
   The council and mana whenua working together in agreed ways on agreed things
2. **Empowered Aucklanders**
   The council working with Aucklanders for better water outcomes
3. **Sustainable Allocation and Equitable Access**
   Prioritising mauri when using water, to sustain the environment and people in the long term
4. **Regenerative Water Infrastructure**
   Ensuring Auckland's water infrastructure is regenerative, resilient, low carbon, and increases the mauri of water. It should be seen and understood by Aucklanders
5. **Water Security**
   Creating water abundance and security for a growing population through efficient use and diverse sources
6. **Integrated Land Use and Water Planning**
   Integrating land use and water planning at a regional, catchment and site scale
7. **Restoring and Enhancing Water Ecosystems**
   Taking catchment-based approaches to the health of water ecosystems
8. **Pooling Knowledge**
   Fostering a shared understanding, enabling better decisions for our water future.

Our servicing strategy for the Beachlands, Maraetai and Whitford Village area is mindful of giving effect to these strategic shifts. We welcome any commentary around how we can better support these strategic shifts with the preparation for, and information provided in, this document.

Aapitihanga 2: Ngaa whakaaetanga tukunga
Appendix 2: Discharge consents

Our consents have population limits, and daily discharge limits. These will be the measures that we will include in the adaptive plan. The table below describes our currently held discharge consents:

Consent	Type	Expiry Date
26876	Discharge of contaminants to air	31 Nov 2024
26875	Resource Consent **MAX: 10 000 population,** **Flow Monitoring Conditions**	31 Dec 2025*
26875	Discharge of contaminants to land to enter water	Initially granted in Nov 2004 with the appeal to the permit determined in August 2005
* The water quality of the stream is monitored as a condition of the resource consent.		

Ngaa tukunga ki te whenua me ngaa ara rerenga wai aa ngaa tau e tuu mai |

Future discharges to land or freshwater

The discharge of treated wastewater onto or into land and/or into water from a wastewater treatment plant requires discretionary activity resource consent under regional plan rule E6.4.1(A6) of the Auckland Unitary Plan. Enabling development that will result in an increase in the volume and frequency of untreated wastewater overflows into Auckland's freshwater environments is not consistent with the first priority of objective 1 of the National Policy Statement for Freshwater Management. The policy F2.11.3(8) refers to the avoidance of wastewater discharges unless the 'best practicable option' has been identified.

Tukunga ki te takutai Aa ngaa tau e tuu mai |

Future discharges to coast

The discharge of treated wastewater to the coastal marine area requires discretionary activity resource consent under the regional coastal plan into the General Coastal Marine zone under rule F2.19.7 A (A69).

Tukunga ki te koohauhau Aa ngaa tau e tuu mai |

Future discharge to air

Under rule E14.4.1 of the Auckland Unitary Plan:

- The flaring of biogas (should this be required) is a discretionary activity (A57),
- Discharge of contaminants into air from waste processes from the treatment of municipal wastewater (municipal wastewater treatment plants) is a discretionary activity also (A163).

Aapitihanga 3: Te Rautaki Kootuinga Waipara 2023
Appendix 3: Wastewater Network Strategy 2023

The Beachlands area is covered by the network discharge consent Watercare holds in the Auckland region. Our wastewater network discharge consent was issued by Auckland Council in 2014 for a 35-year period. Its purpose is to protect the health of Auckland's communities and environment (such as beaches and waterways) by setting performance standards for the wastewater network. The consent authorises an average of two spills per year or an alternative discharge frequency based on the best practicable option.

Currently, there are 11 engineered overflow points within the Beachlands wastewater network. One of these overflow points, situated near Maraetai Park (known as EOP 1079), has exceeded the desired overflow frequency of twice per year, a target set by the Network Discharge Consent (NDC). The Wastewater Network Strategy has the target of reducing overflows in the Auckland region over time consistent with conditions of the resource consent so that by 2047 we have fewer than 100 points in our network which spill more than twice per year (compared with over 200 currently), and the Maraetai Park overflow point is covered by the wider Auckland strategy.

Maraetai has two beaches monitored under Safeswim. These beaches have experienced water-quality alerts during wet-weather events. These alerts are typically due to elevated faecal contamination levels, which exceed the Ministry of Health's recommended standards for safe swimming. These contamination events are often linked to wastewater network overflows during heavy rainfall events.

For more information about Watercare's 2023 Wastewater Network Strategy, please see www.watercare.co.nz/Water-and-wastewater/Wastewater-network-strategy-2023.

Aapitihanga 4: Whakaraapopotanga whakawhanake
Appendix 4: Development summary

To the best of our current knowledge, the following table shows the projected population growth

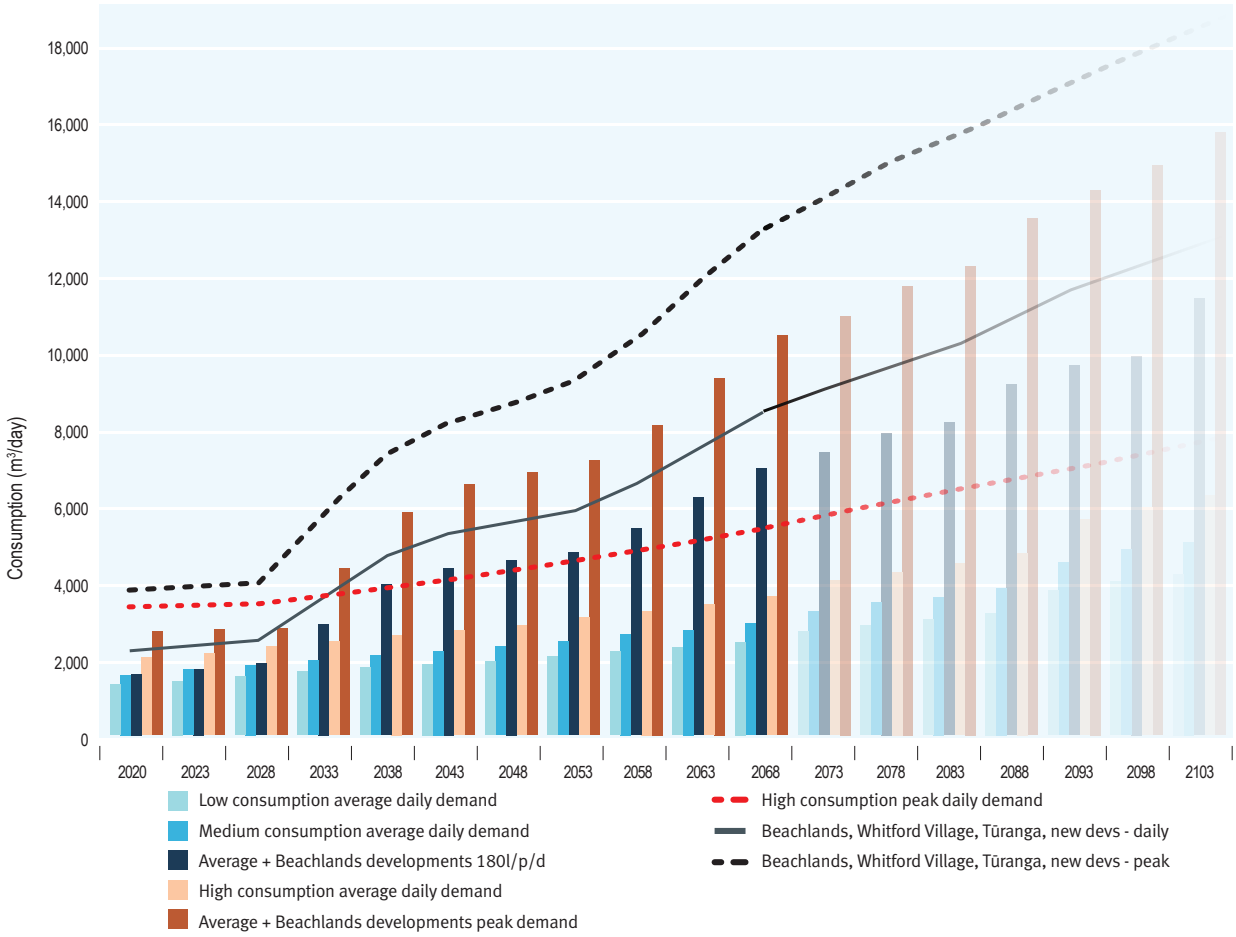
Development	Area (Ha)	Staging of No. of Additional Dwellings			Total Development Potential
		Short	Medium	Long term	
Beachlands South Private Development*	250	2,000	2,000	-	4,000 (dwellings)
Beachlands Unrestricted Development Potential	390	-	1,250	19,952	21,202**
Beachlands-Maraetai Live Zoned Land	31	400	400	-	800
Maraetai Future Urban Land	59	-	217	-	217
Whitford Village Live Zoned Land	-	-	105	-	105

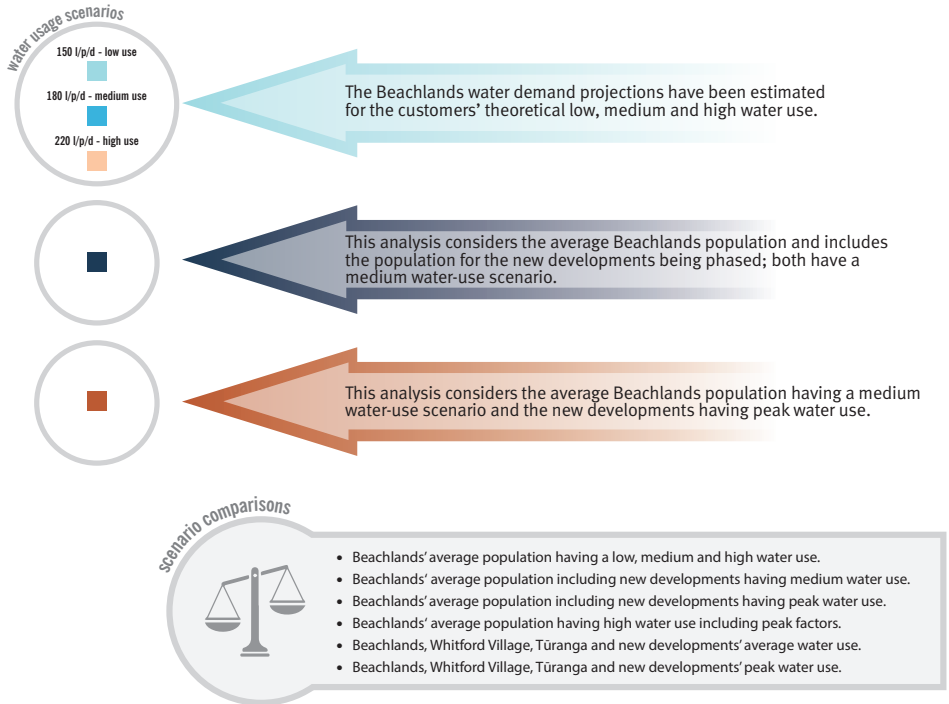
** For the Beachlands South Private Development, an additional number of dwellings is given in Household Unit Equivalents (HUEs).*
*** This number and the nature of connection to Watercare's assets is subject to confirmation.*

- The development of Beachlands-Maraetai Live Zoned Land is landowner driven, and timeframes for the potential developments are unknown.
- The development of these areas is more likely to occur when and if the landowners can connect into public services such as the Beachlands Wastewater Treatment Plant or a Watercare potable water supply.
- Due to infrastructure and consent constraints, some growth is expected in the short term and the majority within the medium and long term.
- The proposed plan change for Beachlands South includes the following provisions relating to the provision of infrastructure and the service levels that such infrastructure is required to meet:
    - A requirement for development to be adequately serviced by wastewater and water supply infrastructure
    - Application of Stormwater management area control - Flow 1 (SMAF 1) over the site for hydrological mitigation
    - Implementation of a water-sensitive design approach including water-efficient appliances, and rainwater harvesting for non-potable purposes.

Aapitihanga 5: Te wai e hiahiatia ana ia raa
Appendix 5: Daily water demand

Beachlands' average water demand projection



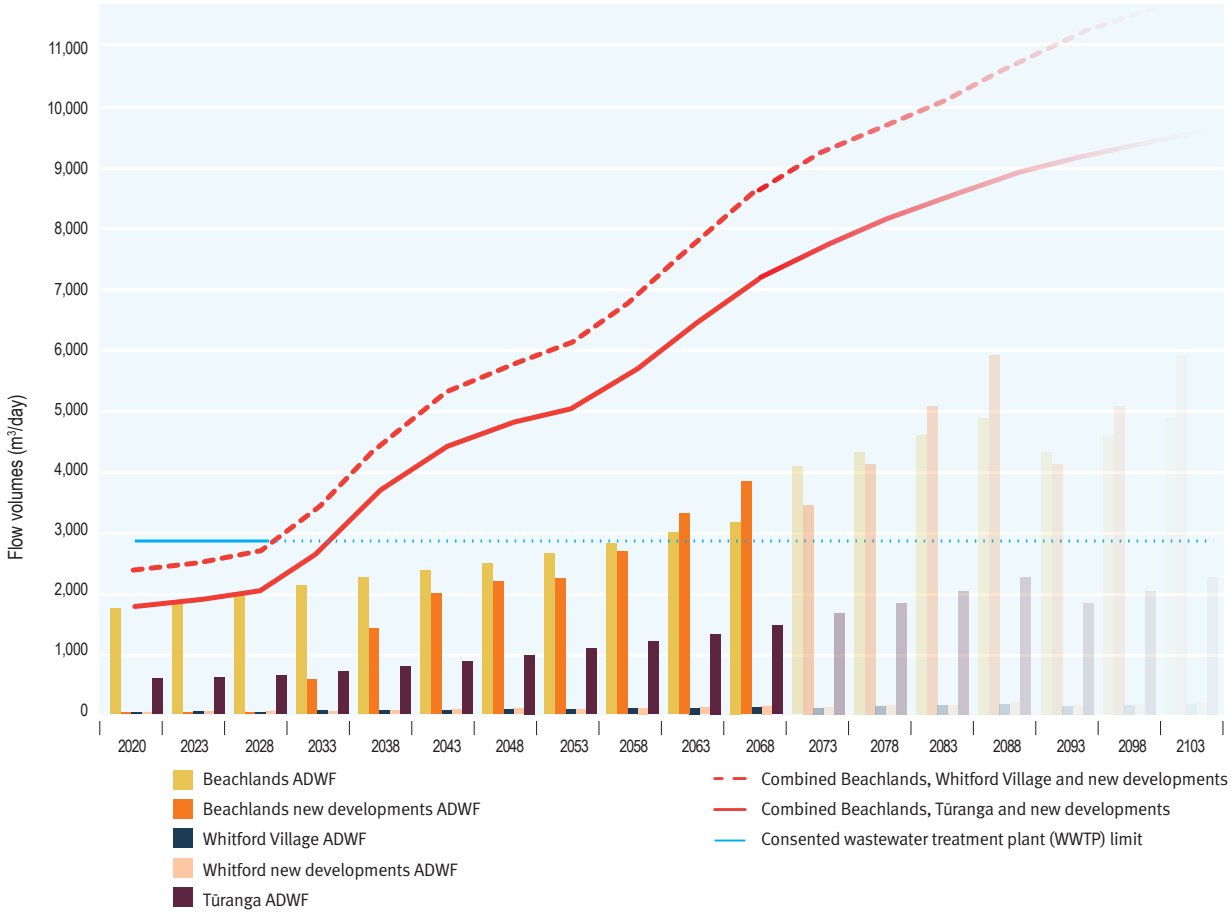


The above chart estimates expected water demand if there were a public water supply option implemented in the Beachlands, Maraetai and Whitford Village area.

Aapitihanga 6: Te toopuutanga rerenga waipara i te waa o te Aahuarangi maroke

Appendix 6: Combined dry-weather wastewater flows

Combined average dry-weather wastewater flow (ADWF) projection



scenario comparisons

- Average dry-weather flow for Beachlands (yellow) and the Beachlands new developments average dry-weather flow (orange).
- Average dry-weather flow for Whitford (dark blue) and the Whitford new developments average dry-weather flow (cream).
- Average dry-weather flow for Tūranga (purple).
- The combined flow for Beachlands, Whitford and the new developments is shown as a solid red line.
- The combined flow for Beachlands, Whitford, and new developments including the Tūranga flows is shown as a dashed red line.
- The consented WWTP limit of 10,000 m³/day is shown as a blue line and this highlights when the consented limits are expected to be exceeded.

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