

# Our Water Future Tō tātou wai ahu ake nei

A discussion document  
February 2019





## Mihi

**Ka mihi ake ai ki ngā maunga here kōrero,  
ki ngā pari whakarongo tai,  
ki ngā awa tuku kiri o ōna manawhenua,  
ōna mana ā-iwi taketake mai, tauiwi atu.  
Tāmaki – makau a te rau, murau a te tini,  
wenerau a te mano.  
Kāhore tō rite i te ao.**

*I greet the mountains, repository of all that has been said of this place,  
there I greet the cliffs that have heard the ebb and flow of the tides of time,  
and the rivers that cleansed the forebears of all who came those born of this land  
and the newcomers among us all.  
Auckland – beloved of hundreds, famed among the multitude, envy of thousands.  
You are unique in the world.*

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## Foreword

### Kupu takamua

Protecting our streams, rivers, lakes and harbours is a top priority for Aucklanders, and there are big challenges we need to tackle.

We've made a good start on some of the immediate issues, like cleaning up our beaches and replanting our streams. However, there is much more we need to do if we are to secure our water future.

We want to agree a vision for our waters, and identify the investments we need to make to achieve that vision.

It is all too easy to take water for granted. After all, getting clean, reliable drinking water is as easy as turning on a tap, and we can safely swim, fish or kayak in most places, most of the time. We rely on experts to manage the details for us. But perhaps that leads us to undervalue what we have.

Events around the world, from California mudslides to Capetown droughts, remind us how fragile our water systems are. Too much water, or too little, can be disastrous.

The deluge of plastics and other pollutants in our oceans drives home how much damage we are doing to our waters and ultimately to our own future.

In Auckland, localised floods, slips and coastal erosion happen often. Although it rains frequently, we have to rely on our neighbours

in the Waikato to meet our drinking water needs. As our population grows, and the impacts of climate change begin to bite, we need to think very carefully about our water future.

Working in partnership with Māori is an essential part of this process. Te mauri o te wai, recognising the lifegiving nature of water, is a view that treats water with the respect it deserves. With water at the centre of our decisions, it is my hope that we can begin to build a healthier, more resilient Auckland.

We can all contribute to a better water future. I invite you to read this discussion document and let us know what you think. Let's work together to ensure a secure, sustainable and healthy future for water in Auckland.

**Councillor Penny Hulse**  
Chair, Environment and Community Committee

**On behalf of the Auckland Water Strategy Political Steering Group**

Councillor Bill Cashmore - Deputy Mayor,  
Margaret Devlin - Watercare Services Chair,  
Lester Levy - Auckland Transport Chair,  
Tame Te Rangi – Representative of the Mana Whenua Kaitiaki Forum



**11,117km<sup>2</sup>**  
of ocean



**3200km**  
of coastline



**16,500km**  
of permanently  
flowing rivers



**72**  
natural and  
artificial lakes



**multiple**  
aquifers

## Water and Tāmaki Makaurau / Auckland: inseparable stories

### Te wai me Tāmaki Makaurau: ōna pakiwaitara motuhake

Water, or wai, is a precious taonga, a treasured resource. It gives us life, shapes our environment and adds to the beauty of our region.

#### Our connection with water

Our connection with water is part of what makes living in Tāmaki Makaurau / Auckland so special.

Historically, our harbours and streams were abundant sources of kai / food for mana whenua and manuhiri / visitors alike. They also formed important transport and trade routes.

Waka, ships, ferries and freighters brought trade and economic prosperity. This allowed us to grow into a city of 1.66 million people with more than a third of Aotearoa / New Zealand's economic activity.

#### The decline in water quality

As the population grew, we built water infrastructure to keep us healthy and safe – but we didn't always look after the waters that sustained us. Rivers were piped, wetlands were drained, and plumes of sediment and

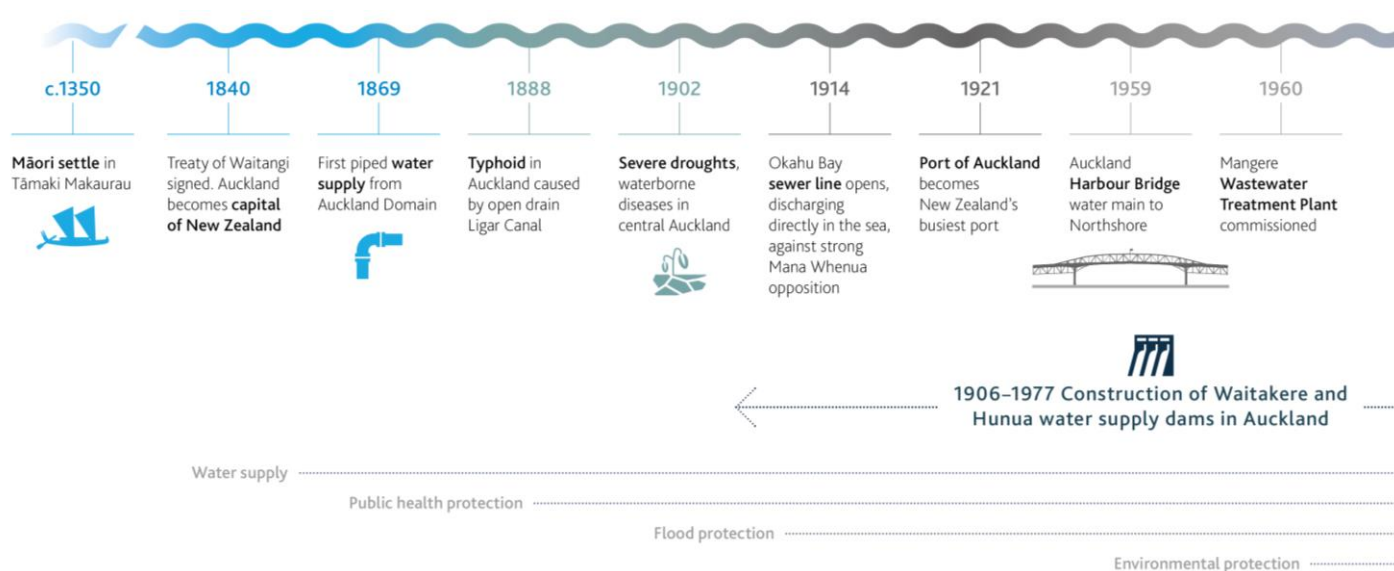
other pollutants were discharged into the harbours.

In both urban and rural areas, water quality has declined. Freshwater and marine environments are showing the stress of decades of pressure.

As the population grows and the impacts of climate change take effect, these stresses will become more severe. Our water infrastructure – the networks that manage our drinking water, wastewater and stormwater – also faces new pressures.

#### Clean, healthy water is essential to our future.

The region is 75 per cent water. As we continue to grow and change, we need to look after this most precious taonga.



## A conversation we need to have: the purpose of this discussion document

### He kōrero me tutuki i a tātou: te take mō tēnei pūrongo whakawhiti kōrero

Defining our water future is a task for everyone together. We know that we will face some big water challenges in coming years. What kind of water future do we want to create? What vision could we aspire to, and what are the big issues we need to tackle?

#### Problems with water concern us all

We've talked a lot about water lately. Aucklanders have very clearly told us that clean and healthy water is a top priority. Safeswim has raised awareness about the health risks we face when our infrastructure doesn't work as well as we would like.

Storms, flooding and coastal inundation have made clear the challenges of living in an ever-changing water landscape. This is especially real for the communities that have been directly affected. Community restoration programmes have revealed strong personal connections to our natural ecosystems.

#### Developing a Water Strategy

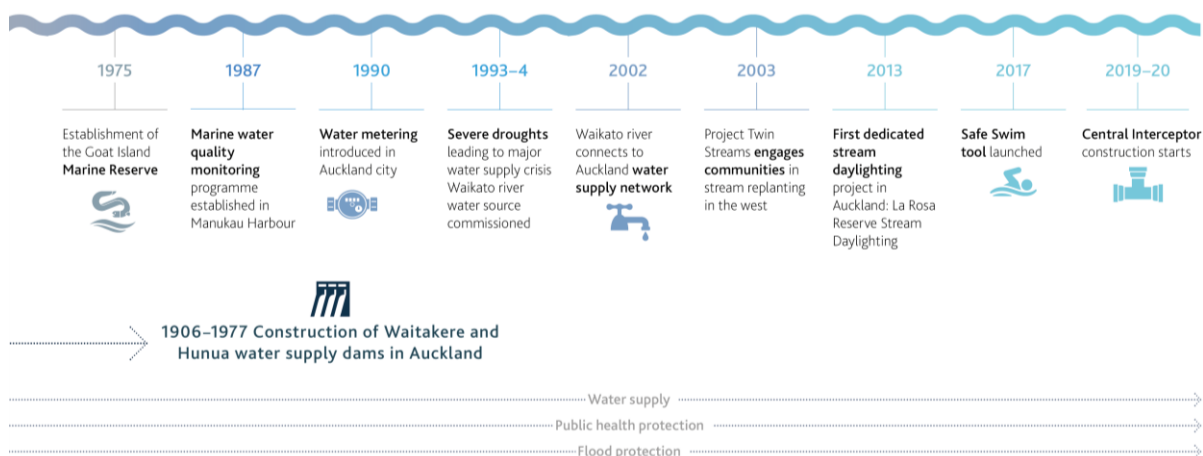
In June 2018, we decided to prepare a Water Strategy for Auckland to ensure that our actions respond to the challenges and

opportunities we have to improve water outcomes.

This discussion document is a first step in the strategy's development. It looks across the full range of water issues, and begins to identify the choices that we, as Aucklanders, will need to make in coming years.

We all need to understand the issues, so that we can set some regional directions for how we:

- take care of natural waterbodies
- meet our daily water needs as our population grows
- look after our waters while managing our growth and development
- prepare for changes in our climate and our communities.





## Our challenges

We face some big challenges that will shape what we can do:

- Our waters are degraded, especially where they are close to urban areas. We need to clean up our rivers, lakes, streams and harbours.
- Freshwater is a scarce resource, even though it rains frequently. We have limited large rivers, lakes and groundwater resources in the region to draw water from, and we are becoming increasingly reliant on the Waikato region to meet our needs. We are going to need to make better use of the water that we have, or agree to develop new sources of supply by 2050.
- We live in an ever-changing environment, vulnerable to natural hazards such as flooding, coastal inundation, erosion, drought and the effects of climate change. We will need to make changes to be ready for the increasing risks.
- Responding to water issues takes money and time (and the costs of doing nothing will likely end up being higher in the long run). We want to make sure our decisions are improving our water future, not deferring the problems for future generations to resolve.

We have taken advice from the Mana Whenua Kaitiaki Forum to prepare this discussion document. They have said that te mauri o te wai should be at the centre of the strategy, with rivers, estuaries and harbours restored to a state of health (discussed on p.16).

Involving mana whenua in governance and decision-making roles is an ongoing part of this process, as well as making sure they are able to actively exercise kaitiakitanga in practical ways.

## Decisions we have to make

In coming years, we will have to make big, potentially controversial decisions about how we manage water. We know that people have different perspectives on water issues. We also know that people are more likely to support decisions that they were involved in shaping.

To help us, as a starting point in this process, we want to sketch out a broad framework that we can agree to. After setting out the local and national context, this discussion paper steps through a proposed framework for how we think and make decisions about water in Tāmaki Makaurau (see framework, p. 8).

### A framework for water decisions

The proposed framework contains:

- an aspirational vision for our water future
- five values that describe the reasons we attach importance to water
- four big issues that are at the core of our water challenge
- six principles that will guide our actions as we move forward
- four processes that we need to work on, to support quality decisions.

### We want you to have your say







We want to hear what you think.

- Do the vision and values reflect what matters to you?
- Have we accurately described the 'big issues'?
- Do you think the principles and processes will help us make progress towards the vision?

With your feedback on this proposed framework, we'll be able to develop an Auckland Water Strategy that moves us toward an agreed water future.

## The proposed framework for an Auckland Water Strategy

### Te pou tarāwaho o te Rautaki Wai mō Tāmaki Makaurau e whakaarotia nei

The Auckland Plan						
Key challenges	Population growth		Environmental degradation		Shared prosperity	
Outcomes						
	Belonging and Participation	Māori Identity and Wellbeing	Homes and Places	Transport and Access	Environment and Cultural Heritage	Opportunity and Prosperity

Te mauri o te wai: putting water at the centre					
Vision	Te mauri o te wai o Tāmaki Makaurau – the life supporting capacity of Auckland’s water – is protected and enhanced.				
Values	Ecosystems <i>Healthy water systems nourish the natural environment.</i>	Water Use <i>We can meet our everyday water needs, safely, reliably and efficiently.</i>	Culture <i>Water contributes to our identity and beliefs, as individuals and as part of communities.</i>	Recreation and Amenity <i>We enjoy being in, on and near the water.</i>	Resilience <i>Our communities, catchments and coastlines are resilient to natural hazards and the impacts of climate change.</i>
Issues we need to work on	Cleaning up our waters	Meeting future water needs		Growth in the right places	Adapting to a changing water future
Processes we need to work on	Creating our water future together		Setting priorities for investment		Achieving net benefits for catchments
	Applying a Māori world view				
Principles to guide our work	<ul style="list-style-type: none"><li>• Recognise that water is a treasured taonga</li><li>• Work with natural ecosystems</li><li>• Deliver catchment scale thinking and action</li></ul>			<ul style="list-style-type: none"><li>• Focus on achieving right-sized solutions with multiple benefits</li><li>• Work together to plan and deliver better water outcomes</li><li>• Look to the future</li></ul>	



## From ridge to reef: taking a systems approach

### Mai i ngā kahiwi ki ngā pūkawa: he tokonga ā-pūnaha te whāinga

This document considers water in all its different forms: in rivers and streams, in underground aquifers, and in estuaries, harbours and marine areas. It talks about drinking water, wastewater and stormwater – the ‘three waters’ that we manage most directly.

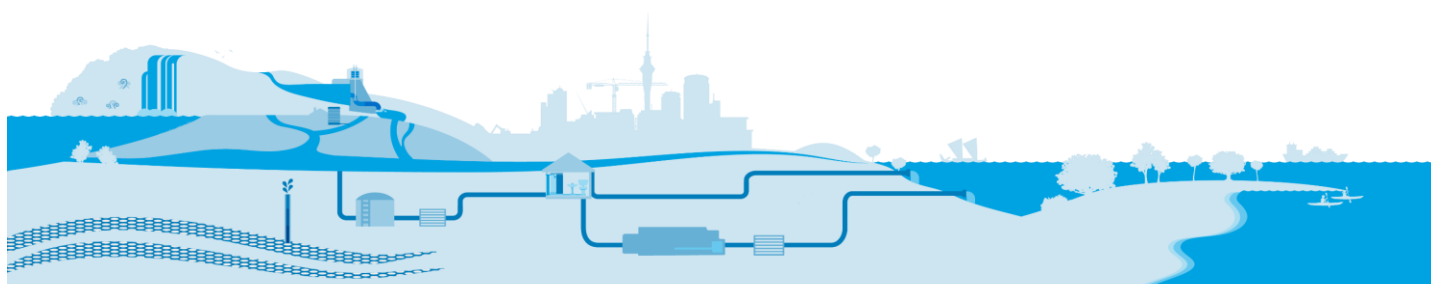
#### Only one water

Sometimes we need to deal with different forms of water in different ways. But they are all connected – there is only one water, constantly moving around the water cycle. We want to make sure we think about how activities in one part of the water system affect the health of the whole system. This is where we think an overarching vision will help.

Taking a system-wide view is much easier to say than to do. Developing processes to support us to keep the big picture in focus will be part of our challenge.

#### Water and the circular economy

Thinking about the whole water system aligns well with the circular economy, described in the Auckland Plan 2050. A circular economy approach means making the most of resources at each stage of their life cycle. Resources are looped through many cycles of use, minimising waste and capturing multiple benefits along the way.



## Meeting current and future needs: the role of the council

### Te tūtaki i ngā hiahia o ināiane anga atu ana hoki: ko te āhua mahi mā te kaunihera

The council has a number of roles and responsibilities for water.

We work across the region to maintain, renew and improve our waters and our water infrastructure. The decisions we make across the council family have big implications for the health and the future of our waters. This includes council controlled organisations like Watercare, Auckland Transport and Panuku.

Every day, we:

- provide safe, reliable drinking water to 1.5 million Aucklanders
- treat wastewater so that it is safe to release into the environment
- manage an extensive stormwater network, including the roads that helps to divert rainfall away from people and property
- anticipate and manage the impacts of storms, floods and other natural hazards
- restore and protect our natural waterways.

Most of our work is focused on freshwater, land-based activities and the coast, but we manage impacts on the marine environment too, by capturing and cleaning stormwater before it reaches the sea.

In the next ten years, we expect to invest \$7.1 billion in diverse water projects of all sizes across the region.

#### We're always improving

Our approach to water is constantly developing. We seek to innovate where we can, to find more effective ways to achieve the healthy, clean water outcomes our communities want.

We work with other councils to learn together. We're pleased to be leading the development of water sensitive urban design in Aotearoa / New Zealand. This includes the Water Sensitive Design Guidelines.

All of this work is shaped by the council's strategies, policies and plans, as well as national legislation and policy (see fig i).

Auckland Council, Watercare and Auckland Transport look after:

**365million**  
litres of drinking water  
per day

**27**  
drinking water sources

**450million**  
litres of wastewater  
per day

**330,000+**  
manholes

**474**  
rivers and streams

**3200km**  
coastline

**9200+ km**  
of water supply pipes

**8000+ km**  
of waste water pipes

**6300+ km**  
of stormwater pipes

The main plans that we use to manage water are the Auckland Plan, the Unitary Plan, the Long-term Plan and our Asset Management Plans. Together they provide the direction, development rules, finances and work programme that determine the council's activities. They also affect what everyone else can do too across the region.

The cultural significance of water to Māori is recognised in the Treaty of Waitangi and in legislation including the Resource Management Act 1991, the Marine and Coastal Area (Takutai Moana) Act 2011, and the Hauraki Gulf Marine Park Act 2000. These Acts guide our approach to water at the council.



Figure i: *National, regional and local strategies and plans shape our approach to water.*

## Water, water everywhere: the national conversation

### He wai, he wai i hea katoa: te takinga kōrero ā-motu

Water is a big issue for Aotearoa. The national conversation often sets the direction for regional and local efforts.

The National Policy Statement for Freshwater Management (NPSFM) is particularly relevant. It requires all regions to safeguard the life-supporting capacity of freshwater bodies and their associated ecosystems.

#### Te Mana o te Wai

The first objective of the NPSFM is ‘to consider and recognise Te Mana o te Wai in the management of fresh water’. This is to ensure that the health and wellbeing of freshwater bodies is ‘at the forefront of all discussions and decisions about water’.

Te Mana o te Wai is the integrated and holistic wellbeing of a freshwater body. Upholding Te Mana o te Wai acknowledges, protects and enhances the mauri of the water. It recognises the connection between water, people and the broader environment.

#### National reviews

Further national processes are currently underway to review how water is managed. The Essential Freshwater Work Programme is focused on stopping further harm to freshwater, reversing existing damage, and ensuring fair allocation of freshwater and nutrient discharges. It is expected to result in amendments to the Resource Management

Act and the NPSFM, and introduce a new National Environmental Standard for Freshwater Management by 2020.

The Three Waters Review is looking at how to improve the regulation and delivery of drinking water, stormwater and wastewater to better support the prosperity, health, safety and environment of Aotearoa.

It is likely that the government will make changes to regulations, including higher standards for drinking water, the discharges from wastewater treatment plants and the stormwater system. They are also looking at changing how services are delivered. Some of the options include creating publicly owned drinking water and wastewater providers that operate across council boundaries.

These processes have implications for our water future in Tāmaki Makaurau: they might change how our water services are regulated and delivered. The council is an active participant in the national discussions, to ensure our region’s water needs are considered.

We have communicated our support for the government’s position that drinking water, wastewater and stormwater assets must remain in public ownership. We have also identified that any subsidies needed to support smaller communities to meet increased water standards should come from national revenue. Rates and local user charges collected in Auckland should only be used to fund services in Auckland.



## Implementing the Auckland Plan 2050

### Te whakatinana i te Mahere a Tamaki Makaurau 2050

The Auckland Plan 2050 sets six outcomes and the development strategy for Tāmaki Makaurau. It identifies the directions required to deliver the outcomes we want to see by 2050, supported by focus areas for action. The Auckland Plan 2050 sets the basis for the development of a water strategy for Tāmaki Makaurau.

Three challenges sit at the heart of the Auckland Plan:

**Population growth:** More than 1.66 million people live in Tāmaki Makaurau already. Over the next 30 years this could increase by another 720,000 people to reach 2.4 million. The rate and speed of population growth puts pressure on our communities, our environment, our housing and our roads.

**Environmental degradation:** Decades of pressure have had negative impacts on the environment, including on our waters. This pressure will continue to increase if changes are not made to the way that the environment

is valued and managed. Climate change will further amplify the challenges, with impacts such as sea level rise, more frequent extreme weather events, and increased risk of flooding and coastal inundation.

**Shared prosperity:** The success of Tāmaki Makaurau is dependent on how well our prosperity is shared. As our population continues to grow, we need to ensure that all Aucklanders can benefit from the social and economic prosperity that growth brings and can participate in and enjoy community and civic life.

Better outcomes for water are supported across the six outcomes of the Auckland Plan 2050, highlighting the need to take an integrated approach across a range of areas. For example, one of the environmental focus areas is to restore environments as Tāmaki Makaurau grows.

To read more about the Auckland Plan, click [here](#)



*The Auckland Plan sets the direction to 2050.*

## Getting our bearings: international comparisons

### He whakamau i te ara whāinga mō tātou: ngā whakatauritenga ā-ao whānui

How are other cities around the world thinking about their water futures?

To help us develop a locally-based vision, we have looked at international examples of water visions and strategies. Many cities describe their aim as to become ‘water sensitive cities’ or to apply a ‘one water approach’. A look at comparable cities reveals a number of themes – all of which could be readily applied to our water situation:

- recognising water supports prosperity, community and economic wellbeing
- future-facing, aiming for inter-generational sustainability and resilience
- a priority on looking after the environment and ecosystems
- managing hazards and ensuring security of supply
- an integrated approach to decision making across the water cycle.

#### SOME EXAMPLES OF WATER VISIONS:

- ‘Water is fundamental to our communities. We will manage water to support a healthy environment, a prosperous economy and thriving communities, now and into the future. - ‘Water for Victoria (Australia)
- ‘By 2040, London will manage its rainwater sustainably to reduce flood risk and improve water security, maximising the benefits for people, the environment and the economy.’ - London Sustainable Drainage Action Plan
- ‘With our OneWaterSF approach, San Francisco will optimise the use of our finite water and energy resources to balance community and ecosystem needs, creating a more resilient and reliable future.’ - OneWaterSF (San Francisco)

In Australia, the Cooperative Research Centre for Water Sensitive Cities has supported stakeholders to develop ‘transition strategies’ for different cities. Each city process has defined its own vision, with some commonalities:

- ‘Adelaide is an attractive and resilient city that uses its diverse water resources and knowledge to drive prosperity, sustain healthy ecosystems, and connect communities.’ - Vision and Transition Strategy for a Water Sensitive Adelaide
- ‘Sydney is a beautiful, prosperous and resilient city with thriving communities, healthy ecosystems and cherished urban landscapes supported by active water stewardship.’ - Vision and Transition Strategy for a Water Sensitive Sydney



## A vision that speaks to this place

### He whakakitenga e taki kōrero ana mō tēnei wāhi

What kind of water future do we want for Tāmaki Makaurau? A vision statement helps us to define our destination and guide our choices along the way.

International examples affirm the issues and opportunities we have identified here in our region. We would like to take an approach that is more clearly connected to Tāmaki Makaurau.

Through the Auckland Plan and Long-term Plan consultations in 2018, Aucklanders have provided their views of our water future. They emphasised that improving water quality is an urgent priority for action. This is to improve environmental health and recreational amenity. They also noted concern about the impacts of growth and climate change.

#### Creating a vision

We want to create a vision that:

- is special to this place
- recognises the vital relationship between our water and our people
- recognises the role of mana whenua as kaitiaki within the region

- represents values that can unify us in our actions
- sets a long-term aspiration for the way we take care of our waters.

The vision doesn't have to describe where we are today, but rather where we want to get to.

We want to make sure that we align with the national conversation about water and the objectives that have been set for us to achieve through the National Policy Statement on Freshwater Management.

We are fortunate to have concepts in te Ao Māori that can help us express this in a way that is unique to our place in the world. With the guidance of the Mana Whenua Kaitiaki Forum, 'te mauri o te wai – the life supporting capacity of water' has been identified as a concept that encompasses our aspirations for water in Tāmaki Makaurau.



## Te Mauri o te Wai

Te mauri o te wai has many layers. It is about the health of water but also about the deep connections between water, the environment and people.

Water has mauri – a vitality or essence that supports life. The actions we each take can enhance mauri or, they can diminish mauri.

In turn, the mauri of water affects the mauri of people. When te mauri o te wai is compromised, so are we. This is a concept that we can all connect to. Knowing that some of our waters are polluted to the point where we can't safely fish, or swim, or drink, is concerning for many Aucklanders. Te mauri o te wai evokes a future where our children and grandchildren are able to swim in, and harvest from, our rivers, estuaries and harbours.

While the National Policy Statement for Freshwater Management speaks of Te *Mana* o te Wai, we think te *mauri* o te wai is a better description of the aspiration that could unite us in Tāmaki Makaurau. Waters with healthy mauri nourish us and allow us to meet our obligations to care for one another (manaakitanga). As mana whenua have observed, there can be no mana without mauri.

Guided by the Mana Whenua Kaitiaki Forum, we are proposing the following vision as an aspirational statement of where we would like to be by 2050:

### **Te mauri o te wai o Tāmaki Makaurau – the life supporting capacity of Auckland's waters – is protected and enhanced.**

We appreciate that we might have many different ideas of how we protect and enhance *te mauri o te wai*, and we believe this opens an exciting space for discussion and collaboration. If we can agree a common destination, it will become easier to debate the priorities and options to get there. It should help us to recognise the consequences of actions across the whole water cycle, and ensure we treat water as a precious resource.



## The importance of water: describing our values

### Te take nui o te wai: te whakaahua i ō tātou uaratanga

When we talk about values, we are describing what is important to us

A value-based approach can help connect our decisions back to what we think matters most. In this way, our values are our navigational aids, helping us to stay on course towards our vision.

The National Policy Statement for Freshwater Management requires that we develop values to inform the setting of freshwater objectives and limits. This includes compulsory values of ecosystem health and human health for recreation.

These are used to inform the setting of freshwater objectives and limits. We are proposing to use the values we describe here as we develop Auckland's response to the policy statement.

#### What our values look like

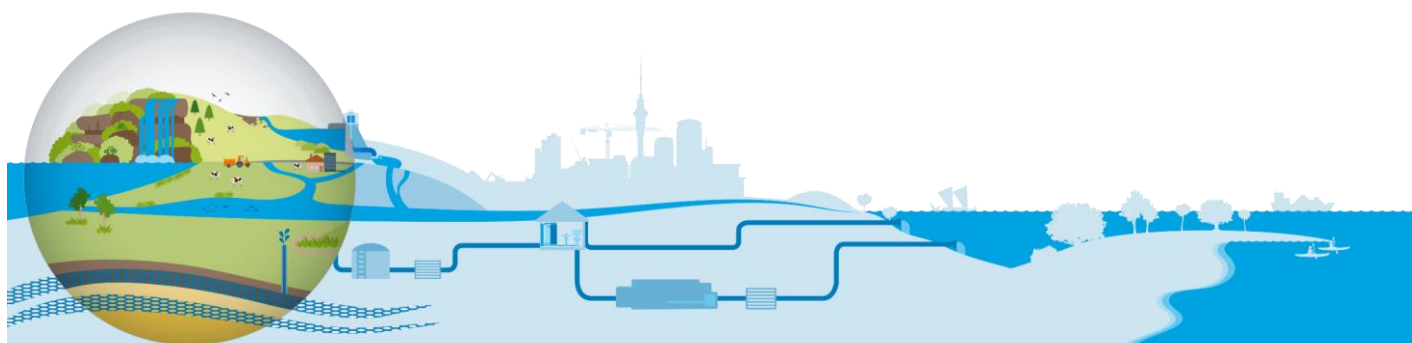
So, what is it that we value about water in Tāmaki Makaurau?

In the next few pages, we describe values for water in five broad categories:

1. Ecosystems: healthy water systems nourish the natural environment.
2. Water use: we can meet our everyday water needs safely, reliably and efficiently.
3. Recreation and amenity: we enjoy being in, on and near the water.
4. Culture: water contributes to our identities and beliefs, as individuals and as part of communities.
5. Resilience: our communities, catchments and coastlines are resilient to natural hazards and the impacts of climate change.

On the following pages, we describe what it is that we value for each category, and the current and future state of our waters compared to those values. We connect the values to the 'big issues' (which we discuss in the next section). Finally, we identify where you can learn more and suggest some simple examples of how you can take action right now.





## Ecosystems

### What we value: Healthy water systems nourish the natural environment

Healthy streams, rivers, lakes and coastal waters are home to diverse plants, animals, insects and other organisms. When the mauri of our water is enhanced, and water systems are healthy, they can clean up contaminants, absorb carbon dioxide, and provide us and other animals with the food we need to survive.

#### Current state

The health and mauri of our waterways is very closely connected to the activities that are happening on the surrounding land. Some streams are surrounded by native bush and have clean water and thriving animal and plant populations (see map p. 19).

By contrast, most of our urban streams are in poor health, with degraded mauri. The health of rural waterways is mixed, depending on how the surrounding farming, forestry and agricultural activities are managed.

Our estuaries, harbours and marine waters are home to diverse biodiversity, but sediment from land-based activities are muddying the waters and smothering sea life.

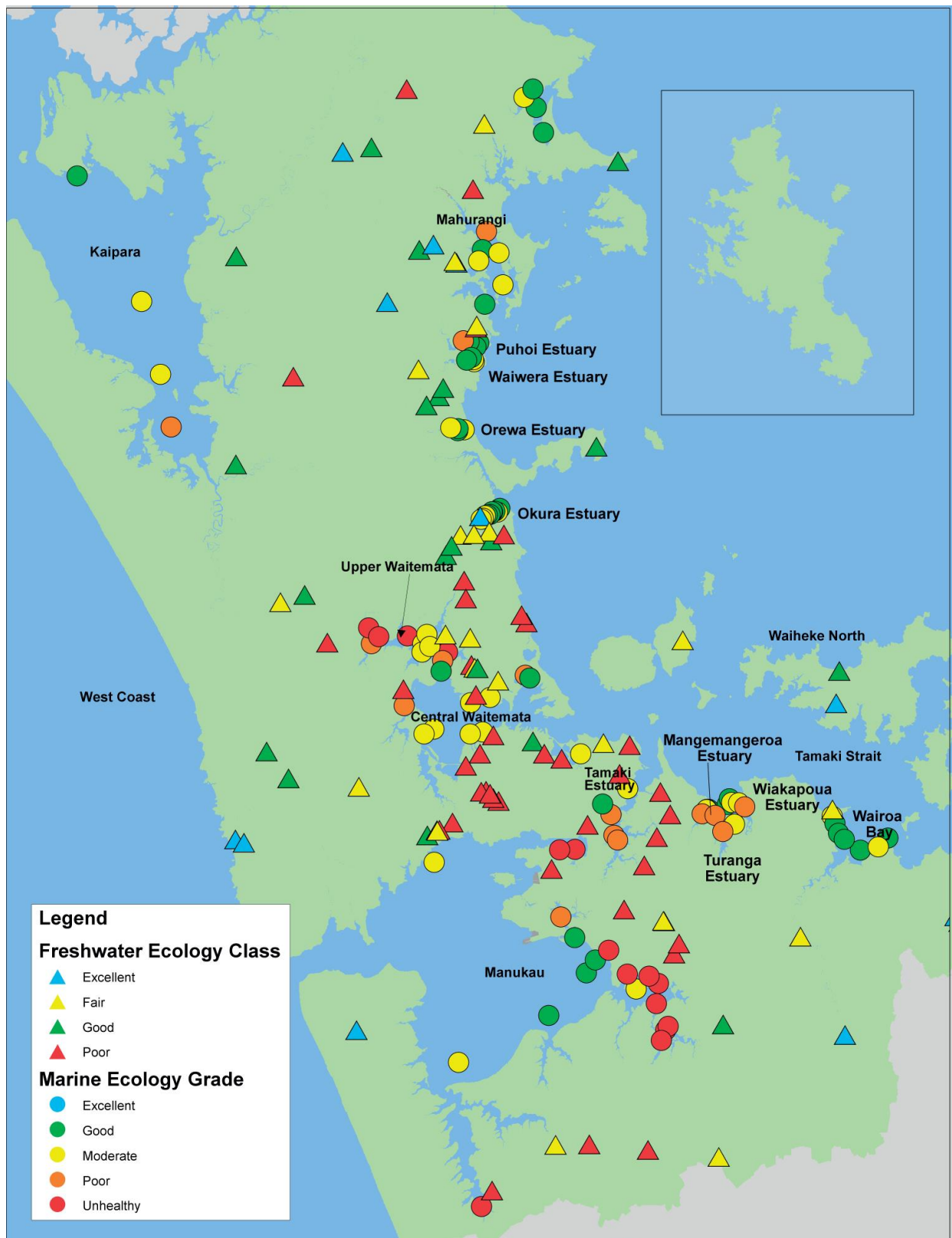
So, what's causing the degradation? It's not a simple picture. Sediment comes from land disturbance like earthworks, forest harvesting, stream erosion and slips.

Many other contaminants accumulate from diffuse sources that are difficult to manage, like the heavy metals that come from car brake linings. Roads are a conduit for rain to wash these materials into the environment.

#### FAST FACTS

- The Kaipara Harbour is the nursery for 98 per cent of snapper off the west coast of the North Island.
- 80 species of birds roost around the Manukau Harbour, including migratory birds like bar-tailed godwits. These birds fly continuously for eight to 10 days to get here from Alaska.
- Marine reserves are proven to help biodiversity. The ecosystems in the Goat Island Marine Reserve are healthier than many others in the Hauraki Gulf. It acts as a nursery for the wider fishery in the gulf. Around 11 per cent of young snapper in a 40km radius the offspring of adults that lived in the reserve.





*Water quality is generally better in remote parts of the region, and worse in more populated areas.*

*Source: Research and Evaluation Unit, Auckland Council 2018*

Although we are the nation's largest city, most of Tāmaki Makaurau is rural. Agriculture, forestry and horticulture can increase the levels of sediment, nutrients and bacteria in waterways. Even in natural forest areas, sediment and bacteria will wash into our streams. The more sediment that is released at one time, the harder it is for our ecosystems to recover.

Our ideas about what is okay have changed over time, and we are less accepting of activities that were once quite normal, such as clearing native forests or tipping waste into rivers. Now, we're learning about the impact of litter and microplastics on wildlife.

### Doing better

We've started to improve our impacts on ecosystems with:

- more water sensitive rural and urban development practices
- stock exclusion and nutrient management as part of good farming practices.
- rain gardens, litter traps and swales to filter contaminants out of urban stormwater

- restoration projects to improve the mauri of wetlands, lakes and streams.

Many of the actions we are taking for other reasons will also help water outcomes. This includes Auckland Transport encouraging Aucklanders to use passenger transport or walking and cycling to reduce the number of single occupancy cars on our roads.

We're innovating and learning as we go.

Different treatment systems are being trialled in the road corridor to treat the runoff before it reaches our harbours. New technology brings new opportunities, such as using smart water sensors and drones to carry out water monitoring programmes.

### Future challenges and opportunities

Continued population growth and urbanisation will add to the pressures on our waterways.

Land development is predicted to triple the

amount of impervious surfaces (hard surfaces like buildings and roads that stop water from soaking into the ground) by 2048. Without careful design, this will increase the amount and speed of stormwater. This could erode waterways and have bigger effects on receiving waters.

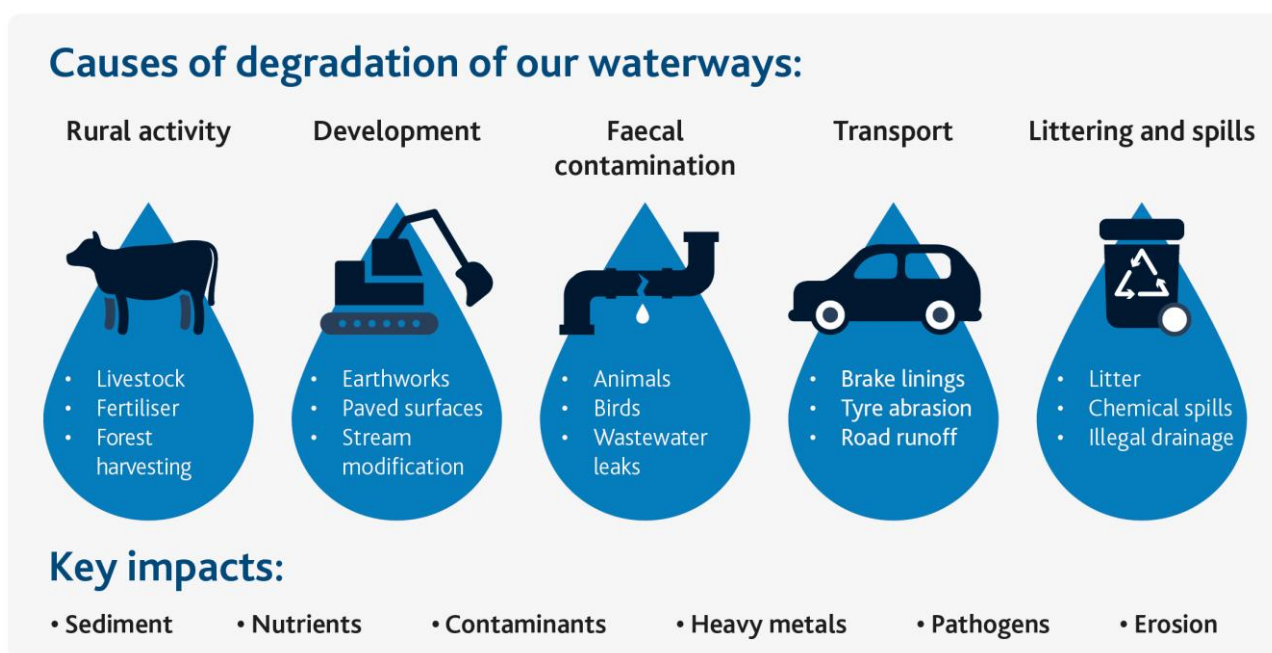


Figure ii: Ecosystem stressors impacting our waterways



The impacts of climate change, such as increased temperatures and more frequent storms will make it harder for our natural systems to recover after events.

### CASE STUDY

Like many urban streams, Te Auaunga / Oakley Creek in Mount Albert has been known for its poor water quality. Over the last few years local residents have been planting native trees around the stream. This helps to reduce the amount of contaminants entering the water.

Recently students from Gladstone Primary discovered a spotty stonefly nymph at the stream. These are usually only found in areas of native bush and high water quality. Its presence is a reward for local residents, showing their efforts are paying off

### What we need to work on

This value connects to the following big issues and processes, that we discuss later in the document:

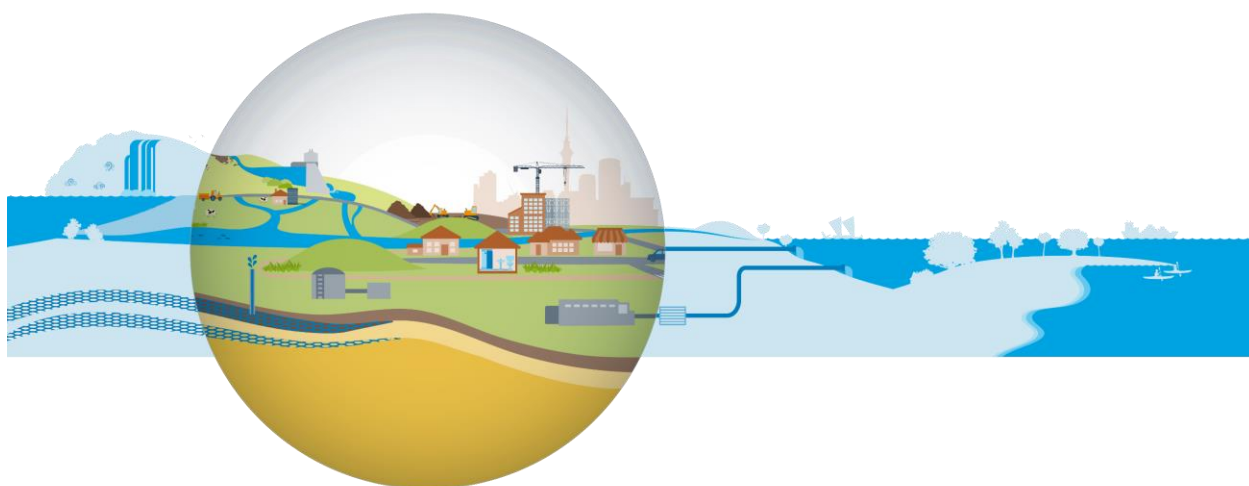
- cleaning up our waters (p. 36)
- growth in the right places (p. 37)
- creating our water future together (p. 42)
- achieving net benefits for catchments (p. 43).

### Learn more

[State of the Environment 2015; Auckland Design Manual – Water Sensitive Design](#)

### Take action

You can help absorb stormwater by reducing the amount of hard surfaces like concrete, and adding mulch to garden beds. Wash your car on the lawn or in a commercial carwash to help filter contaminants – there are more ideas on the council's website: [Use eco design practices in your garden](#).



## Water use

### What we value: We can meet our everyday water needs safely, reliably and efficiently

Access to clean water is essential to life, and critical for public health and the economy.

In urban areas, we value having an efficient, trustworthy system that provides safe drinking water as easily as turning on a tap.

In rural areas and on our islands, where we must manage our own water resources from season to season, we value every drop.

We rely on water for sanitation, with a large-scale wastewater system that helps to convey and treat sewage and minimise the risk of infectious diseases.

### Current state

#### Where our water comes from

Providing Aucklanders with a secure supply of fresh water is one of the council's most important jobs. Although it rains regularly, we do not have large fresh water resources: only 38 per cent of Watercare's municipal water supply is sourced within the region (see fig iii).

The rest comes from Watercare-owned dams in the Hunua Ranges (part of the Waikato catchment) and the Waikato river.

The last dam built to supply Aucklanders with drinking water was opened in 1977. After the drought of 1993/94, Watercare undertook a detailed investigation of future sources of drinking water. The Waikato River was selected as the best source and a new treatment plant and pipeline was completed in 2002.

Today, our municipal system has proven to be safe, reliable and resilient. We work hard to keep it that way, even in the most testing of situations (see case study p. 23).

Our picture of rural water supply is less clear, because it's not managed in the same way. Rural users source their own supply, from rain tanks, surface water takes, or groundwater. The council issues resource consent for groundwater takes, so we know that aquifers below some parts of Tāmaki Makaurau are nearly fully allocated, which poses challenges for future water use.

For those using water tanks, storing enough water to last through summer can be difficult. There can be periods when rain is not frequent or heavy enough to replenish tank levels, and water has to be trucked in.

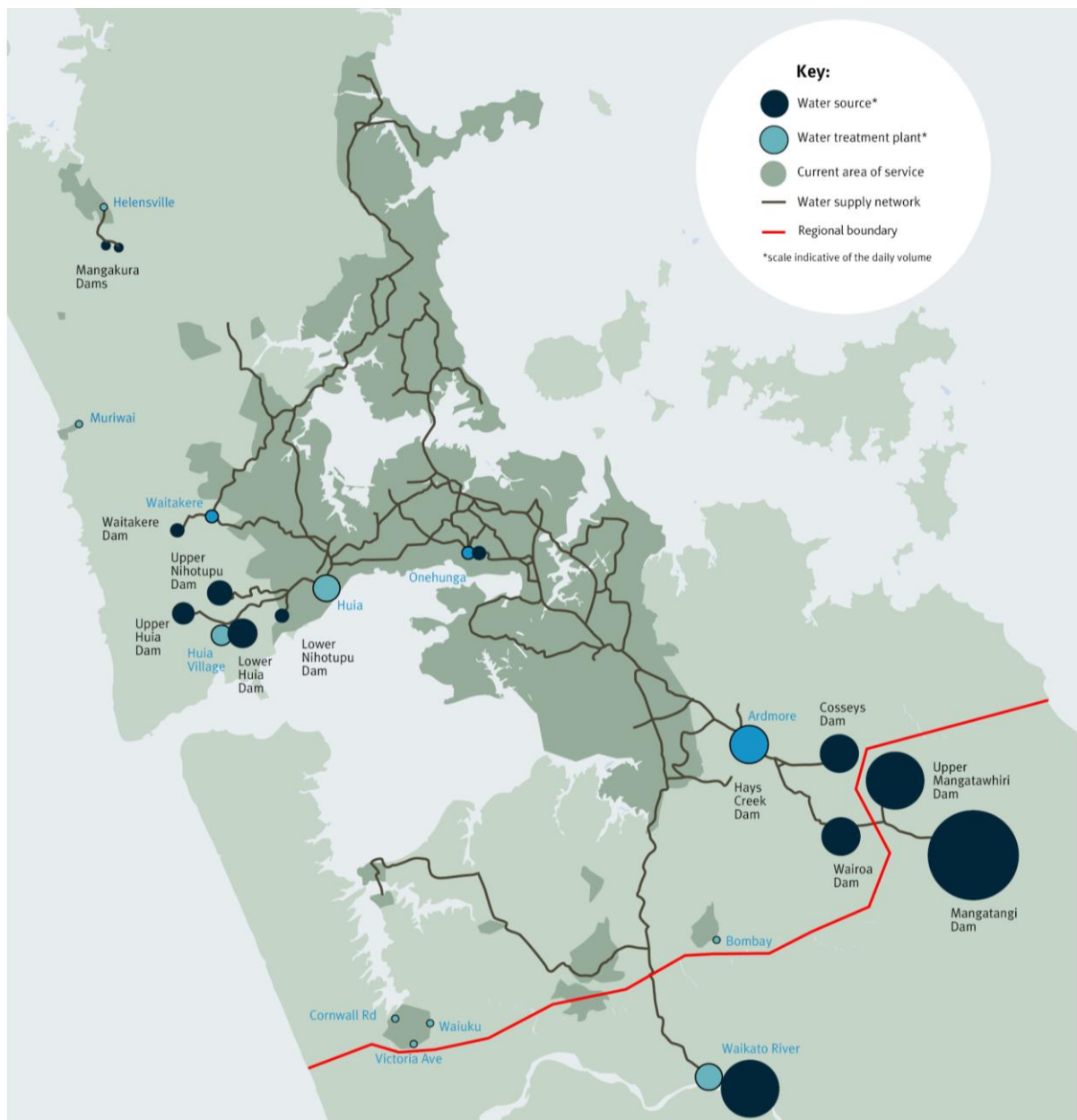
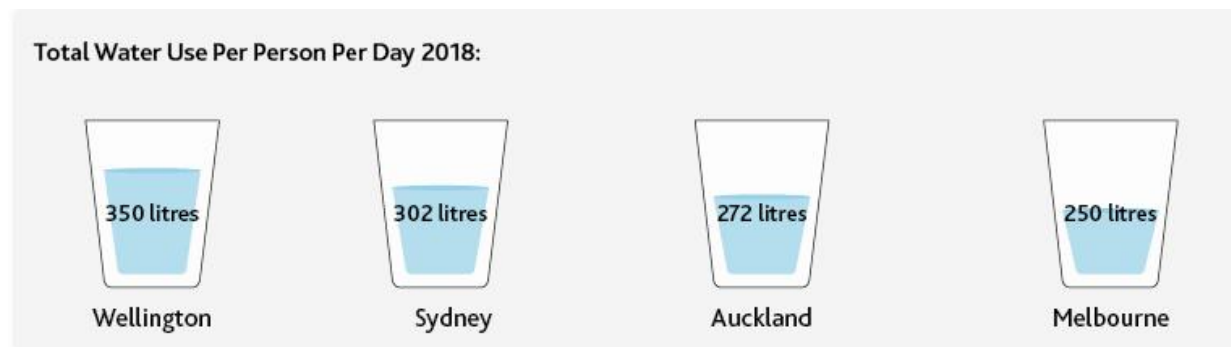


Figure iii: Most of our drinking water comes from sources in the Waikato Region.

## CASE STUDY

In March 2017, the Tasman Tempest dumped a record amount of rain on Tāmaki Makaurau, peaking at two months' worth in only 12 hours. The rain caused massive slips in the Hunua Ranges and filled the dams with silt. The Ardmore treatment plant had to work a lot harder to get the water up to drinking quality. Aucklanders were asked to cut down their water use by 20 litres a day. Watercare was able to draw on other dams to continue supplying safe drinking water. Watercare is now looking at ways to reduce slips including planting native trees, and treatment technology to handle more silt from future storm events.



### How our water is used

Watercare supplies around 365 million litres of water every day, for use in homes and businesses. That works out to 272 litres per person per day, down 26 litres since 2004.

More than half of that water is used in homes. At 160 litres per person per day, we have the lowest per capita residential water use in Aotearoa.<sup>1</sup> Volumetric charging (paying for water based on the amount that is used) encourages us to be efficient. It also helps us to quickly detect when something's gone wrong, like a broken or leaking pipe.

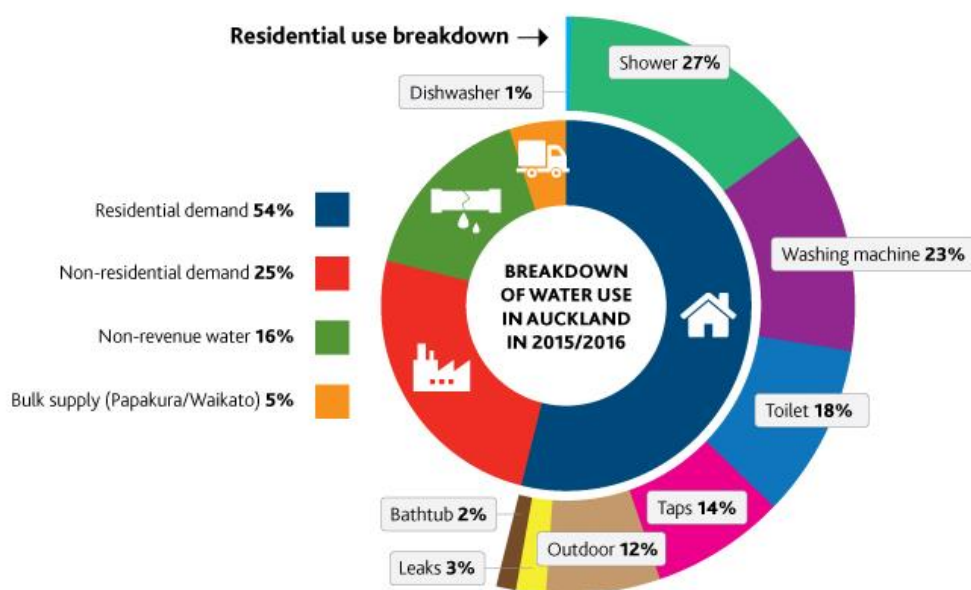
About a quarter of our reticulated water supply is used by the commercial sector. Some industries are particularly water intensive, including beverages, food and other manufacturing activities.

### Where our water goes

We also use water to transport our sewage, as wastewater. The mauri of wastewater is diminished. If it mixes with other waters, it can pollute the mauri of those waters too.

Keeping untreated wastewater out of waterways is an important objective. This is especially so for our ecosystem, and recreation and amenity values (this is discussed further on in this document).

Before waterborne sanitation was introduced, Aucklanders used cesspits and night-soil carts. Because of this, residents suffered from regular outbreaks of typhoid and other infectious diseases. The first sewerage system was completed in 1914 and was an important milestone for public health (even if it simply moved the problem elsewhere – more on that on page 31).



<sup>1</sup> 2016 Water New Zealand performance review

## Treatment plants today

Today, 18 treatment plants discharge around 450 million litres of treated water each day. The flow from the largest plant at Māngere is comparable to some of our bigger rivers.

Significant upgrades to treatment plants have greatly improved the standard of wastewater treatment. As well as removing solids and biological nutrients, Māngere's treatment processes result in a 10,000-fold reduction in harmful pathogens, bacteria and viruses. The final effluent meets standards that protect public health, the local environment, and coasts, estuaries and harbours.

## CASE STUDY

Wastewater is now being valued as a source of energy and reusable products. Water reuse at the Māngere and Rosedale treatment plants means we don't need to use high quality drinking water for this low-grade purpose. We save enough drinking water to supply 156,000 Aucklanders every year. The plants also generate energy from biogas to power themselves (56 per cent of Māngere's energy needs, and 74 per cent for Rosedale). The goal: to run the Māngere and Rosedale plants on self-generated energy by 2025

## Future challenges and opportunities

We expect that population growth will drive demand for safe, reliable drinking water beyond supply by 2050. We will need to have new solutions in place. We currently have limited prospects for increasing either supply or storage within our regional boundaries. It is likely that we will need to use a mixture of

tools to meet our urban and rural water needs, including managing our demand and securing new sources. We come back to this in 'Meeting Future Water Needs' on page 38.

The wastewater network and plants are also going to approach their design capacity. We can add further capacity, and need to think about the best ways to do this.

As our city grows, decisions about where and how this growth happens can have a big influence on how easy or expensive it is to provide water services. Getting water and wastewater to where we need it to go relies on infrastructure which is expensive to build, maintain and operate. We come back to this in 'Growth in the Right Places' on page 37.

We will also need to ensure that our current water sources remain fit to drink from, especially from smaller-scale bores and rural water takes. As groundwater allocations reach their limits in some places, we need to ensure farmers and growers are able to meet their water needs. They need to continue their important contribution to the economy and food systems of Tāmaki Makaurau. This includes thinking about how allocation is fairly managed, for example between existing and new activities.

## FAST FACT

By being water efficient, Aucklanders have managed to defer the need for another water source by five years. Water efficiency gains by 2025 will buy us another five years.





*Mangere wastewater treatment plant.*

### What we need to work on

This value connects to the following big issues and processes, that we discuss later in the document:

- meeting future water needs (p. 38)
- adapting to a changing water future (p. 39)
- setting priorities for investment. (p. 43)

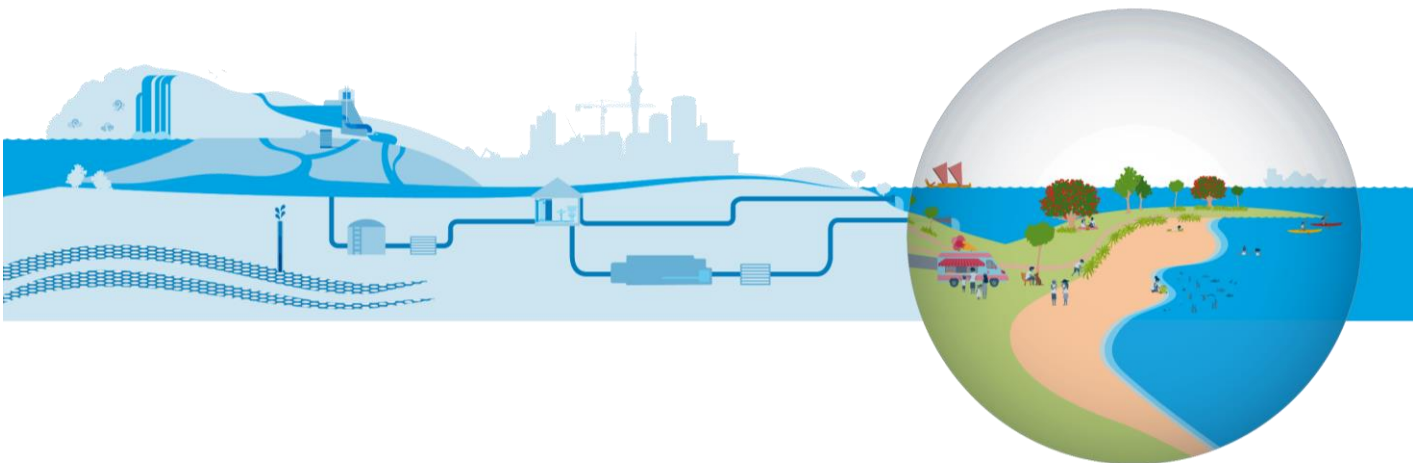
### Learn more

[Auckland water efficiency strategy](#)

### Take action

An undetected leak can waste thousands of litres of water. Fix dripping taps and check under appliances for leaks. Watercare provides advice to help households and workplaces save water [on their website](#).





## Recreation and amenity

**What we value:** We enjoy being in, on and near the water

Spending time in or around water is one of the benefits of being an Aucklander: we are never more than 20 kilometres from the coast. The recreational possibilities and amenity value of our beaches, harbours, lakes and streams are highly prized. They enhance our place as one of the world's most desirable cities to live.

### Current state

#### Access

The waters of Tāmaki Makaurau are very actively used for recreation. Popular spots like Piha and Long Bay receive more than 10,000 visitors a day at peak times. Some of our recreational spots, like the west coast lakes, are also highly sensitive natural environments. There is a challenge to manage demand without undermining the very qualities that visitors enjoy.

To help people enjoy the water, the council provides facilities like boat ramps, jetties and



carparks. To help people stay safe, we support essential services such as Surf Lifesaving and the Auckland Rescue Helicopter. The council's community facilities delivered 400,000 swimming lessons last year.

#### Public health

Sometimes water gets contaminated with human and animal wastes. This can make people sick, and is a source of considerable public concern. Some of this we can fix (like

broken sewer pipes and under-performing onsite wastewater systems), and some (like bird droppings) we cannot.

### CASE STUDY

Some older areas of the city were built with combined stormwater and wastewater services (only two per cent of the serviced area). The Central Interceptor and Western Isthmus water quality improvement project will help with wet weather overflows.

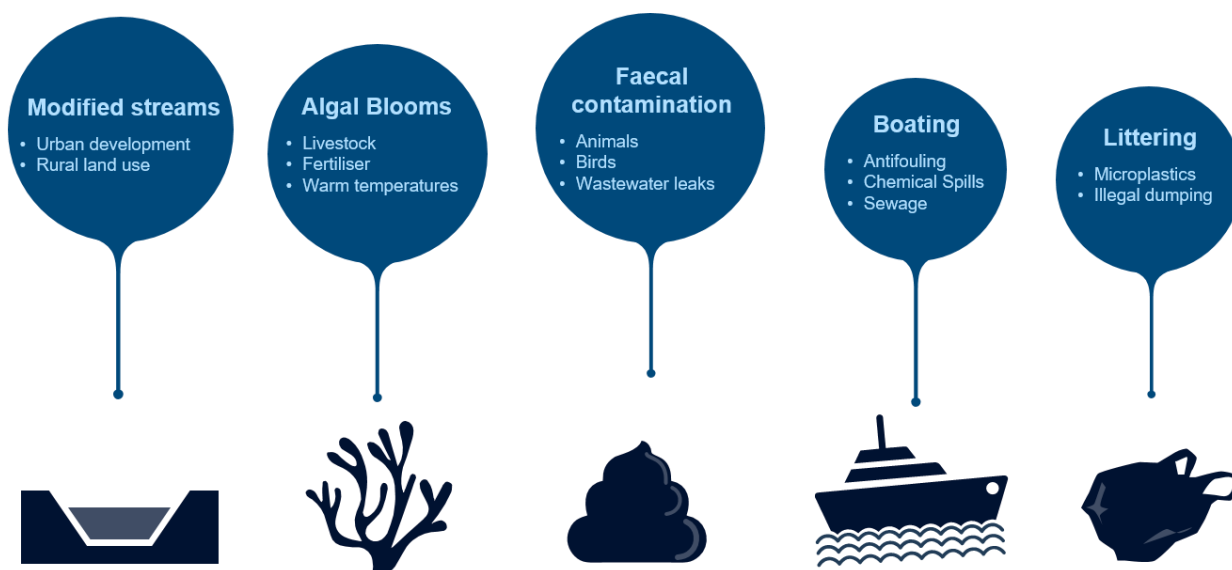
New technology and better information makes it possible to detect and improve small-scale wastewater issues too, such as broken pipes and leaks.

Safeswim has been developed to help people make informed choices about where and when they swim. This is a partnership project with Surf Lifesaving Northern Region and the Auckland Regional Public Health Service.

Data from sensors on the wastewater network is combined with predictive modelling to provide the public with the best real-time information possible. Safeswim also allows Aucklanders to monitor progress towards our target of more swimmable days and better public health.

### CASE STUDY

In 2018, the council and community of Clarks Beach banded together to find and fix the sources of contamination that were polluting their beach. Locals regularly collected water samples to feed into Safeswim. The causes of pollution are being traced, and the long-term alert on the beach has been lifted



*Sources of contamination that affect recreation*

## Amenity and connection

In urban and suburban areas, we are working to make hidden waterways visible again. Daylighting and naturalising our streams, providing pre-treatment for stormwater, and building boardwalks along esplanades are great ways to reconnect our communities with their natural environment. They are examples of mauri-enhancing actions.

## Future challenges and opportunities

As our population increases, it will be important to maintain recreational and amenity opportunities for all Aucklanders. It will also be important to manage increased demand for recreational use of waterways, beaches and the associated public facilities like boat ramps. Growth in tourism could add to these pressures such as hosting more visiting cruise ships.

More urban development will put further pressure on the health of our waters, and have an effect on their recreational and amenity values.

Climate change, coastal inundation and more severe storm events are likely to undermine access to water for recreation. Already-sensitive environments will become more vulnerable to the impacts of visitors.

### FAST FACT

Since they began in 2002, volunteers of the Watercare Harbour Clean Up have collected 38 million pieces of litter from our waterways.



*Microplastics found on the beaches of Tāmaki Makaurau*

## What we need to work on

This value connects to the following big issues and processes, that we discuss later in the document:

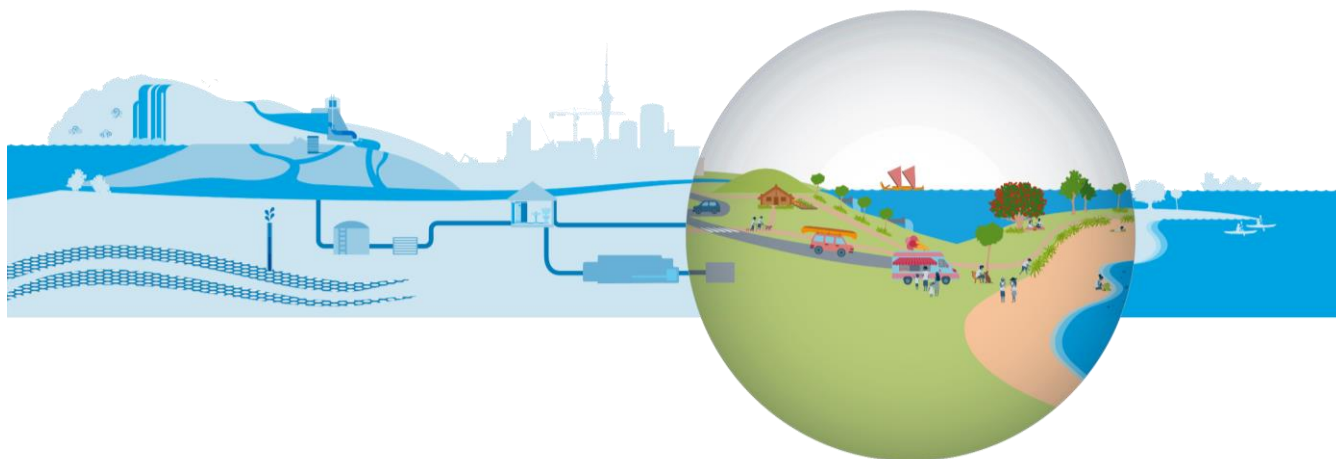
- cleaning up our waters (p. 36).
- creating our water future together (p. 42).

## Learn more

[Safeswim website](#)

## Take action

Think before you flush things down the drain. In 2016, around half of the wastewater overflows in dry weather were caused by people flushing rubbish down the toilet and pouring cooking fats, oils and grease down the sink.



## Culture

### What we value: Water contributes to our identities and beliefs, as individuals and as part of communities

For the many cultures that are part of Tāmaki Makaurau, our waters add to our vitality and identity. They allow us to express our traditions. Being able to connect with water in places that are special to us, whether that's through swimming, surfing, fishing or gathering shellfish, is part of what makes us an Aucklander. It's also what we like to share with our visitors.

Our cultural attitudes shape how we value and use water. If healthy waterways are valued within our culture, we will place a higher priority on their protection.

Water holds particularly special cultural value to Māori. Mana whenua are iwi and hapū who have a genealogical relationship (whakapapa) to significant local waters. They have an obligation as kaitiaki to protect them as taonga tuku iho (treasures to be passed down to future generations).

### Current state

Population increase, sedimentation and pollution have all had an impact on the cultural value of water, over a long duration. Water with degraded mauri reduces the quality of our experience. Swimming at a

litter-strewn beach, or fishing in murky water diminishes our cultural wellbeing.

This has adversely affected mana whenua and their ability to exercise manaakitanga. Caring for guests is an important sign of mana (prestige and authority), and relies on gathering food from traditional harvesting grounds (mahinga kai).



*To Māori, all things are deemed to have mauri; people, fish, animals and birds, lands, seas, waterways and rivers.*



Initiatives in two of our harbours are bringing the cultural values of communities and mana whenua into decision-making processes:

- Sea Change – Tai Timu Tai Pari, a marine spatial plan and initiative for the health and sustainability of the Hauraki Gulf, with mana whenua views woven throughout all aspects of the plan.
- The Integrated Kaipara Harbour Management Group, created to ensure a healthy and productive Kaipara Harbour.

### FAST FACT

The sewerage system that was opened in 1914 helped to reduce the problem of typhoid and infectious diseases in the city. It also created new problems. The system fed to an above-ground wastewater pipeline that was built across Ōkahu Bay, against the wishes of the Ngāti Whātua Ōrākei iwi. It discharged raw sewage into the bay, polluting the shellfish beds, and turned the papakainga (village) into a swamp during heavy rain. The pipeline separated the people from their mahinga kai and contributed to a loss of mana for their hapū

### Future challenges and opportunities

Population growth and climate change could put further strain on the cultural values of water. These values include mana whenua's ability to gather kai from traditional food grounds.

Changing attitudes to water may play a big part in how we manage our water resources. Recognising significant natural features as a person in the eyes of the law could help to ensure the long-term protection and

restoration of significant water bodies. The Whanganui River is an example of this.

Tikanga codifies Māori values into traditional practices and customs, to ensure that the mauri of water is not degraded. Tikanga is commonly based on experience and learning that has been handed down through generations, and its practice can vary between iwi and hapū.

Treaty settlements are creating new co-governance and management arrangements with Iwi Authorities. These arrangements recognise Māori values as a fundamental driver for the sustainable management of natural resources.

### What we need to work on

This value links to the following big issues and processes, that we discuss later in the document:

- cleaning up our waters (p. 36)
- applying a Māori world view (p. 42).

### Learn more

[Sea Change Marine Spatial Plan](#)

### Take action

Consider what you can do to restore the mauri of the waters you love. Be mindful of how the effects of your actions might wash downstream to those waters (e.g. littering, and using stormwater drains for anything but rain).

Community groups welcome volunteers to clean up and replant local waterways – lists of community programmes are available on the council's website, [here](#) and [here](#).



## Resilience

### What we value: Our communities, catchments and coastlines are resilient to natural hazards and the impacts of climate change

We value resilience in our water systems, both natural and engineered. We want them to continue working through sudden shocks and more gradual shifts in conditions.

Tāmaki Makaurau is vulnerable to a range of hazards that can risk our safety and our daily lives. Intense storm events, coastal erosion, and localised floods remind us of this.

We value our ability to weather such events with the least possible disruption. When disruptions do happen, we value being able to recover quickly and effectively.

In some places, we have made the impact of natural hazards worse. We've done this by reclaiming coastal land, modifying landscapes, increasing impervious surfaces, and building in vulnerable locations.

Hazard events can be localised and frequent. Nearly every year, we will experience a damaging flood or other event somewhere in the region. This brings disruption to affected households and businesses. Some parts of Tāmaki Makaurau are more vulnerable than others.

### Current state

#### The hazards

Storms, flooding, coastal inundation and droughts, are natural processes. They only become hazards when they affect the things that we value. These things include property, infrastructure, and – most importantly – our safety.

### FAST FACT

Floods are the most frequent and costly natural disasters in Aotearoa. 137,000 buildings in Tāmaki Makaurau are prone to some form of flooding, of which 16,000 are at risk of flooding above floor level.



## CASE STUDY

Five days of unusually heavy rain in March 2017 flooded more than 300 properties. Trees fell, slips blocked many roads, and more than 2800 homes were left without power.

In New Lynn, debris washed downstream and blocked a major culvert under the Clark Street and Great North Road intersection. Stormwater overflowed the culvert and flooded local buildings and residences. The footpath and road collapsed into a very large sinkhole, and one multi-storey building was so damaged that it had to be demolished.

Major urgent repair works were an opportunity to make things better than before. The new and improved culvert has two levels, to cope with regular flows and flash flooding. Embracing water sensitive design, roadside plants are used to capture excess water and act as a 'biofilter' by catching contaminants before they enter the stormwater system.



### Water infrastructure

The resilience of our infrastructure is an important consideration. We want to avoid disruptions to essential services such as drinking water supply and wastewater disposal. Floods can make roads impassable, and pose direct threats to our safety. These can be localised problems or have region-wide consequences. This depends on where the hazard occurs and how quickly services can be reinstated.

### Communities

In the wake of the South Island earthquakes, we have learned a lot about the community dimensions of resilience, including the need for:

- **Connected communities.** Communities that are better connected to each other are better able to take care of each other in times of difficulty.

- **Informed choices.** Resilience requires that we are all able to make informed choices about risk. The council is working with scientists to develop robust data, such as flood mapping and coastal inundation and erosion studies. We need timely and effective ways to share that information with Aucklanders.

The five R's of Tāmaki Makaurau emergency management: Reduction, readiness, response, recovery, resilience.

### Future challenges and opportunities

Risks to resilience are expected to change over time. This is in part because natural systems are dynamic and ever-changing, and in part because of climate change. Sea level rise, changes in rainfall intensity and patterns,



and more storms will all intensify existing risks.

For example, predictions for losses from coastal erosion in different parts of the region range from 6m to 55m in the next 100 years. With sea-level rise, these predictions extend to 200m in some areas. These kinds of changes will have significant effects on the future of coastal properties and activities.



*Image: Tamaki Drive is closed up to eight times per year due to flooding when high tides and significant storms combine. King tides are an indicator of the effects of future sea level rise.*

### What we need to work on

This value connects to:

- adapting to a changing water future (p. 39)
- growth in the right places (p. 37)
- creating our water future together (p. 42)
- setting priorities for investment (p. 43).

### Learn more

Working together to build a resilient Auckland: Auckland Civil Defence and Emergency Management Group Plan; [Coastal Management Framework for Auckland](#)

### Take action

Have you checked the flood hazard maps for your property?

Keep drains and gutters clear of debris and pay attention to heavy rain warnings.

## CASE STUDY

Capetown's experience highlights how essential it is for our water systems to be resilient. A normally well-supplied city, severe drought dropped water storage levels close to the point where officials were counting down to when they would need to turn off the taps.

On 'Day Zero,' residents would only be able to collect 25 litres of water each from standpipes across the city. That drastic vision prompted residents to halve their water use, delaying Day Zero for now.

The city is pursuing further water efficiency and diversifying its water sources. The changes have come at significant economic and personal cost, but highlight the ability of communities to respond when they need to.

## The big issues: what we need to work on

### Ngā take nui: ngā mea hei mahi mā tātou

The challenges for each of the five values highlight just how much we need to do if we are going to protect and enhance te mauri o te wai o Tāmaki Makaurau.

As part of developing this discussion document, we talked with Councillors, local board members, the Mana Whenua Kaitiaki Forum and staff from across the council family.

We asked them, what the issues are that we need to tackle. We also looked at the submissions from the Long term Plan and Auckland Plan 2050 processes.

#### Focusing on the big issues

From those sources, we have distilled four big issues that we think are at the heart of our water future:

- **cleaning up our waters**
- **growth in the right places**
- **meeting future water needs**
- **adapting to a changing water future.**

These are challenging issues that we can't afford to ignore. None of them have a quick fix, and we don't yet have all the solutions that we need.

#### Making progress where it matters

We want to make sure that our work programmes are responsive to these big issues. We also want to make sure that we are always on the lookout for new opportunities to make progress. Developing an Auckland Water Strategy will help us to keep our focus where it needs to be.

We start to talk about the issues on the following pages, and suggest some lines of inquiry that we'd like to pursue as part of developing an Auckland Water Strategy.

We are proposing to work across the council and with mana whenua, stakeholders and the community to develop better understanding of the issues. We want to come up with options to move forward, and to implement the preferred approach. We'll also look to define goals and outcomes for each of the big issues. That way, we'll be able to evaluate whether we are making a difference.

**We are interested to hear your views about whether we have identified the right set of issues, and what kind of actions we should prioritise.**

## Cleaning up our waters

Our biggest ecological effects on water come from our activities on the land. Contaminants wash down through catchments and into our waterways. This disrupts ecosystems and damages mahinga kai. Faecal contamination from humans, animals and birds poses health risks for recreational use.

What do we need to do on the land, to clean up our waterways?

### A clear objective

Aucklanders want cleaner waters<sup>2</sup>. We want to be able to enjoy the water without risk of getting sick, and we want to get pollutants out of the waterways.

We want to restore the biodiversity of our natural waterways, and have confidence that our water infrastructure is providing reliable, clean drinking water.

### A long-term investment

Cleaning up our waters is going to take time and money, and there's a connection between the two. With more money we can move faster, with less it might take us longer to get to our goals.

Through the water targeted rate, we have committed an additional \$452 million over the next ten years to deliver cleaner harbours, beaches and streams. The money is funding programmes to improve stormwater systems, reduce wastewater overflows, and rehabilitate urban and rural streams.

This is going to enable us to achieve in a decade what we had originally anticipated would take 30 years, but this investment is only part of the solution: there is still more to be done.

### A targeted approach

The needs are going to be different across the region. It's going to take more effort to clean the waters in some areas compared to others.

We take a risk-based approach to deciding how we stage our investments, for example the places with the highest human health risk. How do we make these choices transparent, with a level of reassurance that the objective of cleaning our waters applies to the whole region, even if its implementation has to be staged?

### Our proposed actions

We would like to explore how we can move further, faster with cleaning up our waters. Some of the possibilities include better data-sharing, streamlining processes to encourage water sensitive design, identifying other sources of funds, and stepping up the effort to identify and fix sources of pollution.



*Image: Croftfield Wetlands, stormwater retention basin*

<sup>2</sup> Auckland Plan 2050 and Long-term plan consultations, 2018.



## Growth in the right places

Managing growth is the most pressing challenge for Tāmaki Makaurau. We need to provide for the housing, employment and social needs of our growing population, while meeting concerns about affordability and the environment. The impacts of growth on water are significant: whether we like it or not, human activity inevitably has effects on our waters.

What would growth look like if we made water – te mauri o te wai – the priority in our decision-making processes? And are there changes we can make to enable that kind of growth?

Our monitoring programmes tell us that water quality is usually best in the most remote and natural parts of the region. It is worst in the most urbanised areas, with a mixed picture in the rural and suburban areas in between.

### An opportunity to improve

If our goal is to improve te mauri o te wai, we think we need to do our best to protect the places where water is relatively healthy, and use growth as an opportunity to improve the impacts on areas that are already degraded.

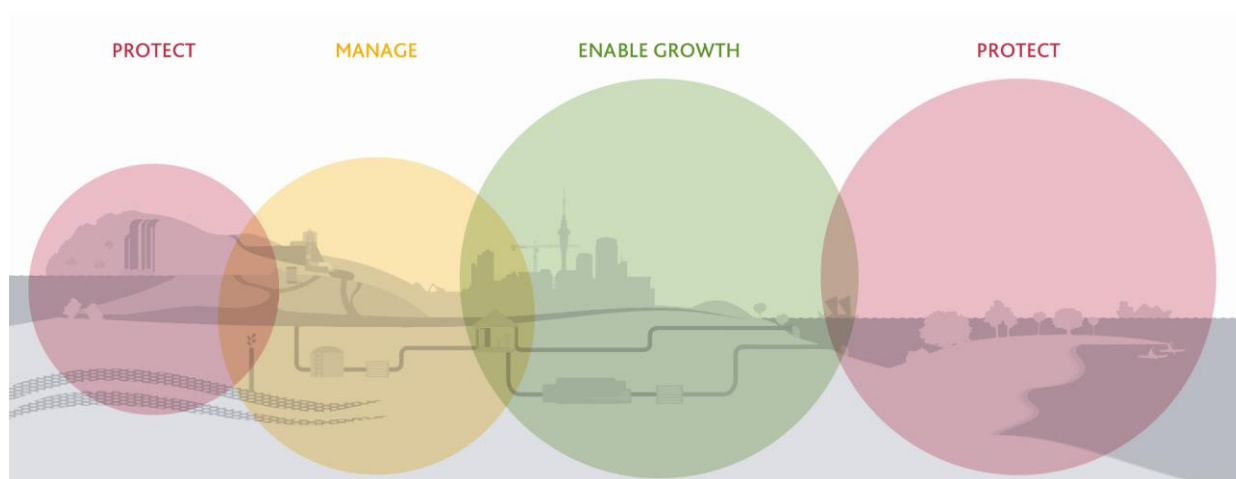
Redevelopment in our town centres is a good time to address some of our existing water problems, such as reducing flood hazards and improving stormwater capture and treatment.

It also helps us manage our infrastructure investments, concentrating demand in a smaller area.

This approach aligns with the compact urban form promoted in the Auckland Plan 2050 and the Auckland Unitary Plan. It also lines up with our transport objectives of increasing public transport patronage. The less time we are stuck in congestion, the less pollution will come from our cars, onto our roads and into the sea.

### Our proposed actions

We would like to look further at the tools that are needed to manage and enable growth in ways that will protect and enhance te mauri o te wai.



*How would we manage growth if te mauri o te wai was given priority?*



## Meeting future water needs

We need to ensure we continue to have enough water to meet our needs, for drinking, agriculture and industry, even as our population grows. We will also need to ensure we are fairly allocating the water we have, across the range of water demands. This includes making sure we leave enough water in streams and aquifers so they still have enough base flow to be healthy.

Where will our water come from by 2050?

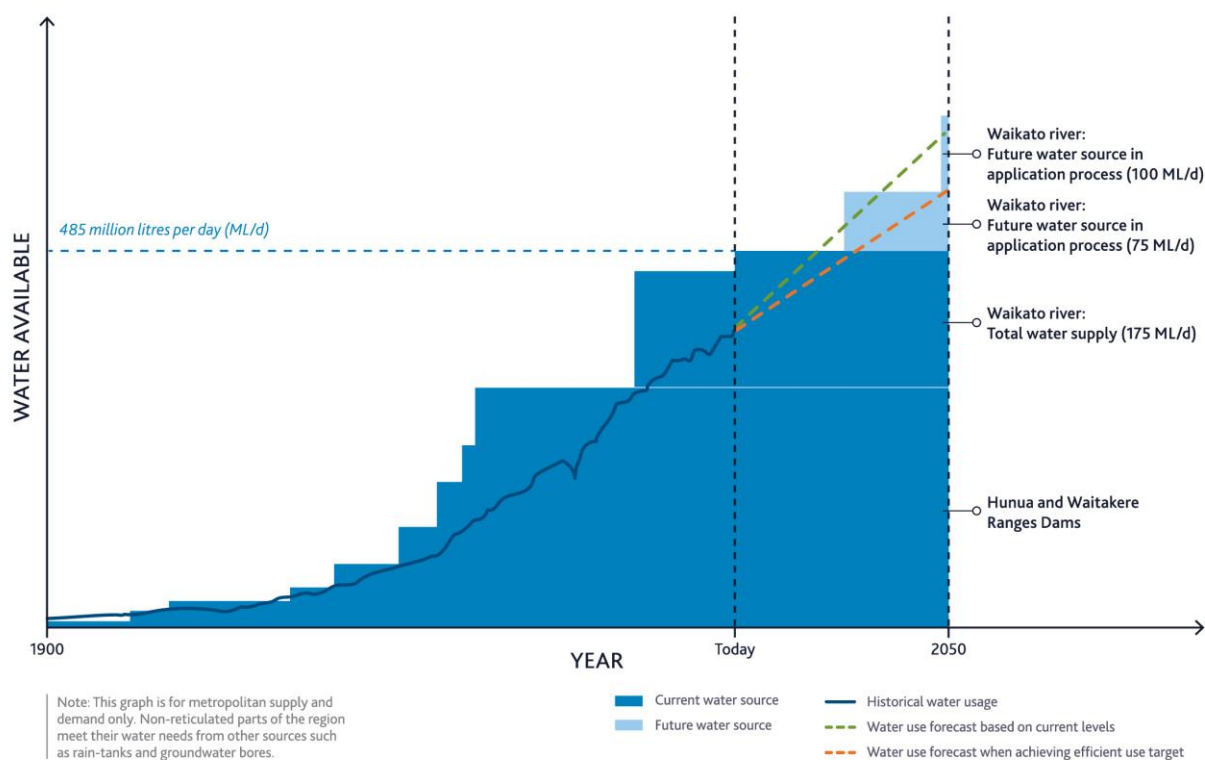
Freshwater is a scarce resource in Tāmaki Makaurau, even though it rains frequently. We have limited large rivers, lakes and groundwater resources in the region to draw water from, and we are becoming increasingly reliant on the Waikato region to meet our needs.

In urban areas, water demand is forecast to outstrip current supply within 10 years, prompting planned additions to our existing water supplies. This is expected to meet our urban supply needs until around 2050, or



*Water tanks come in all shapes and sizes*

## Water supply and demand in metropolitan Auckland



longer if we can be more efficient with our water use.

In the rural parts of Tāmaki Makaurau, we have a very limited understanding of how much water is being used. This is especially important for groundwater, because we think we are close to the limit of what we can sustainably take from aquifers in some parts of the region.

Large water users meter their takes (as part of their resource consent conditions), so we know that they aren't all using their full allocation. But, we don't monitor small-scale bores. We also know there are many illegal bores.

### Our proposed actions

We need to evaluate a range of options for meeting our future water needs. This includes making the most of what we already have, and potentially developing other new sources of supply. Because our supply options within the region are very limited, the solution is likely to be a mixture of some or all of the following:

- more efficient water use (demand management)
- rainwater collection and storage, from rain tanks to reservoirs
- other water sources in the region, such as aquifers and surface water takes from rivers
- water re-use for non-potable and potable purposes
- water sources from outside the region.

We would also like to improve our groundwater monitoring, so that we can better quantify demand and ensure our allocation systems are working and that our ecological effects are appropriately managed.

## Adapting to a changing water future

We know that conditions for our water future are changing, and that many of the changes – like droughts, flash flooding and coastal inundation – will be rapid and disruptive. We expect that effects will be felt unevenly across communities and different industry sectors, due to geography, socio-economic status, and the level of their water needs.

What can we do now, to anticipate the changes in our water future and be ready to adapt? How much additional capacity (redundancy) do we need to build into our systems, and how do we balance what is efficient today with what might be necessary tomorrow?

### A HIERARCHY OF RESPONSES

On the coast, there are four key approaches we can take: do nothing, protect, adapt, and retreat. Here are some examples:

- Do nothing: No measures put in place
- Protect: Building seawalls and planting dunes
- Adapt: Raising buildings to account for sea level rise
- Retreat: Moving back from the coast

Deciding what kind of approaches to take and where are not simple decisions. They require a balance between:

- technical feasibility
- affordability
- community expectations, and
- health and safety.

There is also a dimension of timing. Today's hotspots require urgent responses, but as the effects of climate change are felt, we can anticipate many more hotspots emerging. How do we ensure our existing communities are able to adapt, and how do we make sure that we're not still building in vulnerable places?

As is becoming evident nationally, it is not yet clear how the cost of adapting to a changing water future will be shared between affected individuals and communities. How should we prioritise our responses in Tāmaki Makaurau?

## Coastal Management Framework

The Coastal Management Framework was approved in 2017. It is a good basis for our thinking. It sets health and safety as a key consideration, then looks at whole systems to understand what changes might be needed. It sets a long-term horizon for change (100 years), and uses interim measures to work towards more durable solutions. It recognises that not all technical solutions will be suitable, or even possible, for all areas, and that what might work for ten to twenty years may need to change over the longer term.

## Our proposed actions

As the frequency and severity of hazard events increases, so will our need for a shared understanding of risks, responses and the allocation of responsibilities. We want to continue to develop this shared understanding with communities.



*Coastal erosion at Stanmore Bay*



## How we will work: applying a principles-based approach

### Ka pēhea ā tātou āhua mahi: he tikanga ā-mātāpono te āhua whakahaere mahi

We have a lot to do to make progress, both within the council and in partnership with mana whenua, stakeholders and communities. We are proposing the following six principles to guide us as we work:

1. **Recognise that water is a treasured taonga.** Water is life, and needs to be managed carefully to restore te mauri o te wai.
2. **Work with ecosystems.** Working with the natural environment, and mimicking its systems wherever possible is key to a water sensitive approach.
3. **Deliver catchment scale thinking and action.** The catchment is the best scale to think about water flows and uses, and the balance between different activities and effects.
4. **Focus on achieving right-sized solutions with multiple benefits.** Local variables will drive the fine-grained responses to our regional aspirations, with different solutions appropriate at different scales.
5. **Work together to plan and deliver better water outcomes.** We all have a stake in our water future. Engaging with mana whenua, communities, and across disciplines helps find durable and effective solutions.
6. **Look to the future.** Our planning and development takes future uncertainties into account, so that communities and infrastructure are future-proofed and resilient.

These proposed principles can be applied as we design and implement work programmes, and as we evaluate progress. This will help to ensure the details of how we work contribute to our vision and values.

*Note: the Urban Water Working Group has proposed a series of ten principles to support*

*improved urban water outcomes across Aotearoa. The principles broadly align with what we have proposed here. We will review the alignment when the draft national principles progress to a final approved version.*

#### POLLUTION PREVENTION

More than 1000 litres of purple dye was spilled into the Ōruarangi Stream in 2013, killing all the eels, fish and many of the oysters. The company responsible was fined \$103,000 plus \$25,000 court costs: a significant example of the polluter pays principle in action.

Mana whenua, as kaitiaki of the awa, are working proactively with the council to ensure such an accident isn't repeated. Through the Industry Pollution Prevention Programme they advise businesses on how to prevent contaminants entering waterways.

## Improving the way we work

We think that there are four key elements that we need to improve within our processes, to help us apply the principles in our work:

- applying a Māori world view
- creating our water future together
- setting priorities for investment
- achieving net benefits for catchments.

As with the four big issues, we will need to work across the council and with mana whenua, stakeholders and the community to identify steps we can take to improve our processes.

## Applying a Māori world view

Putting te mauri o te wai at the centre of our approach to water means that we must incorporate a Māori world view across all of the elements of our framework. So, how might a Māori world view shape our thinking and decision-making?

With advice from the Mana Whenua Kaitiaki Forum, we think there are three main issues:

- placing te mauri o te wai at the centre of decision making processes
- incorporating mātauranga Māori (Māori knowledge and expertise)
- providing for mana whenua in governance arrangements.

We would like to explore how we might increase opportunities for mana whenua to exercise their enduring kaitiaki role over the waters of Tāmaki Makaurau. It could include a range of opportunities, from co-governance arrangements to hands-on projects (some of which might be enabled through the council's social procurement policy).

## Creating our water future together

Achieving a healthy, sustainable and affordable water future for Tāmaki Makaurau will require energy and commitment from all of us.

From the decisions we make in our own homes and communities, through to the regional investment choices that we will need to make, we all have the opportunity to make a better water future for Tāmaki Makaurau.

There are a few things that we know work well already:

- engaging Aucklanders in their communities, about their local water issues
- empowering Aucklanders as citizen scientists
- working directly with industry, agriculture and other sector groups to support their leadership in water management
- ensuring we all take responsibility for our impacts, through pollution prevention and polluter pays programmes
- collaborating across teams within council and with central government agencies to ensure regulatory frameworks and practical projects are responsive to Aucklanders' needs.



*Community planting at Harbutt Reserve*



## Setting priorities for investment

Water needs to be affordable and accessible to everyone. At the same time, we have to be able to pay for our water systems. Put simply, we can't afford to do everything today.

When we do spend money, we need to make sure that our spending lines up with our objectives, and that we're getting value for money.

The next 30 years will require significant investment in our water infrastructure, for drinking water, wastewater and stormwater. Between now and 2048, we expect to have spent around \$35.7 billion on water infrastructure. Rapid growth, historic underinvestment in assets, and high levels of expectations from the community have created significant financial challenges for the council.

Even without the pressure of anticipated population growth, we must continue to maintain, renew and replace our current assets to meet communities' expectations. This needs to be balanced with the community's ability to pay for the significant investments that need to be made.

We would like to investigate whether taking a 'one water' view of the water system would enable clearer prioritisation of our investments. Are there technological innovations or opportunities for partnership that would allow us to get further faster?

## Achieving net benefits for catchments

Even with the best techniques, we can't avoid all water impacts from land-based activities. This means that we need practical ways to balance our choices so that, overall, our waterways end up better off than they started.

Looking at this picture at the catchment scale would allow us to understand where impacts are coming from and – when impacts can't be avoided or remedied on-site – how they can be mitigated or offset within a catchment.

For example, there may be opportunities to offset the impacts of new development by protecting significant environmental sites within the same catchment. This is about focusing our efforts on the activities that have the most impact on the whole catchment health.

We also need to look at the regional scale, and make decisions about the level of effect we can accommodate in different catchments. Te mauri o te wai is different in every catchment, with their own mix of impacts and abilities to absorb change (see Growth in the Right Places on Pg 38).

We would like to investigate practical methods to allow for decision-making at a catchment scale. These could include offset mitigation, environmental compensation schemes, and allocation and trading schemes.

Total projected expenditure by infrastructure type 2019 – 2048		
Infrastructure type	Capital expenditure	Operating expenditure
Water supply	\$7.7 Billion	\$10.7 Billion
Wastewater	\$11.6 Billion	\$18.0 Billion
Stormwater	\$6.1 Billion	\$7.0 Billion
Total water	\$25.4 Billion	\$35.7 Billion

Source: Infrastructure Strategy

## What happens next

### He aha ka whai muri ake

The council has decided to develop an Auckland Water Strategy. This discussion document is an early part of that process. It reflects the current state of thinking, and what we know about the issues for the waters of Tāmaki Makaurau.

We have proposed a framework to organise how we think and make decisions about water:

- **Our aspiration** is to protect and enhance te mauri o te wai – the life supporting qualities of water. This sits at the centre of our values and drives our decisions.
- **Five values.** We recognise that we value water for a range of reasons. We describe these in five categories, to help us understand how the current situation measures up to our values, and to hone in on the stressors that are having an impact.
- **Four big issues.** We identify four ‘big issues’ that define our water challenge. If we are to restore te mauri o te wai, we will need to address these issues.
- **Six principles.** We propose six principles that will guide our actions as we move forward with developing the proposed framework into a Water Strategy.
- **Four processes.** We also identify four elements that we need to work on in our processes, to support quality decisions.

We have focused on high-level values in this document – the spaces where we can find agreement and unify our vision. We would like to get some feedback and agree on a framework as a way of organising our approach to what we do next.

The next steps in developing a Water Strategy for Tāmaki Makaurau need to provide a line of sight, from vision to actions, to make sure what we are doing is going to build the future we aspire to. Defining outcomes, measures

and processes for transparent reporting on our progress will be an important part of this.

Now, we want to hear from you:

- Do these values match what you value about water? Please tell us why, and if there is anything else you value about water?
- How concerned are you about the ‘big issues’? Please tell us why, and what you think we can do now to anticipate and adapt to the changes in our water future?
- What criteria are important to you as we develop options to meet our future drinking water needs?
- What actions should we prioritise as we adapt to a changing water future?
- Do you have any feedback on the proposed framework, or is there anything else you think should be included?
- What’s the most important thing you think we should do for our water future?

You can give feedback online at [akhaveyoursay.nz](https://www.aucklandcouncil.govt.nz/ourwaterfuture). We are also running Have Your Say events across the region or you can fill out a submission form available at libraries, service centres and local board offices. Feedback must be received by 19 April 2019. We’ll take all the feedback to the Environment and Community Committee later this year, as part of shaping the next steps in developing an Auckland Water Strategy. To receive updates about this discussion, sign up at [aucklandcouncil.govt.nz/ourwaterfuture](https://www.aucklandcouncil.govt.nz/ourwaterfuture)

## Glossary

### Papakupu

**Amenity** The liveability or quality of a place that makes it pleasant and agreeable for individuals and the community.

**Aquifer** An underground layer of water-bearing rock or sand from which groundwater can be extracted.

**Asset** Natural or constructed features that are of value including natural assets such as waterways or constructed assets such as water storage reservoirs and pipelines.

**Biodiversity** The variety of life in a particular habitat or ecosystem including the totality of genes, species, and ecosystems.

**Catchment** Area of land in which rainfall drains toward a common stream, river, lake, or estuary.

**Groundwater** Water located beneath earth's surface in pore space (the space within a rock body that are not occupied by solid material) and fractures of rock formations.

**Hāpu** A number of whānau sharing descent from a common ancestor; kinship group, sub-tribe.

**Impervious Surface** Any surface that is covered by materials such as asphalt, concrete, stone, brick, metal, etc, through which water cannot penetrate. In the urban environment, roads, footpaths, roofs, carparks, and other constructed assets often create impervious surfaces.

**Infrastructure** The fixed, long-lived structures that facilitate the production of goods and services and underpin many aspects of quality of life. 'Infrastructure' refers to physical

networks, principally transport, water, energy, and communications.

**Iwi** A number of hapū (section of a tribe) related through a common ancestor.

**Kai** Food.

**Kaimoana** Seafood.

**Kaitiaki** Trustee, custodian, guardian.

**Kaitiakitanga** Guardianship, stewardship, trusteeship.

**Ki Uta Ki Tai** Conceptual term meaning 'from the mountains to the sea' or 'from ridge to reef'.

**Kotahitanga** Unity, togetherness, solidarity, collective action.

**Mahinga Kai** Food gathering place (rivers, bush, sea, gardens etc.).

**Mana whenua** Hapū and iwi with ancestral relationships to certain areas in Tāmaki Makaurau where they exercise customary authority.

**Manaakitanga** The process of showing respect, hospitality, generosity and care for others.

**Manuhiri** Visitor, guest.

**Mauri** Life principle, life force, vital essence. The essential quality and vitality of a being or entity.

**Natural Areas** Places characterised by indigenous species or ecosystems, or a place or landform not or scarcely modified from an indigenous condition.

**Non-residential water use** Water used for industrial, commercial, institutional purposes and for irrigating public parks, gardens, and sports fields.

**Nutrients** Mineral elements absorbed by plants for nourishment. Excess nutrients in wastewater can lead to algal growth that impact on the environment and water quality.

**Rain garden** Specially designed systems to filter stormwater through soil mix and plants. These absorb and filter contaminants before stormwater flows to surrounding ground, pipes, drains and streams, and eventually to the sea.

**Rain tanks** On site storage used to collect and store rainfall runoff from roofs.

**Runoff** The portion of rainfall which runs off the land and into the drainage system and overland flow path.

**Sewage** Wastewater produced as a result of residential and non-residential uses of water that needs to be collected for treatment before further use or discharge to the environment.

**Sewerage** The system of pipes and treatment works to collect and safely dispose of sewage effluent.

**Stormwater** Rainfall runoff from land, including constructed impervious areas such as roads, pavement, roofs and urban areas which may contain dissolved or entrained contaminants, and which is diverted and discharged to land and water.

**Tāmaki Makaurau** The Māori name for Auckland. Translates to Tāmaki desired by many.

**Taonga** A treasured item, tangible or intangible.

**Taonga tuku iho** A treasure passed down through the generations, either tangible (e.g. whenua) or intangible (e.g. Te Reo Māori).

**Te ao Māori** The Māori world view.

**Three Waters** Water services for water supply, wastewater, and stormwater; including both natural assets and physical infrastructure.

**Tikanga** Correct procedure, custom, lore, method, way, plan, practice, convention, protocol. The customary system of values and practices that have developed over time and are deeply embedded in the social context.

**Wai** Water.

**Wastewater** Liquid (and liquids containing solids) waste from domestic, industrial, commercial premises including (but not limited to) toilet wastes, sullage, trade wastes and gross solids.

**Water efficiency** Using the minimum amount of water possible without compromising the desired outcome or the liveability of our city and region.

**Water sensitive urban design** A range of measures that are designed to minimise environmental impacts of urbanisation. These encompass stormwater treatment systems, such as wetlands and raingardens, as well as water saving and water harvesting systems (for example, rainwater tanks).

**Water quality** The physical, chemical and biological characteristics of water in relation to a set of standards.

**Wetland** Permanently or intermittently wet areas, shallow water, and land water margins that support a natural ecosystem of plants and animals that are adapted to wet conditions.

**Whakapapa** Genealogy, lineage, descent.







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