Developing a regional, 30-year pathway for three waters investment

Pre-reading for Wellington Water Committee workshop

13 September 2021

Wellington Water

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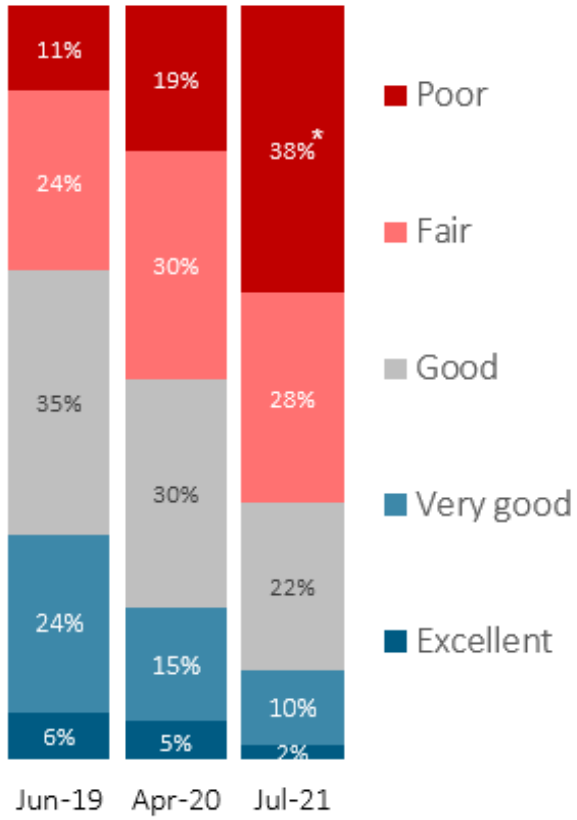
Why develop a 30-year view?

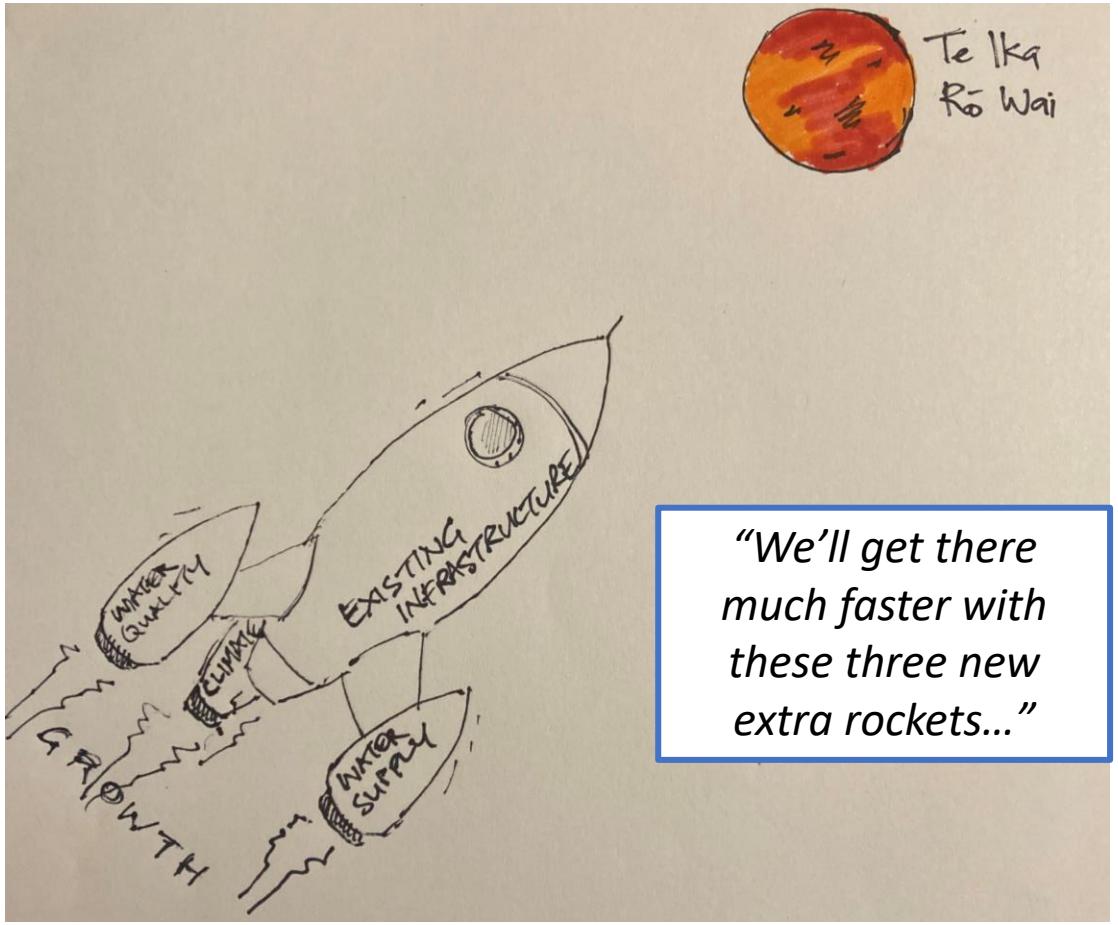


Our annual customer survey asks people how they rate us on planning for the region's growth and future needs

- Customer surveys show that people want to know more about our plans for water management in the region. It's not just our region – the same interest shows up in other areas too.
- The three waters services in the region are consistently being portrayed as negative examples of management and investment. This plan will help to re-frame that perception and re-build confidence.
- You have already responded to renewal issues with a significant increase in investment. There are still some big challenges coming towards us in the next three decades that the community is concerned about, such as water quality, supporting growth, and responding to climate change.
- Developing a 30-year view towards the community's long-term aspirations for the way we live with water builds on the work done for your long-term plans, and invites a conversation on the direction to address these challenges (regardless of water reform outcomes).

Purpose of the 13 September workshop

- The workshop is the first step towards the release of a public discussion document, envisaged for early 2022.
- In this workshop we will discuss and agree the regional investment direction & key milestones for the next 30 years. This paper provides a summary of the issues and potential responses to help get the conversation started.
- We also want to identify and discuss the implications of this direction for councils and customers.
- The workshop will focus on the transformational challenges – water supply, water quality and climate change. The need for renewal and maintenance of existing assets is assumed to be a 'given' and these challenges will all need to be accounted for as we enable the expected population growth.
- We will consolidate your feedback and bring a draft document to your November meeting for approval.



The region's strategic priorities have launched us on the journey towards our objective: Te ika Rō Wai – balance between people, water and the environment

Where we are headed

The quality of our freshwater and coastal environments has become a very important topic for our communities and mana whenua. Their desire for improved water quality has resulted in expectations being set at the national level through the concept of Te Mana o te Wai and in the National Policy Statement on Freshwater Management (NPS-FM). Restoring the quality of the water to levels they aspire to will likely be a decades long journey, but the long-lived nature of infrastructure assets means that the decisions and investments we make over the coming 30 years will be pivotal to whether and when we get there.

Mana whenua's aspirations…

When the right balance is achieved between the environment and people, the mana and mauri of water will be restored to its natural state.

This future state is reflected in the phrase Te Ika Rō Wai.

The Wellington region is at the head of Te Ika a Maui (North Island) and so this name refers to the purity of water within Maui's fish's head. This both reflects and requires a healthy environment.

…are our community's aspirations

The NPS-FM and the mandates for Taumata Arowai and the new water service entities seek to give effect to **Te Mana o te Wai**:

"…a concept that refers to the fundamental importance of water and recognises that protecting the health of freshwater protects the health and well-being of the wider environment. It protects the mauri of the wai.

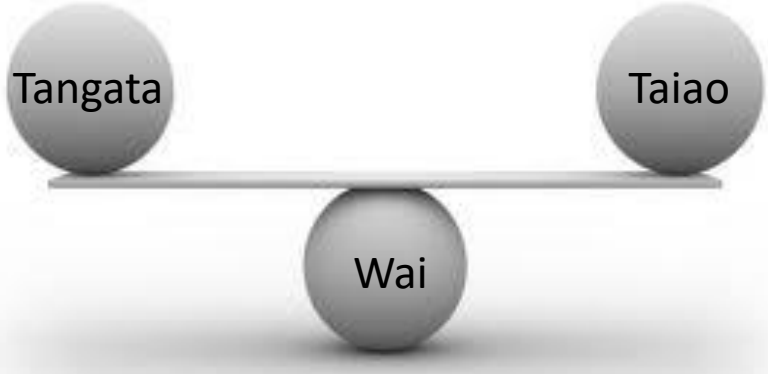
Te Mana o te Wai is about restoring and preserving the balance between the water, the wider environment, and the community"

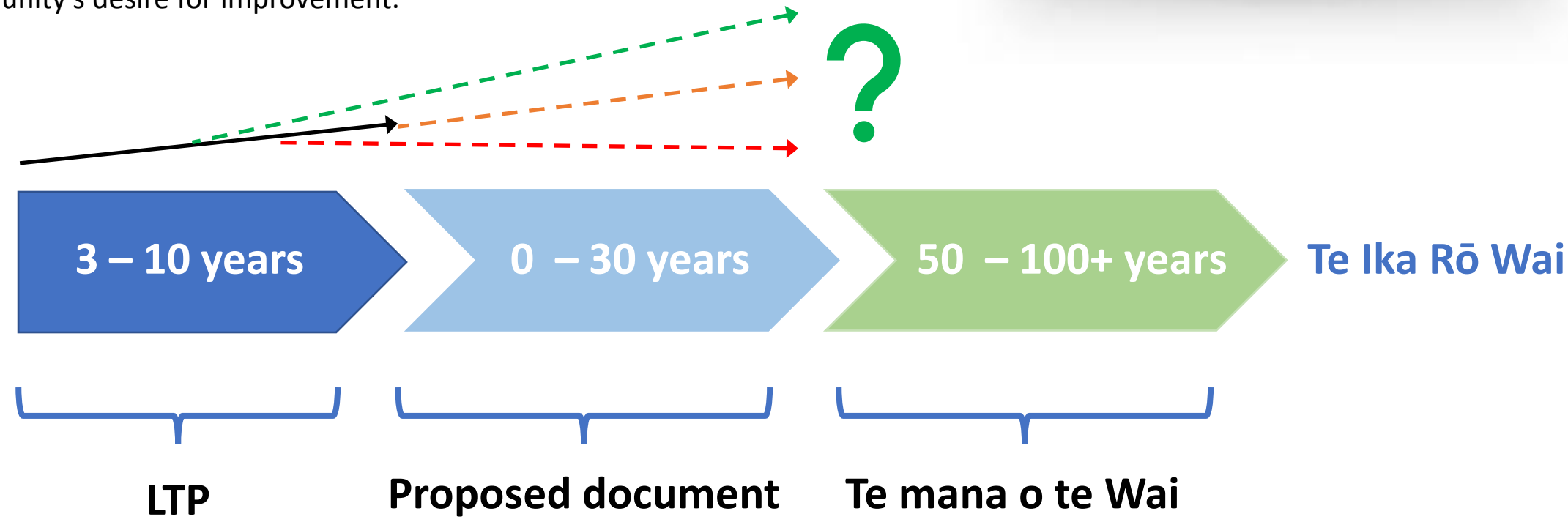
If we care for the water, the water will care for us

Where this 30-year view fits

Looking to the long-term,
without being trapped by the short term

While the 2021/31 LTPs have seen a significant uplift in three waters investment, financial constraints limited the ability to invest in regional strategic priorities. The 30-year view can look beyond these constraints to reflect increased investment capability and the community's desire for improvement.





Success will require us to go beyond the status quo

While the existing services have been excellent for providing reliable and safe services for customers:

- Per capita water demand has increased, and now sits well above benchmark levels, putting pressure on our freshwater sources
- The quality of our freshwater and harbours is typically at very low grades for e-coli and other environmental parameters
- Our carbon emissions are increasing.

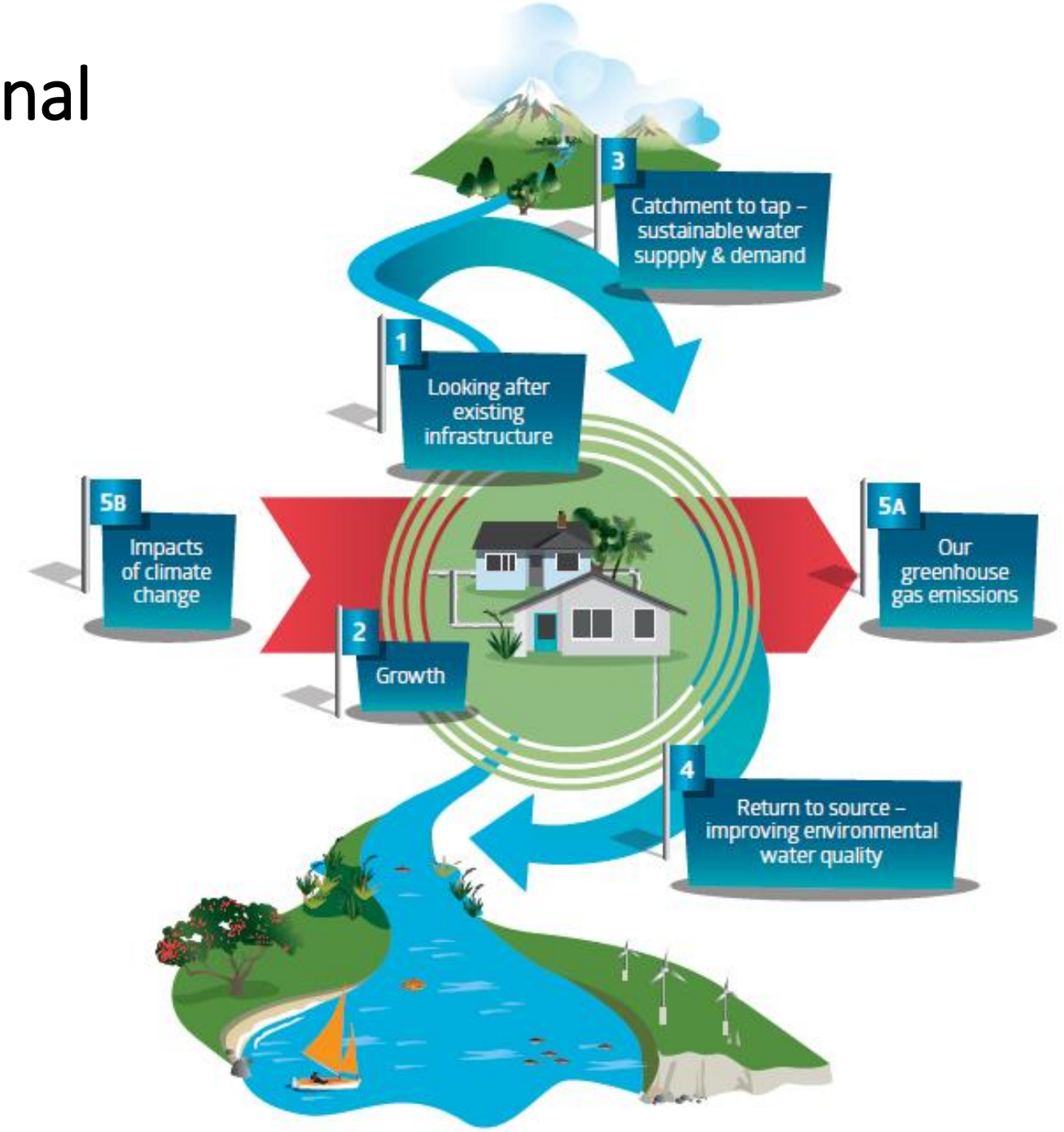
This, together with the magnifying impact of growth is taking us away from, rather than towards Te Ika Rō Wai. We need to make some transformational changes to the way the services are delivered if we are going to change the direction of travel.

A reminder of our regional investment priorities

Over the past three years we have worked with you and our customers to identify the regional, strategic issues that we need to address if we are to provide sustainable services into the future. These regional priorities informed our LTP advice and will require significant further investment over the coming 30 years.

They are also strongly interconnected. For example, the poor quality of the existing infrastructure increases the loss of water from the network, increasing both the demand for water and the carbon emissions from our operations.

This interconnectedness also means we need to think about the services in an integrated manner, and at the catchment level:
“ki uta ki tai”, from mountains to sea.



Looking after existing infrastructure – the issues

Getting infrastructure renewal rates right is key to delivering reliable customer service

Providing safe and reliable core services is our customers' top priority, but:

- asset age is increasing, with around 25% of pipes at or past nominal end-of-life and more than half requiring replacement within the coming 30 years
- asset condition is deteriorating, and is often worse than its age would normally suggest
- aged, poor condition assets fail more often and increase operating costs
- poor condition assets also reduce our ability to deliver on our other strategic priorities – increasing leaks, limiting growth, and reducing resilience.

Moving towards Te Ika Rō Wai

Achieving balance between people, the water and the environment requires us to:

- Reduce leaks and losses
- Deliver reliable services efficiently, for current and future customers
- Help customers to look after both the services and the water itself.

By 30 years' time we need to:

- Have cleared the backlog of deferred renewals
- Understand the condition of all of our assets and use this to optimise maintenance and renewal decisions
- Be demonstrating optimal asset management practice
- Show performance for leaks, blockages, reliability/availability and cost consistent with industry benchmarks

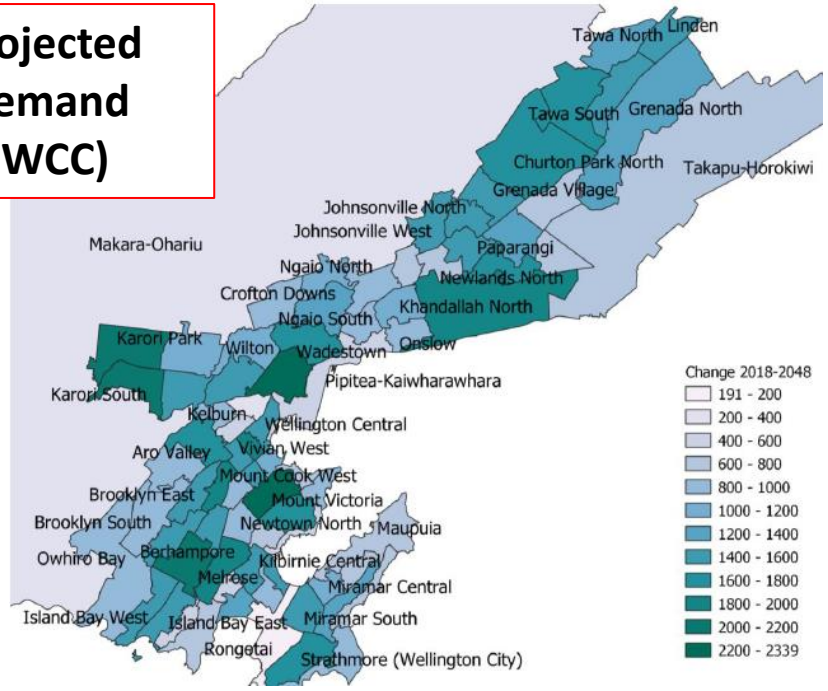
Investment direction

The investment formula for Looking After Existing Infrastructure is straightforward:

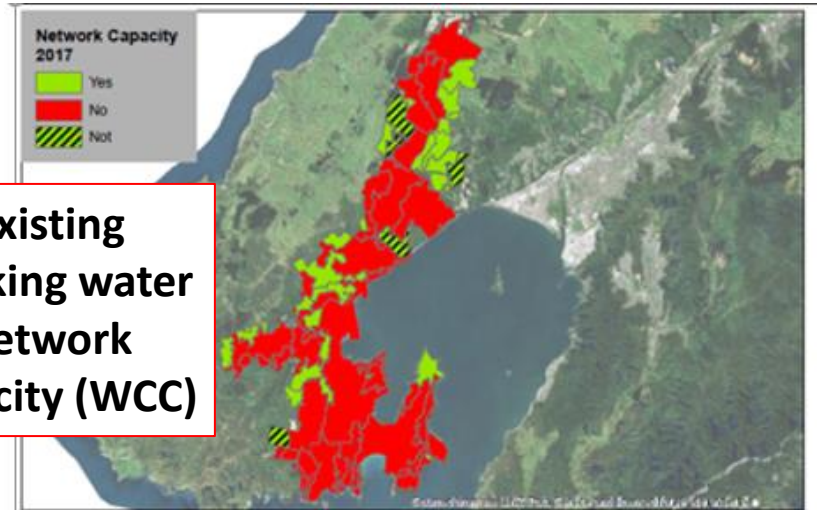
- Increase the rate of renewals to 2-3x current (i.e. already increased) and then sustain at a rate consistent with condition-based requirements
- Expand the extent of asset condition assessment to encompass all asset classes and criticality
- Increased planned maintenance activities to the optimal level (relative to costs for loss of service)
- Continue and complete development of asset management system, including data and analytics
- Expand monitoring, sensing and controls to enable optimised operations and maintenance (i.e. "smart water networks")
- Incorporate growth and resilience requirements into renewal investments.

Enabling growth – the issues

Projected demand (WCC)



Existing drinking water network capacity (WCC)



Our water services exist to serve people, and the extent of the services must grow as the number of people living in our towns and cities increases, but:

- the regional population is forecast to grow by up to 150,000 people
- many of the existing networks are already at or close to capacity
- District Plans enable growth in areas with inadequate infrastructure
- the last major change to network configuration was the addition of wastewater treatment plants in the 1990s
- growth increases the demand for (scarce) water and adds to water quality impacts
- District Plans and other policy levers provide little or no incentive for customers to adjust behaviour to reduce demand on the services

Moving towards Te Ika Rō Wai – growth

Achieving balance between people, the water and the environment requires us to:

- Ensure water is used efficiently from the start
- Keep water in, or return it to its natural state
- Adopt integrated approaches – ki uta ki tai – that enhance the catchment where possible
- Realise the social and cultural benefits of naturally-flowing water (such as mahinga kai, contact, access, amenity, etc.)

By 30 years' time we need to:

- be investing in infrastructure ahead of demand at all scales (i.e. bulk, catchment, and local network)
- be coordinating land-use planning and infrastructure planning
- be requiring design standards, and encouraging behaviours, that minimise impacts on water, the environment and the services, including in District Plans
- have all new connections be 'fault-less' and completed to agreed standards

Investment direction

Achieving growth and Te Mana o te Wai outcomes together is about both investing appropriately and setting appropriate requirements for land use and development.

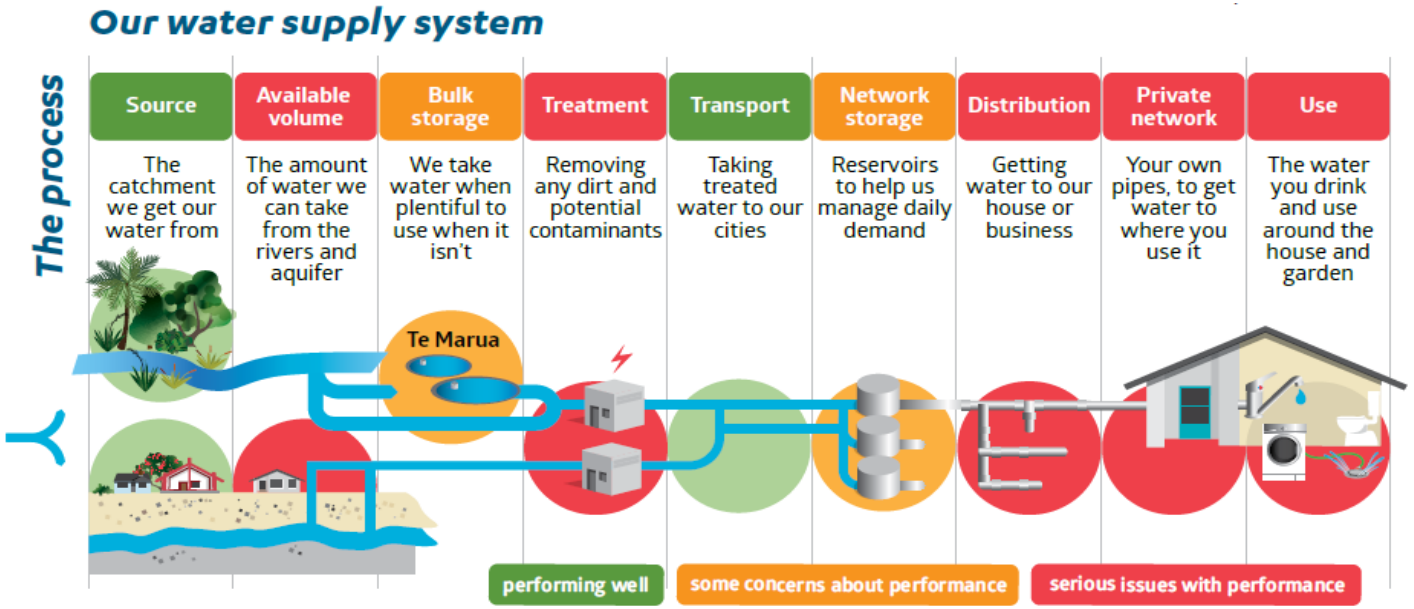
For ***investment***, the key will be seeing growth as an opportunity for regeneration, innovation and change:

- Complete investment in, and enable council-prioritised growth areas. Requires at least a 4-5-fold increase above currently funded levels.
- Complete bulk, trunk and local network plans to enable council-prioritised growth areas (including the supporting hydraulic and network models) to enable optimised investment

For ***land use and development***:

- District Plans, policies, codes of practice, bylaws and compliance practices all revised to mandate water sensitive practice and to enable and incentivise behaviour change (including through charging practices)
- Regional Standard for Water Services adopted across the region and revised to support achievement of the strategic priorities.

Sustainable water supply and demand – the issues



Our water supply system starts at our catchments and runs all the way through to our customers' taps.

We need to ensure people have enough water when they need it, while also leaving enough water to sustain the freshwater ecosystems we take it from.

This involves activities that both enable sufficient supply and ensure it is supplied and used efficiently.

Our existing system is close to its limits and under increasing pressure:

- The growing population is increasing the demand for water
- Our major water source, Te Awa Kairangi is over-allocated and it is expected that we will be required to reduce the amount of water we take from it in the summer
- Leaks from our ageing pipes is increasing, and exceeds industry good practice benchmarks
- The region's water use is high compared to both national and international benchmarks
- Climate change will increase water supply variability, and the supply of water is one of our most significant emissions sources
- We, and our customers have limited information about how much water is being used, and where

Moving towards Te Ika Rō Wai – sustainable water

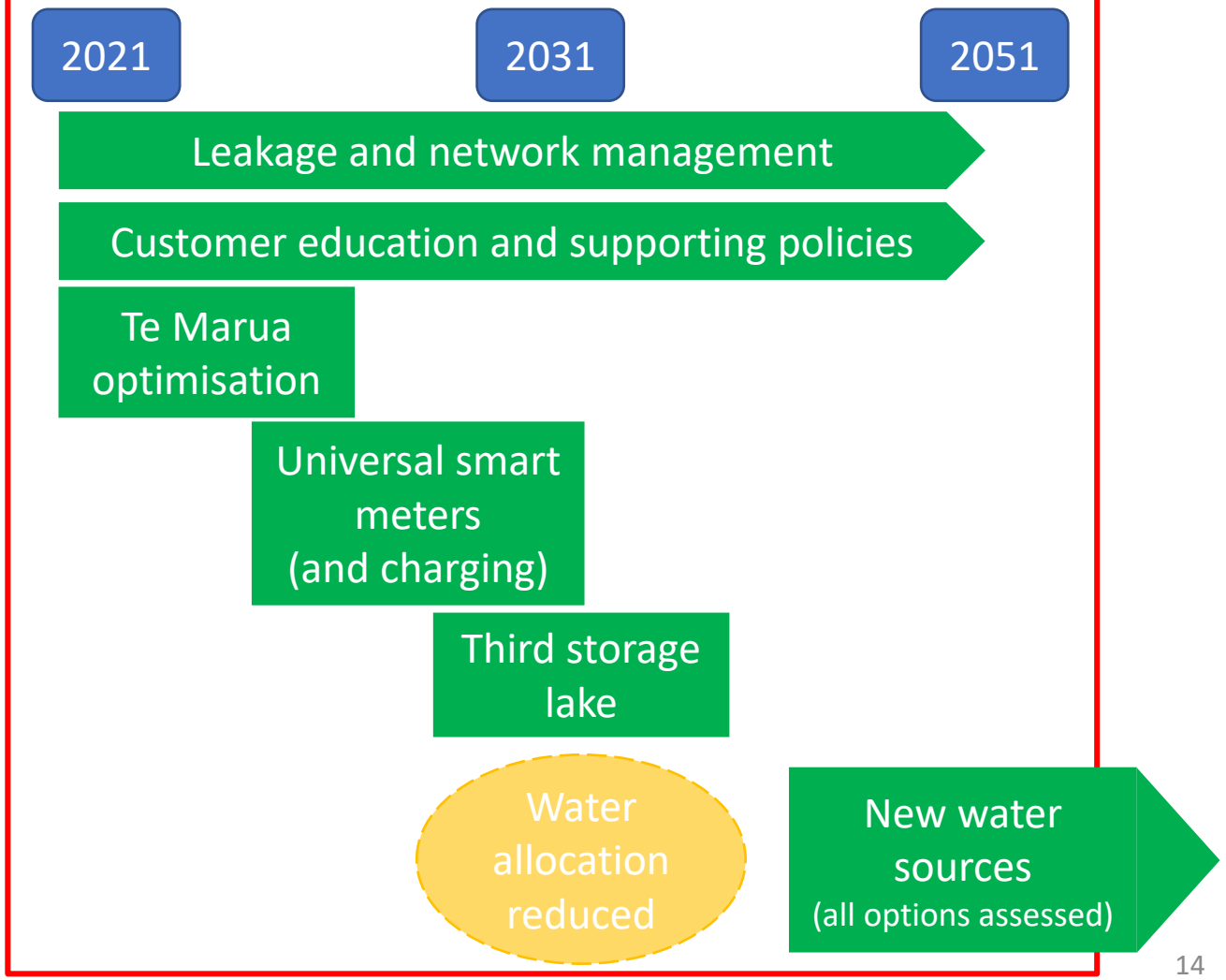
Achieving balance between people, the water and the environment requires us to :

- Reduce water loss
- Reduce the demand for water
- Re-use water that has already been taken out of its natural state, where possible
- Ensure that river flows are kept above those needed to sustain ecosystems
- Assist our customers to use only the water they need to use, and to prevent waste and leaks.

By 30 years' time we need to:

- have reduced domestic per capita demand to global benchmark levels (150 litres/day or less)
- have reduced network leakage to global good practice benchmarks
- have reduced the amount of water we take from Te Awa Kairangi in summer and have further diversified our water sources
- understand and be providing customers with information about water consumption

Investment direction



Improving environmental water quality – the issues

There are many factors that affect the outcome of water quality in our harbours and coastal waters.

We return stormwater and treated wastewater to the environment and the water cycle. In the process we introduce contaminants that make the water unsafe for people and ecosystems and significantly modify the flows and other characteristics of natural systems.

Our objective is to ensure the receiving water is safe for both people and the environment, but:

- Our urban waterways are of poor quality and do not meet community and regulatory expectations for human contact and ecosystem function
- Poor condition private and public wastewater pipes cause leaks and overflows into the environment from the network and treatment plants
- Our stormwater is untreated and the network design can contribute to poor environmental outcomes (i.e. enclosed pipes, channelled flows, cross-connections etc.)
- Growth, when delivered in the conventional manner, compounds these problems by increasing stormwater run-off and placing additional demands on wastewater networks that are already operating at or close to capacity.

Moving towards Te Ika Rō Wai – water quality

Achieving balance between people, the water and the environment requires us to :

- Maximise the extent to which water exists in its natural state and cycle
- Adopt integrated approaches – ki uta ki tai – that protect downstream environments and address pressures from inputs
- Realise the social & cultural values & benefits of naturally flowing water (mahinga kai, amenity...)
- Support communities to care for their local water

By 30 years' time we need to:

- Be progressively improving water quality to the required level, catchment-by-catchment
- Have all new developments and infill built to meet water quality requirements, including "daylighted", natural stormwater services
- Have ensured our customers are maintaining their private pipes & connections
- Be renewing pipes and assets based on and to address their impacts on water quality

Investment direction

There are strong connections to the measures required to look after existing infrastructure and enable growth.

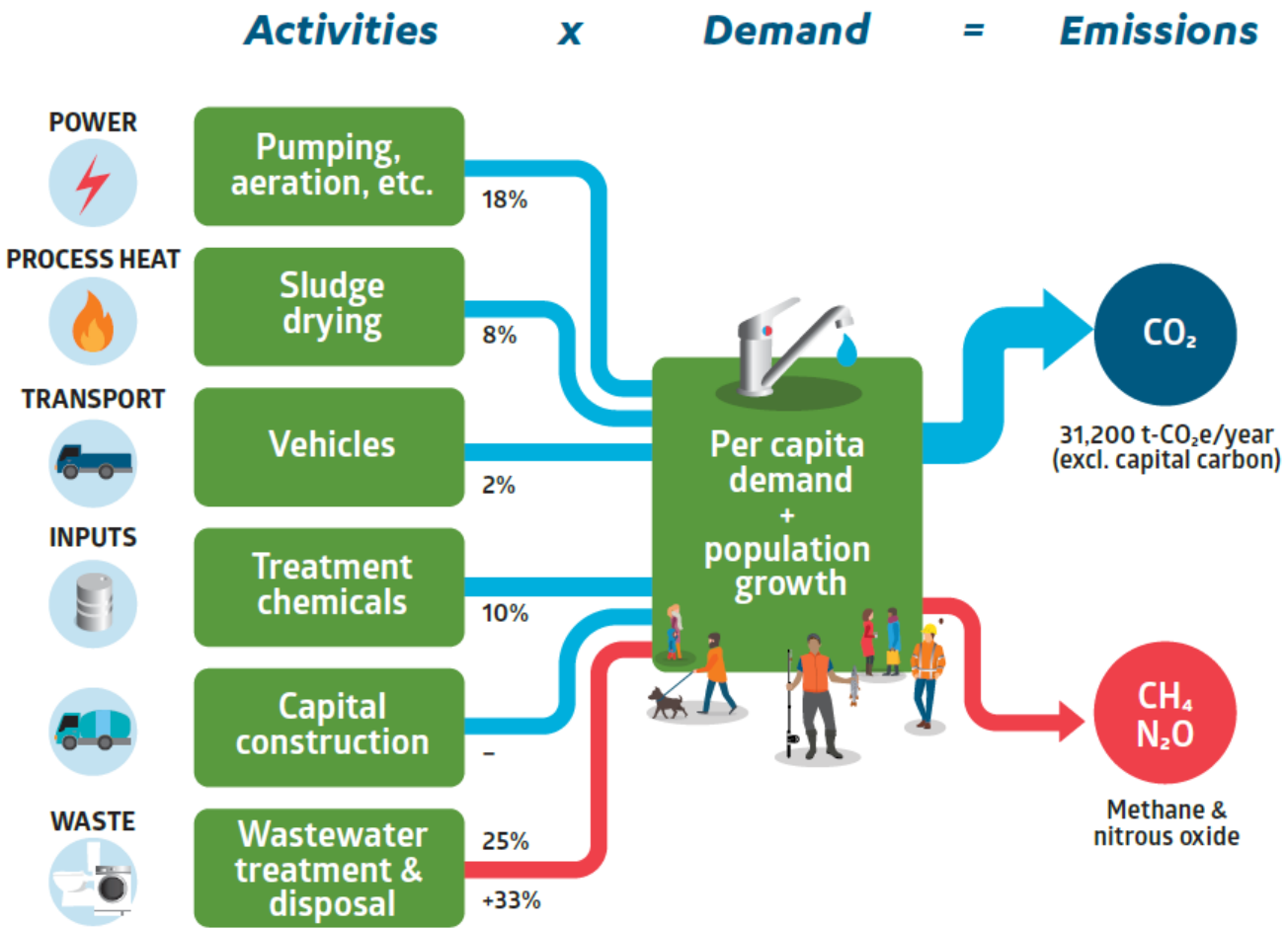
For ***investment:***

- Prioritise the renewal and maintenance of assets that create risk to water quality on a catchment-by-catchment basis (and consistent with Whaitua outcomes)
- Increase our monitoring and 'smart networks' capability to better optimise operations and asset management.
- Significantly expand the "know your pipes" inspection programme for private pipes to increase its coverage
- Increase the capacity of the networks to contain peak flows
- Use growth, including developer-supplied infrastructure as an opportunity for regeneration and change.

For ***land use and development and council policy***:

- Use **all** available council policy levers, including District Plans, codes of practice, bylaws and compliance practices to mandate water sensitive practice and to enable and incentivise behaviour change (including through charging practices)
- Ensure the Regional Standard for Water Services is adopted across the region and revised to support the strategic priorities, such as through designing to achieve a "water-tight" network.

Reducing our emissions – the issues



These are the main elements of water services that produce carbon emissions. Increased demand (whether through leakage or population growth) increases carbon output.

Delivering water services generate carbon emissions through both their operation and in completing capital projects. We need to do our share to support the country's net zero emissions target, but:

- Our operational emissions are tied to service demand and population growth, which are increasing.
- Our historical approach to our biggest emission source, wastewater biosolids, has not recognised its energy value
- Emissions from wastewater treatment processes are not well understood, but may be significant
- We have not typically considered the carbon emissions from our capital programme and have been using traditional construction techniques.

Moving towards Te Ika Rō Wai – reducing emissions

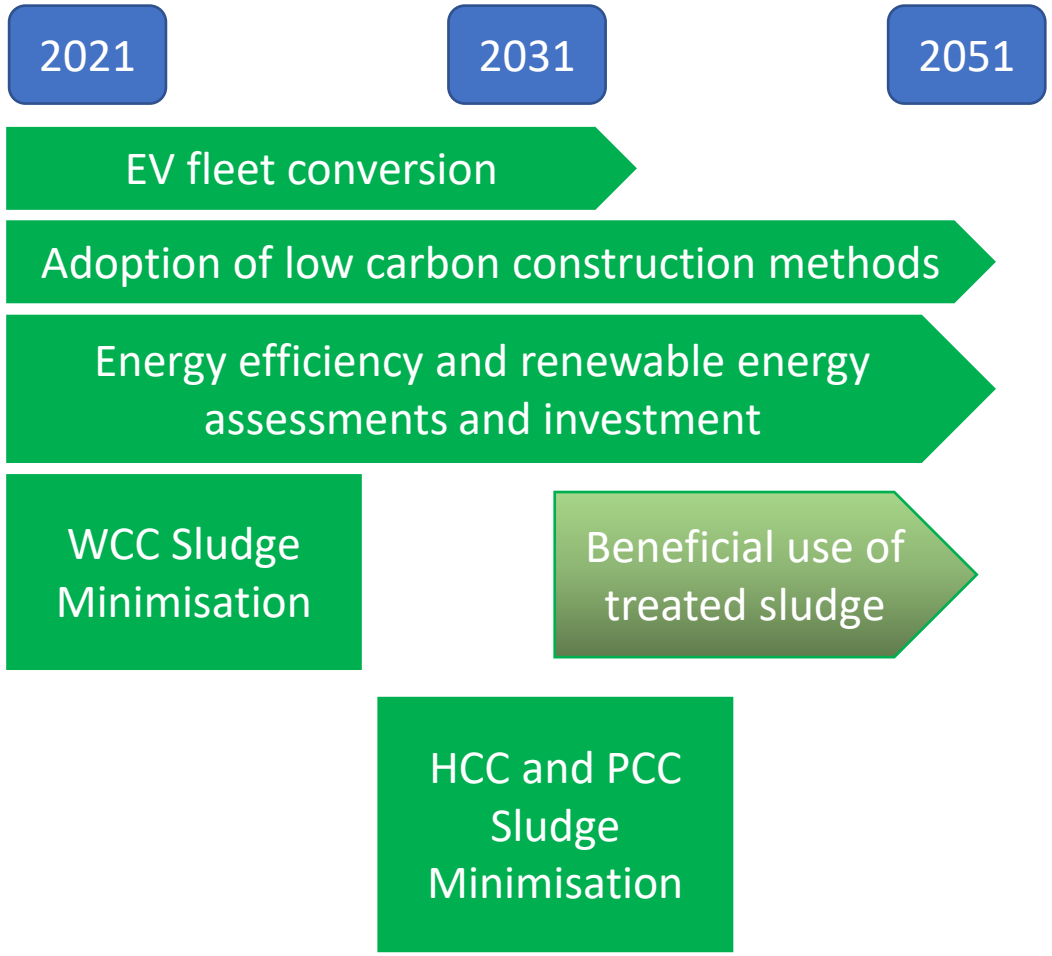
Achieving balance between people, the water and the environment requires us to:

- Reduce the demand for water (as this reduces our emissions)
- Contribute to NZ's 2050 emission reduction targets
- Move towards a circular economy approach, especially for wastewater
- Help customers to reduce their demand for our services

By 30 years' time we need to:

- be utilising the energy and nutrient value of wastewater biosolids
- be demonstrating good energy efficiency practice and have expanded our use of on-site renewable generation
- Have reduced the emissions from our capital programme in line with recognised international good practice

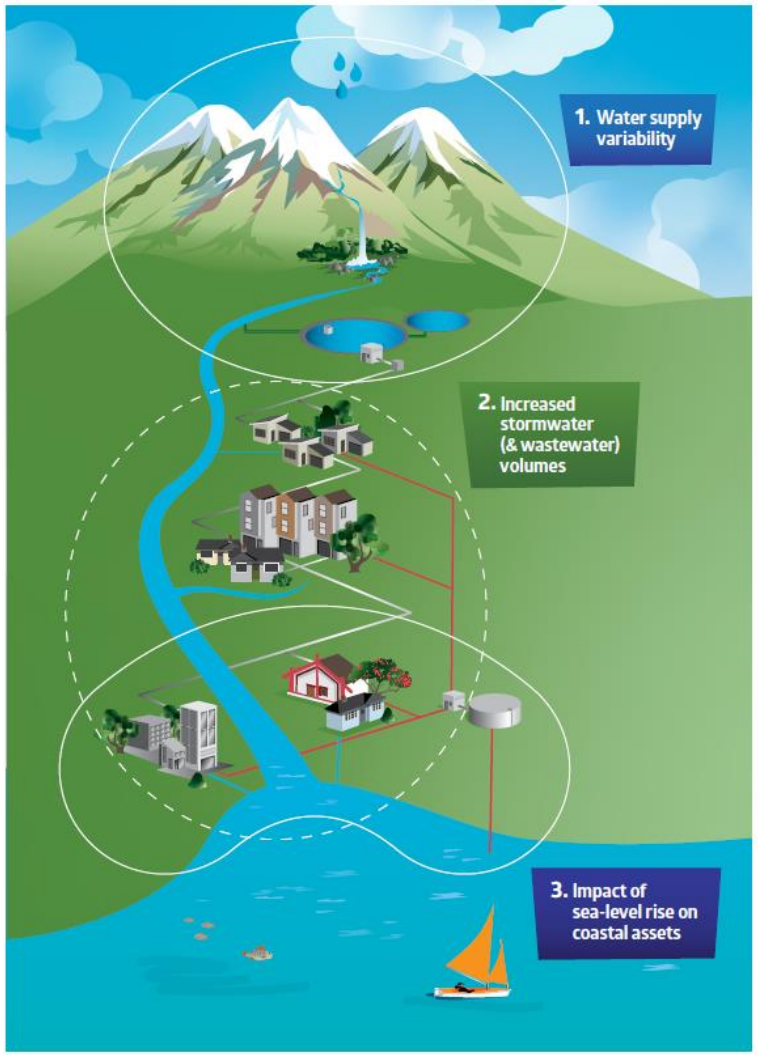
Investment direction



Resilience to natural hazards and the impacts of climate change

While the investment advice for the current LTP focused on the five regional strategic priorities, these are not the only areas requiring investment. Future investment will also need to acknowledge:

- localised flooding issues, including variations in the level of service being provided and recognising the future impacts of climate change
- the need to adapt to the impacts of climate change at the local, network and catchment level
- the need to ensure the services are resilient to earthquakes and other natural hazards such as landslides



Climate change impacts all areas of water service activity

Resilient to natural hazards and the impacts of climate change

Achieving balance between people, the water and the environment requires us to :

- *What are the changes we need to make to achieve a better balance for areas that we know will be affected by rising sea levels*?
- *What does balance look like with respect to flooding and other natural hazards*?
-

By 30 years' time we need to:

- *What will we need to have achieved so that our cities and people are more resilient to the challenges we can see*?
- *What service standards should we aim for?*
-

Investment direction

For ***investment:***

- Complete stormwater hydraulic models and flood maps and establish a regionally consistent approach to levels of service and operational and investment responses
- Complete climate change risk assessments and adaptation plans for treatment plants and bulk network infrastructure
- Use renewals and regeneration via growth to progressively increase resilience to natural hazards
- Revisit the drinking water resilience strategy in light of the unaffordability of the proposed responses, and complete the strategy for wastewater

For ***land use and development and council policy***:

- Support councils with information to support their land-use decision-making in response to expected climate change impacts

See you at the workshop!

Monday, 13 September, 2.30-4.30, Lower Hutt Events Centre, 30c Laings Rd.

This pre-reading is intended to provide an overview of the key issues and challenges we face as a region if we are to meet community aspirations and legislative requirements for managing the three waters.

Our aim at the workshop is seek guidance from you on investment direction and timings. Of course there are many other resources and ideas you may have that will help inform your input. We've recorded some reflections from two kaumatua of local iwi: you can view those here:

https://www.wellingtonwater.co.nz/publication-library/advice-and-work/ - and scroll down the list to the "30 Year Plan Video 1" and "30 Year Plan Video 2". When you click on the link, it should download, creating a tab in the bottom of your browser, or check your download file.

Another example is this article, about changing urban design to work with floods.

On the day Michelle Rush will take you through a structured process to help us identify and prioritise key directions and milestones. Please help us ensure a successful outcome by working with our health and safety team as well.