



Early Investment Signals for Porirua City Council 2021/31 LTP

20 February 2020

Mark Kinvig, Group Manager, Network Strategy and Planning



Our water, our future.

At the heart of a thriving city



At the heart of a thriving city is resilient three waters infrastructure that:

- **protects the harbour and environment**
- **enables sustainable economic and population growth**
- **improves public health**

We are facing challenges over the next 10-30 years that need to be addressed for Porirua to continue to thrive as it grows.

This presentation sets out the nature of those challenges and the scale of investment required.

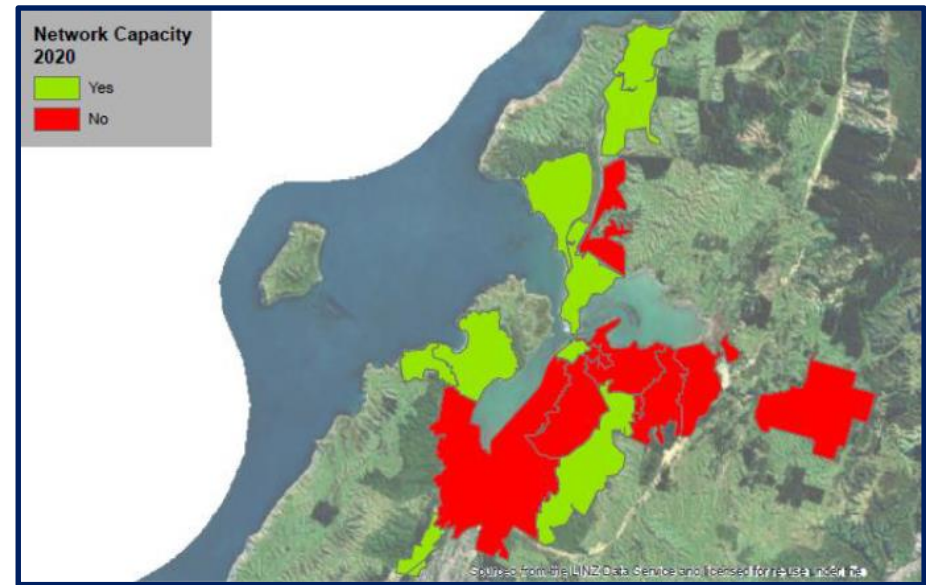


We are in a critical 30 year period

Circa 60% of PCC's assets are due for renewal within the next 30 years



Mungavin Ave - Porirua



Networks at capacity

**Forecast 30-50%
population growth
over next 30 years**

New and existing challenges



Key challenges and priorities

Te Mana o Te Wai

Looking after existing infrastructure

(renewals, operations, maintenance and critical service level upgrades)

Based on previous discussions with PCC, there was general agreement that these areas are a top priority for your 2021/31 LTP.

Growth

However, many of these are new activities or have increasing service requirements going forward. Bringing about meaningful change will require significant investment over the next 10-30 years.

Sustainable Water Supply

Healthy Urban Waters

Note:

Climate Change
(mitigation and adaptation)

Seismic resilience and urban flooding investment was seen as a lower priority than these five.

Investment timeframes to achieve levels of service



Looking after existing infrastructure

(renewals, operations, maintenance and critical service level upgrades)

This is an ongoing task to ensure that the network delivers reliable, best-value services to customers

Growth

Investment is required to ensure service levels don't deteriorate over time as the population increases (**3-30+ years**)

Sustainable Water Supply

Investment is required to reduce demand within the next **5-6 years** but ongoing investment is required as growth progresses

Healthy Urban Waters

National and regional policies and plans require us to significantly improve freshwater and harbour quality over the next **30 years**

Climate Change

(mitigation and adaptation)

The NZ Zero Carbon Act requires us to reduce our emissions, and to have plans in place to manage our climate risks over the next **30+ years**

Effective management of infrastructure is a long term effort and although we do have isolated high profile failures from time to time, we can adjust investment strategies over time based on improved data, technological developments and rate of change e.g. population growth.

Investment will be required over multiple decades to achieve the outcomes and levels of service associated with these priorities.

This slide illustrates key timeframes to be aware of when making investment decisions about Three Waters infrastructure.

Multiple investment benefits

Investment in one key area benefits other service goal areas. Some examples are provided below:

Looking after existing infrastructure

(renewals, operations, maintenance and critical service level upgrades)

Investing in renewals over time improves network resilience, facilitates growth, reduces water loss and leakage of the wastewater into the environment, and helps to reduce operational costs

Growth

Investment in network upgrades to service growth has similar benefits to managing existing infrastructure

Sustainable Water Supply

Reducing water demand improves environmental and cultural outcomes, reduces long term cost to the customer and reduces carbon emissions

Healthy Urban Waters

Investing in healthy urban waters improves environmental and cultural outcomes and improves network resilience

Climate Change

(mitigation and adaptation)

Investing in emissions reduction improves environmental and cultural outcomes and reduces long term cost to the customer. Investment in adaptation increases long term community resilience

Smart policy can also drive better community outcomes

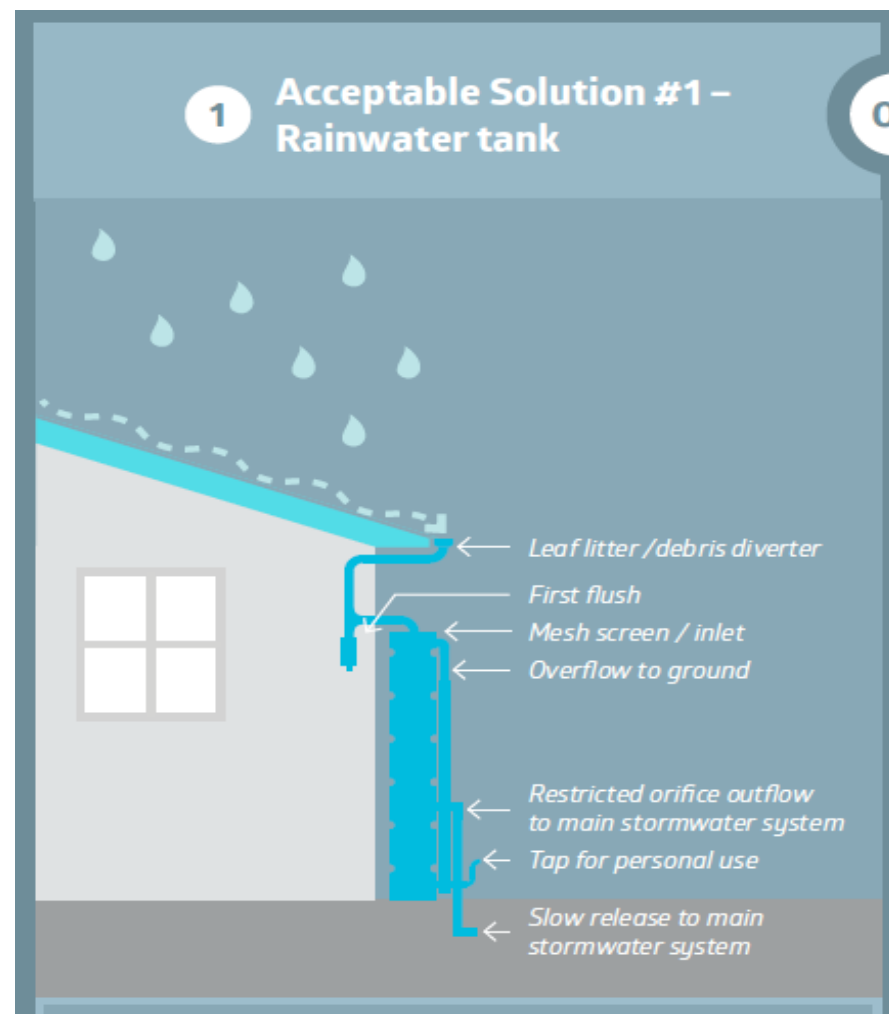
Three Waters outcomes can be achieved by improving and developing the network. There are also significant opportunities to improve long term outcomes through smart policy, including District Plan provisions, councils' policies and bylaws and Wellington Water policies, standards and guidelines.

Examples of what can be achieved through District Plan objectives and policies include:

- Design of water-efficient houses and developments
- Water storage for resilience (i.e. post-earthquake)
- Minimum floor heights for protection from future flooding
- Stormwater neutrality requirements on developments to mitigate flooding downstream and improve water quality

Wellington Water has been working with your District Planning team to ensure that progressive Three Waters objectives and policies are included.

This illustration refers to one of Wellington Water's guidelines for achieving stormwater neutrality for one property. This solution also provides some resilient water supply storage for a household.



Council Performance Measures



The table below provides insight on PCC catchment performance

Measure	Target	Quarterly result					
		2018/19				2019/20	
		Q1	Q2	Q3	Q4	Q1	Q2
Drinking water consumption	<335 litres per resident per day						
Dry weather sewerage overflows	Zero overflows						
Freshwater sites uncontaminated	90% sites <1000 E.coli on rolling 12 month median value						
Wastewater blockages	<0.8 blockages per km of pipe						
Sewerage complaints	<30 complaints per 1000 connections						
Flooded dwellings	<0.5 habitable floors per 1000 connections						

Red = target not achieved

Green = target achieved

Key challenges and priorities

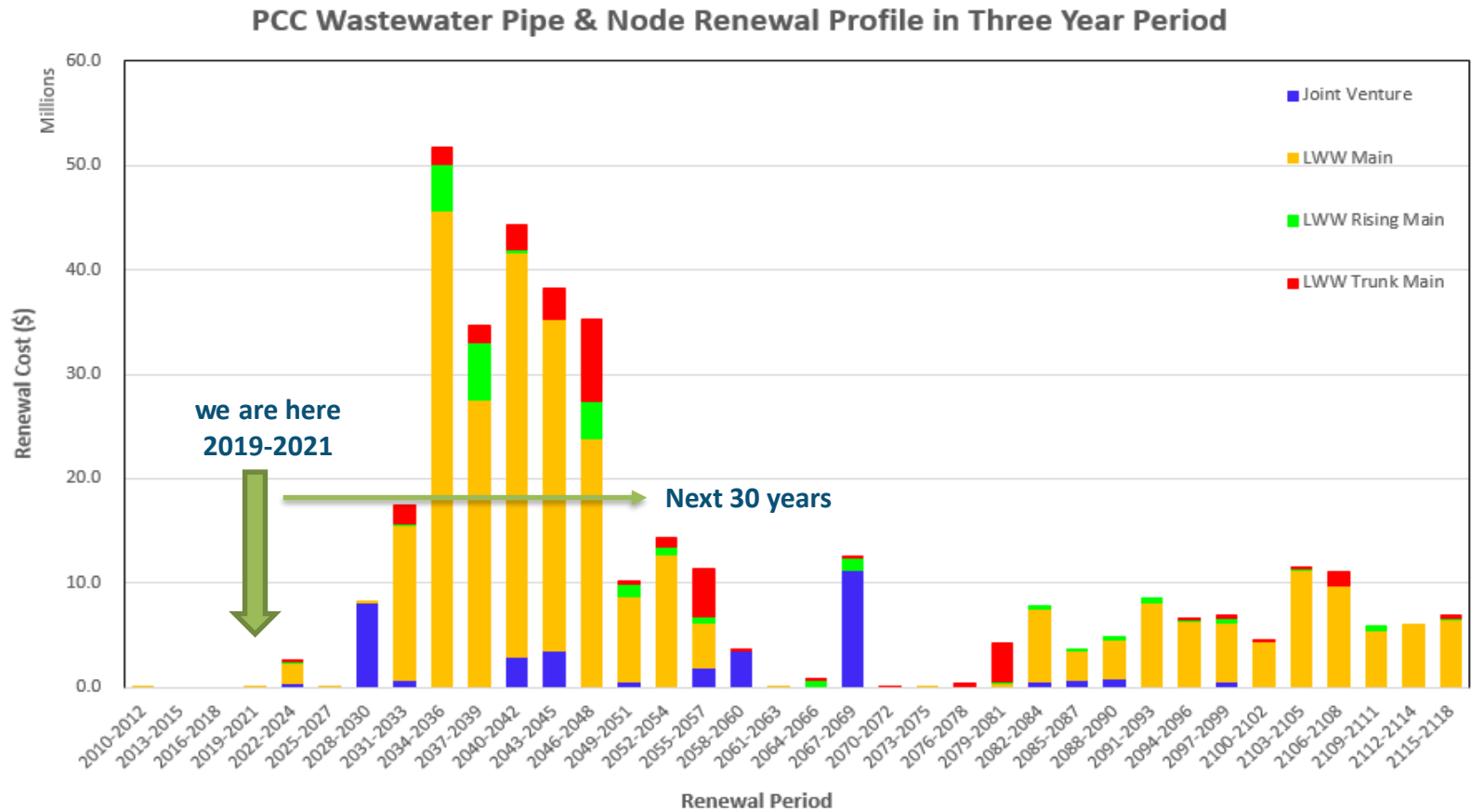


The following slides set out the nature of the challenges in more detail including examples where appropriate and a summary of the increase in investment required over the next 10 years for consideration as part of your 2021/31 LTP.

Looking after existing infrastructure

Looking after existing infrastructure – Challenge

This graph illustrates the pending investment for the council’s wastewater network based on the age profiles of the pipes (amber coloured graph bars):



Note:

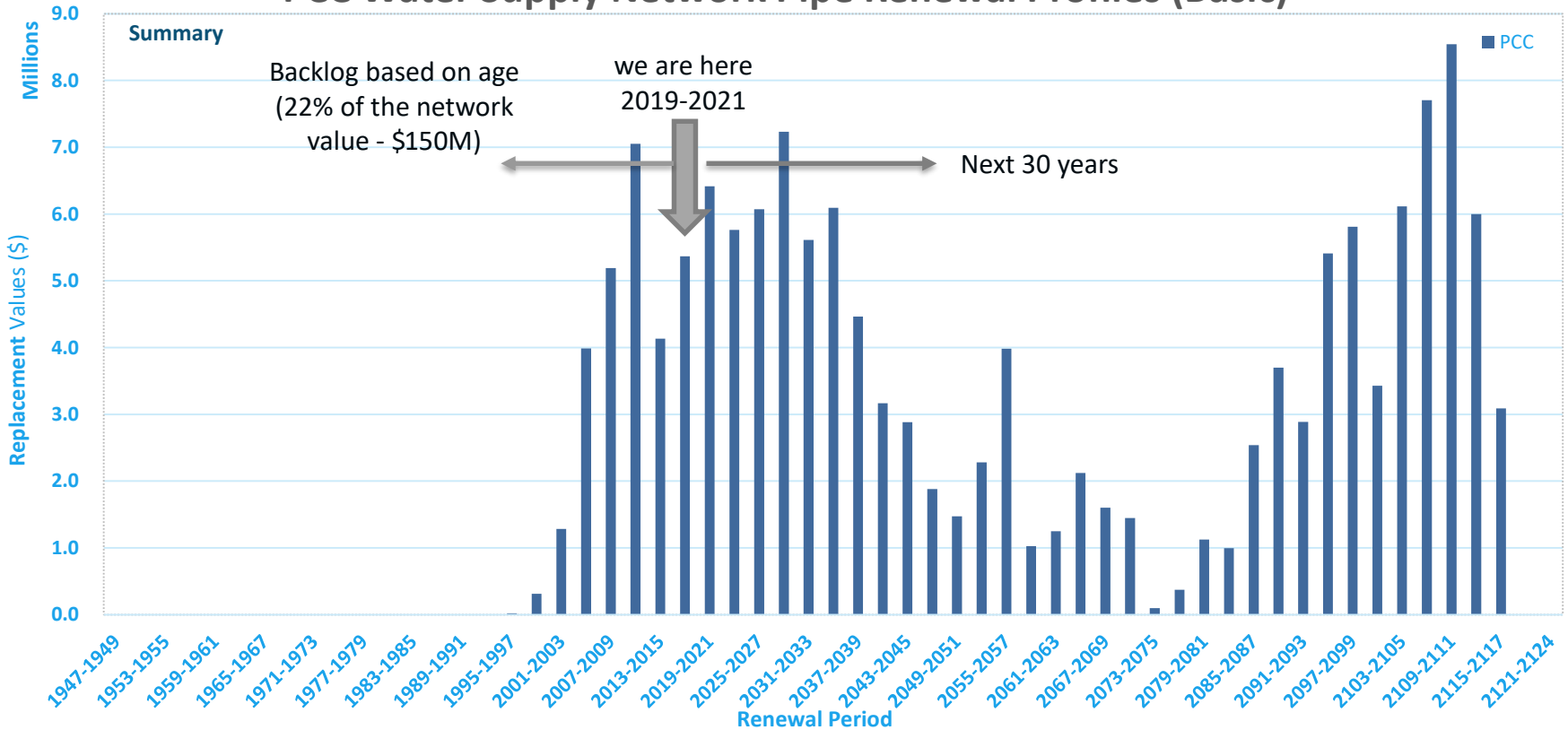
Based on current knowledge actual asset condition is considered worse than what is indicated by this age profile.

Looking after existing infrastructure – Challenge



This graph shows the pending investment and investment backlog for the council’s water network based on the age profile of the pipes (this data only relates to pipes not pump stations and plants):

PCC Water Supply Network Pipe Renewal Profiles (Basic)



Permanent circa 25% increase in Opex Investment within 3 years (\$10M over 10 years)

Activities	LTP Years	Result	Link to Strategy & Benefits
Maintenance and operations	1-10+	Reduced water demand, reduced service risks, move from reactive to planned to predictive, detection and proactive fixing of water leaks	Sustainable Water Supply, Looking After Existing Infrastructure, Te Mana o Te Wai
Private network inspections	1-3+	Reduced wastewater overflows, reduced public health risk	Healthy Urban Waters, Te Mana o Te Wai
Investigations, monitoring, planning	1-10+	Better long term value to PCC moving from reactive to planned to predictive, reduced service risks particularly on critical assets	Supports all key priorities

Note:

This increase in Opex is based on making a 5-10% efficiency saving across all operational activities once our service delivery model is fully embedded within the next 3 years.

\$11M annual increase in Renewals
within 10 years (over & above 2018/28 average of \$3M pa)

Activities	Years	Result	Link to Strategy & Benefits
Water supply renewals	1-10+	Reduced water demand, reduced service risks, increase in network resilience	Sustainable Water Supply, Looking After Existing Infrastructure, resilience, Te Mana o Te Wai
Wastewater renewals	1-10+	Reduced overflows into streams, rivers and harbour, increase in network resilience, reduced service risks	Growth (upsized assets), Healthy Urban Waters, Resilience, Te Mana o Te Wai

Note:

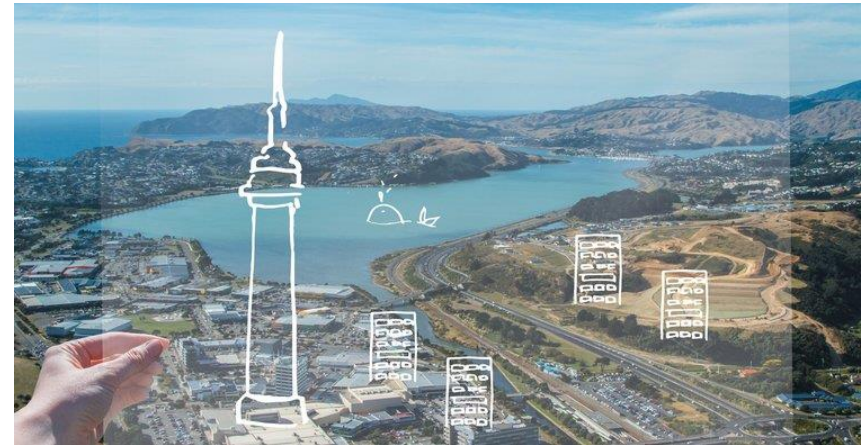
This includes renewals for Eastern Porirua which will be funded by Kāinga Ora

Growth

Growth Opportunity

Planning for future growth will support our ability to:

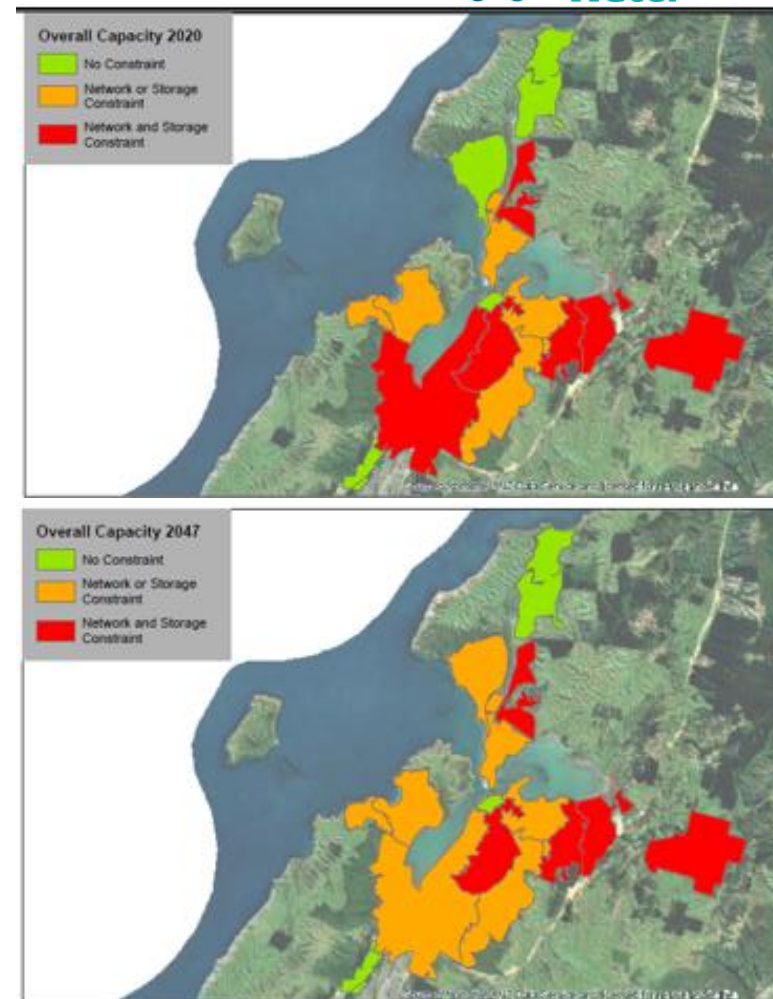
- Strategically plan to meet population growth set out in PCC Growth Strategy and new District Plan
- Develop integrated plans for Three Waters networks to meet growth demands and address existing network constraints e.g. strategic upgrades that have multiple benefits to all our outcomes
- Enable us to identify, monitor, and understand network demand and constraints on an annual basis e.g. rate of development and location of land use demands
- Have evidence based data to assess the land use re-zoning and intensification e.g. constraints in the network, growth demand and flooding hazards



Growth Challenge – circa up to 30,000 more people by 2048

We have assessed the capacity of 3-water networks for the growth areas in the NPS-UDC Porirua Infrastructure Capacity Report (Nov 2018) based on growth predictions.

- Constraints in capacity of the existing infrastructure networks for all three waters across the seven growth areas;
- Limited or no network coverage in some locations identified for growth, such as Plimmerton Farms, Judgeford Hills, and Whitby;
- Increased demand from growth and land development, particularly new housing, is placing pressure on existing networks which in places have constrained capacity



Porirua Water Supply Overall Capacity 2020 and 2047

Growth Challenge – approx. *10,500 new homes

We have assessed the potential implications of growth in the *Preliminary Three Waters Catchment Plan to support the Porirua Urban Growth Strategy 2048*.

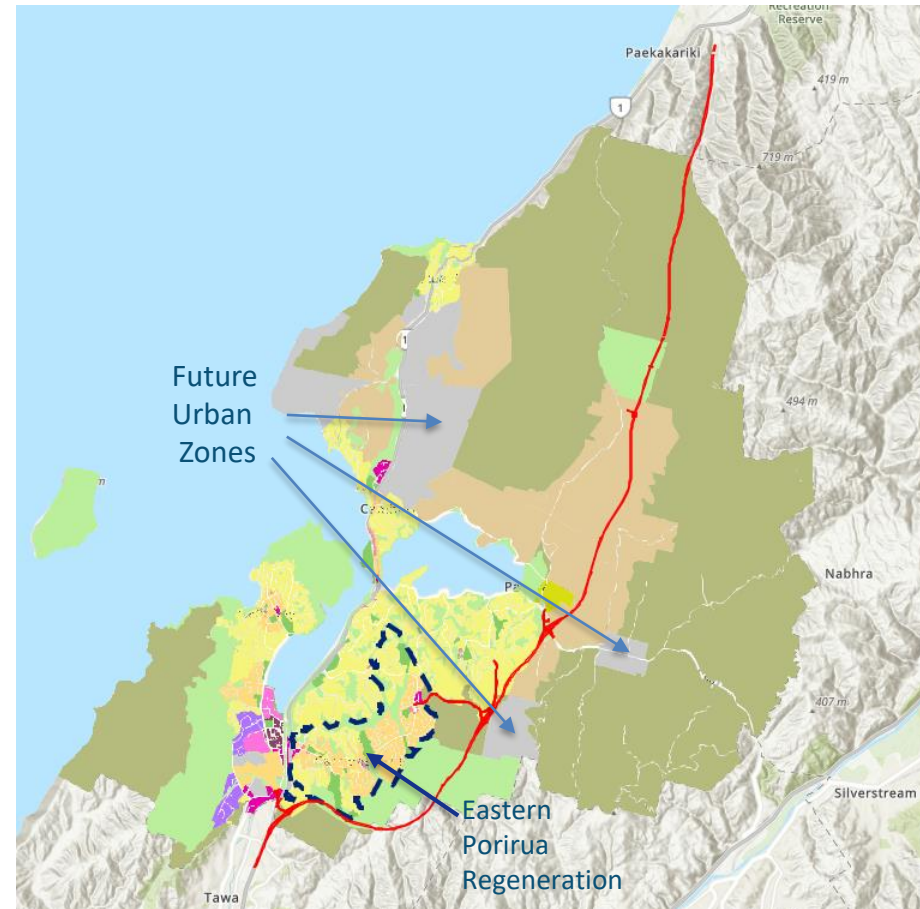
Future Urban Zones identify areas that are enabled for future land development. Includes Northern Growth Area and Judgeford Hills and Flat – currently no network coverage.

Medium Density Residential zones in CBD, Eastern Porirua, and Western Porirua. Much of these areas are already development enabled under the District Plan rules.

We identified:

- Strategic network upgrades that focus on trunk infrastructure and would benefit multiple growth areas; and
- Potential infrastructure that would be needed for un-serviced Future Urban Zones;
- Proposed planning controls for subdivisions, particularly for managing stormwater, water sensitive design, wetlands, and treatment devices.

Further investigation is needed to guide planning, funding and investment, and establish strategic business case for programme and project development.



PCC Draft District Plan Zones 2019 – shows land enabled for future growth

*Note: figure taken from Porirua Growth Strategy March 2019

Increased investment for Growth – *\$440-600M (10 years)

Activities		LTP Years	Result	Link to Strategy & Benefits
Build assets in a way that meets future forecast growth demand	Strategic Projects (key projects that serve two or more growth areas) \$138-\$202M	1-10+	No deterioration in current levels of service as a result of growth and integrated solutions that achieve all our outcomes.	Growth, Healthy Urban Waters, Resilience, Flooding, Looking after existing infrastructure, Te Mana o Te Wai
	Eastern Porirua; \$170-\$234M	1-10+		
	Plimmerton Farms; \$105-\$127M	1-10+		
	Whitby; \$16M	1-3		
	Western Porirua (catchment study has not been completed as yet but a reservoir was already planned) \$15M	6-9		

Note:

Not all financial information is available so numbers are indicative only.

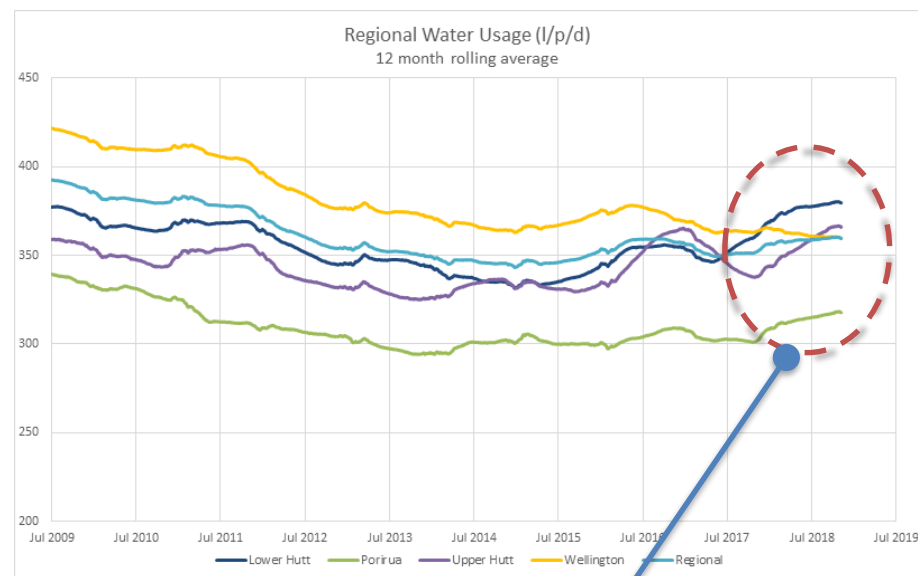
Shown is total estimated cost to provide three water infrastructure to enable growth, with sources of funding to be determined by PCC.

Timing of development has been assumed based on current knowledge with priority being Eastern Porirua and Plimmerton Farms.

Sustainable Water Supply

Sustainable Water Supply Challenge

- Gross regional consumption is trending higher and is nearly 90% of system capacity
- Household consumption is high compared to other cities (NZ and internationally)
- At current growth rates this will become unsustainable within the next 5-10 years, resulting in more water shortages
- GWRC's long term plan currently has provision for another large storage lake estimated at \$200-\$300M +. The four city councils would fund this via the levy
- During the past 4 years we have seen a dramatic increase in visible network leaks due to the ageing network
- Councils have indicated a preference for conservation over construction



Increasing regional demand

Sustainable Water Supply Investment



There are several approaches that can be taken to influence water consumption. Following councils' direction to adopt a conservation approach to water supply, we are increasing the number of network meters and pressure management devices in the network. The network meters will provide more guidance on how the network is operating and subject to funding, will enable targeted leakage detection and repairs.

However, we are unable to account for where all the water goes because there are no household meters. Kapiti Coast District Council reduced their consumption by 20% following the introduction of household meters. The majority of their private network leakage was occurring in only 2% of their rated properties.

Volumetric charging does not necessarily need to be introduced initially as the meters could be used purely to identify leaks and influence customers on their usage.

Would PCC consider the installation of household water meters within the next 3 years (subject to a business case) to reduce consumption?



Funding requirements – Sustainable Water Supply



*\$1-\$16M Increase for Sustainable Water Supply

Activities	LTP Years	Result	Link to Strategy & Benefits
Pressure management programme	1-3	Reduced network pressure and leakage volumes	Sustainable Water Supply, Te Mana o Te Wai
Household water meters (*circa \$15m for PCC)	5-7	Circa 20% reduction in water demand	
Increased operational leakage management and customer engagement <i>(activities included in increasing company capability)</i>	1-10+	Circa 10% reduction in water demand	

Healthy Urban Waters

A new focus on the health of our freshwater

***82%**

of New Zealanders say that water pollution is their #1 concern*

* Colmar Brunton for Fish & Game NZ, December 2018. WWL customer surveys also highlight this as a priority



Leaks and overflows from ageing assets cause adverse environmental & public health outcomes



Urban growth contributes to a decline in water quality through increased run-off pollutants

Mana whenua exercising their rights as kaitiaki



New National Policy Statement and related RMA changes, manifesting at local level through the Natural Resources Plan and associated Whaitua process

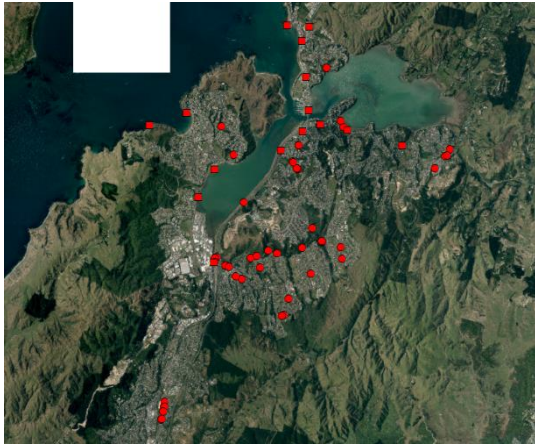
Healthy Urban Waters Challenge (cont'd)

- Addressing freshwater quality is one of the most complex issues that we will face over the next 30 years
- National policies require councils to improve water quality outcomes over the long term
- Our community expectations are rising with respect to water quality in the environment i.e. Whaitua Committees
- Deficient wastewater and stormwater networks and stormwater runoff contribute to high levels of contamination



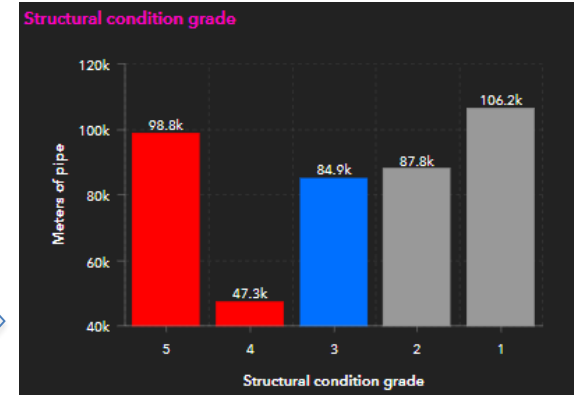
Healthy Urban Waters (Cont'd)

These screenshots illustrate the healthy urban waters challenge in Porirua

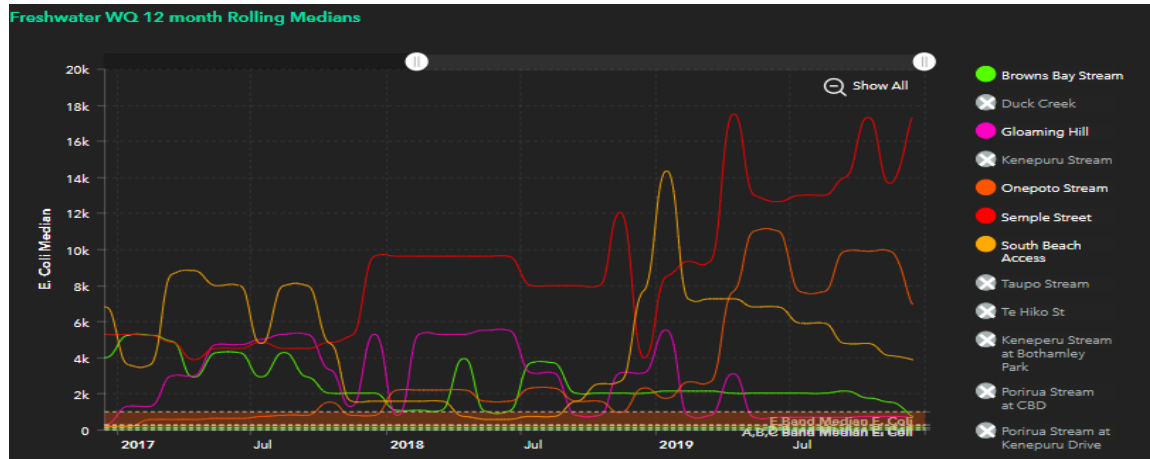


This data shows that there was 12 wastewater overflows during wet weather in the Porirua city area in 2019.

This data shows that around 52% of the wastewater pipes in Porirua are grade 4 or 5 (structural cracking and other defects)



This data shows that recorded E.Coli levels in Porirua, the sites are generally in band E (worst grade in new MfE freshwater standards).

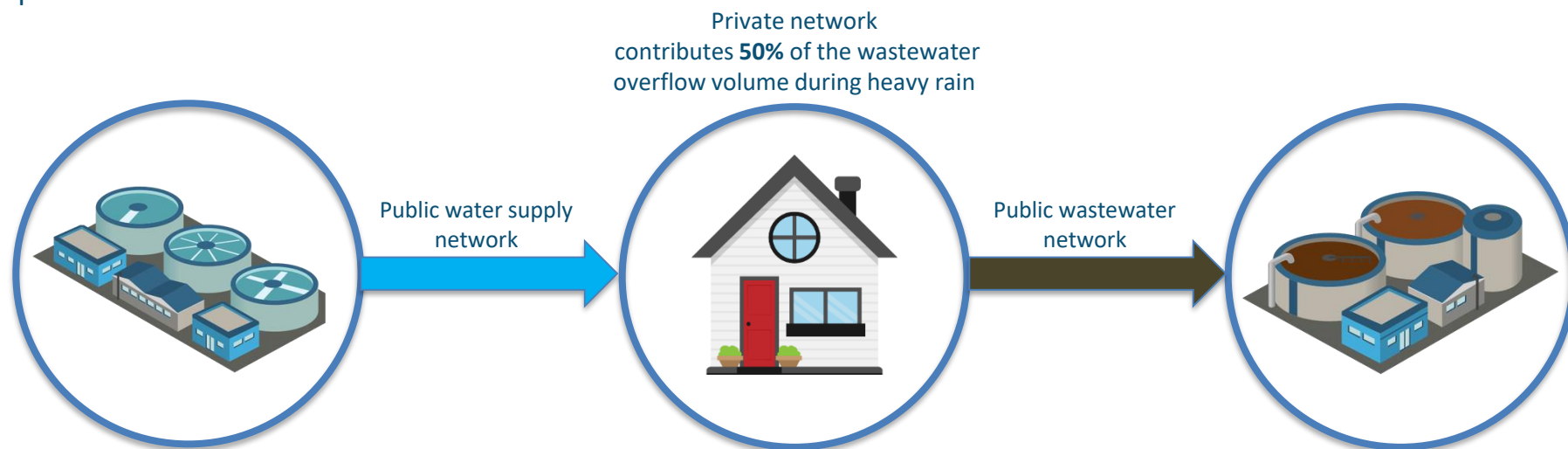


Healthy Urban Waters – Private Network Contribution

The illustration below shows a simplified perspective of the water supply and wastewater services entering and leaving a property. **50%** of the wastewater volume overflows that occur during heavy rain originate from the private property portion of the network.

Council could improve its policy to help property owners undertake repairs to reduce wastewater overflows over time. This requires a combination of customer education, bylaw and enforcement, funding strategy and a long term implementation plan (30 years) to ensure that the outcome is achieved.

The wastewater overflows in the network are addressed through investment in renewals, upgrades and targeted repairs.



Funding requirements – Healthy Urban Waters



Increase for Healthy Urban Waters – costs unknown

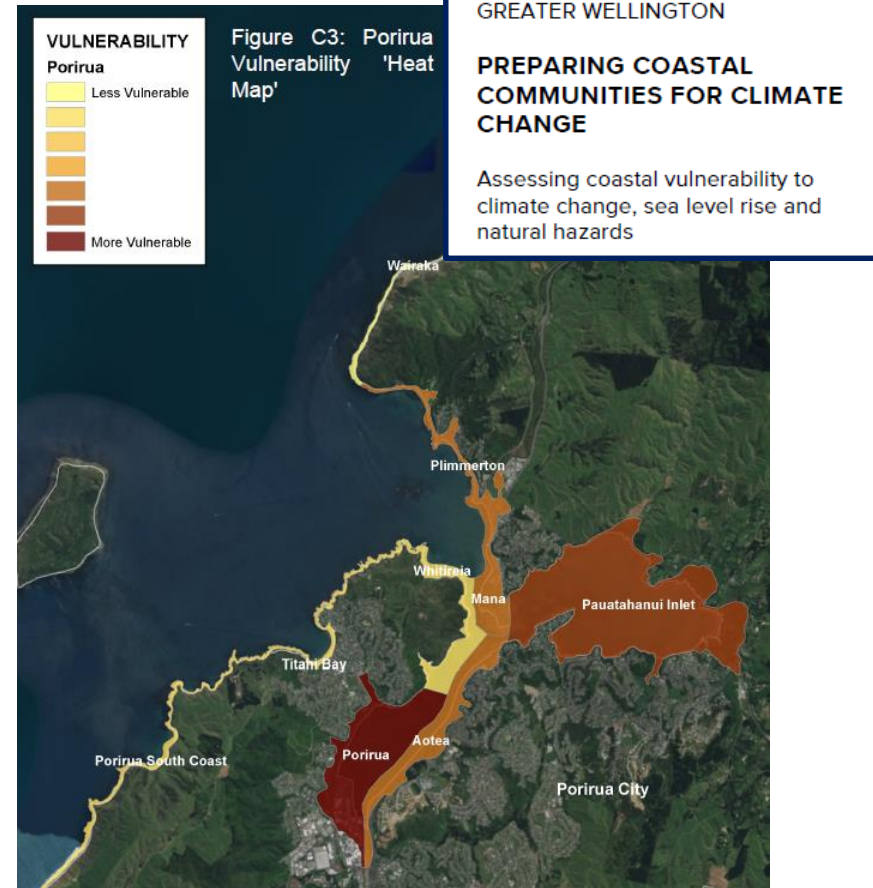
Activities	LTP Years	Result	Link to Strategy & Benefits
Increase in general Three Waters Opex	1-3+	Reduced overflows into streams, rivers and harbour, reduced service risks	Healthy Urban Waters, Te Mana o Te Wai
Increase in wastewater renewals	1-10+	- Includes private network inspections <i>(Allowed for under 'looking after existing infrastructure' – Opex & Capex Renewals)</i>	
Wastewater network smart controls and sensors (IIOT)	1-10+	Reduced overflows into streams, rivers and harbour, reduced service risks	
Wastewater network storage	1-10	Reduced overflows into streams, rivers and harbour, reduced service risks <i>(Allowed for under 'growth')</i>	
Stormwater Quality Management	1-10+	Capture stormwater contaminants in wetlands, raingardens and first flush diversions.	

Climate Change

(Adaptation and Carbon Reduction)

Adaptation (Flooding and Sea Level Rise Challenge)

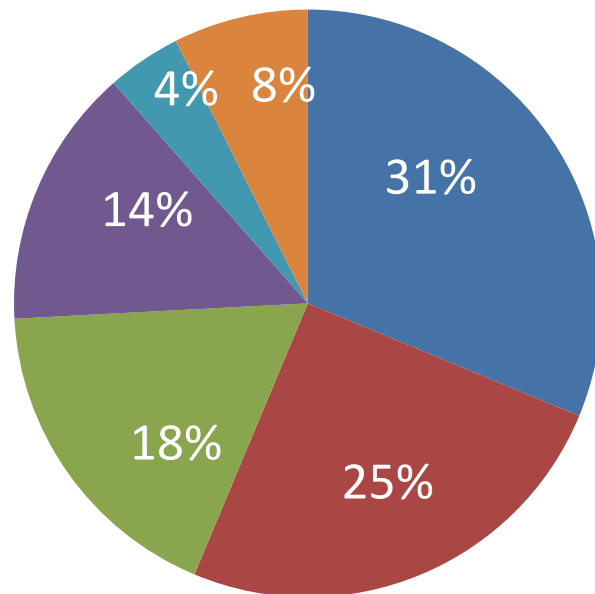
- Many parts of the region will be affected by major flooding events over the next 50-100 years
- Sea level rise and more intense storms will lead to land use adaptation challenges, high infrastructure costs and increasing insurance premiums for the community if not managed effectively
- Increased likelihood of drought increases pressure on water sources



Climate Change (Carbon Reduction Challenge)



- Our regional Three Waters activities produce 17,500 tonnes of CO₂ equivalent (financial year 2018/19 data)



88% across top 4 categories

- Electricity Consumption
- Fugitive Emissions (Sludge at Landfill)
- Water Treatment Chemicals
- Gas Consumption (Seaview WWTP)

- Mobile Fuel Combustion - Fleet Vehicles
- Misc (10 categories)

Excludes SWDC

Funding requirements - Climate Change (Carbon Reduction)



Increase for Carbon Reduction – costs unknown

Activities	LTP years	Result	Link to Strategy & Benefits
Water treatment options	1-6	Operating carbon reductions <i>(Undertaken within Greater Wellington opex budget)</i>	Carbon Reduction
Electricity usage optimisation	1-6	Operational carbon emission reductions	
Capital carbon reduction processes for all infrastructure projects	1-10+	Reduced carbon emissions from infrastructure development (capex projects)	

Note:

Capital carbon approach to projects is expected to reduce cost of projects and long term operational costs within the next 10 years

Resilience

Resilience Challenge



We are vulnerable to earthquakes due to the proximity of the Wellington Fault line and the fragility of the region's infrastructure. We have made some good progress during the past 5 years with the Community Infrastructure Resilience (CIR) initiative that can provide up to 20 litres per person per day, one week after a major event.

However, progress in other areas requires further investment over multiple decades to improve community resilience.

Water Supply:

Household resilience (only 40% of households have sufficient water to meet the most basic requirement)

Better operational response plan
Vulnerable network (long term investment in renewals and upgrades - bulk water and networks)

Wastewater:

Household resilience (less than half of households have a plan for managing wastewater)

Better operational response plan (partially developed but requires further investment to complete)

Vulnerable network (long term investment in renewals and upgrades - PCC plants and networks)

Wellington Water Capability and Capacity

Due to the scale of Three Waters challenges over the next 10-30 years, Wellington Water will need increased capability and capacity to respond to the changing environment. Some examples include:

- Increased focus on long term planning and investigations
- Water regulation response
- Technology and smart networks
- Closing base data gaps
- Building sector capacity & capability



Company Investment

\$10% Increase in Company Capability & Capacity
PCC contribution - \$350k per annum

Activities	LTP Years	Result	Link to Strategy & Benefits
Programme delivery of strategic priorities (strategy to action)	1-10+	Ability for company to deliver strategy to action on all significant priorities that have not, historically been a focus for the company (carbon reduction, healthy urban waters, sustainable water supply)	Supports all key priorities
Base data gap closure	1-6	Better long term value to PCC, evidence based investment, for example on growth demands	Supports all key priorities
*Water regulation preparedness	1-3	Strengthened capability, technology and systems	Safe and healthy water confidence

Note:
 * Excludes possible contribution required to fund a national three waters regulator

Indicative Investment Increases



Opex

Looking after existing Infrastructure: 25% increase in council **Opex** - **+\$10M** increase over 10 Years

Sustainable Water Supply (included)

Carbon Reduction (included)

Increasing Company Capability & Capacity: + **\$3.5M** increase over 10 years (PCC - \$350k per annum)

Total Opex Increase – Circa + **\$13.5M** over 10 years

Capex

Renewals: **3 times** increase on current investment by 2030 - **+\$110M** over 10 Years

Growth Construction - + **\$440-\$600M**

Sustainable Water Supply - + **\$1M - \$16M**

Healthy Urban Waters – cost unknown

Carbon Reduction – cost unknown

Total Capex Increase – Circa **\$700M** + over 10 years

PCC Indicative Capex Investment over 30 years



Total Capex – Circa *\$1.8 billion over 30 years

Total Capex Increase – Circa *\$1.5 billion over 30 years, comprising:

Growth Construction – Circa \$1.05 billion

Asset Renewals – Circa \$350 million

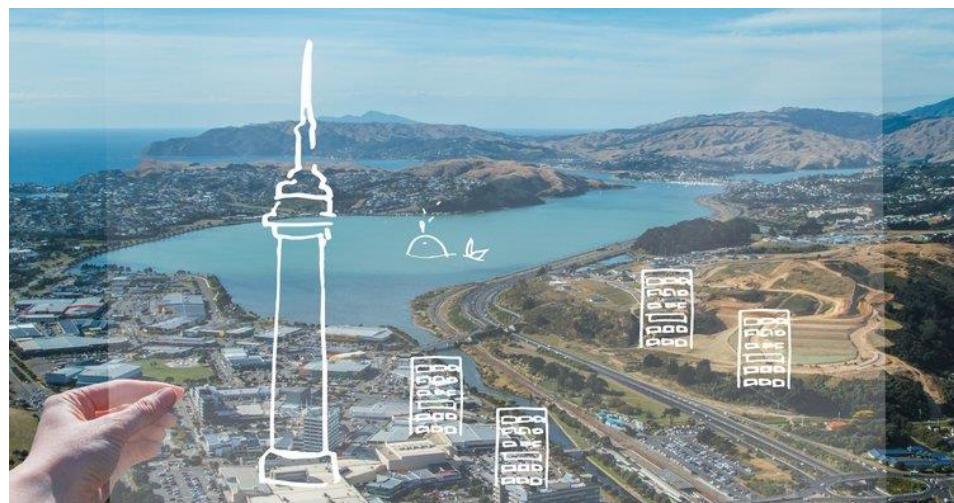
***Levels of Service – Circa \$100 million**
(Including circa \$30 million for Sustainable Water Supply)

(* Levels of Service category includes work identified under Sustainable Water Supply, Healthy Urban Waters & Climate Change)

***Note:** Figure based on draft (unconstrained) three waters service plan at January 2020, with increase compared to base 2018/48 LTP of \$300 million

Affordability – further work needed

- This increase in investment is a step change over your current (2018/28) LTP
- The \$1+ billion of additional investment for growth is unaffordable
- We will work with you to establish priorities and timing
- We understand that you will be discussing funding options



Next steps

Wellington Water will come back to Council around April/May to seek formal advice on three waters investment options for Porirua City's 21/31 LTP. We can also provide three waters policy recommendations that support delivery of outcomes for your City.

