Early Investment Signals for UHCC 2021/31 LTP

February 2020

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Wellington Water

Our water, our future.

At the heart of a resilient city

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

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

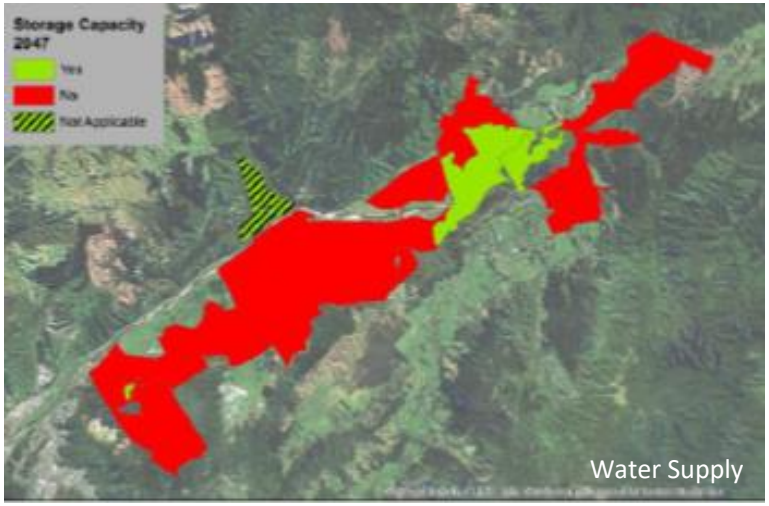
We are facing challenges over the next 10-30 years that need to be addressed to enable Upper Hutt City to continue to be a resilient city.

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

We are in a critical 30 year period

Circa 40 - 50% of UHCC's three waters assets are due for renewal within the next 30 years

Martin St, Wallaceville



Networks at or approaching capacity in 2047

Forecast 20% population growth over next 30 years

New and existing challenges

Our water, our future.

Key challenges and priorities

Wellington Water

Te Mana o Te Wai

- Looking after our existing infrastructure *(renewals, operations, maintenance and critical service level upgrades)*
- Growth
- Sustainable Water Supply
- Healthy Urban Waters
- Climate Change *(mitigation and adaptation)*

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

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.

Note:

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

Investment timeframes to achieve levels of service

Looking after our 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 have plans in place to reduce our emissions and 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 our 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 our 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

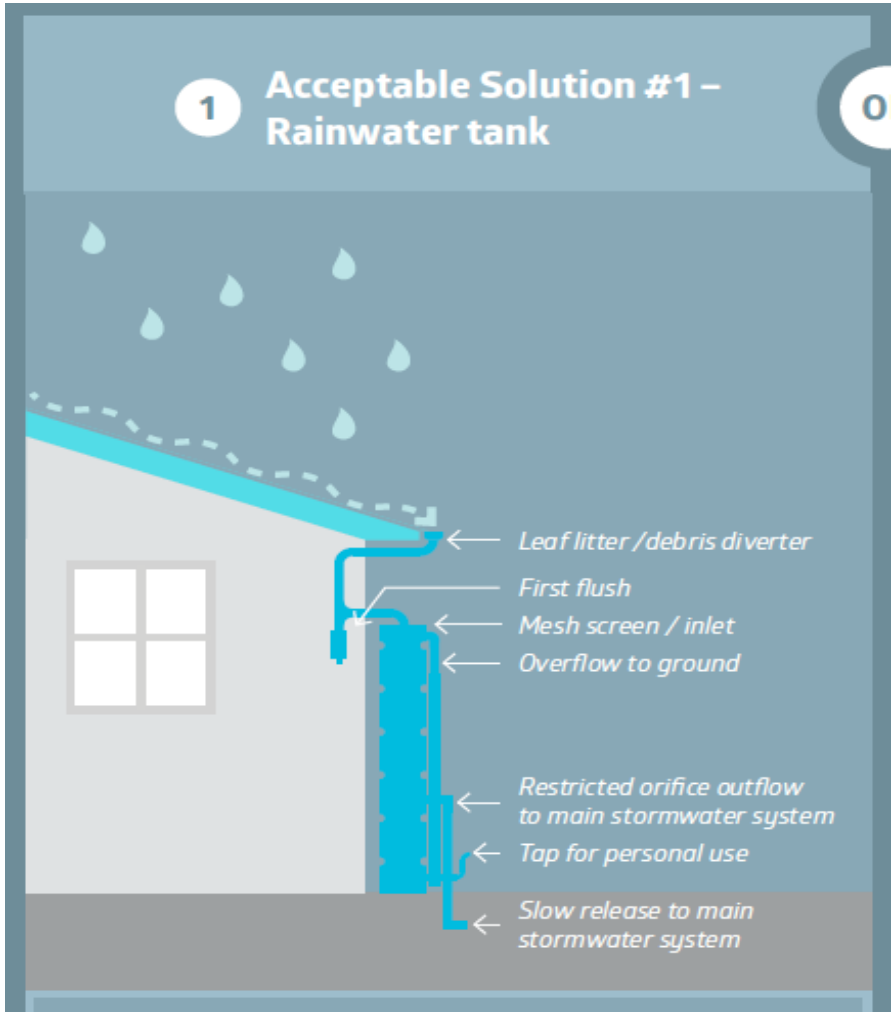
Three Waters outcomes can be achieved by improving and developing the network. There are also significant opportunities to improve long term outcomes through smart policy, including District Plan provisions, councils' policies and bylaws and Wellington Water policies, standards and guidelines.

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 is working with your District Planning team to ensure that progressive Three Waters objectives are included as plans are reviewed by councils.

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 UHCC 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	🟢	🟢	🟢	🟢	🟢	🟢

Red = target not achieved
Green = target achieved

Placeholder page outlining UHCC's water leakage

To be completed post
ELT discussion

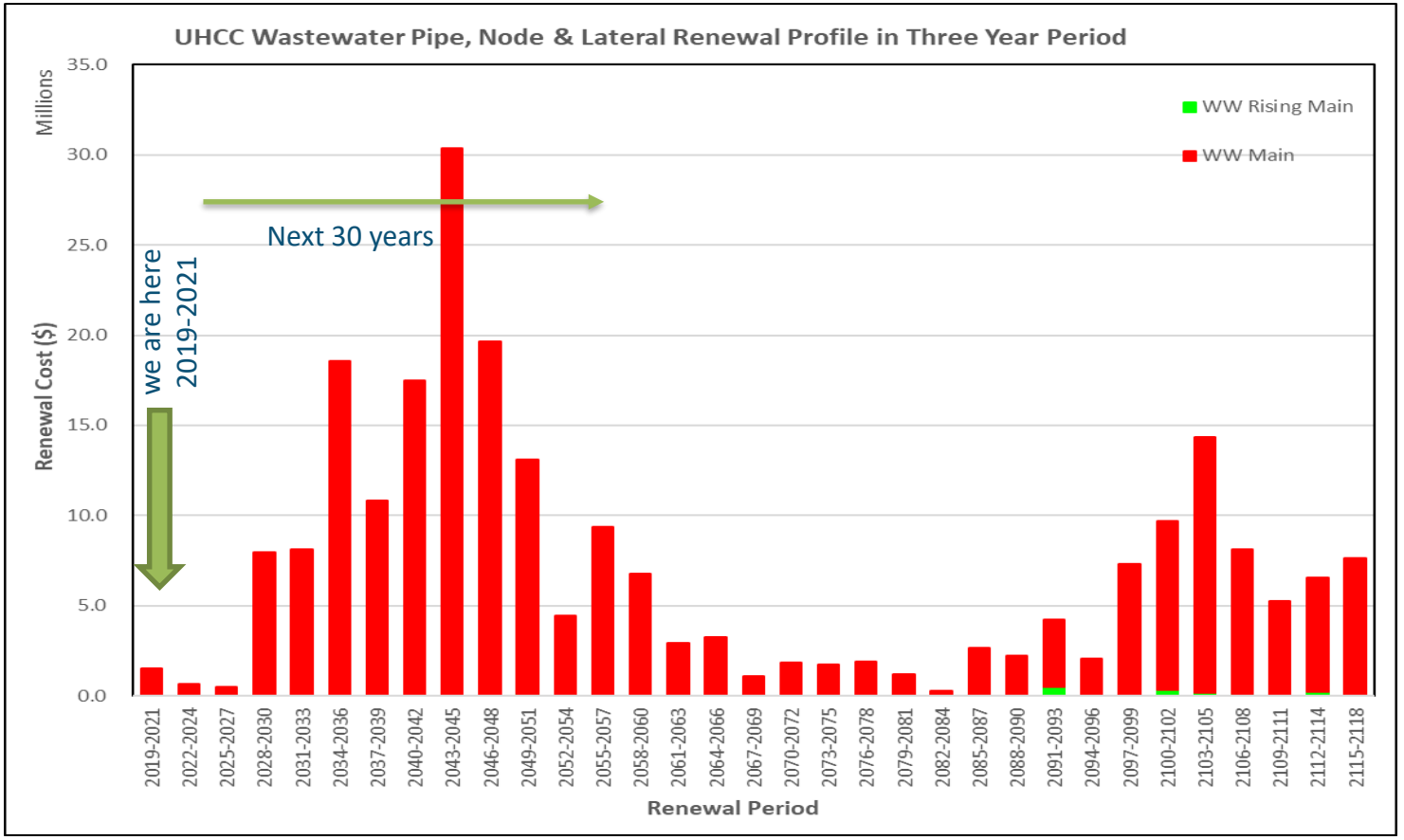
Key challenges and priorities

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 our existing infrastructure

Looking After our existing Infrastructure – Challenge

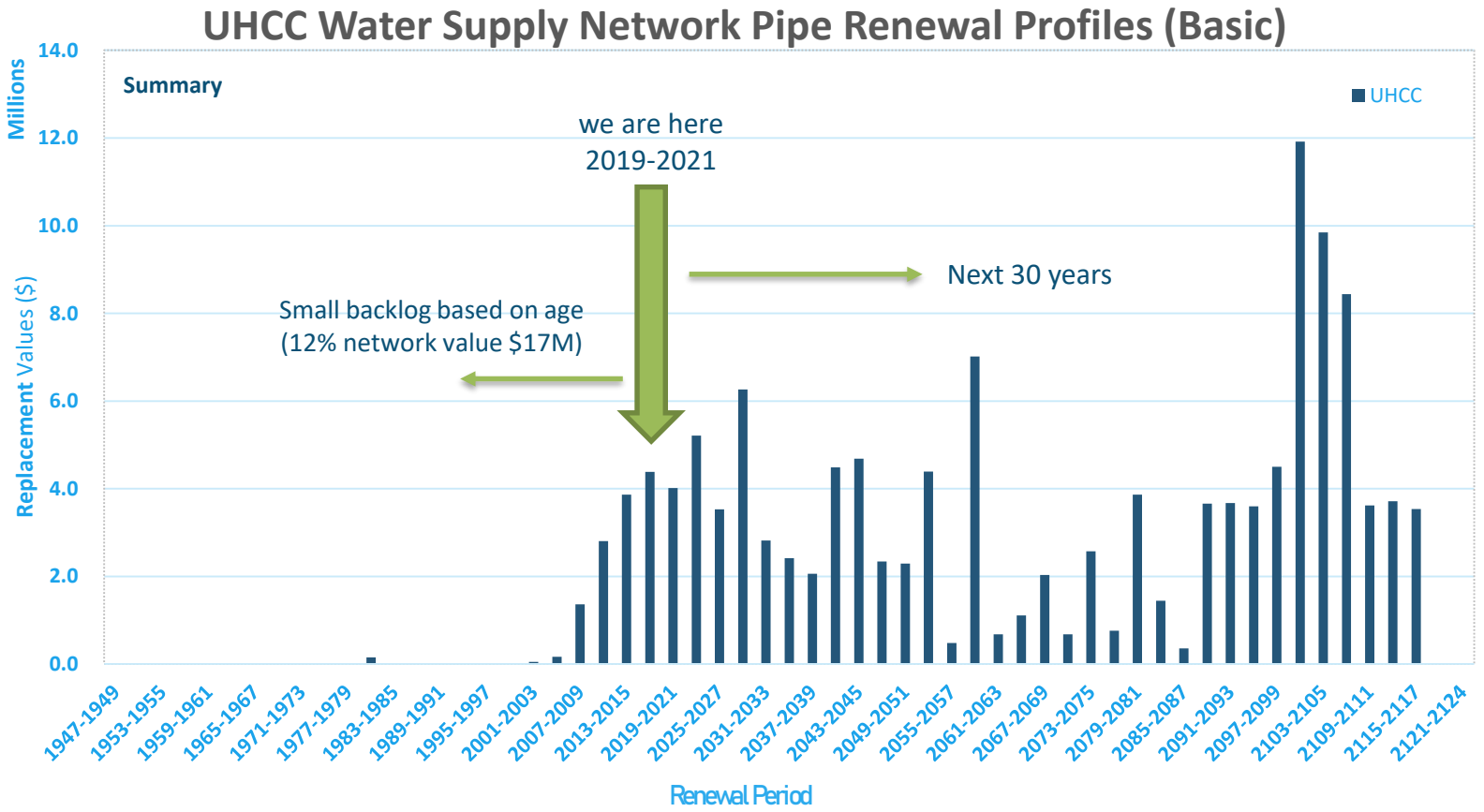
This graph illustrates the pending investment for the council's wastewater network based on the age profiles of the pipes: (excludes wastewater trunk network and treatment plant)



Our water, our future.

Looking After our Infrastructure – Challenge

This graph shows the pending investment and backlog investment 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):



Funding requirements – OPEX

Permanent 10-20% Increase in Opex Investment within 3 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 HCC moving from reactive to planned to predictive, reduced service risks particularly on critical assets	Supports all key priorities

Note:

This increase in Opex investment 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.

Funding Requirements – CAPEX Renewals

$30M* increase in Renewals over 10 years (over & above 2018/28 LTP)

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 our 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

* Approx. 50% of this increase comprises UHCC's contribution to wastewater trunk network renewals

Growth

Growth Opportunity

Planning for future growth will support our ability to:

- Strategically plan to meet population growth set out in UHCC growth strategies and District Plan
- Develop integrated plans and solutions 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 constraints on an annual basis e.g. rate of development and location of land use demands
- Have evidence based data to assess land use re-zoning and intensification e.g. constraints in the network, growth demand and flooding hazards

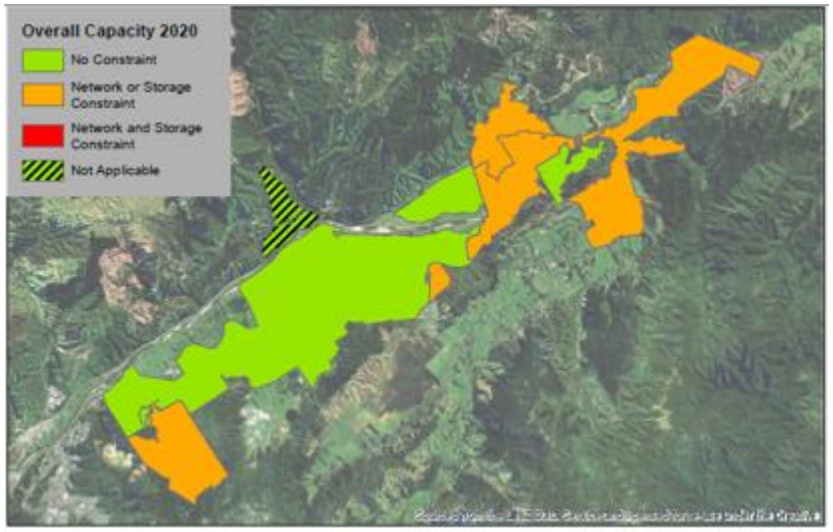
Growth Challenge

Wellington Water has assessed water supply capacity for UHCC over various time periods based on growth predictions. This is a requirement under the National Policy Statement for Urban Development Capacity (NPS-UDC).

The adjacent map shows network constraints in 2020 based on high level modelling. Detailed models will be completed for all three waters within the next 2 years.

Many of these areas are already development enabled under the District Plan rules

Growth plans are guided by the *Land Use Strategy Upper Hutt 2016 – 2043* and upcoming *District Plan Change 50*.



UHCC Water Supply constraints 2020

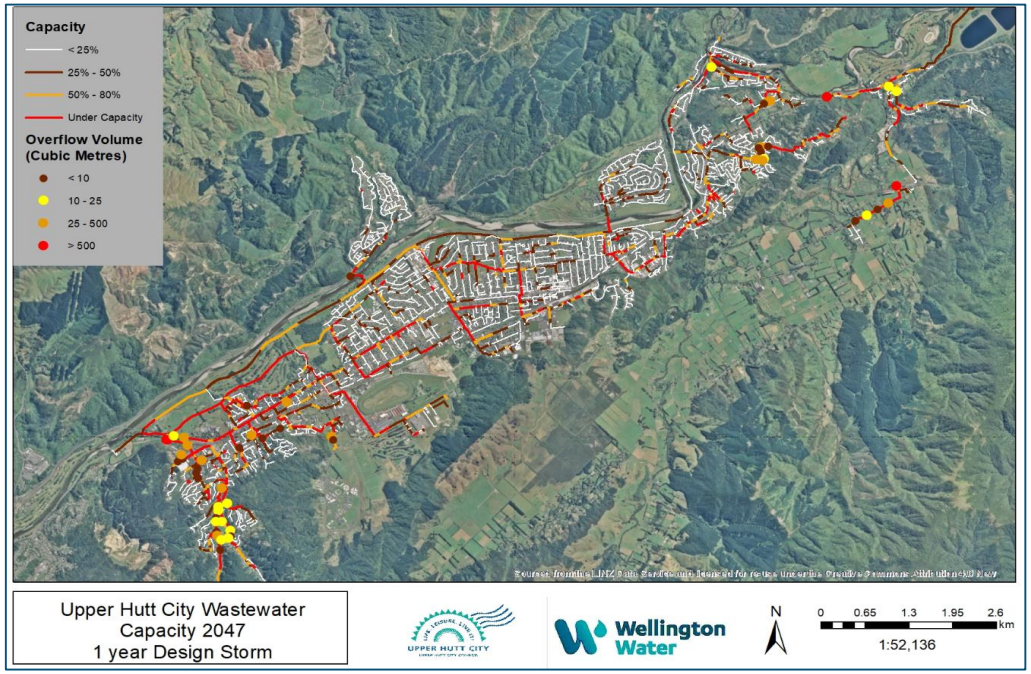
Growth Challenge (Cont'd)

Wellington Water has also assessed wastewater network capacity for UHCC over various time periods based on growth predictions.

The adjacent map shows predicted network constraints for year 2047.

The red lines show parts of the piped network that are expected to be under capacity within 30 years. The coloured dots show the extent of predicted wastewater network overflow volumes for year 2047

Silverstream wastewater overflows not shown



UHCC wastewater constraints 2047

Our water, our future.

Increased investment for Growth – Total Costs Unknown

Activities	LTP Years	Result	Link to Strategy & Benefits
Integrated growth planning (circa $1M)	1-3	Infrastructure needs understood for Upper Hutt reticulated urban area, including wastewater trunk main	Growth, Healthy Urban Waters, Resilience, Flooding, Looking after our existing infrastructure, Te Mana o Te Wai
Build assets in a way that meet future forecast growth demand	3-10+	No deterioration in current levels of service as a result of growth and integrated solutions that achieve all our outcomes.	

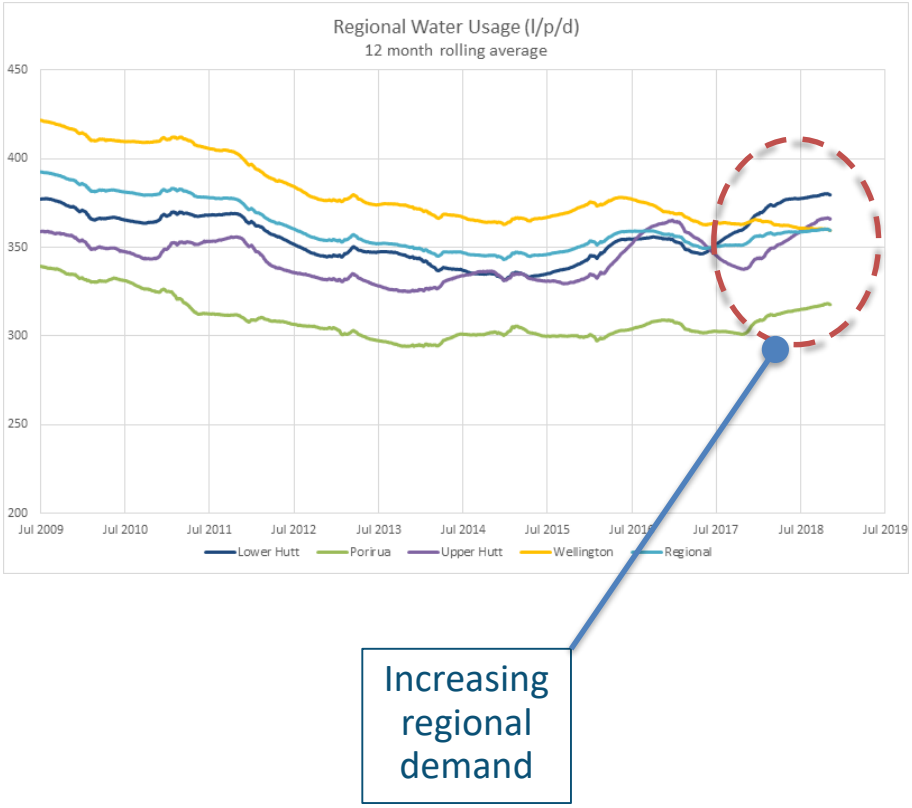
Note:
Growth investment needs are yet to be determined for UHCC. Future Growth plans need to be completed to fully understand Three Waters infrastructure investment. UHCC Future Growth Study – Phase 1, to be delivered in February 2020.

Specific funding provisions for UHCC Three Waters growth planning via investigations into integrated planning solutions is required.

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



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

*$1-$11M 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
Water Supply network smart controls and sensors	1-10+	Optimised network management	
Household water meters (*circa $10m for UHCC)	5-7	Circa 20% reduction in water demand	
Increased operational leakage management and customer engagement (*activities included in increasing company capability)*	1-10+	Circa 10% reduction in water demand	

Note:
It is assumed that network meters will be installed prior to the 2021/31 LTP

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

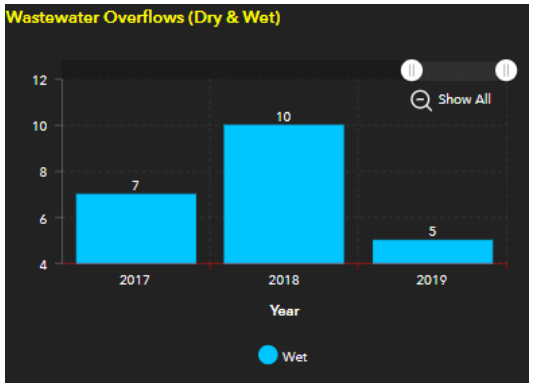
New National Policy Statement and related RMA changes, manifesting at local level through the Natural Resources Plan and associated Whaitua process

Healthy Urban Waters Challenge

- 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

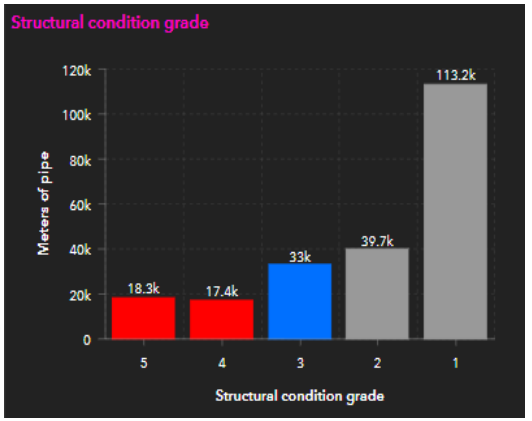
Healthy Urban Waters (Cont'd)

These screenshots illustrate the healthy urban waters challenge in Upper Hutt

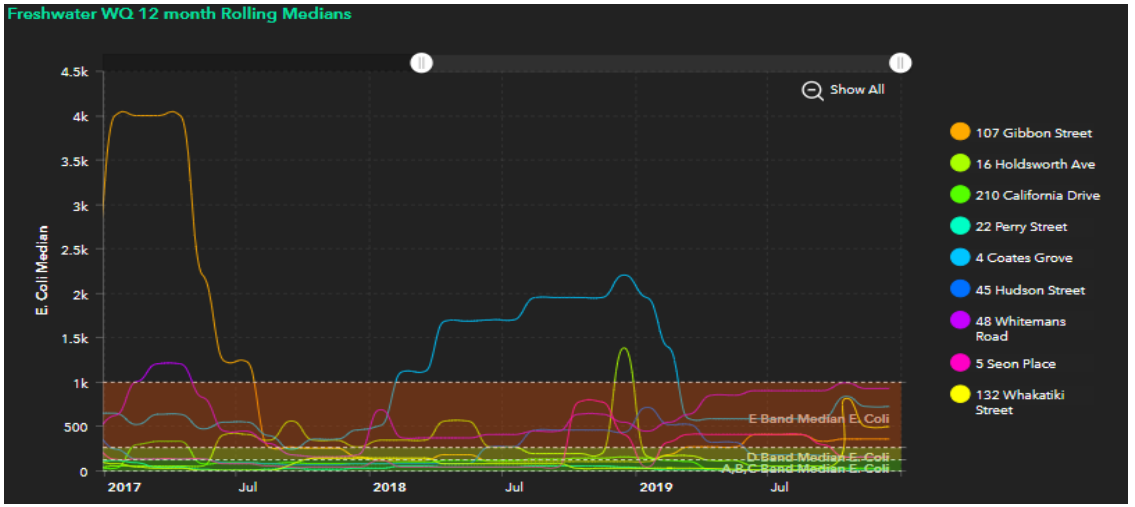


This data shows the number of recorded wastewater overflows during wet weather in the Upper Hutt city area over the past 3 years. 95% of the overflow incidents have been from the Silverstream Tank. Other overflows from manhole lids have occurred but are not currently monitored.

This data shows that around 16% of the wastewater pipes in Upper Hutt are grade 4 or 5 (structural cracking and other defects)



This data shows that recorded E.Coli levels at about 50% of monitored sites are generally in Band E (worst grade in new MfE freshwater standards).



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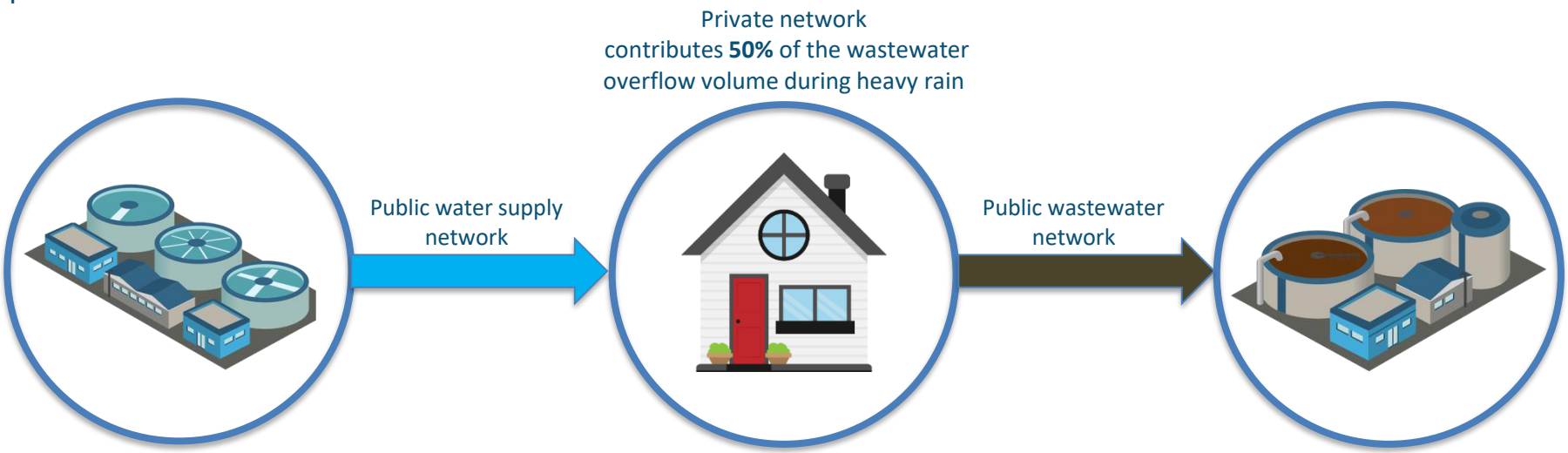
Healthy Urban Waters – Private Network Contribution

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.



Healthy Urban Waters Investment

Circa $20M Increase for Healthy Urban Waters

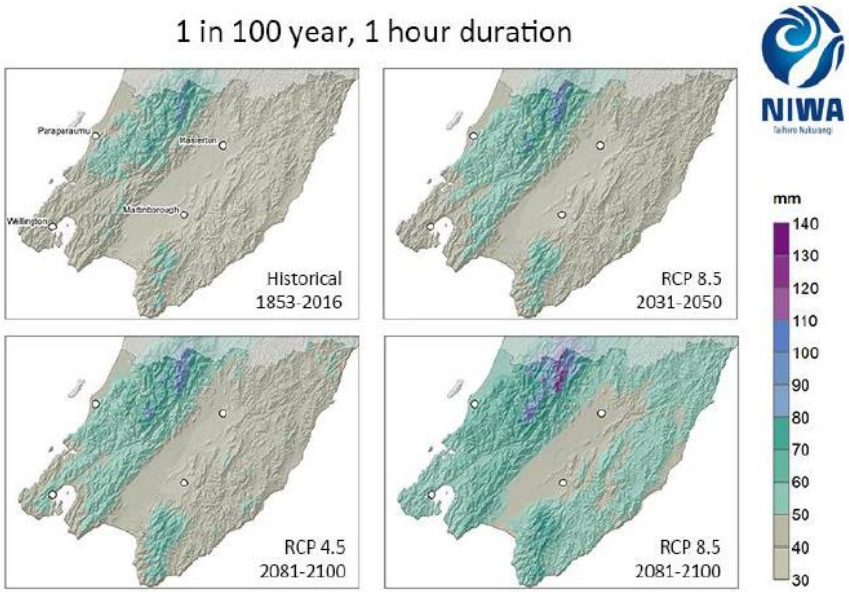
Activities	LTP Years	Result	Link to Strategy & Benefits
Increase in general Three Waters Opex	1-3+	Reduced overflows into streams, rivers and harbour, reduced service risks - Includes private network inspections *(Allowed for under 'looking after our existing infrastructure' – Opex & Capex Renewals)*	Healthy Urban Waters, Te Mana o Te Wai
Increase in wastewater renewals	1-10+		
Wastewater network smart controls and sensors (IIOT)	1-10+	Reduced overflows into streams, rivers and harbour, reduced service risks	
Wastewater network storage *(includes local storage and UHCC's contribution to trunk network storage)*	1-10+	Reduced overflows into streams, rivers and harbour, reduced service risks	
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 increasingly 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

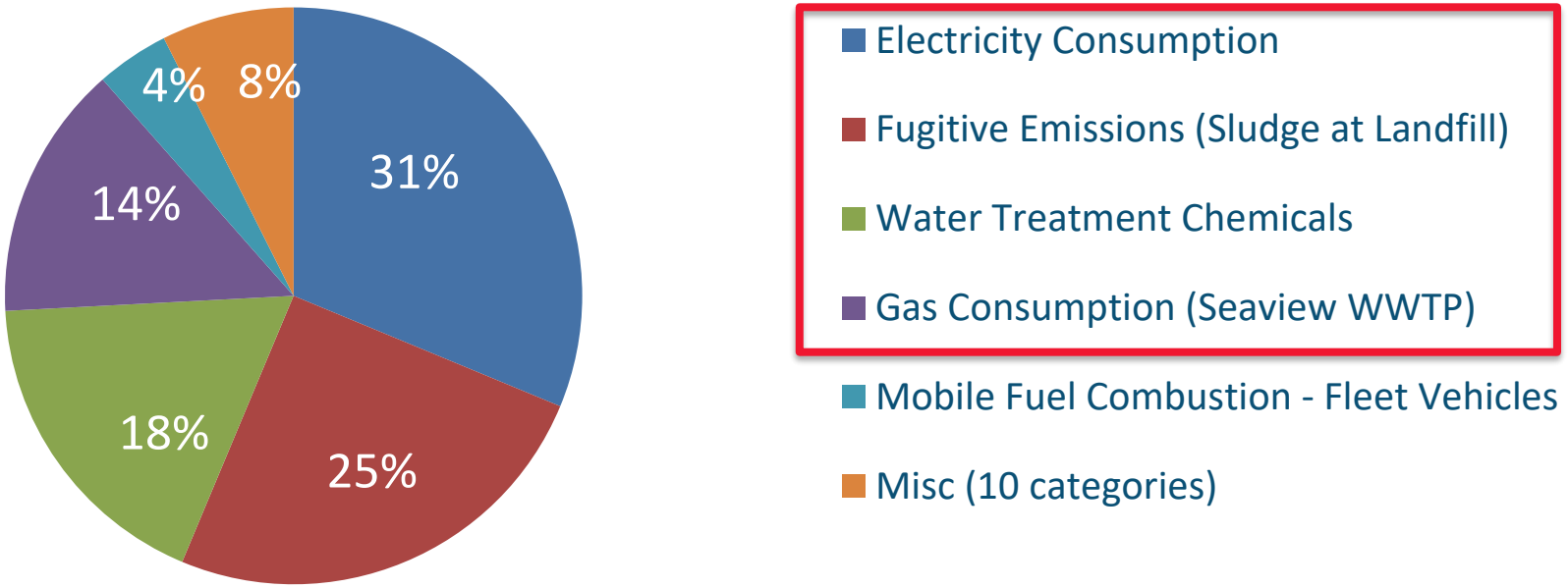


Predicted extreme rainfall event frequency under various climate scenarios

* The Seaview wastewater treatment plant is located in the coastal area. Sea level rise is also expected to impact on the aquifer.

Climate Change (Carbon Reduction Challenge)

- Our regional Three Waters activities produce 17,500 tonnes of CO_2 equivalent (financial year 2018/19 data)
- 88% of omissions originate from 4 categories which includes sludge drying at the Seaview wastewater treatment plant which UHCC contribute to



Excludes SWDC

Climate Change (Carbon Reduction)

Circa *$15M Increase for Carbon Reduction

Activities	LTP years	Result	Link to Strategy & Benefits
Wastewater sludge management *(*UHCC's share is the main contributor to the $15M)*	5-10	Reduced operational carbon emissions from sludge treatment and disposal (including natural gas dryer at Seaview WWTP)	Carbon Reduction
Water treatment options	1-6	Operating carbon reductions *(Undertaken within Greater Wellington opex budget)*	
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 our regional 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 (WWL currently working with UHCC to make this fully operational)

Vulnerable network (long term investment in renewals and upgrades - bulk water and UHCC plants 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 - UHCC 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

Wellington Water

$10% Increase in Company Capability & Capacity
UHCC contribution - $200k 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 HCC, evidence based investment, for example on growth demands	Supports all key priorities
*Water regulation preparedness	1-10	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 for

Wellington Water

Opex	Capex
Looking after our existing Infrastructure: 10% - 20% increase in council **O**pex - **+$5M - $10M** increase over 10 Years	**Renewals: 35%** increase by 2025 - **+$30M** increase over 10 Years
Growth Planning: **+$1M**	**Growth Construction** - unknown
Sustainable Water Supply (included)	**Sustainable Water Supply - + $1M - $11M** (Household Water Meters + $10M)
Carbon Reduction (included)	**Carbon Reduction** (Sludge solution) - **+$15M**
Increasing Company Capability & Capacity: + $2M increase over 10 years ($200k per annum)	**Healthy Urban Waters –** Circa **+ $20M**
Total Opex Increase – Circa **+ $8M – $13M** over 10 years	**Total Capex Increase** – Circa **+ $66M - $76M** over 10 years

Next steps

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