



The Mayoral Taskforce on the Three Waters Report



Contents

- 4 Mayor's Foreword**
- 6 Taskforce recommendations, to the Council**
- 10 Mana whenua**
- 12 The Taskforce Journey**
- 14 The current state of the three waters, and what it means for our city**
- 18 Three Waters Assets and Services**
 - 18 Stormwater
 - 23 Drinking Water
 - 24 Wastewater
 - 26 Network resilience
 - 27 Low carbon transition and resource recovery
- 28 Governance, funding, community participation & reporting**
 - 28 Improving governance and achieving sufficient, sustainable funding
 - 34 Community Participation
 - 36 Performance and Transparency
- 39 Taskforce members**



Mayor's Foreword

Ko te wai te ora ngā mea katoa. Water is the life giver of all things.

Collectively, Wellington City Council's (WCC) Three Waters network (drinking water, wastewater and stormwater) includes 2,653 km of pipes, 65 reservoirs, 103 pump stations, and three treatment plants, and is valued at approximately \$3.86 billion.

Our three waters system has for many years been largely out of sight, out of mind. However, in December 2019 and into early 2020 a number of high-profile pipe failures, particularly in the City's wastewater network led to concerns about the condition of the City's underground infrastructure. This Taskforce was established in February 2020 to investigate the condition, funding and management of the network, and to develop recommendations for its future. The WCC responded further by increasing funding in its 2020–21 Annual Plan specifically for enhanced condition assessment and for roving crews to identify and address problems.

The Taskforce unanimously agrees that transformational change in governance, asset ownership, funding and management is required to lift the network's performance to the level appropriate to a modern, inclusive and environmentally sustainable city. During the period the Taskforce has been working, Government announced a national water reform programme which aligns closely with the Taskforce's conclusions.

Key General Conclusions

Although WCC has been fully depreciating its water assets for many years, and providing the funding requested, the actual level of renewals investment has consistently been significantly lower than the depreciation collected. Significant funding has been directed to other projects. The result is that the network is ageing and deteriorating, leading to increases in pipe breakages and increasing water loss and wastewater leakage. The scale of the financial challenge is very significant, and a reset is required.

The Taskforce recommends ring fencing depreciation funding in the first instance, in advance of any transition of assets and funding arrangements to Wellington Water Limited (WWL) or a successor entity resulting from any Government reforms.

The Taskforce found that WWL funding has been squeezed, resulting in reduced investment in asset condition assessment. The Taskforce considers a well-planned and funded condition assessment programme is essential to good asset management, and to ensuring pipes are replaced at the optimal time, not too early, or too late. Better understanding of asset condition would more clearly establish pipes actual lives, rather than expected useful, lifespan and ensure accurate rates of depreciation.

The Taskforce also found that it appears that as the network ages, and possibly exacerbated by earthquake damage, maintenance and renewals are increasingly reactive rather than planned.

The Taskforce supports continued investment to ensure the three waters network is resilient in the face of Wellington's seismic and climate change challenges.

Rapid population growth also means the network is nearing capacity in many areas, and there will need to be well targeted, but extensive investment in new infrastructure to align with urban planning for future population growth. A robust development contributions policy and other funding tools will be needed to ensure that growth pays for the costs it imposes.

Governance, funding, community participation and reporting

The Taskforce recommends that Councils should work together to transition their water assets and appropriate debt to WWL or a successor entity, which must remain owned by its constituent Councils. The Taskforce supports in principle the Government's direction towards

Council owned multi-regional entities providing drinking water and wastewater services.

The Taskforce considers Council ownership must be cemented into the foundation documents of WWL and any successor organisation.

Alongside any new asset ownership and management arrangements the Taskforce considers it important that communities have an enhanced relationship with their water services at a catchment level. This includes the need for increasing transparency of information.

Drinking Water

There is a need to significantly reduce our collective water use to protect the environment and delay or avoid the need for expensive new water storage facilities. Rapid population growth means the four cities are approaching water supply limits. Water consumption per capita and the level of network leakage are high, and leakage is often hard to detect. Consequently, the Taskforce concludes that water metering in time, should replace rates as the means of funding residential water supply. This would enable rapid location and addressing of leaks, encourage water harvesting and reuse, forestalling the need for expensive new water sources, and give an accurate picture of the actual levels of leakage in the drinking water system. The Taskforce is strongly of the view that any charging system must ensure everyone retains access to enough healthy and affordable water.

Wastewater and Stormwater

The Taskforce confirmed that stream systems are polluted by wastewater leaks from both public and private pipes, and by pollutants entering stormwater. The Taskforce agreed that past practices are no longer acceptable and embraced the principle of Te Mana o te Wai. The Taskforce concluded that we will all have a part to play as kaitiaki, in progressively addressing these problems and better looking after streams and coastal waters, whether that is in reducing water use, repairing our own water systems, or in eliminating pollutants

and inappropriate items going into wastewater and stormwater systems.

In addition to recommending more investment in condition assessment, maintenance and renewal of the public network the Taskforce recommends increased investment strengthening compliance processes to progressively identify and address failings within the private pipe network.

The Taskforce has 48 recommendations which together will create a resilient, modern, well managed, sustainable three waters system that continues to provide enough healthy drinking water, and will progressively eliminate adverse effects on the environment.

I want to finish by thanking the Taskforce members. They have given an enormous amount of time, expertise, and passion to ensuring Wellington has a three waters system fit for the future. They have brought inquiring minds and a willingness to explore, discuss and reach conclusions together. The Taskforce comprised myself, Councillors, water infrastructure specialists, iwi, whaitua, community and business representatives and chairs of the WWL Board and Shareholder Committee. We have been supported by WWL and Council officers and our own independent expert. I want to record my deep appreciation for the commitment and expertise of all the Taskforce members and our support team.

I commend the Taskforce's report to the Council for its consideration and adoption.



Andy Foster
Mayor of Wellington

Taskforce recommendations, to the Council

Three Waters Assets and Services

1. With urgency, task and fund WWL to implement a plan for the inspection of critical assets across the three waters network within three years, in order to inform future investments.
2. Task and fund WWL to prioritise increased renewals investment on those critical assets identified as needing maintenance and repair during the condition assessment programme.
3. Task and fund WWL to continue to improve its asset maintenance systems and processes, and asset data collection and management.
4. Substantially increase the level of funding in the WCC 2021/31 LTP for capital funding for renewals (possibly by ringfencing funds collected for water asset depreciation), operational funding for planned maintenance, and operational funding for reactive maintenance to reduce the risk of asset failure.

Stormwater

5. In the event that stormwater asset ownership and management is not transferred to a new entity in the Government reforms, Council should develop a plan for the future of stormwater management that recognises its connections to streams, the other water services, land use, and the roading network.
6. The Council, together with WWL and with input from GWRC must develop a comprehensive suite of regulatory and non-regulatory interventions to require property developments and roading infrastructure to adopt water sensitive urban design such as the use of water impact assessments, rainwater/stormwater harvesting, rain gardens, constructed wetlands, green roofs, improved sump maintenance, strategic street sweeping and permeable pavements to mitigate water quality impacts and reduce peak wet weather flows.
7. The chosen interventions should be incorporated into the Council's Codes of Practice and District Plan and mandated for all new development (both greenfield and infill/brownfield) supported by education for contractors, community groups, and the design and engineering community.
8. Propose changes to the District Plan so that all new land development consents are required to improve the stormwater effects of the site (a higher bar than maintaining the current level of effects). Where this is not possible or sensible within development sites, a formal stormwater offsetting programme could be adopted to fund more efficient centralised systems in the public realm.
9. Work with WWL and GWRC to develop catchment-scale stormwater planning which considers opportunities to 'daylight' currently piped streams, restoration of remaining streams, and implementation of green infrastructure to treat stormwater prior to discharge into streams, harbour or the open coast.
10. Work with WWL to develop an approach to the ownership and management of green infrastructure for private property developments and ensure that these assets meet design and performance requirements when being vested to Council ownership.
11. Ensure all green infrastructure is adequately capitalised and depreciated to provide ongoing maintenance and renewals funding.
12. With input from WWL, consider the development of a stormwater bylaw to help manage the input of potential contaminants into the stormwater system.
13. Develop standardised estimation and reporting of stormwater effects for all Council projects and require the assessment of options to offset these effects.

14. With WWL, further integrate the use of roads and open spaces (such as parks and sports grounds) to act as overland flow paths and flood storage, to reduce the effects of stormwater flooding on public health, safety, and property.

Drinking Water

15. Rapidly progress the business case for universal residential 'smart' water meters across Wellington City, building on the economic case recently completed for GWRC and as endorsed by the WWL Shareholders Committee, and include budget provision for installing these meters in the out years of the 2021/31 LTP.
16. Consult with ratepayers on the merits of these smart meters for reducing water loss and enabling more water-efficient behaviour as part of consultation on the 2021/31 LTP.
17. Establish a suite of policy measures, including changes to the District Plan, relevant bylaws, and Codes of Practice that result in reduced drinking water use in new residential developments, such as through requiring rainwater harvesting and storage.
18. Request WWL to investigate the opportunity to harness international innovations around smart water networks and other technologies that support efficient water use and network operations.
20. Task and fund WWL to progress the Owhiro Catchment pilot programme as a high priority to inform the development of the road-map and to develop and implement a programme that strategically works through catchments to identify and repair cross-connections or asset failures in both public and private assets, where catchments with open streams and community connection are prioritised.
21. The road-map should include activities to address wastewater network capacity issues (including stormwater ingress) to progressively reduce the requirement for untreated wastewater discharges into the environment from constructed overflows, with the goal that constructed overflows should only be used in genuine emergencies.
22. Urgently review and strengthen consent and code of compliance processes to ensure there are clear accountabilities and a low risk of future illegal cross-connections.
23. Establish a complete set of regulatory and policy measures to ensure that Council can require landowners to undertake repairs to failed private assets, record failures on Land Information Memoranda until repaired, and provide a funding mechanism to support landowners to make these repairs, such as through installments on their rates bill or by enabling Council to recover the costs when the property is sold.

Wastewater

19. Task and fund WWL to develop a road-map for consideration in the 2024/34 LTP that would see WWL (or a future entity) funded to achieve compliance with the National Policy Statement – Freshwater Management by 2040.

Network resilience

24. When evaluating future sludge treatment options, consider the resilience risks involved in piping wastewater sludge across earthquake faultlines.
25. Request that WWL develops greater understanding of the compounding effects of seismic activity on buried water infrastructure.
26. Task and fund WWL to identify critical three waters infrastructure at risk from natural hazards and prioritise them for upgrade, having regard to the previous work undertaken for the Wellington Lifelines Group resilience project.
27. Continue working with other utility service providers to identify joint earthquake and climate change adaptation strategies, such as alternative 'shared corridors' for utility services to be moved away from hazard areas.
32. Engage positively and proactively with the other Councils in the region to agree on how the region's people and the environment can best benefit from the reform programme and associated funding
33. Work with other Councils to develop a plan to transfer three waters debt and asset ownership off Councils' at the 2024/34 LTP, to either WWL or a new entity formed through the Government reforms
34. Ensure the entity has the ability to borrow against its assets, thereby smoothing water infrastructure investment over time.
35. Enable the entity to raise revenue directly through customer charges, while protecting incentives for rainwater harvesting

Low carbon transition and resource recovery

28. Task and fund WWL to measure carbon and to pursue projects that will reduce the carbon emissions generated by the three waters services.
29. Advance the sludge minimisation project to deliver more efficient treatment of biosolids, including beneficial reuse of biosolids and treated wastewater where feasible.
36. Communicate the benefits of switching from the current water charging model to a method based on actual water consumption to reduce demand on drinking water and incentivise property owners to repair leaks
37. Evaluate any future water charging system to ensure that it is transparent to all users, fair and reasonable in terms of providing a long term ability to deliver sufficient, affordable water to low income households and ensuring that it does not limit the uptake of rainwater tanks for harvest and reuse for non drinking uses

Improving governance and achieving sufficient, sustainable funding

30. Commit to the concept of an independent, publicly-owned, not-for-profit, water management and asset-owning entity that is governed and operates in accordance with a statement of intent from shareholding Councils
31. Actively participate in the Government's national Water Reform agenda, to ensure that it delivers on the principles and goals agreed by the Taskforce
38. Review the Council's development contributions policies to ensure these are requiring new developments to meet the infrastructure costs that they create, and require the new asset owning entity to ensure that upgrades to asset capacity due to population growth are paid for through development contributions and use of the Infrastructure Funding and Financing Act
39. Synchronise three waters investment to enable city growth in identified areas in the new District Plan

Community Participation

40. With iwi, key stakeholders and the wider community develop a process for the formation of catchment governance groups and catchment plans, within the framework of the Natural Resources Plan and associated resource consents.
41. Engage Iwi, key stakeholders, and the wider community around the Government's reform proposals to develop governance mechanisms that enable direct democratic input while achieving the economies of scale offered by a large corporate entity.
42. Investigate ways to connect people with their catchment using measures such as landscaping and signage to identify the location of piped streams.

Performance and Transparency

43. Establish clear lines of accountability and communication so that customers know who to contact about all water-related matters and where to find and easily access water-related information and performance data.
44. Review the effectiveness of receiving waters quality monitoring processes, such as LAWA and Baywatch, and noting Auckland Council's 'Swim Safe' system, including a specific focus on whether the selected monitoring sites are consistent with the needs of communities and whether public health notices and signage are clear, unambiguous, and well located.
45. With iwi and partner agencies, develop a cultural health and ecosystem health monitoring programme at selected sites around the Wellington streams and coastline.
46. In collaboration with partner agencies, build on the Water That Counts pilot to develop and progressively expand an open-access data portal for water, including measures such as drinking water quality and consumption, water leakage, fresh and marine water quality monitoring, and other key performance measures including compliance with consent conditions.
47. Redesign and align WCC and WWL customer satisfaction surveys to better reflect community aspirations and expectations about three waters services.
48. Support the benchmarking of cost and operations for three waters services against other comparable providers to better assess the performance of WWL, additional benchmarking of the condition of the assets to assess the performance of the network, and make these results publicly available where possible.

Mana whenua

Taranaki Whānui and Ngāti Toarangatira have a long history in the settlement and development of Whanganui-a-Tara. At the start of the 19th Century there were many hapū and kainga along the coastal harbours. Hapū and whānau had access to mahinga kai (food gathering places rich with many kai sources and supplies) from various bush areas, cultivated gardens, freshwater streams and marine areas. This enabled much contact and trade between kainga and hapū and eventually Pākehā who arrived at the shores. Traditionally, Māori were kaitiaki (guardians) of their environment.

Today, our connection with Te Whanganui-a-tara continues to be based on a set of values which are about our relationships with people and the environment (including the built-up one). This plays out in a range of forms including our role as kaitiaki and through the provision of advice across a range of government, local government and policy forums. For mana whenua we have always taken our responsibilities as kaitiaki seriously. However, over the past 180 years our rights as mana whenua have eroded and our voices have been ignored. The establishment of the Pākehā system of law, regulation, funding models and public policy settings have been difficult mechanisms to influence. However, our interests have remained and our desire to ensure that the mana whenua and other citizens who have chosen to live, enjoy and play in our city - can do so safely and without harm to our environment.

Both Taranaki Whānui and Ngāti Toarangatira of this whaitua (region) share a vision - “Kei te pūtake o te whaitua o te Whanganui-a-Tara tōna mauri mana motuhake hei orange mō te katoa / the mauri

of te Whanganui-a-Tara and the communities who live within it is nurtured, strengthened and able to flourish”.

In March 2020, Mayor Andy Foster extended an invitation to both Taranaki Whānui and Ngāti Toarangatira to participate in the Mayoral Taskforce on Three Waters in the wake of a number of infrastructural and environmental problems in late 2019. These included:

- the partial collapse of a tunnel under Dixon Street leading to the discharge of raw wastewater into our harbour
- the failure of the wastewater sludge pipes under Mt Albert leading to over \$100k a day in transporting costs, so as to ensure the untreated sludge would not enter our harbour
- increased volume of wastewater and drinking water leaks across the city impacting on te mana me te mauri o te wai
- public criticism over wastewater entering our freshwater and coastal marine environment - reminding everyone of their lack of care when it came to our important role as kaitiaki of our streams and coastal catchments.

The costs and impact of these issues have unfairly impacted on many who reside in our city including tangata whenua. Members have lost trust in our City Council, WWL and the Greater Wellington Regional Council (GWRC) in terms of its ability to manage and look after our precious water assets and infrastructure for the people of the today and most of all for our mokopuna (grandchildren) of tomorrow.

We have sat and listened to the issues and participated in the various discussions about the possible solutions. As mana whenua, we are left in no doubt that the political nature of local politics and local politicians has had an important part to play in the poor infrastructure decision making over many decades. We know this will likely impact inequitably on Māori who live in our city. One thing is clear to us, the costs that we bear today should be an investment in a city for the future and this will impact on rate payers.

As mana whenua, our input to this important work has occurred amongst a great many of other issues like a Wellington housing crisis, a national increase in the costs of living, inequities across our social and health systems, pressure from our communities about environmental impacts of climate change and the COVID-19 pandemic. Despite this, we continued to meet online and engage in the debates.

Both Taranaki Whānui and Ngāti Toarangatira will continue to uphold our mana whenua rights, interests and responsibilities within our tribal boundaries. Our waterways are of huge significance to us, reflecting the sustenance they provide to us and the shared identity we have with them. Keenly we want to see a radical and meaningful shift that sees the active kaitiakitanga / guardianship of our waterways being led out by ourselves as mana whenua but also all people of our city. If we want to secure the future for those who come after us - we must together be bold and lead in a new direction that ensures our waterways no longer suffer from our human abuse.

The Taskforce Journey

Nga mihi nui i a koutou katoa.

The 13 members of the Mayoral Taskforce on Three Waters come from diverse backgrounds and interest groups. Taskforce representatives were drawn from mana whenua, Whaitua, community and environmental activists, water infrastructure specialists, Councillors and the WWL Board and Shareholders Committee.

Despite our different political, industry and cultural perspectives there is unanimous agreement on the way forward.

Put simply, we all agree that tinkering is not going to cut it. Transformational reform is required.

Current arrangements have failed. Some fundamentals must be addressed, and our recommendations do so.

It is important to note, the following recommendations are directed to those elected members of the WCC who will ultimately make the decisions.

The Taskforce, which was chaired by the Mayor, followed a structured process that started with developing a shared understanding of the services and the issues, before considering potential solutions:

- Situational awareness around recent failures in the wastewater network and information sharing from WWL.
- Understanding asset management, funding and budgeting for three waters operation and management in Wellington City.
- Understanding community and regional concerns about the quality of the water environment in the region.
- Understanding the major risks that face the Wellington three waters systems currently and in the future.

- Understanding the Government's three waters service delivery reform programme and proposals.
- Reflection on the shared information and forming of main conclusions and recommendations for Council's consideration.

The recommendations that are contained in this report seek to set Wellington on a path to be a water-efficient city - having its water infrastructure well-governed, resilient, efficient and delivering affordable water services to all citizens.

This will require a fundamental reorganisation of the funding, governance, asset ownership and management of our water assets to make the significant improvements necessary.

In the period since the Taskforce commenced its deliberations, the Government has announced its three waters reform programme. This programme has identified many of the same issues and responses as the Taskforce, such as the need to transition both asset management and ownership into dedicated, standalone entities. The Taskforce supports these reforms in principle and their ability to unlock central government funding to help address the enormous funding required over the coming years.

Moving from the current charging system, where customers pay a charge that does not reflect their actual use, to a system that monitors use so that those who use less, pay less and those that use more, pay more is a key tool for moving the city's water services onto a sustainable environmental footing. This is in line with the world's most water efficient cities, who all have forms of water metering and charging. Metering enables both the asset operator and water users to understand where and how water is being used and take action to reduce wasteful use, address leaks, and improve efficiency. It is not part of this Taskforce's

mandate to recommend the design of this charging model, but it is important that we acknowledge that great care is required to ensure the water services remain accessible and affordable for everyone, with the necessary regulatory oversights and safeguards in place.

The Taskforce recognises that serious measures must be taken to address issues that communities rightly feel deeply about. We agreed on the following key principles in guiding the development of our recommendations:

- Embrace the concept of Te Mana o te Wai and the passage of water “ki uta, ki tai - from mountain to sea”.
- Act with urgency to respond to challenges in the city’s three waters services while nationwide reforms are finalised and enacted.
- Fully participate in Government-led change to improve management of three waters infrastructure and operations while maintaining public ownership.
- Ensure everyone has access to sufficient healthy, affordable drinking water.
- Protect public health from water-borne illnesses.
- Align with mana whenua and Wellingtonians’ expectations to deliver ecological restoration and a transition to low carbon emissions for future generations.
- Promote community participation as essential for success.
- Ensure transparency through use of open-data, and in decision making and communication.
- Ensure provision of water services is secure and with minimal interruption, including resilience to natural hazards and the effects of climate change (while accepting that small, isolated disruptions are a necessary compromise for an affordable, cost effective system).

- Ensure the management of water assets and provision of water services run efficiently and provide Wellingtonians with value for money.
- Implement a funding model that is stable and sufficient and delivers intergenerational equity.

We believe we have done our job in giving sound and practical advice. It is now up to the Council and the community to take the necessary actions.

The current state of the three waters, and what it means for our city

The Mayoral Taskforce on the Three Waters was launched in the wake of infrastructure and environmental problems in our water that came to a head in late 2019 - early 2020. This followed the failure of a tunnel in Dixon Street that saw wastewater enter the harbour, broken pipes in a tunnel under Mt Albert that resulted in trucks carrying wastewater sludge to the landfill around the south coast, and public criticism of the increased number of wastewater and drinking water leaks across the city. The public were increasingly concerned about the effect these asset failures have on our freshwater and coastal marine environments.

At the heart of these problems is water infrastructure that has not received sufficient investment to maintain the levels of performance expected by the public, or to accommodate the impacts of growth and to reduce the impact of the services on the environment. Around 30% of our drinking water networks and 20% of our wastewater networks have already passed their expected useful economic life, and 50-60% of pipeline assets require replacement in the next 30 years. As these assets age they are becoming increasingly prone to failure. These leaks, bursts and breaks are absorbing an increasing amount of available funding, making less available for planned maintenance and renewals and increasing the risk of future problems. Couple this with the looming threat of climate change-related stressors on our water system from drought, high intensity rainfall and sea level rise and it is clear that there is urgency to take action now.

The impact of this under-investment is not limited to lower quality services for customers. Water losses could be as much as 30% of the total water supplied, depleting our valuable water sources and increasing carbon emissions. Leaking wastewater pipes are contributing to poor freshwater and harbour water quality. This degradation is not sustainable and does not meet the expectations of mana whenua or the public. None of the city's water bodies meet the environmental limits anticipated under the National Policy Statement for Freshwater Management 2020.

The state of the city's three waters infrastructure also has implications for its future population growth. Much of the network is already operating at or close to its design capacity, but current forecasts anticipate population growth of 25-40% over the next 30 years. Investment is also required to meet the carbon emission reduction targets in the Council's Te Atakura/First to Zero strategy, and to ensure the services are resilient to the impacts of climate change.

Wellington's water infrastructure clearly requires urgent upgrades and an ongoing programme of renewal and enhancement to address the legacy of past under-investment. Achieving the desired level of performance will require a daunting sum of money over the next 20-30 years.

If we do not act now, deferring these renewals and upgrades will lead to more burst pipes, more money being spent on unplanned, reactive pipe repairs, more environmental pollution, and costly solutions such as hundreds of millions of dollars for additional drinking water storage capacity.

The situation in Wellington is not unique - cities and towns across New Zealand are facing similar challenges with maintaining their three waters services while also responding to growth, lifting environmental performance and preparing for climate change. Building on the findings from the Government Inquiry into Havelock North Drinking Water, the government is now introducing regulation and pursuing structural reforms intended to help ensure all communities have access to safe, reliable and sustainably funded water services¹. In addition to structural reforms that are expected to lead to better outcomes for the water services in Wellington City, the process is also likely to include central government funding support.

The moment has come to seriously address our water management systems and marshal all resources - including rates, borrowing, central government funding, conservation measures and operational efficiencies - to bring the situation under control and put the city's water infrastructure back on a sound footing.

The scale of the financial challenge is significant

There is now almost total community awareness that water infrastructure is a critical asset that the city needs to survive and thrive. It has been out of sight, out of mind, for a very long time. This is clearly no longer the case.

Assets need to be maintained and renewed if their value is to be sustained

Wellington City owns around \$3.86 billion worth of three waters infrastructure, providing services that are fundamental to the city's function, livability and prosperity. Providing these services requires an ongoing investment in maintenance and renewal. If these assets are not looked after, their condition and, consequently, their performance, will deteriorate. Insufficient funding for WWL's work looking after the services has led to inefficiency and delayed maintenance and upgrade projects, as well as a lack of funding to raise the environmental performance of the current infrastructure at the time of renewals. This, in turn, has led to the deteriorated network and unreliable services that the city is living with.

Rates revenue has kept pace with maintenance and renewal requirements...

WCC's approach to ensuring there is enough ongoing investment for renewals is through funding depreciation. This involves collecting rates funding equal to the value of the asset that is 'consumed' during that year, recognising that an asset's value decreases over time as it wears out². Wellington City residential ratepayers are currently levied for their water services as part of their rates assessment through a combination of uniform (i.e. per household) and property value-based charges. For a house with a capital value of \$800,000, the share of the rates attributable to the three waters services is around \$1,275 per year. Commercial operators with water

meters pay for the water they use, with wastewater and stormwater charges recovered in a similar manner to residential households.

This rates funding is used to pay off debt, ensuring that enough borrowing capacity is available to replace the asset at the end of its assumed working life. This approach leads to inter-generational equity, as it means that current ratepayers are paying for the portion of the assets 'used' in the current year. While the investment in renewals required can vary from year-to-year, depreciation and investment need to balance out over time to avoid a funding and performance deficit.

...but this revenue has not been fully reinvested in the services

While WCC has set the rates for these services to fully recover the depreciation of its three waters assets from ratepayers, and has done so for many years, these funds have not been fully reinvested into the services. Data presented to the Taskforce showed that renewals have typically been \$10-20 million per year less than depreciation revenues, or only 50-60% of what is required for investment to keep pace with asset depreciation. This situation was forecast to continue into the foreseeable future. Collectively this adds up to hundreds of millions of dollars of underinvestment. This investment deficit is also being compounded by rising capital and operating costs, water asset revaluations that increase the rates funding required for depreciation, and the need to improve the functional and environmental performance of the network.

1 See www.dia.govt.nz/three-waters-review for more information.

2 Depreciation rates are based on the expected useful life of the asset. Better condition assessment information can lead to changes in the expected useful life that is used to calculate depreciation.

At WCC the debt, depreciation and rates revenue associated with water assets has not been ring-fenced. So, while rates collected for water depreciation were used to pay down debt, the debt ‘headroom’³ created by this was not specifically tagged for future investments in water renewals. Given that renewals spending has been consistently less than depreciation funding for many years, it is likely that this debt has been used to fund other city infrastructure that is not water related.

This misalignment between depreciation collected through rates and expenditure on renewals means that when assets reach the end of functional life there is unlikely to be the necessary borrowing capacity available to renew them.

Operating assets beyond their useful lives

In addition to this underfunding of renewals, political pressure for lower rates has resulted in other decisions to increase efficiency that have had unintended consequences, leading to the underfunding of asset renewals in three waters.

As assets age, their condition deteriorates and they become increasingly prone to failures such as leaks, bursts, breakages and overflows that require a reactive, operational response. This is becoming increasingly evident in Wellington where the average asset age is increasing and so is the number of leaks and other reactive activities, together with the costs.

However, it is also wasteful to replace assets too soon, when they still are in good condition. For example, you wouldn’t replace a lightbulb at your house until after it has stopped working. If an asset is still in good condition at the end of its expected useful life it is financially prudent to maintain it in operation. The most efficient time to replace any asset is at the point where the costs of failure (including costs to customers) exceed the cost of renewal.

Running assets past their expected useful lives can be an efficient and prudent strategy, if you have good information about the condition of the assets. However, it can be difficult to judge when an asset is likely to fail, especially when those assets are buried underground.

As a result of funding pressures, WWL has had to reduce the amount of asset condition assessment that it undertakes.

On their own, any of these three decisions - running assets past their expected useful life, reduced spending on asset condition assessment, and consistently spending less on renewals than depreciation - could be a reasonable strategy for cost reductions. Taken together they have created an environment that has allowed significant underfunding of renewals.⁴

The failure of the Mt Albert sludge transport pipes and the Dixon Street wastewater pipes are both examples of the consequences - the costs of the failure, including the operational response, were much higher than might have been incurred if awareness of the pipe condition had enabled a planned renewal before the failure occurred.

Requirements are not standing still – demand and customer expectations are also increasing

Unfortunately, the financial challenge is not limited to the maintenance and renewal of existing assets. Meeting forecast population growth of around 30% over the next 30 years will require both the upgrade of existing assets and the construction of new assets.

3 i.e. the amount of debt below the permissible level,

4 It appears that these decisions were all made separately, potentially across several electoral cycles. The compounding effect of these decisions does not appear to have been easily visible to Councillors.

Additional investment is also required to meet increasing standards for discharges to freshwater and the harbour, such as by incorporating treatment processes into stormwater systems that have historically drained directly into these environments. The services also need to mitigate and adapt to the impacts of climate change.

A step change in investment is now required

Taken collectively, WWL has proposed that the level of capital investment across the region, including Wellington City, needs to increase from around \$140m per year to around \$240m per year. Independent advice from the Water Industry Commission for Scotland suggests that even this increase will be insufficient, with \$300-\$350m as a more realistic estimate. This represents a 200-250% increase on current levels.

WWL has now commenced discussions with WCC about funding requirements for the 2021/31 Long-term Plan (LTP). This has included outlining that capital investment of around \$1.5b over 10 years together with more than \$30m per year of operating expenditure (on average) is necessary to start making inroads into the investment deficit and to start making progress on key strategic challenges such as growth, water demand reduction, improving water quality and acting on climate change. WWL understands that this is likely to be beyond what the Council could afford in the short term and is working with Council staff to advise Councillors on the critical priorities.

Three Waters Assets and Services

The ‘three waters’ are drinking water, wastewater and stormwater and the assets and services provide safe drinking water, protect communities from the hazardous effects of wastewater, reduce disruptions to our lives from wet weather events, and convey urban stormwater into the environment. The services are very interdependent, for example, much of the drinking water becomes wastewater after it has been used in toilets, showers, baths, basins and appliances. If captured, some can be used in place of drinking water for internal demands like flushing toilets and laundry in addition to watering gardens.

The Taskforce agreed on goals related to three waters assets and services in each of the following areas: stormwater, wastewater, drinking water, low carbon transition and resource recovery, and network resilience. The sections below describe the Taskforce’s goals and recommendations for how these can be improved.

From WWL briefings the Taskforce became acutely aware that, due to the lack of funding, WWL had not been able to undertake anything like sufficient condition assessment of critical three waters assets. Condition monitoring and assessment is an essential part of good asset management, particularly for the most critical assets. Some of the recent failures such as the Dixon Street wastewater tunnel failure can be attributed to this lack of condition monitoring and assessment. Accordingly, the Taskforce is recommending WCC urgently funds the inspection and maintenance of critical assets, and other improvements to WWL asset management processes. The Taskforce was pleased to see that investments in this area are now underway using funding allocated through the Government’s recent three waters stimulus package and an additional \$500k of Council funding through the 2020-21 annual plan.

Recommendations

1. With urgency, task and fund WWL to implement a plan for the inspection of critical assets across the three waters network within three years, in order to inform future investments.
2. Task and fund WWL to prioritise increased renewals investment on those critical assets identified as needing maintenance and repair during the condition assessment programme.
3. Task and fund WWL to continue to improve its asset maintenance systems and processes, and asset data collection and management.
4. Substantially increase the level of funding in the WCC 2021/31 LTP for capital funding for renewals (possibly by ringfencing funds collected for water asset depreciation), operational funding for planned maintenance, and operational funding for reactive maintenance to reduce the risk of asset failure.

Stormwater

Co-design with nature to make water sensitive design and green infrastructure solutions to stormwater the default for development within the city; retain, restore and enhance existing elements of the natural drainage system, and integrate these elements into the urban landscape to connect communities with their water bodies.

Historically, the purpose of our stormwater system has been to drain rainwater from homes, premises and roads to prevent flooding that creates risks for public health and safety. The physical assets include pipes, culverts and sumps, but the performance of the system is also highly dependent on overland flow paths that carry the water around, rather than through, individual properties and enable the safe passage of stormwater when the pipe network is at capacity. Streams have also been piped over time to enable the development of roads, buildings and other city infrastructure. The stormwater systems around



the city have been designed to a range of standards for the amount of rainfall they can accommodate, meaning that some parts of the city are more prone to flooding than others. The challenges with managing stormwater are expected to increase over time as the frequency of heavy rain events increases, sea level rise makes it more difficult for stormwater to discharge, and as growth and intensification reduces ground permeability and impacts on overland flow paths.

The existing stormwater systems discharge directly into the environment, but it is now recognised that stormwater is a source of contaminants that can impact on water quality and ecosystem health. Heavy metals (such as zinc and copper), hydrocarbons, sediments and nutrients enter the water from areas of urban development causing acute and chronic toxicity to the indigenous fish and invertebrates that once thrived in our city's waterways. Changes in flow during small to moderate rainfall can also cause erosion in streams, and the discharge of 'hot' stormwater in summer rainfall can be detrimental to downstream ecosystems. Taken all together, the adverse environmental impacts of the stormwater system can extend through the entire stream system to the harbour, where sediments smother life on the seafloor.

Wastewater that enters the stormwater system either through leaking wastewater pipes, overflowing wastewater pipes or illegal connections, creates a significant public health risk and prevents safe swimming in our streams or coastal waters following even moderate rainfall. It also impacts on the aquatic life and biodiversity of these water bodies. Having access to water bodies that are safe for human contact and that sustain their natural ecosystems is highly valued by iwi and our communities. Our stormwater systems have not been designed to remove these contaminants, but the National Policy Statement on Freshwater Management requires their performance to be improved. The existing water quality is poor and none of the city's water bodies are likely to meet the targets that are expected to be set

under the region's Natural Resources Plan without significant investment.⁵

Other national and international cities have shown moving away from a focus on drainage to a more integrated approach can have a range of positive ecological, cultural and economic benefits. The use of nature-based solutions such as wetlands, rain gardens and green roofs to treat stormwater within the urban landscape provides a more natural solution instead of traditional underground pipes and improves water quality and ecosystem health. These 'green and blue' networks that can be enjoyed by local citizens and increase their contact with and appreciation of water and water services. This approach, often called 'water sensitive urban design' or 'green infrastructure' is now widely recognised as the standard for stormwater management across New Zealand but has yet to see widespread uptake in the Wellington region.

As our city has developed, many of the original streams have been piped creating a disconnect for communities and creating barriers to the migration of indigenous fish species which once thrived in these. Further piping of existing streams should be avoided if at all possible.

Improved management of existing piped streams should be prioritised. They should be recognised as streams and strategies put in place to progressively protect and restore the water quality and ecological connections within them. Daylighting of these 'lost' streams can be challenging and needs to be considered within a strategic, catchment-wide context. Opportunities to integrate the daylighting of piped streams as part of urban renewal and development projects should be investigated in early optioneering as a way to reinstate urban ecology into the city.

⁵ All streams in Wellington city are currently rated D or E for water quality by GWRC, the lowest ratings available.

The public also has a role to play in improving water quality outcomes, such as avoiding littering and other forms of pollution and helping to care for and maintain their local waterbodies through activities such as riparian planting and weed removal. Regenerative planting in the upper catchment of these streams also contributes to their biodiversity value.

Recommendations:

5. In the event that stormwater asset ownership and management is not transferred to a new entity in the Government reforms, Council should develop a plan for the future of stormwater management that recognises its connections to streams, the other water services, land use, and the roading network.
6. The Council, together with WWL and with input from GWRC must develop a comprehensive suite of regulatory and non-regulatory interventions to require property developments and roading infrastructure to adopt water sensitive urban design such as the use of water impact assessments, rainwater/stormwater harvesting, rain gardens, constructed wetlands, green roofs, improved sump maintenance, strategic street sweeping and permeable pavements to mitigate water quality impacts and reduce peak wet weather flows.
7. The chosen interventions should be incorporated into the Council's Codes of Practice and District Plan and mandated for all new development (both greenfield and infill/brownfield) supported by education for contractors, community groups, and the design and engineering community.
8. Propose changes to the District Plan so that all new land development consents are required to improve the stormwater effects of the site (a higher bar than maintaining the current level of effects). Where this is not possible or sensible within development sites, a formal stormwater offsetting programme could be adopted to fund more efficient centralised systems in the public realm.
9. Work with WWL and GWRC to develop catchment-scale stormwater planning which considers opportunities to 'daylight' currently piped streams, restoration of remaining streams, and implementation of green infrastructure to treat stormwater prior to discharge into streams, harbour or the open coast.
10. Work with WWL to develop an approach to the ownership and management of green infrastructure for private property developments and ensure that these assets meet design and performance requirements when being vested to Council ownership.
11. Ensure all green infrastructure is adequately capitalised and depreciated to provide ongoing maintenance and renewals funding.
12. With input from WWL, consider the development of a stormwater bylaw to help manage the input of potential contaminants into the stormwater system.
13. Develop standardised estimation and reporting of stormwater effects for all Council projects and require the assessment of options to offset these effects.
14. With WWL, further integrate the use of roads and open spaces (such as parks and sports grounds) to act as overland flow paths and flood storage, to reduce the effects of stormwater flooding on public health, safety, and property.

Sanctuary to Sea, a whole of catchment restoration project

The Sanctuary to Sea - Kia Mauriora te Kaiwharawhara is a ZEALANDIA-led, multi-stakeholder project that involves mana whenua, local authorities, businesses, community groups and schools. This whole-of-catchment waterway improvement effort aims to restore freshwater and forest ecosystems in the Kaiwharawhara water catchment. Seven strategic partners, including Taranaki Whānui, GWRC and WCC, Department of Conservation, WWL, and Morphum Environmental, are implementing a comprehensive 10-year plan, with the broader aim of being an ‘exemplary’ model for other national and international environmental restoration projects. Ultimately this project aims to demonstrate how we can work together to enhance the environmental values of a waterway in an urban landscape.

Beginning within the ZEALANDIA sanctuary for Te Mahanga stream and at Mt Kaukau for Korimako stream, the Kaiwharawhara catchment is the largest in Wellington city, covering over 16 square kilometres. It also is one of the few remaining tributaries with a natural estuary mouth into the harbour. The Sanctuary to Sea project currently focuses on the Te Mahanga arm of the stream to the estuary.

Our native fish are among the hidden treasures of New Zealand’s animal life because they are seldom seen. Yet the Kaiwharawhara Stream catchment is known to have 13 species of fish out of the 21 in the Wellington Region. The Sanctuary to Sea project helps to raise the profile of these fish downstream from ZEALANDIA’S headwaters to prevent further impacts on the waterways, and also aims to improve aquatic

habitats throughout the catchment and restore fish migration pathways. This is important because many native fish species need to migrate between freshwater and the sea (known as diadromy) during their lives; their survival depends on it.

The catchment is also important for people. It is a much-loved recreational destination with links to the Sanctuary to Sea Walkway and the proposed Great Harbour Way - Te Aranui o Pōneke project.

Like many catchments in Wellington, the Kaiwharawhara stream has been affected by pollution from wastewater and stormwater, and from the legacy effects of landfills and development. Over the last 25 years, efforts have been made to remedy some of these issues, including checking and repairing cross-connections, and fixing known wastewater pipe faults.

There are already numerous community groups involved in the restoration of the area, who are already making huge strides in enhancing the environmental values of the area.

Once the vision for the Sanctuary to Sea project is achieved, the entire catchment will be a healthy and forested ecosystem which sustains an abundant native biodiversity and enhances the opportunities for Wellingtonians to have a nature-rich future. To put it plainly, ika and tuna will once again be able to access the stream from the estuary, move freely in unpolluted waters and healthy connected habitats from sea to sanctuary. Forest remnants, riparian zones and urban gardens will connect and support native wildlife.

Drinking Water

Significantly reduce consumption in order to protect our source waters and avoid the expense of constructing new dams and reservoirs, while maintaining compliance with national Drinking Water Standards; promote and support the appropriate use of non-potable water to assist in achieving this.

Wellington City shares its water supply with the three other cities in the Wellington metropolitan region, drawing water from Te Awa Kairangi/the Hutt River, the Waiwhetu Aquifer and the Wainuiomata and Orongorongo rivers using treatment, storage and transport assets owned by GWRC.

As part of their Waitangi Tribunal Claims Settlement Acts, both Taranaki Whānui and Ngāti Toarangatira have statutory acknowledgement over several tributaries and waterways (statutory areas) across Whanganui-a-tara, including the rivers we draw water from. This means that WCC (as a consenting authority) has an obligation to engage, converse and consult on remedial and/or additional changes to those tributaries and waterways. Ways of achieving this has been through the use of the Resource Management Act, consenting process and/or inclusion in forums such as the Mayor's Taskforce for Three Waters.

The catchments for this water are protected, well managed and of high quality. GWRC and WWL should be commended for ensuring the drinking water supplied to the city is of a high standard and consistently meets public health requirements.

Unfortunately, the distribution of this water around the city and the level of consumption do not meet as high a standard of performance.

Around 30% of the drinking water network has already passed or is approaching the end of its expected lifetime, and more than 50% is expected to require replacement within the next 30 years.⁶ In many cases the pipelines will require replacement ahead of

their useful expected end-of-life due to the impacts of factors such as operating pressure and ground movement (including from seismic activity). These factors are considered to be a particular issue for the asbestos-cement pipes that make up around 25% of the existing water distribution network.

The aged network is also more susceptible to bursts and leakage, and the amount of water lost in the network has been increasing accordingly. This problem has been exacerbated through reduced funding being allocated to active leak management. Water loss across the city's water network is difficult to calculate due to the relatively limited extent of consumption metering, but the calculated mean water loss for the region is 19% of the total water taken from the environment.⁷ The performance is poor when compared against international leakage benchmarks, and this high level of waste is no way to treat a precious taonga.

At more than 200 litres per person per day, average household water consumption is also well in excess of national and international benchmarks. The experience from the installation of household water meters at Kāpiti suggests that a reasonable proportion of this high water use is likely to come from water leaks on private property, especially given the relatively older age of Wellington's housing stock.

The high level of loss and consumption, together with population growth, is putting the bulk water network system under stress, and significant investment in additional water storage and treatment will be required within the next 10 years unless action is taken, which will add significantly to water rates.

6 Asset age is useful as an initial proxy for asset condition but, as noted earlier in this report, good practice asset management requires an effective inspection and assessment regime to develop understanding of actual condition. This inspection and assessment regime has also not been sufficiently funded to-date.

7 The mean is within a 95% confidence interval of 6-31%. Other relevant data, such as the amount of flow overnight indicate that losses are unlikely to be at the lower end of that band.

This high level of loss and consumption also increases energy use and greenhouse gas emissions and reduces the amount of water available to river ecosystems.

It is not possible to identify leaks on private property, or to provide customers with information on their specific water consumption to support their desire to change their water use behaviour without water metering. The information provided by these meters can also help to more rapidly identify leaks in the network. The Taskforce supports the conclusion of the recently completed economic case that has identified the use of ‘smart’ meters with remote meter reading capability as delivering overall economic, environmental, customer and operational benefits and the proposal to move forward with the development of a detailed business case. The WWL Shareholders Committee has agreed to progress the business case to the next stage and will be supporting Councils in the region to consult with their communities about the proposals in future.

Greater use of alternative water sources will be essential to reduce the consumption of drinking water in Wellington. Several measures related to stormwater harvesting and water re-use set out in the section on stormwater will also contribute to our goals to reduce consumption of drinking water.

Wellington has very low levels of rainwater/stormwater harvesting to provide alternative water sources suitable for a range of non-potable uses. This reliance on the reticulated water supply for all domestic and commercial water uses results in the need to divert, treat and distribute large volumes of water across the city for uses such as garden watering and toilet flushing where this high level of water treatment is not required.

The reluctance to harvest and reuse water at source is often attributed to the view that ‘water is free’ and that ‘we have plenty of water’. Both of these statements are increasingly recognised as being false and the range of other benefits offered by alternative water use are becoming better understood. These benefits include

ecological benefits from reducing roof runoff, increased seismic and operational resilience, and connecting communities with the water cycle and supply.

Recommendations

15. Rapidly progress the business case for universal residential ‘smart’ water meters across Wellington City, building on the economic case recently completed for GWRC and as endorsed by the WWL Shareholders Committee and include budget provision for installing these meters in the out years of the 2021/31 LTP.
16. Consult with ratepayers on the merits of these smart meters for reducing water loss and enabling more water-efficient behaviour as part of consultation on the 2021/31 LTP.
17. Establish a suite of policy measures, including changes to the District Plan, relevant bylaws, and Codes of Practice that result in reduced drinking water use in new residential developments, such as through requiring rainwater harvesting and storage.
18. Request WWL to investigate the opportunity to harness international innovations around smart water networks and other technologies that support efficient water use and network operations.

Wastewater

Comply with the freshwater quality standards set out in the National Policy Statement-Freshwater Management (2020) by 2040 to reduce the risks to public health from recreation/food gathering, prevent further degradation to receiving waters, and respect the aspirations of iwi and communities to restore Te Mana o Te Wai.

The primary purpose of the wastewater service is to protect public health by ensuring the wastewater is safely removed from private property and other public spaces. There is now an increasing focus being placed on reducing the risk of illness and the environmental effects of discharges to waterways and the sea. Legacy design

decisions, where wastewater is diverted to freshwater or stormwater when there are high flows or blockages, makes achieving the objective of keeping wastewater out of freshwater a very challenging proposition.

More than 1,000 km of public wastewater network has been developed over the past 125 years and many parts of it are now ageing and in poor condition. Recent high profile failures have highlighted the risks associated with this ageing infrastructure, and evidence shows that more than 30% of wastewater pipes are now in poor or very poor condition. The failure of the Dixon Street wastewater tunnel, which saw approximately 6,500 m³ of wastewater enter the harbour in the CBD just before Christmas 2019 attracted widespread public and media attention and saw a rahui placed on the harbour to recognise the environmental harm and increased health risk from swimming. The Taskforce would like to acknowledge the work of WWL staff and subcontractors who worked around the clock to resolve this.

The wastewater system experiences regular blockages and overflows which are offensive and harmful to people and the environment. The system can be overloaded in rainfall and also leaks, letting stormwater in during wet weather and letting wastewater out during dry weather. Private lateral pipes also leak and are sometimes mis-connected to the stormwater system, allowing pollution directly into our streams and coast. The lack of maintenance of those private pipes, which most owners are not even aware of, also needs to be made a priority. Blockages are also occurring as a result of people flushing materials such as wet wipes that the system is not designed to accommodate.

The solution lies in taking better care of these ageing pipes and pump stations and treating wastewater to a standard that meets our communities' aspirations. Public and private wastewater pipes should be maintained in a water-tight condition, so they do not leak or spill any wastewater before it reaches

the treatment plants, where it is treated to a suitable standard to return to the ocean. We should capture the nutrient and energy value of the sludge by-products from the treatment plants rather than burying them in the landfill. The pipes should also be resilient, not only to natural hazards like earthquakes but also to other interruptions like blockages and maintenance.

In mid-2020 a pilot project was formed in the Owhiro catchment with the objective of restoring the water quality in the stream (and, as a result, the marine reserve) to a level that is safe for swimming and to act as a reference and benchmark for the water quality and ecology improvements that can be made to urban streams. It is a joint action group comprised of the community, mana whenua, WWL, GWRC, WCC and Regional Public Health. Parties meet monthly and data is shared across all agencies. Wellington's first 'roving crew', operated by WWL, will start work in the catchment in January 2021 to identify failures in both the private and public wastewater networks.

Recommendations

19. Task and fund WWL to develop a road-map for consideration in the 2024/34 LTP that would see WWL (or a future entity) funded to achieve compliance with the National Policy Statement - Freshwater Management by 2040.
20. Task and fund WWL to progress the Owhiro Catchment pilot programme as a high priority to inform the development of the road-map and to develop and implement a programme that strategically works through catchments to identify and repair cross-connections or asset failures in both public and private assets, where catchments with open streams and community connection are prioritised.
21. The road-map should include activities to address wastewater network capacity issues (including stormwater ingress) to progressively reduce the requirement for untreated wastewater discharges

into the environment from constructed overflows, with the goal that constructed overflows should only be used in genuine emergencies.

22. Urgently review and strengthen consent and code of compliance processes to ensure there are clear accountabilities and a low risk of future illegal cross-connections.
23. Establish a complete set of regulatory and policy measures to ensure that Council can require landowners to undertake repairs to failed private assets, record failures on Land Information Memoranda until repaired, and provide a funding mechanism to support landowners to make these repairs, such as through installments on their rates bill or by enabling Council to recover the costs when the property is sold.

Network resilience

Urgently improve the resilience of critical assets; steadily improve network resilience as assets are renewed; plan ahead for adaptation to the effects of climate change, particularly in coastal areas

With the majority of the assets buried beneath the ground, the three waters services are particularly at risk to the impacts of shaking and ground movement during earthquakes. These risks are then exacerbated by the nature and age of the materials used in the past. Asbestos-cement and cast iron drinking water pipes and ceramic wastewater pipes are relatively brittle, but are relatively widespread around the networks. Age further increases their susceptibility, with asbestos-cement pipes eroding over time and the ceramic pipes impacted by factors such as ground settling and the penetration of tree roots.

The Kaikoura earthquake in 2016 saw an immediate spike in service call-outs, but it is anticipated that the quake has also contributed to accelerated asset failures and the uptick in call-outs that has occurred over subsequent years. Due to the challenges in identifying damage to pipes that can be directly attributed to the

Kaikoura earthquake, no central government funding was ever provided to compensate WCC for this.

The renewal of these assets provides an opportunity to increase their resilience, as well as ensuring that they maintain their required levels of service. Pipe renewals have been undertaken with more resilient materials for many years.

Recommendations

24. When evaluating future sludge treatment options, consider the resilience risks involved in piping wastewater sludge across earthquake faultlines.
25. Request that WWL develops greater understanding of the compounding effects of seismic activity on buried water infrastructure.
26. Task and fund WWL to identify critical three waters infrastructure at risk from natural hazards and prioritise them for upgrade, having regard to the previous work undertaken for the Wellington Lifelines Group resilience project.
27. Continue working with other utility service providers to identify joint earthquake and climate change adaptation strategies, such as alternative 'shared corridors' for utility services to be moved away from hazard areas.

Low carbon transition and resource recovery

Reduce carbon emissions from three waters in order to help to meet Council’s Te Atakura goal of net zero carbon by 2050

The city’s water services are highly integrated into climate processes, and climate change will have impacts on all three waters:

- Drinking water will be affected by changes in seasonal water availability and sea level rise (for the aquifer).
- Wastewater will be affected by rainfall intensity, temperature, groundwater levels and coastal erosion.
- Stormwater will be affected by rainfall intensity, sea level rise, groundwater levels and coastal erosion.

These impacts are understood at a general level, but in most cases (with the notable exception of the availability of drinking water from the catchments) they have not been explored in detail.

The delivery of the three waters services generates a range of carbon emissions. These include energy use for pumping and treatment processes, emissions from wastewater treatment and sludge disposal, the embodied carbon in water treatment chemicals, and the emissions from construction activities and materials. The recent passing into legislation of the Zero Carbon Act will see the establishment of national greenhouse gas emissions ‘budgets’ (limiting the total amount of emissions) and the Council has also set its own emissions reduction target in its Te Atakura/First to Zero strategy and declared a climate change emergency.

The generation of methane from the disposal of wastewater bio-solids (‘sludge’) to landfill is understood to be the most significant source of emissions from the city’s three waters operations.

The bio-solids contain nutrients and energy that have potential value that is not being captured through the existing (very limited) treatment process and landfill disposal. WWL has been undertaking an analysis of different options to minimise the volume of sludge produced and reduce the carbon emissions that is nearing its conclusion.

Recommendations

28. Task and fund WWL to measure carbon and to pursue projects that will reduce the carbon emissions generated by the three waters services.
29. Advance the sludge minimisation project to deliver more efficient treatment of biosolids, including beneficial reuse of biosolids and treated wastewater where feasible.

Governance, funding, community participation & reporting

Under the current governance and funding arrangements, WCC and WWL work together to provide water services to residents in Wellington City. WCC owns the pipes and other infrastructure that makes up the three waters network across the city.⁸ They raise revenue through rates and charges and also use some loans (debt) to fund the necessary capital investment and operational expenses to run the network. WCC agrees the expenditure plans and annual budgets to deliver the agreed level of service and then contracts with WWL to operate and manage the water network on their behalf.

WWL is a Council-controlled organisation, jointly owned by six Councils in the region as the service provider and operator of the water system. WWL advises each of the client Councils on the spending requirements to achieve desired levels of service in their city. They operate the network, carry out necessary repairs and maintenance, and build new infrastructure such as Omāroro reservoir. WWL reports back to each client Council on the delivery of their programme. WWL is governed by a board appointed by the WWL Shareholders Committee, that is made up of one elected member from each owner Council, together with mana whenua representatives. In addition to appointing the board members, the Committee also agrees the company's Statement of Intent on behalf of the owners.

You could think of WCC as the landlord and WWL as the property management company. The property management company manages tenants day to day and advises the landlord on setting the rent and necessary repairs to the property. The landlord makes the final decision about any repairs or upgrades, as well as setting the rent.

This separation of functions has led to occasional disconnects and miscommunications between Councillors, WCC officers and WWL. This has contributed to the underfunding of WWL and the deterioration of the condition of the water assets over time.

The Taskforce agreed on goals related to governance and funding in each of the following areas: governance and funding, community participation, and performance and transparency. The sections below describe the Taskforce's goals and recommendations for how these can be improved.

Improving governance and achieving sufficient, sustainable funding

Leverage economies of scale to improve efficiency and affordability by transferring water assets to a multi-Council, publicly-owned entity which Council participates in governing; give the water entity powers to borrow, raise revenue direct from customers and require fully-funded depreciation of assets so that funding is sufficient to finance replacement and quality improvement, with a premise that growth pays for growth;

A key governance failure has been political pressure to keep rates lower than what is actually required to maintain the infrastructure assets and services. Rates collected for funding depreciation of three waters assets have been used to pay back debt, which was likely then invested in non-water capital projects. In recent years, the budget process has typically involved WWL being set a funding envelope to prioritise within, rather than the budget being built up from an understanding of asset management and service levels. Activities essential to achieving the required service levels, such as asset condition assessment and leak detection, were severely curtailed in order to meet the funding limits provided. These service cuts were not easily visible to Councillors who believed that,

⁸ The bulk water supply for the Wellington metropolitan region is owned by GWRC and operated for them by WWL. Bulk water is delivered to reservoirs owned by WCC for distribution around the city. The costs for the bulk water service are recovered through a dedicated rate.

since WCC was fully funding depreciation of water assets, WWL must be receiving sufficient funding for renewals and maintenance of existing assets.

The Taskforce proposes that the ownership of the assets is transferred to the same entity that operates the network, whether that be WWL or a new entity created through the government reforms. This asset-owning company would have economies of scale, clearer accountability and the ability to borrow unconstrained by Council borrowing limits in line with the government's proposed water sector reforms. WCC could not make this change alone, all Councils with a shareholding in WWL would need to agree to this approach.

By transferring the ownership of the assets to WWL (or a new entity) the budgeting and prioritisation decisions will occur within the same entity, lessening the risk of similar 'invisible' underfunding occurring in the future. Water revenue would not be able to be spent on other unrelated activities.

Water is a precious resource. The Taskforce unanimously supports public ownership of the recommended water entity and urges WCC to ensure it is cemented into the foundation documents of any successor organisation to WWL so it remains in public trust for future generations. We note that the Government is committed to ensuring ongoing public ownership and has signalled its intention to put in place mechanisms that secure an enduring public ownership model.

WCC has strict borrowing covenants that limit the amount they can borrow as measured against the revenue that is collected. Given the significant investments required in three waters assets and other infrastructure in Wellington city, WCC is likely to hit its debt limit within the next decade. If the water assets are transferred to a separate entity which did not need to be consolidated into the WCC balance sheet, that entity would be able to borrow significantly more

against the same asset base. This increased borrowing will enable the large-scale investment that will be required over the next 30 years.

To give full control over its own funding sources the Taskforce also recommend enabling the entity to raise revenue directly from customers. This could be through flat rate charging, volumetric charging, or a mix of the two. Water rates would then no longer be charged by WCC. The Taskforce has not considered what the appropriate charging structure should be, however the Taskforce are agreed that key principles are that everyone should have access to sufficient, healthy, affordable water and that ownership of the water entity must remain in public hands through shareholding Councils. It is also essential that the process for determining charges, and the charges themselves, are transparent to all water users.

A key argument against volumetric charging for water is the concern about how it will affect low income households. There are many ways to design a charging system, the case study below shows how Kāpiti tackled this challenge when implementing water meters and volumetric charging. The view of the Taskforce is that charging systems can be designed to protect the interests of low-income households and we strongly recommend that any charging system must be evaluated on whether it will deliver sufficient, affordable water to low income households.

WCC has committed to stage 1 of the government's water sector reforms - the investigation of structural changes that, if endorsed by Councils, would see the formation of publicly-owned, multi-regional, asset-owning water entities. In return for this commitment, the government has provided millions of dollars to support improvements to three waters services.⁹ The Taskforce has been pleased to see this funding allocated to activities such as increased renewals, asset condition assessment and leak detection that are consistent with the priorities we have identified. Further funding will be made available if the Council commits to the structural changes that are ultimately recommended, and the Taskforce encourages WCC to participate in this process with a view to achieving the principles and goals set out in this report.

Wellington city is forecasting significant population growth in the next 30 years. WWL will need to upgrade the network capacity to support additional housing development. WCC is developing a Spatial Plan and District Plan that will determine where future housing growth can occur around the city. Investment in upgrading the network will need to be synchronised and integrated with the new District Plan so that extra housing capacity is delivered to market efficiently and effectively.

Recommendations

30. Commit to the concept of an independent, publicly-owned, not-for-profit, water management and asset-owning entity that is governed and operates in accordance with a statement of intent from shareholding Councils
31. Actively participate in the Government's national Water Reform agenda, to ensure that it delivers on the principles and goals agreed by the Taskforce
32. Engage positively and proactively with the other Councils in the region to agree on how the region's people and the environment can best benefit from the reform programme and associated funding
33. Work with other Councils to develop a plan to transfer three waters debt and asset ownership off Councils' at the 2024/34 LTP, to either WWL or a new entity formed through the Government reforms
34. Ensure the entity has the ability to borrow against its assets, thereby smoothing water infrastructure investment over time
35. Enable the entity to raise revenue directly through customer charges, while protecting incentives for rainwater harvesting
36. Communicate the benefits of switching from the current water charging model to a method based on actual water consumption to reduce demand on drinking water and incentivise property owners to repair leaks
37. Evaluate any future water charging system to ensure that it is transparent to all users, fair and reasonable in terms of providing a long term ability to deliver sufficient, affordable water to low income households and ensuring that it does not limit the uptake of rainwater tanks for harvest and reuse for non drinking uses
38. Review the Council's development contributions policies to ensure these are requiring new developments to meet the infrastructure costs that they create, and require the new asset owning entity to ensure that upgrades to asset capacity due to population growth are paid for through development contributions and use of the Infrastructure Funding and Financing Act
39. Synchronise three waters investment to enable city growth in identified areas in the new District Plan

⁹ The group of Councils that own WWL have agreed a funding package of \$47.3m to be allocated primarily across the metropolitan cities.



Water Meters and Volumetric Charging - Kāpiti Case Study

The role of water meters and usage-based charging in achieving more sustainable outcomes

An average, four-person Wellington household currently uses around 900 litres of drinking water per day. This is the equivalent of around nine baths, or around 90 minutes of showering. This usage is about 50% more than the equivalent house in Auckland. One important difference between the two cities is that Auckland ratepayers are metered and are charged for their water based on how much they use. In Wellington the charges do not include any usage component but are mainly based on the capital value of the property.

The use of metering and charging in Auckland is not unusual, it is a very common practice internationally. In fact it is Wellington that is unusual for allowing people to take water - our most precious resource - and use as much as they like without any direct consequences.

The experience from Auckland and from numerous other cities around the world has repeatedly demonstrated residential water metering, coupled with a form of charging that reflects water use, is an effective mechanism to reduce demand for water through both leak reduction and behaviour change. Reducing water loss and consumption defers the significant capital investment required for new water supply infrastructure (as well as providing many other economic, environmental and customer benefits) which, in the case of the Wellington region may be up to \$400 million.

Tracking water use through water metering provides a mechanism to reduce water losses;

- In local authority networks, by improving their understanding of how much water is being used in the network, and where, enabling a more accurate water balance and more efficient and rapid leak identification. Water losses in Wellington may be as much as 30% of the water supplied to the network.
- In private properties, by identifying leaks on the customer side of the meter, which otherwise are likely to go undetected. Most recently the roll-out of residential metering in Marlborough in September found a property leaking 67,000 litres per day (24.5 million litres of water a year).

Metering also facilitates behaviour change by providing customer-specific information on their actual water consumption and enabling targeted education and other prompts such as in-home water use audits or subsidised water-efficient plumbing fittings.

The meters also enable the development of a charging approach that fairly assigns costs to reflect water use as well as the costs of developing and maintaining the network. A fair charging approach would:

- Provide an incentive for consumers to use water more efficiently and consider alternative sources for water that does not need to be drinking quality, such as rainwater harvesting.
- Ensure customers that use less pay less, and those that use more, pay more. In general, this is a more equitable approach to charging for water services and is consistent with other utility services such as mobile phones, gas and electricity.
- Provide a mechanism to raise consumer consciousness of the water and, in turn, encouraging consumers to appreciate and value the services they are receiving or to challenge the levels of service where the value is perceived to fall short. This in turn raises the accountability of water suppliers.

Case Study from the Kāpiti region - Steps taken to address consumer equity/affordability arising from water metering;

In 2014 Kāpiti Coast District Council introduced residential water metering and use-based charging as a mechanism to reduce water demand in the district and avoid the cost of major new infrastructure investment. The initiative was successful and reduced total water demand by around 25%. In the process, around 65% of ratepayers also ended up paying less for their water than they did under the existing rates-based charging model.

The Council put in place a number of measures to address equity and affordability issues arising from the shift. Mechanisms they put in place provide a useful case study for Wellington City and included:

- Credits for water loss from leaks: In the first year of the new scheme, more than 200 people who fixed leaks on their properties applied for credits on their water bills (for the estimated cost of water lost from leaks). People can still apply for credits if they have their leaks fixed promptly, once discovered.
 - Cost of fixing leaks: There is up to \$300 per household available for ratepayers in financial hardship who have had to pay to get a leak fixed. There is a total of \$25,000 per year available for these grants.
- The formation of a community-based advisory group to develop the charging structure: The Charging Regime Advisory Group (CRAG) was made up of representatives from iwi, low-income households, the Chamber of Commerce, landlords/tenants, Greypower, Older Persons' Council and elected members.
 - Water rates remissions: Large families in financial hardship can apply for a remission on their water rates of up to \$120 per year. The total annual budget for water rates remissions is \$50,000. To be granted a remission, a property owner or tenant must have more than three dependents (18 years or younger) living at the property and receive a Working for Families tax credit.

Community Participation

Develop effective community participation mechanisms to enable catchment-level governance within a large scale, regional water entity.

Reconnecting communities with their water is a critical element of embracing Te Mana o te Wai. It is increasingly evident that the way communities use and interact with the water and water services has a major impact on the investment that is required to deliver them. The amount of water we use and leaks on our own properties influences investment in water supply infrastructure; how we look after our properties' wastewater pipes, and what we flush down the toilet influences the performance of the wastewater network; and how we build our properties and roads, and the activities we undertake on them influences the flow and quality of water in the stormwater system. Connecting our communities to the water, and bringing them into decision-making will help everyone to understand the scale of the challenge we face in rehabilitating our waterways and upgrading and developing the services to meet customer expectations.

The natural scale at which a community engages with the water cycle is at the catchment level. This is the water they see and interact with everyday, and where there is the greatest potential for the impacts of people and the three waters services to be understood. We are now seeing increasing levels of this community connection to their local catchments, with interest groups forming around the city to protect and restore their local waters for the enjoyment of this and future generations. There is a relative lack of systems and processes for them to utilise to make the most of their interest and enthusiasm, and the initiatives underway in Owhiro, Kaiwharawhara, and through the Water That Counts pilot (see the section on performance and transparency, below) need to be developed in a way that enables them to be adopted and adapted across all catchments.

While communities are often engaged at the catchment level, the economies of scale required to efficiently manage the three waters asset network exist at a regional level and will include many different catchments. There is a risk with the proposed formation of a new, large, multi-regional water services entity of the required scale, that community participation will be lost. With this in mind, we recommend that mechanisms for community governance and participation at both the regional and catchment level are designed into the overall governance of the new water entity. This will require deliberate planning to develop and integrate catchment level plans and governance processes into the new entity's structure.

Recommendations

40. With iwi, key stakeholders and the wider community develop a process for the formation of catchment governance groups and catchment plans, within the framework of the Natural Resources Plan and associated resource consents.
41. Engage Iwi, key stakeholders, and the wider community around the Government's reform proposals to develop governance mechanisms that enable direct democratic input while achieving the economies of scale offered by a large corporate entity
42. Investigate ways to connect people with their catchment using measures such as landscaping and signage to identify the location of piped streams.

Waiwhetu upgrading of private drains project

This is a successful example of a project where a Council formally engaged with the community to upgrade their leaky private wastewater drains. The issue was that many of these drains were old and leaking. During times of moderate rainfall, combined with high-water table levels, ground water flowed into the private wastewater drains through cracks and defective joints, overloading the Council's wastewater network and treatment plant. The resulting overflows had adverse environmental impacts and created additional financial costs for the Council's wastewater operations.

The Council and the community, with support from GWRC and the Ministry for the Environment, worked together to improve the quality of the water in the stream. The Council paid for the costs of identifying the leaky private drains and the ratepayers paid for any necessary upgrades. The Council further assisted ratepayers by setting up contracts with drainlayers to fix the private drains that lowered their costs and through establishing several payment options including spreading the cost of repairs across multiple years through the rates bill.

The Council also appointed a dedicated project manager and provided enough funding to enable them to respond to citizens' queries and suggestions. The project timeline and policies were also developed in conjunction with the affected ratepayers.

Performance and Transparency

Review the effectiveness of the current public health monitoring of beaches and streams; develop performance measures in partnership with iwi, key stakeholders and the wider community; provide open-data on water quality, water leakage and other key performance measures.

Access to relevant, accurate, reliable and timely performance information is essential for asset owners, customers and other key stakeholders to be able to understand how well the services are being delivered and whether investment and operational decisions are efficient and effective. This is especially important for these essential community services that are being delivered through publicly-owned assets and operate without any competition. Access to this information, and the public scrutiny and participation it enables, will become even more important when the services are delivered by a standalone entity that is not under the umbrella of Council and needs to be able to demonstrate its value for money story.

Access to data and information needs to be improved

Community expectations around accessing water-related data are rising and must be met. The Council, WWL, and the future asset-owning company are all public entities whose products, including data, belong to the citizens and should only be withheld by exception (for example, for personal privacy issues). At the moment, access to this data is difficult and relatively limited. When available, data is often in difficult to use formats and not provided in a timely fashion.

WWL, WCC and GWRC have, in 2020, made significant steps towards better models of openness and this should accelerate. The Water That Counts pilot, commissioned by GWRC and funded by the Government's Tech Accelerator programme, is

intended to progressively develop a digital 'home' for each catchment that brings together all of the relevant data from across all of the interested parties and make it accessible to everyone. This data is expected to include a range of information such as water quality sampling results, resource consents and discharge management plans, information on restoration projects, and investigations and remediation reports accessible.

Assuming this pilot is successful it could then be rolled out across all the City's catchments.

Performance measures should reflect community expectations

The performance of the networks and WWL is currently assessed through a wide range of measures including those set by the Council in the LTP, mandatory measures prescribed by the Department of Internal Affairs, and measures set by the company under its Statement of Intent. This wide range of measures makes it difficult to interpret actual performance and this is also made difficult through inconsistent measures being applied across Councils despite their receiving the same services and having measures that do not align with what customers want, are sometimes outside of what the company can control (e.g. some are weather-dependent) and that do not reflect the funding and investment that has been provided.

The WWL Shareholders Committee has recently endorsed a recommendation to develop a more consistent set of measures across the cities being served by WWL, as a first step towards rationalising the measures and making them reflective of customer expectations and funding. Establishing a suite of customer-focussed measures will also be a key activity for the new asset-owning entity so their performance requirements are clear for all stakeholders.

Benchmarking is a key component of demonstrating value for money

The delivery of the city's water services is essentially a monopoly - there are no other choices available and so no competition to support efficiency and innovation. In the absence of competition or the economic regulation that is typically used to spur efficiency in monopoly businesses, the best way to test whether the services are being delivered efficiently and effectively is through benchmarking against other, similar entities. WWL has been participating in Water NZ's National Performance Review since its inception, but in 2020 has also committed to participating in the annual benchmarking process run by the Water Services Association of Australia and has engaged the Water Industry Commission for Scotland to undertake an independent review of its 2021/31 LTP proposals. The Taskforce supports and encourages these additional benchmarking approaches and looks forward to seeing the outcomes and resulting recommendations and actions.

Recommendations

43. Establish clear lines of accountability and communication so that customers know who to contact about all water-related matters and where to find and easily access water-related information and performance data.
44. Review the effectiveness of receiving waters quality monitoring processes, such as LAWA and Baywatch, and noting Auckland Council's 'Swim Safe' system, including a specific focus on whether the selected monitoring sites are consistent with the needs of communities and whether public health notices and signage are clear, unambiguous, and well located.
45. With iwi and partner agencies, develop a cultural health and ecosystem health monitoring programme at selected sites around the Wellington streams and coastline.
46. In collaboration with partner agencies, build on the Water That Counts pilot to develop and progressively expand an open-access data portal for water, including measures such as drinking water quality and consumption, water leakage, fresh and marine water quality monitoring, and other key performance measures including compliance with consent conditions.
47. Redesign and align WCC and WWL customer satisfaction surveys to better reflect community aspirations and expectations about three waters services.
48. Support the benchmarking of cost and operations for three waters services against other comparable providers to better assess the performance of WWL, additional benchmarking of the condition of the assets to assess the performance of the network, and make these results publicly available where possible



Taskforce members



Members of the Taskforce would like to thank the staff from WCC and WWL Limited and Garry Macdonald from BECA who supported the work of the Taskforce, and all those who presented to the

Taskforce to develop our understanding of the three waters network and operations in Wellington City, the challenges we face and the potential solutions available to us.

All presentations are available online:

wellington.govt.nz/services/environment-and-waste/water/mayoral-water-taskforce

