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Local Government Funding and Financing Inquiry
New Zealand Productivity Commission
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Submission to Productivity Commission Issues Paper: Local government funding and financing inquiry.

INTRODUCTION

Water New Zealand welcomes the Commission's Inquiry. Water New Zealand is a not-for-profit organisation that promotes and represents water management professionals and organisations. It is the country's largest water industry body, providing leadership in the water sector through advocacy, collaboration and professional development. Members are drawn from all areas of the water management industry including regional councils and territorial authorities, consultants, suppliers, government agencies and scientists.

This Inquiry will assist the Government in its current 3 Waters review which is relevant to this Inquiry because *"most three waters assets and services are owned and delivered by local councils."*¹

The Minister of Local Government has set out a key challenge that this Inquiry will analyse:

*"We need to address the issues creating pressure and impacting on Council balance sheets and that's the burgeoning cost of waters infrastructure as citizens seek higher assurance about safe, reliable drinking water and higher environmental expectations around urban and freshwater. Our three waters system faces critical funding and capability challenges in delivering this. With pressures such as aging infrastructure, population changes, increased tourism numbers and the need to build in resilience against climate change and natural events, the situation will get much worse if we do not address it."*²

Water New Zealand agrees that this Inquiry is important. The example given by the Commission is apposite:

*"If councils struggle to deal with rising costs this can lead to uncomfortable compromises. For example, a recent review of New Zealand's water infrastructure identified that around 750 000 people are served by water supplies that did not meet drinking water standards in 2015/2016. And there are examples of ageing wastewater treatment plants that are struggling to cope with demand – in one exceptional case resulting in partly treated wastewater being discharged periodically into a nearby riverbed" (p.3).*³

Our submission is focused on the funding of 3 waters. We agree with the government that this requires systemic reform if we are to provide water services that meet community expectations, protect public health and preserve our natural environment.

¹ <https://www.dia.govt.nz/Three-waters-review>

² <https://www.beehive.govt.nz/release/wellbeing-and-water-%E2%80%93-necessary-conversation-local-government>

³ Productivity Commission. (November 2018). Local government funding and financing - Issues paper.

EXECUTIVE SUMMARY

- Data: Water New Zealand welcomes this Inquiry and would like to meet with the Commission to share our insights. The National Performance Review provides benchmarking data for 3 waters services provided by councils. We can share this data with the Commission.
- 2015 Inquiry: The Commission's report on 'Using land for housing' is highly relevant and identifies barriers to improvement. The additional issue is low growth and smaller councils.
- Funding: Water services are a considerable and growing part of council expenditure. There is a looming bulge of water asset replacements and renewals to fund. In general, debt for water assets is higher than debt ceilings for council overall. Income for water services is often less than the cost of providing those services.
- Charging: Water charges need to be transparent. Volumetric charging has considerable proven benefits in managing demand and reducing expenditure. It should be enabled for wastewater as well as for drinking water. Consumers are broadly in favour of paying for what they use.
- Water meters: Meters enable charging and better asset management. There is near to full metering coverage in larger urban areas such as Auckland, Christchurch and Tauranga. However, many areas do not have residential water meters.
- Equity: Charges tend to be higher in smaller and in poorer communities. There is a cross subsidy from households to industry which adds to inequities.
- Depreciation: There is a lack of knowledge and understanding about asset condition. Therefore depreciation does not reflect real costs of asset renewal and replacement.
- Tourism: Increasing visitor numbers are placing demands on water services in communities that cannot afford to meet them. Central government funding is required to bridge the gap.
- Population: Long term planning of infrastructure aligned to population growth or decline must be improved with the support of central government.
- Increasing responsibilities: Funding must be realigned to match higher standards for water services and freshwater quality if councils are to deliver the required improvements.
- Climate change and natural hazards: Developing resilience to natural hazards is a major and increasing challenge for councils and their communities. We have considerable work to do to be better prepared and to be able to cope with the consequences.
- Variable costs: The costs of providing services are generally higher for smaller councils.
- Long Term Plan Consultation: There is a significant information gap which makes public consultation less effective and meaningful.
- Technology: There is a significant variance in the uptake of new technology by councils with some councils not taking advantage of the benefits of technology advances and automation.

2015 PRODUCTIVITY COMMISSION INQUIRY

The Commission's report on 'Using land for housing' provides a considerable amount of relevant analysis and recommendations. The report was prescient:

"Effectively managing ageing assets and funding the renewal of infrastructure will be major challenges for councils in the coming years" (p. 8).⁴

We agree with the Commission that:

"Any decisions about how infrastructure is paid for should be framed in the context of ongoing efforts to ensure that infrastructure is provided and managed in a disciplined, cost-effective and efficient manner" (p.9).⁵

The Commission found that there were governance barriers to improved efficiency and affordability:

"The current governance arrangements for water infrastructure have three major shortcomings that are likely to inhibit affordable and efficient provision:

- *fragmentation in water provision;*
- *problems associated with monopoly provision; and*
- *evidence of inefficient pricing"* (p. 10).

The Commission could usefully consider why many of its previous recommendations have not been implemented to date. What will make the difference this time around? The Commission has identified one key factor that may explain a lack of progress:

"While water services have a range of characteristics that have led to local public monopoly provision, the approach has a number of well-recognised issues. One particular problem is that the provision of water services, particularly water pricing, is susceptible to political interference" (p. 232).⁶

The Commission identified that water services are a significant part of council expenditure:

"High-growth councils typically dedicate between 20% and 30% of their total operating expenditure on water supply and wastewater management. Water related infrastructure assets (such as pumps, pipelines and treatment plants) make up a significant share of council asset portfolios and are of considerable value. For example, New Zealand's largest water provider, Watercare (which is responsible for water and wastewater in the Auckland region) owns assets valued at around \$8.1 billion – significantly more than the value of New Zealand's national electricity grid, Transpower" (p. 236).⁷

An additional question that this Inquiry needs to address is how do smaller council's and those council's not experiencing growth fund 3 waters services? The problems are different for these councils that may not have the necessary means to fund 3 waters services.

We agree with the Commission that central government needs to engage more in water services. Whilst *"roading and wastewater were the two largest areas of capital spending in 2017"* (p. 13),⁸ the level of central government engagement in roading is in stark contrast to its lack of engagement (until now) in wastewater. We also note that the costs of stormwater are hidden and may indeed be part of the roading expenditure.

⁴ Productivity Commission. (September 2015). Using land for housing.

⁵ Ibid

⁶ Ibid

⁷ Ibid

⁸ Productivity Commission. (November 2018). Local government funding and financing - Issues paper

The Commission has identified that there is an asset renewal and replacement problem ahead:

“The New Zealand Institute of Economic Research (NZIER) notes that historical infrastructure investment has occurred in ‘waves’, and as a result some councils may experience bulges of asset renewals and replacements. Long term trends show that there have been two big waves of investment, in 1910-1930 and in 1950-1986. These waves were synchronised across different types of assets. Such investments will ‘echo’ in the future as they come to the end of their useful lives ... Whether because of these echoes or not, capital investment has been historically low relative to population and income in recent decades. This suggests a looming bulge of capital renewals and replacements in coming decades.” (p.180).⁹

This looming problem is most acute for water assets because water capital expenditure is very lumpy, as engineering New Zealand (IPENZ) have observed (p. 181).¹⁰ There is “a significant renewal cycle of the three water assets is likely to occur during 2040 to 2060” (p.7).¹¹ The next ‘wave’ is already upon us with consent conditions for wastewater discharges coming up for renewal.

NATIONAL PERFORMANCE REVIEW (NPR)

Water New Zealand and Councils have identified the following from our collaborative work on the NPR:¹²

- Expenditure on 3 waters is rising, which is likely a reflection of rising community expectations.
- Debt carried against water supply, wastewater and stormwater assets is higher than debt ceilings allowed for councils overall. There is a consistent gap with income for water services from all sources trailing expenditure by around 10%.
- Median water charges (from all sources) are higher for small communities and are often higher in communities with a lower median household income. In some communities, water and wastewater charges account for over 4% of average household income. There are often multiple charging schemes within council boundaries with smaller schemes paying more and more likely to be in communities with a lower median household income.
- It is not uncommon to have the same charges for residential and non-residential water schemes. This implies cross subsidies given different loads on the system. Some Councils do not have trade waste charging systems in reducing incentives to reduce pollution.
- More efficient water use can be linked to the use charging.

The NPR is used to provide data included in this submission to the Commission. Further data can be provided as required to inform this Inquiry.

⁹ Productivity Commission. (September 2015). Using land for housing.

¹⁰ Ibid

¹¹ Office of the Auditor-General. (November 2014). Water and roads: Funding and management challenges.

¹² <https://www.waternz.org.nz/NationalPerformanceReview>

RESPONSES TO QUESTIONS

Q1 What other differing circumstances across councils are relevant for understanding local government funding and financing issues?

There are several other key factors that may inhibit or enable the extent to which councils are able to fund and finance services including:

- different levels and time of historical investment in infrastructure;
- the quality of existing infrastructure;
- whether or not the Council has established alternatives to the general rates, particularly user charges and targeted rates;
- whether rating is council wide or by ward;
- geographical distance and spread of services;
- levels of debt;
- charging.

The latter two factors are explored further below.

Debt

For some councils, debt carried against water supply, wastewater and stormwater assets is higher than debt ceilings allowed for councils overall.

The figure below shows the proportion of revenue (excluding developer contributions) spent on interest payments for each of the 3 waters networks. This metric aligns with the Debt Servicing Benchmark in the Local Government (Financial Reporting and Prudence) Regulations 2014.¹³ The benchmark is met if borrowing costs are less than 10% of a local authority's revenue per year or 15% for a high-growth council. This is a whole of council benchmark and not required to be met by water, wastewater or stormwater services individually. However, considered on an individual asset class levels the figures indicate that borrowing costs exceed these figures for a large proportion of water, wastewater and stormwater networks, likely reflecting that water assets tend to be long lived and capital used to finance them is commonly funded through debt.

The median level of debt servicing across all participants is close to the benchmark with 9%, 11% and 9%, of interest spent on revenue for water, wastewater and stormwater services respectively. However, there are 14 authorities whose water supply assets exceed the benchmark, 19 for wastewater and 20 for stormwater. The 15% benchmark is exceeded by 5 participants for water assets, 13 for wastewater and 12 for stormwater.

Councils are classified as large if serving greater than 100,000 water and wastewater properties, small if less than 20,000.

¹³ <http://www.legislation.govt.nz/regulation/public/2014/0076/latest/DLM5730401.html>



Charging

Water New Zealand considers that funding for water services needs to be more transparent. If water services are seen by consumers as ‘free’ because the cost is not easily distinguishable from other components of the rates bill, then it is unlikely to be valued. The Commission has already made a strong and thorough case in its 2015 Inquiry report.

The Commission has accepted our view that there are significant benefits to water user charges:

“Water New Zealand gives a compelling account of the benefits of using user charges for water services: While the question of metering has often misinformed rhetoric surrounding it, it is clear there are significant advantages. Rapidly emerging technologies such as digital or ‘smart metering’ means that consumers have a far greater sense of the value and importance of the water they receive. Metering results in greater equity than is currently the case, where a blanket uniform annual charge offers no incentive to change consumer behaviour. It helps identify leakage, offers a pricing tool to manage supply in times of drought, and allows the consumer to far more effectively manage their demand requirements” (p. 187).¹⁴

¹⁴ Ibid

LGNZ also agrees that user charges are an effective economic mechanism:

“Greater application of user charges to replace targeted and general rates for services such as water, waste management, sewage disposal schemes and the like would enhance economic welfare... User charges also allow consumers to decide what they buy, and in what quantity, giving them greater control over their economic lives” (p. 187).¹⁵

We agree with the Commission that charges can reduce council expenditure:

“Councils should make more use of user charges where this can reduce demands on, and prolong the life of, critical infrastructure. User charges are an effective approach to managing demand and have substantial potential to reduce the operating expenditure of councils, and delay or avoid capital investments in new infrastructure. Tauranga City Council’s introduction of water meters and volumetric charges has resulted in a significant reduction in demand for water. This, in turn, has generated significant savings, primarily because upgrades to water infrastructure can be delayed. Similar benefits are being realised in other cities, including Auckland, where user charges are in place for water. Other cities could replicate this experience. Government should facilitate infrastructure demand management by removing legislative restrictions on user charges for roads and wastewater” (p. 8-9).¹⁶

SOLGM also agrees that pricing is the most effective demand management tool:

“Effective asset management often requires a mix of solutions that manage demand as well as meeting demand. ‘Building our way out’ is not always the right answer. Although local authorities apply tools such as education and rationing, the most effective tool for demand management is proper pricing. Legislation impedes the use of pricing as a tool for demand management, especially for network infrastructure” (p. 4).¹⁷

The case for volumetric charging is indeed compelling. Volumetric charging for domestic wastewater should be explicitly enabled to manage demand. There should not be a requirement to change governance arrangements or ownership to enable volumetric charging for wastewater.

The Commission identified that there are political barriers to volumetric charging:

“In many cases, introducing user charges is politically challenging. Some will see charging for services that previously appeared to be free (for example, services that are funded from rates revenue) as a revenue gathering exercise, or as an undesirable step toward privatisation.”

¹⁵ Ibid

¹⁶ Ibid

¹⁷ https://12233-console.memberconnex.com/Attachment?Action=Download&Attachment_id=1394

Cost transparency can help to overcome these barriers. We agree with the Commission that water costs should always be clearly identified to the consumer:

“In the absence of an economic case for introducing volumetric charges, water costs should be separately listed on rates bills or presented in a separate water services bill” (p. 190).¹⁸

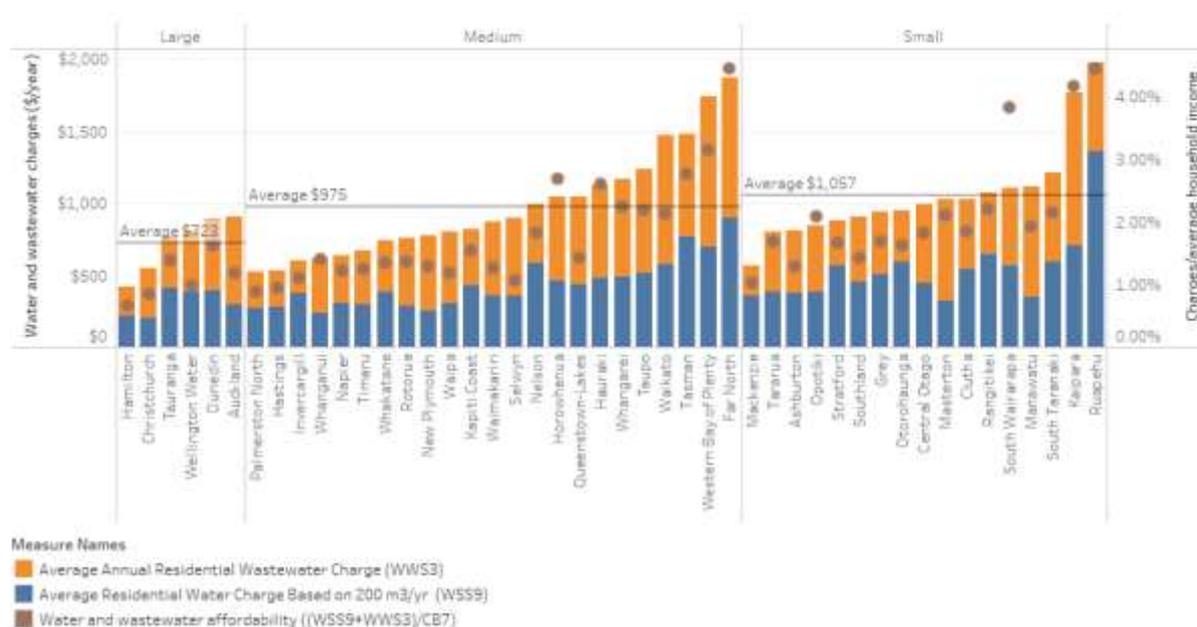
We suggest that resistance is based upon mistrust and a lack of understanding of the value of the water services they currently receive. Consumers after all will pay a high price for bottled water.

The New Zealand Water Consumer Survey 2017 found that a large proportion of New Zealanders believe that pricing of water should be based on how much water is used rather than a fixed charge. More than three in five respondents (63%) agree that they would prefer to pay for how much water they use rather than a fixed charge. Regions where there are no volumetric charges have a stronger response, with more of the respondents strongly agreeing (p. 26).¹⁹

Water and wastewater affordability

While there is currently no official definition of ‘water affordability’ in New Zealand, International water affordability metrics range from 2-5% of household income. While no participants in the NPR have in excess of the 2% figure, the Far North, Western Bay of Plenty, Ruapehu, Kaipara, South Wairarapa, Tasman, Horowhenua and Hauraki all have water and wastewater charges that were in excess of 2% of total average household income.

Median water charges are generally higher for small communities. The figure below shows average charges for drinking water, wastewater and stormwater based on participant size.



The affordability of water and wastewater charges has been determined based on combined water and wastewater charges for a household consuming 200m³ of water a year, divided by average household income (sources from Statistics New Zealand 2013 census data of the median household income by territorial authority).

¹⁸ <https://www.fndc.govt.nz/your-council/strategic-planning/lt2018-28/lt2018-28-docs/lt2018-28-section-breakdown/7.-Infrastructure-Strategy-for-2018-48.pdf>

¹⁹ <https://www.waternz.org.nz/watersurvey>

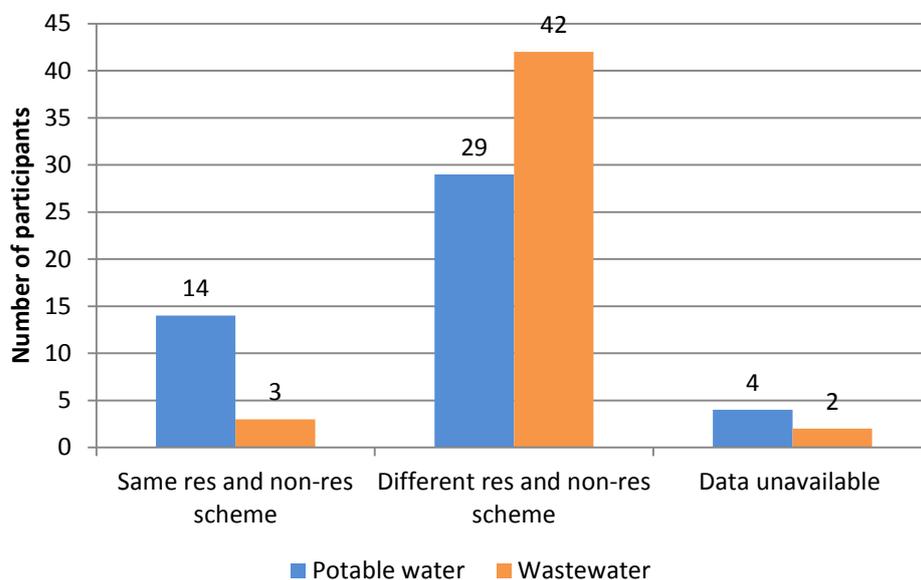
Water and wastewater charges have a median charge of 1.09% for small councils, 1.4% for medium size councils, and 1.83% for large councils, suggesting a correlation between the size of entities and communities' ability to pay for water services.

High water and wastewater charges often occur in regions with lower household incomes, creating affordability challenges for some users.

Differentiation between water and wastewater charges

Not all local councils differentiate between different users when setting water tariffs. While it is common for participants in the NPR to have in place trade waste charging approaches for managing industrial discharges from non-residential users, significantly less councils differentiated water charges for non-residential potable water consumers. The figure below from NPR respondents shows that 14 authorities used the same charging approach for both residential and non-residential customers. This potentially implies cross subsidies from non-residential to residential given the generally higher loads on the system from non-residential consumers.

Different charging regimes for residential and non-residential water and wastewater supplies



Water metering levels

Water metering not only enables volumetric charging to make more efficient use of the water asset and potentially defer capital investment. In addition metering is an effective tool for managing the asset, particularly in detecting leakage. If there is no measurement, then there is no management.

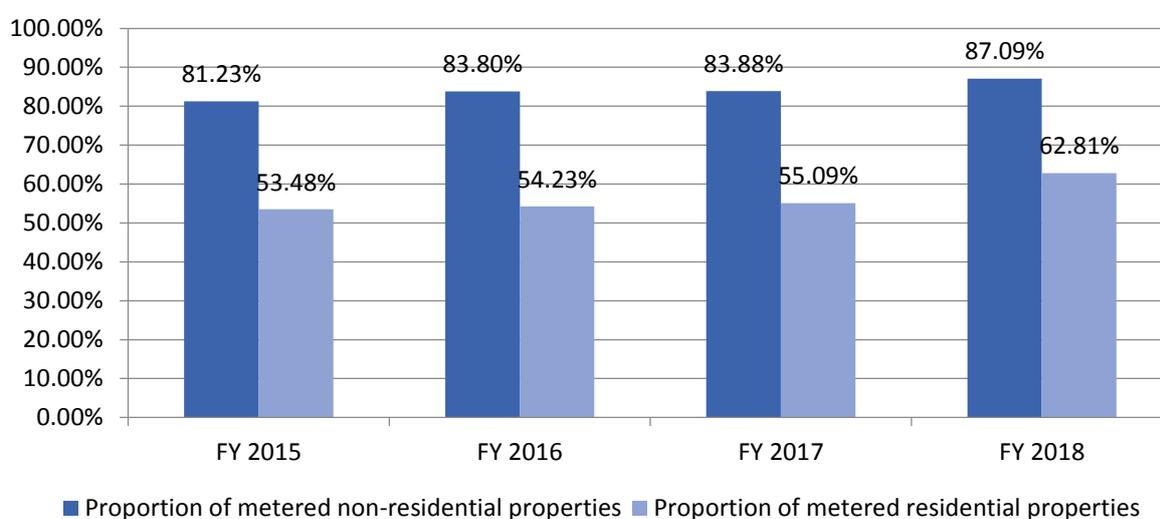
Internationally, water metering is widely used and technology is moving at a rapid pace. Automatic Meter Reading (AMR) allows the automatic collection of data from meters which is then transferred to a central database. AMR data can be collected via site-visits, drive-by collection, or through a fixed network method, whereby a network is permanently installed to capture meter readings. There are numerous advantages to be had with AMR and Advanced Metering Infrastructure including:

- remote utility management
- improved customer service

- radically improved leak and fault detection
- capture of time-of-use and rate of use data
- water usage profiling
- dynamic pricing.²⁰

Collectively NPS participants had installed 105,321 non-residential and 763,479 residential water meters in 2017/18. This covered 82% of the 128,186 non-residential properties receiving water services and 47.6% of the 1,325,898 residential properties receiving water services.

Over the previous four years the proportion of meters has gradually increased, partly reflecting high growth in Auckland where there is full residential water metering. The proportion of water serviced properties for participants supplying four years continuous data is shown in the figure below.

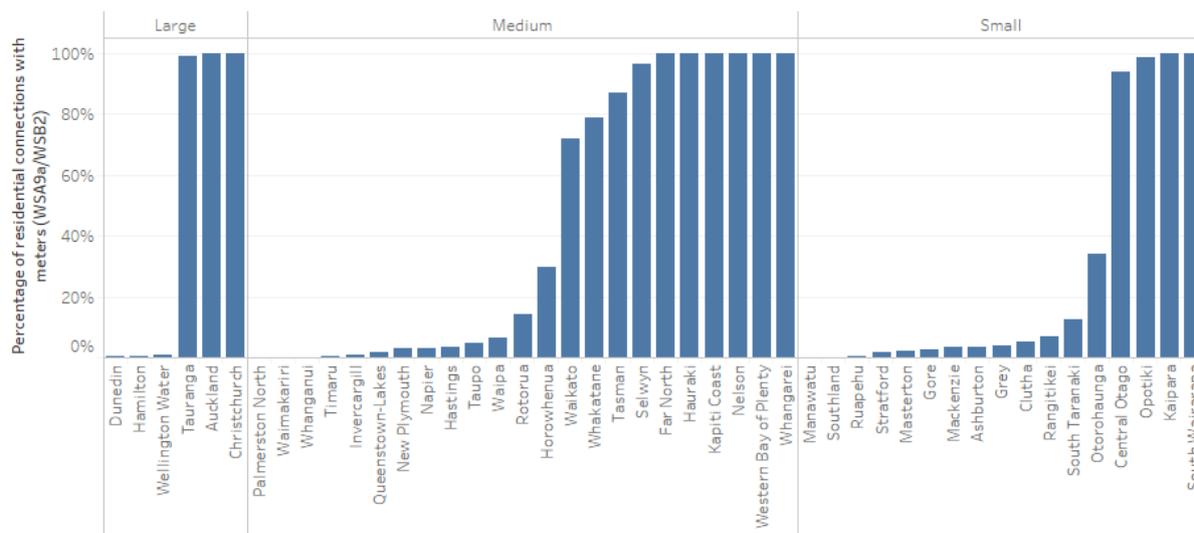


In general these meters are used to apply volumetric charges for water services. While Christchurch residential properties are metered, the meters are not used to collect revenue unless exceptionally high water use occurs. These meters are read approximately every two years and used to provide an indication of water consumption to inform water loss and management initiatives.

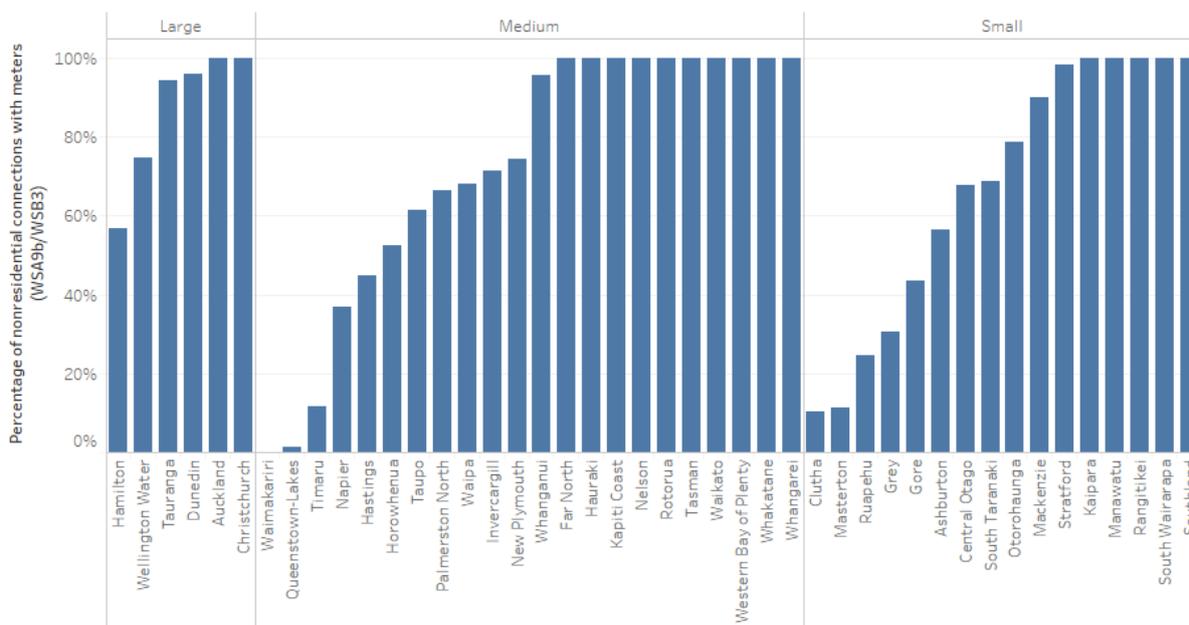
The levels of metering coverage are shown in the figures below. While it is more common than not for a residential property to have a water meter this largely reflects near to full metering coverage in large centres such as Auckland, Christchurch and Tauranga. The majority of participants (29 of 46 providing data) still have no or low residential water metering levels.

²⁰ https://www.waternz.org.nz/documents/other/111118%20_metering%20_overview.pdf

Percentage of residential properties with water meters



Percentage of non-residential properties with water meters



Councils with low or no residential metering coverage (less than 40% of properties metered) are: Dunedin, Hamilton, Wellington water, Palmerston North, Waimakariri, Whanganui, Timaru, Invercargill, Queenstown Lakes, New Plymouth, Napier, Hastings, Taupo, Waipa, Rotorua, Horowhenua, Manawatu, Southland, Ruapehu, Stratford, Masterton, Gore, Mackenzie, Ashburton, Grey, Clutha, Rangitikei, South Taranaki, Otorohanga (although Otorohanga has been rolling out water meters to all properties).

Q2 What explains the difference between the amount that councils account for depreciation and the amount spent on renewing assets? Are changes needed to the methods councils use to estimate depreciation? If so, what changes are needed?

Depreciation is more likely to be based upon adopting an accounting standard and asset age than upon asset condition and actual cost. The change required is for depreciation costs to accurately reflect the actual costs of maintenance and renewal which in turn depends upon the quality of asset management information. This is acknowledged by councils and is most acute in smaller councils with less resources. Castalia reported to the DIA in 2017 that:

*“Service provider scale correlates with asset management maturity. We found that the population size of a service provider correlates with the AM maturity of the service provider: the greater the population level, the higher the level of asset management maturity.”*²¹

An obstacle is that most 3 waters assets are underground and hard to inspect. For example, the Far North District Infrastructure Strategy states:

“A largely age-based approach to asset management, coupled with low confidence in asset condition information (especially for our underground assets) makes it difficult to make optimised strategic decisions around infrastructure investment... Without good data and information, we cannot manage the asset well or plan for the future. At present we have low confidence in underground asset condition, particularly for stormwater” (p.45).²²

Another example is Marlborough District Council’s Infrastructure Strategy:

“The buried pipe infrastructure and the sub-structure of roads present another challenge as they are not visible, and it is therefore more difficult to assess their condition. Without reliable condition information it is a complex task to accurately estimate how long the asset will remain serviceable” (p.176).²³

Asset condition information must inform assumptions if depreciation is to reflect reality.

Q3 In what ways are population growth and decline affecting funding pressures for local government? How significant are these population trends compared to other funding pressures?

Population growth or decline both impact upon council’s ability to fund water services. Where there is a declining population, the per capita cost of 3 water assets are likely to be higher. The bigger the population, the more capital costs can be spread.

A barrier to providing for future growth is that the income from future developers, ratepayers and service users to pay for the asset lags the requirement to invest. Debt finance creates costs ahead of income and impacts upon the balance sheet.

The planning regime does not enable councils to stop new development on the basis that they can’t afford it. The marginal costs of an additional connection can be minimal, but a major

²¹ [https://www.dia.govt.nz/diawebsite.nsf/Files/Three-waters-documents/\\$file/Castalia-ThreeWaters-Asset-Management-Maturity-in-NZ-\(final-report\)-Oct-2017.pdf](https://www.dia.govt.nz/diawebsite.nsf/Files/Three-waters-documents/$file/Castalia-ThreeWaters-Asset-Management-Maturity-in-NZ-(final-report)-Oct-2017.pdf)

²² <https://www.fndc.govt.nz/your-council/strategic-planning/ltp2018-28/ltp-2018-28-docs/ltp-section-breakdown/7.-Infrastructure-Strategy-for-2018-48.pdf>

²³ https://www.marlborough.govt.nz/repository/libraries/id:1w1mps0ir17q9sgxanf9/hierarchy/Documents/Your%20Council/2018-28%20LTP/2018-28_Long_Term_Plan_Final.pdf

new development may trigger a requirement for significant new capital investment. Planning for growth is important because the costs are greater to retrofit infrastructure. For example, in Auckland city the relocation of stormwater pipes to enable the construction of the city rail link and the construction of the Central Interceptor incurred significant costs.

The Auckland Plan 2050 expresses the infrastructure/development challenge clearly:

“Aligning the timing of infrastructure provision with development. Future growth and change will require a significant increase in the capacity and expansion of Auckland’s infrastructure networks. When infrastructure is provided, it needs to be coordinated with growth. This will minimise the costs of under-used assets, or the problems with over-stressed, congested networks” (p.208).²⁴

Central government has an important role to play in enabling infrastructure to meet growth demands. For example, providing interest free loans as an effective means of putting in infrastructure ahead of population growth and deferring the debt. For example, the Housing Infrastructure Loan in 2018 to Tauranga City Council provided for capacity upgrades to the Te Maunga Wastewater Treatment Plant and a new Waiāri water treatment plant which were operating at or near capacity.²⁵

The Office of the Auditor-General’s 2014 report on water and roads suggests that the biggest challenge is long term infrastructure asset planning:

“Analysis shows that most local authorities’ planning and decision-making about their infrastructure services, assets, and associated funding are adequate for short to medium-term planning. However, local authorities need to do more to manage infrastructure and financial strategies for the long term, given the wider economic and population changes we face” (p. 5-6)²⁶

Long term planning of infrastructure aligned to population growth or decline must be improved with the support of central government to enable infrastructure investment in response.

Q5 To what extent is tourism growth resulting in funding pressures for local government? Which councils are experiencing the greatest pressure, and how is this manifesting?

Tourism pressures are manifesting in areas with a high seasonal population. Councils experiencing significant pressures on 3 waters infrastructure due to seasonal tourism can be deduced from round two of the Tourism Infrastructure Fund (TIF) in 2018. The main infrastructure funded by the TIF was toilet facilities. Only one of the 28 councils received funding in advance of the problem having already arisen and causing environmental harm. Central government needs to provide the funds to meet the demand arising from tourism because council has no ready means of gathering significant income from many of those tourists, particularly those camping in public places. The draft Aotearoa New Zealand Government Tourism Strategy acknowledges that the challenges of visitor growth *“often show up at a local government level, where much of the infrastructure needed to support tourism is provided”* (p. 4).²⁷

²⁴ <https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/auckland-plan/about-the-auckland-plan/docsprintdocuments/section-8-development-strategy.pdf>

²⁵ <https://www.hud.govt.nz/urban-development/housing-infrastructure-fund>

²⁶ Office of the Auditor-General. (November 2014). Water and roads: Funding and management challenges.

²⁷ MBIE. (October 2018). Aotearoa New Zealand Government Tourism Strategy: Summary.

For example, Westland District identifies that:

“Funding and delivering activities is a challenge in Westland as it is a vast district but one that is sparsely populated. Additionally, much of the land (about 87%) is part of the Department of Conservation (DOC) estate. The DOC estate contains a number of outstanding natural features making it a very popular tourism destination. However, a key challenge for the Council is providing and funding infrastructure and facilities to enable visitors to use the DOC estate. Although the district is over 400 kilometres long, there is a small rating base within the district, with only one main township and numerous smaller rural settlements. Currently, within the district there are only 6,585 rateable properties. Despite this, our geographically dispersed settlements require a range of services, facilities and infrastructure. It is a key challenge for Council to fund these core services within the limitations of the current rating base. Council’s largest operational spending continues to be transportation infrastructure and three waters (drinking water, wastewater and stormwater)” (p. 17).²⁸

In 2018 the TIF funded \$320,250 for the provision of toilet facilities at Ross, \$300,750 for the provision of toilet facilities at Whataroa, \$184,550 of funding for the provision of toilet facilities at Kumara and \$176,250 of funding for the provision of freedom camping facilities at Hokitika. That is a total of \$981,800 which is 1.85% of the councils total 2008 capital expenditure just to provide the most basic essential facilities for visitors which had been lacking for some time. The very fact that Westland Council made these successful funding bids shows that the problem was not its ability to identify and specify of the infrastructure required. The constraint was a lack of funding.

The problem is not just a lack of toilets and car parks for visitors but extends to existing core infrastructure. For example, the Bay of Islands is struggling to have enough drinking water and wastewater capacity in peak season. This drinking water problem is compounded by prolonged dry spells during summer. As a result, \$353,000 of TIF funding was granted for three sewerage and water system feasibility studies for Opuia, Paihia and Waitangi.²⁹

The question arises as to how the Far North District Council can fund the implementation of recommendations from these feasibility studies. It has a small permanent resident population and a lack of adequate roading and water infrastructure across a large geographical district. For example, a number of wastewater treatment plants are lacking investment, resulting in ongoing non-compliance issues at the Taipa, Ahipara, Paihia, Opononi-Omapere and Kerikeri treatment plants (p. 44).³⁰ The Far North is just one example of a council has more urgent priorities than it has funds and evidently requires central government funding support over and beyond the TIF.

A third example is the Buller District Council and problems with drinking water at Punakaiki. The water supply has been non-complaint for bacteria and protozoa resulting in boil water notices. Even though a Ministry of Health subsidy was potentially available, the required 5% contribution by the Council has still been unaffordable. The settlement has only 81 residential ratepayers and around 450,000 summer visitors to the ‘pancake’ rocks.³¹ The TIF granted \$175,000 of funding for the construction of additional water storage facilities and fencing to address water supply issues at Punakaiki. However as the Council’s Long Term Plan says, this

²⁸ https://www.westlanddc.govt.nz/sites/default/files/WestlandDistrictCouncil_LTP%20FA%20PRINT.pdf

²⁹ <https://www.mbie.govt.nz/immigration-and-tourism/tourism/tourism-funding/tourism-infrastructure-fund/tourism-infrastructure-fund-round-2-funding-recipients>

³⁰ <https://www.fndc.govt.nz/your-council/strategic-planning/ltp2018-28/ltp-2018-28-docs/ltp-section-breakdown/7.-Infrastructure-Strategy-for-2018-48.pdf>

³¹ <https://www.stuff.co.nz/the-press/news/west-coast/98988331/costly-fix-for-punakaiki-water-supply-problems>

is only an interim solution, “the upgraded supply will be far more resilient and will get us through until a long-term ‘fit for purpose’ alternative is available” (p. 1).³²

The government acknowledges that:

“Our current tourism system ... features some out-dated policy settings and funding arrangements that were never designed to deal with the scale and pace of change that we have seen in the past five years” (p. 1).³³

This Inquiry is well-placed to recommend up-to-date policy settings and funding arrangements.

Q6 Is an expansion of local government responsibilities affecting cost pressures for local government? If so, which additional responsibilities are causing the most significant cost pressures and what is the nature of these increased costs? To what extent do these vary across local authorities?

The 3 waters review is likely to tighten the regulatory framework and economic regulation to deliver a higher set of standards. The requirements on councils set by national policy statements and national environmental standards under the RMA can significantly increase cost pressures. For example, raising drinking water standards and the Freshwater NPS. We agree with SOLGM that:

“Heightened expectations about water quality will manifest themselves in higher standards for treatment of stormwater and discharge. The impacts of this will become clearer in the next round of infrastructure strategies” (p. 6).³⁴

Councils need to focus on providing essential services to meet community expectations. Funding must match higher standards for water services and freshwater quality if councils to deliver the required improvements.

Q8 How are local authorities factoring in response and adaptation to climate change and other natural hazards (such as earthquakes) to their infrastructure and financial strategies? What are the cost and funding implications of these requirements?

Developing resilience to natural hazards is a major and increasing challenge for councils and their communities. The two major hazards seismic resilience and the impacts of climate change are considered below.

Seismic resilience

Underground pipes are particularly vulnerable to seismic activity. The Canterbury and Kaikoura sequences have had a significant impact the extent of which is not fully known. For example, Marlborough District Council states:

“We know from Christchurch’s experience that some of the older pipe materials (particularly asbestos cement and cast iron) do not perform well following earthquake ground shaking and liquefaction. New pipe materials such as PVC, and particularly polyethylene, are more resistant to ground shaking and ground deformation than the older, more brittle, materials. There is a considerable legacy of asbestos cement and cast iron pipes that may be regarded as less resistant. This is particularly the case for

³² <http://bullerdc.govt.nz/wp-content/uploads/2018/11/1718-Annual-Report-FULL-VERSION.pdf>

³³ MBIE. (October 2018). Aotearoa New Zealand Government Tourism Strategy: Summary

³⁴ https://12233-console.memberconnex.com/Attachment?Action=Download&Attachment_id=1394

the Awatere water supply as the scheme was first installed in 1947 when asbestos cement was a popular pipe material” (p.189).³⁵

Insurers’ assessments of asset replacement values post Kaikoura quake damage, highlight that current depreciation methods in use are not strongly correlated to actual asset replacement costs. More information is available on this issue from Marlborough District Council.

Wellington Water has completed a water supply resilience programme. It identifies that region is particularly vulnerable to earthquakes and sets a long term goal to provide 80% of customers, within 30 days of a reasonable seismic event, with at least 80% of their water needs. The cost estimates for the overall programme amount to \$695 million.³⁶

Adaptation to climate change

Climate change is already having a major impact on all New Zealand. The impact is particularly severe on some coastal areas such as the Thames-Coromandel district and Dunedin south. NIWA list some of the key impacts of climate change for New Zealand. Those that have a direct impact both on the 3 waters services provided by councils and upon freshwater quality are listed below:

- Sea levels around New Zealand are expected to rise due to the ocean expanding as it warms, as well as the melting of glaciers. A recent national risk assessment of local government sea level rise exposure completed for LGNZ has started to delineate the consequences of sea level rise. It found that *“our understanding of exposure, impacts and risk is limited.”*³⁷ The consequences include infrastructure failure. For example, many wastewater assets in coastal areas are exposed to salt-water inundation. Salt water intrusion into low lying wastewater pipelines may exacerbate existing inflow and infiltration issues. Drinking water aquifers (such as the Waiwhetu aquifer servicing Wellington) are also vulnerable to saline intrusion.
- Climate models suggest that the frequency of extreme winds over New Zealand is likely to increase in almost all areas in winter and decrease in summer. Increases in strong winds may mean that coastal regions exposed to the prevailing winds may be subject to an increase in the frequency of heavy swells, which would add to the effects of higher sea levels. Increased power outages due to extreme winds affect water service delivery.
- Heavy rainfall is the result of a warmer atmosphere which can hold more moisture (about 7% more for every 1°C increase in temperature). Modelling work suggests that for New Zealand all rainfall extremes can be expected to increase by about this amount. On top of this, local atmospheric circulation changes can further increase or decrease rainfall extremes. This could have wide ranging impacts on water infrastructure, decreasing surface water quality, overloading stormwater systems and overloading wastewater networks and treatment plants causing wastewater overflows.
- Droughts are projected to become more frequent and more intense under climate change. This is likely to affect the life of underground pipes through increased soil movement and cracking, have impacts on the quality of surface water supplies (through increased algal blooms and turbidity), lower groundwater tables, and increase water demands.
- Daily temperature extremes are likely to impact on peak water demands.³⁸

³⁵https://www.marlborough.govt.nz/repository/libraries/id:1w1mps0ir17q9sgxanf9/hierarchy/Documents/Your%20Council/2018-28%20LTP/2018-28_Long_Term_Plan_Final.pdf

³⁶ Wellington Water. (2017). Towards 80-30-80

³⁷ <http://www.lgnz.co.nz/assets/Uploads/James-Hughes-Local-Government-Sea-Level-Rise-Exposure-Project-ilovepdf-compressed.pdf>

³⁸ <https://www.niwa.co.nz/natural-hazards/hazards/climate-change>

The Stocktake Report from the Climate Change Adaptation Technical Working Group (CCATWG) identified that:

“Many councils realise the importance of acting on adaptation and would like to do more but identified barriers including limited community buy-in; resourcing constraints (funding, capacity and capability); and lack of leadership and support from central government” (p. 53).³⁹

By default, most councils are reactive and static in their planning, not anticipatory and dynamic. The CCATWG recommendations included:

“A coordinated and planned approach, with legislative alignment and clear definition of responsibilities for climate change adaptation, hazard management, resilience, and emergency management. This will... enable long-term investments to be undertaken with confidence – by the Government, local government, iwi/hapū, the private sector, and communities” (p. 29).⁴⁰

There is a risk that current investments are not resilient and sustainable and that councils are left to pick up the pieces.

Water New Zealand asked in the 2016/17 National Performance Review how climate change was being managed. 36 of the 50 respondents provided some account of how climate change considerations had been factored into 3 waters management. The approaches and reported changes accounted for were different for each participant. The only standardised guidance referred to was the 2008 Ministry for the Environment’s (MfE) climate change impact assessment guidance manual for local government.⁴¹ Results suggested that local authorities were aware that climate change was likely to have significant impacts and that more guidance is required on how to manage climate risks to water infrastructure. We note that subsequent guidance was issued in 2017 by MfE on coastal hazard and climate change which outlines the problems but does not provide specific guidance on water infrastructure solutions.⁴²

Climate change impacts on drinking water

The consequences of climate change on the drinking water system can be severe. For example, the Report of the Havelock North Drinking Water Inquiry: Stage 2 made several relevant observations:

- *“Contamination is almost always preceded by some kind of change and change must never be ignored. Sudden or extreme changes in water quality, flow or environmental conditions (for example, heavy rainfall, flooding, earthquakes) should arouse particular suspicion that drinking water might become contaminated” (p. 8).*
- *“Data has been presented to the Inquiry that shows that many waterborne outbreaks of disease have been preceded by high rainfall” (p. 56).*
- *“There was acceptance that below-ground bore heads carried additional risk and that with changing rainfall patterns, and attendant flooding risk, this risk may be increasing” (p. 206).⁴³*

At the least this requires means more frequent testing and may require changes to the way drinking water is provided.

The Deep South Science Challenge has a project looking at the consequences of drought on drinking water:

³⁹ <http://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/adapting-to-climate-change-stocktake-tag-report.pdf>

⁴⁰ <http://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/ccatwg-report-web.pdf>

⁴¹ <http://www.mfe.govt.nz/sites/default/files/climate-change-effect-impacts-assessment-may08.pdf>

⁴² <http://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/coastal-hazards-guide-final.pdf>

⁴³ <https://www.dia.govt.nz/Report-of-the-Havelock-North-Drinking-Water-Inquiry---Stage-2>

“Currently, we don’t know the likelihood of future droughts or how they will change in location or intensity because of climate change. We also don’t know what risks these kinds of droughts might pose to our drinking water supply systems in New Zealand.”

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Clearly there is more work needed to do ensure the security of supply of our drinking water in the face of the impacts of climate change.

Wastewater, stormwater and climate change

The impacts on wastewater and stormwater are well summarised by the Deep South Challenge:

“The Edgecumbe floods saw raw sewage floating through the streets, making the clean-up extremely challenging. Over 300 homes in the district were damaged... and flood-proofing the town itself remains a distant goal. The asset value of stormwater and wastewater assets in New Zealand is well over \$20 billion. This includes 24,000 kilometres of public wastewater networks with more than 3,000 pumping stations, and over 17,000 kilometres of stormwater networks. Much of it, however, was not designed for the challenges climate change will bring, from sea level rise to the predicted changes in precipitation frequency and intensity. The way climate change is predicted to affect our stormwater and wastewater will have a considerable impact on many aspects of NZ life, including health, disaster resilience, drinking water, ecology, and transport, not to mention how flooding or infrastructure failure will impact on communities.”⁴⁵

We have not prepared our water assets to manage the impacts of climate change.

The Auditor General found that there is an urgent need for improvement to stormwater systems:

“Councils need thorough and reliable information about their stormwater systems and flood risks so they can make deliberate choices about what level of service they need to provide to their community now and in the future.

Councils need to prioritise gathering the right information to help them understand their flood risk and the performance of their current stormwater system in reducing that risk. This would enable councils to identify the assets most important in protecting homes and property from the effects of flooding, and identify their investment priorities.

In my view, the historical under-investment in stormwater systems that my Office has previously identified creates a level of urgency. People need to be confident that the stormwater system will continue to protect their homes and property from flooding. Flooding is New Zealand’s most frequent natural hazard and causes significant social, environmental, and economic costs. According to the Insurance Council of New Zealand, severe weather and flood events resulted in claims costing about \$260 million in 2017/18” (p. 4).⁴⁶

We are not able to prevent or cope with flooding due to a lack of information about and under-investment in stormwater assets.

⁴⁴ <https://www.deepsouthchallenge.co.nz/projects/drinking-water-drought-and-climate-change>

⁴⁵ <https://www.deepsouthchallenge.co.nz/news-updates/new-zealands-water-systems-particularly-vulnerable-climate-change>

⁴⁶ <https://www.oag.govt.nz/2018/stormwater/part-1>

Q10 Do the prices of goods and services purchased by local government vary across councils? If so, what are the reasons for these differences?

One of the key reasons for a difference in costs is bulk purchasing power and distance from markets. Smaller rural councils are likely to have to pay more for goods and services, including contractors than larger urban councils.

There are many different expert professional engineers, scientists and technicians required to deliver 3 waters services. Recruitment and retention of expertise is a significant issue for smaller rural councils competing against a New Zealand and global trend of urbanisation and skills shortages for engineers and technicians. We suggest that higher salaries are one of the few options available when a council is not able to offer the same opportunities for career progression or the range of lifestyle opportunities to be as attractive to employees.

Q16 How effective are councils' Long-term Plan consultation processes in aligning decisions about capital investments and service levels with the preferences, and willingness and ability to pay, of residents, businesses and other local organisations?

There is a significant information gap which makes public consultation less effective and meaningful. The New Zealand Water Consumer Survey 2017 was undertaken to understand consumer perspectives on issues facing the water industry. The survey was conducted online between 1 May and 16 June 2017 and received more than 4,500 responses. The results provide an insight into consumers' needs and how water utilities can best service their customers. The survey informs community-based policy debate.⁴⁷

Consumers are concerned about the environment, including water shortages and climate change. Their concern for the environment is driving a significant proportion of consumers to undertake water saving initiatives. This trend is likely to result in consumers holding water suppliers accountable for being environmentally responsible, undertaking more water saving measures and tackling climate change. Further, consumers expect industrial and agricultural water users to do their bit to save water and adequately pay for usage.

Consumers believe that water suppliers generally provide high quality customer service. However they are uncertain that water providers are adequately planning for the future. There also appears to be a lack of understanding amongst most respondents regarding the structure of water governance. This can lead to a lack of trust in the planning and efficient management of water. There is an opportunity for water suppliers to undertake more community engagement and knowledge sharing.

Consumers would prefer to pay for how much water they use. Consumers also believe that there should be a cost when taking water from the environment, particularly when it is for a commercial use. This requires water suppliers to reassess water pricing and increase transparency and accountability.

The majority of respondents are concerned about poor water quality in their waterways, particularly litter and floating plastics, as well as sewer overflows. Consumers believe councils should be investing more in waterway quality. New and innovative ways to manage stormwater and pollutants can be explored, to take pressure off the sewer network. This is an opportunity for water suppliers and councils to work in partnership and take responsibility for the waterway network and the impact of excess stormwater.

⁴⁷ <https://www.waternz.org.nz/watersurvey>

Q18 How much scope is there for local government to manage cost pressures by managing assets and delivering services more efficiently?

We agree with the Commission that asset management is central to managing infrastructure costs:

“Any decisions about how infrastructure is paid for should be framed in the context of ongoing efforts to ensure that infrastructure is provided and managed in a disciplined, cost-effective and efficient manner” (p.9).⁴⁸

The Auditor-General noted a significant asset information gap exists at present:

“Good information about network asset performance helps good decision making about capital expenditure and how to fund that expenditure. Therefore the results of our analysis raised questions for us about the information local authorities use for asset maintenance, renewal, and replacement decisions... Our own observations and advice from experts is that other countries...have better quality data and collection practices than those that our local authorities use to manage water and roading assets” (p. 5).⁴⁹

The Commission has found that there was a need for more engagement in the National Performance Review to provide a benchmark for self-regulation:

“In the absence of explicit economic regulation of water provision, New Zealand needs to ensure that self-regulatory approaches such as benchmarking are robust. Water New Zealand’s NPR is good practice, however with greater industry buy-in and further development of some indicators its effectiveness could be strengthened. LGNZ, as the advocacy body for local government in New Zealand, is well-positioned to work with councils to encourage more substantive participation in the NPR” (p. 266).⁵⁰

The Commission also found evidence of inefficient pricing mechanisms for several key reasons linked to public monopoly provision governed by elected council members:

“The provision of water by local public monopolies can reduce the incentive to ensure that prices for water are set efficiently. Water services are governed by elected local councillors who operate in multi-purpose entities and face competing demands for capital expenditure. In addition, decision making “can be influenced by local vested interests, and the popularity of more visible social infrastructure, rather than analysis of the needs of communities for essential, but less visible infrastructure” (Water New Zealand). Inefficient, or politically motivated, pricing decisions have the potential to undermine the efficient delivery of water services, and to hinder a responsive supply of infrastructure to support growth.

- *Under recovery of capital costs. Councils have tools in place to recover the costs associated with urban growth from the development community through development contributions. However, elected officials may face pressure to keep these charges low; this may result in under-recovery of costs. In the absence of full cost recovery, cross-subsidies are required to support growth. This is likely to create a significant disincentive toward expanding the network to accommodate growth.*

⁴⁸ Ibid

⁴⁹ Office of the Auditor General. (November 2014). Water and roads: Funding and management challenges.

⁵⁰ Productivity Commission. (September 2015). Using land for housing.

- *Under-recovery of operating costs. Full recovery of the operational costs associated with maintaining water networks can also be subject to political pressures. According to Water New Zealand, “council decisions are dominated by the political imperative to keep rates down’. Where this results in under-recovery of operating costs, existing assets are likely to be poorly maintained, or renewals deferred for future generations to deal with. Indeed, some available evidence suggests that councils are deferring infrastructure maintenance. Forecasts in the Long-Term Plans of high-growth councils point toward a growing and potentially under-funded requirement for infrastructure renewals.*
- *Over-charging. Monopoly provision entails the risk that prices will exceed the price of supply. For example, Councils might overcharge for water services, particularly if their other revenue sources are under pressure” (p. 243).⁵¹*

Asset condition assessment gaps and inconsistent assessment methodologies

Participants in the NPR commonly assign a 1 to 5 grading to indicate the condition of their assets (1 indicating assets are in very poor condition and 5 being very good). These condition assessments offer us a glimpse into the state of assets. However, variation in assessment methodologies makes it difficult to make accurate comparisons. The table below shows various measures in use:

Condition grading approaches	Water		Wastewater		Stormwater	
	<i>Pipelines</i>	<i>Above ground assets</i>	<i>Pipelines</i>	<i>Above ground assets</i>	<i>Pipelines</i>	<i>Above ground assets</i>
Informal	4	5	3	4	3	3
In-house	9	6	7	8	8	11
New Zealand Infrastructure Asset Grading Guidelines	3	4	3	5	1	3
NAMS International Infrastructure Management Manual	8	9	4	9	4	6
IPWEA Condition Assessment and Asset Performance Guidelines	1	6	2	4	1	3
Visual Assessment Manual for Utility Assets		2		2		0
New Zealand Pipe Inspection Manual	4		14		14	
IPWEA Practice Note 7: Water Supply and Sewerage	2		1		0	
Other (please specify in comments field)	6	5	5	6	5	7
Not specified	10	10	8	8	11	14

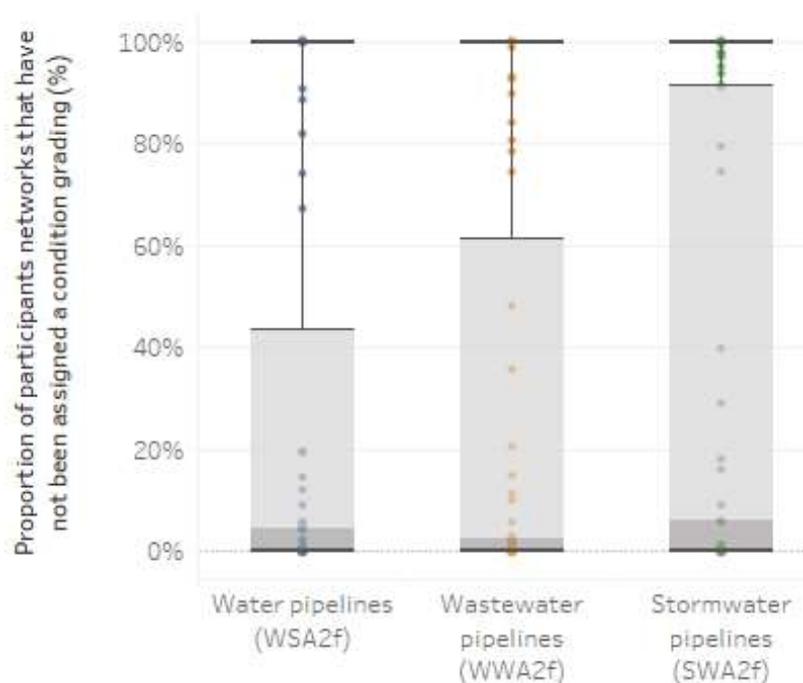
Completeness of pipeline condition grading

A review of the New Zealand Pipe Inspection Manual is currently underway, offering the opportunity to facilitate the adoption of a standardised method for pipeline condition assessments. A national pipe database project being undertaken by the University of Canterbury is an additional initiative aiming to improve the quality and comparability of councils’ pipelines data by collating information into a single database. A pilot is underway using data from 6 participating water suppliers.

The completeness of councils’ asset condition data can be compared by looking at the proportion of the network that has yet to receive a condition grading, as shown in the figure below.

⁵¹ Ibid

Proportion of pipelines that have not yet been assigned a condition grading per participant



Notably stormwater pipeline condition is the least likely to be assessed. Variation partially reflects different condition grading approaches across participants. For example, Dunedin only assigns an asset a condition when a physical assessment of assets has been undertaken, whereas other participants have extrapolated pipeline condition grading based on factors such as asset age or number of breakages.

Q20 How do councils identify and employ new technologies to manage their infrastructure assets and produce services more efficiently? How effective are councils in using new technologies to manage cost pressures? Please provide specific examples of the use of new technologies to manage cost pressures.

There is a significant variance in the uptake of new technology by councils with some councils using manual treatment methods and not taking advantage of the benefits of technological advances and automation. One factor is the expertise of the council staff involved in making the decisions about water treatment.

For example, technology developed in New Zealand enables 'predictive control' by measuring raw water influent quality and determining how much coagulant is required for water and wastewater treatment plants. This system reduces chemical costs by around 18%, reduces plant downtime and delivers an improvement in final water quality. The payback on investment that is typically is less than two years.⁵² For example, Wellington Water delivered \$650,000 per annum in operating costs whilst improving plant performance.⁵³ However, it requires a high level of expertise to operate and of the 60 sites utilising this system, most are overseas.

Similarly, another product New Zealand developed in has reduced the power costs by approximately 10% through shifting pumping to lower power tariff periods and maximising pump efficiency, whilst keeping reservoirs and pressures within the required parameters. There is little adoption in New Zealand even though this energy management software is used internationally.⁵⁴ However it has been used in Wellington and delivered cost savings.⁵⁵

⁵² <http://www.lutra.com/water-treatment-software/automated-coagulation-dosing>

⁵³ <http://www.lutra.com/knowledge-base/user-stories/wellington-water>

⁵⁴ <http://www.derceto.com/Products-Services/Derceto-Aquadapt/About>

CONCLUSION

Water New Zealand welcomes this opportunity to share with the Productivity Commission the insights we have gained from our work with councils and the water industry. Please contact the Association if you wish to discuss any of our comments in greater detail.

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⁵⁵ http://www.derceto.com/Case-studies/Case-studies/pod-files/CaseStudies/GWWcasestudy_USL_web_April12.pdf