

Questions from the Regional Water Shortage Summit held 11 September 2023

Why Smart Meters over Analogue Meters?

In November 2020, Wellington Water provided the Water Committee and councils with an [economic case](#), which evaluated a range of options to reduce water demand, support customer engagement, reduce environmental impacts, and improve network management.

The economic case considered a range of options including increased use of network meters, analogue meters, and smart meters. Out of all the options only smart meters would provide the region with the benefits in terms of money spent and water saved.

Smart meters provide residents and Wellington Water with much more frequent and detailed information on household water use. This is provided on an automated basis and is readily integrated with other network data for analysis and decision-making. This provides the following key benefits:

- Private leaks can be detected when they occur
- Customers have information to better understand how they use water
- The data can help identify where public network leaks are occurring.

Analogue meters require a physical reading by a meter reader and provide a lower quality of data than smart meters. Due to their limitations, analogue meters will not:

- Detect small leaks on private properties
- Provide timely private leak detection
- Help customers to understand their usage
- Help to locate leaks on the public network.

The economic case also showed that installing analogue meters would be marginally cheaper than installing smart meters but wouldn't provide the water saving benefits.

In the politest way possible, should we cut to the chase and sense check water meters? That's why we're all here right?

Resolving the water supply shortage risk in the lowest cost, lowest impact manner involves three key actions we refer to as KRA:

- **'Keep'** - increased investment in leak management to *keep* the water in the pipes
- **'Reduce'** - universal smart meters to support customers to reduce water use; and
- **'Add'** - additional lakes to store more water to see us through the summer.

The strategy, the action plan and the community capital invested in the two Whaitua Plans are in place and ready for delivery. Why aren't WW implementing them?

Both Whaitua Implementation Plans (WIP) ultimately require funding from our client councils to progress. We are incorporating both plans into our planning and investment advice to councils. Please note that since all the drinking water sources and catchments lie within Te Whanganui-a-Tara, the WIP for Te Whanganui-a-Tara is the only one that contains recommendations on Water Use.

Is Scenario 1 the only one that implements the Whaitua recommendations?

All the scenarios presented at the Summit include consideration of the change in water take to meet the Te Whanganui-a-Tara Whaitua recommendations.

Scenario 1 includes all three of the above key actions (Keep, Reduce and Add) and is the approach that is best able to accommodate the Whaitua recommendations from the perspective of cost, impact on the water, and carbon emissions.

What other recommendations from the Whaitua report have been considered to support options presented so far?

The Te Whanganui-a-Tara Whaitua report recommended that councils fund and implement universal water meters. This is supported by the analysis undertaken for Scenario 1, recommending the three key actions: addressing water loss (Keep); a reduction in water use (Reduce); and adding more supply (Add). Other recommendations in the report include:

- Changes to minimum flows and allocation amounts,
- Engaging with the community and commercial water users,
- Leak management,
- Water harvesting when river flows are high, and
- Urban water recycling.

What % of leak reduction have we managed to accomplish? Are we making a difference or just treading water?

Leaks have continued to increase over the last few years and increased investment is needed. This is one of the key recommendations from the Summit. In areas where and when funding has been increased, we've seen some levelling off in demand.

Can Wellington Water put real time information on the capacity of the storage lakes and the aquifers? I.e., can we make this real for people?

The water levels in the storage lakes and the aquifer depend on numerous factors, including water demand and rainfall conditions. This means they may not provide a complete picture of the water supply risk. Wellington Water's website has a [Supply Map](#) where people can look at water usage trends. Wellington Water's and councils' regular public communications and updates on Water Restriction Levels throughout the summer provide the most up-to-date information on the current water supply risk. These take into consideration the overall supply and demand position.

If the risk and concern is so big, is that not a high bar to declare a state of an emergency to motivate resources e.g. use army to secure infrastructure.

In an emergency water shortage event (e.g. Level 4 restrictions) we would look to our councils and WREMO to declare a state of emergency. We are currently working closely with NEMA, WREMO, Taumata Arowai, GWRC, and our client councils to develop an emergency response plan so that everyone is prepared.

It seems like we lurch to this scenario year on year & it's getting worse. Is that correct?

The issue is becoming more acute and each year the risk increases due to the rising demand for water. This is a result of increased leaks due to historic underinvestment, population growth, and the region's relatively high usage.

If our primary tool to curb low-level shortages is a restriction on sprinklers and hoses, is it worth considering an ongoing reduction of outdoor water use?

It's important that we raise the restriction levels when they are most needed so that people take them seriously. If they are in place all the time, there is a risk that the public simply ignore them. We rely on the community doing the right thing for water restrictions to be effective.

When can we expect a full business case for water meters and other solutions? How do we cost it in our LTP if we don't have the final # of \$?

Updated cost estimates for all three of the Scenarios will be incorporated into our LTP advice for councils. These estimates include up-to-date information on smart meter installation costs, the results of the pre-design investigations undertaken from the lakes, and the costs for the full range of leak management activities.

We have now developed an initial estimate for the installation of smart meters in the metropolitan Wellington region. The cost per smart meter is estimated at \$1,772, which includes a proposed 20% contingency.

This early estimate is based on information from other similar projects, a survey of meter suppliers, engagement with the supply chain, the Greytown smart meter trial and the PCC commercial meter project. We've also benchmarked our figures against costs from other water service providers in Aotearoa who have installed smart meters.

Next steps of this work would include a trial in metropolitan Wellington, which will provide us with a greater level of certainty in the cost per smart meter.

Would WW make use of smaller subcontractors in the plumbing and water space to help speed up the roll out and spread around \$\$ to smaller firms?

A procurement plan will be prepared as part of the universal metering delivery programme, subject to councils approving the investment. Implementation is likely to require a range of skills and expertise and all viable options will be considered to determine the most suitable approach.

What assumptions have you made about leak management in your demand forecasts?

Three options for managing leaks were assessed. These were:

1. Maintaining the existing level of investment, resulting in the status quo of public leaks around 35% (note the region is facing around a total of 45% of leaks which includes public and private leaks) and rising,

2. Medium investment, which would reduce public leaks to an estimated 25%, or
3. High investment, which would reduce public leaks to an estimated 12%.

The third 'high investment' option is considered achievable only if water meters are in place to improve Wellington Water's ability to effectively manage the network and efficiently locate leaks for repair.

With Scenario 1, how long would this guarantee supply for?

Scenario 1 is where councils invest in all three recommended outcomes: 'Keep' water in the pipes by investing in finding and fixing leaks, 'Reduce' water use, and 'Add' lakes. This scenario would allow councils to sustainably meet demand for water until around 2045. This assumes median population growth as well as leak and demand reduction initiatives being consistent with our current forecasting. The timing for future upgrades will be reviewed regularly and will depend on actual population growth, leak reduction, and how much residential water use is reduced through smart meters and demand management.

What about a scenario where demand falls to levels equivalent to other cities – i.e. put meters in, demand reduces - when is supply then required?

This is covered by Scenario 1, where we 'Keep' water in the pipes by investing in finding and fixing leaks, 'Reduce' water use, and 'Add' lakes. Under this scenario the proposed Pakuratahi Lakes would be required by 2035. However, designing and constructing storage takes many years. Therefore, investment and work on storage lakes needs to start in 2024, in order for the lakes to be available by 2035. Modelling shows that lowering the demand for water alone (e.g. water meters) is not enough to ensure we will have enough water for our growing population or to offset the risk of ongoing water shortages in future years.

How are you educating communities, homeowners and commercial businesses?

We engage with communities and homeowners through a range of channels, including our website, via our client councils' websites, and a range of social media. This is typically limited to relatively general messaging as the relationship with homeowners is mainly through the client councils and we also do not have the data available to support and enable direct engagement.

We have established relationships with some of our largest commercial and industrial customers to help them better understand their water use and will continue to look to work with them to support water use efficiency improvements.

Every summer we increase our communications around water restrictions and conservation. This summer, we will again look to increase awareness, engagement and understanding of restrictions, what we are doing about leaks, and the water system. This year we will also be looking to clearly communicate that there is a risk of a water shortage.

Declare a regional state of emergency, we have a military force that goes around the world fixing other people's infrastructure. Fix ours.

Please see the response to the earlier question about the potential for a state of emergency to be applied.

What is Kāpiti's per person water use, excluding leaks, today?

We will seek an update on this from Kāpiti Coast District Council. Their per person usage is higher than the metropolitan region's, due to relatively large sections and the associated high outdoor water use for gardens. It's important to note that they saw a 25% reduction in demand after meters were installed. This has deferred significant capital investment and reduced their need for summer water restrictions.

How are Auditors able to OK our LTP with so much financial uncertainty with these options presented?

As noted above, there are up-to-date cost estimates that will be applied in the LTP process. The level of cost uncertainty is acknowledged in the estimates used in that process.

Upper Hutt has a political resistance to meters. How could we overcome that?

Political matters are for the councils to resolve and comment on, not Wellington Water.

How can we use the opportunity as a local employment opportunity?

All the investment recommendations will require a wide range of local contractor and sub-contractor resources and generate employment opportunities for the region. Once the investment is decided, Wellington Water can work with our supply chain to optimise the opportunity for the region.

How do you incentivise the landlord?

We assume that this relates to the use of metering. If councils implement universal water meters these will be installed on all properties. Councils will be responsible for ensuring landlords act on any issues and councils have sufficient powers to be able to direct property owners to fix leaks at their property.

What work is Wellington Water doing now, to ensure that any plan changes to the NRP or future regional plans will be enabling for delivering this strategy?

Wellington Water engaged closely with the Whaitua Te Whanganui-a-Tara Committee and continues to engage with Greater Wellington as they develop the associated Plan changes. We expect to make submissions on the pending Plan change and to participate in the hearing process to support good outcomes for the water and for our customers.

Questions that were answered in session at the Summit

How do we incentivise people to be more accountable for their water leaks?

We see three elements to this:

- Raising awareness of the issue and the importance of taking action (i.e. education),
- Helping people to identify that they have a leak, and the size of the leak (which is one of the benefits of universal smart meters), and
- The measures that councils use to compel action.

Councils have some powers under the Local Government Act to direct customers to repair leaks. There are also measures to assist people to make repairs. Charging for water is another way that can incentivise action, as can measures to support repairs such as rebates if/when leaks are repaired.

With funding and capacity constrained, how to manage trade-offs between existing pipe renewals that support more infill housing or building new greenfield infra?

This question is probably not directly related to the topic of the Summit. Ideally councils would consider infrastructure implications of greenfield development before enabling it, and recover costs through their Development Contributions Policies.

What is the cost per household to install a meter [similar question answered in Slido]

The cost to install a smart meter depends on the connection and the property and installation location/conditions.

Since the summit, we have developed an initial estimate for the installation of smart meters in the metropolitan Wellington region. The cost per smart meter is estimated at \$1,772, which includes a proposed 20% contingency with an expected range of between \$1,500 to \$2,100. This estimate includes consideration of the economies of scale for a planned programme to install meters across the region, and the cost to provide the 'smart' components (data communications and management).

A memo outlining the basis for this cost estimate has recently been provided to council officers. The costs would not be an upfront charge on customers but would be recovered over time through rates in the same manner as other capital expenditure (or as part of any future volumetric charge).

What do you say to people in the room (I'm not one of them) who came here today opposed to meters? Is there any option without them?

Scenarios 2 ('Add' supply and 'Keep' water where it should be through investment in water loss) and 3 ('Add' supply only) presented at the Summit did not include meters.

However, these options **are not recommended** because without meters to help reduce water use, the cost will be significantly higher. This is because the water supply capacity would have to be increased to offset the effect of higher demands for water and greater levels of leaks.

Scenarios 2 and 3 would also see:

- Higher carbon emissions,
- Greater impacts on the water and the environment, and
- Increase infrastructure costs across the water supply system (i.e. larger pipes, increased numbers of reservoirs, etc.)

What happens if one city refuses to agree with the rest of the region?

That city should expect to see a significant increase in its share of costs for the water supply. These costs are allocated to councils under the Bulk Water Levy, which is based on the share of the total water supplied (i.e. councils pay for water on a volumetric basis but have elected not to directly pass through these costs to ratepayers).

This means the relative share of total water demand will increase for those councils without meters when the water demand of those councils that install meters drops - as their share of the costs will increase. The overall levy will also need to be increased to pay for the additional water storage and infrastructure that will be needed as a result.

Is demand higher in El Niño years, given the greater drying effect on golf courses, cricket pitches, home gardens etc?

The Wellington metropolitan water supply is particularly vulnerable to climate conditions that increase demand and reduce supply availability (especially from Te Awa Kairangi/Hutt River). Past El Niño events have impacted the water supply, but the impact is uncertain and not is difficult to assess and predict for future years.

Wellington Water engages NIWA to produce climate predictions to model supply and demand. These predict three months ahead, so don't yet cover the critical summer period. However, in general terms, we expect to see increasing demand for water during spells of hot, dry weather due to increases in outdoor usage.

Future of water supply: have you applied timeline for the short listed options?

The anticipated timeline is shown in slide 23 of the presentation slides from the Summit. These are available [here](#).

We've got a budget allocation for the next 7 years. Is the recommended amount over and above this?

Yes. Since the estimates for the 2021/31 LTP was developed:

- Costs for meters have increased due to inflation and an increased understanding of scope.
- There has been a sharp and unexpected rise in water lost through leaks, so the recommended leak management (Keep) actions are additional to what is currently budgeted.

In addition to these changes, the expectation in 2021/31 was that councils would invest in meters and enable the lakes to be deferred outside the 10-year investment period. This did not happen, and water demand has increased. This means the lakes are now an additional cost that will be paid through the Bulk Water Levy. To cover this, the levy will need to be increased.

Can people voluntarily install their own meter?

Yes. Customers can request meter installation from their councils and to be charged on a volumetric basis. Uptake of voluntary meters has been minimal.

What would residents experience if water was to be rationed under level 4 (or more)?

The four different levels of water restrictions are outlined here: [Water Restriction Levels](#).

They are described in more detail in Wellington Water's [Drought Management Plan](#)

Can small area meters be helpful in detecting leaks - at a lower cost than household meters?

Wellington Water provided an [economic case](#) to the Water Committee and councils in November 2020. This considered:

- Additional network meters (including small area meters),
- Universal analogue meters, and
- Universal smart meters.

Only universal smart meters showed benefits that are likely to exceed the costs.

How do renters pay vs landlords?

This would need to be considered by councils as part of any decision to apply charges.

Will you stop water being used for export?

Greater Wellington Regional Council make decisions on water takes and water allocations, under the framework of the Natural Resources Plan. Wellington Water obtains its resource consents for water takes under this framework, as would any company seeking to undertake water bottling operations.

How full are the lakes now? How long does it take to empty them?

Through the winter, the lakes are kept full unless maintenance is required in other parts of the system or on the lakes themselves. The lakes are used to supplement the water supply from our main sources, rather than as a sole source of supply. From full they can provide about 80 million litres per day for around 45 days, assuming no inflow to top up levels during that period.

Has variable pricing for commercial users been considered to reduce summer demand, or are they a minor part of total demand?

Councils set the charging rates for commercial users. Excluding small sites with usage similar to residential users, the majority of commercial customers are metered. This means they already have a volumetric charge for their water use. Commercial users are a small proportion of total demand (around 15%) but we are looking at how we can work with them to help reduce their water use and be more efficient, particularly in the event of a shortage.

Can you explain Te Mana o te Wai?

This was answered by one of the iwi representatives attending the Summit. In practice (i.e. in relevant legislation) Te Mana o te Wai refers to the fundamental importance of water and recognises that protecting the health of fresh water protects the health and well-being of the wider environment. It is described in more detail in the [National Policy Statement for Freshwater Management 2020](#). The application of Te Mana o te Wai for the water supply catchments has been addressed through [Whaitua te Whanganui-a-Tara](#).

Isn't better to invest on fixing the leaks than spending on water meters? Specifically, when we are losing over 35%

Modelling has shown that reducing leaks is needed **in addition** to water meters and constructing additional storage lakes.

The scale of the problem now, combined with increased demand due to growth and reduced supply after water takes are re-consented in the mid-2030s, means the **three recommended interventions are all required**. It is not a case of one or the other.

We also note that to fix leaks, we need to be able to find them. Water meters will play a critical role in efficiently finding leaks.

My water meter showed me I had a leak of 100L a day, now fixed. What are the barriers to all residents having a meter to learn their use?

As noted above, it is possible for a resident to request that their council install a meter. Uptake has been minimal. There is likely to be a range of factors behind this.

What role could water tanks and water sensitive urban design play in helping with these issues?

While the option is not a practical solution for the current challenge it would be of benefit in the long term, and we are always keen to support and encourage water efficiency and conservation.

Unfortunately, analysis of retrofitting rainwater tanks to existing homes shows that they would not significantly improve drought resilience. This is because:

- Only relatively small tanks can practically be retrofitted, and
- They would be quickly emptied during a drought (with no rain to fill them).

The cost and effectiveness of rainwater tanks and water sensitive urban design would be greatest if applied at the new build stage and improvements achieved slowly over many decades. Rainwater tanks also provide benefits like water storage for post-earthquake resilience and can help to reduce peak flows into the stormwater system when set up correctly.

If we start level 2 restrictions now, would that help prevent a summer shortage or is this more a week-by-week issue?

Implementing Level 2 restriction now isn't expected to prevent the need for Level 3 restrictions (or greater) later this summer. The highest risk of shortfall occurs during hot summer months when high demand coincides with low water availability from the river and aquifer sources.

It's important that we raise the restriction levels when they are most needed so that people take them seriously. If they are in place all the time, there is a risk that the public simply ignore them. We rely on the community doing the right thing for water restrictions to be effective.

Who owns the land in Pakuratahi where storage lakes would be built?

The land is owned by the Greater Wellington Regional Council. It was purchased specifically for the purpose of constructing storage lakes.

Can water meters be used to help find leaks on the public network?

Yes. Smart Water Meters play a key role in finding leaks on the public network quickly and in a cost-effective way. We recommend Scenario 1 (Keep, Reduce and Add) over Scenario 2 (Keep and Add) because of the significant impact water meters can have on leaks.

They can also support customers in managing their water use, identify private leaks, and support efficient management of the networks and investment in infrastructure.

It's not clear why Te Mana o te Wai is identified as a risk? Surely, it's an opportunity?

The intention was not to identify Te Mana o te Wai as a risk, but to note that taking the necessary action to give effect to Te Mana o te Wai would **influence** the risk level. Giving effect to Te Mana o te Wai will benefit the environment and community through reduced wastage, more efficient use of water, and more natural flows in the rivers and aquifers. It requires a reduction in water takes and, in the **absence** of actions to reduce the demand for water, will result in an increased likelihood of water shortages.

Is there any more market capacity (people/materials/expertise) to invest in more teams tackling leaks?

We expect that there is additional capacity and capability available, but this will be most effectively achieved through councils committing to long-term investment in water loss reduction activities. If long-term investment is provided, our supply chain would be able to commit to more investment in people and technology and sustainably grow their workforce.

How do we make sure volumetric charging minimises impact on vulnerable/ low-income residents?

Any decisions around charging for water use through water meters sits with councils and if meters were implemented, councils would need to come up with a charging scheme. This has been done in other cities and a wide range of options have been applied. These include:

- Financial support like special rates, payment plans, assistance funds, and rebates,

- Support for water efficiency measures, like leak detection, installation of water-efficient fittings and appliances, and
- Leak repair rebates.

What's the comms plan and how can councils support it?

We have a comprehensive comms and engagement campaign being planned now. Wellington Water's comms team will be bringing this to councils' comms teams in the next few weeks. For our elected officials though, publicly leading the issue with us would be really helpful, e.g. sharing our content, demonstrating that we're all in this together, and taking the issue seriously.

What's the latest cost estimate for water meters across the region? Has alternative funding of them been explored?

We have run a smart meter trial in Greytown. This cost around \$2,000 per meter. The conditions in metro Wellington will be very different but early estimate range is \$1,500-\$3,500 [Note: This estimate has now been updated, as noted in a response to a similar question, above].

Who is on the steering group?

The Wellington Water Committee is made up of the mayors or their representatives from each of the shareholding councils and mana whenua.