

15 March 2024

Taumata Arowai
Brandon Street
WELLINGTON
Attention: Allan Prangnell

By Email: allan.prangnell@taumataarowai.govt.nz

Dear Allan,

Assurance of ongoing supply of a sufficient quantity of drinking water in the Wellington Region

Thank you for your letter of 21 February 2024. As agreed, this letter is the combined response of the Chief Executives of Wellington City Council, Hutt City Council, Porirua City Council, Upper Hutt City Council, Greater Wellington Regional Council and Wellington Water. Thank you for working with us, both through the current water shortage and in looking toward next summer.

We acknowledge our obligations under the Water Services Act (WSA) 2021. As the owners and operators of a drinking water supply, local authority shareholders and Wellington Water are all drinking water suppliers for the purpose of the WSA. Each organisation consequently has a non-transferrable, overlapping duty to ensure the ongoing sufficiency of supply, moderated through the application of s17 of the Water Services Act.

We know that (leaving exceptional weather aside) the most effective way to combat water shortages is through a trifecta of responses:

- Renewals of aged pipes,
- Concerted action on leaks, and
- Water meter installations.

Councils are currently working through their long-term plan processes with a focus on increased investment in water infrastructure, alongside increases in operational expenditure to fund leak repair activity. This work should ensure that the risks to sufficient water supply are managed in the immediate and medium term, whilst recognising that for the long term, a different water delivery model with new funding and financing mechanisms is vital. With the demise of the Affordable Waters Programme, councils across the region are also commencing work on what our long-term model might look like.

In your letter, you requested that we provide Taumata Arowai with a clear plan that outlines the steps we will take to prevent an immediate risk to the supply of a sufficient amount of drinking water during the summer of 2024/25.

You advised us to focus specifically on actions that will significantly reduce the risk of a water shortage in the short term so that we can meet our legal obligations. The plan should aim to ensure

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that we do not need to declare a drinking water emergency next summer and provide assurance that the risk of exceeding Level 2 water restrictions will be minimal.

Assumptions, modelling, and inputs

In formulating the plan with other councils, Wellington Water has utilised the industry-accepted ‘Water Balance’ to articulate the key areas of intervention that can most impact the risk.

Own Sources	System Input	Water Exported			Billed Water Exported to other Systems		Revenue Water
		Water Supplied	Authorised Consumption	Billed Authorised Consumption	Billed Metered Consumption by Registered Customers		
Billed Unmetered Consumption by Registered Customers							
Water Losses	Unbilled Authorised Consumption		Metered	Non-Revenue Water			
	Apparent Losses		Unmetered				
	Real Losses	Unauthorised Consumption					
Water Imported	(allow for bulk meter errors)			Customer Metering Under-registration	Leakage on Mains		
				Leakage and Overflows at Service Reservoirs			
				Leakage on Service Connections up to the street/property boundary			

Water Balance Diagram extracted from the *BenchlossNZ* Manual

To mitigate risks and ensure a smooth water supply, we need to increase the amount of water we input into the system, reduce authorised consumption of water, and minimise real losses. These are the key interventions that we also implemented in summer 23/24. We are yet to incorporate their impact into the upcoming summer's modelling.

To provide Taumata Arowai with an accurate assessment of the likelihood of entering each Water Restriction Level and the need for a drinking water emergency declaration, we will model the supply and demand for the upcoming year earlier than usual. Additionally, we will carry out an independent review of the model to ensure its accuracy and share the findings with Taumata Arowai.

While we wait for the modelling results, we can make a broad assessment of our ability to meet the targets you have outlined.

In the last two years, the highest 1-day average demand was 199ML/d and the highest 7-day average demand was 190ML/d. This year’s modelling shows that there was approximately a 33% chance of demand over 210ML/d triggering level 4 restrictions. **Therefore, to reduce the risk of entering Level 3 would require a combined total reduction of demand and/or additional supply to the effect of 20-30ML/d.**¹

¹ These figures for next summer will be available when the model is run in late March/early April 24 but provide a starting point for planning.

Demand (1 day average)	Demand (7-day average)	Supply (Headroom)	Response
N/A	Where demand exceeds 170ML/d	Where headroom is at 20%	Level 1 water restrictions
Where demand exceeds 190ML/d	Where demand exceeds 170ML/d	Where headroom is between 19% and 10%	Level 2 water restrictions
Where demand exceeds 200ML/d	Where demand exceeds 190ML/d	Where headroom is between 9% and 5%	Level 3 water restrictions
Where demand exceeds 210ML/d	N/A	Where headroom is between 5% and 0% (below safe headroom)	Level 4 water restrictions

Package of measures

In order to meet this reduction in demand, we have developed a package of measures that are currently being deployed by Wellington Water and shareholder Councils. Some are well underway; others are subject to further analysis and decision-making processes. Those measures comprise increased system input, reducing authorized consumption together with increased investments in operational and capital expenditure to reduce water loss.

Increased System Inputs

Te Marua Upgrade - The Te Marua Water Treatment Plant is currently undergoing an upgrade to significantly increase the treatment capacity of the plant by 60 MLD. The project is complex in that the Dissolved Air Flocculation (DAF) system needs to be installed while keeping the Treatment Plant running. The project is aiming to deliver 20ML/d of this new capacity by December 24, although that date is at risk.

The project team, with the support of GWRC, have implemented several interventions to speed the project delivery up and it is no longer a situation where additional resources can bring forward the delivery date. The project team are aware of the importance of the project to the region and are putting effort into bringing the new capacity in on time.

Additional authorised take – Wellington Water continues the ecological work to understand the impact of taking additional authorised water from regional supplies. This is crucial in supporting an application for a variation to the existing resource consents, or any authorisation made in a drinking water emergency to enable a greater take of water than currently allowed under the conditions of the existing resource consents.

Wellington Water is preparing its application for a variation to the existing resource consents, but this cannot be relied on as a control for next summer's risk. We also acknowledge that of all the possible controls this is the least aligned with Te Mana o te Wai.

Raising Awareness and Reducing Authorised Consumption

This summer we saw a good level of understanding and engagement with the public on our communications around the risk of tighter restrictions and a potential water shortage. Before summer WWL decided to divert all its marketing budget and communications to focus solely on the summer risk, the work on leaks, and water restrictions. For the 24/25 summer, Wellington Water

intend to take a similar approach however intend to start communications about the summer and restrictions earlier in the year.

The response to the campaign has shown that the 'get prepared' message has had a strong response from the community with many turning up to purchase rainwater tanks. Wellington Water will look at what preparedness and educational messages can be deployed during the winter months to provide a better foundation for next summer and the restrictions campaign. The messages around leaks and the work done in this area will continue throughout the year as part of our business-as-usual messages.

In the longer term, universal metering has been committed to by all councils and would allow the quantity and nature of water use to be measured. We anticipate that the debate around water meters will maintain a community focus on water consumption.

Without meters, it is more complex to assess if consumers have changed their water use or if private leaks have been repaired. There are good indications that the campaign has played a role in reducing the daily spike in demand, and the exact savings may be able to be calculated when this year's data is included in the modelling. Currently, our estimate is that around 1ML/d of savings is attributable to people's reducing their consumption on water.

We anticipate that performance will be similar next summer, and we plan to replicate it.

Minimising Real Losses

The water loss for the metropolitan network is the driving cause of the acute water shortage risk and represents the short and long-term solution to the issue. The calculation will be completed as part of the modelling, in late 2023 it was:

Council	Estimated water loss % for both public and private networks
Hutt City Council	46%
Wellington City Council	41%
Upper Hutt City Council	52%
Porirua City Council	41%

Water NZ’s ‘Water Loss Guidelines’ provide clear and accepted guidance on the main factors to influence water loss in a network.

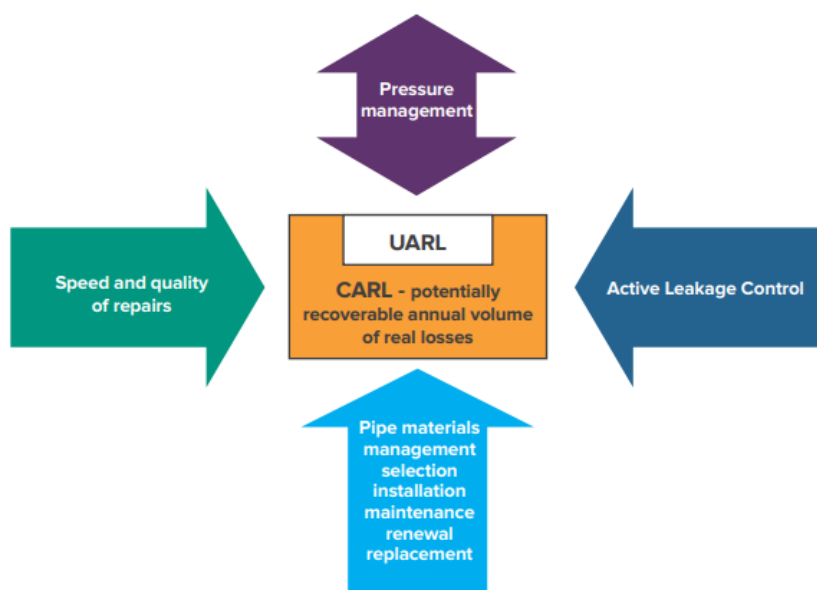


Figure 2: The four complementary leakage management activities

To achieve Taumata Arowai’s short-term water loss goal the most applicable are ‘Speed and quality of repair’ and ‘Pressure management’, although a balance must always be struck to ensure any water loss gains are sustained.

Funding – operating expenditure

The councils’ OPEX budgets for addressing water-loss in FY 23/24 and the indicative budget for 24/25 are set out in the table below. While these are subject to public consultation, they show a potential regional level of water-loss investment uplift. Some councils have provided targeted funding to address their backlog of leaks which is expected to further reduce water loss.

FY 2024-25 Indicative Regional Opex Investment in Drinking Water Acute Water Loss Activities			
Council	FY2023/24	FY 2024/25	Uplift
Hutt City Council	5,552,511	10,570,659	190%
Porirua City Council	2,740,126	3,099,284	113%
Upper Hutt City Council	1,678,577	1,841,254	109%
Wellington City Council	10,798,446	15,875,875	147%

Wellington Water has modelled the impact of this funding on water loss in three scenarios. These models are based on some key assumptions being:

- Wellington Water is authorised to contract resources before LTP sign-off. There is a two-month standup time meaning the extra work can only commence from 1 September 2024 if there is no authorisation.

- There will always be a baseline of 500 open leaks (there can never be zero as any network will always leak to some degree).
- There will be no increase in the rate of new leaks occurring.
- Unit rates for the cost of repair are only uplifted from 1 July 2024.
- External contractor resources can respond to required high-tempo repair rate.
- An average saving per leak of 0.005 ML/d.

Based on these assumptions, Wellington Water estimates the following potential savings:

Scenario		Potential ML/d saving*	Current Council Position
1	Opex as indicated for FY 23/24 & FY24/25	5-7	UHCC, WCC
2	All councils fully fund the clearing of leak backlog from 01 July 24	6-9	PCC
3	All councils fully fund the additional clearing of backlog from 1 April 24	8-18	HCC
* Variables make exact estimation of the potential water loss saving difficult and Wellington Water will continue to refine its estimations as more information is obtained from the surge repair work currently underway.			

Some councils have already agreed to fully fund the clearing of the backlog – others are still working through their decision-making processes at pace.

Wellington Water has identified that the market may struggle to deliver should all councils fully fund clearing of the backlog. Wellington Water is working with the market to provide some capability to undertake some simpler repairs without compromising the integrity and safety of the drinking water network.

Funding – capital expenditure

The councils' CAPEX funding primarily focuses on reactive/planned renewals and pressure management which consolidate water loss gains. These are important in ensuring that water loss gains are maintained by addressing the age of the infrastructure. The investment indicated below shows an imbalance in the investment across the network by councils. More work is required to articulate the ML/d savings that will be made in 24/25 from CAPEX but it is not likely to be more than 2ML/d.

FY 2024-25 Indicative Regional Capex Investment in Drinking Water Acute Water Loss Activities	
Council	FY2024/25
Hutt City Council	13,533,000
Porirua City Council	7,425,000
Upper Hutt City Council	7,530,000

Wellington City Council	5,801,638
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Other issues raised.

In your letter you suggested that some other information might be useful in our response:

- Milestones. As outlined above, there are two critical timing major milestones that will significantly influence our ability to avoid restrictions next summer:
 - The completion date of Te Marua Water Treatment Plant upgrade (20ML/d).
 - Wellington Water additional funding for leaks backlog by 1 April 2024 (6-18ML/d).
- Engagement with Mana Whenua and application of Te Mana o te Wai. Mana whenua are engaged in all council and Wellington Water decision making. As has been described above, Te Mana o te Wai has been considered at a high level in assessing the package of options.
- Measuring the plan's success. Two simple key measures will determine the success of this plan next summer:
 - If water savings modelled in ML/d are achieved.
 - If water restrictions are required.

Summary

Taumata Arowai has asked for a plan to mitigate the risk of a declaration of a drinking water emergency next summer, and to provide assurance that the residual risk that Level 2 water restrictions will be exceeded will be negligible.

Wellington Water has calculated that achieving this aim requires a 20-30 ML/d in additional supply/water loss reduction across the network. We have outlined how we plan to address this through: input into the system, reduce authorised consumption of water, and minimise real losses.

In a perfect world, the answer would be:

- Te Marua comes online by December 2024 releasing 20ML/d, and
- All Councils fully fund clearing of backlog from 1 April (8-18 ML/d).

However, the current environment is not perfect, and we would rather be realistic about our situation than hopeful. At this point, Wellington Water estimates a 5-18ML/d benefit in water loss reduction/authorised consumption could be achieved depending on variables described outlined. If realised, this will have a significant impact on the likelihood of declaring a drinking water emergency and entering restrictions.

The modelling due to be completed in the next few months will provide a more definitive answer, although there will always be risk and uncertainty.

We will continue to engage with your team to ensure that Taumata Arowai has full visibility of our risk modelling and the implementation of our plan to address the risk of an acute water shortage in 24/25.

Yours sincerely



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Hutt City Council



Wendy Walker
Chief Executive
Porirua City Council



Nigel Corry
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Greater Wellington Regional
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Copied to: Wellington Water Board
Wellington Water Committee