Beyond muddy waters: Three Waters reforms required to future-proof water service delivery and protect public health in Aotearoa New Zealand

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ABSTRACT

A 2016 drinking water-related campylobacteriosis outbreak in Aotearoa New Zealand made much of an entire town sick leading to reforms colloquially called “Three Waters”, which aims to improve the management and delivery of waste, storm and drinking water systems. Public discourse on the Three Waters reforms has been dominated by anti-co-governance rhetoric, concerns around privatisation and loss of local control and alternative less comprehensive reform models. This debate has drowned out the fundamental problem statement justifying the reforms, that is, the management of drinking water resources is currently: 1) demonstrably inadequate to protect public health and promote health equity; and 2) economically inefficient. We discuss four areas where the proposed Three Waters reforms are likely to address current and future challenges and improve public health. We conclude by outlining four areas of remaining contention.

The “Three Waters” Reforms in New Zealand

In 2016, drinking water contaminated with animal faeces made much of an entire town sick (~8,000 people), with 58 hospitalisations and four deaths, costing an estimated NZ$21 million.1,2 The outbreak was an outcome of systemic flaws in Aotearoa New Zealand’s regulatory system for drinking water, which were highlighted in the ensuing Government Inquiry.3 This Inquiry led to the Three Waters Review4 and subsequent reforms colloquially called “Three Waters” that are responsible for reforming the waste, storm and drinking water systems in the country.

The Three Waters reforms include three main aspects: 1) the establishment of an independent Crown water services regulator; 2) establishment of a new regulatory framework for drinking water; and 3) reform to water delivery services.4 The first two elements have been established and received broad support from politicians, the public, central and local governments, and the water sector. The final aim, to reform water delivery services, has become the most contentious aspect of the total Three Waters reforms package.

The Water Services Entities Bill is currently being considered by the New Zealand Parliament (public submissions closed in July 2022). The Bill proposes amalgamating the water services controlled by 67 city and district councils, into four Government entities.5 It is proposed that the entities will have equal representation from Māori (Indigenous people of the New Zealand) and council members on regional representation boards. Māori representatives will be selected by local Iwi (tribes), while council members include any councillor or member of senior management with the appropriate expertise. The regional representation board is responsible for providing the strategic direction for the entity and appointing an executive board with the technical expertise to run the entity.

Public discourse around the reforms has been largely focused on issues of co-governance outlined above, with some concern about privatisation, loss of local decision making and potentially reduced accountability. Unfortunately, the two key issues driving reform have been drowned out in public discourse: 1) the current approach to water services is far from adequate to protect public health; and 2) individual councils cannot typically support the necessary upgrades in their water services without major additional funding, potentially from ratepayers.
Problems with the current water management system

Currently, it is conservatively estimated that 34,000 people get enteric illness from drinking water in New Zealand each year. Subsequent water quality reports also show one in four people drink from a water supply that is not fully compliant with the drinking water standards. Taumata Arowai, the new water regulator, released its first annual drinking water quality report in July 2022, which showed that in its first two months of operation, there were 82 breaches of the drinking water standards and 27 boil water notices.

It is difficult to accurately estimate the full extent of the public health burden from contaminated drinking water in New Zealand due to three main factors. First, current drinking water testing and reporting requirements for many contaminants are largely based on a national testing programme conducted between 1996–2004. Water supplies testing below 50% of the maximum acceptable value (MAV) for certain chemical contaminants within this programme did not require ongoing monitoring. For example, only about 18,000 people in 2020 were on supplies required to test for lead (a heavy metal being a potential contaminant from old piping). The well documented lead contamination event in 2020 in Waikouaiti (a town in East Otago) was proactively detected by Dunedin City Council as part of operational rather than regulatory testing. Prior to 2020, records provided to researchers only contained two tests for lead in the entire Dunedin City Council distribution system (despite this being one of the country’s oldest cities).

Second, there is currently no centralised database of drinking water quality in New Zealand. Recently, researchers at the University of Otago requested drinking water quality data from councils, and received over 3,000 Adobe portable document format laboratory reports and 300 custom Microsoft Excel files. The lack of a centralised database has prevented effective public health surveillance and research—in particular, of the impact of contaminants below the current MAVs. Third, our understanding of the health impacts of certain contaminants is still incomplete. For example, the MAV for nitrate is 11.3mg/L nitrate nitrogen, but emerging evidence suggests increased risks of bowel cancer and pre-term births at 0.87 mg/L and 5mg/L, respectively (albeit these relationships still involve some uncertainty and have not yet been proven to be causal).

The current water service delivery is also contributing to health inequities. Over the 2009–2016 period, supplies serving fewer than 5,000 people accounted for virtually all (96%) of test samples with unacceptable levels of contamination by bacteria. Historically, people living in socio-economically deprived areas are exposed to greater public health risks due to their water supplies possessing less robust barriers to contamination and/or treatment processes than those living in less deprived areas. Current water service delivery has impacted Māori by impeding their customary rights to waterways relied upon for mahinga kai (traditional food sources) and through poor service delivery to some communities. It is estimated small/rural supplies will require a 13-fold increase in today’s water charges to meet the future needs of the water services compared to a seven-fold increase for city supplies. Thus, people on smaller supplies and living in high deprivation: 1) receive the poorer quality water; 2) have fewer safeguards or protections against contamination; and 3) have the least capacity to address these systemic inequities.

The current system is economically inadequate

Public health outcomes aside, the current model of water service delivery is economically inadequate. An economic assessment conducted by the Water Industry Commission for Scotland for the New Zealand context, estimated that between NZ$120 to $185 billion of investment will be needed over the next 30 years to replace and refurbish existing infrastructure, to and upgrade the Three Waters assets to meet drinking water and environmental standards. Councils would collectively need to increase their annual spend from $1.4 billion per year to between $4–6 billion per year to address this deficit. Even so, these costs may underestimate the true costs of building adequate system resilience against the effects of climate change (e.g., storm damage, flooding, and sea level rise) increasing intensification of agriculture, and potential seismic instability. These threats are all particularly important in the New Zealand context given the vulnerability to climate events and earthquakes.
Possible public health improvements through Three Waters reforms

There are four main areas where Three Waters reforms could address the current and future challenges outlined above. The first is through the standardisation of drinking water monitoring, reporting, and record keeping. Taumata Arowai has already established new rules for drinking water monitoring which will increase the frequency of sampling and the range of contaminants required for testing. In lieu of a national database, which Taumata Arowai has not yet publicly committed to establishing, the process for obtaining data from four entities will be more streamlined than relying on 67 councils with varying data management capacities. Furthermore, the four new entities will likely have the appropriate data science and management expertise required to retrieve data quickly and efficiently. This assessment is reinforced by our experience with larger councils providing more data, faster, than smaller councils.

The second area where amalgamation could improve public health is by ensuring each water entity has the appropriate technical expertise to ensure safe delivery of water services. Water New Zealand (the industry body for the Three Waters sector) has estimated the water sector will need an additional 6,000–9,000 skilled workers over the next 30 years if safe drinking water standards are to be met. It seems unrealistic to expect each of the 67 councils to have sufficient expertise in all areas required to ensure optimal public health outcomes from water service provision—for example, to have a groundwater hydrologist, engineers, spatial data specialist, and public health expertise. A recent information request to all councils found that complete spatial files on the water supply boundaries, the areas they provide water to, was only available for 63% (42/67) of councils. Likewise, our recent analysis of community water fluoridation showed that councils that fluoridate water were only able to achieve fluoride levels required for optimal oral health benefit 54% of time between 1992 and 2022.

The third area of improvement is through increasing the availability of capital and creating system efficiencies. Councils have strict borrowing covenants that limit the amount they can borrow as measured against the revenue that is collected. Wellington City Council for example is expected to hit its debt limit within the next decade. Figure 1 demonstrates the additional debt limits of the new water entities compared against the current debt limits of councils. Amalgamation would provide entities with larger balance sheets which facilitates greater borrowing, at lower interest rates, required to fund major infrastructure projects. This is because non-revenue generating or loss leading services provided by councils will not consolidated into the overall balance sheet of the new entities. In addition, amalgamation into four entities would enable the economies of scale required to improve overall system efficiencies—by as much as 45%.

The fourth area of improvement is through better decision making by an executive board with technical expertise rather than elected officials. Subsequent reports have pointed to political decision-making being a key contributing factor to the underinvestment in Three Waters infrastructure and a key challenge to addressing these problems. For example, data presented to the Wellington City Council Mayoral Taskforce showed that renewals for Three Waters infrastructure have typically been $10–20 million per year less than depreciation revenues, meaning only 50–60% of the revenue collected for water assets from rates was actually spent on those assets. Figure 2 shows the depreciation revenue collected by the Wellington City Council and the amount actually spent each year since 2006. Another example of short-term decision making at the local government level comes from water metering. In those areas implementing water metering, operational costs have decreased (~25%), water usage has decreased (~25%) and between ~65–80% of people actually paid less for their water after implementation. In those areas not implementing water metering at the local government level comes from water metering. In those areas implementing water metering, operational costs have decreased (~25%), water usage has decreased (~25%) and between ~65–80% of people actually paid less for their water after implementation. Despite this, almost every Mayor implementing water metering in New Zealand has failed to be re-elected the following election, suggesting water management may be one contributing factor to unsuccessful re-elections. Lastly, the current system does not provide a clearly defined or consistent role for mana whenua (Māori with territorial rights in an area), which has led to decision making that is prejudicial to Māori interests. For example, the placement of Three Waters infrastructure or effluent discharges that impact mahinga kai or taonga (treasured resources), or that some Māori communities are underserved by poor quality Three Waters services or none at all.
**Figure 1:** Comparison of current council Three Waters debt capacity and additional debt capacity for the new water service entities following reform (figure from Department of Internal Affairs (2021)).

**Figure 2:** Historic depreciation funding and renewals expenditure by the Wellington City Council on Three Waters infrastructure from 2006 to 2020 (figure from The Mayoral Taskforce on the Three Waters (2020)).
Remaining areas of contention

Four areas of the Bill that have drawn substantial criticism are the co-governance arrangement between Māori and councils, potential for privatisation, loss of local decision making over key assets, and the potential for less comprehensive alternative reform models.

Co-governance

The Water Services Entities Bill proposes co-governance between Māori and the council executive on the regional representation board (as opposed to the technical executive board), which has been met with some strong resistance and dominated public discourse. It is important to state that the proposed co-governance will not impact on ownership of water assets. All shares in the water entities will be held by councils, with each council holding shares in the new entity proportional to their population.3

Instead, co-governance represents an acknowledgement of the Crown’s obligations under Te Tiriti o Waitangi (The Treaty of Waitangi),25 Te Tiriti o Waitangi, which outlines the relationship between New Zealand governments and Māori and is New Zealand’s founding document, has two versions—Māori and English. Colonial governments believed Māori had ceded sovereignty, the Māori signatories believed they had retained rangatiratanga (sovereignty) over their lands, waters, villages and taonga. The resulting “one size fits all” governance frameworks, absent of Māori values and beliefs, had a widespread negative impact on the well being of whānau (family) and hapū (communities) at an inestimable cost to the nation.26 There was no notion of using both knowledge systems or seeking collaboration between the Treaty partners.

Since the establishment of the Waitangi Tribunal in 1975, Te Tiriti o Waitangi settlements have become mainstream, while modern legislation increasingly enables Māori to partner with central and local government in the management of resources and delivery of services. For example, co-governance between the Government and Māori has been successful for many years in environmental management,27 while many councils already have co-governance arrangements on their executive with Māori wards and Iwi-appointed councillors or voting rights on council committees. Co-governance is a collaboration that draws on both western and Māori knowledge systems, is innovative and adaptable to challenges, and draws communities together in a common effort to overcome persistent and systemic problems. Particularly by reducing the historic incidence of despoilation of customary food and natural resources and ensuring equitable access and delivery of services to Māori and their pākāinga (land).

Privatisation

Some public discourse has focused on the Water Services Entities Bill providing an avenue to privatisation of water assets. This is an important consideration for services that govern a need as fundamental as drinking water. However, any decision to privatisate water assets under the Bill would require: 1) unanimous support from all councils (meaning one vote could veto any decision); 2) 75% support from an entity’s representative group (which means Māori representatives could veto privatisation in any entity); and 3) 75% support in a public referendum in the entity’s area.27 Thus, privatisation of any water assets would need super majority support from the council executive, Māori representatives, and the public. To further protect against privatisation, these safeguards should be entrenched in the Water Services Entities Bill—requiring a super majority (e.g., 75% of Parliament) to overturn these clauses.

Loss of local control or reduced accountability to communities

While loss of local control is a commonly cited concern, it requires some deconstruction as it appears to mean different things to different people and groups. The broad criticism is that transfer of responsibility for water infrastructure to four government entities will remove community and local council control over decision making, making it more difficult to have local needs and perspectives taken into consideration. The Auditor General, in his submission on the Water Services Entities Bill, cites concerns about the potential to reduce decision makers accountability to the communities they serve. The summary reads: “as currently drafted in the Bill, the accountability arrangements and potential governance weaknesses, combined with the diminution in independent assurance noted earlier, could have an adverse effect on public accountability, transparency, and organisational performance.”28

However, for some groups “local control” has a related but differently motivated meaning. The most prominent groups campaigning on opposi-
tion to the reforms are also engaged in broader anti-Government lobbying. Alongside sharing concerns that echo the Auditor General, these groups also characterise the reform’s potential loss of local control as being part of an “asset grab” by Government on behalf of Māori or as part of a hidden Government agenda for Māori co-governance of New Zealand by 2040. It appears that “loss of local control”, for some, means loss of Crown or Pākehā control.

Additionally, as former Attorney General and Minister for Treaty Negotiations Chris Finlayson notes: “people who are frightened by co-governance think they’ll be locked out of access to our natural resources.” Notably, some of campaign material from these groups refers not to water infrastructure but simply to water. Water for private enterprise has been available on a largely first come first served basis in New Zealand and in parts of the country this has led to council facilitation of overallocation of water (negatively impacting human and environmental health). Some agricultural water users particularly are concerned that loss of local control may mean loss of access to water for their private use.

Less comprehensive reform models

Several councils have proposed regional co-operation agreements as an alternative model for reform (e.g., Hawke’s Bay; Hamilton–Tauranga partnership). Similar models in Australia have improved water delivery effectiveness and efficiency (e.g., in New South Wales), but so too have major amalgamations in Tasmania and Victoria which were similar to the current Three Waters proposal.

Nevertheless, the experience of regional co-operation in New Zealand is limited and underwhelming. Wellington Water was established in 2014 to manage Three Waters services for six council serving about 400,000 people, but its performance has been hindered by multiple issues. First, this regional co-operation model still relies on council decision making by elected officials which is politically influenced to make short-term decisions as highlighted above. Second, co-ordinating, often competing, priorities among the participating council has been a complex and time-consuming process. An inquiry into Wellington Water’s failure to consistently provide community water fluoridation over a number of years stated: “the need to advise each council individually consumes a lot of time and resources, and having different requirements for each council makes service delivery more complex.” It is worth mentioning a raft of other problems with Wellington Water including failure to manage waste water discharge that resulted in major system failings including 6.5 million litres of wastewater entering Wellington Harbour in 2019; an estimated 70 million litres of untreated water entering stormwater or freshwater bodies or simply flowing onto the streets annually; and around 700 blockages every year. While Wellington Water inherited aged and fractured infrastructure and has had to face major operational and capital funding gaps since its inception, the governance and funding structures that caused these baseline problems for Wellington Water would likely remain unchanged in other regional co-operation models. Furthermore, Wellington Water, and any other regional corporation model, is still financially constrained by council debt caps and balance sheets outlined above, which have inhibited major infrastructure investments.

Conclusions

Good quality drinking water that is free of hazardous contaminants is a fundamental human right and a key element of the Sustainable Development Goals. Water contamination in New Zealand has had severe consequences for human health and is an ongoing public health threat. Consequences are borne disproportionately by smaller and the most deprived communities, with Māori disproportionately comprising the latter. The current regulatory arrangements for water services are inadequate, are economically unsustainable, and are inefficient. The amalgamation proposed in the Water Services Entities Bill provides an opportunity to resolve previous systemic flaws outlined in the Government Inquiry into Havelock North and to future proof the country’s Three Waters. Most importantly, the proposed new legislation is likely to more robustly, and efficiently, improve the protection of public health and uphold the right to clean, safe water.
COMPETING INTERESTS

Nil.

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