PUBLIC HEALTH COMMUNICATION CENTRE AOTEAROA

Three Waters reforms are needed to protect public health and ensure changes are economically sustainable and efficient

21 July 2022

Tim Chambers, Nick Wilson, Simon Hales , Marnie Prickett, Michael Baker

Public discourse on the Three Waters reforms has been dominated by anti-co-governance rhetoric and concerns around privatisation. This debate has drowned out the fundamental problem statement justifying the reforms. In this blog, we re-focus the discussion on the critical need to reform the management of drinking water resources which is currently: 1) inadequate to protect public health and promote health equity; and 2) economically unsustainable and inefficient.

In 2016, Havelock North's water-related campylobacteriosis outbreak made much of an entire town sick (~8,000 people), with 58 hospitalisations and four deaths.[1,2] The outbreak was an outcome of systemic flaws in Aotearoa New Zealand's (A-NZ) regulatory system for

drinking water, which were highlighted in the subsequent Government Inquiry.[3] This Inquiry led to the Three Waters Review[4] and subsequent reforms colloquially called “Three Waters” that are responsible for reforming the waste, storm and drinking water systems in A-NZ.

The final and most contentious aspect of the total Three Waters reform package is the Water Services Entities Bill (WSE).[5] In short, the WSE proposes to amalgamate the water services controlled by 67 district and city council into four government entities (see Figure 1). The entities will have equal representation from mana whenua and council executive members on regional representation boards, which will provide the strategic direction of the entity and appoint the executive board responsible for running the entity.

Unfortunately, the public discourse around Three Waters has been overly focused on issues of co-governance and dominated by local politicking. 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 rates hikes.

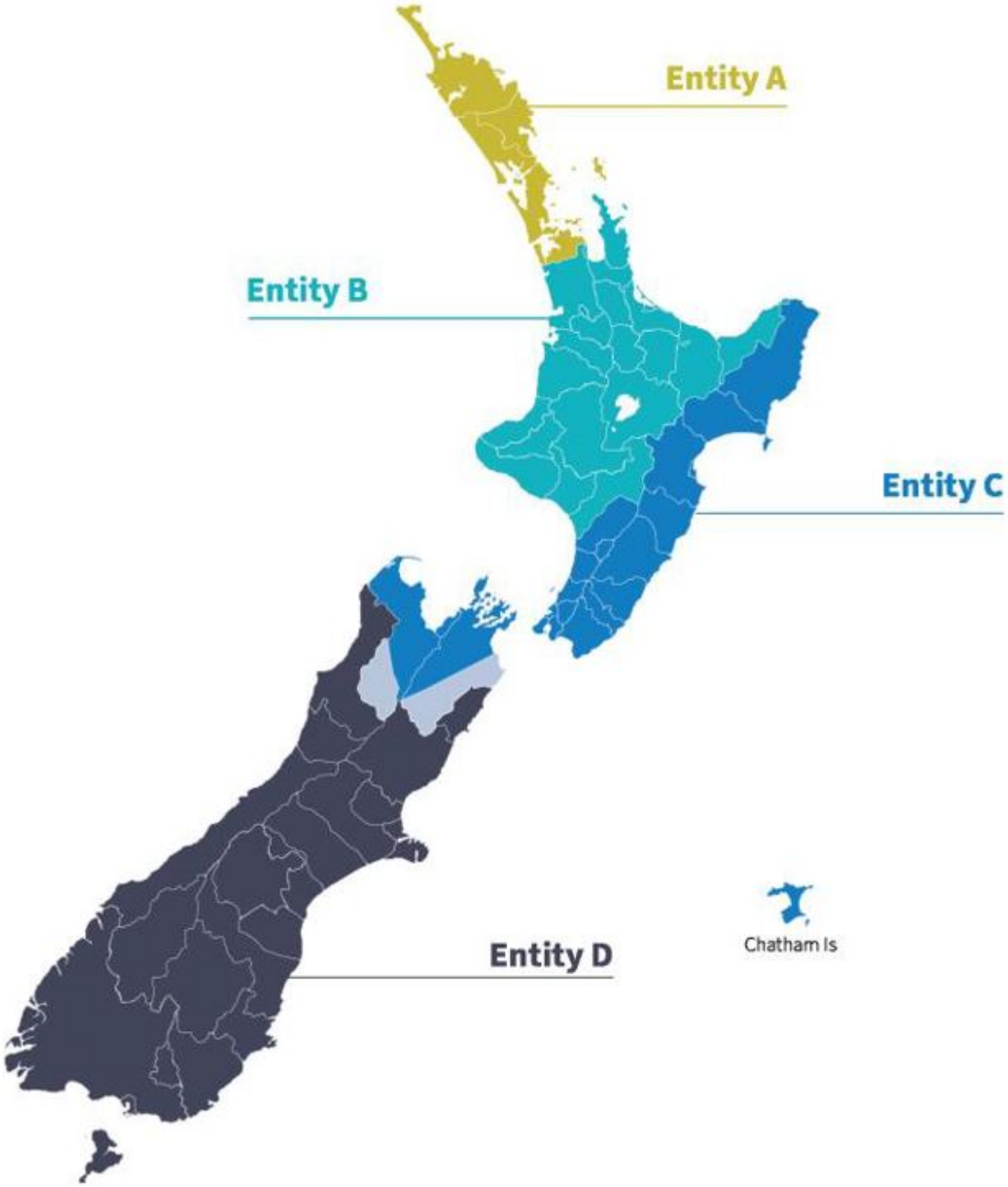

Figure 1. Four new water service entities proposed under the Water Services Entities Bill with outlines of territorial authorities – go to https://threewaters.govt.nz/affordability/ to examine estimated average household costs under reform scenarios for each district.

The current system is not adequate to protect public health or promote health equity

Currently, it is conservatively estimated that 34,000 people get sick from drinking water in A-NZ each year.[6] 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.[7] Taumata Arowai, the new Crown water regulatory, 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.[7]

The full extent of the public health burden of drinking water is unknown in part due to the risk-based approach to monitoring adopted in A-NZ. Current drinking water testing and reporting requirements for many contaminants are largely based on a national testing programme conducted between 1996-2004.[8] Water supplies testing below 50% of the Maximum Acceptable Value (MAV) for certain contaminants within this programme did not require ongoing monitoring. For example, only ~18,000 people in 2020 were on supplies required to test for lead (with this heavy metal being a potential contaminant from old piping).[9] The well documented 2020 Waikouaiti lead contamination event was proactively detected by Dunedin City Council as part of operational rather than regulatory testing.[10] Prior to 2020, records provided to researchers only contained two tests for lead in the entire Dunedin City Council distribution system.[11]

The current water service delivery is also contributing to health inequities. From 2009-2016, 96% of all bacterial exceedances in registered supplies came from supplies serving less than 5,000 people (data from MoH drinking water compliance register). People living in deprived areas are exposed to greater public health risks than those living in lower deprived areas.[12] 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 7-fold increase for city supplies.[13] Thus, people on smaller supplies and living in high deprivation: 1) receive the worse 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 unsustainable and inefficient

Public health outcomes aside, the current model of water service delivery is economically infeasible and inefficient. An economic assessment conducted by the Water Industry Commission for Scotland (WICS) for the A-NZ context, estimated that between NZ$120 to $185 billion (B) of investment will be needed over the next 30 years to replace and refurbish existing infrastructure and upgrade three waters assets to meet drinking water and environmental standards.[14] Councils would collectively need to increase their annual spend from $1.4B per year to between $4-6B per year to address this deficit.[13] Amalgamation into four entities enables the economies of scale required to improve overall system efficiencies – by as much as 45%.[13] Amalgamation also provides entities larger balance sheets which facilitates greater borrowing (at lower interest rates) required to fund major infrastructure projects.

Another important advantage of amalgamation is to optimise the work force capacity in the water sector. "Water New Zealand" (the industry body for the three waters sector) has estimated the waters sector will need an additional 6000-9000 skilled workers over the next 30 years if safe drinking water standards are to be met.[15] 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 – eg, to have a groundwater hydrologist; engineers; spatial data specialist; and public health expertise. For example, 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% of councils.[11] There are increasing challenges to ensuring safe drinking water, notably the effects of climate change, intensification of agriculture, and awareness about the health effects from long-term exposure to water contaminants (eg, nitrate).[16,17] These changes will demand greater competency from our water regulators in the future.

Areas of contention

There are still a number of features of the WSE that draw substantial and sometimes justified criticism. While outside the scope of this blog to cover these in detail, we will quickly cover two key issues.

Co-Governance: The WSE proposes co-governance between mana whenua and the council executive which has been met with some strong resistance and dominated public discourse. It is important to state that co-governance has no impact on ownership of water assets. All shares in the water entities will be held by councils, with each council holding shares proportional to their population.[5] However, what co-governance does represent is an acknowledgement of the Crown's obligations under Te Tiriti o Waitangi.[18] Further, co-governance reflects an acknowledgement of past failings of council governance over water assets that sparked the reforms as well as the success of Māori co-governance in environmental management.[19]

Privatisation: Some public discourse has focused on WSE providing an avenue to privatisation. This is an important consideration for services that govern a need as fundamental as drinking water. However, any decision to privatise any 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; and 3) 75% support in a public referendum in the entity's area.[5] Thus, privatisation of any water assets would require super majority support from the council executive, mana whenua and the public. To further protect against privatisation, these safeguards should be entrenched in the WSE.

Conclusions

Good quality drinking water that is free of hazardous contaminants is a fundamental human right and a key element of the 2030 Sustainable Development Goals.[20,21] Water contamination in Aotearoa has had severe consequences for human health and is an on-going public health threat.[1-3] Consequences are borne disproportionately by smaller and more deprived communities. The current regulatory arrangements for water services have failed, are economically unsustainable, and are inefficient. The amalgamation proposed in the WSE Bill provides an opportunity to resolve previous systemic flaws outlined in the Government Inquiry into Havelock North and future proof our Three Waters. Most importantly, the proposed system improvements in the efficacy and efficiency of our Three Waters will protect public health and uphold the right to clean, safe water.

***Author details**: All authors are based at the Department of Public Health, University of Otago, Wellington.

Corresponding author: Dr Tim Chambers 021 1004066 tim.chambers@otago.ac.nz

References

1. Gilpin BJ, Walker T, Paine S, Sherwood J, Mackereth G, Wood T *et al.* A large scale waterborne Campylobacteriosis outbreak, Havelock North, New Zealand. *Journal of Infection.* 2020;81(3):390-395. https://doi.org/10.1016/j.jinf.2020.06.065
2. Wilson B, Jones N, Wood T, Jagroop-Dearing A, Kubovy J, Baker MG. Clinical outcomes of campylobacteriosis: a case series analysis of hospitalisations associated with the Havelock North Campylobacter outbreak. *The New Zealand Medical Journal.*

2021;134(1547):71-84.
3. Department of Internal Affairs. *Government inquiry into Havelock North drinking water report of the Havelock North Drinking Water Inquiry: Stage 2.* Auckland (NZL)2017. Accessed 11 Feb 2020. https://www.dia.govt.nz/diawebsite.nsf/Files/Report-Havelock-North-Water-Inquiry-Stage-2/$file/Report-Havelock-North-Water-Inquiry-Stage-2.pdf.
4. Department of Internal Affairs. *Three Waters Review: Te Tari Tawhenua.* Wellington (NZL): Department of Internal Affairs;2020. Accessed 11 Feb 2021. https://www.dia.govt.nz/Three-waters-review.
5. New Zealand Parliament. *Water Services Entities Bill.* Wellington (NZL)2022. Accessed 19 Jul 2022. https://www.legislation.govt.nz/bill/government/2022/0136/latest/whole.html?search=sw_096be8ed81c2922d_priv_25_se&p=1#LMS671870.
6. Ball A. *Estimation of the burden of water-borne disease in New Zealand: preliminary report.* Wellington (NZL): Ministry of Health;2006. Accessed 20 Dec 2021. https://www.health.govt.nz/system/files/documents/publications/water-borne-disease-burden-prelim-report-feb07-v2.pdf
7. Taumata Arowai. *Drinking Water Regulation Report 2021.* Wellington (NZL): Taumata Arowai;2022. Accessed 19 Jul 2022. https://www.taumataarowai.govt.nz/assets/Uploads/Governance-docs/Drinking-Water-Regulation-Report-2021.pdf.
8. ESR. *Archived dataset from Ministry of Health's Priority Two Chemical Determinands Identification Programme 1995-2004.* Christchurch (NZL): Institute of Environmental Science and Research;2019. Accessed 10 Mar 2019.
9. Ministry of Health. *Annual Report on drinking-water quality.* Wellington (NZL): Ministry of Health;2020. Accessed 25 Feb 2021. https://www.health.govt.nz/system/files/documents/publications/annual-report-drinking-water-quality-2018-2019-25june2020.pdf.
10. Uwins-England H, McKenzie J. *Review of health response into Waikouaiti water supply lead contamination.* Wellington (NZL)2021. Accessed 19 Jul 2022. https://www.health.govt.nz/system/files/documents/publications/final-report-health-response-into-waikouaiti-water-supply-lead-contamination31mar2021.pdf.
11. Chambers T, Hales S, Wilson N, Baker M. Improvements to drinking water monitoring, reporting and record-keeping needed to protect health. *Policy Quarterly.* 2022;18(23-27). https://ojs.victoria.ac.nz/pq/article/view/7571/6727.
12. Hales S, Black W, Skelly C, Salmond C, Weinstein P. Social deprivation and the public health risks of community drinking water supplies in New Zealand. *Journal of Epidemiology and Community Health.* 2003;57(8):581. https://doi.org/10.1136/jech.57.8.581
13. Department of Internal Affairs. *Regulatory Impact Assessment: Decision on the reform of three waters service delivery arrangements.* Wellington (NZL): Department of Internal Affairs;2022. Accessed 19 Jul 2022. https://www.dia.govt.nz/diawebsite.nsf/Files/Three-waters-reform-programme-2022/$file/regulatory-impact-assessment-decision-on-the-reform-of-three-waters-service-delivery-arrangements.pdf.
14. Water Industry Commission for Scotland. *Economic analysis of water services aggregation.* Scotland (UK): Water Industry Commission for Scotland;2021. Accessed 19 Jul 2022. https://www.dia.govt.nz/diawebsite.nsf/Files/Three-waters-reform-programme/$file/wics-final-report-economic-analysis-of-water-services-aggregation.pdf.
15. Water New Zealand. *Strategy aims to address Three Waters workforce shortage.*

Water New Zealand;2022. Accessed 19 Jul 2022. https://www.waternz.org.nz/News-and-Events/Story?Action=View&Story_id=1663.
16. Chambers T, Douwes J, t Mannetje A, Woodward A, Baker M, Wilson N *et al.* Nitrate in drinking water and cancer risk: the biological mechanism, epidemiological evidence and future research. *Australian & New Zealand Journal of Public Health.* 2022. https://doi.org/10.1111/1753-6405.13222
17. Richards J, Chambers T, Hales S, Joy MK, Radu T, Woodward A *et al.* Nitrate contamination in drinking water and colorectal cancer: exposure assessment and estimated health burden in New Zealand. *Environmental Research.* 2022;204(112322). https://doi.org/10.1016/j.envres.2021.112322
18. Trezise J, Vowles J, Moody G, Dowsett J. *Commitments to equality in Te Tiriti mean co-governance.* online: Newsroom;2022. Accessed 19 Jul 2022. https://www.newsroom.co.nz/commitments-to-equality-in-te-tiriti-mean-co-governance .
19. Fisher K, Parsons M. River co-governance and co-management in Aotearoa New Zealand: enabling Indigenous ways of knowing and being. *Transnational Environmental Law.* 2020;9(3):455-480.
20. United Nations General Assembly. *Resolution 64/292: The human right to water and sanitation.* Geneva (CHE): United Nations;2010. Accessed 17 Feb 2021. https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/64/292.
21. United Nations General Assembly. *Transforming our world: The 2030 agenda for sustainable development.* Geneva (CHE): United Nations;2015. Accessed 15 Mar 2021. https://sdgs.un.org/sites/default/files/publications/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf.

Public Health Expert Briefing (ISSN 2816-1203)
