Flaws in Water Service Entities Bill

Report to Communities 4 Local Democracy

JULY 2022

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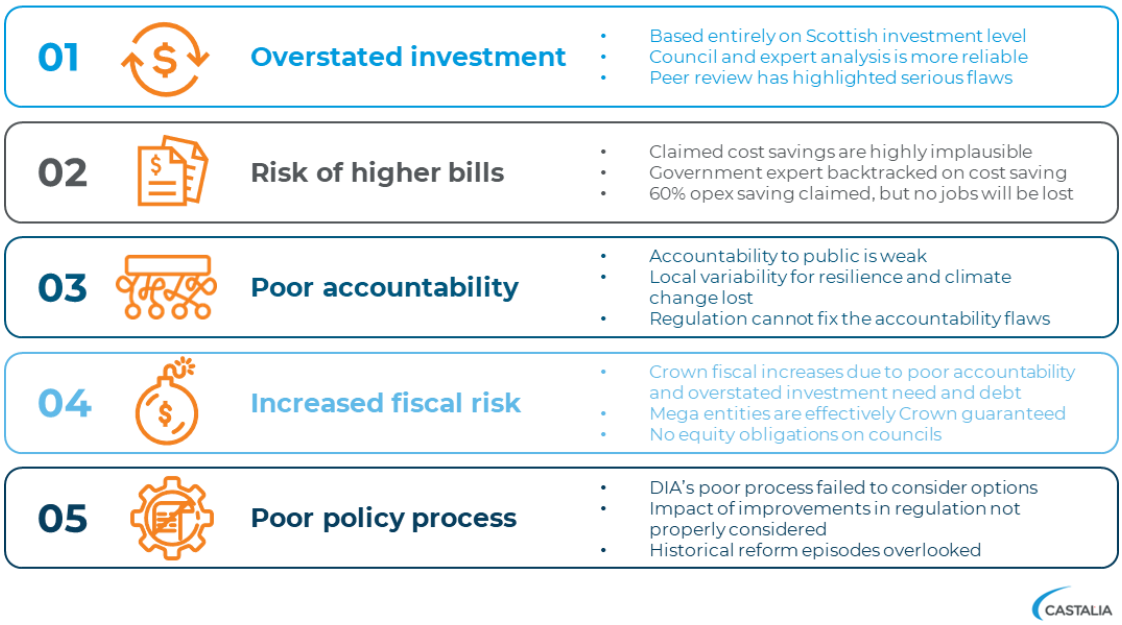
Definitions

AER	Australian Energy Regulator
Bill	Water Services Entities Bill
Capex	Capital expenditure
LGA	Local Government Act
LGFA	Local Government Funding Authority
LTP	Long-term plan
OFGEM	Office of Gas and Electricity Market
OFWAT	Water Services Regulation Authority
Opex	Operating expenditure
RFI	Request for Information
TfP	Total factor productivity
WICS	Water Industry Commission for Scotland
WSE	Water service entity

Executive summary

The government proposes to reform the New Zealand drinking, waste, and stormwater (three waters) sector. It has introduced the Water Services Entities Bill (the Bill) to Parliament. The Bill has been referred to the Finance and Expenditure Select Committee.

This report identifies the key flaws with the government's Bill and the policy and economic analysis that underpins it. There are five flaws with the Bill.

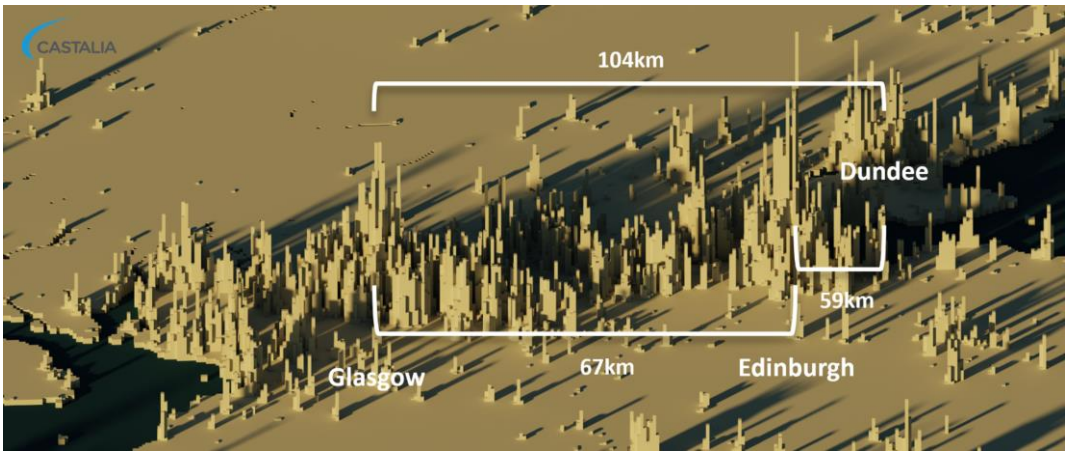


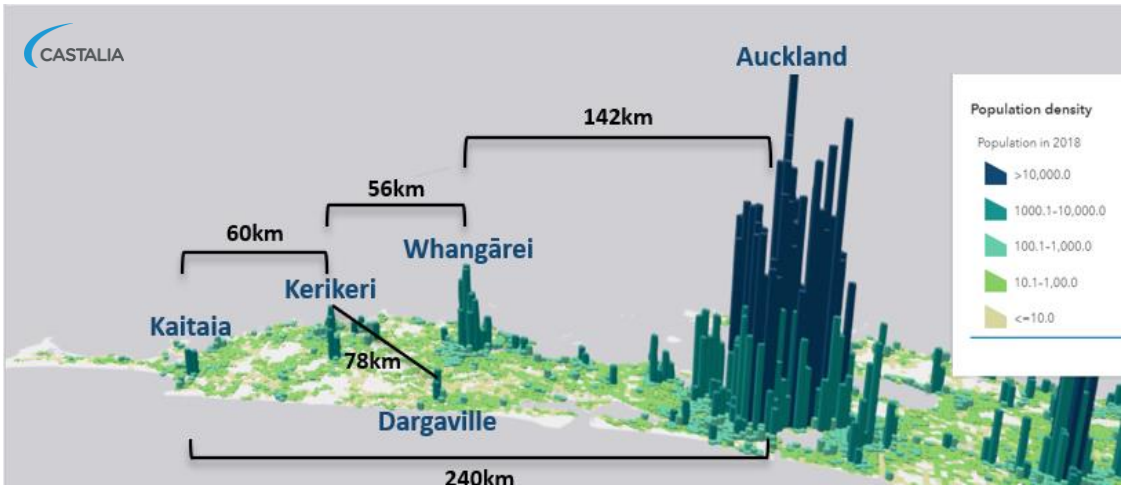
Investment needs likely to be biased and unreliable

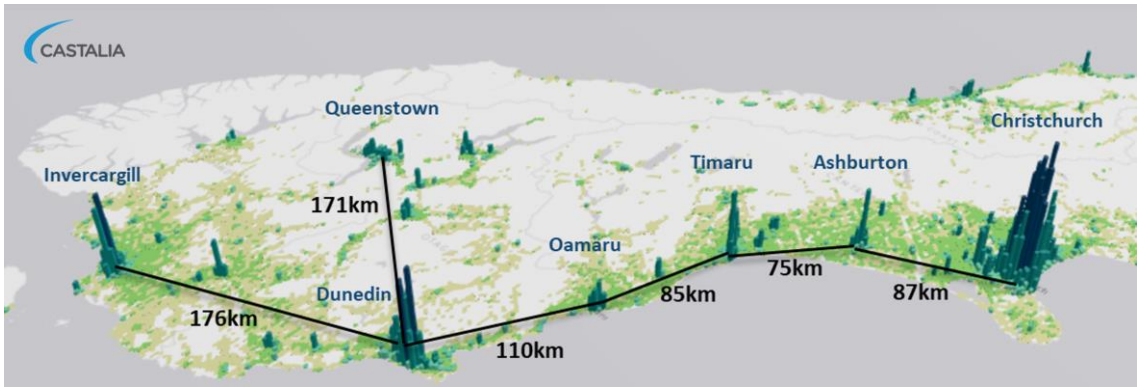
Investment estimates are difficult over 30 years. All stakeholders, including Communities 4 Local Democracy, acknowledge that additional investment is needed in the water sector. However, the government's estimates are highly likely to be biased and overstated. This is because only a single point of reference (Scotland) is used to determine what expenditure is needed for New Zealand.

The government hired the Scottish water regulator Water Industry Commission for Scotland (WICS), to carry out the analysis. WICS uses a top-down approach using Scotland as its comparator rather than using the bottom-up estimates by the 67 councils (and council-controlled organisations like Watercare) for needed capital investment. Scotland has a very different urban geography with closely linked towns and cities, compared to New Zealand with a highly urbanised population but long distances between its towns and cities. Scotland is, therefore, an inappropriate comparator, as Figure 0.1 illustrates.

Figure 0.1: Population densities and distances between towns in Scotland and New Zealand







Castalia has carried out case studies of several councils to show the vast gap between WICS' top-down model and the bottom-up council estimates. Councils widely regarded as having maintained appropriate investment levels and with relatively new assets differ from WICS' estimates by several orders of magnitude. The likely bias and unreliability of the WICS approach is borne out by the findings of other peer reviewers.

Average household water charge claims are implausible

The government's claims are based on implausible assumptions and faulty modelling that exaggerates the benefits of mega entity reform.

The government's modelling claims that household bills will be significantly higher without reform. To portray the proposed reform in the best possible light, a series of modelling assumptions are used. Ultimately, the WICS advice to the government claims that the reform will achieve the same level of service with **half** the expenditure than a scenario where councils retain ownership and make no improvements.

Efficiency assumptions are highly implausible, and not backed by robust evidence. Capex and opex efficiencies are derived from inappropriate comparisons with UK water utilities. Significant capex efficiencies from "economies of scale" are not available in the New Zealand water sector where water services are not physically proximate. Opex efficiencies above 50 percent are not plausible. The government has promised that all staff in council organisations will be retained and the outsource provider market is already competitive.

Further assumptions exaggerate the benefits of reform. The modelling assumes additional efficiencies that are not justified. These seemingly innocent assumptions magnify the cost savings in the mega entity reform scenario.

Mega entities will have poor accountability to the public

Accountability to the public is important because water services are natural monopolies and essential for community wellbeing. The typical ways that customers hold a service provider accountable are not available. Unfortunately, the complex governance structure chosen for the mega entities undermines accountability to the public and key communities of interest. The government's advisors have added more command-and-control mechanisms to the mega entity model which are likely to complicate governance, rather than improve accountability to consumers and communities.

Local variability matters in water services. Climate change will have different impacts in different areas. The definition of "resilience" depends on local geographies and demographics. Water sources and wastewater treatment options are different between different parts of the country. This means water services need to be responsive and adaptable to local needs.

The mega entity model is also ill-suited to interacting with economic regulation. Unfortunately, the government has not advanced the design and regulatory settings for the proposed economic regulator ahead of implementing the reforms.

Mega entities significantly increase Crown fiscal risk

The proposed reform will create four of the largest firms by asset value in New Zealand. The Crown will provide a fiscal backstop under the proposed reform model, according to Standard & Poors' latest report to the government. Significant risk will be transferred to the Crown without the typical control and accountability mechanisms.

The mega entity borrowing programmes will ultimately be the Crown's responsibility if there is any risk of default. The complex accountability mechanisms mean the Boards of the mega entities will have multiple 'masters'. Management will have multiple accountability documents, including various important socio-cultural obligations that need to be balanced against cost efficiency and maintaining minimum service levels. This creates room for

mismanagement or worse, compared to a more straightforward council-owned, corporate state-owned enterprise or Crown Entity model.

Council debts are effectively quarantined from the Crown. Creditors of a defaulting council can appoint a receiver to recover debts via special rates and, ultimately property sales (although no local authority has ever failed in New Zealand). Under the proposed mega entity model, the Crown will have a clearer obligation to step in. Therefore, it is conceivable that council and Iwi influence over the mega entity governance could be diluted in future was the Crown to ever have concerns about the mega entities' financial health. Indeed, the central government stepped in to assert greater control occurred after similar mega reforms were undertaken in England and Wales in 1972.

Government failed to consider credible alternative options

The government prematurely selected a highly risky mega merger option without properly considering credible alternative options. Water services are critical to wellbeing. Policy development to reform water services should therefore follow a standard policy process. Not following standard policy processes creates a risk that the model selected could fail, and lead to reforms that do not meet the agreed public policy objectives, or that produce unintended consequences. The government did not establish the reform objectives and instead focused on only one among a range of important factors—"scale". This contributed to premature selection of a preferred model following a relatively cursory review of the international experience.

The government failed to consider the impact of improving the regulatory regime that enforces minimum national standards for water quality, environmental outcomes and economic performance. The Havelock North inquiry pointed out that the water quality regime has been deficient for many decades. Increasing scrutiny and improving regulations creates real incentives on local government and councillors to improve water service management and increase investment. This is obvious as our case study of Hastings District Council illustrates.

1 Introduction

The government proposes to reform the New Zealand drinking, waste and stormwater (three waters) sector. It has introduced the Water Services Entities Bill (the Bill) to Parliament. The Bill has been referred to the Finance and Expenditure Select Committee.

This report identifies the key flaws with the government's Bill and the policy and economic analysis that underpins it. There are five flaws. The government claims that massive investment is needed in New Zealand water services. Unfortunately, numerous case studies illustrate that the analysis relied upon is flawed, as set out in section 2. Consumers risk paying high water charges as a result of this high-risk reform. This is because the government's claimed cost savings are highly implausible, as outlined in section 3. Critically, the mega entities will be unaccountable to the public and communities of interest, which undermines their long-term sustainability. This is addressed in section 4.

In section 5, we identify the elevated Crown fiscal risk from these reforms. Whereas local governments currently provide security to lenders, the Crown will provide a fiscal backstop for the four entities. The entities will become some of the largest corporations in New Zealand. Given the weak accountability framework, the risks are elevated. Therefore, the Crown may take a more direct governance interest in the entities over time, weakening local involvement. Finally, in section 6, we outline how critical process flaws mean that available reform options were not properly considered. The evidence base the government used was skewed towards a high-risk reform option.

2 Investment needs significantly overstated

Capital investment is needed in some parts of New Zealand now and in the next 30 years to meet growth demands and due to historical deferred and underinvestment. There have been high-profile asset failures. However, it is not plausible that the required investment is as high as the government claims.

The government—based on Water Industry Commission of Scotland (WICS) modelling—claims New Zealand water services require $120-185 billion of capital investment over the next 30 years.[1] This is based on a top-down New Zealand-wide assumption, driven by inappropriate United Kingdom (UK) comparators, that a massive nationwide investment programme is necessary for all council water services. This is despite all local councils submitting Request for Information (RFI) documents that include detailed bottom-up information about planned capital investment.

Peer reviews of the government's analysis do not conclude whether the government's crude modelling results in a reasonable prediction of a New Zealand-wide investment requirement. When experts, including Castalia, have reviewed the modelling on a council-by-council basis, those experts find serious flaws with the analysis.

2.1 Top-down approach to estimating investment is flawed

The government's estimate of New Zealand's water investment need is underpinned by the assumption that it must match per capita investment levels in Scotland. This single assumption drives the claims of how much money must be spent. This is justified on the grounds that New Zealand has a relatively lower level of urbanisation than Scotland.[2] However, urbanisation figures are not used in the analysis. Instead, population density is used, which is a different concept.

Because only a single point of reference (Scotland) is used to determine what expenditure is needed for New Zealand, it is highly likely to be biased.

Flawed metrics are used to determine needed investment which do not stack up to other comparators

The government's analysis projects New Zealand investment needs to rise significantly based on a correlation between English and Scottish drinking water and wastewater asset value levels and population density. The government does not show how the weak correlation in Scotland and England might predict water investment needed in New Zealand. A causal link is not determined.

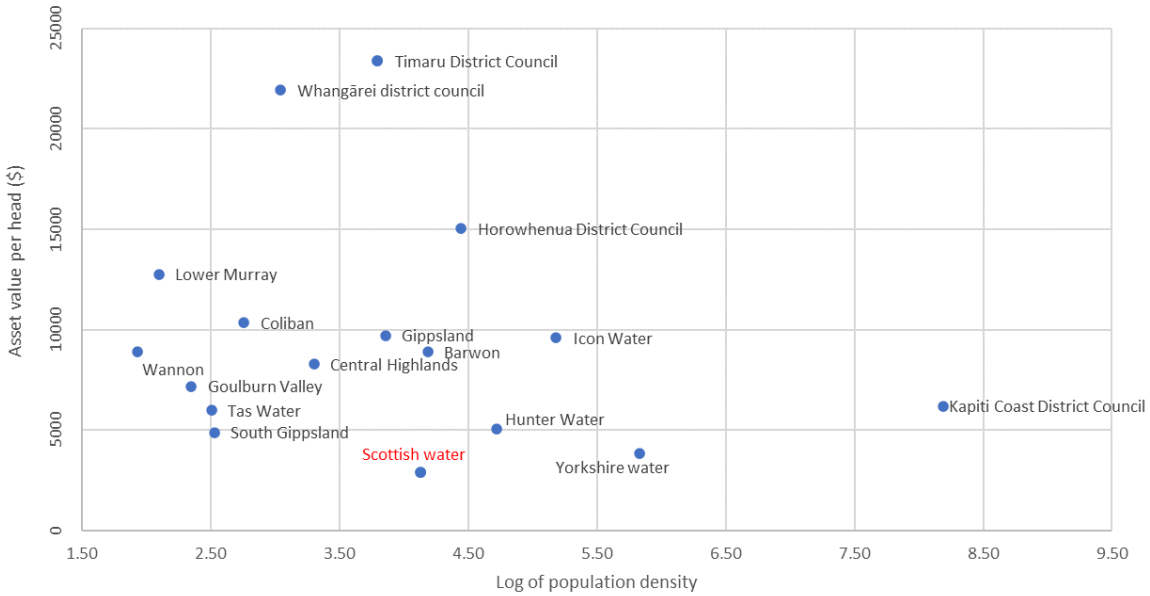
Castalia has previously analysed other regulated water utilities, including in Australia, to verify whether there was a clear relationship between asset level per connected citizen and population density. We found a very weak relationship between population density and asset value per connected citizen. Australia has some similarities with New Zealand in that its

[1] https://threewaters.govt.nz/affordability/

[2] WICS supporting material 1 – required investment (slide 19), https://www.dia.govt.nz/diawebsite.nsf/Files/Three-waters-reform-programme/$file/wics-supporting-material-1-required-investment.pdf

population is highly urbanised, but the overall population density is quite low, because towns are far from each other. Australia's towns developed at a similar time to New Zealand's and therefore follow the same typical geography (detached houses on suburban sections). When Castalia included Australian water utilities, New Zealand councils and UK water utilities in the 'asset value per capita' analysis, we find that **no conclusive relationship** between urbanisation and asset value:

Figure 2.1: Asset value per connected citizen for selected water utilities



Note: Castalia could not reconcile WICS' estimated asset value per connected citizen for Scottish Water and Yorkshire Water based on those entities' annual reports. It is possible that WICS may be using undepreciated replacement values for the assets of those entities. For our analysis, we used asset values from the relevant entities' annual reports. We included all vertically integrated Australian water utilities where recent replacement values were available.

The preferred model applied to predict New Zealand's investment requirement is highly selective

WICS is highly selective in the approach it chose to model New Zealand's investment needs. While it reviewed options that were more in line with local authorities' own estimates, it decided to base its analysis on Scottish assumptions that reported significantly higher required levels of investment. This approach is based on the assumption that Scotland is the most appropriate guide for the required level of investment because of New Zealand's low population density compared to other areas in the United Kingdom.

There are significant differences between Scotland and New Zealand geographies

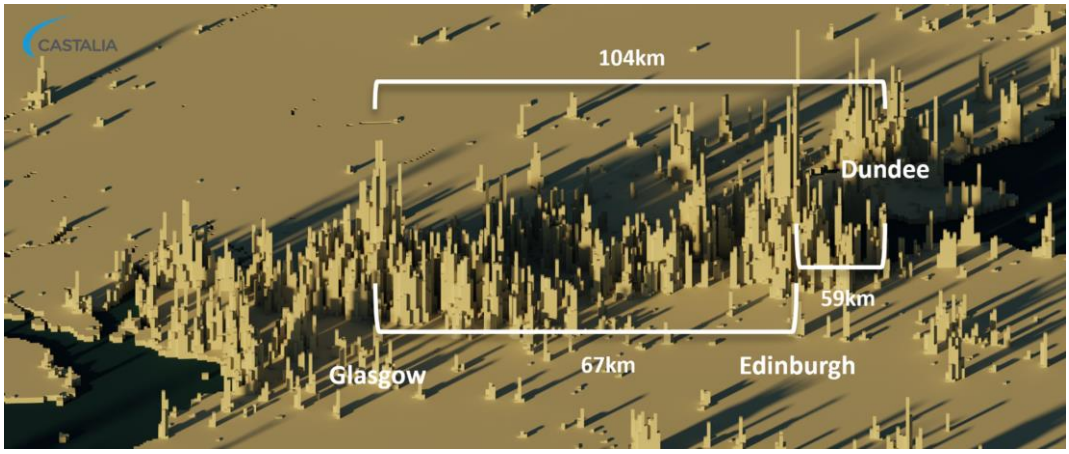
As Castalia has consistently pointed out, Scotland is not a relevant comparator for New Zealand water services. There are fundamental differences between the two countries' geography.

In water services, geography is important for the cost and quality of service. Denser urban areas tend to have lower average costs of service. Water services with more dispersed customers have to distribute drinking water and pump wastewater over longer distances with more pipes, dispersed treatment infrastructure and higher costs. Aside from some high-level

discussion of available water sources and similar populations, there is no investigation into why Scotland's geography is a good predictor of New Zealand's water investment needs.

Figure 2.2 illustrates the population density in Scotland. Most of the population lives in the narrow band that is between and around Glasgow and Edinburgh. There is potential for agglomeration efficiencies and for networks to achieve some scale benefits based on proximity alone.

Figure 2.2: Population density (persons per square kilometre) in Scotland



As Figure 2.3 and Figure 2.4 show, the majority of New Zealand's population reside in urban areas with significant distances between each urban area.

Figure 2.3: Major cities within the proposed Entity A and the distances between them

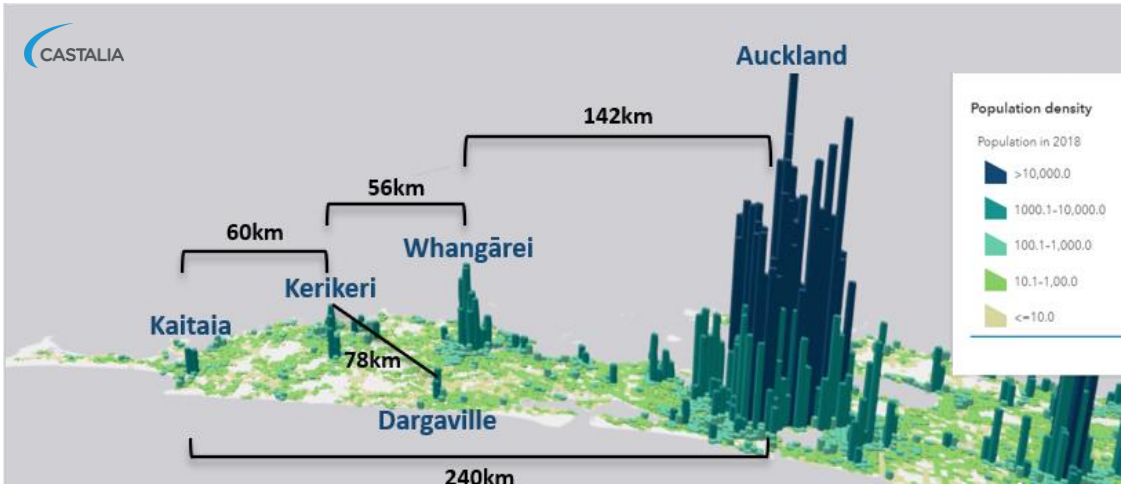
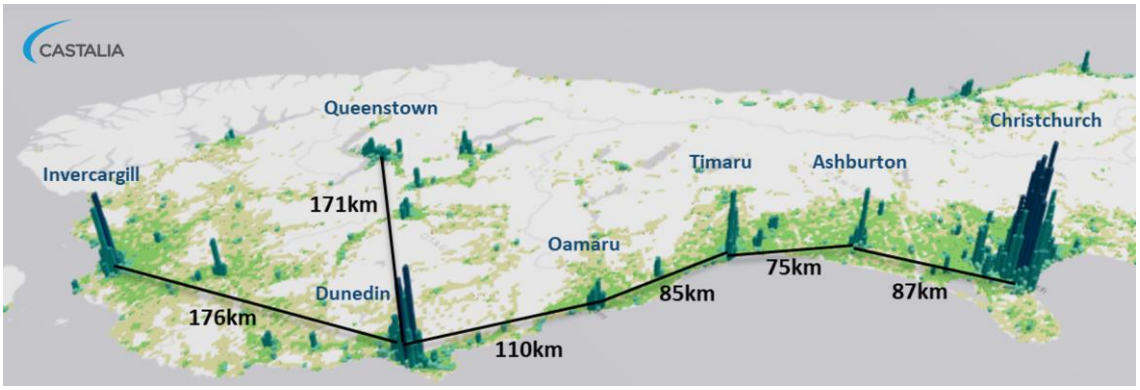


Figure 2.4: Major cities within the proposed Entity D and the distances between them



It is incorrectly assumed that lower population density in New Zealand implies lower levels of urbanisation. Table 2.2 illustrates how New Zealand's population is more urbanised than Scotland's, but despite this, New Zealand still has a lower population density. A larger majority of New Zealand's population live in urban areas, and the urban population is more likely to grow in New Zealand as compared to Scotland.

Table 2.1: Urban population statistics of New Zealand and Scotland

	Population Density (people per sq. km of land are)	Urban population (% of population)	Population in the largest city (% of urban population)	Urban population growth (annual %)
New Zealand	18.6	86.7	36.4 (Auckland)	2.2
Scotland	65	83.04[3]	11.6 (Glasgow)	-0.06[4]

Source: World Bank Indicator Database, 2020

There are other methodological flaws in the government's prediction

No adjustment is made for the overlapping nature of growth and replacement investment. This overstates the total investment estimate. In practice, when enhancement and growth investment take place, the new upgraded assets often replace at least some ageing assets. This reduces the need for replacement expenditure.

The government-commissioned technical analysis from Beca New Zealand that found UK water quality standards were a relevant benchmark for future New Zealand regulatory standards. But this does not mean that the same investment gap exists between New Zealand's current state and the UK's. Beca New Zealand's report cannot (and does not) provide a view on whether WICS' top-down analysis and crude modelling techniques give accurate insights into the level of investment required.

WICS uses cumulative economic depreciation to forecast replacement capex

WICS uses an unorthodox and inaccurate method to forecast replacement capex. It uses cumulative economic depreciation on new assets, which assumes that future replacement capital expenditure will be exactly equal to estimated future depreciation. This is an incredibly crude assumption. The depreciation-derived estimates are far inferior to the bottom-up capex forecasts developed by local authorities for the purposes of their long-term plans. Standard regulatory approaches do not equate economic depreciation with capital expenditure. To our best knowledge, neither Water Services regulation Authority (OFWAT), Office of Gas and Electricity Market (OFGEM), Australian Energy Regulator (AER), Australian State regulators, nor the New Zealand Commerce Commission (to name a few) have set capital expenditure allowances based on economic depreciation. Local Government New Zealand has issued guidance to local authorities that depreciation should not be confused with replacement capital expenditure.[5]

2.2 Bottom-up estimates by experts show much lower needed investment

The government's modelled investment requirement for standalone councils is determined by population, land area, and density alone. The formulas used to estimate the required investment for each standalone council are not made available. It appears only basic

[3] https://www.gov.scot/publications/rural-scotland-key-facts-2018/pages/2/

[4] Urban population as a percent of total population has decreased by 0.06 percent between 2018 and 2019. https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/2011-based-special-area-population-estimates/population-estimates-by-urban-rural-classification

[5] LGNZ, Depreciation in the local government context, available at: https://www.lgnz.co.nz/assets/Induction-Extras/78d9041b79/Depreciation-paper-final.pdf

information from the RFI responses is applied in modelling the mega entity and standalone councils. This includes connected population, asset values, water-related debt, and current water-related revenues.

The government's estimates are significantly higher than councils' own estimates. In some cases, the government's estimate is over ten times that of the councils' own estimates.[6] Box 2.1 and Box 2.2 below, as well as Box 6.1 in section 6, present case studies of individual councils. In each case, the government's claimed investment requirement is several times more than the council's own estimates.

Box 2.1 examines Waimakariri District Council. The government's claimed investment requirement for Waimakariri District Council is nearly four times more than the council's own estimate. This is not plausible. Waimakariri District Council has made significant capital investments in water infrastructure assets in recent years, and its water infrastructure assets are relatively new.

Box 2.2 examines Auckland Watercare. The overstated investment requirement for New Zealand's most sophisticated water utility suggests that the government's approach is unreliable across all councils.

Box 6.1 in section 6 below also examines Hastings District Council. It is not plausible Hastings District Council's investment requirement is more than double the amount budgeted for in Hastings District Council's long-term plan (LTP). Hastings District Council has implemented several operational and management changes and has made significant water infrastructure investments since Havelock North Inquiry. It's most recent LTP budgets for a comprehensive asset upgrade in the coming years.

Local councils are well placed to understand investment needs

All local councils in New Zealand agreed to provide the government with comprehensive information about water services during the RFI phase in mid-2020. The RFI responses included a full picture of all local councils' planned water sector investments.

As asset owners with accountability to local communities, local councils have a sound understanding of the investment needs required for three waters' services. This detailed and rich data source could have been used to estimate the required investment levels. Adjustments could have been made to the RFI data to account for any conservatism or for differences in management's sophistication in estimating investment needs. However, the government preferred top-down modelling using overseas comparators.

Box 2.1: Waimakariri District Council case study

Waimakariri District Council has a relatively new asset base and has plans to accommodate a growing community. This is reflected in its LTP. It is not plausible that Waimakariri's investment requirement, as modelled by WICS, is so high.

[6] Waimate District Council – Morrison Low Review of WICS data, August 2021. Page 11

Waimakariri District Council has relatively new water infrastructure assets

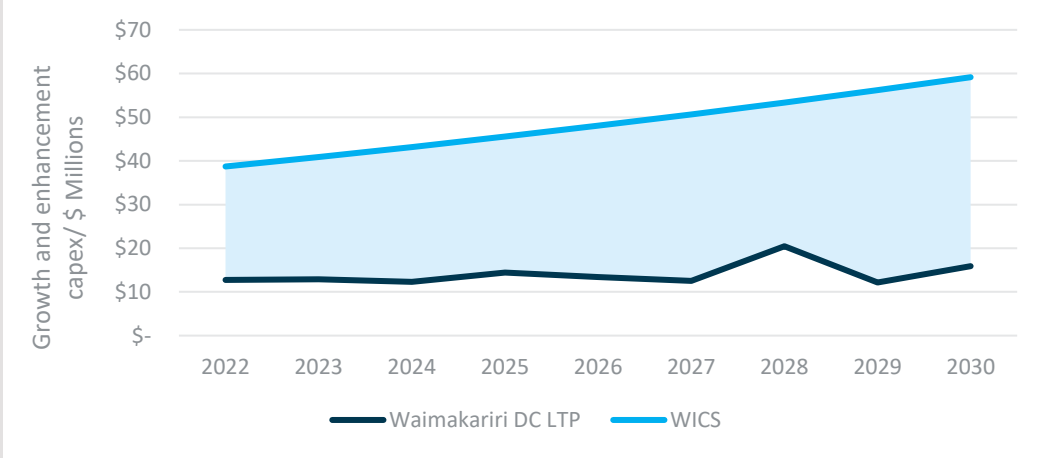
Waimakariri is a growing community. The population has doubled since 1996 and is expected to grow by just under 50 percent by 2050 to reach a total population of 95,000.[7] Water infrastructure assets in Waimakariri are relatively new. For example, 61 percent of its reticulation assets has more than 80 percent asset life remaining.[8]

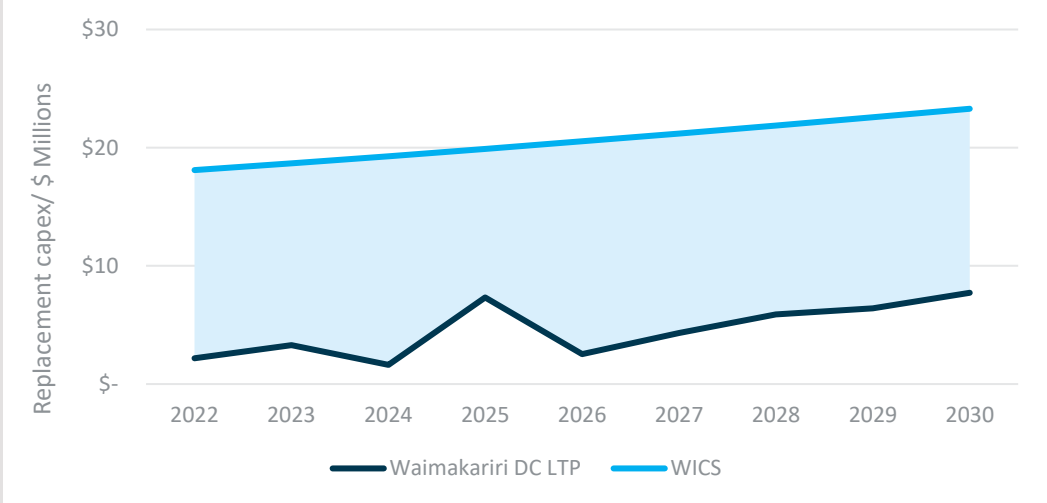
In recent years, Waimakariri has invested heavily in water infrastructure for growth. The council has focussed on enabling growth by providing trunk infrastructure. It ranks sixth out of 89 statistical areas for the highest housing consent rate per 1,000 residents in New Zealand since 2004.[9] Since 2016 Waimakariri District Council has spent $87.6 million of capex on water infrastructure assets. An average of $17.5 million per year.[10]

The government's estimate of Waimakariri District Council's investment requirement is nearly four times greater

Waimakariri District Council has a clear picture of its investment needs, since so much of the water infrastructure is new. It plans to spend $168 million of capex on water infrastructure assets between 2022-2030.[11] The government estimate is nearly four times greater at $621 million. The figures below show the difference between Waimakariri estimates as an asset owner and the government's top-down analysis using Scottish models. Capex is broken down into Growth and Enhancement, and Replacement capex.

The government's estimates are seriously flawed. First, it is implausible that Waimakariri needs four times as much growth and enhancement investment when it has some of the most modern infrastructure in New Zealand and is already planning for growth. Second, Waimakariri's estimates of replacement capex are robust, since it understands the conditions of its own assets unlike WICS.





Waimakariri is already achieving local economies of scale

Waimakariri is consolidating its small wastewater treatment plants into two main plants. Further opportunities to achieve economies of scale in production (merging infrastructure) is unlikely over the period in question.

Box 2.2: Auckland Watercare case study

The overstated investment requirement for New Zealand's most sophisticated water utility suggests that the government's approach is unreliable across all councils

The government's estimate of Watercare's investment requirement is 1.6 times greater than the utility's own estimate between 2022 and 2030. It is not plausible that Watercare's own estimate of investment requirement is so much smaller than the government's claim. Watercare has the most sophisticated asset management approach in New Zealand.[12] Its own investment plans are a more appropriate estimate of actual investment requirement. Watercare has organisational structures that fully integrate asset management decision-making from the operational level to the executive team level, with specialist individuals with defined asset management roles specified in their job descriptions and regular training.

Watercare plans to spend $8.6 billion of capex on water infrastructure assets between 2022 and 2030.[13] The WICS top-down approach estimates that $13.9 billion is needed over the same period.[14]The figures below show the difference between Watercare's bottom-up analysis and the government's top-down analysis.

7 Waimakariri District Council annual report 2021/22

8 Waimakariri District Council - Activity Management Plan 2021 Water Supply District Overview. July 2021

9 Statistics New Zealand. Waimakariri only ranks behind high-growth areas Queenstown-Lakes, Selwyn, Mackenzie, Waitemata and Upper Harbour.

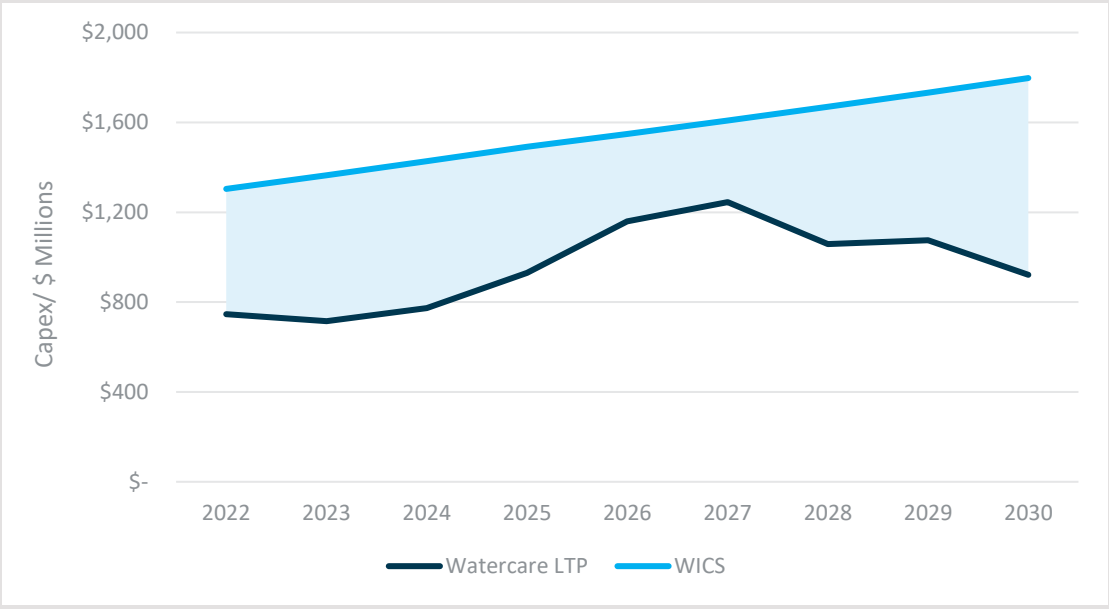
10 Waimakariri District Council annual reports 2016-2021

11 Waimakariri District Council long-term plan 2021-2031

12 Castalia (2017) Three Waters Asset Management Maturity in New Zealand - Report to Department of Internal Affairs

13 Watercare Asset Management Plan 2021-2041

14 Three Waters Reform Individual council models and slide packs - dia.govt.nz



2.3 Experts' reviews of the government's analysis highlight flaws

The government cite the expert reports it commissioned to review the modelling in support of its claims that the UK and Scottish models are appropriate for New Zealand. FarrierSwier's report made several reservations about the investment requirement estimate.[15] The report cautioned that "Investment assumed to achieve UK levels of water quality and may not reflect New Zealand needs" and that the "Investment requirement is uncertain over 30 year-horizon". The report also highlighted that cultural standard, as well as climate change and seismic resilience, were not directly captured in WICS analysis.

3 The government's average household water charges claims are implausible

The government is claiming that the Bill will deliver lower household water bills compared to a situation where councils make no improvements whatsoever. The government's claims are based on implausible assumptions and faulty modelling that exaggerates the benefits of mega entity reform. The key issues are:

- Implausibly high capex and opex efficiencies assumed for the mega entity reform
- Most councils assumed to achieve no efficiencies without amalgamation

[15] FarrierSwier (2021), Three Waters Reform: Review of the methodology and assumptions underpinning economic analysis of aggregation, page 28.

- The government's modelling makes additional assumptions that exaggerate the benefits of reform.

3.1 Mega entity efficiencies are highly implausible

The capex and opex efficiency assumptions used in the government's modelling are implausible and drive significant cost savings for the mega entities in the reform scenario. Capex and opex efficiency assumptions are based on inappropriate comparisons with the performance of water utilities in the UK.

The government's modelling assumes that:

- The mega entities will deliver the same level of service for half the capital expenditure
- Operating expenditure (opex) efficiency will more than halve[16] without any staff losing their jobs percent by 2040.

Figure 3.1 shows the results of estimating the average household bill in 2051 using the government's model with more reasonable efficiency assumptions. This results in an average household bill in 2051 of around double the government's claim.

The results in Figure 3.1 assume a 10 percent capex efficiency achieved over 20 years. This would be a generous assumption for an administrative amalgamation of geographically dispersed water utilities. Some capex efficiencies may be achievable in the mega entity reform due to regulation, clarity of policy priority and excellence in management.

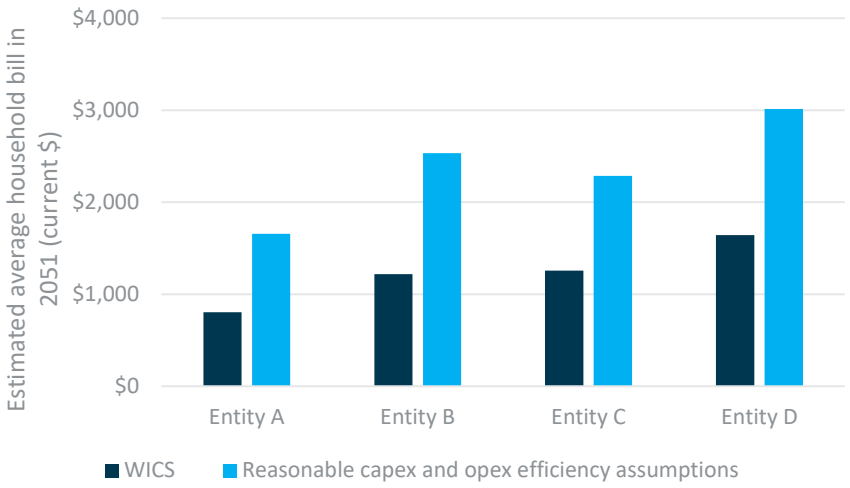
The results assume a cost saving of only $5.7 million to $22.5 million per year.[17] This minor opex efficiency may be realised due to the likely reduction in the number of high-paid senior staff members.

[16] Opex efficiencies are determined by characteristics of the mega entity and so vary between mega entities

[17] Calculated based on the following assumptions:

- Metropolitan councils lose three staff members earning $200,000 with an overhead equal to twice the salary
- Provincial councils lose two staff members earning $180,000 with an overhead equal to twice the salary
- Rural councils lose one staff member earning $150,000 with an overhead equal to twice the salary

Figure 3.1: Estimated average household bill in 2051 under reasonable capex and opex efficiency assumptions



3.1.1 Capex efficiency estimates are implausible

Significant capex efficiencies from "economies of scale" are not available in the New Zealand water sector. The government's consultants claim that the same level of service will be available for half the money. The government and its advisors have not engaged in the relevant literature and applied it appropriately in the New Zealand context. The government's analysis is based on an inappropriate comparison to the observed efficiencies of Scottish Water. Administrative amalgamations of water services that are not physically proximate generally do not generate efficiency benefits.

The literature does not provide a justification for the government's conclusion

The government claims the "route one" cause of a poor performing water sector is that it does not exploit efficiencies of scale.[18] The government relies on international literature applied to New Zealand to conclude that a connected population of 600,000 to 800,000 seems likely to achieve an efficient scale. It provides a sample of the literature in its Regulatory Impact Assessment. However, it manages to completely misinterpret that evidence. In fact, the literature finds

- There are "diverse findings on economies of scale"[19]
- There is "little evidence of consistent economies of scale from consolidation"[20],
- There is "no generally applicable rule, but there is a need to carry out case studies prior to taking a decision"[21],

[18] DIA - Regulatory Impact Assessment: Decision on the reform of three waters service delivery arrangements, May 2021. Page 38.

[19] Abbot and Cohen (2009) Productivity and efficiency measurement in the water industry

[20] Ferro (2017) Global study on the aggregation of Water Supply and Sanitation Utilities.

[21] González-Gómez and García-Rubio (2008). Efficiency in the management of urban water services. What we have learned after four decades of research.

- Customer density is the greatest driver of efficiency.[22]

Where the literature does find scale advantages for larger water companies, it only applies to already operational companies and networks and not physically distant or merged entities. Administrative amalgamations of water services that are not physically proximate generally do not generate efficiency benefits.[23]

The government's claim that the reform will achieve a 50 percent capex efficiency is based on an inappropriate Scottish comparator

The government claims that the reform will achieve a 50 percent capex efficiency using modelling produced by WICS. This modelling uses a very crude efficiency factor driven by the population served by the merged entity. The only quantitative analysis WICS says it has undertaken to support this belief is an observation that Scotland improved capital expenditure efficiency from 2002-2021. WICS' modelling fails to account for the fact that the NZ reforms are administrative mergers of geographically dispersed water utilities.

The government has failed to recognise criticisms of its modelling and assumptions on economies of scale

FarrierSwier peer-reviewed the modelling, and it appears they did not interrogate the underlying models. It found that "WICS analysis cannot be used to definitively conclude that amalgamation in and of itself will lead to material efficiency gains in New Zealand" and that "significant care should be taken when relying on the capital efficiency gaps estimated by WICS."[24]

The government's consultants admit capex efficiencies are not driven by economies of scale

The CEO of WICS, Alan Sutherland, stated in a TVNZ interview that cost savings will not be realised from capital cost savings by "hooking different rural communities together".[25] Instead, he states that it is about regulation (which we agree will improve performance), professionalism, and excellence in management. He claims that scale is necessary to achieve **operational cost savings**, such as improved professionalism and asset management in an interview with Business Desk.[26]

WICS modelling does not decompose regulation, professionalism, and improved management-driven efficiencies. WICS also mistakenly assumes that regulation will not apply to the status quo (council-owned water services).

Minor efficiencies may be realised

There may be some capex efficiency from the reform due to regulation, clarity of policy priority and excellence in management. For example, Deloitte found poor procurement costs around AU$239 million per annum on annual infrastructure spend of AU$4.4 billion (a one-off 5.5 percent improvement might be possible). A 10 percent capex efficiency over 30 years is therefore a generous assumption for an administrative amalgamation of geographically dispersed water utilities.

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[22] ACIL Tasman (2007) Size and Scope Economies in Water and Wastewater Service

[23] Castalia (2020) Analysing Economies of Scale in New Zealand Water Services. Report to Local Government New Zealand.

[24] FarrierSwier (2021), Three Waters Reform: Review of the methodology and assumptions underpinning economic analysis of aggregation, page 29

[25] Alan Sutherland interviewed by Jack Tame on TVNZ's political show Q+A, 19/06/2021.

[26] Business Desk article "Six year wait for three waters reforms far too long, says Scottish expert", 27 June 2022.

WICS efficiency assumptions for mega Entity A (Auckland and Northland) highlight implausible claims

It is not plausible that mega entity A will realise household bills more than half of what is estimated for Watercare by 2051. The government's modelling of Watercare and Entity A reveals two things:

- Efficiency gains are not driven predominantly by scale, excellence in management, procurement, and specialist staff
- The government's counterfactual is wrong and assumes regulation and clarity of policy would not be available without amalgamation.

The governments modelling of mega entity A is significantly different to its modelling of Watercare. Even though Watercare accounts for 95 percent of the total population served and Watercare's investment requirement is 85 percent of the total investment requirement of all four councils in Entity A.

The government's modelling assumes Watercare will achieve capex and opex efficiencies of 10 percent by 2041 (the largest of any standalone council). The government's modelling claims this is based on observed efficiencies from the UK of entities of such scale. Alternatively mega entity A achieves efficiencies of more than 50 percent.

In addition to these efficiencies, the government's modelling makes further efficiency assumptions for mega entity A, which are not assumed for Watercare. The government's modelling assumes mega entity A will:

- Absorb additional capital inflationary pressures
- Achieve total factor productivity (TfP) of half NZ wide productivity
- Absorb all new opex costs.

The government's claim that Watercare will only achieve minor efficiency gains compared to mega entity A is wrong. Watercare is aiming to reduce the cost of developments by 20% by working together with contractors in an enterprise framework.[27] The same efficiency gains from regulation and clarity of policy will be available to Watercare without amalgamation. mega entity A will not achieve improved asset management, procurement, and specialist staff compared to Watercare. Watercare has the most sophisticated asset management approach in New Zealand.[28] Increasing the size of its asset base by less than 10 percent is highly unlikely to attract more professional staff.

3.1.2 Opex efficiency estimates are implausible

WICS assumes implausible opex savings. Globally the major operating costs for water services are labour, third party (that is outsourced) services and materials and energy. New Zealand is no different. WICS claims the mega entities achieve opex efficiencies of between 53.3 and 61.9 percent by 2040, derived from econometric studies of UK water entities. Opex efficiencies achieved in the UK water sector are not a reasonable guide to the efficiency gap in New Zealand. Opex efficiencies above 50 percent in under 20 years is not plausible in the New Zealand water sector.

[27] Watercare Asset Management Plan 2021-2041

[28] Castalia (2017) Three Waters Asset Management Maturity in New Zealand -Report to Department of Internal Affairs

This is because:

- The government has promised that all staff in council organisations will be retained in their jobs and further that more jobs will be created from the reform
- The outsource service provider market is already competitive.

Castalia estimates that only minor opex efficiencies of around $5.7 million to 22.5 million per year[29] may materialise. We estimate this because some high paid senior staff members will no longer be required following amalgamation.

UK econometric models to claim that large opex efficiencies are possible

WICS has used an Ofwat 2004 econometric model to estimate that, after reform, larger New Zealand water entities can achieve up to a 61.9 percent efficiency improvement opex.

To estimate the opex efficiencies, WICS combined 2003-2004 data from the UK with recent data from New Zealand councils to estimate a performance baseline to measure New Zealand water entities against. To ensure compatibility of the estimates with New Zealand's operating environment, the gaps in efficiency between New Zealand entities and the benchmark were adjusted with 'special factors' related to regulatory, geographic and environmental factors that were considered unique to New Zealand.

Based on observed efficiency gains from UK water reforms, WICS assumes that New Zealand water reforms may achieve the same operating efficiency results – roughly a 50 percent improvement.

It is important to note that these estimates are an assumed benchmark that provides a guide to what might be possible based on experiences in the UK water sector but, as peer reviewer FarrierSwier notes, care needs to be taken as it is not possible to conclude that those efficiencies can be realised.[30]

Many local councils already outsource operational capability to scale providers

Many New Zealand water companies already outsource operational capability to specialist providers. Several large-scale providers deliver services across all of New Zealand, such as Downer, CityCare Water and Veolia (a global specialist water services company). Other large-scale providers operate on a regional basis, such as Watercare (which provides services around Auckland).

Outsource providers already achieve economies of scope and scale across regions and New Zealand. This is because outsourced service providers can offer specialist expertise on a contracted basis, where full-time employment of staff may not be warranted. Outsource providers also compete with one another for council contracts. This ensures prices tend towards costs and it incentivises efficiency improvements. Cost reductions of up to 50 percent in the already competitive outsource service provider market are implausible.

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[29] Calculated based on the following assumptions:
- Metropolitan councils are losing three staff members earning $200,000 with an overhead equal to twice the salary
- Provincial councils are losing two staff members earning $180,000 with an overhead equal twice the salary
- Rural councils are losing one staff member earning $150,000 with an overhead equal to twice the salary

[30] FarrierSwier (2021), Three Waters Reform: Review of the methodology and assumptions underpinning economic analysis of aggregation, page 60

The government claims no jobs will be lost and new jobs created—despite claimed opex cost savings

The government claims firstly that no jobs will be lost,[31] and furthermore that the reform will create additional jobs.[32] It estimates 6,000 to 9,000 additional jobs will be created.[33] In an interview with TVNZ, the government's lead consultant from WICS', CEO Alan Sutherland stated that efficiencies are achievable despite jobs increasing in the sector.[34]

3.2 Additional assumptions are invalid

The government's modelling makes additional assumptions that exaggerate the benefits of reform. These seemingly innocent assumptions multiply the variation in the estimated average household bills across the two scenarios.

- Total factor productivity efficiency is assumed only for mega entities
- Additional capital price inflation is absorbed only by mega entities
- Additional opex is absorbed only by mega entities
- Capex is expended according to an increasing time profile only for mega entities

Table 3.1 presents assumptions adopted in each scenario and the impact on projected costs in the mega entity models.

Table 3.1: Impact of additional assumptions on the mega entity modelling

Assumption	Mega entity	Standalone Council	Impact
Total factor productivity (TfP) efficiency	0.4 percent per year	0 efficiency	Mega entity capex and opex 11.5 percent lower by 2051
Additional capital price inflation absorbed	0 additional capital price inflation	1 percent capital price inflation	Mega entity capex 25 percent lower by 2051
Additional opex absorbed	0 additional opex	3 percent of growth and enhancement capex	Mega entity opex between 38 percent and 50 percent lower by 2051[35]
Investment and efficiency time profile	Investment time profile increasing over time combined with efficiency time profile decreasing over time	Investment constant over time No efficiencies in most cases	Mega entity total capex between 2022 and 2051 is between 11 and 15[36] percent lower than if capex time profile was linear

[31] Rachel Reese, Mayor of Nelson and Three Waters Steering Committee member – Thursday 15 July 2021, LGNZ Conference Speech [00:23:12:00], available at https://www.lgnz.co.nz/about/lgnz-conference/2021-lgnz-conference/videos-conference-2021/

[32] Grant Robertson, Minister of Infrastructure – Thursday 15 July 2021, LGNZ Conference Speech [00:33:40:00], available at https://www.lgnz.co.nz/about/lgnz-conference/2021-lgnz-conference/videos-conference-2021/

[33] https://www.dia.govt.nz/three-waters-reform-programme-frequently-asked-questions

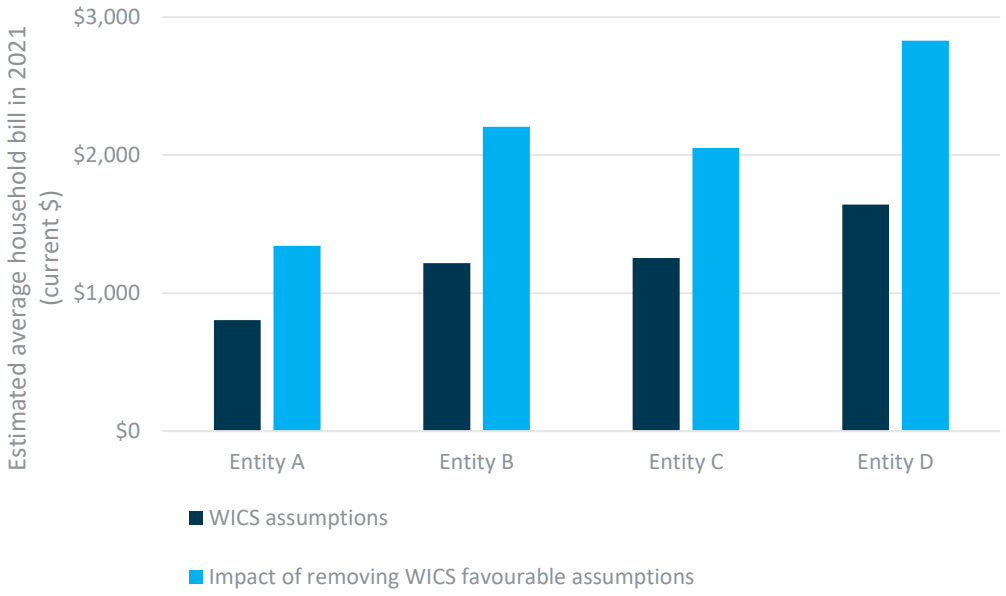
[34] Alan Sutherland interview on Saturday Morning with Jack Tame Newstalk ZB, 19/06/2021.

[35] Each mega entity is modelled to have different growth and enhancement capex requirements so additional opex varies.

[36] Cost difference varies between mega entities because of different capex requirements

Figure 3.2 illustrates the materiality of these additional assumptions. The figure presents the results of estimating the average household bill in 2051 under assumptions consistent with the standalone council model and assuming a linear investment time profile. The results are generated using WICS's own model.

Figure 3.2: Impact of removing WICS favourable assumptions on the estimated average household bill in 2051

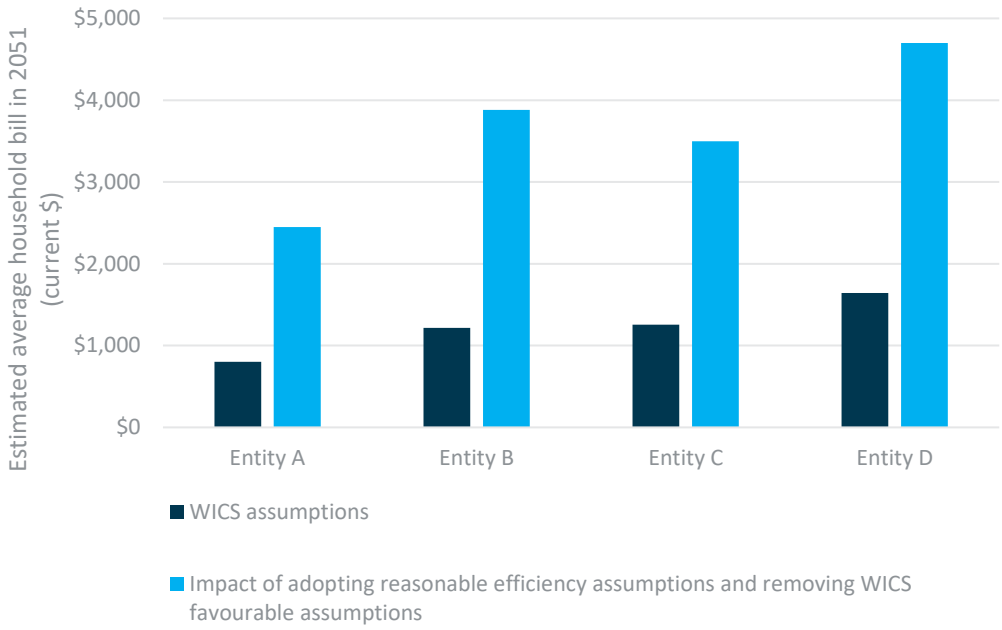


The assumption that only mega entities will achieve TfP efficiency and absorb capital price inflation and additional opex are additional efficiency assumptions. These additional efficiencies drive significant cost savings as shown in Figure 3.2. WICS provides no substantive justification or disclose empirical analysis to support these gains. As discussed in the previous sub section, capex and opex efficiencies are not available at the scale assumed by WICS. WICS has not provided any basis for why council-owned water services will not achieve any TfP efficiencies and not absorb any opex or capital price inflation.

WICS chosen time-profile for capex investments in the mega entity model deflates the capex expended. In the Reform Scenario, WICS has only included the large investment requirements after 2031. Yet, in the standalone council Scenario, WICS included the large investment requirements from 2022. In the Reform Scenario, the benefits of the new investment are delayed by up to a decade, while the costs arrive just in time to be reduced by the maximum efficiency gains assumed in the model. We note that 2031 is the first year when the WICS model allows maximum efficiency gains.

Combining these assumptions with more reasonable capex and opex assumptions produces unsustainable household bills. Figure 3.3 presents the results of combining the assumptions.

Figure 3.3: Impact of adopting reasonable efficiency assumptions, and removing WICS favourable assumptions on the estimated average household bill in 2051



3.3 Peer review highlights flaws

FarrierSwier's review of WICS modelling highlights several flaws in WICS modelling approach. [37]

- UK experience of expenditure efficiencies may not be a reliable measure of outcomes to be observed in New Zealand
- Other factors, as well as amalgamation, could be attributed to WICS estimated efficiency gains
- Costs associated with amalgamation are not captured and could be substantial
- Estimating household prices are calculated by back solving a revenue path is an unconventional approach
- WICS analysis does not account for potential diseconomies of scale or scope.

Morrison Low's review of WICS modelling concluded the scale of the difference between the entity and council scenarios is smaller than the amount that the WICS analysis indicates. Morrison Low's report points out several concerns with WICS modelling.[38]

- WICS modelling does not account for differences in rural drinking water, including level of service funding, or water use

[37] FarrierSwier (2021), Three Waters Reform: Review of the methodology and assumptions underpinning economic analysis of aggregation, page 28.

[38] Waimate District Council – Morrison Low Review of WICS data, August 2021. Pages 1-2.

- Council's debt capacity is not considered at an activity level. Because borrowing requirements of other council activities are usually low, a 250 percent debt/ revenue limit is significantly understated
- Key underlying assumptions (percentage of revenue from households and number of connected properties) do not match the councils RFIs, leading to overstated costs in the standalone council scenario
- There has been no adjustment to planned renewals investment to reflect that some investment in the level of service enhancement or growth is likely to also have a renewals component
- Long term contractual obligations will reduce or at least defer efficiencies.

4 Mega entities will have poor accountability to the public

Accountability to the public is important because water services are natural monopolies and essential for community wellbeing. The typical ways that customers hold a service provider accountable are not available (by choosing an alternative, reducing consumption, or demanding better service). The complex governance structure chosen for the mega entities undermines accountability to the public and key communities of interest.

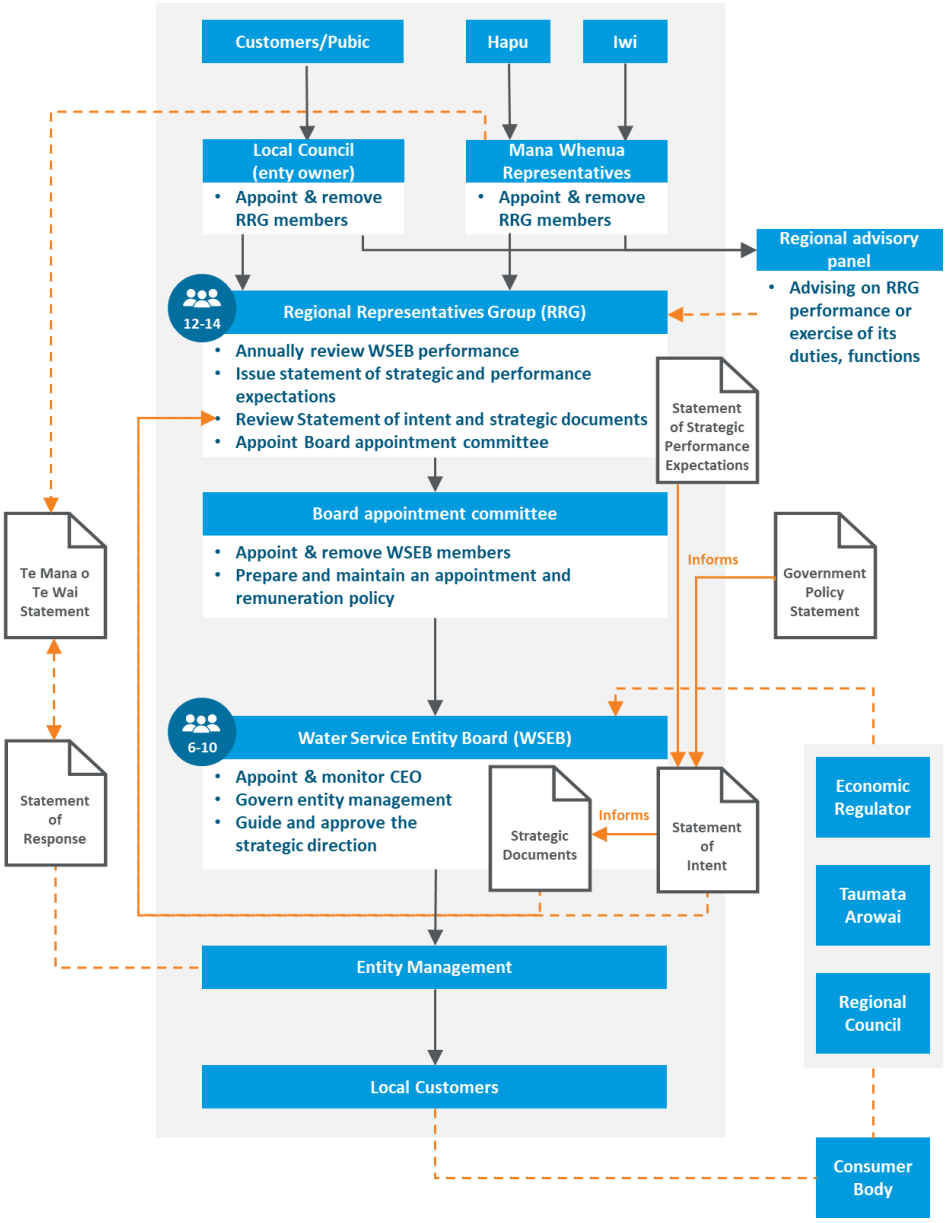
4.1 Complex governance structure removes accountability to public and communities of interest

The proposed WSE will have unique and complex governance mechanisms. Those charged with governance of the WSEs will have diverse interests to serve. The management of the entity is removed from local voters and Iwi members by several steps. There are also a variety of accountability documents issued by various parties. In addition, three regulators (water quality, environmental and economic regulators) will have to monitor compliance with their standards and rulings and attempt to enforce breaches.

The governance model requires balancing various socio-cultural objectives. These include Iwi-Māori objectives and equity, affordability objectives and any others such as support housing and urban development that the government may specify in a National Policy Statement. It is highly unusual for water utilities to have to maintain safe water, provide for efficient services while investing prudently for the future, maintain environmental outcomes and provide for a range of potentially competing socio-cultural objectives to numerous authorities.

Typical Companies Act duties of directors do not apply. Instead, bespoke duties are set out in the Bill. These are untested and novel, as far as we are aware. Therefore, the balancing of competing objectives, and how to trade these off will be determined in the future. Figure 4.1 below illustrates the complex governance and accountability arrangements.

Figure 4.1: Complex mega entity governance structure



4.2 Local variability, resilience and responsiveness will be lost

Local responsibility for water networks is critical to resilience to climate change and other challenges. Local responsibility ensures networks are responsive to changes. This will be lost under the reforms. Additional command and control mechanisms will not improve governance.

Important local variability in service and quality levels will be lost

There is variability in service expectations. For example, wastewater services often need to consider local needs. There are different options of treating and discharging treated wastewater. Some communities, including local hapu, may have different expectations and

needs in respect of wastewater. Within the complex governance structure proposed in the mega entity model it is unlikely local variations in demands will be reflected.

It will be challenging for management and operational staff in the central head offices to understand and respond to the variability in demands in communities. The proposed mega entities will oversee geographically dispersed areas, from a centralised head office. Management and administration will be centralised to four main centres in each mega entity area. This means that sophisticated management and reporting mechanisms will be needed to ensure that the multiple discrete networks report cost and quality information back to head office.

The role of local expertise and management is critical in water services. This is a key difference to other infrastructure like national electricity networks. Water networks are highly localised. The environmental conditions are very different between networks. For example, some regions draw drinking water from multiple bores from a large aquifer (like Christchurch), whereas other regions take surface water from purpose-built dams (like Auckland) or from rivers. The drinking water reticulation network and wastewater networks are highly localised because water has a low value to weight ratio. This is unlike electricity, where the network covers the whole country.

Additional command and control measures more likely to complicate governance than improve it

The government has proposed additional measures to try and hold the WSE board and RRG accountable to certain additional requirements. These requirements are imposed by central government as command-and-control mechanisms in which certain requirements are set out which the WSE board and RRG must report on.

The government has acknowledged that the command-and-control accountability mechanisms it has designed are not capable of completing the governance arrangements. Cabinet stated: "the level of independent governance proposed requires the addition of appropriate consumer protection and accountability mechanisms."

4.3 Mega entity interaction with regulation is poor

Economic regulation of water services is intended to support the reform objectives. Evidence suggests that the performance of economic regulation for public-owned water utilities is poor, with few exceptions.

The economic regulator will struggle to interact with the complex governance structure of the mega entity. The cost of economic regulation will outweigh the benefits.

- The regulator will struggle to improve the availability of relevant information
- The regulator will struggle to incentivise management and governance to optimise cost and quality of service
- The regulator will struggle to value the socio-cultural matters that will be traded off.

The economic regulator will struggle to improve the availability of relevant information

Overcoming information asymmetry will be especially hard because of idiosyncratic water networks. The regulator will need to independently judge whether the WSEs costs are fairly attributable to the different typographies, geographies, water sources and so on that will apply differently in across its jurisdiction. This is different to other utility regulation, like electricity, which has fewer idiosyncrasies.

This will be especially difficult in New Zealand, where there is a lack of relevant and accurate information on the current value and state of water assets and networks. There is also limited information on the volumes of water consumed (or lost as non-revenue water). Many water networks in New Zealand remain unmetered.

The regulator will have issues incentivising management and governance to optimise costs and quality of service

The government acknowledges that conventional civil penalties are likely to be ineffective in addressing mega entity misconduct due to a lack of profit motive and the cost of any sanctions will ultimately be borne by the consumer. It is likely that repeated breaches would be needed to prompt any action.

The mega entities do not have a profit motive. There will be no commercial incentive to reduce costs (or increase revenues). Managers will receive no rewards for innovating, finding ways to save resources, or the myriad of other efficiencies that profit-maximising managers might identify. In fact, managers might even be incentivised to increase some costs. Typically, price-quality regulation incentivises management to improve efficiency by setting the prices that water utilities can charge at a level that reflects reasonable costs.

The regulator faces an unusual challenge of incentivising mega entities to increase tariffs to cover costs. This is because, in some cases, local councils failed to charge tariffs that cover the cost of service. This is one of the government's justifications for sector reform. Typically, in profit-maximising water utilities, regulators are faced with the challenge of ensuring water utilities do not increase tariffs too much in pursuit of excess profits. The government has not acknowledged the challenges of this unusual regulatory challenge.

The regulator will be unable to analyse price differences between localised networks because tariff harmonisation is a feature of the mega entities. The large-scale tariff harmonisation of the sort proposed will create opportunities for inefficiencies and improper conduct to be concealed because both the governance bodies and regulator will be unable to monitor it.

Those tasked with governance of the mega entities, at any of the many layers between voters and mega entity management, could have incentives to keep tariffs low. This is a particular risk given the significant cross-subsidies that will exist. Unless the regulator itself initiates tariff increases, even in the absence of mega entities proposing such increases, typical price or revenue cap regulation may prove ineffective.

Socio-cultural objectives compete with efficiency and water service outcomes

The economic regulator will be required to monitor the socio-cultural outcomes sought from these reforms. It is an inevitable consequence that the regulator will have to judge the trade-offs between different values. An economic regulator is ill-suited to the role of determining whether investments and tariffs are appropriate in light of socio-cultural objectives.

The regulator is tasked with defining the level of productive efficiency—best service for least cost. The regulator faces the challenge of understanding how to value the socio-cultural matters that will be traded off. Improving the performance of water utilities is generally cost benefit justified, but not Pareto efficient. In other words, there are winners as well as losers.

This will be complex. The mega entities will be required to make investment decisions that reflect the different needs of over 60 Iwi (for Entity B), and many more hapu groups. As the government itself acknowledges, to realise the objective of improved kaitiakitanga, the mega entities will have to connect governance with delivery on the ground at a hapū/whānau level.

5 The reform increases fiscal risk

The proposed reform will create four of the largest firms by asset value in New Zealand. The Crown will provide a fiscal backstop under the proposed reform model, according to Standard & Poors' latest report to the government. Significant risk will be transferred to the Crown without the typical control and accountability mechanisms. The Crown is not best placed to manage such risk.

5.1 Mega entities are effectively guaranteed by the Crown

The reform proposes that the four mega entity balance sheets will be separate from local authorities. Local authorities will retain a "shareholding" under a unique structure in the Bill.

> *Each entity will be a body corporate and will be co-owned by the territorial authorities in its service area in shares to provide a tangible expression of ownership that is recognisable by communities and territorial authorities.*[39]

The Bill states that the mega entities will be "separate from the entity's board members, the entity's employees, the Crown, the entity's regional representative group, and the entity's territorial authority owners". While the Bill states that the mega entities will be "co-owned" by territorial authorities in the service area, the shares cannot be sold or otherwise transferred for any reason.

In light of this structure, Standard & Poors find that the Crown is the ultimate fiscal backstop. Since the government re-designed the mega entities to have council "shareholders", Standard & Poors stated in May 2022 "there is an 'extremely high' likelihood that the New Zealand sovereign will provide timely support to WSEs if they were in financial distress." Therefore, Standard & Poors assign the likely credit rating of A-/Stable. This is effectively a guarantee or at least a contingent liability on the Crown's balance sheet—as Standard & Poors confirms.[40]

5.2 Local authority debt is quarantined from Crown

In contrast, to the mega entities which will effectively be Crown guaranteed, local authority debt has a very strong standalone credit quality. Local authority debt is quarantined from the Crown. This means it is much less likely to present a fiscal risk to the Crown in the event of borrower failure.

Local authority debt is particularly creditworthy because it is secured against ratepayers' rates obligations and, if necessary, the forced sale of ratepayers' real property pursuant to section 115 of the Local Government Act 2002 (LGA). If a local authority defaults on its obligations to repay a debenture lender, the following will apply:

- The lender can immediately appoint a receiver and impose a rate on all ratepayers
- Failure by a ratepayer to pay that rate can ultimately lead to the sale of the ratepayer's property (the receiver has first right to the proceeds from the sale and in fact ranks ahead of the mortgagee)

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[39] Water Services Entities Bill, Explanatory note, p. 2

[40] Page 7

- The receiver can seek payment from the mortgagee of a defaulting ratepayer's property.

This general principle is further strengthened where local authorities are members of the Local Government Financing Authority (LGFA). Currently, 65 local authorities (local and regional councils) are members. The LGFA is a club through which local authorities collectively issue debt. The LGFA underwrites the obligations of its individual member councils because 65 members guarantee the obligations of the others through joint and several liability.[41] The strong credit quality is underpinned by the fact that no local authority has ever failed in the history of New Zealand.[42]

5.3 Mega entities will increase Crown fiscal risk

The mega entities increase Crown fiscal risk. Because the Crown is effectively providing a credit backstop, and creditors' powers are reduced relative to current local authority borrowing, the Crown is exposed to increased risk of mega entity failure.

This risk is increased due to a combination of key factors, which we elaborate on below:

- Complex governance and competing objectives dilute accountability of mega entity management to the directors and, ultimately, customers
- Incentives on the large bureaucratic management structure to over-spend
- Unallocated equity risk.

A possible outcome of these reforms, once the increased Crown fiscal risk is made apparent (for example, during a period of high interest rates and significant debt repayment obligations), is that the Crown directly intervenes in the governance and management of the entities, since core Crown creditworthiness could be at stake. This is exactly what occurred when England and Wales reformed from hundreds of municipal water entities to ten regional water boards in 1972. By 1983, with rising debt costs and the poorly performing regional boards, the UK central government stepped in and removed all local authority influence. By 1989, the ten water boards needed new capital and were privatised by the Thatcher government.

Complex governance and competing objectives dilute accountability

The mega entities will have globally unique governance, accountability, and incentive structures. The mega entity management will be three or four steps removed from elected councillors—those are the individuals who, via democratic process, have direct accountability to the consumers served.

Several accountability documents and statements overlay the disconnected accountability to consumers. Figure 4.1 above shows the complexity and disconnect between customers, communities, mana whenua, and the mega entity management (which is tasked with improving the service).

[41] https://www.lgfa.co.nz/sites/default/files/2022-03/New%20Zealand%20Local%20Government%20Funding%20Agency%20Ltd._0.PDF

[42] LGFA Investor Update, December 2021, available at: https://www.lgfa.co.nz/sites/default/files/2021-12/LGFA%20Investor%20Update-%20December%202021_0.pdf

Incentives on management misaligned with fiscal prudence

Managers of the mega entities are not incentivised to maximise fiscal prudence. This increases the Crown's fiscal risk—a risk over which it has no control. The Bill will create large bureaucratic organisations with a wide geographic spread and a large number of employees. These will be difficult to oversee to ensure investment decision making is efficient and necessary

As we outline above, the investment requirement is overstated and unrealistic. Managers, based in centralised offices away from the local networks, will have a combination of a massive balance sheet (and ability to borrow) and many demands to spend on capital projects. This means large debt and increased opportunity for mismanagement or even malfeasance in spending programmes.

Furthermore, cross subsidisation of tariffs is a feature of the new system. This means that cost of service cannot be accurately calculated at an appropriate level of service delivery. It creates further room for mismanagement, over-estimation of costs and a general inability to detect poor performance and bloat.

Finally, the multi-faceted obligations on the mega entities create opportunities for management to avoid accountability. There are multiple competing obligations to multiple parties (customers, central government, regional representatives, Iwi and regulators). There is no clarity on how these will be traded off when in conflict.

Equity risk is not allocated to councils or iwi

Mega entity "shareholders" have no right to an equity return, directly or indirectly. This means the equity risk and obligation to provide equity capital is unclear. The mega entities will also be financed by the private sector (quite unlike Scottish Water, the model this has been based on). Mega entities will face market interest rates and creditors that assess the creditworthiness in terms of core financial metrics, not socio-cultural or wellbeing objectives.

The model is untested and globally unique. It is unclear what will happen if the mega entities face rising financing costs and are unable to raise revenues to match costs. This leaves a range of unanswered questions:

- Will the councils listed as "shareholders" be obligated to provide additional equity capital? There is a prohibition under the Bill on providing "financial support"
- Will iwi within the mega entity boundary be able or obliged to provide additional capital?
- Why would either councils or iwi provide any capital since there is no effective control over governance (and hence management) and no financial return?

6 The government failed to consider alternative options and evidence

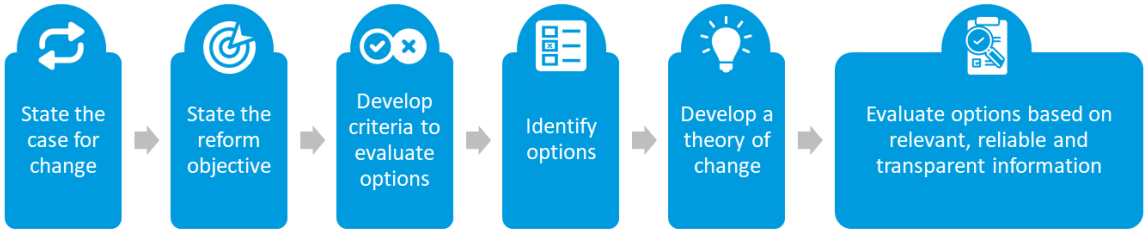
The government did not follow the correct policy process to establish a reform proposal. The government fixated on economies of scale and prematurely developed a reform model built around mega amalgamation. Throughout the reform process, the government relied on flawed analysis to discard alternative reform options. The government conflated the benefits of privatisation and regulation in England and Wales with amalgamation and relied on cherry

picked examples to claim benefits of amalgamation. . The impact of an improved regulatory regime was not properly considered, and historical lessons of amalgamation were ignored.

6.1 Government and its consultants did not appropriately review options

The government's policy development process was poor and failed to follow standard processes. The government prematurely fixated on one reform option, regional amalgamation. It did not properly evaluate alternative options and failed to appropriately consult. Failing to follow standard policy processes creates a risk that the model selected could fail, and lead to reforms that do not meet the agreed public policy objectives, or that produce unintended consequences.

Figure 6.1: Standard policy development process



Unfortunately, standard policy process has not been followed. A preferred entity design was chosen before options properly identified and evaluated.

The government correctly identified a range of problems that exist in the water sector, on the basis of some research and analysis. However, the objectives chosen included one of the evaluation criteria (benefits of scale) and accordingly ensured a biased outcome. It focussed on one factor among a range of important factors—economies of scale. This contributed to premature selection of a preferred model following a relatively cursory review of the international experience.

From around 2017

The government's consultant team assumed that scale benefits were available before testing that critical assumption. Before considering alternative options, it commissioned work from Frontier Economics[43] and Martin Jenkins[44] to review regional administrative amalgamation of water utilities in a limited number of jurisdictions, and overlooked extensive evidence from the global literature. Castalia contributed analysis to the Joint Steering Committee in mid-2020 on:

- Relevant evaluation criteria for water reform
- Institutional options and experience from global reform episodes

[43] Frontier Economies (2019), Review of Experience with Aggregation in the Water Sector Report for the Department of Internal Affairs

[44] Summary of Comparative Model, 25 October 2020. Provided to Joint Steering Committee secretariat by consultants Martin Jenkins on 3 September 2020

- Economies of scale in New Zealand water services.

Unfortunately, the government's consultants did not incorporate that evidence, and has managed to incorrectly interpret the evidence in its Regulatory Impact Statement.[45]

The government fixated on a preferred mega entity design supported by flawed analysis. The government based its reform proposal solely on WICS analysis before alternative options were properly identified and evaluated. The government did not engage with consultation that critiqued WICS analysis.

Only later did the government consider the objectives of reform. It then designed bolt on policies to ensure the full sweep of reforms achieved the objectives.

Throughout the reform process, the government relied on WICS flawed analysis to discard alternative reform options. The government compared WICS analysis of a full package of reforms to all proposed alternatives of entity design considered in isolation.

6.2 Impact of improved regulatory regime not properly considered

The government focused on the issue of "scale" and ignored the evidence—since the Havelock North inquiry—of how even a modest improvement in the regulatory regime would improve outcomes. Until 2020, responsibility for water quality regulation sat with the Ministry of Health under the Health Act 1956. The Ministry made no prosecutions in over 60 years of regulatory responsibility. Only after the tragic event of Havelock North that resulted in four deaths and thousands of illnesses did the Ministry take action. The Havelock North inquiry established that this weak regulatory regime in turn provided weak incentives on drinking water providers to meet minimum safety standards.

Water services have objectively improved in many cases from a combination of heightened public scrutiny, expectations of stricter regulatory standards and creation of a new regulator. The case study set out in the Box below illustrates this.

Box 6.1: Hastings District Council case study

Regulation with appropriate incentives serves its purpose

Improved regulation and accountability incentivise councils to invest appropriately in water infrastructure and improve management and operational performance. Without public attention and regulation--as was evident in the 60 years that the Ministry of Health regulated water quality with zero enforcement actions--councils have failed in some cases to invest appropriately and manage water services. The Hastings District

[45] DIA (2022), Regulatory Impact Statement at paras 110-117, Breakout Box 1 and Breakout Box 2 is a plainly incorrect interpretation of the existence of economies of scale in water services. In fact the available economies of scale from administrative amalgamations of the type proposed for New Zealand are limited to procurement cost savings, operating cost savings and

Council serves as a useful example of how changing the balance of accountability improves outcomes.

The gastroenteritis outbreak in Havelock North tragically resulted in three deaths and around 5,500 people becoming seriously il with campylobacteriosis. The inquiry identified [poor management], [poor regulation and enforcement] and [under-investment] as major contributing factors to the outbreak.

In the two years following the Havelock North Inquiry Hastings District Council implemented a number of operational and management changes.[46]

- Formed a Joint Working Group to work on drinking water quality with the regional council and health authorities to provide oversight for planning and decision making on regional drinking water matters.[47]
- Reviewed, updated, and implemented water testing, water safety measures and emergency response plans
- Increased staffing and organisational capacity
- Contracted an international water quality expert to advise on and peer review water safety operations and decision making
- Developed a "one network" Water Supply Strategy in 2017
- Developed a further Water Strategy in 2018
- Worked with surrounding Local Councils to develop a regional water service model for Hawkes Bay funded by the government and rewarded with $20 million in 2020.

Following the inquiry, Hastings District Council has invested over $80 million in drinking water infrastructure over four years.[48] A number of significant milestones in the Water Strategy have been achieved in four years and most projects are on track to be completed by the end of 2022:

- In 2019, the Hastings-Havelock North water main was completed, and the Havelock North booster pump began construction
- In 2020, three small community supplies upgraded
- In 2021, the Frimley water storage and treatment plant, which will hold eight million litres of water as well as enabling effective water treatment, began construction
- In 2022, the Eastbourne water storage and treatment plant began construction, and four small community supplies were fully upgraded, two entered the commissioning phase and one entered the consenting phase.

[46] Hastings District Council annual report summary 2016/17

[47] Hastings District Council annual report summary 2017/18

[48] https://www.hastingsdc.govt.nz/services/water/three-waters-reform/

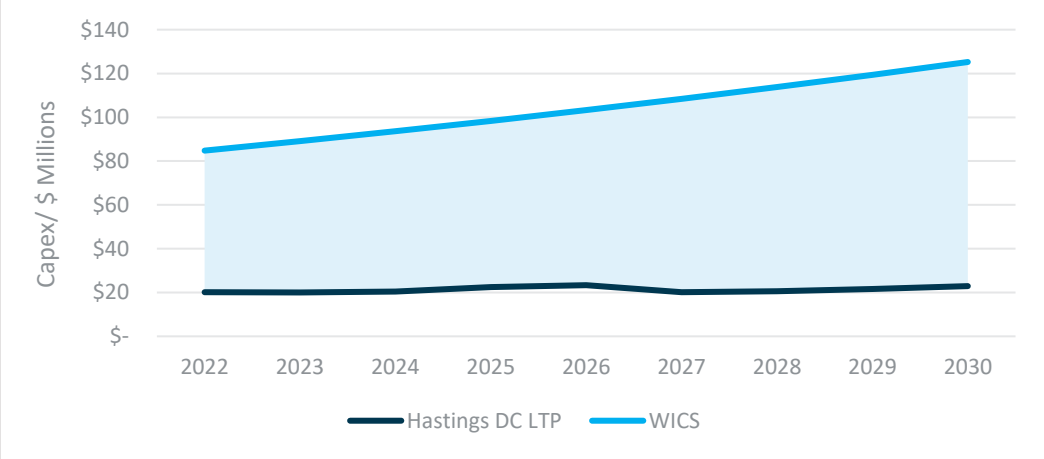
In addition, Hastings District Council is undergoing a significant renewal programme in the wastewater area relating to rising mains and trunk main infrastructure. This programme is over 20 per cent complete and is ongoing in future years.[49]

The government's investment requirement is overstated

The government estimates that Hastings District Council has an investment requirement more than 4.5 times as much as provisioned for in its LTP. This is implausible, especially since Hastings District Council has significantly upgraded its network assets since the tragic Havelock North campylobacter outbreak.

Hastings District Council water infrastructure assets are relatively new. For example, Hastings District Council has 10 brand new treatment and storage drinking water facilities, and an award-winning $35 million wastewater plant was built just over a decade ago. [50] Hastings District Council plans to spend $192 million of capex on water infrastructure assets between 2022-2030.[51] The government estimates a $936 million investment requirement over the same period.[52]

The figures below show the difference between Hastings District Council's bottom-up analysis and the WICS top-down analysis.



6.3 Historical reform lessons ignored

The government did not appropriately consider historical lessons of reform. The government commissioned Frontier Economics to undertake a review of amalgamation experiences in

[49] Hastings District Council annual report 2020/21

[50] Talking point: Mayor Sandra Hazlehurst – Hastings District Council website: https://www.hastingsdc.govt.nz/services/water/three-waters-reform/

[51] Hastings District Council long term plan 2021-2031

[52] Three Waters Reform Individual council models and slide packs - dia.govt.nz

relevant countries.[53] The report drew incorrect conclusions from the case studies. Amalgamation in of itself did not lead to enhanced performance across the case studies reviewed. The study cherry picked scenarios and conflated outcomes of other structural reforms with amalgamation. The report did not provide sufficient attention to examples of amalgamation that caused diseconomies of scale.

The report cherry picked time periods to deliver examples of amalgamated entities with enhanced performance

Prior reform periods where amalgamation failed to drive performance improvements were overlooked.

In England and Wales water companies amalgamated 17 years prior to the period reviewed.

In Scotland there was a long history of amalgamation before the case study period. The period considered in the case study followed four years of poor performance of amalgamated regional entities.

In Tasmania the study focuses on the recent performance of Tasmania's single water company, overlooking prior poor performance following amalgamation.

The report conflated outcomes of privatisation and regulation with amalgamation.

The study cites the improved performance of water utilities in England and Wales after privatisation and regulation as evidence that amalgamation of water providers results in benefits. In fact, the benefits identified in the report relate only to the outcomes of privatisation and regulation of the water sector.

The report overlooks improvements in governance and regulatory oversight during the creation of Scottish water. The report focuses on the performance of Scottish Water to establish the benefits attributable to amalgamation.

The report overlooks examples of diseconomies of scale due to amalgamation

The study only briefly reviews Melbourne Water, the single water service provider to the city of Melbourne. Melbourne Water was amalgamated in 1992, however this amalgamation resulted in diseconomies of scale due to its size. In 1995 Melbourne Water was separated into four entities: three retail water businesses, and a wholesale bulk water, sewer and waterways manager (which would retain the name Melbourne Water).

[53] Frontier Economies (2019), Review of Experience with Aggregation in the Water Sector Report for the Department of Internal Affairs

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WASHINGTON, DC
1747 Pennsylvania Avenue NW, Suite 1200
Washington, DC 20006
United States of America
+1 (202) 466-6790

SYDNEY
Suite 19.01, Level 19, 227 Elizabeth Street
Sydney NSW 2000
Australia
+61 (2) 9231 6862

AUCKLAND
74D France Street, Newton South
Auckland 1010
New Zealand
+64 (4) 913 2800

WELLINGTON
Level 2, 88 The Terrace
Wellington 6011
New Zealand
+64 (4) 913 2800

PARIS
64-66 Rue des Archives
Paris 75003
France
+33 (0)1 84 60 02 00

Thinking for a better world.

enquiries@castalia-advisors.com
castalia-advisors.com