Timaru District Council Submission on the Three Waters Reform Proposal

Introduction

1. The Timaru District Council welcomes the opportunity to provide feedback on the proposed Three Waters Reform on behalf of our organisation and our community.

2. Timaru District Council opposes the New Zealand Government's proposal, as currently presented, to remove three waters assets and services from local authority governance and management, and instead establish four multi-regional water entities to undertake these roles.

3. Following engagement with the Three Waters Review and the more recent reform proposals, Council has identified four primary concerns that form the basis of this submission:

   i) Three water service delivery reform should not take place in the absence of clear regulatory standards, and the framework for financial regulation;

   ii) The loss of local voice, decision-making, and ability to meet local needs and aspirations due to the proposed structure and governance of the water entities;

   iii) The evidence on which the proposal is based is flawed and as such, the reforms are unlikely to achieve the desired outcomes, especially for the Timaru District; and

   iv) The failings of the reform process are undermining Council's legislative decision-making processes.

4. We recognise that a formal decision of Council to opt in or out of the proposed reform is not sought at this point. However, due to the concerns which will be discussed further in this submission, Council has resolved unanimously, with resounding support from our local community, that we are cannot support the Government's proposal.

Three water service delivery reform should not take place in the absence of clear regulatory standards, the framework for financial regulation, or in isolation from the broader local government reform programme

5. In the absence of a robust regulatory framework and any meaningful detail about economic regulation, Council's ability to plan for the provision of compliant three water services in the future is hamstrung. As a result, we are not able to assess whether the proposed reforms will provide the best outcomes for the Timaru District.

6. It is essential that, before council governance and operation of water services is unilaterally stripped away, time is allowed for the establishment of Taumata Arowai, implementation of the Water Services Bill, and the provision of a clear framework for economic regulation. This will afford local authorities the opportunity to consider, plan for, and meet newly defined regulations, in consultation with local communities.

7. Council understands the Government's concerns around regulation, affordability, the capability, capacity and efficiency of the services currently delivered by councils. However, we believe the urgency to address these concerns comes at the expense of a cohesive approach to reviewing the role and funding of local government.

8. The Three Waters Reform continuing without appropriate consideration for, or integration with, the Resource Management Act Reform, or the Future for Local Government Review, risks undermining the lasting success of all these reform programmes. A whole of local government approach with aligned direction and goals across all three reforms would undoubtedly be more beneficial for community wellbeing outcomes.

9. We therefore ask that the Government revisit the Productivity Commission's advice, presented following their 2019 review of local government funding and financing.[1] Regarding funding and financing of three waters, the Commission found that:

   "*The previous regulatory regime has imposed weak disciplines and incentives on council-led water suppliers to meet safety and environmental minimums, and no independent oversight of supplier charges and/or costs"*[2]

   "The performance of the three-waters sector would be substantially improved through an approach that (1) rigorously enforces minimum performance standards; and (2) is permissive about the way councils structure and operate their three-waters businesses. In particular, the Government should set clear health and environmental performance standards for all three-waters services. Councils achieving those standards within a specified time period should be free to structure their three-waters businesses how they wish, but they should remain subject to regulatory oversight and possibly subject to price control."[3]

10. These recommendations emerged from a full review of the funding and financing challenges facing local government and included extensive consultation with councils, government departments and other key stakeholders. The recommendations are therefore informed by those with expert knowledge and experience, specific to New Zealand, and the New Zealand local government structure. They were not formulated in isolation of the complexities and challenges of our current structure, nor did the review ignore the success and high performance of some councils and the benefits inherent to local decision-making and service delivery of three waters.

11. Council therefore believes the Productivity Commission's recommendations provide a more holistic, balanced and considered approach to resolving the challenges facing New Zealand's three waters infrastructure, than those provided by the Water Industry

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[1] "Local Government Funding and Financing", Productivity Commission, 2019.

[2] Ibid, p.280.

[3] Ibid, p.293.

Commission of Scotland (WICS), which suffer greatly from a lack of local knowledge and context.

12. Timaru District Council has a proven track record of prioritising compliance with public health and environmental regulations. Effective long term planning has meant that we have been able to meet these regulations while delivering agreed levels of service and meeting our community's growth requirements in an affordable way.

13. This successful local governance and management should not be removed from the Timaru District. Council is fully aware a step-change is required in investment to meet future regulations. By working closely with our communities, we are confident we will be able to meet this challenge, and therefore, as the Productivity Commission states, should remain free to do so.

14. We are disappointed that the Government has not considered the Productivity Commission's advice as part of the Three Waters Review and Reform programmes. Given the sector-wide concern that the financial case in support of the proposal is flawed and based on information that does not reflect the New Zealand situation, we urge the Government to revisit the Commission's recommendations.

Loss of local voice, decision-making, and ability to meet local needs and aspirations.

15. Council's primary concern with regards to the structure of the proposed model is the loss of local control and influence over water – something so vital to community wellbeing, local growth and development. There is no assurance from the Government that strategic projects enabling economic development, identified by Council and the community as essential, will be recognised and prioritised appropriately by the new water entity.

16. Council has no faith that the proposed governance structure will be responsive to the needs and aspirations of the Timaru District, given the many degrees of separation. Further, the proposal provides no mechanisms for accountability over decision-making and service delivery to local communities by the water entity. There is a justified concern that future funding will be allocated predominantly to metro areas, to the detriment of rural and provincial New Zealand.

17. There is no mechanism that provides assurance to rural and provincial communities that their interests will be recognised, protected and prioritised under the current proposal. As noted by the Treasury the current governance structure is complicated. This raises a significant risk that the benefits that exist within the current three waters sector will be eroded if not irretrievably lost under this proposal.

18. The current proposal means that councils will lose their ability to influence and control the responsiveness and accountability for service delivery and issue resolution that currently exists. This lack of influence and control deeply concerns Council and our community.

19. Responses to Council's engagement to date emphatically show that our community does not support joining the reforms, with the unacceptable loss of local voice, and ownership the most frequently articulated. Attached to this submission is a summary of this feedback.

20. Local authority experience in three waters provision should be valued and recognised though appropriate inclusion in any future governance structure. Until the Government resolves these issues, and guarantees the local voice will not be lost in decision-making and service delivery, on behalf of our communities, we cannot accept the current proposal.

The evidence on which the proposal is based is flawed.

21. Council is deeply concerned that as a result of unsubstantiated assumptions and flawed analysis, the stated benefits of the Government's proposal will not be achieved for the Timaru District. If this proposal, based on the WICS analysis, were mandated by the Government and these assumptions failed to produce the desired outcomes of the reform, we believe that the future wellbeing of our community may be detrimentally impacted.

22. Based on analysis undertaken for Council by both Castalia and Morrison Low, a number of assumptions used by WICS are flawed and inaccurate. We have attached both reports in support of this submission.

23. The benefits of the reform programme rest on three key claims:

    (a) That Timaru District Council (and New Zealand as a whole) needs to invest to match Scottish levels of water sector capital stock per resident;

    (b) The new water entities will be able to achieve significant opex (53.3%) and capex (50%) efficiencies compared to continued council delivery; and

    (c) If Timaru District Council were to continue to deliver three water services, it would not make any service delivery improvements.

24. Applied to the Timaru District, these assumptions result in a significantly inflated projection for future household costs should Council opt out of the proposed Entity D. This data has been disseminated in support of the Government's case for change at a local level through the DIA dashboards. We are deeply concerned that because of the application of these baseless assumptions, the DIA dashboard has presented very misleading information to our communities regarding future household costs.

25. Our analysis makes it clear that the required investment for Council is overstated by WICS, the efficiency gains are implausible, and the assumption that Council would not make any improvements over the next thirty years is unfounded and insulting.

26. Given our lack of faith in the WICS data and analysis, we believe that the promised benefits of the reform proposal are unlikely to materialise. Therefore, we cannot risk the loss of local voice, decision-making and accountability by supporting an inherently flawed model.

The failings of the reform process undermines Council's legislative decision-making processes

27. It is necessary to remind the Government of the decision-making framework councils are legally bound to adhere to – a framework developed to ensure councils make prudent and well-considered decisions – a framework we respect, and must insist that the Government respects also.

28. The Local Government Act 2002 states that Council must, in the course of the decision-making process –

    (a) Seek to identify all reasonably practicable options for the achievement of the objective of a decision; and
    (b) Assess the options in terms of their advantages and disadvantages; and
    (c) Take into account the relationship of Maori and their culture and traditions with their ancestral land, water, sites waahi tapu, valued flora and fauna, and other taonga.[4]

29. Further, in the decision-making process, Council must give consideration to the views and preferences of persons likely to be affected by, or have an interest in, the matter.[5]

30. It is also our responsibility to make judgements about how to achieve compliance with the above responsibilities, in particular:

    (a) The extent to which different options are to be identified and assessed;
    (b) The degree to which benefits and costs are to be quantified; and
    (c) The extent and detail of the information to be considered.[6]

31. Considering these legal responsibilities, and exercising the judgement afforded us by the Act, Council does not believe that we, or any other council, is currently able to comply with the Act in deciding the future of water services delivery for our communities.

32. We are able to identify reasonably practicable options other than the Government's proposal, including continued Council service delivery and a regional joint council approach. We do note however that when we sought to explore this option in 2019 it was dismissed by the Government as being unlikely to achieve the desired reform outcomes, for reasons that were never adequately explained.

33. Yet, having identified these options, we are not able to fully assess them, as we do not know the basis on which the Government arrived at its preferred option, and nor do we have enough detail about the regulations that will be applied to water service providers in the future. For the same reason, we are not able to assess to any acceptable degree of estimation the benefits and costs of these options for Council or our communities.

34. We do know that the extent and detail of the information we are being asked to consider regarding the Government's proposed model is flawed and lacking in local relevance, as discussed earlier in this submission.

35. Given the significance of this issue, we are not currently in a position where we can undertake genuine consultation with our communities, as is required in accordance with the principles of consultation also set out in the Act, and our Significance and Engagement Policy. Again, this is because we are not able to provide any meaningful analysis to explain to our communities the reasonable practicable options in the absence of detail about how the Government arrived at its preferred model, or clear information about future service delivery and economic regulations.

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[4] Section 77 – Requirements in relation to decisions, Local Government Act 2002.

[5] Section 78 – Community views in relation to decisions, Local Government Act 2002.

[6] Section 79 – Compliance with procedures in relation to decisions, Local Government Act 2002.

36. That this process is eroding our ability to perform these legislative decision-making responsibilities is extremely concerning to Council. If this is not the Government's intention, then a pause in the reform process is the most effective, and only acceptable step to Timaru District Council that the Government can make to confirm this.

37. The Government should use this pause in the process to resolve appropriately all critical issues identified by Local Government New Zealand in consultation with councils including, but not limited to:

    (a) ensuring local authorities, as owners of water assets on behalf of communities, maintain the ability to exercise recognised ownership rights – control, use, possession;

    (b) significantly restructuring the governance model to provide more influence from, and direct accountability to local authorities and their communities;

    (c) ensuring communities are able to exercise a local voice in future water services, particularly relating to investment priorities and levels of service;

    (d) guaranteeing alignment with local planning and community aspirations for future residential, commercial and industrial growth;

    (e) resolving how rural water supplies and services will be treated, including ensuring that rural communities are not heavily subsidising urban services, especially wastewater and stormwater.

Next Steps

38. We recognise that at some point, as a Council, and on behalf of our communities, we will need to make a formal decision. We must do this in a manner that adheres to the decision-making principles and requirements of the Local Government Act 2002 (LGA), and is reflective of such a significant decision to be made on behalf of our community. To enable this, the Government must clearly set out when, and how Council will be expected to make this decision.

39. Following the announcements of June and July 2021 we are aware that the original timetable (provided in July 2020) for implementing the reforms no longer applies. However, the Government has not provided any details on a revised timetable beyond the 1 October deadline for feedback. We do not know:

    (a) What decisions are yet to be made by the Government;

    (b) When the proposal will be finalised and confirmed by the Government;

    (c) When Council will be able to consult with our communities on whether they support the Government's proposal or other options available for water service delivery;

    (d) How long will Council have to prepare for and undertake this consultation;

    (e) Whether there will be an opportunity to opt-in/opt out of the reform proposal, or whether the Government will mandate these reforms.

40. In addition to the responses to these questions, we request the Government works with local government to develop more detailed, but accessible information that enables us to engage meaningfully with our communities on the reforms, rather than the simplistic

and ill-conceived information promulgated through the Government's Three Waters public advertising campaign.

41. In particular, we encourage the Government to detail clearly how they arrived at the proposed model for water services delivery. At this stage, we as a Council are unclear how, based on qualitative and quantitative evidence, the Government arrived at the establishment of four multi-regional entities as its preferred option. Nor is it clear why the Government has discounted alternative models or solutions that would provide for continued council delivery for water services – for example the Productivity Commission's recommendations (detailed above), or a Waka Kotahi style model, or a model in which Council's Three Water assets were guaranteed by the Government.

42. Our communities need to understand all the options considered and how these options were assessed for meaningful engagement to occur.

43. We respectfully request that the Government does not mandate this deeply unpopular reform. Such a step would not only be detrimental to the future of local government and the wellbeing of our communities, but also the constructive relationship between local and central government.

Conclusion and Recommendations

44. Council makes this submission cognisant of the fact that we share a common goal with the Government – we too are committed to ensuring our communities get safe, reliable and affordable three water services that support good public health and environmental outcomes are realised. We support the establishment of Taumata Arowai and introduction of the Water Services Bill.

45. We look forward to Taumata Arowai and the new regulatory system providing much-needed consistency and certainty for water service providers and users across New Zealand. We believe that in working closely with Taumata Arowai, Timaru District Council will be able to continue to deliver a high standard of water services for our communities into the future.

46. We also recognise in order to deliver these services and outcomes successfully and sustainably we need to enable local communities to participate meaningfully in discussions about these issues that directly affect them.

Timaru District Council recommends:

1. That the Government pause the Three Waters Reform Programme to:

    (a) allowed for the establishment of Taumata Arowai, implementation of the Water Services Bill, and the provision of a clear framework for economic regulation;

    (b) ensure all outstanding critical issues identified by LGNZ and councils have been resolved;

    (c) provide councils with enough time to be able to engage meaningfully with their communities on such a significant decision; and

    (d) ensure integrated alignment with the Resource Management Act Reform and the Future of Local Government Review.

2. That the Government reviews the accuracy and applicability of the WICS analysis to New Zealand council's water service provision, and considers other analysis and advice, including that provided by Castalia, Morrison Low and the Productivity Commission, to establish a more robust proposal.
3. That the Government urgently provides a revised reform timetable to allow councils to plan accordingly.
4. That the Government works with local government to develop more detailed, but accessible, information that enables councils to engage meaningfully with our communities on the reforms, including greater clarity over how the Government arrived at this proposed model.
5. That the Government does not mandate the reform proposal.

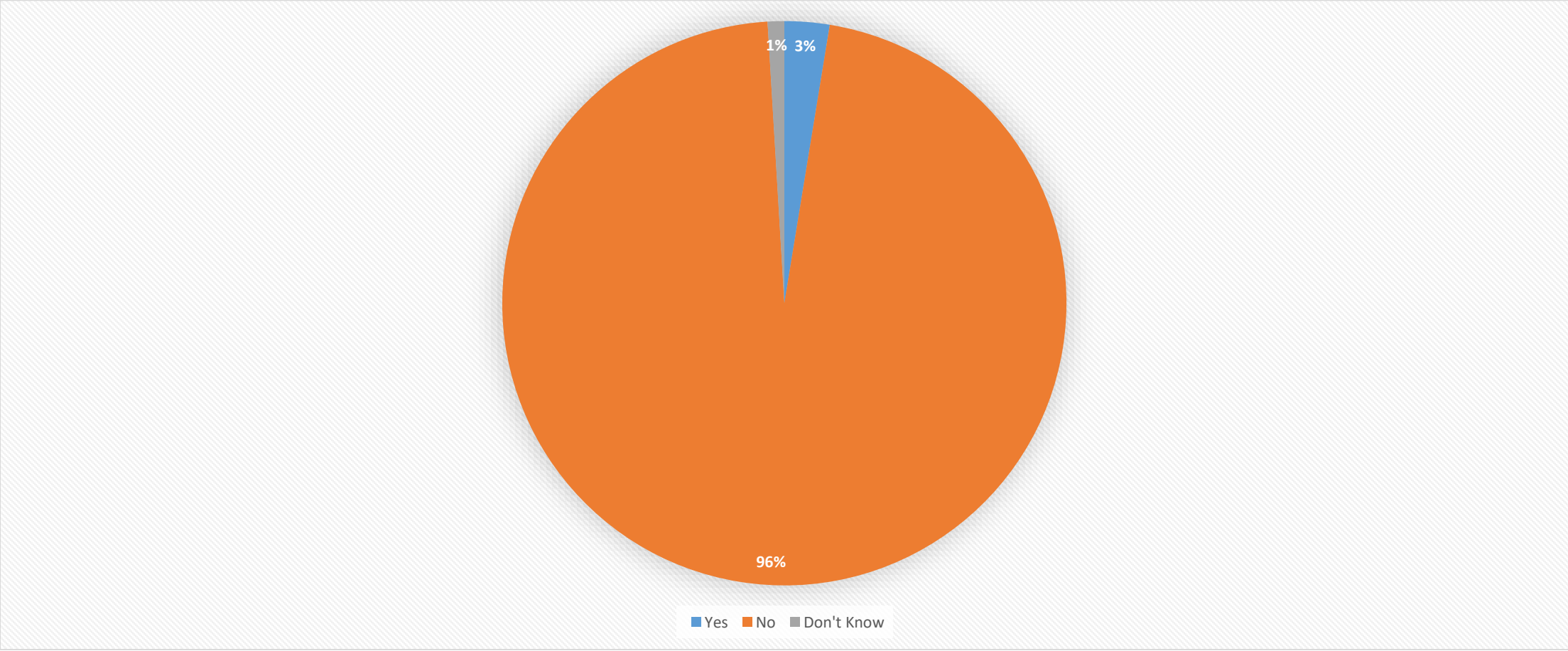
Nigel Bowen
Mayor of Timaru District Council

Timaru District Council Three Waters Survey

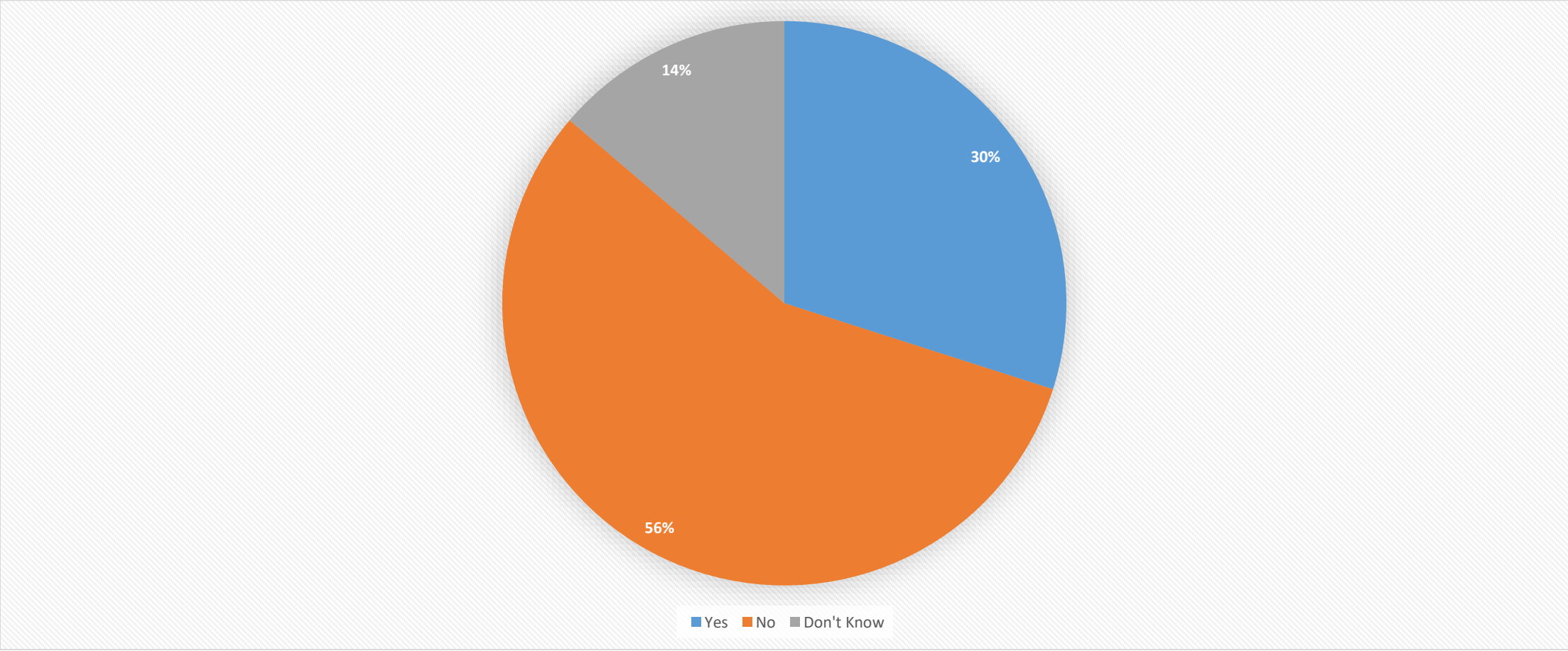
1496 responses received

TIMARU DISTRICT COUNCIL
Te Kaunihera ā-Rohe o Te Tihi o Maru

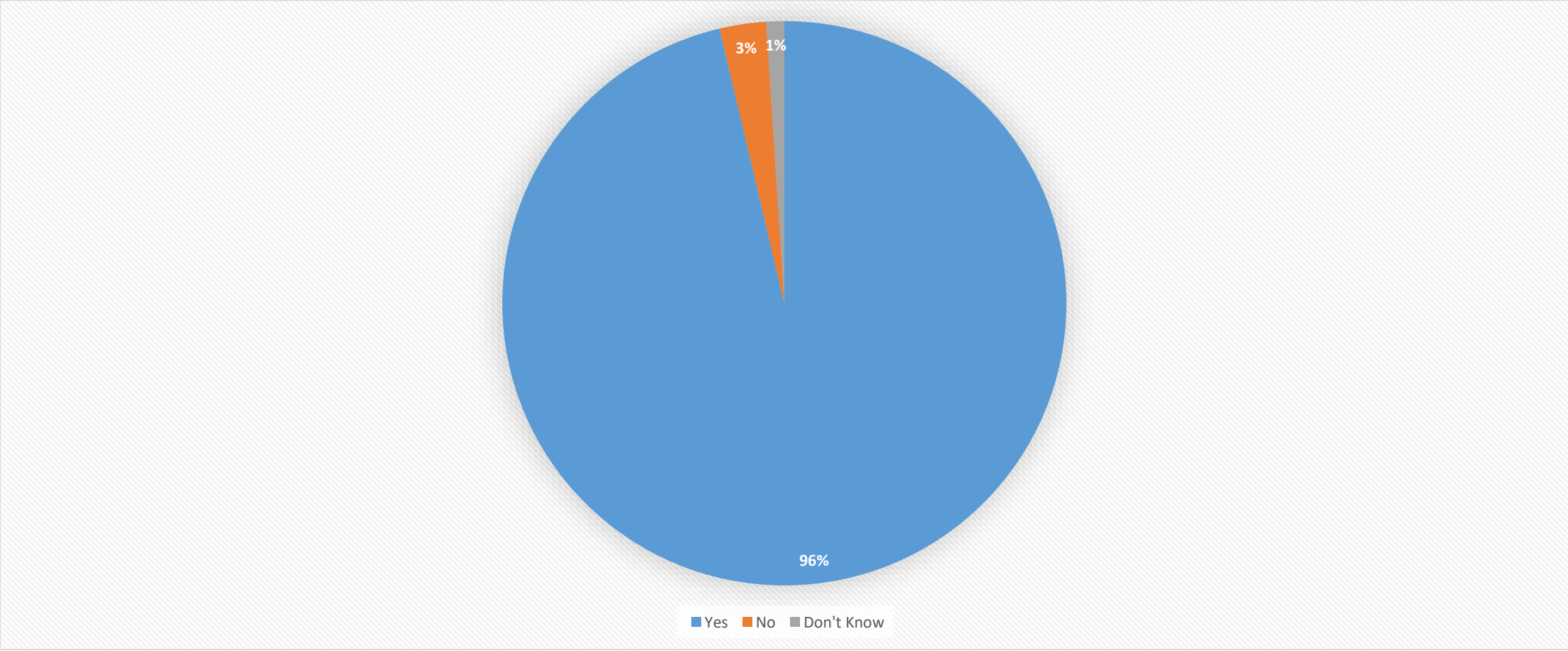
Question: With the information currently available, do you agree with the Three Waters service model proposed by Government?



Question: Do you feel that there should be stronger regulation over drinking water, waste water and stormwater?



Question: Is local control of drinking water, waste water and storm water services important to you?



Advice on Water Reform

Report to Timaru District Council

SEPTEMBER 2021

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Definitions

DIA	Department of Internal Affairs
IPART	Independent Pricing and Regulatory Tribunal
LGNZ	Local Government New Zealand
RFI	Request for Information
TDC	Timaru District Council
WICS	Water Industry Commission for Scotland

Executive summary

The government is proposing to reform the drinking, waste and storm water (three waters) sector. The reform will involve amalgamating the water services of the 67 local authorities into four new regional statutory corporations, with centralised management and a new governance structure. The structure will have indirect Board appointment rights for local authorities to be shared with mana whenua representatives.

The government proposes to amalgamate the water services of Timaru District Council (TDC) into a new statutory corporation called "Entity D" together with the water services of Ashburton, Buller, Central Otago, Christchurch, Clutha, Dunedin, Gore, Grey, Hurunui, Invercargill, Kaikoura, Mackenzie, Queenstown Lakes, Selwyn, Southland, Waimakariri, Waimate, Waitaki and Westland (the Reform Scenario).

The government has given TDC two choices, join the Reform Scenario or Opt-Out. TDC, along with other local authorities, has been asked by the government to consider the evidence and whether the government's proposal to reform the water sector will deliver benefits to its residents. The government also committed to providing Timaru with $19.9 million in funding under the "better off" package, an additional $3 million[1] for stranded overhead costs under the "no worse off" package, and further compensation for any loss in TDC's debt headroom. These amounts are to be part-funded from the balance sheet of the new entity.

Key question: will the Reform Scenario deliver the claimed benefits?

The key question for this report is whether the benefits for TDC that are claimed by the government are robust, and whether the Timaru community is likely to be better off with the Reform Scenario.

The Reform Scenario uses analysis provided by Water Industry Commission for Scotland (WICS), the Scottish government's regulator of its monopoly water provider Scottish Water. The WICS analysis and modelling underpins the case for reform. The government has relied on WICS for the claims that significant capital investment is needed in the New Zealand water sector, and that amalgamation into four separate entities with accompanying institutional changes is the only way to achieve the cost-efficiencies to make the reform affordable.

The government is promising that household bills will be four times lower in Reform Scenario than in Opt-Out

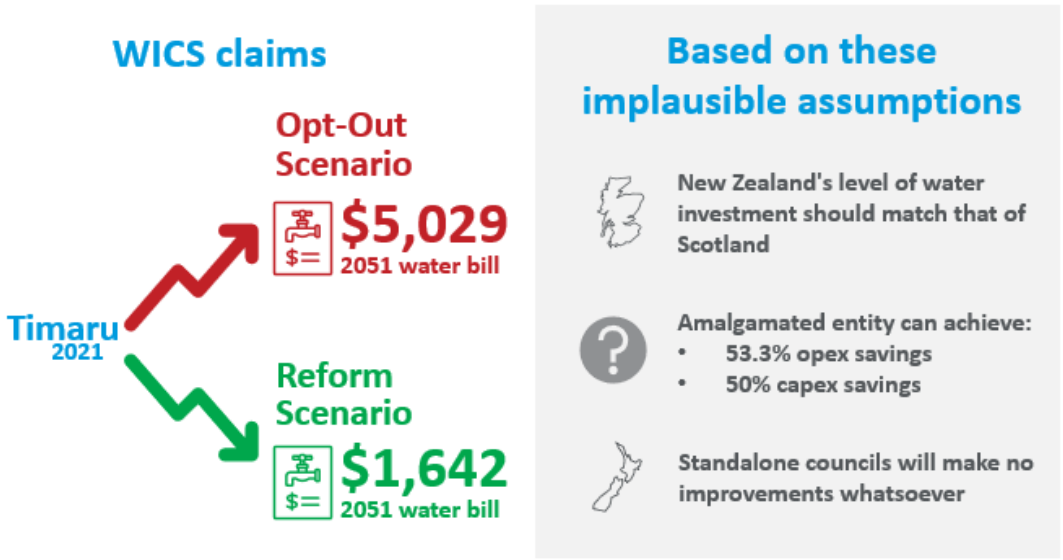
The government is promising that the Reform Scenario will deliver household bills that are about half the amount that would exist in the Opt-Out Scenario. The government claims that the Reform Scenario will deliver Timaru residents:

- Household bills that average $1,642 by 2051
- Improvements in service delivery and affordability
- Improvement in the ability to raise finance.

In contrast, the government's WICS analysis claims that if TDC provides water services as an opt-out provider, household bills will rise to $5,029 by 2051.

[1] We were advised of this number by TDC.

Figure 0.1: Government's predicted outcomes in Reform Scenario and Opt-Out Scenario



Reform Scenario is based on faulty assumptions and flawed analysis

The Reform Scenario is based on faulty assumptions and flawed analysis. The government has not shown with sufficient certainty to TDC that the claimed benefits of the Reform Scenario will materialise.

The benefits of the Reform Scenario rest on three key claims:

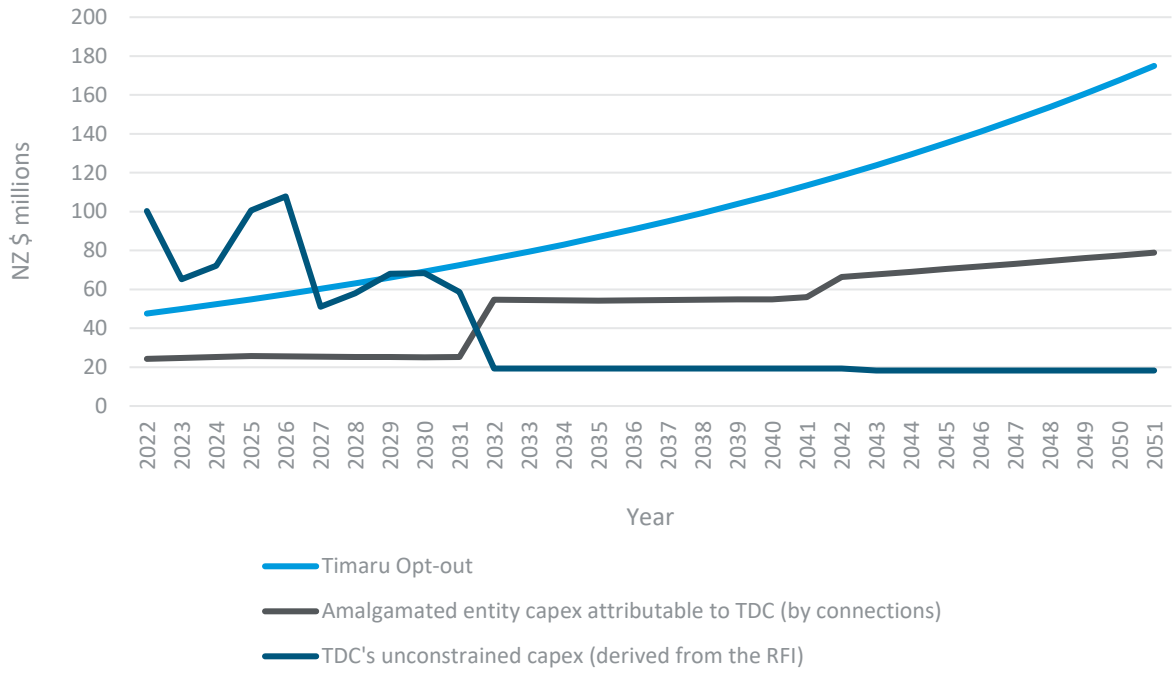
- That TDC (and New Zealand as a whole) needs to invest to match Scottish levels of water sector capital stock per resident
- The amalgamated entity will be able to achieve up to 53.3 percent in opex efficiency and up to 50 percent in capex efficiency compared to existing opt-out entities
- TDC as an opt-out entity will not improve over the next 30 years.

Required investment for TDC and for New Zealand as a whole is overstated

The Reform Scenario rests on WICS' modelling and manual adjustments that assume New Zealand will need significantly higher levels of capital investment over the next 30 years than is currently estimated in local authorities' own 10-year plans. The required capital investment, compared to TDC's own planned investment is illustrated below.

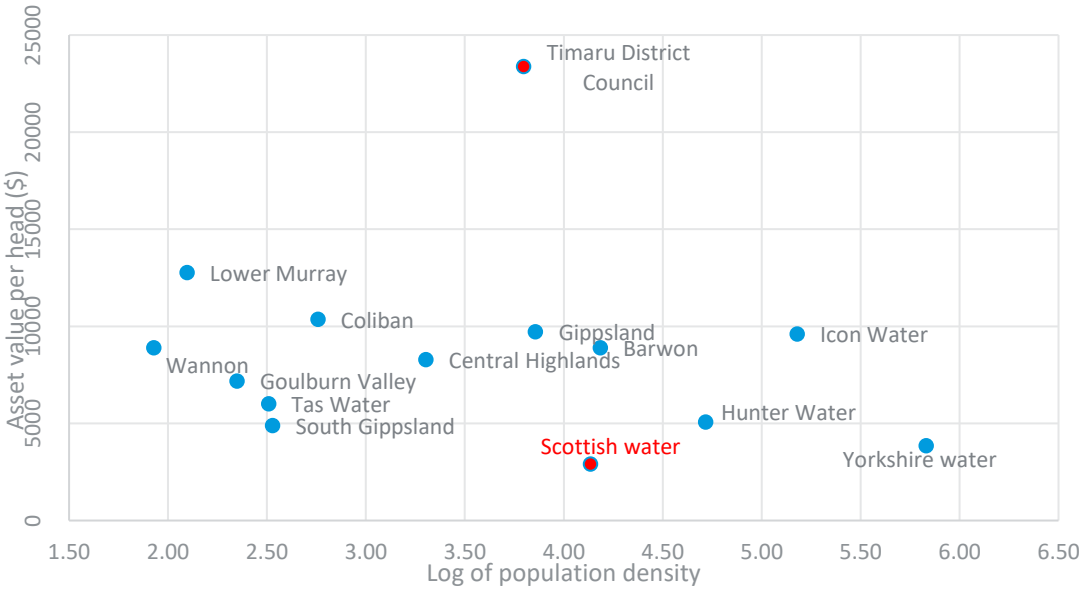
Figure 0.2 shows how WICS models a significant difference in net investment for TDC in the Opt-Out Scenario compared to TDC's own planned capital investment.

Figure 0.2: Net investment scenario for TDC under WICS models and TDC's own plan



However, in modelling the Opt-Out Scenario, WICS claims that TDC needs large capital investment increases from 2021 because WICS mechanistically applies a model based on Scotland, that WICS suggests shows that New Zealand requires water asset capital stock of up to $70,000 per capita. However, there is no strong evidence that Scottish asset levels are relevant to New Zealand in general, or to Timaru in particular. When we compare asset levels per capita to a wider range of water entities in Australia, which has closer similarities to New Zealand's urban geography than Scotland, the choice of the Scottish model is less clear.

Figure 0.3: 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. As a result, the asset value per connected citizen in this figure for Scottish Water and Yorkshire Water do not match the WICS figures illustrated in Figure 0.3. We included all vertically integrated Australian water utilities where recent replacement values were available.

Efficiency assumptions are implausible

WICS' modelling makes implausible assumptions about the efficiency in the Reform Scenario. The government assumes that the Reform Scenario will deliver 50 percent capital expenditure (capex) savings and 53.3 percent operating expenditure (opex) savings.

The capex saving is not grounded in any actual evidence, but rather on WICS' observations. The implausibility of capex savings has also been addressed in previous analysis by Castalia for Local Government New Zealand and the Joint Steering Committee. Economies of scale in capex are not available in New Zealand water services, except for minor potential cost savings in procurement.

The opex saving is also derived from Ofwat and Scottish observations. However, for TDC the opex efficiency is implausible because TDC already has comparable opex to the largest and most corporatized water provider Watercare in Auckland. Given the profile of TDC's opex, it seems unlikely that savings of 53 percent are possible.

TDC is likely to improve water service delivery if it opts out, yet WICS assumes no such improvements

In any case, TDC is likely to improve its services over the next 30 years, yet WICS' modelling assumes that TDC will make no efficiency gains under the Opt-Out scenario. As a result, the Opt-Out scenario, as modelled by WICS, likely overstates TDC's costs.

TDC will be subjected to water quality regulation, and obtain guidance and expertise from Taumata Arowai. Corporatisation and improved performance of other water service providers will lead to changes at TDC that drive better performance as TDC seeks to match the benchmarks set.

Economic regulation is likely to apply across the sector, not just to four amalgamated entities. The government's assumption that it cannot regulate all council-owned water services is inconsistent with the Commerce Commission's regulation of electricity distribution businesses and inconsistent with the experience in multiple overseas jurisdictions where economic regulators are capable of regulating many entities. Economic regulation is also likely to enable benchmarking and comparisons.

Financing changes would make significant impact to household water bills in Opt-Out and Reform Scenario

The 2051 water bill levels claimed by WICS change significantly with changes in the assumptions about the borrowing capacity of water service providers in the Opt-Out or Reform Scenario. In some parts of New Zealand, council balance sheet strength, LGFA limits and aversion to debt can limit efficient borrowing for long-lived infrastructure. Long-term debt instruments that match the life of the assets they finance is generally an efficient way to ensure that the beneficiaries of infrastructure bear its costs. The debt limit assumptions used by WICS for the Opt-Out Scenario have a material impact on the level of 2051 household bill. The 2051 bills would be 42 percent lower if WICS had assumed a higher debt-to-revenue limit. This is illustrated in Figure 0.4 below.

Figure 0.4: Average WICS bill per household under different financing options for TDC (Opt-out scenario)

	Average bill per household ($, 2051)	Average bill per household ($, 2021)	% Change (Decrease in bills)
250 % debt to revenue Limit (WICS model assumption)	9,872	5,029	-
280 % debt to revenue Limit	9,0938	4,633	7.89
500 % debt to revenue Limit	5,758	2,933	41.67

TDC should examine how it can provide a constructive counter-proposal to the government

The government's evidence base and analysis does not establish if the reforms provide a net benefit to TDC. We recommend that TDC carry out a proper net benefit analysis, potentially with other local authorities that have a similar viewpoint. This is likely to be many councils, since the WICS analysis has consistent faults that apply to all local authorities.

Water services are critical to wellbeing, so it is very important that the full range of options are considered that are locally appropriate. Other than opting out, the Reform Scenario is the only option that has been presented to TDC and other local authorities.

We recommend that TDC carry out a net benefit analysis that includes the full range of options together with transparent data, sound and contestable analysis so these options can be properly evaluated.

There is plenty of analysis, evidence and now a rich data set in the RFI responses for TDC and like-minded local authorities to be able to identify alternative and better reform options. TDC could prepare a constructive counter-proposal that achieves desirable objectives, while avoiding the risks and costs of the Reform Scenario.

1 Introduction

The New Zealand government is proposing to reform the drinking, waste and storm water (three waters) sector. It proposes to amalgamate the three waters services of the 67 local authorities into four regional public corporations.

The government is proposing to amalgamate TDC's water services into a new statutory corporation called "Entity D" together with the water services of Ashburton, Buller, Central Otago, Christchurch, Clutha, Dunedin, Gore, Grey, Hurunui, Invercargill, Kaikoura, Mackenzie, Queenstown Lakes, Selwyn, Southland, Waimakariri, Waimate, Waitaki and Westland (the Reform Scenario). The government has presented the only alternative to the Reform Scenario as being a situation where TDC remains as a standalone water service provider under council control (the Opt-Out Scenario).

This report analyses the evidence underpinning both the Reform Scenario and the Opt-Out Scenario as follows:

- The Reform Scenario is analysed, and its underlying assumptions tested to determine whether the stated level of household bills is robust (section 2). Specifically the analysis reviews:
  - The estimates of the required level of assets for the Reform Scenario (section 2.1)
  - The estimated efficiencies apparently available in the Reform Scenario (section 2.2)
  - Other aspects of the methodology that raise questions (section 2.3).
- The Opt-Out Scenario is analysed and its underlying assumptions tested to determine whether the stated level of household bills is robust (section 3)
- Finally, the risks and costs to the TDC community with the Reform Scenario are examined (section 4).

2 Government's Reform Scenario produces implausible household bill estimates

The Reform Proposal predicts household bills for 2051. The WICS analysis rests on two key assumptions: First, that the capital stock invested in New Zealand water services needs to increase by a very large amount. Second, that the Reform Scenario will deliver large efficiency gains compared to the Opt-Out Scenario. In our view, WICS' assumed scale of required increase in capital stock, and of the achievable efficiency gains under the reforms, are both implausible.

2.1 Required investment estimate is overstated

The government's case for reform rests on a claim that New Zealand water services require a significant capital investment over the next 30 years. The government relies on WICS advice and analysis to set the level of investment for the Reform Scenario from 2021 to 2051.

WICS' modelling is entirely based on a top-down, New Zealand-wide assumption that a massive nationwide investment programme is necessary for all council water services. This is despite TDC and all other local authorities submitting detailed bottom-up information about planned capital investment.

Capital investment is needed in some parts of New Zealand now and in the next 30 years to meet the demands of growth and due to historical deferred and underinvestment. There have been high-profile asset failures. However, it is not clear that the investment is needed in all places, at the scale WICS claim.

WICS are selective in estimating the nationwide required investment amount. WICS also use inappropriate Scottish comparators to support its claim that New Zealand needs to invest at equivalent levels. WICS' estimate of required investment is significantly higher than the levels of investment that asset-owner TDC has estimated will be required.

WICS used projected investment requirements across three investment types that include replacement or renewal investment, enhancement investment, and growth investment projections. These projections are based on assumptions relating to asset lives, replacement costs, inflation, population density, and projected connections growth.

2.1.1 WICS approach to estimating required investment is unsound

In order to estimate the required investment, WICS uses English and Scottish comparators. WICS allocated New Zealand-wide investment requirements for councils based on statistical relationships and observed experiences in England and Scotland. The total investment required is made up of two key components that include 'enhancement and growth' and 'asset replacement and refurbishment'.

WICS modelled the required investment using three approaches. WICS then cross-checked the modelled investment against information gathered from councils' RFI responses. The modelled investment from the three approaches, plus investment specified in councils' RFI responses are summarised in Table 2.1.

WICS took three steps with each of its three modelling approaches:

- Step 1 is to apply econometric models to predict New Zealand's investment needs
- Step 2 is to manually adjust the Step 1 estimate for differences in growth
- Step 3 is to apply a cap of $70,000 to reflect an assumption about the ability to pay for the investment.

Table 2.1: WICS modelling approaches for required investment

	Approach	Enhancement and Growth Investment ($ billions)			Asset replacement and refurbishment ($ billions)	Total Investment [2] ($, billions)
		Step 1: Unadjusted model output (NZ $, billions)	Step 2: Manual adjustment for "differences in growth"	Step 3: Apply cap of $70,000 per connected citizen		
1	Great Britain comparative Models	49 – 69	63-83	57-77	63-77	120-154
2	Scotland only comparative models (WICS preferred)	73- 99	87 -113	77-100	70-86	148-185
3	Asset value comparisons with UK[3]	52-57	81-85	77-81	70-79	148-160
	Information included in councils' RFI	53	*N/A*	*N/A*	61-69	115-122

Source: WICS Final Report

WICS makes no adjustment for the overlapping nature of growth and replacement investment

We note that, in practice, when enhancement and growth investment takes place, the new upgraded assets often replace at least some ageing assets, thus reducing the need for replacement expenditure. WICS' approach appears to have made no adjustment for this, since the total investment is calculated as the simple sum of 'enhancement and growth' and 'asset replacement and refurbishment', and the estimates for the two categories are derived separately, with no consideration of interaction between the two. This means that WICS' total investment estimate will be overstated.

WICS' preferred model appears highly selective

WICS' models in approaches '1' (Great Britain comparative) and '3' (comparing asset values) produce a level of enhancement and growth investment in Step 1 that is broadly consistent with councils' RFI responses.

Yet despite the consistency with councils' own estimates of investment, WICS' preferred model is approach '2'. Approach '2' reports significantly higher required levels of investment.

[2] Total investment is calculated adding enhancement and growth estimates taken from estimates after applying a cap of NZ$70,000 per connected citizen and the asset replacement and refurbishment expenditures. The range represents the modelled low and high values of investment requirements.

[3] This approach is briefly explained by WICS to use projected investment that is required to match the levels of asset values per connected citizen in the UK and Scotland for 2020 after adjusting for depreciation and connection differences.

WICS Step 2 and Step 3 adjustments to its models are unsound

WICS' 'enhancement and growth investment' models in approaches '1' and '2' are apparently driven by population density.[4] That is to say, the models should automatically predict the required level of investment, given population density in New Zealand. However, WICS has manually increased the required level of investment to "adjust for differences in growth".

WICS then make a further manual adjustment and impose an investment constraint cap of $70,000 per connected citizen due to affordability concerns, because mechanistically applying the Scotland comparator (Step 1) and manual adjustments (Step 2) leads to even higher and even more implausible levels of investment.

WICS ignored local authorities' own estimates of required investment

All local authorities in New Zealand agreed to provide the government with comprehensive information about water services during the Request for Information (RFI) phase in mid-2020. The RFI responses included a full picture of all local authorities' planned water sector investment.

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

2.1.2 Required investment level is based on inappropriate Scottish comparators

WICS estimate of New Zealand's water investment needs is based on an assumption that it must match investment levels in Scotland. This is justified on the grounds that NZ has a relatively lower level of urbanisation.[5] However, WICS does not use urbanisation figures in its analysis. Instead, it uses population density, which is a different concept.

WICS concludes 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.

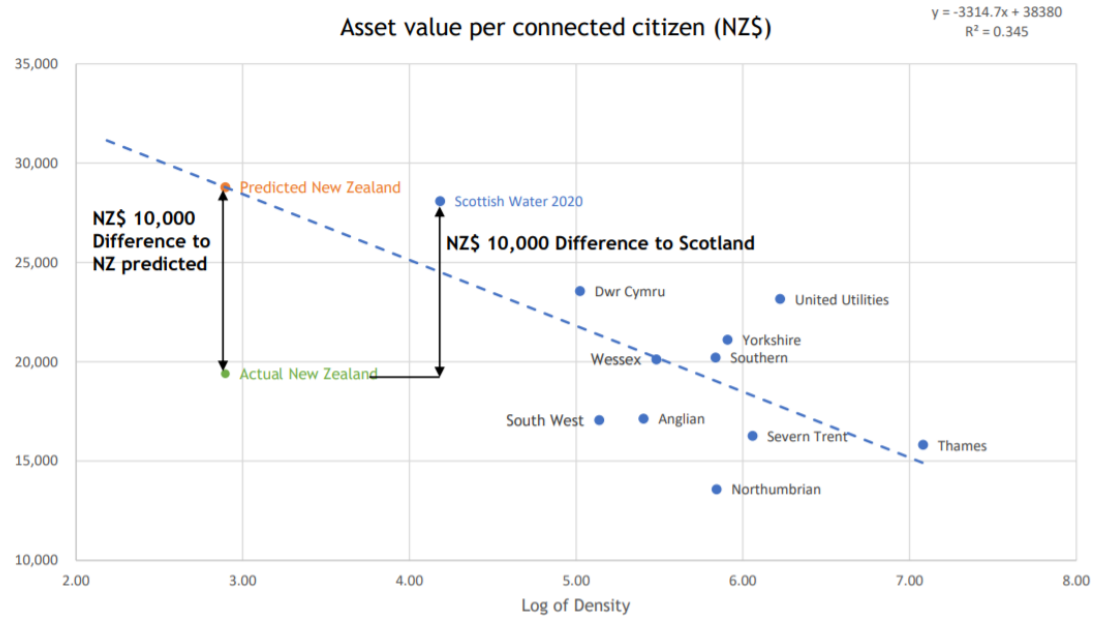
WICS predicts New Zealand's water investment needs based on correlation with population density

WICS identifies a correlation between English and Scottish drinking water and wastewater asset value levels and population density. This is illustrated in Figure 2.1, which we reproduced from WICS report. Based on the correlation between asset value levels and population density, WICS suggests that NZ investment needs to rise significantly. According to this correlation, New Zealand's top-down, national-level required investment is $10,000 lower than it should be.

[4] WICS supporting material 1 – required investment (slide 33), https://www.dia.govt.nz/diawebsite.nsf/Files/Three-waters-reform-programme/$file/wics-supporting-material-1-required-investment.pdf

[5] 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

Figure 2.1: New Zealand's asset gap according to WICS



Source: WICS final report

Population density is not a good predictor of required asset value levels

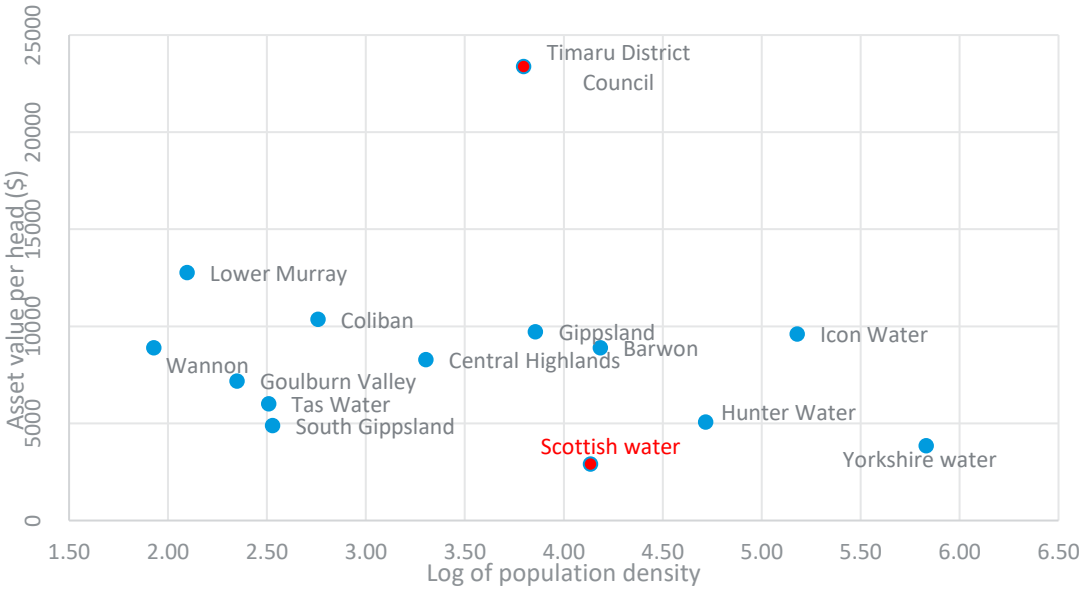
However, WICS does not show how the weak correlation in Scotland and England might predict water investment needed in New Zealand. No causal link is drawn. We were also unable to reconcile WICS' Asset value per connected citizen figures for Scottish Water and Yorkshire. They are much higher than what is implied by the asset values listed in those entities' annual accounts. It is possible that WICS may be using undepreciated replacement values for the assets of those entities, which should not be compared to the optimised depreciated replacement values submitted by TDC.

We analysed other regulated water utilities, including in Australia, to determine whether there was a clear relationship between asset level per connected citizen and population density. Australia has some similarities with New Zealand in that its population is highly urbanised, but 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). Figure 2.2 shows a plot of asset value per connected citizen for water utilities in Australia, Scottish Water, Yorkshire Water and TDC.

For our analysis, we used asset values from the relevant entities' annual reports. As a result, the asset value per connected citizen in this figure for Scottish Water and Yorkshire Water do not match the WICS figures in Figure 2.1.

There is a very weak relationship between population density and asset value per connected citizen as identified by WICS. Figure 2.2 shows that by adding or removing comparator water providers, the correlation line could change markedly.

Figure 2.2: 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. As a result, the asset value per connected citizen in this figure for Scottish Water and Yorkshire Water do not match the WICS figures illustrated in Figure 2.1. We included all vertically integrated Australian water utilities where recent replacement values were available.

There are significant differences between Scotland and New Zealand geographies

Scotland is not a relevant comparator for New Zealand water services because of 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, WICS has not investigated why Scotland's geography is a good predictor of New Zealand's water investment needs.

The total land area and the geographical distribution of the populations are very different. WICS incorrectly assumes 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 2.2: Urban population statistics of New Zealand and Scotland

	Population density (people per sq. km of land area)	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[6]	11.6 (Glasgow)	-0.06[7]

Source: World Bank Indicator Database, 2020

2.1.3 WICS' required investment estimate is higher than TDC's investment plans

TDC's investment plans in its 10-year plan and longer-term investment planning are significantly lower than the WICS estimates for the Opt-Out Scenario. TDC's RFI response revealed to WICS that its planned investment is significantly below the level that WICS' model predicts. This is despite the TDC having a higher level of asset value per connected property as Auckland's Watercare, the largest water provider and, according to WICS, the most sophisticated and corporatised. The net assets per connected property was $23,732 for Auckland and $40,324 for TDC in 2020.[8] Moreover, TDC compares even more favourably than Scottish Water in terms of asset values per connected citizen, as illustrated in Figure 2.2 Some of this difference may be explained by the larger proportion of commercial and industrial water consumers in Timaru. These customers typically have significantly higher demand that residential customers, which increases the net assets per connected property. For water services, 87 percent of TDC's connections are residential compared to 93 percent for Watercare's connections.

Figure 2.3 illustrates the difference between WICS' modelled net investment needs for TDC, and TDC's own planned capital investment.[9] TDC disclosed a level of investment that is higher in the near term. We also calculated the capital investment attributable to TDC in Entity D using WICS' model and find that it is lower and comparable to TDC's own investment plans..[10]

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

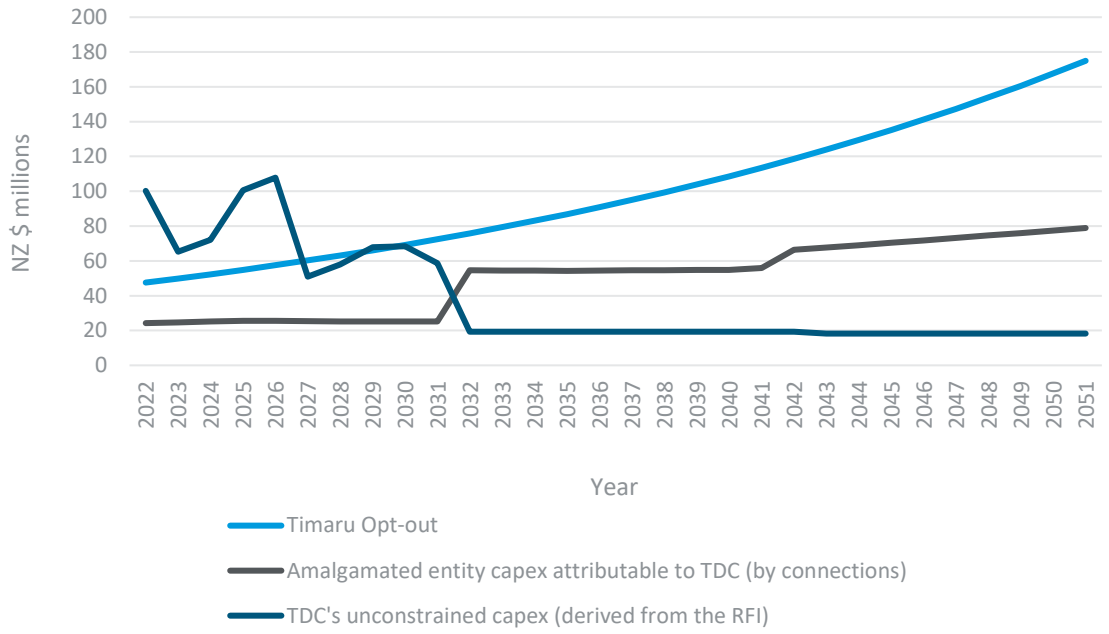
[7] Urban population as a percent of total population has decreased by 0.06 percent between 2018 and 2019. https://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/2011-based-special-area-population-estimates/population-estimates-by-urban-rural-classification

[8] Calculated from TDC's RFI response and Auckland Council Information.

[9] Total investment for unconstrained scenario is derived from its Long-Term Plan and internal capital investment planning to 2051.

[10] Amalgamated entity investment attributable to TDC has been calculated by attributing the net investment from the WICS models for Entity C proportionate to the total number of connections for TDC.

Figure 2.3: Net investment scenario for TDC under WICS models and TDC's own plan



2.2 Efficiency estimates for Reform Scenario are implausible

WICS uses efficiency assumptions in its analysis of the amalgamated entity (Entity D). The efficiency assumptions drive significant cost savings for the Reform Scenario. WICS assumes that:

- Capital expenditure (capex) efficiency will reach 50 percent
- Operating expenditure (opex) efficiency will reach 53.3 percent

It also assumes a total factor productivity efficiency improvement of 0.4 percent per annum for the Reform Scenario but not for TDC as an opt-out entity. These efficiency estimates are highly implausible.

2.2.1 Capex efficiency estimates are implausible

WICS claims that the Reform Scenario will result in 50 percent lower capital costs. WICS claims that Entity D will progressively improve its capex efficiency so that by 2041 it is saving 50 percent per annum. That is, by 2041, for each $0.50 invested, Entity C will get $1.00 of capex value. This is an implausible assumption for the following reasons:

- The assumption is not sourced to any credible authority or from any observed experience that is relevant to New Zealand
- WICS has not shown how Scottish Water capex has any bearing on New Zealand water services and geography
- Entity D councils have already achieved available economies of scale
- Only very minor economies of scale are available in New Zealand water services

- The assumption has been criticised by government-appointed peer reviewers
- The assumption does not consider diseconomies of scale.

The Entity D model results are highly sensitive to this assumption, so if it is wrong, the benefits of the Reform Scenario change drastically.

WICS capex efficiency is based on a single source of information

WICS capital expenditure assumption is based solely on a belief that it "seems reasonable to expect a reformed three waters industry in New Zealand to match the efficiency improvement of the industry in Scotland and by the water and sewerage companies in England and Wales." 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. This quantitative analysis has not been substantiated in any documents released to TDC. There are many reasons why Scottish Water may have improved reported capital expenditure efficiency. These reasons are likely to be specific to Scottish Water. Decision-makers need an explanation of those reasons to understand whether the same improvements can be achieved in New Zealand entities. WICS provides no such explanation.

The citation used in the Entity D model[11] is also misleading. WICS incorrectly cites the source for the capital efficiency improvement as "based on observed experience from GB". However, the actual source of WICS' capital efficiency assumption is not Great Britain at all. Rather WICS cites[12] the single observation of claimed efficiency improvements by Scottish Water from 2002-2021.

WICS claims that the capex efficiency will come from:

- Economies of scale
- Clarity of policy priority
- Robust water quality and environmental regulation
- Economic regulation
- Excellence in management.

WICS does not disclose the relative contribution of these factors to the total 50 percent efficiency gain. In section 3 below, we discuss how water service providers in the Opt-Out Scenario are likely to improve as a result of the improved water quality regulatory regime, how management may improve, and how it is possible that economic regulation could apply to other water services (not just the amalgamated entities).

Scotland is an inappropriate model for Entity D

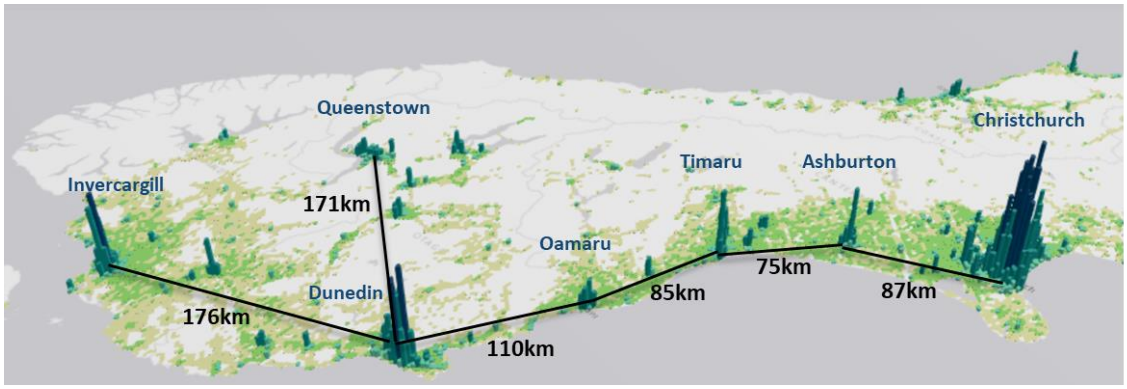
The population within the Entity D boundaries live across a large geographic area, in a mixture of mostly urban settings. There are significant distances between each urban area. TDC's neighbouring councils are Ashburton in the North, Mackenzie to the West and Waimate in the South and Waitaki beyond that.

[11] And in the models for Entity A, Entity B and Entity C.

[12] WICS slidedeck "Entity D: the use and analysis of the RFI information and other benchmarks", available at: https://www.dia.govt.nz/Three-Waters-Reform-Individual-council-models-and-slidepacks

Within Entity D there are cities (Christchurch, Dunedin, Queenstown, Invercargill, Timaru) and urban townships which almost all have significant distances between them. The two main cities, Christchurch and Dunedin, are separated by over 300km.

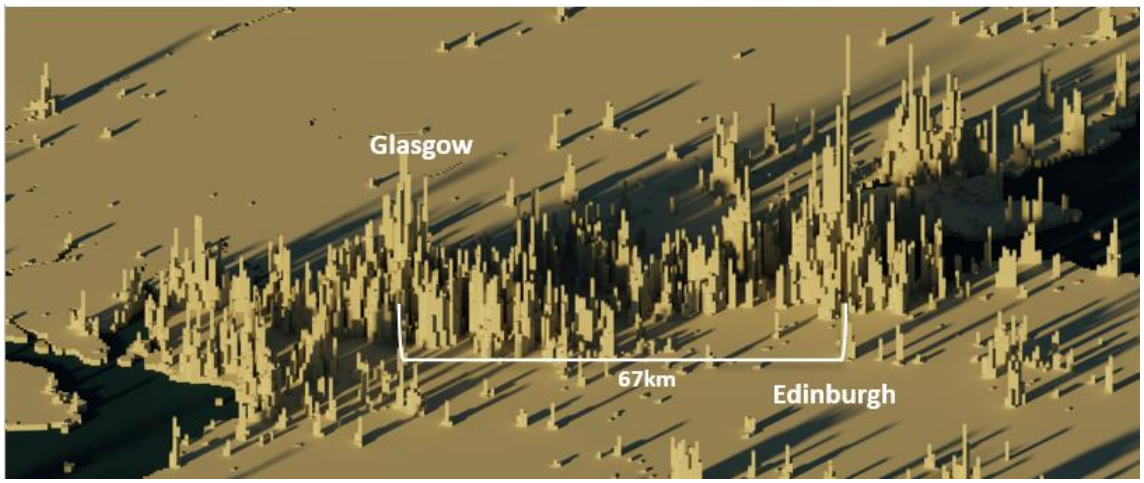
Figure 2.4: Population densities in Entity D area



Statistics NZ, available at: https://statsnz.maps.arcgis.com/

This is different from Scotland, where most of the population lives in the narrow band that is between and around Glasgow and Edinburgh (Figure 2.5). There is potential for agglomeration efficiencies and for networks to achieve some scale benefits based on proximity alone.

Figure 2.5: Population density (persons per square kilometre) in Scotland



Data Source: https://www.worldpop.org/ (3D map generated by Castalia)

In contrast, the population of proposed Entity D live in urban areas with reticulated networks, or rural areas with rural water schemes or self-supply. There are significant distances between the urban towns. This means that the "asset optimisation" potential (that is, the ability to consolidate water networks between towns) is likely to be much lower than as claimed by WICS due to significant distances between New Zealand towns. This means the claimed capex savings are unlikely.

Economies of scale are not available in water services from amalgamations at the level WICS claims

Castalia has previously advised DIA, LGNZ and the Joint Steering Committee that the economies of scale claimed in WICS' 2020 slidedecks from administrative amalgamations were implausible. In New Zealand, only minor economies of scale are achievable through institutional reform, and these will be mostly in management and procurement (not infrastructure capex).[13] Castalia showed that economies of scale are unlikely to be available in New Zealand on the basis of the evidence presented by WICS, Frontier Economics and in the economic literature relied on by the government. The findings in Castalia's 2020 Economies of Scale report have not been rebutted.

WICS claims that the 50 percent capex efficiency gain emerges when water entities achieve a population of 800,000 or more. It also claims that entities serving a minimum population of 59,000 increase capex efficiency as they approach the 800,000 population number. This claim has no basis in the economic literature.

In fact, the literature that looks at the specific question of whether economies of scale are available from administrative amalgamations find that there are none except in highly specific circumstances, not present in New Zealand. Economies of scale estimate is based on non-credible evidence

When preparing the 2020 Economies of Scale report, Castalia reviewed the WICS 2020 slidedecks. Access to the underlying models and assumptions was refused. In the 2020 Economies of Scale report, we were advised[14] that the economies of scale assumption was based on England, Wales and Scotland observations. However, we now know that the supporting evidence for the 50 percent capex efficiency is a single Scottish observation from 2002-2021.[15]

WICS economies of scale claims are rejected by peer reviewers FarrierSwier

FarrierSwier peer-reviewed WICS' approach and had access to 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".[16]

FarrierSwier also state "significant care should be taken when relying on the capital efficiency gaps estimated by WICS. This is particularly important, given the significant step up in investment forecast for the 30-year period and the role that the capex efficiency assumption plays when estimating benefits from amalgamation and associated reform." Like Castalia, FarrierSwier express concern with the sensitivity analysis approach.

Diseconomies of scale not considered

Diseconomies of scale can emerge from administrative amalgamations in water services. This was not considered in WICS' modelling.

WICS has overlooked a relevant case from Australia. In 1992, Melbourne and Metropolitan Board of Works merged with several smaller urban water authorities to form Melbourne

[13] Castalia (2020), Analysing Economies of Scale in New Zealand Water Services: Report to Local Government New Zealand

[14] Conference call between Castalia and WICS (Alan Sutherland) on 20 August 2020

[15] WICS (2021), Slidedeck "Entity C: the use and analysis of the RFI information and other benchmarks", available at: https://www.dia.govt.nz/Three-Waters-Reform-Individual-council-models-and-slidepacks

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

Water. However, in 1995, the entity was disaggregated, and Melbourne Water reformed to become a wholesale water company only. City West Water, South East Water and Yarra Valley Water became separate retail water companies..[17] Several studies confirm that the three disaggregated retail water entities achieved significant cost efficiencies and service level improvements compared to Australian and international water companies since the disaggregation of Melbourne Water..[18] A benchmarking analysis using data from 2002-2003 concluded that the three separate retailers performed "at or near the determined efficiency frontier"..[19] It also made major improvements in customer services in comparison to major urban water authorities in Australia. Melbourne's disaggregated water entities even performed better than UK water companies, according to Ofwat..[20]

2.2.2 Opex efficiency estimates are implausible

Efficiency estimates derived from econometric studies in the UK are used in the Reform Scenario to drive a claimed 53.3 percent saving in opex.

WICS use econometric models to claim that opex efficiencies of 53.3 percent are possible

WICS has used an Ofwat 2004 econometric model to estimate that, after reform, Entity D can achieve up to a 53.3 percent efficiency improvement to operating expenditure (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 53.3 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..[21]

From observations of UK data, larger water entities – those serving populations greater than 800,000, realised larger efficiency improvements than smaller entities. As such, WICS assumes that given the small size of individual councils in New Zealand, the councils will not be able to fully realise the predicted efficiency improvements if they do not amalgamate.

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17 Melbourne Water website, accessed in August 2021, available at: https://www.melbournewater.com.au/water-data-and-education/water-facts-and-history/history-and-heritage/timeline-our-history

18 Water Ways: Inquiry into Reform of the Metropolitan Retail Water Sector (2007). https://www.dtf.vic.gov.au/sites/default/files/2018-02/reform-of-the-metropolitan-retail-water-sector-inquiry.pdf

19 Coelli and Walding (2006), "Performance measurement in the Australian water supply industry: A preliminary analysis." Performance measurement and regulation of network utilities, 29-61.

20 Annual Report 2007-08 (Ofwat) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/250280/0589.pdf

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

TDC does not appear to have significant opportunity for opex savings

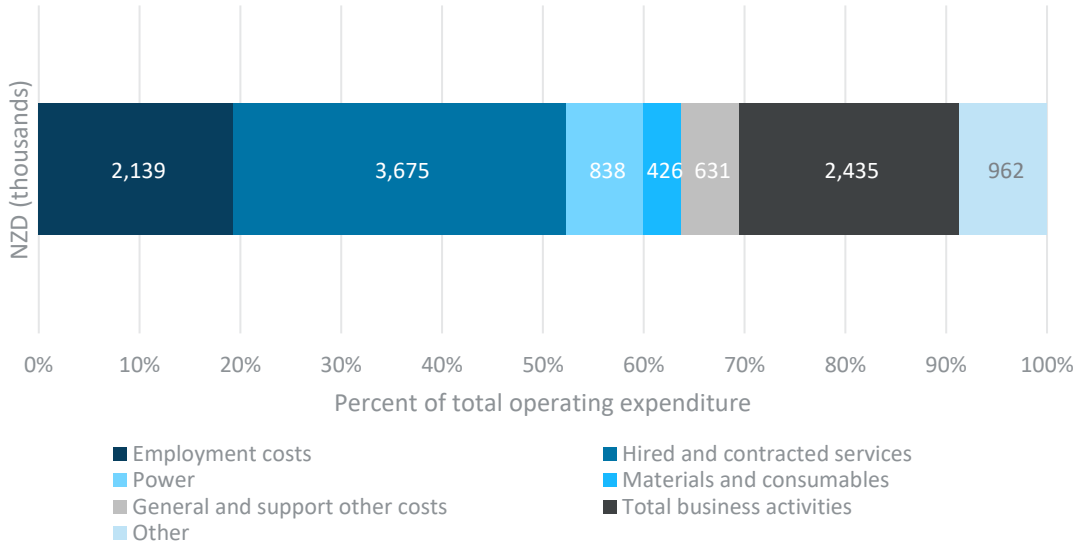
A 53.3 percent reduction in TDC's opex costs appears implausible given the nature of those costs. Approximately 19 percent of TDC's opex is employment costs. 33 percent of opex costs are for hired and contracted services. 10 percent is spent on power and materials and consumables.

Labour cost reductions, including direct employment costs and hired and contracted services, would not be expected to decrease, based on promises of no job losses from government representatives and Three Waters Steering Committee members:

- Rachel Reese, Mayor of Nelson and Three Waters Steering Committee member stated: "all of our staff in our organisations… you will have a guaranteed role in the new service entities. The role will retain the features of your current role; your salary, your terms, and your location."[22]
- Grant Robertson, Minister of Infrastructure said, "The recognition of the workforce… the current workforce involved in this space… this is more work here, more jobs here, higher paid jobs here, that transitional process must include that workforce and must include you, and I want to give that commitment to you today."[23]

Power costs will not reduce significantly as a result of administrative amalgamations. Some minor cost savings are possible for materials and consumables in the Reform Scenario (for example, as a result from buying in bulk). However, none of the opex costs are likely to fall by 53 percent. Figure 2.6 illustrates the opex breakdown.

Figure 2.6: TDC three waters operating expenditure breakdown



Source: Timaru District Council RFI, averaged data from 2019-2021
'Other' includes Local Authority Rates, Service Charges and Other Direct Costs

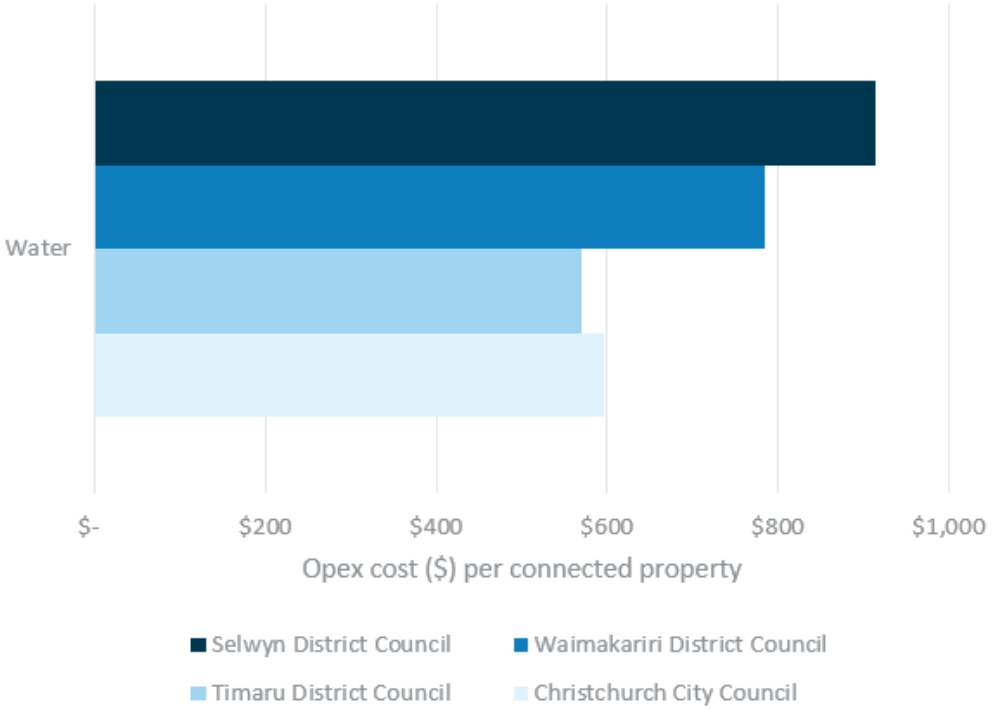
[22] Rachel Reese, Mayor of Nelson and Three Waters Steering Committee member – Thursday 15th July 2021, LGNZ Conference Speech [00:23:12:00], available at https://www.lgnz.co.nz/about/lgnz-conference/2021-lgnz-conference/videos-conference-2021/

[23] Grant Robertson, Minister of Infrastructure – Thursday 15th 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/

TDC's opex costs are similar to Watercare's suggesting TDC is already performing efficiently

It is useful to compare TDC's opex to other water service providers in New Zealand. In Figure 2.2 we see that compared to the largest and most corporatised water service provider in New Zealand, Watercare in Auckland, TDC has comparable opex. Despite serving a significantly smaller customer base compared to Auckland (~19,500 compared to ~525,000 connected properties) TDC has similar opex per connected property as Watercare in Auckland: $570 compared to $528. Compared to Christchurch City Council, the largest water provider in Entity D with approximately 143,000 connected properties, TDC has a lower opex per connected property: $570 compared to $596 in Christchurch. This suggests that TDC is already operating to a level of efficiency comparable to that of Christchurch City Council and Watercare, which ought to both be achieving some opex efficiencies due to size under WICS' logic.

Figure 2.7: Water opex per connected property for different water service providers in South Island



Source: Timaru and Auckland RFI, WICS Christchurch City Council: the use and analysis of the RFI information and other benchmarks

TDC, and other local authorities 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). TDC contracts CityCare Water to maintain its water reticulation assets.[24]

As detailed above, outsourced services amount to around a third of TDC's annual opex costs. Outsource providers already achieve economies of scope and scale across regions and

[24] CityCare water website: https://www.citycare.co.nz/news-and-views/supporting-timaru/

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 is implausible.

2.3 WICS analytical approach has other methodological flaws

WICS' analytical approach has a range of other flaws.

WICS uses an unconventional method that back-solves the revenue path

Typical best practice for calculating the cost of service and tariff levels for water utilities and other regulated services in developed and developing countries is to use the "building blocks approach". The building blocks approach is used by the New Zealand Commerce Commission for a range of regulated infrastructure industries, Australian water economic regulators such as IPART and Essential Services Commission, and by Ofwat in the UK. The building blocks approach reveals a more accurate cost of service, and therefore the revenues required to meet costs.

However, WICS uses a novel method to estimate household bill levels. The projected revenues which result in the "household bills" are calculated based on a hard coded revenue path. Typically, a model used to predict costs (and therefore revenues required to cover costs) should determine the revenue path as an output of the model, informed by the assumptions. However, the revenue path is back solved and has been hard-coded to align with the debt ratios (250 percent of revenue for the Opt-Out Scenario).

Key discretionary assumptions made by WICS inevitably lead to the Reform Scenario demonstrating superior results

WICS modelling approach uses a number of key discretionary assumptions that are highly favourable for the Reform Scenario and highly unfavourable for the Opt-Out Scenario. With such assumptions, it was inevitable that WICS modelling would reach the conclusions that it did.

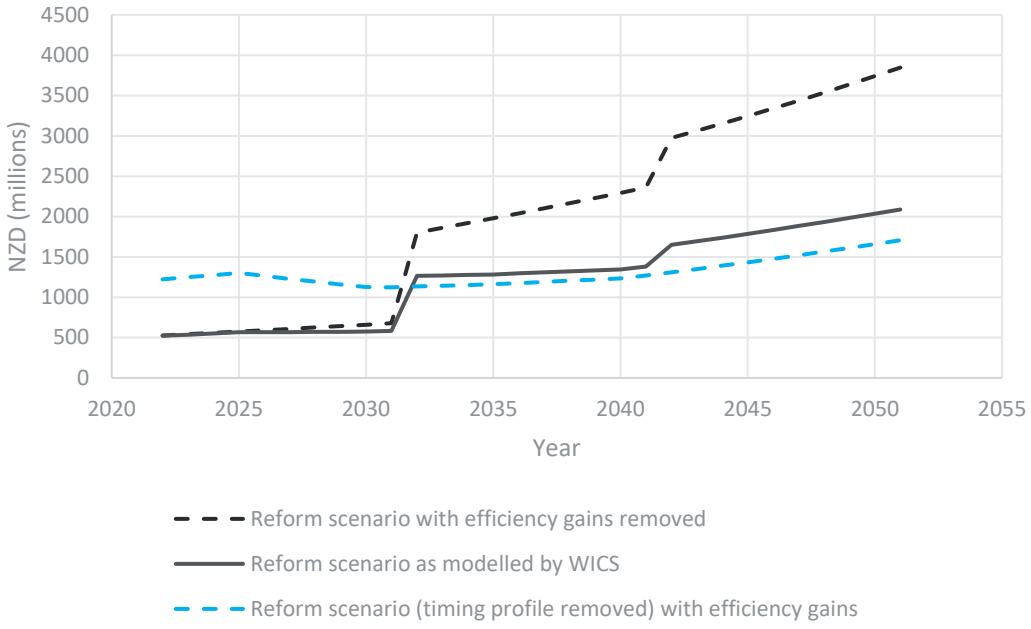
The model assumes that capex efficiency can only begin to be realised if the council's population size is greater than 59,000. The efficiency factor increases progressively to 50 percent when a threshold of 800,000 population is crossed. This 'limit' set by WICS automatically assumes that many councils, including TDC, will not realize any efficiency gains, while every amalgamated entity will realize efficiency gains of over 50 percent.

Further, the net investment profile is modelled differently in the Reform Scenario compared to the Opt-Out Scenario. In the Reform Scenario, WICS has only included the large investment requirements after 2031. Yet, in the Opt-Out Scenario, WICS included the large investment requirements from 2021. The effect is that, 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 to be realised.

The figure below demonstrates the effect of WICS' time-profile adjustment on the Reform Scenario. The solid black line shows WICS' stated new investment path, while the blue dashed line shows what that path would have been without the manual adjustment WICS made to the

time-profile of the investment. For illustrative purposes, the black dashed line also shows what the new investment path looks like before WICS applies efficiency gains.

Figure 2.8: Impact of time-profile adjustment on new investment path under the reform scenario



3 TDC's Opt-Out household bills are likely to be much lower than government estimates

The government's analysis of the benefits of reform compares the Reform Scenario to a situation where no reform and no service improvement occurs (the Opt-Out Scenario). This is an incorrect assumption and leads to significant overstatement of the modelled and claimed benefits. In the Opt-Out Scenario, several factors are likely to lead to improved water services, as well as efficiencies, even if more investment is required.

3.1 WICS overlooks TDC's current high relative performance

WICS has not evaluated TDC's current performance relative to other water service providers across a range of measures. Because WICS' analysis is conducted at a top-down, national level, it does not incorporate TDC's current relative performance into its model. WICS prediction of TDC's performance under the Opt-Out Scenario is worse than the performance TDC would expect to deliver, given its track record.

TDC is performing well compared to other Entity D water providers

TDC has committed to meeting higher performance standards for drinking water quality, environmental outcomes, and economic performance. TDC committed to improving the resilience of its water supply systems in its 2021-31 Long Term Plan.[25].This includes over $13.7 million of investment to upgrade the Pareora pipeline and over $5.9 million of investment for Washdyke Watermain Network Improvements by 2023. During 2019/20, over $2.2M of work was carried out on the water supply network. In 2020 TDC maintained excellent water supply network services, reducing its real water loss from networked reticulation systems by over 5% compared to 2018/19. TDC delivered water services according to required environmental standards with no non-compliance identified in 2019/20.[26]. TDC is also prioritising its stormwater management plan. TDC has utilized private sector participation and is currently constructing Washdyke Flat Road stormwater basin in collaboration with private developers. In 2019/2020 Timaru met all of its stormwater service performance targets. This included delivering stormwater services according to the required environmental standards. TDC has demonstrated prompt and effective responses to problems. In late 2017, asbestos was detected in the Temuka water network. Within 119 days, a new 9 kilometre trunk water main was installed to resolve the problem, and during the construction period, temporary filtration systems ensured minimised service disruption.[27] TDC was recognised with an international award.[28]

TDC has public support for water metering and plans implementation from 2023/24

TDC has planned the implementation of water meters in 2024/25 and budgeted $16 million of spending by 2029 .[29]. Water meters enable service providers to monitor consumption, detect leaks, and target investment where it is most needed. Water meters enable opex efficiency savings and can lower overall capex. Demand management initiatives are enabled. Demand management can include peak demand pricing or pricing during periods of drought or other water scarcity. Demand-side management can reduce a provider's need to invest in additional capacity, thereby reducing overall investment requirements.

Scotland has almost no water metering, making it a poor comparator

Very few households have water meters in Scotland. 2016/17 data reported to the Scottish Parliament states that only 0.016 percent of all households in Scotland had water meters (400 out of 2.4 million households).[30] In England (which has been subject to regulation and a privatised sector since 1989) and Wales (subject to regulation, owned by a not-for-profit corporation), only around half of all households have water meters.[31] Therefore, the claim that

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25 TDC 2021-2031 Long Term Plan, available online at: https://www.timaru.govt.nz/council/publications/plans/long-term-plan

26 TDC annual report: https://www.timaru.govt.nz/__data/assets/pdf_file/0005/487904/TDC-ANNUAL-REPORT-2020_MASTER-Final-for-website.pdf

27 International of Public Works Engineering Conference, 2019, Conference paper on Temuka water event (asbestos), available at: https://www.ipwea.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=26287b16-ce21-4e95-4cc3-2b87849993ed&forceDialog=0

28 Stuff, 4 September 2019, *District council's response to Temuka asbestos scare wins award*, available at: https://www.stuff.co.nz/timaru-herald/news/115521600/district-councils-response-to-temuka-asbestos-scare-wins-award

29 TDC 2021-2031 Long Term Plan, available online at:https://www.timaru.govt.nz/council/publications/plans/long-term-plan

30 Commitee on Climate Change (2016), Scottish Climate Change Adaptation Programme: An Independent Assessment for Scottish Parliament, available at: https://www.climatexchange.org.uk/media/3578/bw-briefing-note-uptake-of-water-metering-2018.pdf

31 Water UK website: https://www.water.org.uk/advice-for-customers/water-meters/

TDC cannot match the improvements WICS claims to observe in Scotland and elsewhere in the UK is likely wrong.

3.2 Improved regulatory regimes will incentivise improved performance by TDC

The New Zealand regulatory regime for water services has been suboptimal. The government is reforming water quality regulation to improve compliance and lift the performance of water providers. The Reform Scenario also proposes to create a new economic regulator. Environmental outcome regulation will remain the responsibility of regional councils.

The government and WICS have assumed that TDC and other councils that opt-out of the Reform Scenario will not improve performance because of the new regulatory regimes, or that regulation will not apply. These underlying assumptions are flawed.

3.2.1 Water quality regulation will likely lead to improved performance by TDC

The New Zealand water reforms also involve a significant change to the water quality regulatory regime. The Ministry of Health has been responsible for water quality regulation over the past 60 years (and pursued a solitary prosecution). The government introduced the Water Services Bill in July 2020. It is at the second reading stage. The Bill will formally establish the drinking water quality regulator Taumata Arowai.

The governments' objective for the Bill is to set a clear national policy direction for the three waters sector, ensure people can access water that is safe to drink, effectively manage risks to drinking water safety, and strengthen compliance, monitoring and enforcement.[32]

The government claims the new regulator will provide sector leadership, technical and scientific expertise, greater clarity on what is expected of councils, and increased support for compliance. Specifically, the government claims that TDC and other water service providers will improve performance as a result of Taumata Arowai's assistance and intervention. The government notes that Taumata Arowai will:

- be "responsible for oversight and monitoring of drinking water safety, public communications, ensuring coordination across the sector, leading or overseeing the response to drinking water emergencies, and emergency response planning."[33]
- "strengthen the approach to drinking water compliance, monitoring and enforcement" by centralising these functions and responsibilities, leading to more consistent application.[34]

[32] Cabinet Paper, 1 July 2019: Strengthening the Regulation of Drinking Water, Wastewater and Stormwater, Offices of the Ministers of/for Local Government, Health and Environment, pg 2, available at: Cabinet-Paper-and-minute-Strengthening-regulation.pdf (dia.govt.nz)

[33] Cabinet Paper, 1 July 2019:Strengthening the Regulation of Drinking Water, Wastewater and Stormwater, Offices of the Ministers of/for Local Government, Health and Environment, page 24

[34] Cabinet Paper, 1 July 2019:Strengthening the Regulation of Drinking Water, Wastewater and Stormwater, Offices of the Ministers of/for Local Government, Health and Environment, page 16

- "work with suppliers and training providers to ensure suitable training is available and being taken up, and ensure the sector has sufficient capability to fulfil its responsibilities."[35]
- "become a centre of technical and scientific expertise. It would provide best practice advice and guidance to suppliers, councils, and other entities involved in drinking water safety, supply and management; and facilitate research into drinking water science."[36]

The government also notes that it will ensure the new regulator "has the powers and resources needed to perform these functions consistently and effectively."[37].

Water quality regulation will improve the performance of TDC and other councils in supplying water services. There will be greater clarity regarding what requirements TDC must fulfil and resources to assist TDC in meeting these requirements.

3.2.2 Possible improvements from economic regulation regime have been overlooked

The proposed economic regulation regime could improve TDC's performance. Economic regulation, if well-designed, can enable benchmarking between providers and incentivise water service providers to improve service quality and lower costs. The details of the economic regulation regime have not been designed, and only high-level descriptions of the regime are available.

However, the government and WICS have assumed that the proposed economic regulation regime either cannot apply to councils that opt-out of the Reform Scenario, or will have no material effect on the performance of those councils. This assumption is flawed. Even if TDC is not subjected to economic regulation, it is likely to make improvements based on benchmarking and performance comparisons.

Government's assumption that economic regulation cannot apply to numerous council-owned water services is flawed

The government assumes that it is not feasible to regulate 67 water service providers. The government and its advisors at the Ministry of Business, Innovation and Employment and the Department of Internal Affairs have not identified a maximum number that would be feasible.[38]

The government and its advisors have overlooked the global evidence of effective regulation applied to multiple water service entities. Some examples include:

- In Florida, the Public Service Commission regulates 147 investor-owned water utilities.[39]

[35] Cabinet Paper, 1 July 2019:Strengthening the Regulation of Drinking Water, Wastewater and Stormwater, Offices of the Ministers of/for Local Government, Health and Environment, page 25

[36] 1 July 2019, Cabinet Paper: Strengthening the Regulation of Drinking Water, Wastewater and Stormwater, Offices of the Ministers of/for Local Government, Health and Environment, page 25

[37] 1 July 2019, Cabinet Paper: Strengthening the Regulation of Drinking Water, Wastewater and Stormwater, Offices of the Ministers of/for Local Government, Health and Environment, page 16

[38] Castalia email correspondence with MBIE and DIA 2020-2021.

[39] Florida Public Service Comission Annual Report (2020), available at www.floridapsc.com/Files/PDF/Publications/Reports/General/Annualreports/2020.pdf

- In Victoria, the Essential Services Commission regulates 15 businesses providing urban water and sewerage services to residential customers.[40]
- In Western Australia, the Economic Regulation Authority regulates 30 licensed water service providers.[41]
- Columbia has a regulatory regime spanning 1,122 municipalities that provide water services either directly or via public service companies. It is a much less developed country than New Zealand, with a GDP per capita of just over US$5,300[42] , and has experienced benefits of economic regulation. The resources available for investment in the water service provisions have increased significantly over the last 15 years since regulation began.[43]

New Zealand's Commerce Commission already has experience regulating multiple electricity distribution businesses. The Commerce Commission regulates electricity distribution under Part 4 of the Commerce Act 1986. It sets price and quality controls for 17 local lines companies and sets quality standards in the form of annual limits for the average number and duration of power outages across the region. The Commission applies information disclosure regulation to a further 12 consumer-owned lines companies, thus having oversight for 27 entities. In the period following the electricity reforms of the late 1990s until 2006, the Commission undertook price regulation of all electricity distribution businesses (even consumer-owned ones).

The Commerce Commission is likely to be the institution that regulates the water sector (adding to electricity distribution, gas pipelines, airports, dairy and telecommunications). It has demonstrated an ability to regulate more than four entities concurrently, and therefore the assumption that it could not regulate more than the four proposed water entities is mistaken.

Benchmarking and performance comparisons with regulated water corporations possible

Even if regulation is not applied to TDC and other councils that opt-out, benchmarking and performance comparisons will be possible. Until now, the only benchmarking tools available to council-owned water providers have been WaterNZ's annual performance report and high-level financial reporting in annual reports and statutory reporting to DIA. With a dedicated economic regulator collecting a wider range of standardised financial performance information and with Taumata Arowai collecting performance information, TDC will be able to better assess the performance of its water services. This is likely to lead to improvements in performance over time.

3.2.3 TDC management and operational competence likely to improve with competition between entities for staff

The government has noted that larger, corporate water entities are likely to improve management and operational competence. If this is the case, then one should expect TDC to also lift the competence of its management and operations. This is because TDC will have to

[40] ESC website, https://www.esc.vic.gov.au/water/water-prices-tariffs-and-special-drainage/average-household-water-bills-victoria

[41] On Tap: Water Consumers Guide - Economic Regulation Authority Western Australia (erawa.com.au)

[42] World Bank Data (2020), Available at: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=CO

[43] World Bank Report, charting a New Course: Structural Reforms in Colombia's Water Supply and Sanitation Sector (2010), edited by Luis A. Andres, David Sislen and Philippe Marin, Bogota, Colombia

match the working conditions at the larger corporate entities, leading to improvements in performance over time.

3.3 TDC can increase access to finance to lower short-term costs

WICS' base assumption is that TDC's financing headroom is 2.5 times revenue. In fact, the Local Government Funding Authority has approved KCDC (and other local authorities with a credit rating of A equivalent or above) to borrow up to 2.8 times revenues.[44] Furthermore, the Opt-Out Scenario assumes that TDC can make no improvements to its financing arrangements.

Efficient use of finance can lower costs of service

Efficient financing is an important consideration in investment planning for water utilities. The term of loans should ideally match the useful life of the asset the loans are financing. If the loan is repaid over a shorter period of time, then water bills after the loan is repaid will be lower than they otherwise would be.

WICS assumes that amalgamated entities have greater access to financing and can make more efficient use of finance to lower the cost of service. We tested the change in average cost per household for 2051 across different financing option scenarios for both TDC in the Opt-Out Scenario and for the Reform Scenario (amalgamated entity). Table 3.1 and Table 3.2 show that a significant proportion of the claimed reduction in average cost per household for the Opt-Out Scenario compared to the Reform Scenario is due to changing the financing requirements.

Table 3.1: Average bill per household under different financing options for TDC (Opt-out scenario)

	Average bill per household ($, 2051)	Average bill per household ($, 2021)	% Change (Decrease in bills)
250 % debt to revenue Limit (WICS model assumption)	9,872	5,029	-
280 % debt to revenue Limit	9,0938	4,633	7.89
500 % debt to revenue Limit	5,758	2,933	41.67

Table 3.2: Average bill per household under different financing options for reform scenario (Entity D)

	Average bill per household ($, 2051)	Average bill per household ($, 2021)	% Change (Increase in bills)
642% debt to revenue limit (Actual Modelled)	3,225	1,642	
280 % debt to revenue Limit	6,297	3,208	95.26
250 % debt to revenue Limit	6,837	3,483	112

[44] LGFA Annual Report (2020), page 53, available at: https://www.lgfa.co.nz/files/documents/LGFA_AnnualReport_2020_web%20version.pdf

Changes to financing arrangements for the Opt-Out Scenario cannot be ruled out

There are other ways that access to finance by New Zealand water providers can be improved. The government's Opt-Out Scenario does not consider these other options. Currently, almost all three waters services are provided by local authorities. Local authorities' borrowing limits, whether imposed by LGFA or due to ratings agency policies, are generally considered to impose limits on optimal investment planning in the water sector. In the Reform Scenario, the new statutory corporations will have separate balance sheets to local authorities, and will be able to raise finance without being impacted by these borrowing limits.

A number of other financing arrangements are already available for the water sector and could apply in the Opt-Out Scenario. Other financing changes could be implemented with law and other institutional reform:

- Central government has recently introduced the Infrastructure Financing Facility,[45] which enables finance to be raised from the private sector, ring-fenced from eligible local authorities' balance sheets
- Long-term concession contracts have been used in New Zealand (in Papakura, signed by Papakura Council prior to the creation of Auckland Council). A third party provides water services for a fixed term (30 years in Papakura) then collects water rates or tariffs directly from customers. Usually, the concession contract requires the third party to invest in and maintain the water assets and network and meet certain performance metrics. The third-party provider accesses private capital markets to finance the capital investment needs (growth, renewals and maintenance)
- Revenue bonds are a common way for municipal government entities in the United States to raise finance for infrastructure investment, often in the water sector. Investors in these bonds are repaid from income created by the projects the bonds fund. These are separate from the general obligations debt raised by the municipal government.

4 TDC residents face risks and costs from Reform Scenario

There are risks and costs to the Timaru Coast community from the Reform Scenario.

4.1 Local accountability for significant public asset and public service will be lost

Accountability to customers is important for water service performance. Under the Reform Proposal, Timaru water customers will lose the ability to hold those tasked with governing water services to account. Elected councillors are accountable to voters, and water issues can be election issues.

[45] Minister for Urban Development statement, 24 July 2020: https://www.beehive.govt.nz/release/law-help-infrastructure-financing-passes

Under the Reform scenario, local government's autonomy to appoint board members to water utilities will be constrained, thus accountability to customers and coordination in planning will be mostly lost. It is more difficult for the local community to have any issues heard at the regional or national political level in the Reform Scenario. If there are management or governance problems, it is more difficult for the Timaru community to influence the indirectly appointed board. Timaru's representation for water services will be diluted.

4.2 Local variability in service and quality levels will be lost

The regional Entity D is likely to be managed from Christchurch. This reduces the ability for the service provider to reflect local differences in service expectations. Wastewater services often need to consider local needs. There are different options of treating and discharging treated wastewater. Some communities, including local Iwi and Hapū, may have different expectations and needs in respect of wastewater. A water services entity headquartered in urban Christchurch is unlikely to have the same ability to reflect these local variations in demands.

4.3 Loss of economies of scope increases average cost of remaining council services by $2 million per annum

TDC currently incurs a range of costs shared across a range of services (water, transport, parks and recreation, and other services). TDC achieves economies of scope by providing these services together; it lowers costs for TDC to provide all the services together compared to if these were provided separately. Following reform, TDC will continue to incur fixed costs related to non-water council services.

TDC's RFI reports that for FY 2020, the total operating cost for water services was $12,006,000. There are multiple overhead cost items that will not reduce even when TDC provides no water services. As estimated from the RFI, these include nine indirect general management and support employees and 600 square metres of office. This shared overhead cost amounts to $2 million dollars[46] per annum.

5 Recommended next steps

This report has shown that the Reform Scenario and comparison to the Opt Out Scenario is founded on unsound evidence and faulty analysis. The promised benefits of reform are unlikely to materialise. There are risks to the Timaru and surrounding community from losing control of water services, and accountability of those tasked with governance to local customers.

Water services are critical to wellbeing, so it is very important that the full range of options are considered that are locally appropriate. Other than opting out, the Reform Scenario is the only

[46] Assumed average salary for TDC employee = NZ$ 100,000
Cost of each employee = 2*100,000
Assuming annual rent of $300 per sq. m.
Economies of scope lost = 2,00000*9 + 300*600 = NZ$ 1,980,000

option that has been presented to TDC and other local authorities. Water services should be safe, resilient, reliable, and customer responsive, at least cost. Some reform of the sector is necessary in some parts of New Zealand. However, the analysis needs to done to determine where water services fall short of this objective, and for what reasons.

We recommend that TDC carry out a proper net benefit analysis, potentially with other local authorities that have a similar viewpoint. This is likely to be many councils, since the WICS analysis has consistent faults that apply to all local authorities. Such an analysis should include the full range of options together with transparent data and sound and contestable analysis so these options can be properly evaluated. There is plenty of analysis, evidence and now a rich data set in the RFI responses for TDC and like-minded local authorities to be able to identify alternative and better reform options. TDC could prepare a constructive counterproposal that achieves desirable objectives, while avoiding the risks and costs of the Reform Scenario.

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TIMARU
DISTRICT COUNCIL

Review of WICS data

Timaru District Council

September 2021

Document status

Ref	Approving Director	Date
2636	D.Bonifant	16 August 2021
2636	D.Bonifant	21 September 2021

Contents

Tables

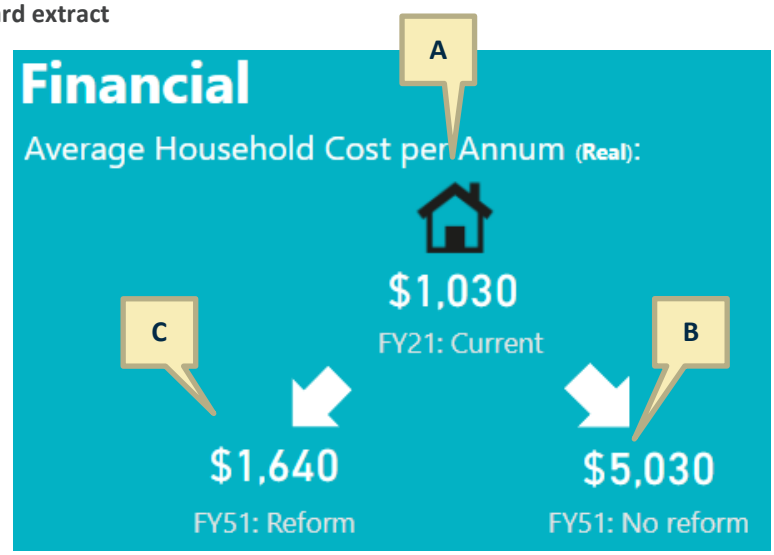
Figures

Executive Summary

This report provides commentary to provide councils support to interpret WICS calculations and how those relate to your existing council information. The key analysis of your council dashboard is of items A, B and C in Figure 1 below.

- **A** – represents the estimated average household cost using WICS modelling approach, this is not representative of actual charges
- **B** – represents the projected future household charge in 2051 without reform
- **C** – represents the projected future household charge in 2051 for **Entity D,** with water reform.

Figure 1 WICS dashboard extract



Our review of the modelling completed by WICS, which informs items A, B and C of Timaru District Council (TDC) dashboard identified a number of key assumptions that have been applied by WICS as having a significant impact on the projected household charges under each scenario, specifically these are:

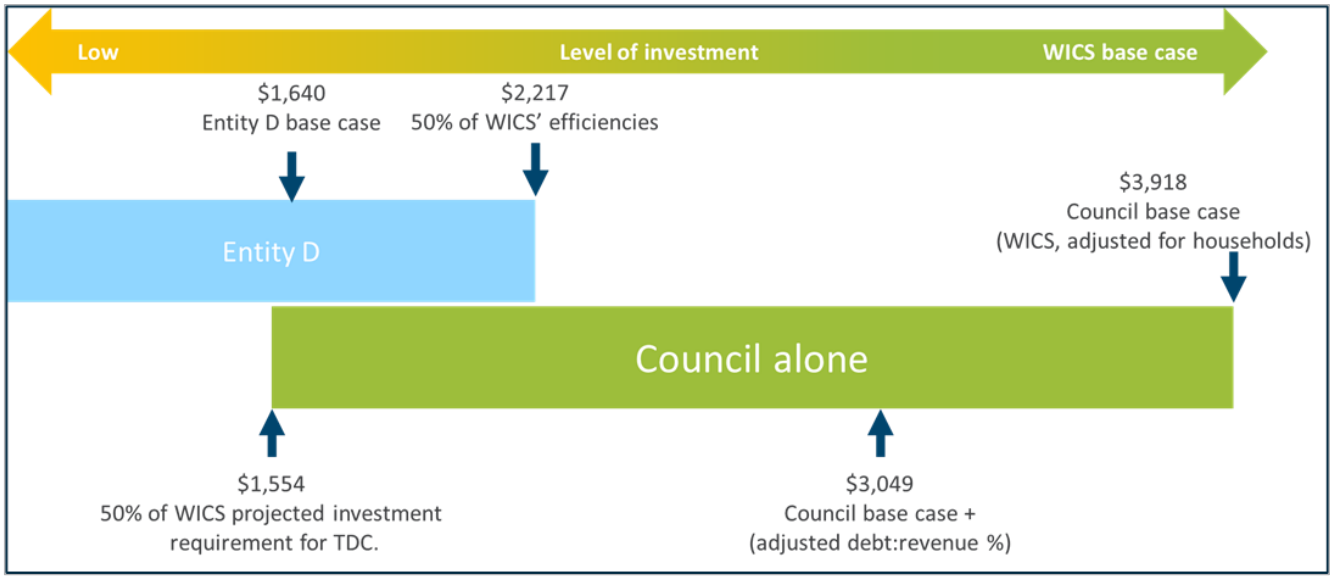
- The level of investment that WICS has assumed is required over the next 30 years. WICS has assumed a ten-year investment requirement of $495m, which is over triple TDC's own constrained investment programme in its RFI.
- The assumptions used by WICS regarding the proportion of three waters revenue that is received from households, which has been assumed by WICS to be 70%, but which is 58% for TDC.
- The approach WICS has taken to determine the number of household connections, which has been to divide the connected population by 2.7. WICS assumes that there are only 14,934 household connections in TDC, compared to the 16,849 water connections disclosed in its completed RFI.
- The approach used by WICS to estimate future revenue requirements. WICS determined future revenue requirements by reference to the amount of debt that TDC would need to borrow to fund its full investment programme. Revenue is determined based on the amount needed to maintain a three waters debt to revenue ratio of 250%. Council's debt capacity is not measured at an activity level, given the lower borrowing requirements of other activities, a ratio of at least 500% is likely more appropriate.
- WICS have assumed that Entity D will be able to achieve operating and capital efficiencies totalling 53.3% and 50%, respectively, over a 20 year period (from today).

To test the impact of these assumptions on the household cost projections, we have undertaken high level sensitivity analysis using the WICS models, as shown in Figure 2 below. This included:

- Adjusting the revenue from households and household connection values in all scenarios tested.
- 50% of the projected investment requirement in both the TDC and Entity D models.
- A higher (500%) debt to revenue ratio in the TDC model.
- 50% of the projected operating and capital efficiencies in the entity D model.

Figure 2 presents the range and scale of different potential household charge outcomes (in 2051) under the various scenarios listed above. The area of overlap represents situations where household charges may be lower under council service delivery than under an entity model or vice versa.

Figure 2 Summary of sensitivity analysis and impact on 2051 household charge projections



In summary, the sensitivity testing shows that:

- When the underlying assumptions regarding percentage of revenue from households and number of connected properties is adjusted to match the RFI data the forecast charges for TDC are approximately 20% lower than those estimated in the WICS reports.
- The scale of the difference between the entity and council scenarios is similar to the amount that the WICS analysis indicates.
- While there are instances where TDC's projected household charges are lower than those that may arise under an entity, these instances only occur when TDC's investment need is 50% or less than the amount projected by WICS.

Overall, we note that while the projected household charges from the WICS analysis may be the subject of some contention, in our view they are directionally accurate. That is, household charges will increase in the new regulatory environment, and TDC ratepayers are likely to have lower household charges under the proposed entity delivery model than through continued council service delivery. However we note that this analysis does not consider the specific impacts on rural water schemes.

1 Introduction

The Department of Internal Affairs (DIA) has commissioned specialist economic, financial, regulatory and technical expertise to support the Three Waters Reform Programme and inform policy advice to ministers.

In mid-2020, a first stage of evidence was commissioned on the potential economic benefits of aggregating water service delivery entities in New Zealand. This was produced for DIA by the Water Industry Commission for Scotland (WICS) using publicly accessible council information and was released in December 2020. Between October 2020 and February 2021 a nationwide Request for Information (RFI) took place across all 67 councils.

This data has been used to inform several workstreams including the second stage of economic analysis found in the WICS Phase 2 report. This latest information has now been released to councils through the 'Council dashboard' and supporting reports.

This report is based upon our review of public WICS reports and individual council models provided by WICS. In some cases, the approach or assumptions used by WICS are unclear; this report focuses solely on the information we were able to access and interpret.

It is also important to highlight that there is no connection between the WICS analysis and the government's wider support package including calculation or allocation of the 'no-worse off' and 'better off' parts of the package.

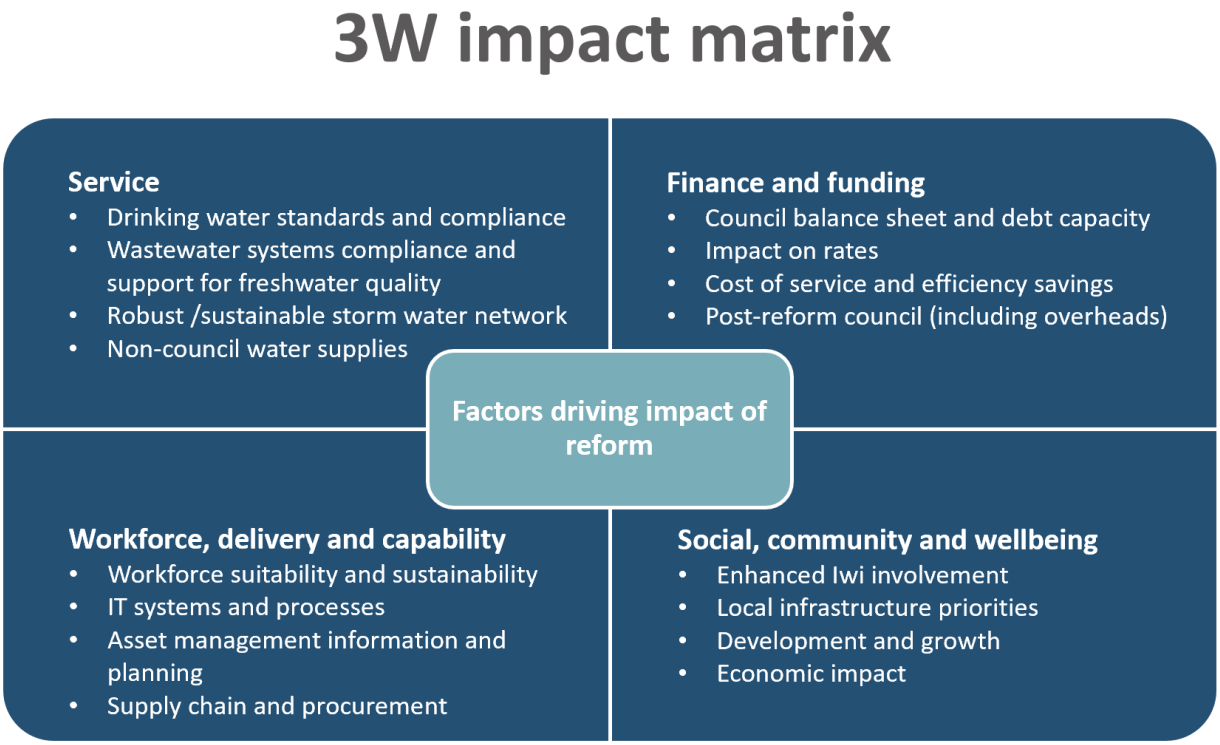
The data in the dashboard is a combination of calculated information (household charges) and data straight from the RFI e.g. FTE data in Operation all the information within "Services".

1.1 Three waters reform

While this report concentrates on the financial analysis recently provided in the Council dashboards, it is important to highlight that this is only one part of the wider suite of information that councils need to consider when looking at the proposed reforms. The impacts, benefits, issues and risks of reform are far more wide ranging than just the financial impacts.

LGNZ has developed a matrix shown in Figure 3 below which highlights the broad considerations each Council should be considering and in our view this represents a good starting point. This helps ensure that benefits, issues and risks around levels of service, capability & capacity, prioritisation of investment and impacts in communities and councils are also considered alongside the financial.

Figure 3 Understanding the impacts (LGNZ)



We also note that as a result of the three waters work we have undertaken across New Zealand over the last 18 months, our view is that the likely future household costs for three waters will increase significantly for all Councils as a result of meeting increased standards, regulations and satisfying a more rigorous compliance regime. Our view of future costs may not be as high as modelled by WICS, but the direction is the same.

1.2 WICS Analysis

Scenarios

Broadly, WICS compares two scenarios:

- Aggregation of three waters services into four water services entities and the associated reforms to the regulatory, governance, management, resourcing, and policy direction that support improvements ('the whole reform package')
- No aggregation of three waters services and although in this scenario some reform takes place , for example, decisions already made to introduce a drinking water regulatory system and environmental standards, the wider reforms are not as extensive as in the former scenario.

Assumptions

The assumptions WICS have used to quantify the inputs are determined through benchmarking against the UK experience. Whilst there has been some adjustment based on council feedback the potential investment requirements and ability to deliver the same efficiency gains, both key drivers of the analysis, may not be comparable in the New Zealand context.

The key assumptions that drive household costs are:

- Investment – this is the single biggest driver of household cost in the WICS model. Due to the ways its calculated at a national level and allocated at entity level and council level it is difficult to understand the impacts it makes on the difference on the household charges under the two scenarios. Any change at the national investment figure will have a material impact on household charges in both scenarios.
- Debt/Revenue – the difference between the treatment of debt in the councils and the entities means that it is likely to overstate the size of the difference in charges between council and the water service entity.

The impact of these are so significant that all other assumptions have minimal impact on household costs.

The WICS analysis has been completed using a different approach, and different assumptions to the those in we used in an earlier business case we undertook for the three waters reform in NZ. We note that despite the differences in our analysis and the WICS analysis they are directionally consistent. That is, in both cases, it is anticipated that there are significant three water investment requirements to meet the new standards and this will lead to substantial increases in the cost of services.

A key risk is that the investment level in three waters could be greater than forecast. The WICS forecast investment articulates this risk. Our earlier business case also identified that an aggregated three waters entity was the option that best protected all ratepayers from the costs of meeting that risk.

Timeframes

WICS have undertaken the analysis over the 30 year time horizon. Responses to the RFI across the country were not consistent, where councils did not provide 30 year information, ongoing investment in growth infrastructure is assumed at the level of the final year in the data set. Undertaking future economic analysis based on a 30 year forecast is notoriously difficult especially in the context of the quality of the existing asset data. Additionally, this assumes capital expenditure follows a linear trend however we know that investment in three waters infrastructure tends to be lumpy.

More detail of the WICS analysis including methodology, impacts and assumptions is provided in Section 2 of this report along with a comparison to the relevant council based information or data.

1.3 Impact on Household Bills

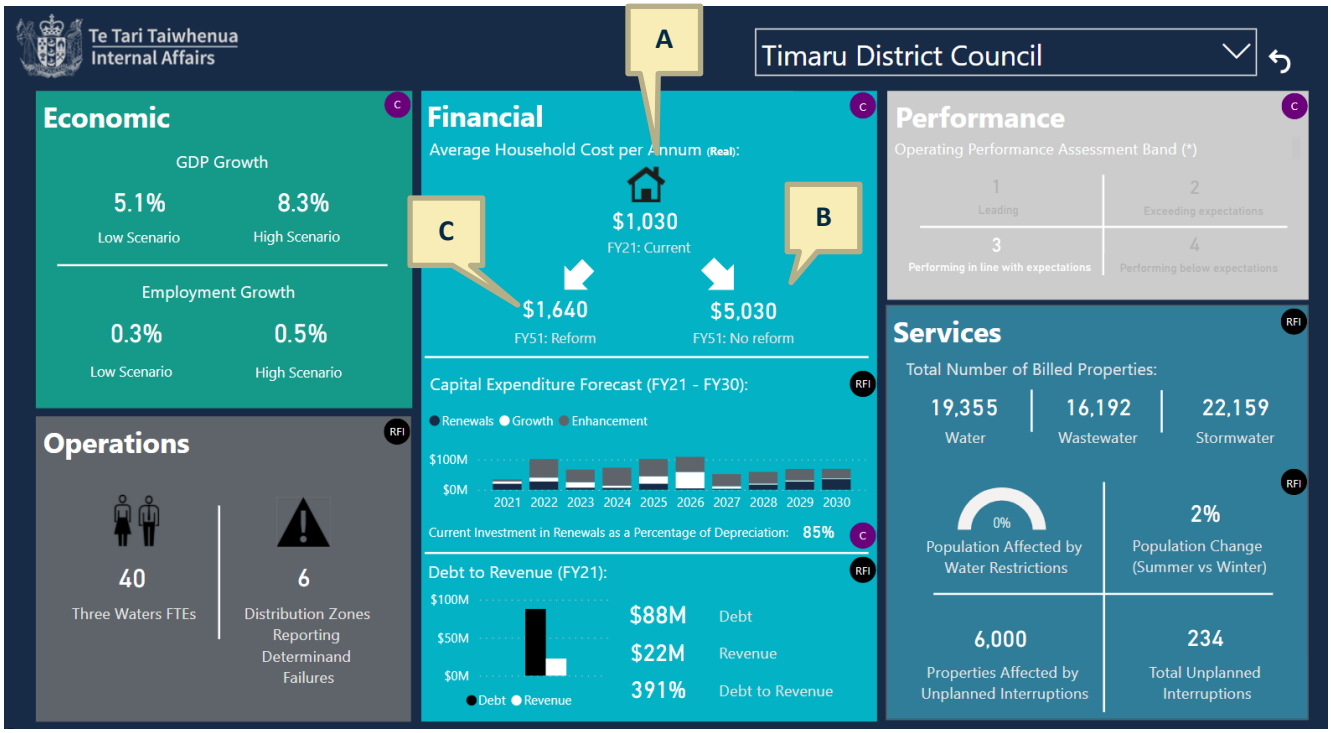
WICS have used an average household charge as the key piece of information for councils and communities.

The dashboards provided by DIA present three different average household costs, represented as A, B and C in Figure 4 below:

- **A** – represents the estimated average household cost using WICS modelling approach, this is not representative of actual charges
- **B** – represents the projected future household charge in 2051 without reform
- **C** – represents the projected future household charge in 2051 under the proposed Entity for your council, **Entity D,** with water reform.

These numbers are expressed in real terms, they are uninflated and expressed in today's dollars. The approach used by WICS to determine these values is outlined below.

Figure 4 DIA Dashboard



A

To estimate current household charges for each council, WICS have (**A**):

- Taken the starting total three waters revenue collected by the council (including development contributions but excluding grants and subsidies)
- Multiplied that figure by 70% - which is their assumed percentage of revenue derived from households. We have noted that the 70% does generally align with majority of councils, however some councils' revenue from households is higher and some lower.
- Divided that figure by the estimated number of household connections, which in turn is derived from:
  - The average of the connected drinking water and wastewater populations. The model does not use actual household connection as identified in the RFI or use stormwater connections.
  - Divided by a standard "household density" multiplier of 2.7

B

The process used by WICS to estimate future household charges (**B**) is the same as outlined above, using estimated future revenue requirements and estimated future household connections (which allows for growth in connections).

In order to determine the future household charge WICS have:

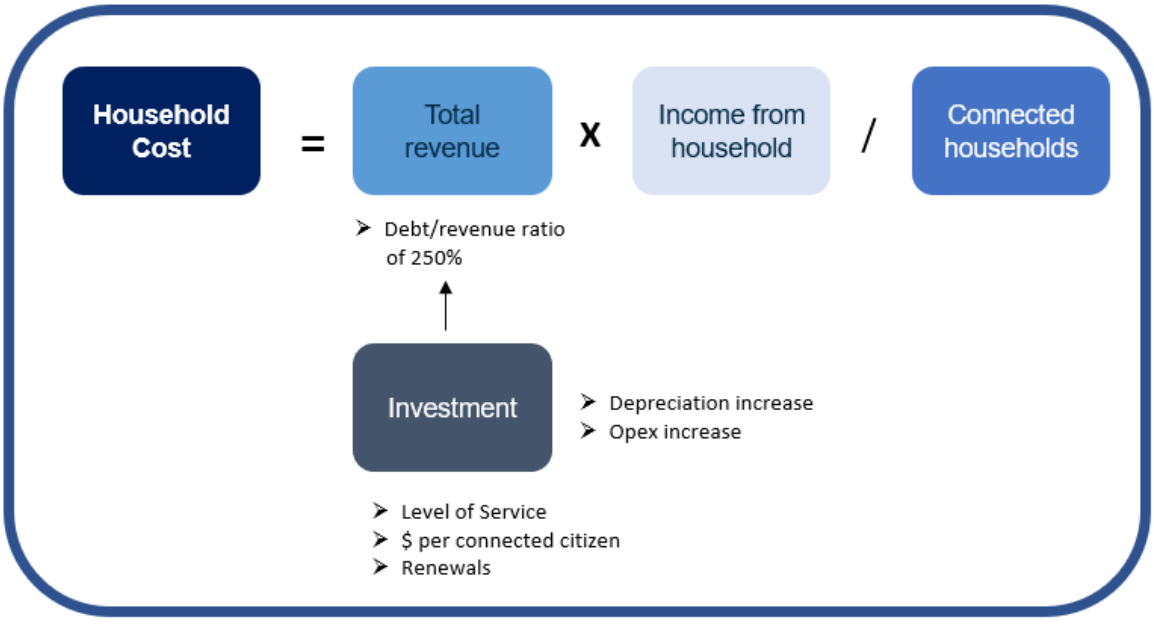
- Calculated the future required investment in growth, level of service enhancement, and renewal of assets.
  - Growth investment is assumed to be the same as disclosed in each council's RFI, with the same annual average expenditure applied across the full 30 year period if a council only disclosed 10 years of projected investment.

- Renewal investment is assumed to be 100% of the economic depreciation of assets. WICS have undertaken their own calculation of economic depreciation based on assumed asset values and lives.
- Level of service enhancement investment has been calculated using a standard approach across the country that has regard to population, land area and density. It does not reflect each council's actual investment set out in the RFIs.

- WICS have recalculated depreciation, this has increased council figures.
- Determined the impact of new investment on operating expenditure. WICS has assumed that for every $100 of capital investment there is $3 of additional operating costs. WICS have also included additional depreciation and financing costs for new assets.
- Determined the amount of new borrowings required to finance their modelled investment profile.
- Determined the amount of revenue that needs to be collected to ensure that councils are able to maintain a three waters debt to three waters revenue ratio of less than 250% over the modelling period. **This is the revenue number that is divided by WICS' estimated future household connections to reach the household charges at B above**.
- This revenue number typically results in operating surpluses being generated which are applied toward debt reduction.

This process is explained in Figure 5 below.

Figure 5 Household cost calculation



C

WICS have undertaken the same modelling to estimate the future household charges for rate payers of a council area if water reform entities were formed. The result reported in each council's dashboard (**C**) matches the projected future household charges for all councils in **Entity D** (of which Timaru is a part) in 2051.

We have not reviewed (and have not been provided with) financial or economic models for any of the proposed water services entities, however we anticipate that the approach used to project future household charges for water services entities is closely aligned to that used to project future household charges for individual councils. The differences are likely to be in the assumptions applied, in particular:

- Entities have been modelled with no limit on the debt to revenue ratios (or no discernible limit). This means that WICS reports show the projected debt level for **Entity D** is allowed to nearly reach 800% of revenue by 2051. This accounts for a substantial part of the difference between the projected three waters rate for each council and **Entity D** in 2051.
- Entities have been assumed to be able to generate efficiencies amounting to over 50% within 20 years from today. By way of contrast, Timaru District Council has not been provided with any allowance for operating or capital efficiencies without reform. This accounts for most of the remaining difference between the projected three waters rates.
- Finally, the entity will benefit from the scale of aggregation. That is, the total revenue needs will be spread over a larger population base. The extent to which this scale benefit applies to a particular council will vary depending on population and land area.
- It is unclear whether the total investment requirements for **Entity D**, including depreciation and renewals investment, have been derived by adding the constituent parts of each council, or by undertaking new calculations using the population, land area and density of the new water services entity. Each approach is likely to have different results.

The various elements of the above approach are outlined in more detail in Section 2.

1.4 Rural water supply scheme

The analysis that has been completed by WICS considers the combined delivery of three waters services across the entire Timaru District and makes no distinction between the costs, levels of service, or differences in water volumes for rural and urban water supply schemes.

However, rural water supply schemes are inherently different to urban water schemes. Rural schemes may often serve the dual purpose of providing water to support agriculture/horticulture as well as to provide drinking water to residents. These schemes typically distribute large volumes of water, with much lower connection densities than would be observed in an urban supply. Additionally, the levels of service expectations within these schemes are often very different, with low pressure trickle fed schemes being common, as well as different standards of treatment at the source.

In this regard, the analysis presented by WICS may be less applicable to rural water schemes in Timaru. Given differences across the country regarding the ownership, governance, management and funding of rural water schemes there is limited clarity at present about how these schemes could fit within the current reform proposals.

1.4 Comparison of key data from WICS

The following section compares data from the WICS model to that within councils RFI.

Timaru District Council

The comparison highlights that WICS has modelled level of service and growth investment to be more than double the constrained investment requirements identified by Timaru in its completed RFI. For Timaru, this is the most significant driver of the household charge calculations produced by WICS. The assumption of staying below a three waters debt/revenue ratio of 250% also drives a higher three waters household charge than if debt/revenue was viewed at the total Council level.

Household Cost per Annum

Item	WICS - Council		WICS - Entity		Comments on assumptions
	2031	2051	2031	2051	
Household Charge (uninflated)	$3,285	$5,029	$1,543	$1,642	• Water Services Entity option shows a significantly lower charge per household.

Investment

Item	WICS - Council		LTP (2031)	Comments on assumptions
	2031	2051		
Total investment requirement	$494,849,041	$1,711,255,676	$154,000,000	• WICS model projects a significantly higher Investment (three times) need than Council in its Long Term Plan.
Levels of Service Enhancement & Growth	$314,872,989	$944,618,966	$63,000,000	• WICS model projects significantly higher (five times) LoS Enhancements and Growth needs than Council's investment in its Long Term Plan.
Renewals	$179,976,053	$766,636,710	$91,000,000	• WICS model projects approximately double the Renewals requirement when compared to council's Long Term Plan.

Item	WICS - Council	RFI	Comments on assumptions
Asset Value	$1,015,080,500	$831,929,856 (Low) $1,100,635,885 (High) (J1)	• Higher asset values becomes more relevant over time.
Depreciation	**$13,841,282** (Assumption C75)	**$7,793,559** (E1.25+E2.24+E2b.24)	• Depreciation similar at start but becomes more material as investment in assets increase. • Implied depreciation rate WICS = **1.35% increasing to 1.75% over time. RFI = 0.94%**

Revenue

Item	WICS - Council			RFI	Comments on assumptions
	2021[1]	2031	2051	2031	
Total debt	$88,000,000	$233,872,057	$619,790,135	$124,194,000 (F3.14)	• WICS projects debt to be higher than in the RFI.
Total Revenue	$22,000,000	$94,015,964	$247,971,969	$31,244,000 (F10.62)	• WICS projects revenue to be slightly higher than in the RFI.
Debt to Revenue	391%	249%	250%	397%	• Charges increase to bring ratio back within 250% under the WICS model so comparison not relevant.
Operating Surplus	N/A	$30,041,283	$52,321,233	N/A	• Only exists under WICS model.

Item	**WICS - Council**	RFI	Comments on assumptions
Revenue from household	**70%**	**58%** (F10.4+F10.19+F10.54) / (F10.62-F10.61+F10.70)	• Timaru collects a lower percentage from household charges compared to the WICS model assumption.
Connected household properties	**14,934**	Water = **16,849** (A1.1+A1.4) Wastewater = **14,918** (A3.1) Stormwater = **18,231** (A3b.1)	• Number of connected properties is lower in the WICS model, the charges are likely to be lower than reported by WICS. • When combined with the assumption regarding revenue from households, this has the effect of overstating future household costs by 20%.
Development Contribution	WICS assumes that Development contributions, when combined with revenue from commercial and industrial users account for less than 30% of total three waters revenue	Timaru did not forecast the receipt of development contributions in its RFI	• Not material.

[1] From DIA dashboard

1.5 Sensitivity testing key WICS assumptions

The impact of the key assumptions used by WICS outlined in section 1.4 has been outlined in the tables below:

- Table 1 shows the impacts on projected household charges in 2051 once the following adjustments have been applied:
  - Adjusted to the number of household connections to adopt the average of water and wastewater billed properties from Council's completed RFI
  - Adjusted to the percentage of revenue from households to match the percentage disclosed in Council's RFI
  - Sensitivity testing around the debt to revenue ratio assumption, to show the impact of applying a 500% ratio instead
  - Sensitivity testing around the projected investment requirement, showing the impact of halving the amount of investment projected by WICS.
- Table 2 shows the impacts of adjusting the level of required investment and assumed efficiencies for Entity D in 2051.

Table 1 Sensitivity testing of projected household charges in 2051 for Council

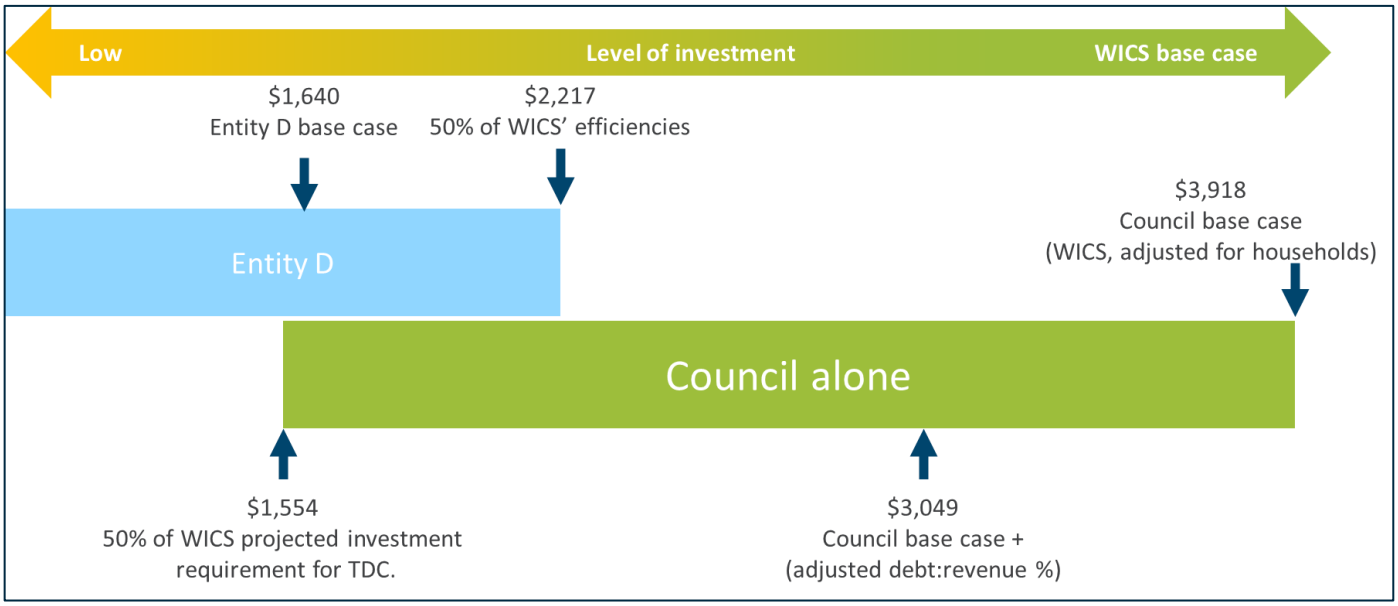
Investment	Three waters debt to revenue	
	250%	500%
100%	$3,918	$3,049
50%	$1,674	$1,554

Table 2 Sensitivity testing of projected household charges in 2051 for Entity D

Investment	Efficiencies	
	100%	50%
100%	$1,642	$2,217
50%	$927	$1,190

The results of the sensitivity testing are represented visually in Figure 6 below. Figure 6 presents the range and scale of different potential household charge outcomes (in 2051) under the various scenarios listed above. The area of overlap represents situations where household charges may be lower under council service delivery than under an entity model or vice versa.

Figure 6 Summary of sensitivity analysis and impact on 2051 household charge projections



In summary, the sensitivity testing shows that:

- When the underlying assumptions regarding percentage of revenue from households and number of connected properties is adjusted to match the RFI data the forecast charges for TDC are approximately 20% lower than those estimated in the WICS reports.
- The scale of the difference between the entity and council scenarios is similar to the amount that the WICS analysis indicates.
- While there are instances where TDC's projected household charges are lower than those that may arise under an entity, these instances only occur when TDC's investment need is 50% or less than the amount projected by WICS.

2 Water Industry Commission for Scotland Commentary

2.1 Investment Projections

Investment is the single biggest driver of cost in the WICS model. WICS estimates potential investment requirement over 30 years for each council. This is considered for:

(a) Renewals (Replacement and Refurbishment)

(b) Levels of Service (Enhancement)

(c) Growth investment

These three values are combined to determine a total investment programme for each council.

2.1.1 Renewals

In their various reports, WICS noted that based on a review of completed RFI's and comparison to their international benchmarks:

- Asset values reported by New Zealand Councils were typically low.
- Useful lives appeared to be optimistic.
- The split of asset value between short lived (less than 30 years) and long lived (estimated lives of around 100 years) was more heavily weighted toward long lived assets.
- Using the low range for asset values and the high range for asset lives (i.e. the two extremes) disclosed in RFI would increase the risk that there is insufficient resources available for asset replacement.

Based on their observations WICS therefore recalculated the depreciation for each council's asset base, assuming:

- 90% of existing assets are long life assets with an estimated life of 100 years.
- 10% of existing assets are short life assets with an estimated useful life of 30 years.
- Long life assets were assumed to have a valuation at the mid-point of the low and high end valuations disclosed in RFIs.
- Short life assets were assumed to have a valuation at the upper range of the valuations disclosed in RFIs.
- New investment is assumed to comprise 60% short life assets and 40% long life assets to enable the long/short life split of assets to eventually reach the international benchmark of 30% short life and 70% long life assets.

WICS has then modelled investment in renewals at 100% of depreciation throughout the modelling period. There has been no adjustment to planned renewals investment to reflect that some investment in level of service enhancement or growth is likely to also have a renewals component.

The modelled renewals investment is likely to differ substantially to renewals programmes that have been calculated by each council.

WICS have modelled an effective starting average depreciation rate of 1.35% of the revised asset value. This depreciation rate increases over the modelling period to eventually reaching 1.75%. These depreciation rates translate to an average useful life for three waters assets of 81 and 59 years, respectively.

Comments on the underlying assumptions

We note that WICS calculation of renewals expenditure and depreciation does not consider:

- The relative age profile of each councils network, and each councils stage in the asset lifecycle.
- The amount of investment in level of service enhancing infrastructure or growth infrastructure which may also have a renewals component.
- The actual split of long life and short life assets within each council, and the specific circumstances that give rise to that split (e.g. water networks with large distribution zones and therefore a higher proportion of reticulation assets which are typically long life, or the inclusion of stormwater assets which typically have longer lives and do not form part of the Scottish water asset base).

We note that the depreciation rate of 1.35% is broadly within the high end of the range observed in New Zealand already. However, the longer term depreciation rate of 1.75% is much higher than most councils in New Zealand (although this is intended by WICS).

While the rate of depreciation may be consistent with the New Zealand average, the valuation of assets is not. In our experience, councils typically value their assets at the low end of the valuation range provided in their completed RFIs. This means WICS has typically increased the total depreciation charge above those that are likely to be included in long term plans.

We also note that in many cases, particularly where there is growth in an asset base, achievement of renewals investment at 100% of the depreciation charge may not reflect sound asset management, as it may result in the replacement of assets before they have been fully consumed. We would expect a three waters entity (and a council) to invest in renewals based on need (having considered age, condition, performance and criticality) rather than an arbitrary percentage of depreciation.

We are aware of a number of recent examples where councils that have had recent asset valuations have experienced substantial uplifts in assets value. This may support WICS assumptions around asset valuations.

Potential impact of assumption

Overstatement of the renewals requirement will result in an overstatement of debt and revenue projections for the entity.

This assumption is likely to affect the entity and council projections equally, so will likely have limited bearing on the comparative outcomes of household charges. However, it will have a significant impact on the projected household charges for councils in 2051 if reform does not occur.

2.1.2 Levels of Service and Growth Investment

The various reports produced by WICS outline three different approaches used to determine the future required investment in level of service enhancement (and in some cases growth expenditure):

- based on relationships between historical enhancement and growth investment in the UK (same approach as Phase 1 but updated using council RFI information)

- based on relationships between historical enhancement and growth in Scotland only (i.e. using the same approach as in Phase 1 but with Scottish data only); and
- based on the observed gap in asset values per connected system between New Zealand and the UK – this approach does not take into account growth.

While the approaches differ in how they arrive at their estimates they deliver broadly consistent results in terms of the magnitude of investment that is likely to be required over the next 30+ years. It indicates that in order to meet quality and growth outcomes, spending will need to more than double from current levels over the next 30 years.

WICS note these figures could ultimately be even higher, as they do not take account of investment uncertainty associated with the need to provide for seismic resilience, climate change, or responding to changing societal standards around environmental impacts (including iwi/Māori expectations).

It is unclear which of these approaches was used to identify the potential amount of level of service enhancement investment needed. However, we understand that the outcome under all three approaches is broadly similar.

WICS also applied two further adjustments:

- It appears that planned investment in growth infrastructure was effectively removed from the results in favour of using council's own projections for investment in growth infrastructure. Where councils only reported forecast investment for a 10 year period this was assumed to be representative of the next 20 years as well.
- Applied a cap of NZ$70,000 per head for combined investment in level of service enhancement and growth infrastructure across any council area, this limits the modelled potential exposure of most rural councils.

WICS does disclose some of the formulas that it has used to identify potential investment requirements, although without knowing the source of the variables used within the formulas we have been unable to replicate the results. We note however that the formulas (at least at a national level) do include length of waterways and coastline, so may make some attempt at incorporating relevant environmental factors.

However, at an individual council level, the investment numbers produced by WICS are based on population, land area, and density alone and have no relationship to each council's:

- Type, quality, or number of water sources
- Receiving environment for wastewater discharges
- Current treatment approach
- Current levels of service
- Asset age
- Asset performance
- Asset condition

Comments on the underlying assumptions

Investment is the single biggest driver of cost in the WICS model. It is what drives the future borrowing requirement, which in turn determines the amount of revenue that needs to be collected. That means that if the future investment requirements in the WICS modelling are under or overstated the future household costs are likely to be similarly impacted.

Despite this it is worth recognizing that predicting future investment requirements is notoriously difficult. This is particularly true over long time frames, such as the 30 year period that has been modelled by WICS.

While predicting investment over a 10 year period is more certain, even this is challenging, as demonstrated by the long term plans of almost every council in New Zealand. Long term plans often have significant uplifts in their ten year capital works programs despite being only 3-year cycles.

We have not attempted to make an alternative assessment of 30 year investment requirements, and therefore have no view on whether the projected investment by WICS is appropriate. However, as it appears that a different approach may have been used to determine investment at a national scale than that used at a council level, even if the national, or regional investment projections are correct, the distribution of where that investment falls in relation to each council may not be correct.

Potential impact of assumption

WICS have used the derived future investment numbers in the stand alone financial analysis provided to councils as well as in the analysis completed for each water services entity. The higher numbers have a flow on effect to a number of assumptions, most importantly, the future revenue required by councils. This is then reflected in the calculated household charge.

We also note that for the purposes of their modelling WICS have assumed that this investment is evenly spread across the modelling period, however it is likely that this will be weighted further toward future years in practice. This results in a sharp increase in projected future household charges.

In the event that the future investment requirements are understated or overstated, there is likely to be a consistent impact on both the council and entity household charge projections. While this assumption may change the scale of the difference in projections it is unlikely to change the overall outcome of their analysis.

2.2 Revenue

Projected revenue is ultimately the main input into the WICS model that is used to determine household charges. The way in which future revenue is projected is therefore critical.

2.2.1 Three water debt to revenue ratio

The total three waters revenue that is needed to be collected by councils in the WICS model has been determined by reference to each council's total borrowing.

Revenue projections have been calculated by identifying the amount of revenue needed to ensure that each council maintains a three waters debt to revenue ratio below 250% over the entire modelling period. Revenue increases are front-loaded in the WICS model, with revenue increases typically stabilizing to match inflation over time (or at least reducing).

The WICS modelling results in forecast future revenue requirements which typically result in the council generating a significant operating surplus for its three waters activity. This surplus is applied toward debt management/repayment.

Water services entities appear to not have been subject to this restriction with Entity C's debt to revenue ratio reaching almost 800% by 2051. We understand that the Government has received advice to suggest that a debt to revenue ratio of this magnitude would not adversely impact on water services entities' credit ratings.

Comments on the underlying assumptions

We note that councils are not typically financed on an activity basis. That is, councils are not required to maintain a three waters debt to three waters revenue ratio of 250%, and in fact a number of councils already exceed this ratio when looking only at three waters debt to revenue.

Three waters typically makes up between 20 – 30% of a council's total revenue, with most other activities typically requiring only low levels of debt. While three waters charges may increase at a much higher rate than other areas of council's business, we would still anticipate that a three waters debt to revenue ratio of around 500% would be within most council's future borrowing capability.

Potential impact of assumption

The revenue numbers directly translate into household charges for councils and the water services entities.

As councils are likely to be able to borrow more than 250% of their three waters revenue, the projected household charges are likely overstated.

Because no such cap has been applied to the water services entities, and we understand that there is official advice to support water services entities maintaining large debt to revenue ratios, this assumption has limited bearing on the projected household charges for the water services entity itself.

When viewed together, the application of this assumption by WICS is likely to overstate the size of the difference in charges between council and the water services entity.

2.2.2 Revenue from Households

WICS has used the split of revenue between households and non-households of 70% as observed in the UK. This has been applied to the total revenue figure above.

The 70% figure represents the total amount of three waters revenue derived from household water charges, and effectively does not include any revenue from development contributions, grants and subsidies, or commercial and industrial water use (or indeed irrigation/stock water schemes).

Comments on the underlying assumptions

In our view the assumption that 70% of revenue comes from household water charges appears to be fair at a national or water services entity level. However, this assumption is less likely to be applicable at an individual council level, noting that:

- Councils that have high levels of urban growth may receive a substantial portion of water revenue from development contributions, and in some cases this may account for the entire remaining 30% (or more) on its own.

- Highly rural councils may receive a large proportion of their three waters revenue from irrigation or stock water schemes, meaning much less than 70% of total three waters revenue is derived from households.
- Some territorial authorities receive large amounts of three waters revenue from large water users. This is particularly true in rural and provincial councils, which often have high water users in the agricultural and horticultural industries.

Potential impact of assumption

This assumption may impact on the size of the difference between the projected household charges under the council and entity scenarios because it is likely to be more accurate at an entity level than it may be for individual councils.

Councils which receive a lower proportion of their three waters revenue from households than is assumed in the WICS analysis will have higher projected household charges under the WICS analysis than they may otherwise have.

WICS analysis is also presented at a three waters level, which means it is difficult to see the impact for customers which may only receive one or two of the services provided. This is likely to be particularly relevant for councils with large rural areas.

2.2.3 Household connections

WICS have determined the number of household connections in their modelling by:

- Averaging the connected water and wastewater populations from each council's RFI
- Dividing the number by 2.7 (which is the average household density in New Zealand).

This value is used as the denominator in WICS' projections of average household charges. The higher this number is, the lower the projected household charge is.

WICS does not appear to have used any data regarding stormwater connections/charges within its analysis.

Comments on the underlying assumptions

Household density varies significantly between territorial authorities within New Zealand. This is particularly prevalent in the comparison of rural and urban councils. According to Statistics New Zealand, in 2018 the council with the highest occupancy rate has an average of 3.0 residents per household, compared to the least dense council having an occupancy rate of 2.1.

We understand that there are now councils that have significantly lower occupancy rates than that still (with some reporting occupancy rates of less than 2 residents per household).

Potential impact of assumption

This assumption may result in a difference between the projected council and entity values (i.e. it will affect the entity and council differently) because the household density number varies significantly between council areas but is likely to be more accurate at an entity level.

For councils with low household density, it is likely that the application of this assumption will have resulted in the WICS analysis overstating the potential household charges in 2051 for individual councils. The projected household charges for the water services entity are less likely to be affected by the application of this assumption.

2.3 Capital and Operating Efficiencies

WICS looks separately at capital and operating efficiency expenditure. In both cases, WICS undertook econometric modelling (using the reworked Ofwat 2004 and 2009 models) of the potential for operating efficiency from each council using tools and techniques applied and fitted to UK water entities and tested this against New Zealand.

2.3.1 Efficiencies

WICS have applied efficiencies adjustments in some cases for individual councils. These efficiencies have been based on council size. The observed experience from United Kingdom demonstrates that only entities of a scale of more than 60,000 connected citizens could be expected to achieve any reductions in operating costs, even if they were subjected to robust governance and regulatory frameworks.

In the models provided, the scale efficiencies increase on a diminishing (logarithmic) basis above the minimum size threshold. This means there is no inclusion for efficiency improvement for councils with less than 60,000 population served. For councils above this threshold, efficiency gains are realisable (albeit at a diminishing rate) up to a maximum of 800,000 population served, after which no further returns to scale have been included in WICS modelling.

In determining the scale of efficiencies modelled for the Water Services Entities, WICS assesses the New Zealand Three Waters sector to be in a broadly similar position as Scotland in 2002, in terms of relative operating efficiency and levels of service. In just under two decades, Scottish Water has lowered its unit costs by 45% and closed the levels of service gap on the best-performing water companies in the United Kingdom. This has been used as evidence to support the modelled efficiencies.

WICS modelling includes a capital efficiency challenge of 50% and an operating efficiency challenge of 53.3% for Entity D, with an assumption that this efficiency gap is able to be closed within 20 years from today. In addition, WICS have assumed that water entities will be able to achieve half of New Zealand's historic annual Total Factor Productivity gains, these gains typically relate to improved workforce productivity and technology gains.

In assessing the ability for water services entities to achieve efficiencies, the Department of Internal Affairs noted, in its Regulatory Impact Statement, that efficiencies could be achieved through:

- Financial efficiencies - better access to capital, more highly leveraged
- Operating efficiencies – improved organisational capability, reduced organisational overhead
- Capital efficiencies – improved asset management, coordination of investment
- Regulatory efficiencies – transparency and benchmarking, regulatory compliance costs lower for a large entity

Comments on the underlying assumptions

We note that Entity D is projected to have around 900,000 customers on formation. This is comparable in size (but much less densely populated) to Bristol Water and South Staffordshire Water, who were cited as achieving efficiencies of 25% and 20% respectively in the WICS reports.

We have no formal view on whether or not the efficiencies used by WICS are achievable or not. Our sensitivity analysis, presented in section 1.5 outlines the potential future household charges under Entity D if these efficiencies are unable to be fully met.

We note that academic literature presented by the Department of Internal Affairs, and the peer review report produced by Farriersweir do acknowledge that efficiencies relating to economies of scale and from an economic regulatory regime have been observed overseas. Whether overseas examples are equally applicable to New Zealand is unclear.

We have not been provided any evidence that the "New Zealand three waters sector is in broadly the same position as Scotland in 2002". This is the starting position for much of the WICS analysis.

Potential impact of assumption

If modelled efficiencies from service delivery reform are overestimated, or underestimated, then this will have a direct impact on the projected household charges for the water services entities. That is, overestimation of the potential operating efficiencies will result in WICS' projections of household charges for water services entities being lower than they may otherwise be if those efficiency targets are unable to be met.

2.4 Sensitivity

WICS undertook detailed sensitivity analysis (Monte Carlo analysis) of their projected household charges to demonstrate whether there are any instances where household charges would be lower under continued council led service delivery versus the reform, scenario. Across the country, this analysis shows only a very limited number of cases where household charges have any potential to be lower without reform than with it. In these cases, WICS typically notes that the levels of service received by customers without reform would be significantly lower than they would be under the reform scenario.

Importantly, while this sensitivity analysis does consider different levels of investment requirements, it does not consider the impact of the debt to revenue assumption, or assumptions regarding the percentage of revenue from households, or the number of connections. We have not attempted to recreate the sensitivity analysis completed by WICS but would anticipate that adjustment of these assumptions prior to undertaking the sensitivity analysis would result in more instances where future household charges crossover under the reform and no reform scenarios.