Advice on Water Reform

Report to Gisborne District Council

SEPTEMBER 2021

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Definitions

DIA	Department of Internal Affairs
GDC	Gisborne District Council
IPART	Independent Pricing and Regulatory Tribunal
LGNZ	Local Government New Zealand
RFI	Request for Information
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 Gisborne District Council (GDC) into a new statutory corporation called "Entity C" together with the water services of Carterton, Central Hawke's Bay, Chatham Islands, Horowhenua, Hastings, Kāpiti Coast, Lower Hutt, Manawatu, Marlborough, Masterton, Napier, Nelson, Palmerston North, Porirua, South Wairarapa, Tararua, Tasman, Upper Hutt, Wairoa and Wellington (the Reform Scenario).

The government has given GDC two choices; join the Reform Scenario or Opt-Out. GDC, 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 Gisborne with $29 million in funding under the "better off" package, an additional $3 million for stranded overhead costs under the "no worse off" package, and further compensation for any loss in GDC's debt headroom.[1] 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 GDC that are claimed by the government are robust, and whether the Gisborne 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 in the Reform Scenario will be eight times lower than the amount of the Opt-Out Scenario

The government is promising that the Reform Scenario will deliver household bills that are eight times lower than what would exist in the Opt-Out Scenario. The government claims that the Reform Scenario will deliver Gisborne residents:

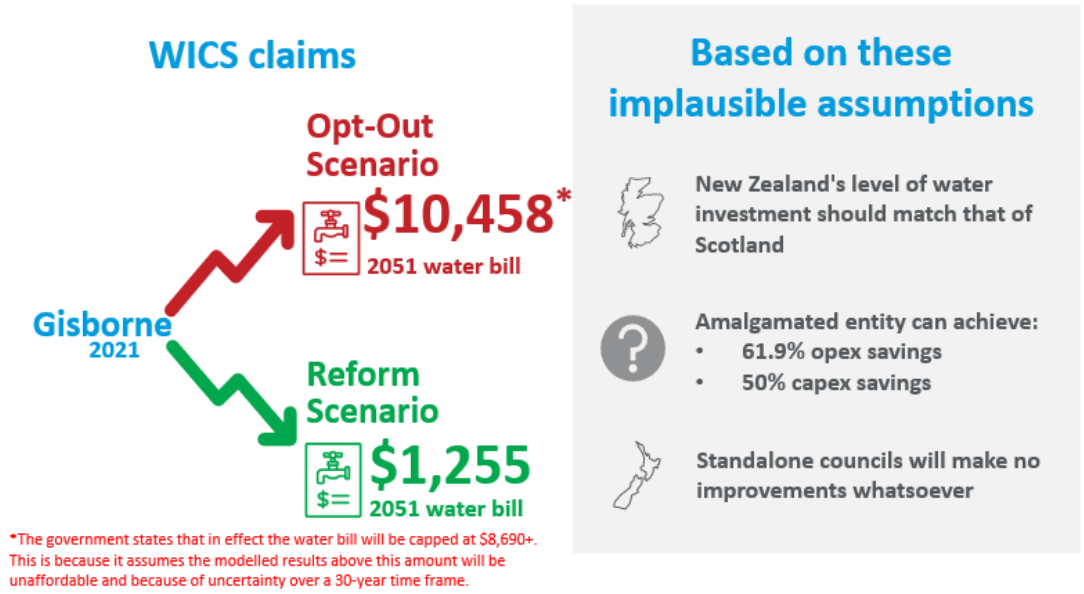
- Household bills that average $1,255 by 2051
- Improvements in service delivery and affordability
- Improvement in the ability to raise finance.

In contrast, the government's WICS analysis claims that if GDC provides water services as an opt-out provider, household bills would rise to $10,458 by 2051. However, the Minister of Local Government has acknowledged the weaknesses in the 30-year WICS forecast and that

[1] Local Authority Indicative Financial Tool, released by DIA, available at https://taituara.org.nz/Story?Action=View&Story_id=334

estimated bill amounts over a cap of $8,690 will be unaffordable for affected communities.[2] Therefore the 2051 bill amount quoted publicly is $8,690+.

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 that the claimed benefits of the Reform Scenario will materialise.

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

- That GDC (and New Zealand as a whole) needs to invest to Scottish levels of water sector capital stock per resident
- The amalgamated entity will be able to achieve up to 61.9 percent in opex efficiency and up to 50 percent in capex efficiency compared to existing opt-out entities
- GDC as an opt-out entity will not improve over the next 30 years.

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

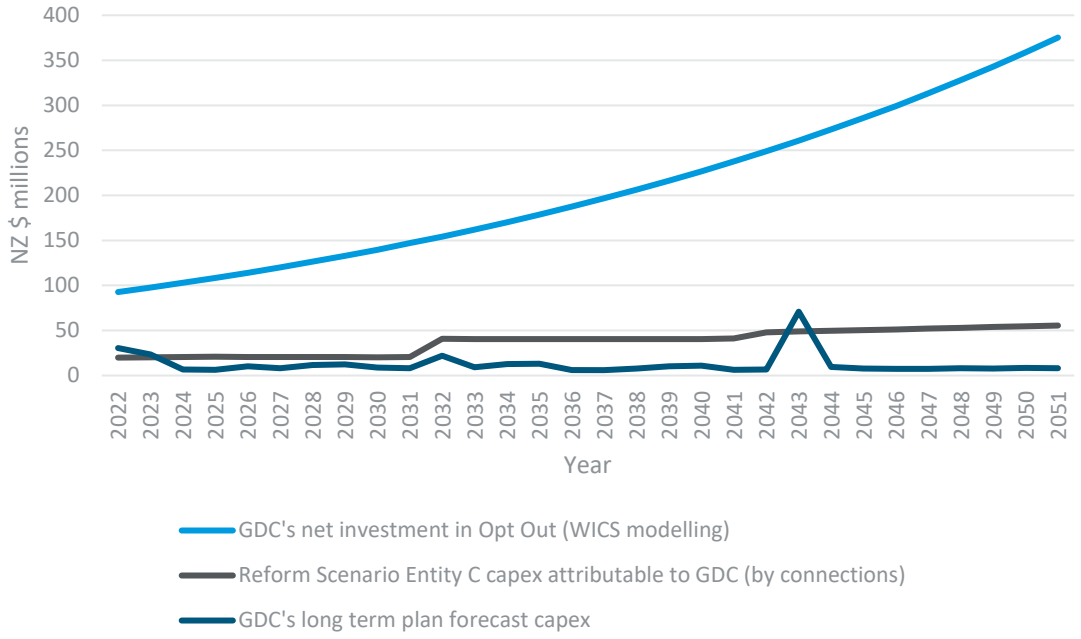
The Reform Scenario rests on WICS' modelling and manual adjustments that assume New Zealand will need significantly higher levels of capital investment over the next 30 years than is currently estimated in local authorities' own 10-year plans. Significant additional capital expenditure is needed in the water sector for some locations in New Zealand. This will be needed to meet the requirements of new regulatory requirements for water quality and environmental outcomes, as well as ensuring resilience to climate change. However, the WICS

[2] Minister for Local Government, Press Release and Note for Editors: https://www.scoop.co.nz/stories/PA2106/S00237/government-water-reforms-to-build-economic-resilience-and-save-ratepayers-money.htm

approach to estimating the required capital expenditure for GDC is flawed and likely overstates it. The required capital investment, compared to GDC's own planned investment, is illustrated below.

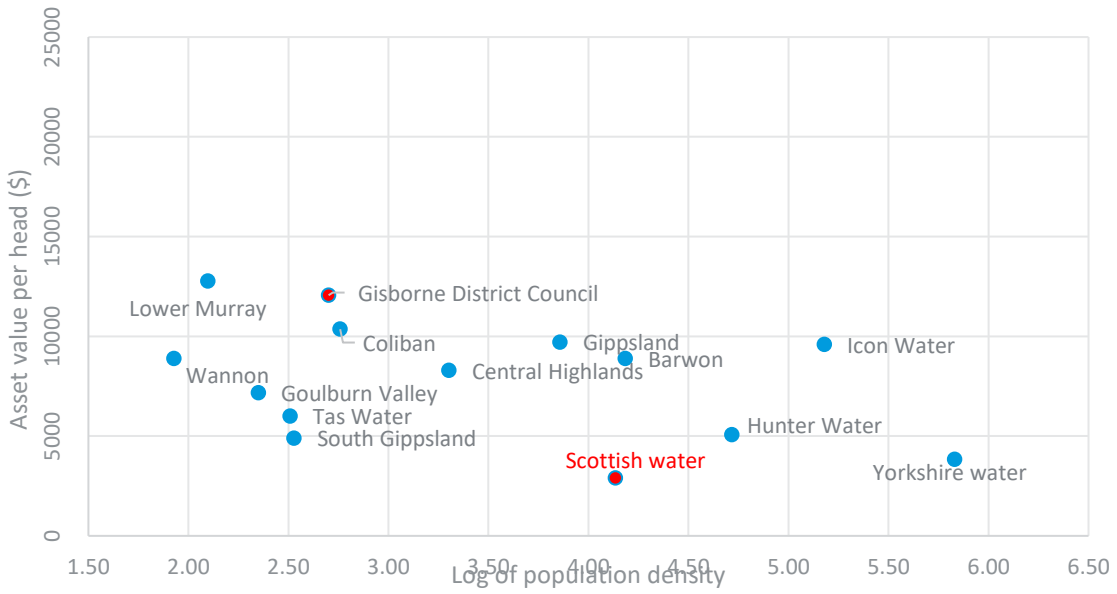
Figure 0.2 shows how WICS models a significant difference in net investment for GDC in the Opt-Out Scenario compared to GDC's own planned capital investment.

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



In modelling the Opt-Out Scenario, WICS claims that GDC needs to increase capital investment from 2021 because WICS selectively and mechanistically applies a model based on Scotland and England/Wales assumptions. This model suggests that New Zealand requires water asset capital stock of up to $70,000 per capita. However, there is no strong evidence that Scottish and England/Wales asset levels are relevant to New Zealand in general, or to Gisborne 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 UK models 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 this figure. We included all vertically integrated Australian water utilities where recent replacement values were available.

WICS significantly overstates the required capital investment because it incorrectly uses accumulated depreciation

The required investment in WICS' model uses a crude assumption of future replacement capital expenditure. WICS takes GDC asset values and asset lives (reported in the RFI) and estimates investment based on cumulative economic depreciation. This approach essentially assumes that future replacement capital expenditure will be exactly equal to estimated future depreciation. The impact of this crude assumption is an overstatement of the estimated replacement capital expenditure by approximately $1.75 billion over the modelling horizon (expressed in projected outturn prices).

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 61.9 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 relatively minor potential cost savings in procurement. The opex saving is also derived from Ofwat and Scottish observations and there is no strong evidence it will emerge in Entity C following reform.

GDC is likely to make some improvements in water service delivery if it opts out, yet WICS assumes no such improvements

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

GDC 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 GDC that drive better performance as GDC 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 a significant impact on 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 are generally an efficient way to ensure that the beneficiaries of infrastructure bear its costs. The debt limit assumptions used by WICS for the Reform Scenario have a material impact on the level of the 2051 household bill. This is illustrated in Table 1.1below.

Table 1.1: Average bill per household (current dollars and projected 2051 dollars) under different financing options for reform scenario (Entity C)

	Average bill per household (current dollars)	Average bill per household ($ 2051)	% Change (Increase in bills)
645% debt to revenue limit (Actual Modelled)	1,257.23	2,464.18	
280 % debt to revenue Limit	2,464.85	4,831.10	96.05
250 % debt to revenue Limit	2,676.12	5,245.19	112.86

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

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 GDC and other local authorities by central government. Water services should be safe, resilient, reliable, and customer-responsive, at least cost. Some reform of the sector is necessary for some parts of New Zealand. However, the analysis needs to be done to determine where water services fall short of this objective and for what reasons.

The government's evidence base and analysis does not establish if the reforms provide a net benefit to GDC. We recommend that GDC 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.

There is plenty of analysis, evidence and now a rich data set in the RFI responses for GDC and like-minded local authorities to be able to identify alternative and better reform options. For example, the four local authorities in Hawke's Bay have already undertaken work on a shared model supported by analysis that suggests some benefits are available. GDC 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 GDC's water services into a new statutory corporation called "Entity C" together with the water services of Carterton, Central Hawke's Bay, Chatham Islands, Horowhenua, Hastings, Kāpiti Coast, Lower Hutt, Manawatu, Marlborough, Masterton, Napier, Nelson, Palmerston North, Porirua, South Wairarapa, Tararua, Tasman, Upper Hutt, Wairoa and Wellington (the Reform Scenario). The government has presented the only alternative to the Reform Scenario as being a situation where GDC 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 are 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 are tested to determine whether the stated level of household bills is robust (section 3)
- Finally, the risks and costs to the GDC 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 the 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 GDC 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 as clear that the investment is needed in all places, at the scale WICS claim.

WICS is selective in estimating the nationwide required investment amount. WICS also used 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 GDC 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 used 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 (which we label A, B and C). 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 the required investment

	Approach	Enhancement and Growth Investment ($ billions)			Asset replacement and refurbishment ($ billions)	Total Investment [3] ($, 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		
A	Great Britain comparative Models	49 – 69	63-83	57-77	63-77	120-154
B	Scotland only comparative models (WICS preferred)	73- 99	87 -113	77-100	70-86	148-185
C	Asset value comparisons with UK.[4]	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'. The estimates for the two categories are derived separately, with no consideration of the interaction between the two. This means that WICS' total investment estimate will be overstated.

WICS' preferred model appears highly selective

WICS' models in approaches 'A' (Great Britain comparative) and 'C' (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 'B'. Approach 'B' reports significantly higher required levels of investment.

[3] 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.

[4] 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 'A' and 'B' are apparently driven by population density.[5] 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 made a further manual adjustment and imposed 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.

A better approach would be to evaluate 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 and for investment to comply with future regulations and resilience to climate change. 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 the assumption that it must match investment levels in Scotland. This is justified on the grounds that NZ has a relatively lower level of urbanisation.[6] 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.

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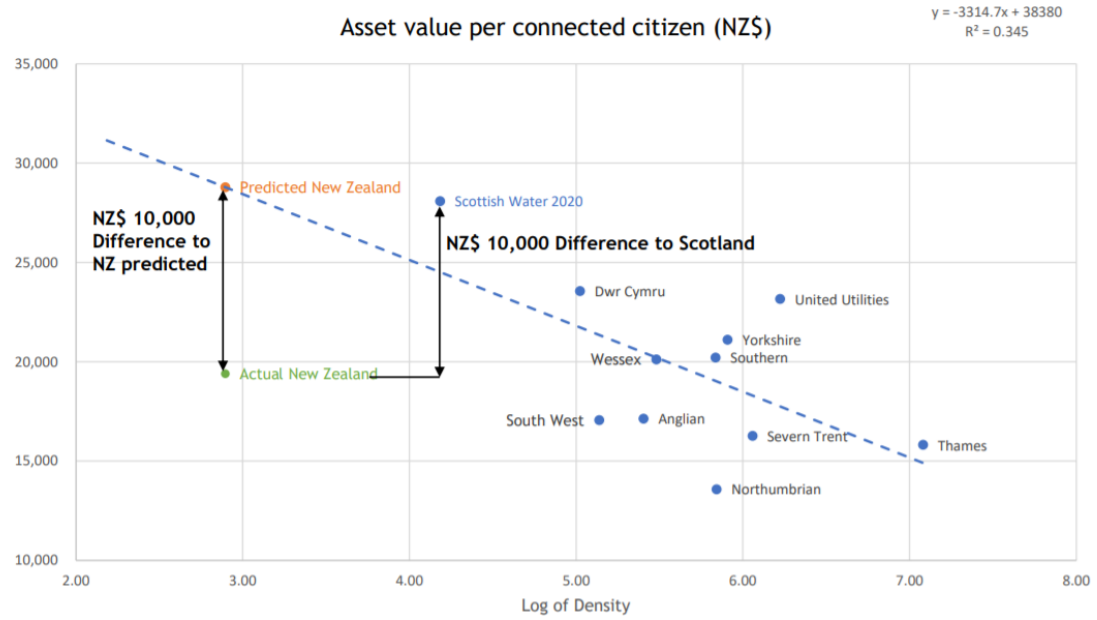
[5] WICS supporting material 1 – required investment (slide 33), https://www.dia.govt.nz/diawebsite.nsf/Files/Three-waters-reform-programme/$file/wics-supporting-material-1-required-investment.pdf

[6] 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

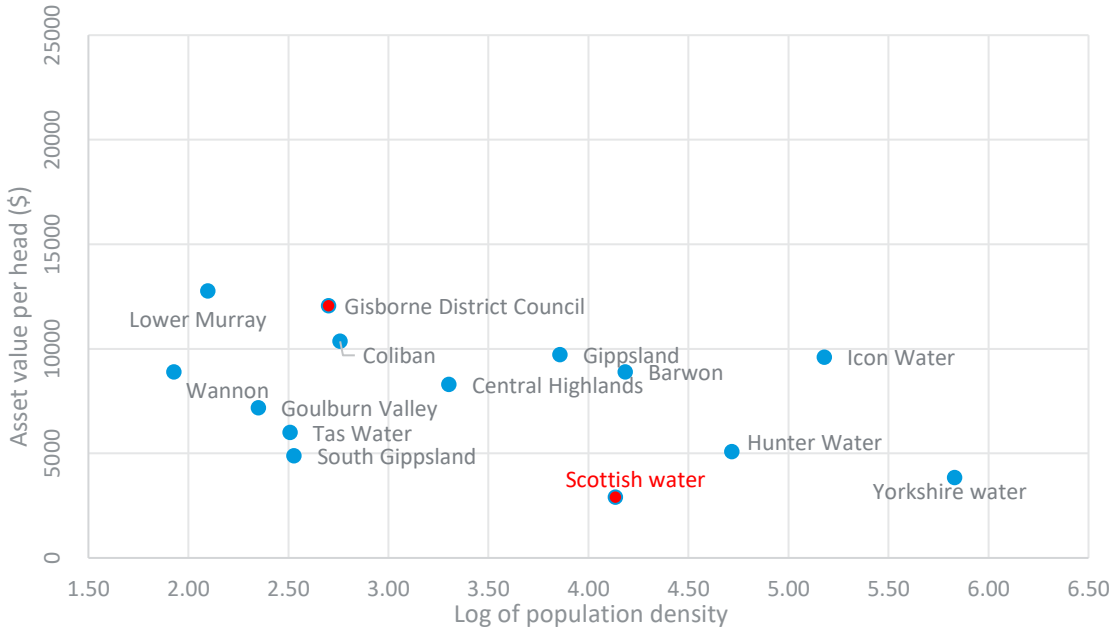
However, WICS does not show how the weak correlation in Scotland and England might predict water investment needed in New Zealand. No causal link is drawn. We were also unable to reconcile WICS' asset value per connected citizen figures for Scottish Water and Yorkshire. These are much higher than what 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 GDC.

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 GDC.

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 does 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 are)	Urban population (% of population)	Population in the largest city (% of urban population)	Urban population growth (annual %)
New Zealand	18.6	86.7	36.4 (Auckland)	2.2
Scotland	65	83.04[7]	11.6 (Glasgow)	-0.06[8]

Source: World Bank Indicator Database, 2020

WICS' use of population density to drive required investment produces an absurd result for sparsely populated Tairāwhiti

When WICS' population density approach is applied in modelling for Tairāwhiti, it produces the implausible results. WICS models a massive capital expenditure amount for GDC under the Opt Out Scenario of $2.7 billion for "required enhancement and growth" investment over the modelling horizon. This explains why WICS' predicted bill is $10,458 by 2051.

The massive investment assumption is driven by WICS' assumptions about population density. WICS' assumes that Gisborne has a very low population density across the whole district, as if water services will be provided by GDC in all localities. The main urban locality in GDC's area is Gisborne city (population 37,000). Reticulated water and wastewater services are provided in Gisborne city. The next largest towns are Tolaga Bay (population 811) and Ruatōria (population 759). The remaining Gisborne District is sparsely populated farmland, forestry and forest park and covers 8,355 square kilometres. Tolaga Bay and Ruatōria may require reticulated services in future. It is unlikely that other towns and hamlets will require large-scale water infrastructure investment that household or community-based water systems could not service. Yet WICS' population density approach appears to drive an assumption that significant investment is needed across a wider area.

DIA's Beca New Zealand report shows some similarities between Scottish and future New Zealand regulations but does not address the fundamental flaws with WICS' approach

DIA also obtained a report from water engineering experts Beca New Zealand[9] which compared the regulatory environment and industry practices in Scotland. Beca New Zealand does not compare whether the level of investment modelled by WICS is appropriate, only that the assumptions about the regulatory environment bear similarities. Beca New Zealand's report explicitly does not cover differences in financial or accounting practices (such as asset depreciation and renewals, asset insurance, debt management and so on) between Scottish Water utilities and New Zealand local authorities. Crucially, it is these matters that have undermined WICS' estimates of required investment.

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

[8] 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

[9] Beca New Zealand (2021), DIA Three Waters Reform WICS Modelling Phase 2: Review of Assumptions between Scotland and New Zealand Three Waters Systems, available at: https://www.dia.govt.nz/diawebsite.nsf/Files/Three-waters-reform-programme/$file/beca-report-dia-three-waters-reform-wics-modelling-phase-2.pdf

It is true that some additional investment is needed in some parts of New Zealand to comply with future regulatory requirements, and to improve resilience of water services to climate change. Beca New Zealand's report is useful to compare the regulatory regimes and network technical similarities. However, Beca New Zealand's report cannot (and does not) provide a view on whether WICS' top-down analysis and crude modelling techniques give accurate insights on the level of investment required.

2.1.3 WICS' required investment estimate is implausibly high due to accumulated depreciation

GDC'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. GDC's RFI response shows that its planned investment is significantly below the level that WICS' model predicts. GDC compares more favourably than Scottish Water in terms of asset values per connected citizen, as illustrated in Figure 2.2

WICS estimates future investment using a highly irregular approach that overstates replacement capital expenditure

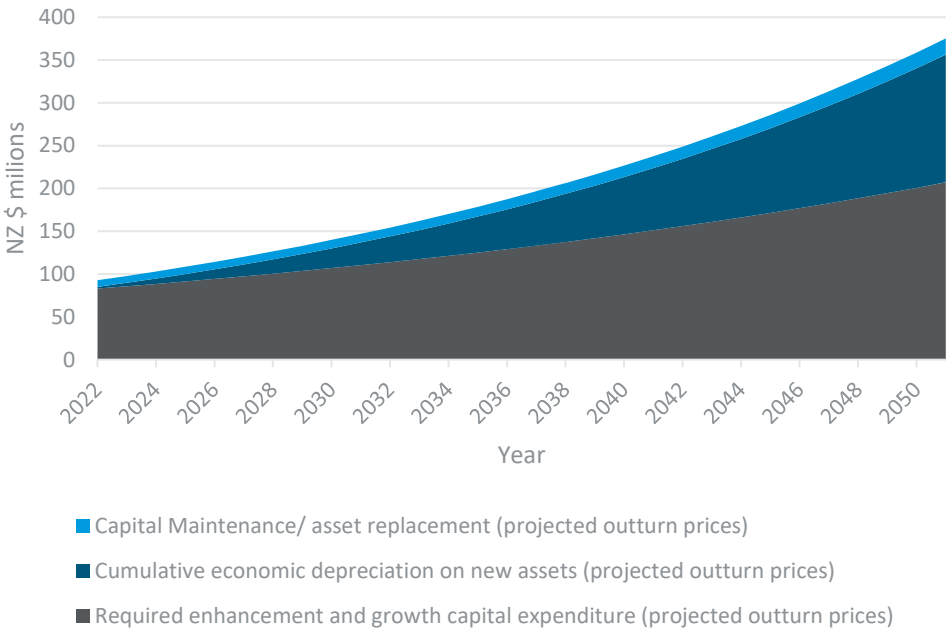
WICS takes GDC asset values and asset lives (reported in the RFI) and estimates investment based on cumulative economic depreciation. This approach essentially assumes that future replacement capital expenditure will be exactly equal to estimated future depreciation. This is a very crude assumption. The depreciation-derived estimates are far inferior to the bottom-up capex forecasts developed by GDC and other local authorities for the purposes of their 10-year long-term plans and longer-term capital investment plans, which could subsequently be adjusted for assumptions about additional investment for regulatory compliance.

WICS use of cumulative economic depreciation is particularly problematic when applied to modelling the replacement of "new assets"—the assets WICS models as "required enhancement and growth capital expenditure". Essentially, the WICS model assumes that one year after a new asset is created, part of that asset must be replaced. WICS then models such part replacements to occur every year until the end of the asset's useful life. This approach clearly does not reflect reality, where assets are generally replaced once and usually towards the end of their useful life. WICS assumes that the long-life assets will have an asset life of at least 84 years, while the short-medium-life assets will have an asset life of at least 24 years. It is hard to see how large-scale asset replacement of new assets could possibly take place within the modelling horizon, which only extends to 30 years.

As a result, just this aspect of WICS' modelling for Gisborne overestimates replacement capital expenditure by approximately $1.75 billion over the modelling horizon (expressed in projected outturn prices)

Figure 2.3 illustrates the components of required investment for GDC, separating the asset replacement and refurbishment into two components.

Figure 2.3: Required investment after capital price inflation for GDC (WICS modelling)



Cumulative economic depreciation makes up a significant portion (28.15 percent) of the total investment requirement for GDC. WICS has taken the GDC asset values and asset lives reported in the RFI only for the asset replacement component of the total investment for GDC (6.03 percent).

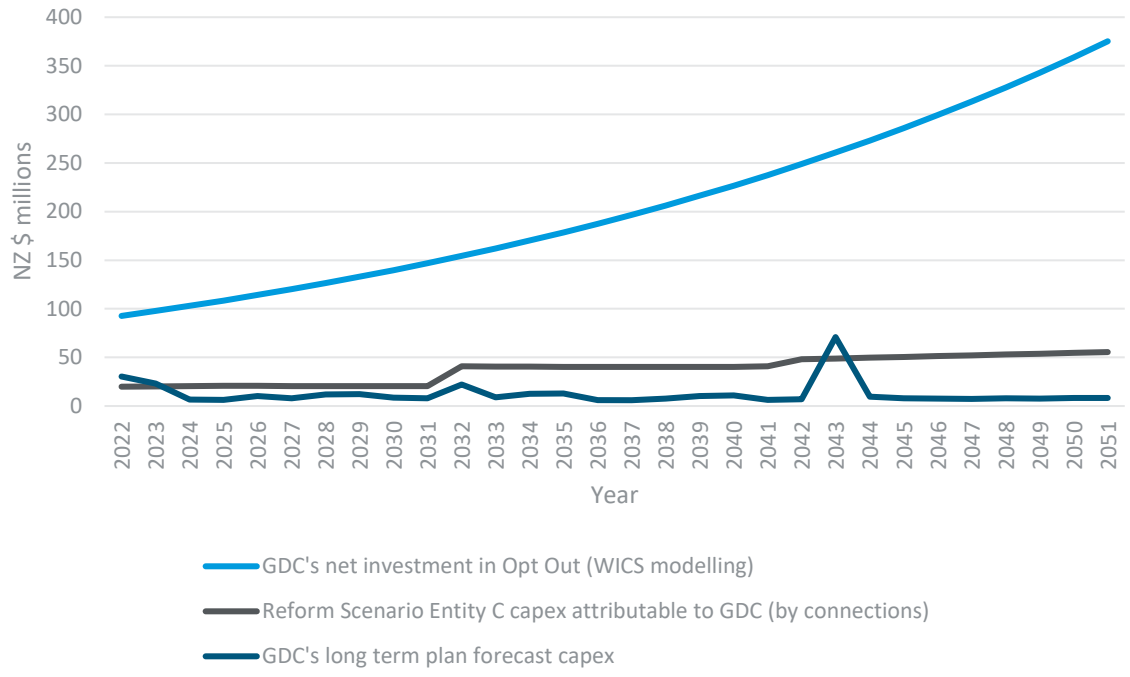
GDC's own long-term capital investment plan has significantly lower levels of investment than WICS model

Figure 2.4 illustrates the significant difference between WICS' modelled net investment needs for GDC, and GDC's own planned capital investment.[10] We also calculated the capital investment attributable to GDC in Entity C using WICS' model and find that it is lower that the Opt Out scenario investment, but still somewhat higher than GDC's own investment plans.[11]

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

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

Figure 2.4: Net investment scenario for Gisborne under WICS models and GDC's own plan



2.2 Efficiency estimates for Reform Scenario are implausible

WICS uses efficiency assumptions in its analysis of the amalgamated entity (Entity C). 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 61.9 percent

It also assumes a total factor productivity efficiency improvement of 0.4 percent per annum for the Reform Scenario but not for GDC 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 C 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

- Recent comments on Castalia's analysis by DIA do not shed any new light on this question
- Some entity C councils have already achieved available economies of scale
- Only relatively 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 C 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 GDC. 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 C model[12] 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[13] 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).

[12] And in the models for Entity A, Entity B and Entity D.

[13] WICS 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

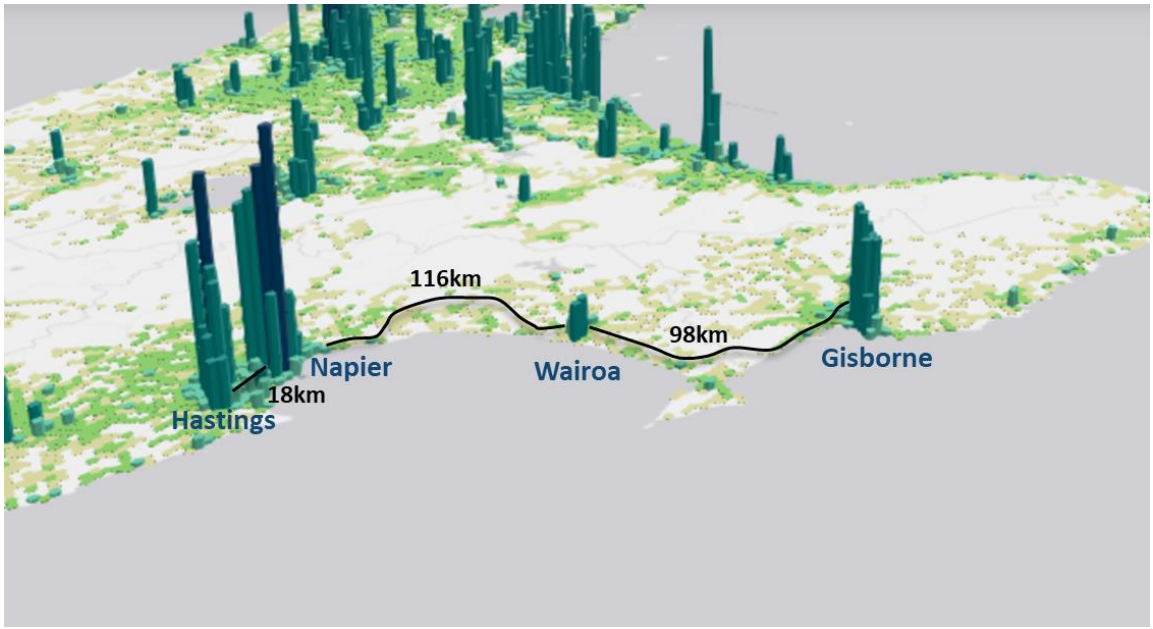
Recent comments from DIA do not shed any new light on the economies of scale question

In response to Castalia's work for other local authorities, DIA subsequently referred stakeholders to a 2018 Frontier Economics report claiming to support a claim that the efficiencies are justified.[14] However, that report relates to efficiency gains following privatisation of the English water and sewerage companies. The English (and Welsh) water companies were the result of an amalgamation in 1972 that pre-dated the Thatcher-led government privatisation by 17 years. Again, DIA makes the error of confusing the efficiency gains that followed from the privatisation and regulation of the poorly performing regional public water corporations in England and Wales in 1989 with benefits of amalgamation. Castalia's report to LGNZ in September 2020 on reform options, entitled "Comparative Analysis of Institutional Forms in Water Services", has a full discussion of this history. The report was released to LGNZ's members in August 2021.[15]

Scotland is an inappropriate model for Gisborne and Entity C

The population within the Entity C boundaries live across a wide geographic area, in a mixture of mostly urban settings. There are significant distances between each urban area. In GDC's case, the neighbouring councils are Wairoa District, Napier City and Hastings District to the South. Entity B councils are to the West. Sparsely populated, remote and inaccessible farmland sits between the settlements. The distance from Gisborne to Wairoa (itself a town of only 8,600 people) is 98 kilometres. It is a further 116 kilometres to Napier. Figure 2.5 illustrates the population densities around Gisborne.

Figure 2.5: Population densities in Gisborne, Wairoa, Napier, Hastings and neighbouring localities



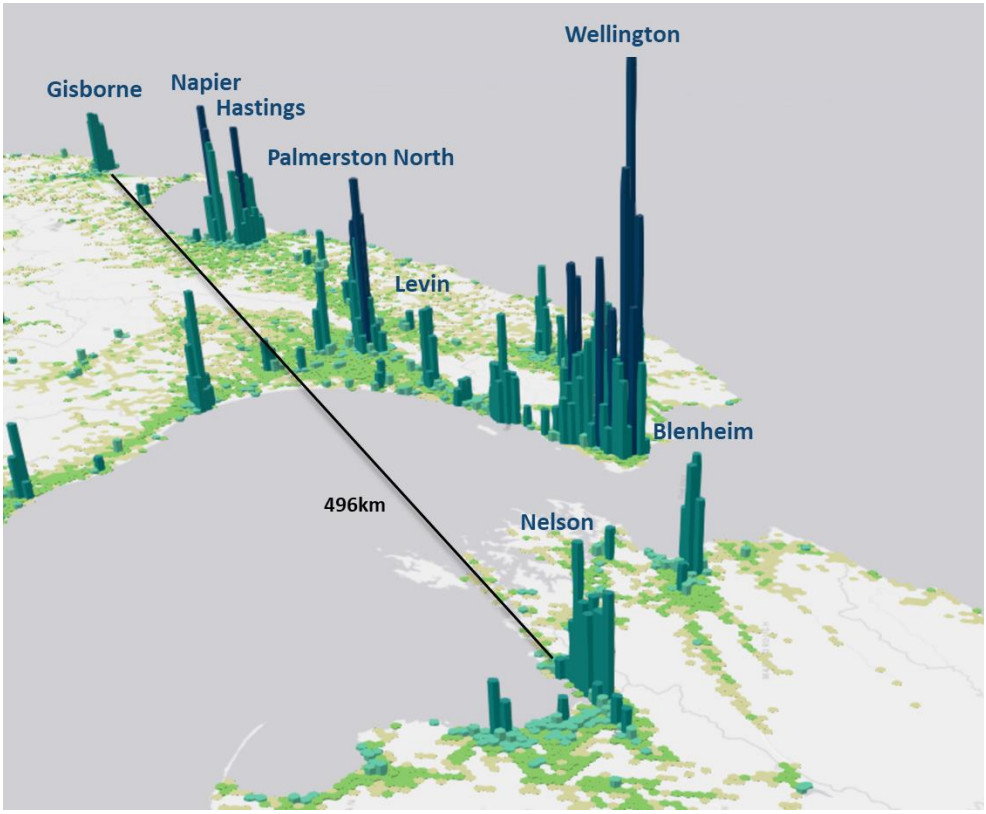
Statistics NZ, available at: https://statsnz.maps.arcgis.com/

[14] https://www.water.org.uk/wp-content/uploads/2018/11/Water-UK-Frontier-Productivity.pdf.

[15] LGNZ's public release is available here: https://www.lgnz.co.nz/assets/LGNZ-release-of-Castalia-reports-context-and-response-v2.pdf

Within Entity C there are cities (Wellington, Lower Hutt, Porirua, Upper Hutt, Palmerston North, Napier) and urban townships, which almost all have significant distances between them. The Cook Strait separates Marlborough, Nelson and Tasman from the rest of the Entity C council areas (and the Chatham Islands). The distance from Tairāwhiti in the North to Takaka in the South is over 500 kilometres. Figure 2.6 illustrates these population densities and distances.

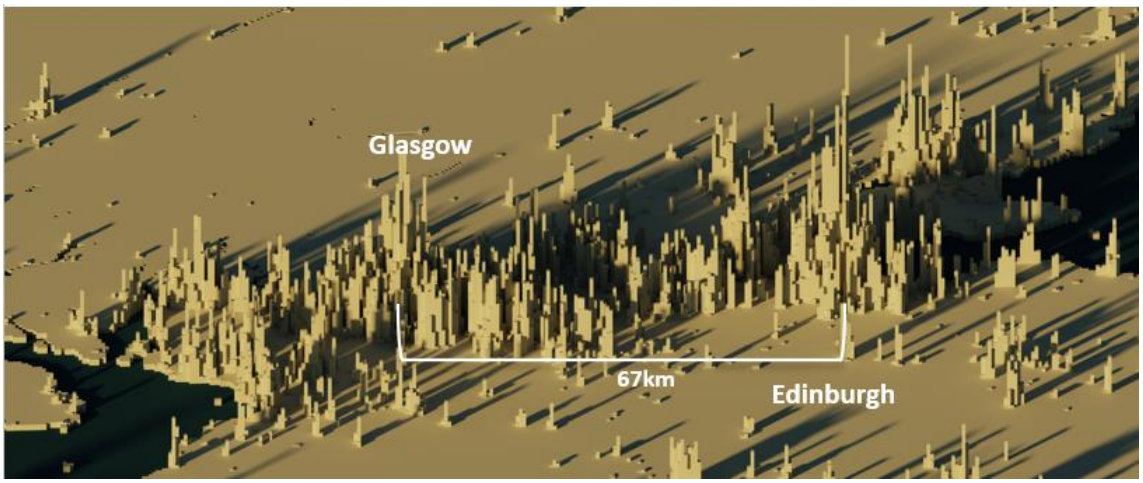
Figure 2.6: Population densities in Entity C area



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

The geographic profile around Gisborne and in the Entity C area is different from Scotland, where 80 percent of the population lives in the larger central belt and around areas between Glasgow and Edinburgh (Figure 2.7). There is potential for agglomeration efficiencies and for networks to achieve some scale benefits based on proximity alone.

Figure 2.7: 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 C lives in urban areas with significant distances between them. This means that the "asset optimisation" (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.

Several Entity C local authorities have already achieved many available economies of scale

Where urban areas within Entity C adjoin, the local authorities already achieve some efficiencies by sharing services. Nelson City Council and Tasman District Council share the costs of the Bell Island wastewater treatment plant, which takes wastewater from the urban areas of Stoke and Tahunanui in Nelson City and Richmond in Tasman District respectively.[16] Six local authorities in the Wellington region own a shared management company—Wellington Water—that achieves some management (opex) and procurement (capex) efficiencies. This makes sense because of the proximity of the urban areas and for historical reasons; the Wellington City water supply has mostly come from within the boundaries of Lower Hutt city for over 100 years. Many local authorities within the Entity C area also procure services from third party providers that compete with one another.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).[17] 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.

[16] Nelson City Council WWTP website: http://www.nelson.govt.nz/services/facilities/infrastructure/nwwtp/

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

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, economic literature that has looked at the specific question of whether economies of scale are available from administrative amalgamations provides a clear answer: there are none available from amalgamation alone, except in highly specific circumstances which are not present in New Zealand.[18]

Economies of scale estimate is not based on 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[19] 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.[20]

WICS economies of scale claims are rejected by peer reviewers FarrierSwier

FarrierSwier peer-reviewed WICS' approach, and we understand 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".[21] Its review did not assess whether the outputs from the WICS analysis are reasonable or free from error.[22]

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 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.[23] Several studies confirm that the three

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

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

[20] 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

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

[22] FarrierSwier (2021), Three Waters Reform: Review of the methodology and assumptions underpinning economic analysis of aggregation, pp. iv-v

[23] 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

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.[24] A benchmarking analysis using data from 2002-2003 concluded that the three separate retailers performed "at or near the determined efficiency frontier".[25] 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.[26]

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 61.9 percent saving in opex.

WICS use econometric models to claim that opex efficiencies of 61.9 percent are possible

WICS has used an Ofwat 2004 econometric model to estimate that, after reform, the larger Entity C can achieve up to a 61.9 percent efficiency improvement to operating expenditure (opex). Ofwat has ceased using this 2004 model and now prefers a very different approach.

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

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

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.[27]

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.

Finally, DIA has claimed to stakeholders that relaxation of the debt constraints on local authorities can contribute to operating efficiency gains. DIA cites the potential relaxation of Auckland Council's debt constraints as a contributor to operating efficiencies for Watercare in

[24] 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

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

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

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

the future. This is incorrect and a significant misrepresentation. Relaxation of debt constraints has nothing to do with opex efficiency.

Cost savings as high as 61.9 percent unlikely given GDC's opex profile

A 61.9 percent reduction in GDC's opex costs appears unlikely given the nature of those costs. Some opex cost savings will be possible with better coordination, sharing of services and expertise. However, Gisborne's remoteness from other centres, and the relatively small size of its discrete water network and assets will not change following reform. GDC already outsources significantly, and its employment costs are around 10 percent of total opex.

GDC's outsourcing costs unlikely to fall due to pre-existing efficiencies

GDC, like many other local authorities, already outsources operational capability to a specialist provider. It has a long-term services contract for around $2.9 million per annum (2019 starting annual cost) with Fulton Hogan to operate and maintain the water treatment plant and wastewater treatment facility. In other local authorities that comprise Entity C, several large-scale providers deliver services, such as Fulton Hogan, Downer, CityCare Water and Veolia (a global specialist water services company). Elsewhere, other large-scale providers operate on a regional basis, such as Watercare (which provides services to communities outside of Auckland).

Outsource providers already achieve economies of scope and scale across regions and New Zealand. This is because outsourced service providers can offer specialist expertise on a contracted basis, where full-time employment of staff by a council 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 61.9 percent in the already competitive outsource service provider market are implausible.

Government promises no job losses in water sector

Labour cost reductions, including direct employment costs and hired and contracted services, would not be expected to decrease in the Reform Scenario. Government Ministers and Three Waters Steering Committee members promised no job losses and higher-paying roles:

- 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."[28]
- 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."[29]

Other opex cost reductions unlikely under Reform Scenario

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

[28] 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/

[29] 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/

example, as a result from buying in bulk). However, none of the opex costs are likely to fall by 62 percent.

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

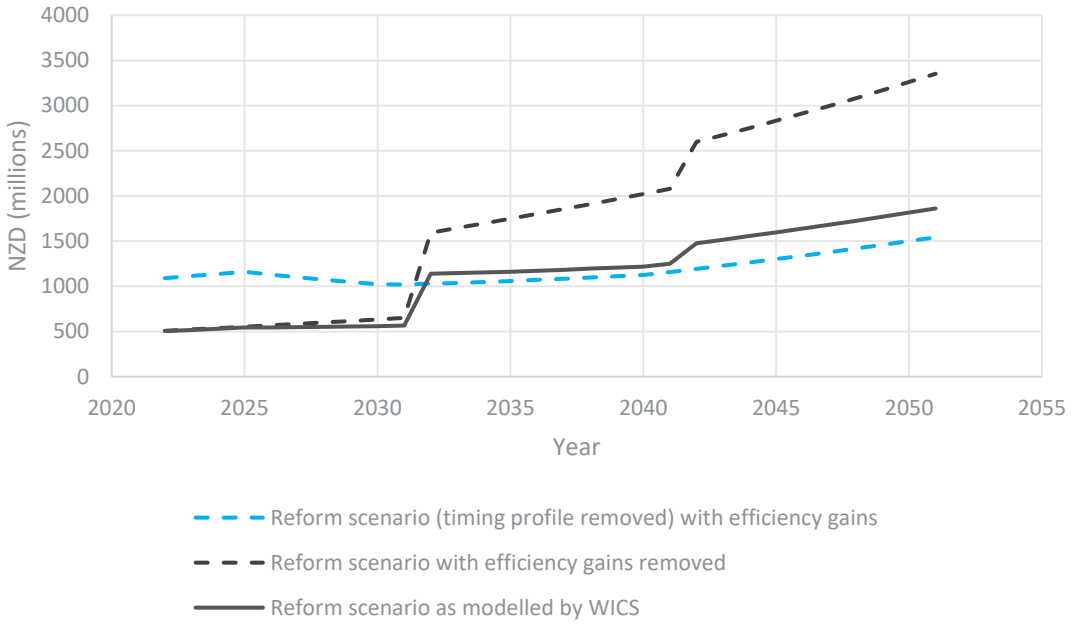
WICS modelling approach uses a number of key discretionary assumptions that are highly favourable for the Reform Scenario and highly unfavourable for the Opt-Out Scenario. With such assumptions, it was inevitable that WICS modelling would reach the conclusions that it did.

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 GDC, 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 GDC'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 takes place (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 Improved regulatory regimes will incentivise improved performance by GDC

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 GDC 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.

3.1.1 Water quality regulation will likely lead to improved performance by GDC

The New Zealand water reforms also involve 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.[30]

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 GDC, 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".[31]
- "strengthen the approach to drinking water compliance, monitoring and enforcement" by centralising these functions and responsibilities leading to more consistent application.[32]
- "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."[33]
- "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."[34]

The government also notes that it will ensure the new regulator "has the powers and resources needed to perform these functions consistently and effectively".[35]

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

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[30] 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)

[31] 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

[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, page 16

[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 25

[34] 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

[35] 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

3.1.2 Possible improvements from economic regulation regime have been overlooked

The proposed economic regulation regime could improve GDC'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 GDC 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 seriously 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.[36]

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.[37]
- In Victoria, the Essential Services Commission regulates 15 businesses providing urban water and sewerage services to residential customers.[38]
- In Western Australia, the Economic Regulation Authority regulates 30 licensed water service providers.[39]
- 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[40] , 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.[41]

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

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

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

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

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

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

[41] 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

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 GDC 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, GDC will be able to better assess the performance of its water services. This is likely to lead to improvements in performance over time.

3.1.3 GDC 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 GDC to also lift the competence of its management and operations. This is because GDC will have to match the working conditions at the larger corporate entities, leading to improvements in performance over time.

3.2 GDC can increase access to finance to lower short-term costs

WICS base assumption is that GDC's financing headroom is 2.5 times revenue. In fact, the Local Government Funding Authority has approved GDC (and other local authorities with a credit rating of A equivalent or above) to borrow up to 2.8 times revenues.[42] Furthermore, the Opt-Out Scenario assumes that GDC 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.

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

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 GDC 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 (current dollars and projected 2051 dollars) under different financing options for GDC (Opt-out scenario)

	Average bill per household (current dollars)	Average bill per household ($ 2051)	% Change (Decrease in bills)
250 % debt to revenue Limit (WICS model assumption)	10,436.44	20,455.41	
280 % debt to revenue Limit	9,612.51	18,840.51	7.89
500 % debt to revenue Limit	6,087.92	11,932.32	41.67

Table 3.2: Average bill per household (current dollars and projected 2051 dollars) under different financing options for reform scenario (Entity C)

	Average bill per household (current dollars)	Average bill per household ($ 2051)	% Change (Increase in bills)
645% debt to revenue limit (Actual Modelled)	1,257.23	2,464.18	
280 % debt to revenue Limit	2,464.85	4,831.10	96.05
250 % debt to revenue Limit	2,676.12	5,245.19	112.86

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[43] 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) under which a third-party provides water services for a fixed term (30 years in Papakura) and 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 GDC residents face risks and costs from Reform Scenario

There are risks and costs to the Gisborne 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, Gisborne 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.

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 Gisborne community to influence the indirectly appointed board. Gisborne's representation for water services will be diluted.

4.2 Local variability in service and quality levels will be lost

The regional Entity C is likely to be managed from Wellington or Lower Hutt (where Wellington Water is based). This reduces the ability of the service provider to reflect local differences in service expectations. This is exacerbated by the physical distance between the likely headquarters and the Gisborne water service network. Those charged with governance, and

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

the Entity C management have long flights or driving distances to complete to understand the needs of Gisborne's water services first hand.

Wastewater services often need to consider local needs. There are different options for 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 Wellington is unlikely to have the same ability to reflect these local variations in demands.

Gisborne has a growing population. Population growth rates have exceeded Statistics NZ estimates, and demand for housing is high. This follows a sustained period of falling or stable population since the 1990s. It therefore has specific needs for its water services: growth infrastructure is needed to meet the demand for new housing and other services. This infrastructure investment is usually coordinated with urban planning (which GDC is responsible for). The Gisborne community may have different challenges than other regional cities. Under a centralised larger entity with governance and management located considerable distance away, it may be more challenging for these local needs to be met, and optimally coordinated.

4.3 Loss of economies of scope increases average cost of remaining council services by at least $2.05 million per annum

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

GDC is also a unitary authority which means it can currently coordinate between its water-related environmental functions and three waters investment and service delivery. However, separating three waters delivery from the environmental regulatory function could also lead to improvements by reducing any scope for conflicts of interest (although this is currently kept in check by policies such as independent audits of unitary authorities' regulatory functions).

GDC's RFI reports that for FY 2020, the total operating cost for water services was $13,223,000. There are multiple overhead cost items that will not reduce even when GDC provides no water services. As estimated from the RFI, these include 10 indirect general management and support employees and 177 square metres of office. We therefore estimate that the shared overhead cost and possible loss of economy of scope is at least $2.05 million dollars per annum, in addition to any losses of scope from the unitary authority functions.

5 Recommended next steps

This report has shown that the Reform Scenario is founded on unsound evidence and faulty analysis. The promised benefits of reform are unlikely to materialise. There are risks to the Gisborne 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 option that has been presented to GDC and other local authorities. Water services should be safe, resilient, reliable, and customer-responsive, at least cost. Some reform of the sector is necessary for some parts of New Zealand. However, the analysis needs to be done to determine where water services fall short of this objective and for what reasons.

We recommend that GDC 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 GDC and like-minded local authorities to be able to identify alternative and better reform options. For example, the four local authorities in Hawke's Bay have already undertaken work on a shared model supported by analysis that suggests some benefits are available. GDC could prepare a constructive counter-proposal, together with other local authorities, that achieves desirable objectives while avoiding the risks and costs of the Reform Scenario.

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