

Advancing the evidence base: background and FAQs

Background

- Throughout the reform programme the local government sector and mana whenua have sought assurances around the evidence base for the three waters reform based on up-to-date, relevant data.
- These four reports provide detailed evidence, at a national scale, of the challenges that our communities face under the current three waters arrangements, and the opportunities that arise from providing these services in a different way.
- They contribute to, rather than provide, the full picture.
- What the reform proposals mean for individual local authorities/areas will become available in the coming months.
- The Water Industry Commission for Scotland (WICS) report is based on data and information provided by councils through the Request for Information process.
- Local government and mana whenua have consistently sought assurance that data and modelling are sound and grounded in the New Zealand context. This is provided by two independent reviews of the approach used by WICS.
- It is important to remember that the reform programme, and these reports, take a long-term view.
- The reports build on earlier analysis. They indicate that the magnitude of the affordability challenges is greater than first thought.
- However, the reports also assess the opportunities for regional economies, industry and jobs presented through the reforms.

About the Reports

Phase two analysis – advancing the evidence base

- The Department of Internal Affairs, with oversight by the Joint Central/Local Government Steering Committee, is releasing a second tranche of evidence-based reports, commissioned to inform the case for change for the Three Waters Reform Programme.
- This analysis further demonstrates the need for reform and its potential benefits and addresses key questions raised by local government members through recent engagements.
- The analysis uses the RfI data provided by councils and publicly available information, including international benchmarks, to undertake economic analysis of reform options.

- This information release provides national-level analysis on the case for change and focuses on the size of infrastructure investment need into the future, and how reform options could help us meet this in a more affordable way – **WICS Phase 2**.
- The release includes two independent reviews of the WICS Phase 2 methodology and assumptions to ensure it is fit-for-purpose in a New Zealand context – undertaken by **Farrierswier** and **Beca**.
- The release also contains a broader economic analysis on the potential impacts of reform on the economy and workforce – **Deloitte report**.
- This national level information release is just one part of a series of information packages the Department will provide to support understanding of the potential impacts and opportunities of reform at a national and local level.
- What the reform proposals mean for individual local authorities/areas will become available in the coming months.

Background on Phase 1 information

- In December 2020 the Department of Internal Affairs (the Department) released a package of information on the case for change, commissioned as part of the Three Waters Reform Programme.
- This early analysis was conducted by the Water Industry Commission for Scotland (WICS), a respected three waters economic regulator familiar with the New Zealand context and with experience of water services reform in the United Kingdom and parts of the European Union.
- The Phase 1 report was high level and directional in nature as it used publicly accessible council information. Several limitations were noted at the time, including not accounting for population growth. However, the report was valuable in providing an early indicative view on the size of New Zealand’s three waters infrastructure deficit and the potential benefits of reform
- Local government representatives expressed concerns over the validity of parts of this analysis, particularly the size of the investment deficit and potential efficiencies of scale, and its applicability in the New Zealand context. This led to a Request for Information from councils on their three waters assets and services.

The Rfi process

- In late 2020/early 2021 councils undertook a request for information (Rfi) as part of the Three Waters Reform Programme.
- This Rfi provided up-to-date and more detailed information at a local level to inform further economic analysis, and other commercial and financial analysis as part of the reform programme.
- This process represents a major undertaking by the local government sector to improve the state of knowledge and understanding about three waters assets, network performance, service delivery costs, commercial arrangements, and future investment requirements.

- Given the timeframes with which councils had to complete the RfI, not all information provided could be audited or fully researched. To reflect this, the Department and WICS asked councils to apply confidence grades to their raw data.
- This will of course mean there is variability across the country in this foundational data, and it should be treated as indicative and reflective of the point in time at which it was commissioned and provided.
- The analysis has also been informed by emerging draft long-term plans that councils have been producing during this period.

Key findings

WICS Phase 2

- The WICS Phase 2 report builds on the findings of the earlier report to provide a more up-to-date analysis. The key findings of the report are in three parts:
 1. The modelling indicates a likely range for future investment requirements at a national level in the order of **\$120 billion to \$185 billion**. This investment is estimated as necessary for New Zealand to meet current levels of compliance that water utilities in the United Kingdom achieve with EU standards over the next 30 years. These standards are assessed by WICS (and confirmed by Beca) to be broadly comparable with equivalent New Zealand standards.
 2. WICS assesses the scope for efficiency by looking at the performance of regulated water utilities in the United Kingdom and making adjustments to take account of factors specific to the New Zealand context. It demonstrates that **New Zealand's Three Waters sector is in a broadly similar position to 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. **WICS considers that New Zealand can achieve similar outcomes to Scottish Water over a longer period (30 years)**.
 3. WICS has analysed around 30 possible aggregation scenarios, reflecting the large number of possible number and boundary configurations. The WICS analysis shows that **scenarios ranging from one to four entities provide the greatest opportunities** for scale efficiencies and related benefits in terms of improved levels of service and more affordable household bills (when compared against the likely outcomes 'without reform').

Farrierswier independent review of WICS findings

- Farrierswier find that the overall approach WICS takes to its analysis should give reasonable estimates in terms of **direction** and **order of magnitude**.
- They note that there are certain limitations associated with the analysis which decision-makers should be mindful of, which relate to estimating the level of future investment requirements and potential efficiency savings that could be realised, particularly given differences in the nuances of the New Zealand regulatory and policy context.

- While their review highlights several limitations associated with the analysis, they note that these are inherent and to be expected in modelling of this kind. Farrierswier also find that WICS' approach to addressing these limitations appears reasonable.
- Farrierswier notes that the approach WICS takes to assessing the potential efficiency gains appears reasonable but care needs to be taken in translating overseas experience into a New Zealand context. They agree with WICS on the factors that will promote efficiency gains in the water sector, including the quality of management, clear policy priorities, and an appropriate economic regulatory regime.
- Farrierswier also explored the relevant literature to test whether any concerns arise that amalgamation might lead to water entities becoming large enough that diseconomies of scale may emerge. Their view is that the amalgamation scenarios under consideration – with entity sizes that do not exceed 2 million connected citizens – **do not appear to include entities of a size that give rise to concerns about diseconomies of scale.**

Beca independent review of WICS findings

- Beca reviewed the standards and practices in the United Kingdom three waters industry and their relevance to New Zealand given WICS has used United Kingdom data and benchmarks as part of its analysis.
- The Beca report considers that, on balance, the forecasts from WICS modelling may underestimate the estimated investment requirements and timeframes, **suggesting that WICS modelling of future investment may be conservative.**

Deloitte industry development study and economic impact assessment

- Deloitte has undertaken a comprehensive study of the economic impacts of reform and the implications for affected industries. Key findings in their report include:
 - **The reform is forecast to impact every corner of the economy and is estimated to increase Gross Domestic Product (GDP) by \$14.4 billion to \$23 billion in present value terms over the next 30 years** when compared to the likely outcomes without reform. In relative terms this increased economic activity equates to an average increase in GDP of 0.3% - 0.5% per annum.
 - **Every region is expected to be positively impacted by reform in terms of GDP and employment growth.**
 - **Reform is expected to support significant job creation across the economy.** Relative to the counterfactual, the reforms are estimated to result in an extra 5,800 to 9,300 additional FTE jobs between 2022 and 2051.
 - Average real annual wages are expected to increase by 0.16% - 0.26% over the period from 2022 to 2051. The increase in real wages mainly reflects a **projected increase in labour productivity.**
 - **The additional jobs are expected to be spread across a broad range of sectors.** Over 30 years significant growth of up to 80% is anticipated in the water sector workforce, presenting significant opportunities for employment growth, specialisation and increased career opportunities. As with any change

process of this scale and significance there are likely to be changes in the configuration of jobs in the water sector and its supply chain in the short to medium term.

- The report highlights a wide range of **opportunities and challenges for the implementation of the reforms relating to the workforce, supply chain, management of the capital investment programme, innovation and productivity.**

Frequently Asked Questions

When will councils receive council-specific analysis and Cabinet decisions?

Cabinet is expected to take and communicate decisions on key design features of the new water services entities (including the numbers and boundaries of these entities) over the coming months.

Once these decisions have been taken, the Department will provide councils with a package of information to help their communities understand the local implications of the proposed reforms.

How is this information base informing advice to Government on reform proposals?

The analysis by the Water Industry Commission (WICS) for Scotland is helping to inform decisions around the optimal number and boundary of water service entities. While an important input, it has been considered alongside analysis of other factors, including community of interest considerations, alignment with regulatory catchments and rohe/takiwā.

Two independent reviews were commissioned to provide assurance regarding the robustness of the WICS modelling and its appropriateness as a basis for policy advice:

- Farrierswier reviewed the methodology and underpinning assumptions applied by WICS and found that the overall approach WICS took to modelling the potential impact of amalgamation of water entities and associated reforms should give reasonable estimates of the direction and scale of impacts.
- Beca reviewed the standards and practices that apply in the United Kingdom three waters industry and how relevant these are for a New Zealand context, given WICS has used United Kingdom data and benchmarks to assess the future investment requirement for New Zealand. The Beca report considers that, on balance, the forecasts from WICS modelling may underestimate the investment requirements and timeframes, suggesting that WICS modelling of future investment may be conservative.

How do the WICS Phase 2 estimates of future investment requirements compare with its earlier analysis?

The full investment requirement estimated by WICS in its Phase 1 study is between \$70 and \$96 billion. This compares to an investment requirement anticipated by the Phase 2 analysis of between \$120 billion and \$185 billion.

It is important to note that while the investment figures commonly quoted from the WICS Phase 1 analysis identify a \$27 to \$46 billion range, this only represents the investment likely to be required to upgrade the existing asset base. It does not include the costs associated with maintaining and refurbishing existing or new assets over the 30-year period, which WICS estimated would cost an additional \$43 to \$50 billion.

The Phase 2 analysis builds on the earlier work by making use of more up-to-date information collected from councils through the substantive Request for Information process conducted in late 2020 and makes allowance for population growth and council-reported rates of connection. The Phase 2 figures estimate the costs of upgrading the existing asset base at between \$57 to \$100 billion and of maintaining and refurbishing existing or new assets at between \$63 to \$85 billion.

What do these documents tell us about why reform is needed?

WICS analysis demonstrates the affordability challenges that local authorities are likely to face in the absence of reform. The cost increases that households are likely to experience without reform will be significant, and likely unaffordable for smaller and more remote communities. In rural councils, average household costs would need to increase by between three and 13 times current costs. For provincial councils the increase is expected to be between two and eight times, while for metropolitan councils it is between 1.5 and seven times current costs.

The Deloitte work demonstrates the potential economic benefits that reform enables by addressing the systemic challenges within the sector, including the affordability challenges faced by councils. By enabling investment to be delivered at a faster and more efficient rate, reforms are forecast to enable an increase in Gross Domestic Product (GDP) by \$14 billion to \$23 billion over the next 30 years.

What do these documents tell us about the impacts of reform and how these are distributed across NZ?

The Deloitte analysis shows that while the economic impacts are distributed differently depending on the relative size, labour market and industry structure of regions, *every* region is expected to be positively impacted by reform in terms of GDP and employment growth.

In particular, many rural and provincial areas are expected to enjoy the highest economic impact relative to their current levels of GDP and employment. This is consistent with the evidence from reforms overseas which shows that reform provides greater opportunities for investment to maintain and refurbish water infrastructure, much of which tends to be located close to communities (e.g. underground pipes).

Metropolitan areas experience significant increases in employment and GDP, and while these are relatively lower when compared to current economic activity for these areas, they represent a large share of the national benefits (for instance Auckland's increase in GDP represents 27% of the total increase across the country).

What impact are the reforms likely to have on local water bills/affordability of world class three waters services?

The WICS analysis provides us with a better understanding of how future water service bills might compare in scenarios with or without reform, under a range of different aggregation scenarios. Without reform, councils will still be required to meet the same future investment requirements associated with meeting regulatory standards. Average household costs will need to increase to address historic underinvestment and enable compliance with these standards. WICS’ analysis shows that these price increases would be far lower as a result of reform.

Results of selected WICS aggregation scenarios

Scenario	Without reform*			With reform		
	Lowest average household bill in 2051	Highest average household bill in 2051	Variance in bills	Lowest average household bill in 2051	Highest average household bill in 2051	Variance in bills
13 entities	\$1,900	\$13,900	730%	\$1,200	\$3,600	300%
5 entities				\$800	\$1,800	230%
4 entities				\$800	\$1,600	200%
3 entities				\$800	\$1,600	200%
2 entities				\$1,000	\$1,600	160%

What is the estimated economic impact of proceeding with the reforms

The reforms are forecast to impact every corner of the economy and could see Gross Domestic Product (GDP) expand by \$14 billion to \$23 billion over the next 30 years. This represents 4.4 per cent to 7.1 per cent of the total New Zealand economy. In relative terms, this increased economic activity equates to an average increase in GDP of 0.3 per cent to 0.5 per cent per annum.

The benefits of reform are widespread, with all regions, and in particular provincial and rural areas, expected to experience significant increases in GDP compared to current levels.

The reforms are expected to support additional jobs across the economy. Relative to the likely outcomes without reform, New Zealand could have on average an additional 5,900 to 9,300 full-time equivalent (FTE) jobs between 2022 and 2051.

How will reform impact on the water sector workforce?

Total employment within the water sector is expected to increase by up to 80 per cent over the medium to longer term as a result of the proposed reforms. However, the composition of the water sector is expected to change, particularly over the transition period. Over time, as investment in more efficient systems and processes for delivering the three waters takes effect, and as the sector matures, the workforce is likely to become more specialised with more attractive career pathways.

How will the proposed reforms impact the wider employment outlook?

Reform is expected to support significant job creation across the economy, resulting in an extra 5,800 to 9,300 additional jobs over the next 30 years. Average real annual wages are expected to increase by 0.16% - 0.26% over the same period, reflecting an increase in productivity and higher skilled employment opportunities.

The additional jobs are expected to be spread across a broad range of sectors and regions. Consistent with the evidence from reforms carried out overseas, Deloitte estimates that employment in many rural and provincial areas is likely to increase at a higher rate relative to the national rate of increase. This reflects the increase in opportunities for investment to maintain and refurbish water infrastructure that is located closer to the communities it serves.

Why are we using a Scottish regulator to inform a New Zealand reform?

The Water Industry Commission for Scotland (WICS) is a respected three waters economic regulator, familiar with the New Zealand context and with experience of water services reform in the United Kingdom and parts of the European Union. WICS particular set of skills and experience is particularly valuable in New Zealand due to the relative lack of maturity in the water services sector.

A key policy consideration throughout the reform process is that proposed new service delivery arrangements must take into account New Zealand communities' conditions and circumstances. The Department and the Steering Committee have benefited from the experience and support of WICS in understanding the economic costs, benefits and likely efficiency gains possible under various reform scenarios.

The reviews conducted by both Farrierswier and Beca also provide further assurance that the approach is robust and appropriate for the New Zealand context. Furthermore, the Department's policy advice has examined other reform models including Tasmania, Australia and experience in other parts of the United Kingdom.

What has been done to ensure that the WICS analysis is relevant for New Zealand?

The two independent reviews conducted by Farrierswier and Beca have commented on the extent to which different parts of the WICS analysis are relevant for a New Zealand context.

Farrierswier have reviewed WICS' efficiency assumptions and the potential for these to be realised in a New Zealand setting and agree with WICS on the key factors that will promote efficiency gains in the water sector, including around good quality governance and management, clear and effective policy direction, and economic regulation. Farrierswier also agree with WICS that reform provides significant opportunities to improve the efficiency of the future New Zealand water industry. They note that there are several factors that may lead to the New Zealand water industry experiencing lower levels of operating efficiency than the United Kingdom, including low levels of productivity growth, high construction costs and skills constraints. These factors are being considered by Department of Internal Affairs officials as part of work to ensure the wider industry is able to gear up to play its part to support the reform objectives.

Beca reviewed the standards and practices that apply in the United Kingdom three waters industry and how relevant these are for a New Zealand context, given WICS has used United Kingdom data and benchmarks to assess the future investment requirement for New Zealand.

Beca consider that, on balance, the forecasts from WICS modelling may underestimate the estimated investment requirements and timeframes due to differences in governance arrangements, consideration of iwi goals and aspirations, seismic and resilience risk, and lack of good quality information on asset, particularly those underground. This suggests that WICS modelling of future investment may be conservative.

What are the limitations on achieving the proposed efficiencies through reform?

Both WICS and Farrierswier note that the ability for new water services entities to realise the efficiency gains possible through reform depends on several preconditions being met. These include that:

- most councils opt into the reform programme
- the entities have effective governance arrangements
- the entities will be able to attract and retain appropriately skilled management
- policy decision-making on water quality and other matters is effective
- effective economic regulation and other governance reform is established
- the entities have access to the necessary resources to
 - fund establishment
 - make the required expenditures to achieve efficiencies

The Government is actively considering each of these preconditions as it decides on its preferred reform approach.

Do the proposed reforms have a ‘tipping point’ where diseconomies of scale kick in?

Farrierswier has reviewed relevant studies on the economies of scale associated with three waters services and concluded that:

“the amalgamation scenarios that DIA is considering do not appear to include entities of a size that give rise to concerns about diseconomies of scale (i.e. as being too large)”