

NSW Productivity Commission



Alternative Funding Models for Local Water Utilities

Issues Paper

February 2024



Acknowledgement of Country

We acknowledge that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.

We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with.

We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities and economies.

We reflect on the continuing impact of government policies and practices, and recognise our responsibility to work together with and for Aboriginal and Torres Strait Islander peoples, families and communities, towards improved economic, social and cultural outcomes.

Artwork:
Regeneration by Josie Rose



Regeneration

Josie Rose is a Gumbaynggirr woman who expresses her contemporary Gumbaynggirr cultural heritage through art. For *Regeneration* her chosen medium is acrylic paint on canvas and the design embodies both creative and cultural expression. The inspiration for her artworks comes from a deep place of spiritual connection to her family, community, culture and respect for Mother Earth. Gumbaynggirr Country is beautiful land with both freshwater and saltwater waterways which inspire her holistic connection to the Ancestors.

Josie Rose
Artist

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Productivity Commissioner's foreword



The people of regional and remote NSW depend on reliable and clean drinking water for their lives and livelihoods. I welcome the opportunity to investigate alternative funding models to strengthen the Local Water Utilities (LWUs) which provide essential water and sewerage services to around 1.8 million people across NSW.

There are over 80 LWUs run by local councils, most servicing fewer than 10,000 households. LWUs face diverse challenges based on where they are located, the area they cover and the number of customers they service.

Meeting the challenge of providing water and sewerage services in regional and remote NSW is no mean feat. Around 20% of the water supply systems in regional and remote NSW are assessed as having high infrastructure-related water quality risk, with over 590,000 people at potential increased risk from water-borne pathogens.

Providing these services to small and isolated communities is also costly, with some customers in remote areas paying around 30% more than their regional counterparts, or about \$540 a year. These are also typically areas of greater social disadvantage.

The problem is, these LWUs lack economies of scale. They need to provide drinking water, sewerage services and maintain a large area of pipes, with only a small population to pay for these costs. The NSW Government's \$1 billion Safe and Secure Water Program is already supporting LWUs with the capital costs of addressing high-risk infrastructure gaps. However, even with this support, some LWUs still face major funding challenges.

LWUs need a funding system that is fair, efficient, and meets the needs of regional and remote communities, while acknowledging different utilities require different levels of support.

The goal of the issues paper is to investigate the lay of the land and develop options that sustainably fund LWUs to deliver the services their communities expect.

I welcome anyone with an interest in how to fund water and wastewater services in regional and remote NSW to make a submission to the NSW Productivity Commission addressing the questions discussed in this paper.

A handwritten signature in blue ink that reads "Peter Achterstraat".

Peter Achterstraat AM

NSW Productivity Commissioner

Executive summary

1



The delivery of water and wastewater services in regional and remote New South Wales (NSW) is challenging. Around 20% of the water supply systems in regional and remote NSW are assessed as having high infrastructure-related water quality risk, with over 590,000 people at potential increased risk from water-borne pathogens.

In September 2023, the Minister for Water asked the NSW Productivity Commission to investigate alternative funding options to reduce risks for LWUs, taking into account:

- current funding arrangements
- minimum service levels

- incentives for performance
- transition path to alternative funding models, leveraging the capabilities of State Owned Corporations
- pensioner rebates.

A critical assumption of this review is the NSW Government's policy of no forced amalgamations of local councils and that ownership of LWUs remain with local councils.

The Terms of Reference for this review are set out in Appendix A.



1.1 Small communities face higher bills and make up more of the higher risk systems

In NSW, customers in small communities often pay higher water and sewerage bills. For example, average bills are almost 30% higher for small, remote LWUs when compared to similar sized LWUs in less remote areas.

Despite having higher water bills, their customers may experience increased risk of drinking water incidents and boil water alerts.

1.2 Minimum service levels are needed to inform funding models

Unlike large metropolitan water utilities, such as Sydney Water, there are no mandatory minimum service levels for LWUs in NSW (or other Australian jurisdictions - see Chapter 4). While some LWUs may set targets for certain aspects of performance, setting minimum service levels could benefit customers. For example, it may incentivise LWUs to improve their performance in critical areas such as water quality, water security, environmental impacts and service reliability.

That said, a balance needs to be found between the desired minimum service levels and the costs of achieving them. Setting higher minimum service levels could involve higher costs for customers and for local and state governments. Further, it needs to be determined whether minimum service levels should apply universally to all towns within the area serviced by a LWU (or even those outside the service area), irrespective of the cost of meeting the standard.

Minimum service levels could be used to inform any decision on community service obligation (CSO) funding, as funding needs to be closely linked to the achievement of outcomes. Introducing independent oversight could complement this process, by transparently assessing how well LWUs are meeting these standards, and therefore encouraging them to adopt a strong focus on outcomes delivery.

1.3 Alternative funding models need to address lack of economies of scale and improve water resilience

Of the 85 LWUs in NSW, almost 72% are relatively small or very small (having less than 10,000 connections).¹ This means LWUs often do not have the financial resources (e.g. they face challenges in cost recovery) or organisational capability to provide more complex functions, such as designing and constructing water infrastructure. Their size may also mean they lack the scale to improve resilience of water systems and ensure water is secure and sustainable for their customers, and to maintain the actions necessary to protect their communities in the long-term.

One solution may be greater collaboration among LWUs when delivering their water and sewerage services. For example, leveraging current collaborative frameworks (e.g. Joint Organisations, county councils and regional alliances) to provide whole of catchment water quality monitoring and share technical expertise. There may also be benefits from broadening collaboration across government agencies, for example between State Owned Corporations, LWUs and regional stakeholders in water reliant industries to better co-ordinate delivery of water services and infrastructure.

Optimising the funding of LWUs may also address economies of scale, as well as improve water resilience and drive better performance. Many smaller and remote LWUs are unable to cover their costs through user charges. However, the current approach to state government funding – focused on capital grants or meeting critical water needs during times of drought – means long term sustainability is not addressed.

Shifting to a more targeted, whole of investment life cycle funding model could assist LWUs provide better water and sewerage services to their customers. It may involve LWUs receiving a mix of capital grants and CSO payments to cover their efficient costs of achieving minimum service levels. Eligibility could be based on system risks or financial need. For example, funding for CSO payments could take into account:

- number of connections
- remoteness and socio-economic score, and
- incentives to improve performance.

This funding could be adjusted to factor in the availability of other funding sources for LWUs, such as TCorp loans. Further, funding could be combined with better operational support for LWUs, such as access to skills training and newer technologies.



Number of connections



Remoteness and socio-economic score



Incentives to improve performance

¹ Excludes State Owned Corporations, County Council-operated utilities and state water supply authorities.

1.4 Issues paper questions



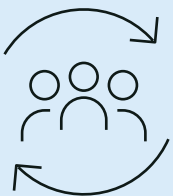
Challenges from current funding models

1. What are the key factors that affect local water utilities' ability to recover costs through user charges?
 2. What might be reasons for some local water utilities with similar size and remoteness to perform differently in terms of level of cost recovery?
 3. What are key challenges with obtaining funding for water and sewerage infrastructure upgrades and investment?
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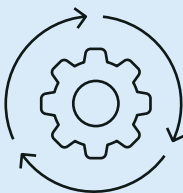
Funding model principles

4. What factors should be taken into account in calculating government subsidies for local water utilities?
 5. What might be the typical costs for delivering water and sewerage services for a well-run local water utility?
 6. What indicators could be linked to funding to drive ongoing performance improvements and deliver value for money for customers?
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Minimum service levels

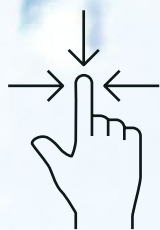
7. Should the minimum service levels be applied universally to all towns within the area serviced by a local water utility, irrespective of size, remoteness or cost?
 8. What metrics should be considered in minimum service levels?
 9. What is the existing evidence on current basic service levels, customers' needs for minimum service levels and willingness to pay in regional and remote communities?
 10. What are the barriers to setting measurable service levels?
 11. What are challenges with monitoring and reporting against minimum service levels?
-



Alternative funding options

12. What are the desired outcomes for addressing the challenges currently faced by local water utilities?
 13. What are obstacles to greater use of loans from financial institutions to fund infrastructure investments in water and sewerage services?
 14. What measures would drive investment planning that takes account of climate change risks and ongoing costs of infrastructure maintenance?
 15. Who are most at risk from high water bills in regional, remote and metropolitan New South Wales?
 16. What are examples of projects or operations associated with a funding model based on regional collaboration for local water utilities? What were the challenges?
 17. What has worked well and what have been challenges for local water utilities in leveraging the scale and expertise of State Owned Corporations?
 18. How could government and local water utilities better partner with Aboriginal communities to improve their water and sewerage services?
-

1.5 Have your say



The NSW Productivity Commission is releasing this Issues Paper in response to the Minister for Water's request for a review of funding options for LWUs.

The Issues Paper is not NSW Government policy, but rather explores a range of issues faced by regional communities in relation to LWUs.

We want meaningful community discussion about why reform is needed, the critical challenges faced by regional communities and the options under consideration. We are releasing this Issues Paper to enable community input into the NSW Productivity Commission's review of potential funding models for LWUs.

The release of the Issues Paper will also be followed by consultations with councils, LWUs, Joint Organisations of councils, industry groups, NSW Government agencies and the community. This will include public submissions and feedback, planned visits to Dubbo, Ballina, Wagga Wagga, Tamworth and Queanbeyan, and a range of online roundtables, workshops and meetings.

The feedback from the public submissions and stakeholder consultations will be used to inform the Productivity Commission's analysis of possible funding arrangements. These will be contained in the Final Report, which will be provided to the Minister for Water for their consideration. The Commission encourages interested parties to make written submissions by 28 March 2024. Written submissions can be submitted to LWUReview@treasury.nsw.gov.au or visit [Have your say, NSW Government](#). Submissions may be published on the NSW Productivity Commission website unless accompanied by a request for confidentiality.

Challenges from current funding models

2



Key questions

1. What are the key factors that affect local water utilities' ability to recover costs through user charges?
 2. What might be reasons for some local water utilities with similar size and remoteness to perform differently in terms of level of cost recovery?
 3. What are key challenges with obtaining funding for water and sewerage infrastructure upgrades and investment?
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2.1 Overview

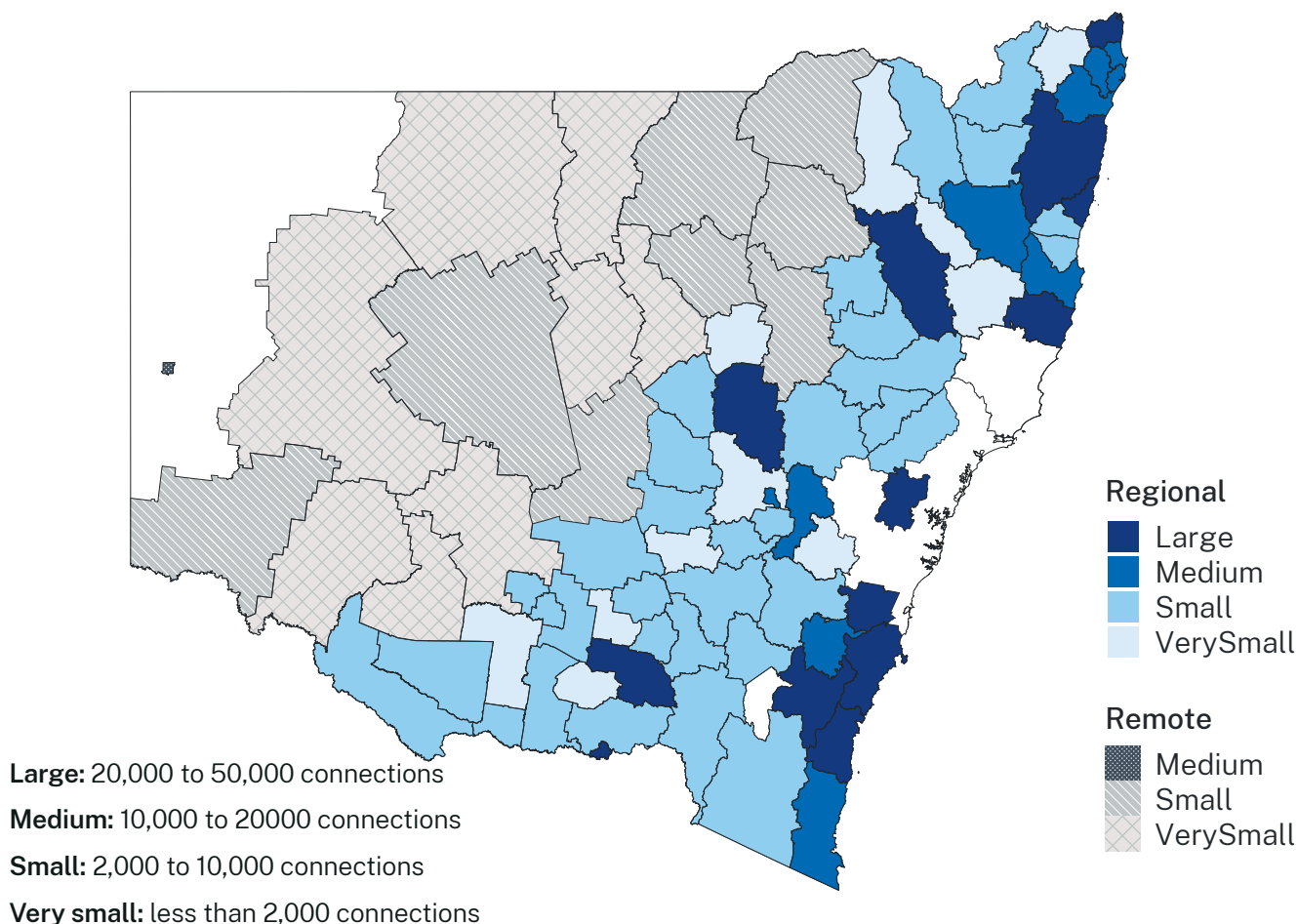
There are 85 council owned local water utilities (LWUs) in New South Wales and almost three-quarters (72%) have less than 10,000 connections.² 19 of the 85 utilities have less than 2,000 connections.

As shown in Figure 1, most LWUs are in areas characterised as regional by the ABS (81%) including all but one of the medium and large utilities with more than 20,000 connections. The remaining 19% of utilities are in remote areas in western NSW.

The NSW Department of Climate Change, Energy, the Environment and Water (DCCEE) maintains a significant database of local water utilities performance against a range of asset management, operational, and financial metrics.³ This data is the basis of most the analysis in this paper. The data is freely available online; visit [Local water utility performance, Department of Planning and Environment](#). Appendix F outlines the calculations for numerical tables in this paper.

In this chapter we have analysed the risks faced by local water utilities as well as their asset performance, and financial condition. We have generally grouped utilities in our analysis based on the number of customers and remoteness of the utility.⁴ To ensure more accurate and realistic comparisons we have mostly focused our analysis on local government run utilities, rather than County Councils which extend across multiple local government areas, or utilities like Central Coast Council and Essential Energy which are price regulated by IPART.

Figure 1: Map of the location of different sized LWUs in NSW. Utilities in areas classed as regional by the ABS are in solid colours and those in remote areas are in dashed lines.



Source: DCCEE, ABS, Frontier Economics analysis, NSW Productivity Commission analysis.

² Excludes State Owned Corporations, County Council-operated utilities and state water supply authorities.

³ DCCEE also maintains a service risk database. See section 2.3 for a discussion of these risks.

⁴ Frontier Economics analysis showed that the number of customers a utility has tends to correlate closely with its customer density, which is another factor often used to describe performance of local water utilities. Frontier Economics, Financial and operating performance of local water utilities-Final Report, 2022.

2.2 Regulatory performance⁵

NSW DCCEEW currently uses a risk based approach to assess water quality, environmental and water security risk by LWUs, which is used to prioritise government funding for capital investments under the Safe and Secure Water Program.

2.2.1 Water quality and environmental risks are greater in small utilities

LWUs are required to comply with Australian Drinking Water Guidelines and the *NSW Protection of the Environment Operations Act 1997* in the delivery of water and sewerage services.⁶ The NSW DCCEEW risk based approach provides scores from 1 to 5, with 5 being the highest risk, based on the following:

- Water quality: degree of control applied to contamination risks as assessed through robust operating processes and infrastructure determined by NSW Health (Cryptosporidium, other pathogens). A score of 3 and above generally

means improvements are needed to existing barriers and a score of 5 means additional barriers are needed.

- Environment: assesses the risk that sewerage management poses risks to public health and waterways. A score of 3 generally means some residual public health risks and a score of 5 means a mismatch of the treatment capacity or technology with level of discharge.

As shown in Table 1, the bulk of LWUs with high water quality and environmental risk scores are small or very small. In part, this is because of the large number of small utilities in NSW.

Table 1: Percentage of LWUs with an average water quality and environmental risk score above 4, by LWU size

LWU size	Water quality risk – LWUs with average scores above 4 (as a percentage of all LWUs) ⁷		Environmental risk – LWUs with average scores above 4 (as a percentage of all LWUs)	
	Regional	Remote	Regional	Remote
Very Small (Less than 2,000 connections)	3%	1%	8%	4%
Small (2,000-10,000 connections)	13%	4%	28%	7%
Medium (10,000-20,000 connections)	4%	NA	11%	NA
Large (20,000-50,000 connections)	3%	NA	12%	NA

Note: The risk scores have not been adjusted to reflect new infrastructure spending.

Source: DCCEEW, NSW Health, NSW Productivity Commission analysis.

Importantly for medium and large utilities, although their average water quality risk scores as a whole are below 4, individual water supply systems might have higher risks. This is because large regional councils often service a large regional city as well as a number of very small outlying communities. As shown in Table 2, sixteen water systems in medium sized

councils and sixteen water systems in large councils have water quality risk scores of 4 or 5. Around 20% of the water systems in regional and remote New South Wales (NSW) are at the highest level of water quality risk, with over 590,000 people at risk of water-borne pathogens.

5 Water quality and environmental risks are regulated by NSW Health and the NSW Environment Protection Authority respectively. While there are no legislative requirements relating to water security risks, DCCEEW's Regulatory and Assurance Framework is designed to ensure LWUs can manage a range of service risks.

6 They also need to comply with the *Public Health Act 2010* and *Public Health Regulation 2022*.

7 Excludes 15 councils which do not currently have a risk score as they may be bulk supplied from another LWU or are non-potable. Risk scores are population weighted averages where a council manages multiple water systems.

Table 2: Number of water supply systems with water quality risk scores above 4, by LWU size

LWU size	Number of water supply systems with water quality risk scores of 4 or 5 ⁸		Water supply system with a water quality risk score of 4 or 5 (as a percentage of all systems)	
	Regional	Remote	Regional	Remote
Very Small (Less than 2,000 connections)	15	16	7%	7%
Small (2,000-10,000 connections)	71	33	33%	15%
Medium (10,000-20,000 connections)	16	NA	7%	NA
Target (20,000-50,000 connections)	19	NA	9%	NA

Source: NSW Health, NSW Productivity Commission analysis.

The Safe and Secure Water Program has begun to address some of the highest environmental and water quality risks. Currently around 45% of LWUs with an average water quality risk score above 4 have received funding. However, only 35% of LWUs with an environmental risk score above 4 have received funding.

As discussed in Box 2.1 an additional \$288 million is earmarked for addressing systems with high risk scores (including water security risk, see section below). Current funding allocated require local councils to submit a project proposal, which can result in time delays potentially due to limited capacity.

2.2.2 Water security risks are greater for smaller utilities

NSW DCCEEW also uses a risk based approach to assess water security risk by LWUs. The risk based approach provides scores from 1 to 5, with 5 being the highest risk, based on the ratio of water access risk to demand weighted by population size. Access risk is based on the 5/10/10 design rule.

A score of 3 generally means the annual secure yield from existing systems is less than the forecast demand in 2040, and a score of 5 means that there are currently nil or very small storages. The 5/10/10 design rule provides that:⁹

- duration of drought restrictions should be no more than 5% of the time
- frequency of restrictions should not be applied in more than 10% of years
- when restrictions are applied, the water supply system should be able to provide 90% of the unrestricted dry year water demand (i.e. 10% reduction in demand) through a much worse drought than on record (akin to a 1 in 1,000 year drought).

The risk scores are weighted by the size of the community. As the current risk scores are weighted by population size, smaller communities may not be able to access the current round of funding. Very small LWUs are assigned lower risk scores to reflect the smaller consequence of supply failure in communities which can be serviced through alternative methods, such as water carting.

The risk ratings in Table 3 show utilities of all sizes face water security risks, although the utilities at high risk were typically smaller. Water security risk tend to be higher in inland areas; the regions with the most utilities with risk scores above 4 are the Central West (6), the Far West and Orana (5), and Murray (5).

⁸ Excludes 15 councils which do not have risk scores as they may be bulk supplied from another LWU or are non-potable.

⁹ The 5/10/10 design rule was an expectation of DCCEEW under the previous and now replaced best practice management and IWCM strategy framework.

Table 3: Percentage of utilities with average water security risk scores above 4, by LWU size

LWU size	Water security risk – LWUs with average scores above 4 (as a percentage of all LWUs) ¹⁰	
	Regional	Remote
Very Small (Less than 2,000 connections)	5%	3%
Small (2,000-10,000 connections)	16%	4%
Medium (10,000-20,000 connections)	9%	NA
Large (20,000-50,000 connections)	7%	NA

Source: DCCEW, NSW Productivity Commission analysis.

The Safe and Secure Water Program has allocated water security funding to 76% of utilities with risk scores above 4. The NSW government has also provided funding through drought funding programs to address water security risks. The risk scores have been reviewed in the light of the work undertaken for the NSW regional water strategies.¹¹

2.3 Operational performance

The operational performance of LWUs is often viewed in relation to service reliability. In particular, water supply interruptions and main breaks. When compared to similarly sized LWUs in regional areas, some remote LWUs experience around 2-3 times as many main breaks and lose almost twice as much water to leakage compared to similarly sized utilities in regional areas.

See Appendix B for more information on the operational performance of LWUs.¹²

2.4 Financial performance

The ability for a LWU to recover its costs through user charges is generally related to its size and location. Larger LWUs in coastal areas and regional cities generally have much stronger balance sheets due to their larger customer base allowing for economies of scale.

2.4.1 Limited cost recovery for small and remote utilities

Under the NWI, all utilities aim to recover enough revenue from water charges to cover the cost of operating and maintaining their network. Where a utility is unable to recover revenue from customers to cover its costs, due to factors such as size and location, over time this would increase performance risks. Further, as discussed in section 2.4.2, water bills are relatively higher in remote areas, impacting cost of living pressures for vulnerable communities and making cost recovery challenging.

Table 4 shows that LWUs with more than 10,000 customers achieved cost recovery for operational costs. Smaller utilities and those in remote areas had more challenges in cost recovery, with some recovering as little as 80% of their costs from customers, due to lack of economies of scale. Further detailed analysis is provided in Appendix B.

¹⁰ Risk scores are population weighted averages where a council manages multiple water systems.

¹¹ Risk scores are also reviewed if a project has been finalised under the Safe and Secure Water Program, to see if the risk score has been reduced due to the intervention. They may also be reassessed if there are other factors that have potentially increased or decreased the risk score.

¹² Service measures in relation to wastewater to be further explored.

Table 4: Proportion of utilities achieving cost-recovery between 2016 and 2022, by LWU size

LWU size	Regional		Remote	
	Number of Utilities ¹³	Proportion achieving cost-recovery 2016-2022 ¹⁴	Number of Utilities ¹⁵	Proportion achieving cost-recovery 2016-2022 ¹⁶
Very Small (Less than 2,000 connections)	11	43%	8	50%
Small (2,000-10,000 connections)	34	90%	8	50%
Medium (10,000-20,000 connections)	10	100%	0	NA
Large (20,000-50,000 connections)	14	100%	0	NA
Total	69		16	

Note: We considered a utility achieved cost recovery if its annual ratio of revenue to expenses was greater than one on average over the years 2016 to 2022.

Source: DCCEEW, Frontier Economics analysis, NSW Productivity Commission analysis.

Table 5 shows operating costs per connection for small and remote LWUs are almost 70% more than in large utilities.

This means there are higher operating costs per connection and less customers to pay for those operating costs.

Table 5: Operating costs per connection, by LWU size

LWU size	Operating costs per connection	
	Regional	Remote
Very Small (Less than 2,000 connections)	\$656	\$868
Small (2,000-10,000 connections)	\$634	\$794
Medium (10,000-20,000 connections)	\$686	NA
Large (20,000-50,000 connections)	\$511	NA

Note: Operating costs do not include borrowings, asset disposals or depreciation.

Source: DCCEEW, NSW Productivity Commission analysis.

Smaller LWUs generally have a larger number of staff per connection, as shown in Table 6. This is due to the large geographic footprint and low economies of scale of smaller LWUs. A base level of labour force is

required to operate and maintain assets that may be disproportionate to the number of customers serviced that are widely dispersed.¹⁷

13 Excludes County Councils and State government utilities.

14 Percentages based on utilities which have reported financial data in the NSW DCCEEW dataset. Due to missing data percentages may not reflect the true number.

15 Excludes County Councils and State government utilities.

16 Percentages based on utilities which have reported financial data in the NSW DCCEEW dataset. Due to missing data percentages may not reflect the true number.

17 LWUs also face challenges in paying skilled water operators sufficiently high salaries to attract them to regional and remote areas. Berrigan Shire Council, Submission to the [Joint Select Committee on Protecting Local Water Utilities from Privatisation](#), October 2023, p 8.



Table 6: Rate of full-time equivalent staff members, by LWU size

LWU size	FTEs per 1,000 connections		Average number of FTEs per LWU	
	Regional	Remote	Regional	Remote
Very Small (Less than 2,000 connections)	6.8	7.6	19	14
Small (2,000-10,000 connections)	4.4	7.2	41	41
Medium (10,000-20,000 connections)	3.3	NA	88	NA
Large (20,000-50,000 connections)	3.7	NA	198	NA

Source: DCCEEW, Frontier Economics Analysis, NSW Productivity Commission analysis.

2.4.2 Customers in remote areas face higher bills

Councils set their own water bills based on the costs they face and the levels of service their communities expect. As shown in Table 7, LWUs with less than 2,000 connections in remote areas have bills around 37% higher (\$2,332 vs \$1,700) than similar sized LWUs in less remote areas. Bills may be higher in these areas because of higher water usage in dry inland areas, but also reflect higher prices.¹⁸

Very small and remote LWUs also tend to service some of the most socio-economically disadvantaged communities in NSW, as shown by the low average Socio-Economic Indexes for Areas (SEIFA)¹⁹ scores for these LWUs in Table 7. Increasing bills for these very small and remote LWUs to achieve cost recovery in some of these areas would require increasing prices by around 10-20% or hundreds of dollars a year on top of their already high bills.^{20 21} Such an increase would place significant hardship on some customers and have significant impacts on local economies.

¹⁸ Note there may be other factors such as geography, water sources, treatment requirement and population density.

¹⁹ The Australian Bureau of Statistics' Socio-Economic Indexes for Areas (SEIFA) ranks areas according to their relative socio-economic advantage and disadvantage using Census data. Higher scores indicate an area is more socio-economically advantaged, the average of all areas in Australia is 1,000, with a score of 900 indicating an area is in the 15% least advantaged.

²⁰ Note the estimated increase in prices to achieve cost recovery would only maintain current service levels.

²¹ Note some councils may be able to raise other own source revenue.

Table 7: Average Socio-Economic Indexes for Areas scores and average annual bills for 2021-22 financial year

LWU size	Average SEIFA score		Average annual bills \$FY2022	
	Regional	Remote	Regional	Remote
Very Small (Less than 2,000 connections)	962	905	\$1,700	\$2,332
Small (2,000-10,000 connections)	957	917	\$1,803	\$2,339
Medium (10,000-20,000 connections)	963	NA	\$1,879	NA
Large (20,000-50,000 connections)	983	NA	\$1,746	NA

Note: Annual bill calculation excludes LWUs which do not provide water, while SEIFA calculation includes all LWUs.

Source: ABS Census 2021, DCCEEW, Frontier Economics analysis, NSW Productivity Commission analysis.

2.4.3 Some utilities have a shrinking customer base

Regional Australia has experienced “two-speed” population growth over the past decade.²² Larger regional centres and coastal areas have generally experienced sustained population growth, while smaller remote towns have typically had stagnant or declining populations.

This is visible in the annual trend in the population and number of connected properties for different sized utilities in Table 8.

Table 8: Compounded annual growth rates in connection numbers, revenue and population, by LWU size and remoteness

LWU size	Compounded annual growth rate in connection numbers		Compounded annual growth rate in real revenue		Compound annual growth rate in population	
	Regional	Remote	Regional	Remote	Regional	Remote
Very Small (Less than 2,000 connections)	-0.3%	-0.7%	3.5%	0.2%	-0.2%	-1.1%
Small (2,000-10,000 connections)	0.5%	-0.6%	1.0%	-0.2%	-0.2%	-0.8%
Medium (10,000-20,000 connections)	0.4%	NA	1.6%	NA	0.6%	NA
Large (20,000-50,000 connections)	1.1%	NA	-0.4%	NA	0.9%	NA

Source: DCCEEW, local government financial statements, DHI [NSW Population Projections](#), NSW Productivity Commission analysis.

22 Australian Bureau of Statistics (2021-22), [Regional population](#), accessed 1 February 2024.

Large regional utilities have experienced growth in the number of new connections. This increases the number of customers it can share its costs across and improves its economies of scale. Smaller LWUs have had lower population growth, and very small utilities have lost connections (see Figure 2).

For small and medium LWUs, real revenue appears to have generally grown faster than changes in the number of connections. Large utilities experienced a decline in real revenue between 2016 and 2022, despite growing connections (see Figure 3 and Figure 4).²³ Unexpectedly, very small utilities experienced increases in revenue, despite a decline in connections. Revenue can be impacted by several factors including changes in prices and the volume of water sold to customers.

Figure 2: Change in number of connections (compared to 2015-16 financial year)

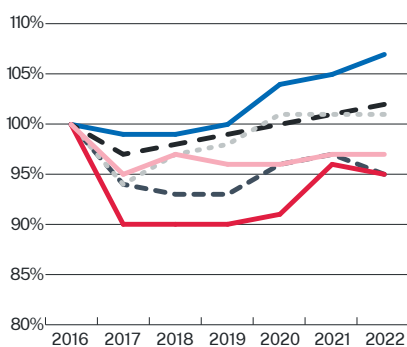


Figure 3: Revenue per connection, 2022 dollars

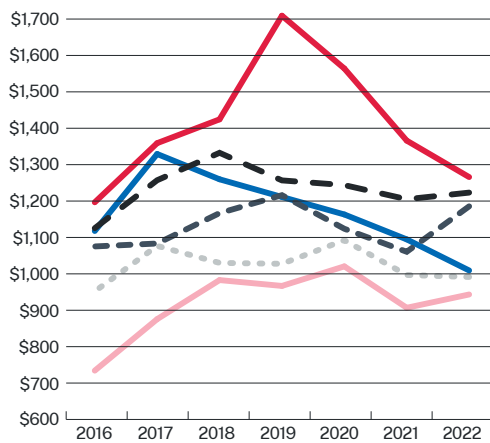
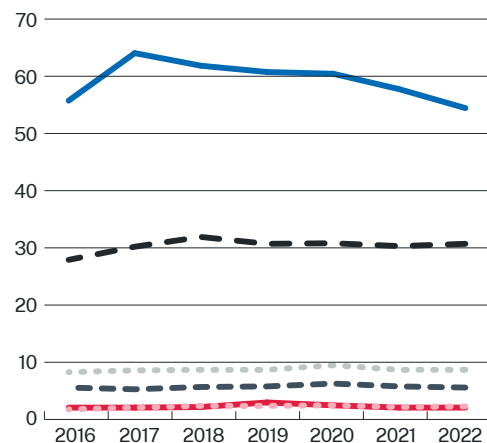


Figure 4: Average revenue per LWU, 2022 dollars, millions



- Large Remote
- Large Regional
- Medium Remote
- Medium Regional
- Small Remote
- Small Regional
- Very Small Remote
- Very Small Regional

CPI Inflation for revenue June on June CPI for Sydney All Groups

2.5 Current funding arrangements

LWUs have a number of funding sources available to them including customer bills²⁴, borrowing, grants, and subsidies from councils. Unlike Sydney Water, which funds much of its capital expenditure from borrowings, LWUs tend to have limited use of debt funding.

2.5.1 Low coverage of operating expenses from user charges

Operating costs cover the running of infrastructure on a day to day basis, including labour and materials. Where LWUs purchase bulk water from WaterNSW dams and pipelines, this is also an operating cost.

LWUs require a consistent funding stream to cover their operating costs, pay for staff and immediate expenses. Customer bills are currently the only consistent funding source available, as subsidies or loans are not available for operational costs.

As Table 9 shows, all LWU sizes had enough cash flow from user charges to cover operating costs. However, the level of coverage of operating expenses from user charges in NSW is below 200%, the national average for utilities with more than 10,000 connections.²⁵

When all expenses including depreciation and interest repayments (if any) are included, many utilities, especially small and very small LWUs, struggle to cover these costs through customer bills alone.

²³ There are several reasons why a utility could have declining revenue including lower real prices, lower water usage due to improving water efficiency or water conditions, or reduced customer numbers. The impact however will force utilities to reduce expenditure at a time of rising costs due to inflation and aging infrastructure.

²⁴ Charges under *Local Government Act 1993* (annual (fixed) and usage based).



Table 9: Percentage of operating to total expenses, percentage of operating expenses covered by user charges and percentage of total expenses covered by user charges, by LWU size.

LWU size	% of operating to total expenses	% of operating expenses covered by user charges	% of total expenses covered by user charges
Very Small (Less than 2,000 connections)	65	137	90
Small (2,000-10,000 connections)	63	154	97
Medium (10,000-20,000 connections)	63	159	101
Large (20,000-50,000 connections)	56	185	104

Source: DCCEEW, Frontier Economics analysis, NSW Productivity Commission analysis.

2.5.2 Capital investment reliant on government grants

LWUs typically receive grant funding from governments to undertake asset upgrades or investment such as pipes, dams, pumps and treatment plants. Currently, the Safe and Secure Water Program provides NSW Government funding for capital projects, prioritised according to a risk assessment (see Box 2.1). Further, LWUs can receive financial assistance grants from the Australian Government (see Box 2.2).²⁶

Primarily offering capital grants can distort a LWU's investment decisions. For example, a LWU may be incentivised to replace or upgrade its infrastructure through a capital grant. However, it may be more efficient for the LWU to improve the way it operates existing infrastructure (which may not attract a subsidy).

²⁵ Bureau of Meteorology, *National Performance Report 2022*, accessed 8 February 2024, Productivity Commission analysis.

²⁶ Some LWUs also obtain debt to fund the required capital investment, either from a commercial bank or from TCorp (see section 2.6.4).

Box 2.1: Safe and Secure Water Program and drought capital grants

The NSW Government has historically provided capital grants to LWUs through a series of different programs. There are currently two major capital funding streams to support local utilities: the Safe and Secure Water Program and various drought response programs.

Since 2017 the NSW Government has been providing capital grants to LWUs through the Safe and Secure Water Program (SSWP) to “address key risks to regional water safety and security in NSW to provide safe, secure and sustainable water and wastewater services to regional towns across the state”. Under the \$1 billion program, the NSW Government has currently committed \$408 million to construct the Broken Hill to Murray River pipeline as well \$317 million to around 200 projects across regional NSW. An additional \$288 million is earmarked for high risk LWUs and awaiting project proposals from LWUs (as at January 2024).

SSWP is designed to target funding to utilities facing the greatest risks in three categories: water security, drinking water quality, and environmental performance. This includes grants for water and wastewater infrastructure as well as planning. In most cases the NSW Government provided between 20% and 90% of the funding for projects, with councils funding the remainder. For a small number of projects, the NSW Government provided all the funding.

In addition, the government committed around \$284 million to various water security infrastructure projects as a response to the 2017-19 drought. These programs are now closed to new proposals, but many projects are still under construction.

Based on current funding agreements:

- 91% of LWUs received some funding under the SSWP and drought funding programs, including 93% of utilities with less than 20,000 connections, and 100% of utilities in remote areas.
- Very small utilities in remote areas received around \$2,900 per connection in grants on average, compared to around \$130 per connection for large utilities.
- Funding is very concentrated in large projects in a small number of councils: ten councils received more than 50% of the funding so far.

LWU size	Value of grants \$ millions nominal		Proportion of LWUs receiving at least one grant	
	Regional	Remote	Regional	Remote
Very Small (Less than 2,000 connections)	26	45	82%	100%
Small (2,000-10,000 connections)	138	56	94%	100%
Medium (10,000-20,000 connections)	105	NA	80%	NA
Large (20,000-50,000 connections)	90	NA	86%	NA

Box 2.2: Local Government Financial Assistance Grants

The Australian Government pays grants to local councils to help them deliver services to their communities. In NSW, general purpose grants totalled around \$710 million for the 2023-24 financial year.²⁷ These funds are untied, meaning councils can choose how to best use them and are accountable to their communities.

How are funds allocated to local councils?

The NSW Local Government Grants Commission determines the amount of financial assistance grants each local council is entitled to receive. Its funding model needs to operate within the National Principles set out in the *Local Government (Financial Assistance) Act 1995* (Cth). For example, it must allocate 30% of grants based on population increases/decreases (e.g. councils with a growing population receive more funding).²⁸

The Commission has tried to refine its funding model to allocate a higher proportion of grants to councils with greatest relative disadvantage. It notes these councils are generally rural and remote with small and declining populations and limited capacity to raise revenue.

The Commission factors in relative disadvantage to its funding model using the following measures:

- population
- proportion of Aboriginal and Torres Strait Islanders in the population
- length of local roads
- hectares of environmental land
- index of rainfall, topography and drainage.²⁹



27 Department of Infrastructure, Transport, Regional Development, Communications and the Arts, [Financial Assistance Grant to Local Government](#), accessed 5 February 2024.

28 [Local Government \(Financial Assistance\) Act 1995](#) (Cth) cl 6.

29 NSW Office of Local Government, [2023-24 Financial Assistance Grants](#).

2.5.3 Pensioner rebates in regional NSW fall behind inflation

Local councils are required to offer rebates to pensioners for their water and wastewater bills, with the NSW Government covering 55% of the cost (through a CSO payment). Currently these rebates are \$87.50 per household for water and \$87.50 per household for wastewater; these amounts are written into legislation and have not been indexed since 1993.³⁰ Since 1993 the real value of LWU pensioner rebates has declined by 55%.

The number of pensioner water and sewerage rebates claimed fell between 2021 and 2023 by around 1.5%, despite the aged over 65 population increasing by 5.3%.³¹ In 2023 the NSW Government spent \$6.5 million less on rebates than expected. In addition, the total value of rebates claimed fell by 13% in real terms between 2021 and 2023, with the largest decreases in large LWUs as shown in Table 10. Most of this decrease was due to inflation.

If the water and sewerage rebates for LWUs increased at the rate of Consumer Price Index they would now be worth around \$390 a year. In comparison, Sydney Water offers a considerably more generous pensioner rebate of around \$650 a year, or around two thirds of a typical customer's bill.³² While for Hunter Water the pensioner rebate is \$380 a year or around a third of the customer's typical bill.³³ The full cost of the for Sydney and Hunter Water rebates are funded by the NSW Government through a CSO payment.

The NSW Government has also provided limited operational subsidies to help LWUs manage the cost of emergency drought expenditure such as carting water. Between 2018 and 2022 the government provided LWUs with around \$3 million in emergency operational subsidies.³⁴

Table 10: Changes in pensioner rebates between 2021 and 2023, by LWU size

LWU size	Annual growth rate in eligible households for rebate	Annual change in number of rebates claimed	Annual change in value of rebates
Very Small (Less than 2,000 connections)	1.4%	-1.7%	-6.5%
Small (2,000-10,000 connections)	2.4%	0.6%	-8.2%
Medium (10,000-20,000 connections)	2.7%	2.3%	-6.3%
Large (20,000-50,000 connections)	2.9%	-2.2%	-9.8%

Source: Office of Local Government, ABS Census 2021, NSW Productivity Commission analysis.

30 *Local Government Act 1993* cl 575(3).

31 Department of Planning, Housing, and Infrastructure, *NSW Population Projections*, accessed 6 February 2024.

32 Sydney Water, *Pension rebates*, accessed 5 February 2024.

33 Hunter Water, *Media release: Supporting our customers as water prices rise*, June 2023.

34 NSW DCCEEW.

2.5.4 Limited use of debt funding

Local governments typically have limited use of debt, as they do not have a commercial focus. Given the cash flow challenges faced by smaller LWUs, debt funding is generally difficult to access and is not a common source of funding for capital projects. However, even for those LWUs with more than 10,000 connections, debt funding is a small proportion of their overall funding.

As Table 11 shows, a sizeable proportion of small and very small utilities have no debt at all. Even for the LWUs which do borrow, they borrow relatively small amounts as shown by the low debt to equity ratios of between 4% and 6%. This is similar to small utilities in other jurisdictions like Victoria and Queensland.³⁵ In comparison Sydney Water has a net debt to equity ratio of around 50%.

Lenders such as NSW TCorp consider a number of financial ratios when deciding whether to lend to LWUs. The interest cover ratio compares the utilities' income to its annual interest repayments, i.e. if the utility has enough cash flow to pay its debts.³⁶ Most utilities can meet the interest cover benchmark set by TCorp based on their current debt levels, noting this excludes those with no debt.

Table 11: Debt funding statistics by LWU size - Proportion of utilities with no debt, average gross debt to equity ratio and proportion of utilities that can meet Interest Cover Ratio benchmark.

LWU size	Proportion of LWUs with no debt	Average gross debt to equity ratio ³⁷	Proportion of LWUs that can meet Interest Cover Ratio benchmark ³⁸
Very Small (Less than 2,000 connections)	32%	4%	100%
Small (2,000-10,000 connections)	40%	6%	85%
Medium (10,000-20,000 connections)	0%	6%	100%
Large (20,000-50,000 connections)	0%	5%	91%

Source: DCCEEW, Frontier Economics analysis, NSW Productivity Commission analysis.

³⁵ Bureau of Meteorology, [National Performance Report 2022](#), accessed 8 February 2024.

³⁶ TCorp is generally restricted to fixed-rate, amortising/credit foncier loans, so a key part of their assessment is both interest coverage and debt service coverage. However, we cannot calculate the Debt Service Coverage ratios for LWUs, as they do not typically report principal repayments of loans in their financial statements.

³⁷ Excluding LWUs with no debt.

³⁸ Excluding LWUs with no debt.

Funding model principles

3



Key questions

4. What factors should be taken into account in calculating government subsidies for local water utilities?
 5. What might be the typical costs for delivering water and sewerage services for a well-run local water utility?
 6. What indicators could be linked to funding to drive ongoing performance improvements and deliver value for money for customers?
-



3.1 Government responsibility to provide safe and reliable water supplies

Under the National Water Initiative (NWI), all states and territories recognised government’s responsibility to service rural and urban communities and agreed to urban water reforms that would provide “healthy, safe and reliable water supplies”.³⁹

The Australian Government’s Productivity Commission’s prior reviews into the progress of states and territories against the NWI have recognised the unique challenges in service delivery in remote and regional communities. These communities face lower service quality than residents of major cities, despite efforts by governments to improve outcomes, due to pressures such as “drought, aging infrastructure, relatively poorer water sources, and the capability and financial sustainability of some smaller providers”.⁴⁰ The lack of economies of scale, in particular, is a challenge in regional and remote communities.⁴¹

Several areas for improvement were identified by the Australian Government’s Productivity Commission in the service delivery outcomes for regional and remote communities, for example:⁴²

- drinking water quality in remote Aboriginal and Torres Strait Islander Communities
- better collaboration between LWUs to achieve economies of scale
- better transparency and targeted assistance to small utilities through CSOs
- improve reviews of compliance of LWUs with financial performance frameworks for consistency with NWI pricing principles.

39 *Intergovernmental Agreement on a National Water Initiative*, paragraph 90(i).

40 Productivity Commission, *Urban water services: regional and remote communities, Supporting Paper G*, May 2021, p 5.

41 Productivity Commission, *Urban water services: regional and remote communities, Supporting Paper G*, May 2021, p 27.

42 Productivity Commission, *Urban water services: regional and remote communities, Supporting Paper G*, May 2021, pp 17, 18.

In NSW, the Town Water Risk Reduction Program (TWRRP) was established by the former Department of Planning Environment (DPE) in 2020 in response to the Audit Office of NSW report which identified areas for improvement in the former DPE's coordination for regional town water infrastructure. The program was also set up in response to identified service risks in the Safe and Secure Water Program, and to make systemic changes, including in the regulatory settings, to expect and enable LWUs to manage risks and priorities in town water systems more strategically and effectively.⁴³ The former DPE had a team of regional water inspectors and managers that conduct regulatory assessments and provide operational support for LWUs.⁴⁴ Areas identified by the Audit Office of NSW for improvement included:⁴⁵

- coordination of town water infrastructure planning and investment
- internal procedures, records and data to support the LWU sector in strategic planning.

Under the TWRRP, a new Regulatory and Assurance framework commenced on 1 July 2022. The framework was developed in partnership with the sector and approved by the Minister for Water.

This new framework expects and enables local water utilities to address risks and strategic challenges effectively and efficiently, based on locally developed plans and management systems. The framework includes regulatory and assurance objectives and guiding principles, transparent and accountable regulatory assessment and approval processes, and assurance of local water utility strategic planning. The framework sets expectations of effective, evidence based strategic planning for town water service provided by local water utilities and the provision by NSW DCCEEW of assurance of the effectiveness of utilities' strategic planning where requested. The NSW DCCEEW also makes available support and advice to help put in place effective strategic planning.

Progress was also made developing a skills and training action plan for the sector and initially providing accredited training for up to 200 water operators by working in partnership with Training Services NSW, and pilots between LWUs (Clarence Valley Council, Orange Council, Tamworth Regional Council, Hay Shire Council, and Murrumbidgee Council) and WaterNSW to reduce dam safety risks and water quality risks.

Box 3.1: Town Water Risk Reduction Program – phase 2

\$24.59m over 2 years (to 2024-25) was allocated to the former DPE to continue the program and deliver longer term outcomes for LWUs:

- Operational support for at least 15 high risk regional water treatment plants not eligible funding from the Safe and Secure Water Program. This includes coaching operators, reviewing alarm controls and monitoring responses. Analysis shows at least 37 of 65 boil water alerts across 44 water supply systems since January 2019 (to October 2022) were potentially avoidable through improved operation of existing water treatment plants.
- Skills and training for water operations, including mandatory training requirements, to address the acute lack of trained water operators in regional NSW.
- Address findings of Dam Safety NSW audits in relation to water quality risks by leveraging the capabilities of WaterNSW. Many LWUs do not have the ability to control the quality and variability of river source water being treated.



43 The NSW Water Strategy also provides a statewide framework for managing water supplies.

44 DCCEEW Water, along with other regulators, regulates local water utilities in their delivery of water supply and sewerage services for healthy and resilient communities, businesses, and the environment. This includes regulatory assessments, approvals and assurance, performance and risk monitoring as well as education, and strategic and technical support and advice activities as set out in the Regulatory and Assurance Framework for Local Water Utilities (RAF) and the Local Government Act and Water Management Act.

45 Audit Office of New South Wales, [Support for regional town water infrastructure](#), accessed 5 February 2024.

The NSW government has also developed initiatives that aim to improve access to water and water management for Aboriginal communities:

- The NSW Aboriginal Water Strategy aims to ensure access to water resources for Aboriginal people. This includes ways of increasing water rights and ensure Aboriginal people are empowered to contribute to water management and planning decisions. Regional Aboriginal Water Committees are being established to facilitate the contribution of local Aboriginal people.⁴⁶
- The Aboriginal Communities Water and Sewerage Program is a \$200 million initiative aimed at ensuring the level of water and sewerage services provided to eligible Aboriginal communities are of equivalent standard to nearby non-indigenous towns.⁴⁷

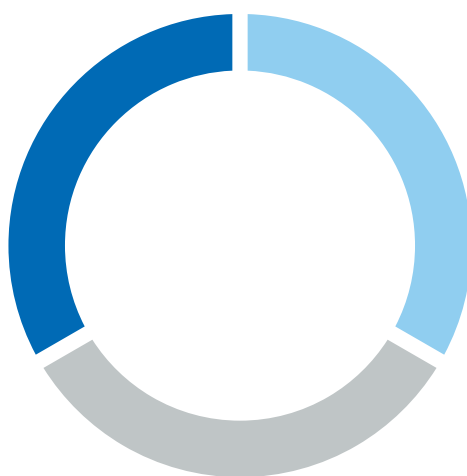
3.2 Full cost recovery, unless economically unviable

The NWI pricing principles provide that “full cost recovery should be the objective for all rural surface and groundwater systems, recognising that there will be some small community services that will never be economically viable but need to be maintained to meet social and public health obligations”.⁴⁸

This means utilities:



Achieve lower bound cost recovery: recover at least its operational costs, taxes, interest, externalities and provisions for asset replacement.⁴⁹



Provide CSO: where it is unlikely that cost recovery can be achieved in the long term.⁵¹

Appendix C sets out how these principles apply to the NWI user-pays model for water utility funding.

NSW DCCEEW’s pricing guidelines similarly have a focus on cost recovery. They indicate that LWU prices should:

- recover the efficient costs of providing water supply and sewerage services to customers



Move towards upper bound cost recovery: should not recover more than the lower bound plus the cost of capital to avoid monopoly rents.⁵⁰

- be cost reflective, fair and equitable, and structured to promote efficient investment and consumption decisions, including the efficient and sustainable provision and use of water supply and sewerage services
- remain reasonably stable over time and consider affordability and impacts on customers.⁵²

46 Aboriginal Affairs NSW, [Water And Sewerage Program](#), accessed 5 February 2024.

47 NSW Department of Climate Change, Energy, the Environment and Water, [Aboriginal Communities Water and Sewerage Program](#), accessed 5 February 2024.

48 [Intergovernmental Agreement on a National Water Initiative](#), paragraph 66(v).

49 [National Water Initiative Pricing Principles](#), Appendix A, paragraph 5.

50 [National Water Initiative Pricing Principles](#), Appendix A, paragraph 4.

51 [National Water Initiative Pricing Principles](#), paragraph 66(v).

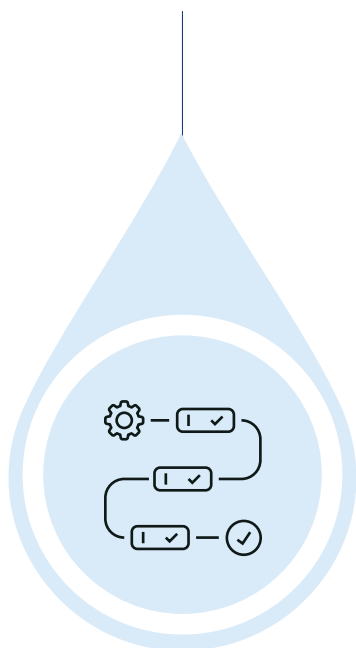
52 NSW Department of Climate Change, Energy, the Environment and Water, [Pricing](#), accessed 5 February 2024.

3.3 Collaboration to achieve economies of scale

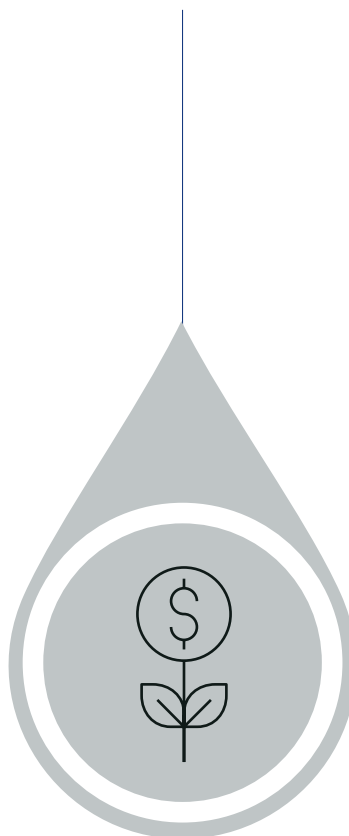
The Joint Organisation (JO) framework as provided under the *Local Government Amendment (Regional Joint Organisations) Act 2018 No 65* is intended to be a forum for local councils to collaborate, align priorities at a regional level and advocate for those priorities. Most councils are currently part of a JO (87 local councils are currently part of 13 JOs).⁵³ The JOs were established through seed funding from the NSW Government (\$300,000 each). It was intended that the JOs would be financial sustainable through member contributions, project delivery, and delivery of shared services across member councils.

The 2021 report from the review into JOs found that about two-thirds of the JOs are operating effectively to delivering against planned strategic objectives, and that a JO's effectiveness is closely related to its financial viability.⁵⁴ Some JOs are sharing staff and services. The key recommendations from the 2021 report into JOs included:

Develop measurable performance targets for each core function which are tailored to the maturity of each JO. Performance against targets should be regularly reviewed to determine opportunities for additional support.



Develop a tailored approach to capacity building and ongoing investment.



Use compliance and audit information to identify processes that require further strengthening.



Chapter 5 provides further details of different collaboration mechanisms currently in use in by local councils.

53 ARTD Consultants, *Joint Organisations Review, Volume 1: Overview Report*, October 2021, p 18.

54 ARTD Consultants, *Joint Organisations Review, Volume 1: Overview Report*, October 2021, p 18.

3.4 Community service obligations where cost recovery is not economically viable

The purpose of CSOs in the context of the NWI is to provide for a basic level of service for more remote regional communities where full cost recovery is not viable.⁵⁵ The Australian Government's Productivity Commission has outlined principles for providing CSOs:⁵⁶

- allow a utility to achieve a basic level of service
- maintain lower bound cost recovery
- maintain affordable prices
- based on credible data on efficient service costs subject to independent oversight
- calculated in a predictable method
- conditional on ongoing improvements.

Based on analysis of data provided by LWUs (see chapter 2), remoteness and size are the key drivers for the level of cost recovery in NSW. For example, 29% (26) of LWUs in NSW have less than 2,000 connections and are also:

- in the most remote areas
- around 50% do not fully recover operating costs
- socio-economically disadvantaged
- the typical residential bill is the highest in remote NSW.

It follows that the calculation of CSOs should take account of remoteness, size, affordability and efficient costs to achieve a basic level of service.

In practice, deriving the efficient costs to achieve a basic level of service is challenging as it is driven by underlying characteristics of the community (such as population density and water source) and the operational management capability of the utility (for example in implementing best practice risk management frameworks). As such, the design of the CSO should allow for this element of "uncertainty", by linking a component of funding to the achievement of specific indicators, and public reporting of financial and operational performance.

3.5 Strong corporate governance to drive performance

Robust corporate governance practice has an important role to play in driving performance improvement and accountability for funds spent.

In relation to regional and remote water services, the Australian Government's Productivity Commission has previously outlined the importance of:⁵⁷

- Financial separation: ring-fencing the finances of the local council general fund from the water utility fund.
- Clarity of roles: defining the respective responsibilities of state versus local government during extreme events.
- Independent oversight: an independent body to monitor utility performance and determine eligibility for CSO payments.
- Performance monitoring and reporting: public reporting of key performance indicators to allow continuous improvement and public accountability.

55 NSW Treasury guidelines on CSOs in the context of State Owned Corporations are contained in [TPG23-19 Guidelines for Community Service Obligations](#), accessed 5 February 2024.

56 Productivity Commission, [Urban water services: regional and remote communities, Supporting Paper G](#), May 2021, p 33.

57 Productivity Commission, [Urban water services: regional and remote communities, Supporting Paper G](#), May 2021, p 49.

Minimum service levels

4



Key questions

7. Should the minimum service levels be applied universally to all towns within the area serviced by a local water utility, irrespective of size, remoteness or cost?

8. What metrics should be considered in minimum service levels?

9. What is the existing evidence on current basic service levels, customers' needs for minimum service levels and willingness to pay in regional and remote communities?

10. What are the barriers to setting measurable service levels?

11. What are challenges with monitoring and reporting against minimum service levels?



4.1 Principles for setting minimum service levels

Currently, minimum service levels for LWUs in NSW are not set for all aspects of service delivery. Major utilities, in contrast, generally have clearly defined levels of service objectives. In the Australian Government's Productivity Commission's 2020 review of the NWI, the following principles for setting minimum service levels for LWUs are provided:

- Based on clear and specific rationale – the minimum standard could be framed as a basic rights concept to ensure that all communities/towns in NSW receive a defined base level of service (irrespective of the cost of meeting the standard).
- Clear definitions of service – there are different service dimensions that need to be considered (e.g. water quality, water security, environmental impacts and network/asset performance). For each dimension a compliance threshold needs to be established which could also specify the frequency which compliance must be met (e.g. daily or monthly).
- Measurable user outcomes – the minimum standards are measurable by the LWU. This means consideration of data availability and the likely cost of collecting the data.
- Subject to review – LWU performance against standards will need to be subject to review by an independent party. This will ensure that there is a clear governance framework to monitor performance against the minimum standards established.

These principles, and how they relate to LWUs are discussed in further detail in Appendix D, as well as a range of other considerations required to establishing minimum service levels. The sections below discuss the main service dimensions that are often reported.

4.2 Water quality

The Australian Drinking Water Guidelines (ADWG) provides a national framework for the management of drinking water supply to assure safety at the point of use. In the guidelines water quality refers to the:

- Safety from a health point of view – this refers to drinking water being safe to drink for people in most stages of normal life, including children over six months of age and the very old. Safety is fundamental to water quality and there is little scope for variation from the standards.
- Aesthetic quality of water – this relates to water being aesthetically pleasing in regard to appearance, taste and odour and not having a detrimental impact on fixtures and fittings. What is acceptable will ultimately be based on consumer preferences. There may be acceptable trade-offs between the costs and benefits for different levels of aesthetic quality, as even water with poor aesthetic quality may be safe to consume.

NSW Health has regulatory oversight for the safety measures for drinking water under the NSW *Public Health Act 2010* and *Public Health Regulation 2022*. NSW Health also provides free water quality testing through the NSW Health Drinking Water Monitoring Program of water quality samples collected by LWUs. Each LWU is advised of the minimum number of drinking water samples to be collected and the characteristics to be tested.

Under the Act and Regulation drinking water suppliers are required to have and comply with a risk-based Drinking Water Management System (DWMS) in accordance with the Framework for the Management of Drinking Water Quality from the ADWG. The DWMS must include information about scheduling of internal and external reviews of the DWMS, processes for the reviews and reporting the results of the reviews to external parties. NSW Health has asked LWUs to conduct annual reviews and share the review reports.

Since 2010, NSW Health has assisted LWUs to develop and implement risk-based DWMS which have helped to identify and control risks, particularly for smaller utilities. NSW Health has identified possible infrastructure and operational needs and is working to comprehensively assess implementation of drinking water management systems by all LWUs. In parallel, NSW Health has worked to assess the risk from *Cryptosporidium* in drinking water supplies and to develop a formal audit program.⁵⁸

The regulatory approach in NSW focuses on process service standards, which require specific actions from LWUs, as opposed to specifying a set of required outcomes. This approach to regulating water quality is used widely across jurisdictions, which are also referred to as water safety plans and are promoted by the World Health Organization. However, there are substantive differences in the way these approaches are implemented or regulated, varying in terms of a range of factors including prescriptiveness and governance (e.g. compliance and enforcement). As an analogy, a road compliance certificate for a car just indicates whether the vehicle has complied (or not). However, additional information is required to determine the state of the vehicle and the likelihood of it breaking down.

New Zealand provides a useful example of where a safety plan based regulatory approach has in the past failed. Following the Havelock North drinking water contamination in 2016, changes have been made to their risk-based management system.⁵⁹ Further information on this historic failure and some of the factors which contributed to it are in Box 4.1.

58 Huynh T., Jarvis L, Henderson W., Bradford-Hartke Z., Leask S., Gajo K., Tickell, J., Wall, K., Byleveld P. *Supporting the implementation of drinking water management systems in NSW*, Journal of Water Health Vol 21 (8), July 2023, pp 1098–1109.

59 See for *Water Services (Drinking Water Standards for New Zealand) Regulations 2022 and Aesthetic Values for Drinking Water Notice 2022 for minimum or maximum allowed values for parameters*.

Box 4.1: Failure of risk-based drinking water regulation in New Zealand

In 2016 there was a widespread outbreak of illness in Havelock North, linked to a contamination of the water supply and *campylobacter* infection. At the time the water supply had an approved Water Safety Plan (WSP). A subsequent government inquiry into the outbreak identified a range of fundamental problems with the existing regulatory regime, noting the WSP model is not itself a problem, rather the regulatory regime creates practical problems.⁶⁰

Key problems with the approach taken in New Zealand at the time included:

- WSPs were largely treated as an exercise in compliance and the concept of water safety planning was not well understood. This resulted in:⁶¹

- WSPs being ‘left on the shelf’ as opposed to being incorporated into everyday operations. The Hastings WSP (covering Havelock North water supply) at the time identified the risks that occurred during the Havelock North outbreak, however mitigative actions were not implemented.
- Outsourcing their development without appropriate involvement or ownership by the water supplier.
- Water suppliers not allocating sufficient resources to implementation and review.

- Overly optimistic wait and see approach in response to water quality, despite regular *E. coli* detections. There was a focus on achieving the minimum requirement of the regulation, rather than improving and proactively protecting water quality.⁶²
- Poor enforcement by regulators. The NZ Ministry of Health, which was the water quality regulator at the time, took a ‘softly, softly’ approach to compliance and enforcement even when there was persistent non-compliance (no compliance orders or were issued and no prosecution were launched from 2012 to 2017)⁶³

This event and subsequent review resulted in a range of changes to the regulation of water quality in New Zealand. This is discussed further in Appendix D.



60 Government Inquiry into Havelock North Drinking Water. *Report of the Havelock North Drinking Water Inquiry: Stage 2*, 2017, p 179.

61 Graham, J., Russell, K. and Gilpin, B. *When the implementation of water safety plans fail: rethinking the approach to water safety planning following a serious waterborne outbreak and implications for subsequent water sector reforms*. *Journal of Water and Health*, 21(10), 2023, pp 1562-1571.

62 McLaren, SJ, Sahli, MW, Selig S. & Masten, SJ. *The drinking water crises of Flint and Havelock North: a failure of public health risk management*. *Journal of Water and Health*. Volume 20, No 9, 2022, p 1314.

63 Government Inquiry into Havelock North Drinking Water, *Report of the Havelock North Drinking Water Inquiry: Stage 2*, 2017, p. 67.

4.3 Water security

Water security is the ability to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development. There are a number of issues to consider in setting minimum standards for water security services (further discussed in Appendix D):

- the extent to which LWUs control the security
- the extent to which water security standards are set with respect to short term or long term criteria.

Currently there is no specific regulation around water security for LWUs. For LWUs in NSW, there are limited water security obligations. A “reasonable standards test” is applied to the service outcomes based on assessing the sufficiency, appropriateness and robustness of a LWU’s planning process.⁶⁴

The NSW DCCEEW is responsible for the NSW Water Strategy, and the related regional water strategies. These strategies identify a range of actions to improve water security across NSW, which will affect water security for LWUs.

The regulatory arrangements for water security across different jurisdictions are predominantly requirements that water service providers plan for and make capital and operational decisions with regards to water security (see Table 12). Within this planning, there may be a minimum service standard which describes what level of water security should be provided for (i.e. limiting the time spent in water restrictions, or system balance assumption).⁶⁵

Table 12: Water security standards imposed across different jurisdictions in Australia⁶⁶

Standard imposed	NSW LWUs	Sydney Water	Hunter Water	Queensland	Victoria
Emergency drought response plan	X	√	√	√	X
Long term capital and operational plan	X	√	√	X	X
Water Supply Planning	X	√	√	√	X
Asset management planning	X	√	√	√	X

64 NSW DPE. *Regulatory and assurance framework for local water utilities*, July 2022, p 23.

65 The operating licences for Sydney Water and Hunter Water explicitly require the development of a drought response plan and to undertake long term water planning, and to fulfil obligations under the Greater Sydney Water Strategy and the Hunter Water Security Plan respectively. Note that WaterNSW is responsible for the management of the water storage assets. Investment in source augmentation (e.g. desalination plant investments) typically involves a whole of government process.

66 Sydney Water. *Operating Licence 2019-2023*; IPART, *Hunter Water operating licence. Operating Licence 2022-2027*; Queensland Department of Natural Resources, Mines and Energy. *Water security level of service objectives, Guidelines for development*, April 2018. To access the file, visit [Water supply levels of service, Business Queensland](#).

In Queensland, utilities in South East Queensland are required to undertake water supply planning against a legislated water security service standard.⁶⁷ Level of service objectives include statements about how much water the water supply system will typically be able to supply, how often and for how long water restrictions might occur and the possibility of needing an emergency water supply due to prolonged drought. However, in other parts of Queensland, urban water service providers are not subject to service standards, but are required to implement a process to mitigate water security risks.

4.4 Environment

The operations of LWUs may have a range of environmental impacts, including, the extraction of water from rivers or groundwater, land clearing to construct new assets, discharges from sewage treatment plants and greenhouse gas emissions from LWU operations. The NSW Environment Protection Authority (EPA) regulates the quality of discharges from sewage treatment plants under the *Protection of the Environment Operations Act 1997*. Under the Act, NSW EPA regulates the quality of discharges from sewage treatment plants with processing capacity of 2,500 persons equivalent (or 75 kl per day) through a licensing process. There are a range of smaller wastewater networks which are not licenced by the EPA and for which monitoring data may not be readily available. Similarly, dry and wet weather overflows from the sewerage network are also regulated by the EPA, although these are not licenced and regularly monitored except where notices have been issued by the EPA following an incidents.

Refer to Appendix D for other regulatory arrangements that affect the environmental impact of LWUs.

Across jurisdictions, environmental standards typically cover the extraction of water from different sources and also the discharge of sewage to the environment.

For the three large metropolitan water utilities in NSW (Sydney Water, Hunter Water and Central Coast Water), all sewage treatment plants are licenced by the NSW EPA under the *Protection of the Environment Operations Act 1997*. The treatment levels required to be met can differ for each treatment plant based on the assessed environmental risks for each facility.

4.5 Service reliability

Service reliability relates to the performance of the urban water network in terms of the management of assets and the level of service provided to customers. For LWUs, service reliability could mean service interruptions (such as main breaks and leaks response times), water pressure, wastewater overflows in dry weather and how utilities plan and manage their assets.

There are currently no service reliability standards that apply to LWUs. Across jurisdictions there are range of different service reliability standards which are reported (see Table 13).

67 Queensland Department of Natural Resources, Mines and Energy. *Water security level of service objectives, Guidelines for development*, April 2018.

Table 13: Service reliability standards imposed across different jurisdictions in Australia⁶⁸

Standard imposed	Sydney Water/Hunter Water	Queensland	Victoria
Water continuity standard	√	√	√
Water pressure standard	√	X	√
Average time taken to attend bursts and leaks	X	√	√
Dry Weather Wastewater Overflow standard	√	X	√
Sewerage blockages	X	√	√
Time taken to rectify sewerage spills blockages	X	√	√
Customer service standards for KPIs to be developed and published	X	√	√

Service standards for Sydney Water and Hunter Water are outlined in their operating licences, which are issued under the *Sydney Water Act 1994* and *Hunter Water Act 1991* respectively.⁶⁹ The scope and substance of these service standards are determined by IPART.

Water service providers in Queensland and Victoria are required to develop and publish customer service standards that set target levels of service for key performance indicators (KPIs).⁷⁰ Service standards are set by each of the water service providers.

4.6 Options for minimum service levels

There are a range of ways in which options for minimum service levels may be structured and these are discussed in more detail in Appendix D.

Taking into account the research across different jurisdictions and the concerns generally expressed by communities in relation to water services, proposed options for minimum service level categories are summarised in Table 14 below.

A balance needs to be found between the desired minimum service levels in these options and the costs of achieving them. Selecting an option with higher minimum service levels could involve higher costs.

Further, when assessing these options, consideration needs to be given as to whether the minimum service levels are ‘basic rights’. That is, whether they should apply universally to all towns within the area serviced by a LWU (or even those outside the service area), irrespective of the cost of meeting the standard.

Water quality and water security standards are proposed across all options as these are generally considered to be of the highest priority by communities. Options also consider including different combinations of environmental and service reliability. Transitional paths could also be considered under each of the options.

68 Sydney Water. *Operating Licence 2019-2023*; IPART. *Hunter Water operating licence. Operating Licence 2022-2027*; Queensland Government. *Water service provider obligations*. <https://www.business.qld.gov.au/industries/mining-energy-water/water/industry-infrastructure/industry-regulation/obligations>, accessed 20 January 2024; Essential Services Commission, *Water Industry Standard – Urban Customer Service. Version 2, 2023*.

69 Sydney Water. *Operating Licence 2019-2023* and IPART. *Hunter Water operating licence: Operating Licence 2022-2027*.

70 Queensland Government. *Water service provider obligations*. <https://www.business.qld.gov.au/industries/mining-energy-water/water/industry-infrastructure/industry-regulation/obligations>, accessed 20 January 2024; Essential Services Commission, *Water Industry Standard – Urban Customer Service. Version 2, 2023*.

Table 14: Options for minimum service levels

Option	Water quality	Water Security	Environment	Service reliability
1	√	√	X	X
2	√	√	√	X
3	√	√	√	√

Within each of the minimum service level categories, there could be further sub-options for the definition of the metrics included under each category. Options under each category are discussed further and summarised in the Table 15 below.

Water quality

While LWUs are required to implement the preventive risk-based ADWG Framework, through drinking water management systems, some councils are more advanced in developing detailed self-sustaining drinking water management systems. There is a requirement to have those DWMS audited and this auditing process is progressing across councils. Within the context of the DWMS, there is a need for appropriate preventive measures, and timely (often continuous) monitoring and reliable control of those preventive measures. Those preventive measures should meet good practice standards and be supported by good operational and asset management practices. These should form part of the drinking water management system, although the degree to which these are implemented differs across LWUs.

Recognising this, two options are proposed that are consistent with the principle of continuous improvement and would move NSW toward approaches adopted in Victoria and other jurisdictions such as New Zealand.

Option WQ.1 reflects the current requirements for LWUs, which includes auditing, compliance reporting requirements and regular (ideally continuous) monitoring of critical control points. This would ensure a strong causal relationship between complying with minimum service standards and the desired water quality outcomes. Where LWUs are not meeting these requirements, additional investments/processes will be required over time to achieve this standard.

Option WQ.2 would include WQ.1 plus seek to use risk based assessment criteria, which is currently used by the NSW Government to identify infrastructure gaps and prioritise capital funding for LWUs.⁷¹

Water security

The development of a water security plan including drought management and long-term asset planning, is included across all water security options. As part of this, a common water security criteria would need to be defined, which would be an integral part of the service standard.

Options WS.2 and WS.3 add to the process standard, with specific parameters to describe water security risks. The two proposed data sources are very similar as yield calculations are likely to be an input to risk based scoring of LWUs.

71 For more detail see: NSW Department of Planning, Industry and Environment. *Risk prioritisation, scoring and reasons fact sheet*, 2020.



Environment

The EPA currently provides regulatory oversight of many LWU treatment plants. Licences are generally not required for smaller sewage treatment systems if they can be operated without causing environmental pollution and where industry guidance can be followed to avoid pollution. Requiring compliance with the requirement is therefore included across options. This minimum standard may have little impact on environmental outcomes where compliance is already high, as licence requirements provide a minimum service standard. The EPA also regulates sewage overflow events but there is limited data on which to set any specific standard, apart from benchmarking (as noted below).

In addition to meeting environmental licence requirements, options include imposing service standards for smaller facilities not covered by NSW EPA licensing. This would use risk based LWU environmental scoring which focuses on sewage treatment. Note this is not the only measure of performance of unregulated assets, as risk scoring also considers assets which are licensed by the NSW EPA.

Service reliability

Service reliability options have been structured to include water continuity and wastewater standards across all options. Across the options the following are considered:

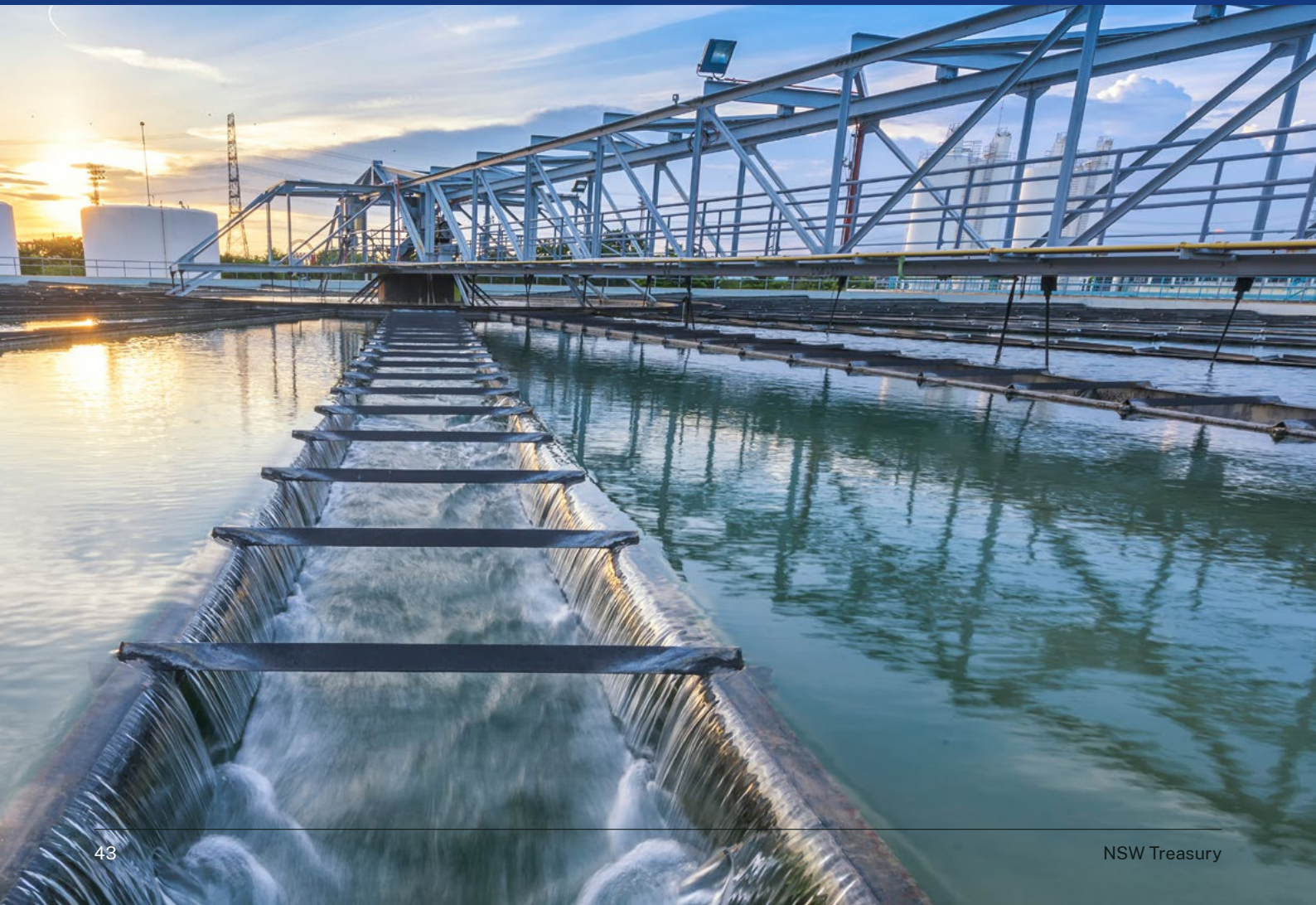
- standards which directly impact customers (pressure and flow standards)
- asset renewal expenditure and performance. This would consist of service standards around the minimum assets investments and renewals required to ensure satisfactory network performance.

Table 15: Options for service standards and minimum service level

Option	Service standard	Minimum service level
Water quality		
WQ.1	<ul style="list-style-type: none"> Requirement to have and comply with a drinking water management system (as per the NSW Public Health Act 2010), that includes information about scheduling of internal and external reviews of the DWMS, processes for the reviews and reporting the results of the reviews to external parties and requirements for regular (and ideally continuous) operational monitoring of process performance e.g. turbidity, chlorine (reporting of process performance occurs through in incident reporting (at the time of the incident) and annual review reporting) 	<ul style="list-style-type: none"> Process service standard
WQ.2	<ul style="list-style-type: none"> WQ.1 plus achieve desired risk level against risk based LWU scoring method (described in Chapter 2) in terms infrastructure gap to achieve ADWG 	<ul style="list-style-type: none"> Benchmarking across LWUs
Water Security		
WS.1	<ul style="list-style-type: none"> Requirement to have a water security plan including drought management and long-term asset planning, based on a defined water security criteria 	<ul style="list-style-type: none"> Process service standard Definition of water security
WS.2	<ul style="list-style-type: none"> Option WS.1, plus Achieve desired risk level against a risk based LWU scoring method (described in Chapter 2) 	<ul style="list-style-type: none"> As per option WS.1, plus Benchmarking across LWUs
WS.3	<ul style="list-style-type: none"> Option WS.1, plus Compliance against water security based on long term yield calculations 	<ul style="list-style-type: none"> As per option WS.1, plus Benchmarking across LWUs
Environment		
E.1	<ul style="list-style-type: none"> Compliance with EPL for sewage treatment plants 	<ul style="list-style-type: none"> EPA set limits based on the environmental risks of each Process service standard
E.2	<ul style="list-style-type: none"> Option E.1, plus Achieve desired risk level against a risk based LWU scoring method (described in Chapter 2) 	<ul style="list-style-type: none"> As per option E.1, plus Benchmarking across LWUs
Service reliability		
SR.1	<ul style="list-style-type: none"> Water continuity standard Wastewater overflow standard 	<ul style="list-style-type: none"> Benchmarking across LWUs and other jurisdictions
SR.2	<ul style="list-style-type: none"> Option SR.1, plus Water pressure standard Water flow standard 	<ul style="list-style-type: none"> As per option E.1, plus Benchmarking pressure and flow across LWUs and other jurisdictions
SR.3	<ul style="list-style-type: none"> Option SR.1, plus Asset renewal spending and performance 	<ul style="list-style-type: none"> As per option E.1, plus Benchmarking asset renewals across LWUs and best practice

Alternative funding options

5





Key questions

12. What are the desired outcomes for addressing the challenges currently faced by local water utilities?

13. What are obstacles to greater use of loans from financial institutions to fund infrastructure investments in water and sewerage services?

14. What measures would drive investment planning that takes account of climate change risks and ongoing costs of infrastructure maintenance?

15. Who are most at risk from high water bills in regional, remote and metropolitan New South Wales?

16. What are examples of projects or operations associated with a funding model based on regional collaboration for local water utilities? What were the challenges?

17. What has worked well and what have been challenges for local water utilities in leveraging the scale and expertise of State Owned Corporations?

18. How could government and local water utilities better partner with Aboriginal communities to improve their water and sewerage services?

5.1 Desired policy outcomes

Potential options for addressing the challenges outlined in Chapter 2 should be assessed against the likelihood that they would achieve the desired policy outcomes. For this review, the following policy outcomes are proposed:

- minimum levels of service can be achieved
- move towards efficient costs for service delivery
- government funding support is targeted to those communities that cannot achieve longer term cost recovery due to size or socio-economic characteristics
- transparency on the achievement of service level outcomes and efficient costs.

Ultimately, a combination of options might be needed to achieve the desired policy outcomes.

5.2 Optimising funding options

There may be scope for LWUs to reduce their service risks through utilising several funding options.

5.2.1 Greater use of commercial products

In NSW, TCorp offers long term loans⁷² to local councils at competitive rates.⁷³ Councils can also access credit from the private sector, which can offer shorter term loans. As noted in Chapter 2, many LWUs meet the key metrics to qualify for these loans, such as interest cover ratios. However, this source of funding is under-utilised, as many LWUs borrow relatively small amounts or have no debt at all.

There is further scope for LWUs to use commercial products like TCorp loans. For example, large LWUs (with greater than 20,000 connections) currently have debt to equity ratios of 6%⁷⁴ on average. Our analysis indicates large LWUs could increase this ratio to 14% on average without adversely affecting their financeability on key metrics.⁷⁵ This would equate to an extra \$947 million in debt funding for large LWUs.⁷⁶

5.2.2 More targeted government grants and subsidies

Existing government grants are focused on capital investments or meeting critical water needs during times of drought. As outlined in section 2.5, there are several limitations with this current approach. Funding may not be prioritised for those very small and remote communities and it may not consider the potential long lead time before projects are completed. Furthermore, the current approach does not appear to factor in a LWU's capacity to obtain funding from other mechanisms outlined in this chapter. This indicates there is scope to revisit the guidelines and processes for obtaining government grants to ensure they are better targeted.

Section 2.5 also outlines that funding LWUs primarily through capital grants can distort investment decisions. It may incentivise LWUs to replace or upgrade infrastructure with capital grants, rather than improve how they manage existing infrastructure (which may not attract a subsidy).

Another issue is that some smaller and remote LWUs, in particular those with less than 2,000 connections, are unable cover their costs through user charges due to lack of economies of scale. Based on NWI principles, a transparent CSO could be used to maintain a minimum level of service for those small remote communities where full cost recovery is unviable.

As discussed in Chapter 3, the amount of the CSO should be based on the efficient cost of achieving a minimum level of service, that can be calculated in a predictable way and be conditional on ongoing improvements. Based on the available information, it is unlikely that efficient costs for specific LWUs can be established without significant cost. Therefore, it is particularly important for an incentive for ongoing improvement to be embedded in any governance structure for regulating LWUs.

72 Borrowing through T-Corp is technically a financing source rather than a funding source.

73 TCorp, [Local Councils](#), accessed 5 February 2024.

74 Note that there is a small discrepancy with the debt-to-equity ratio in Table 11 due to the calculations being based on a different year of financial data.

75 Financial metrics are listed in Appendix B, Table 25.

76 This analysis was based on four ratios T-Corp utilises as part of its assessment of credit worthiness when lending to local governments: Interest Cover Ratio, Unrestricted Current Asset Ratio, Operating Ratio, and Cash Expense Ratio. Increasing the debt loads for large LWUs did not cause these utilities to breach T-Corp financeability benchmarks for these ratios. T-Corp considers other ratios (such as the Debt Service Coverage Ratio, which we lack the data to calculate) as well as non-financial factors when issuing debt and these ratios are typically for loans issued to LGAs as a whole rather than LWUs. Assumes an interest rate on new borrowing of 5.07% p.a. over a 10 year loan term.

Table 16: Illustrative example of a transparent CSO model

Factor	Eligibility	Calculation
Size	Number of connections < x	Least cost of meeting minimum service levels for water quality for size <x connections multiplied by the number of connections minus revenue from user charges
Remoteness	Remoteness score > x	
Socio-economic disadvantage	SEIFA score > 900	
Performance incentive	N/A	X% of calculated shortfall to meeting minimum service level subject to meeting reporting requirements or specific outcomes

Shifting to a more targeted, whole of investment life cycle funding model may assist LWUs to better provide water and sewerage services to their customers. It could involve a mix of targeted capital grants and CSOs, as well drawing on other funding sources, to cover a LWU's efficient operating and capital costs of achieving minimum service levels. This is discussed further in section 5.4.1.

5.2.3 Expanding rebate schemes

Pensioners in NSW can claim a rebate on their water and sewerage charges, which also applies where the service is provided by a council.⁷⁷ These rebates are available to all holders of a Commonwealth Pensioner Concession Card (mostly age and disability pensioners) as well as some veterans. Because these rebates are on council rates, they are available to homeowners but not to renters.

Around 20% of households in areas serviced by LWUs receive a pension (either the age pension or disability support pension).⁷⁸ Around three-quarters of pensioner households are owner-occupiers and would be eligible for a pensioner discount.

The rationale for rebate schemes are to support those members of communities with financial or social challenges, in a mechanism that provides transparency, by separately identifying the costs of the subsidy from the cost of service delivery. Pensioner Concession Cards are means tested by the Commonwealth to ensure benefits are targeted to people on low incomes.

However, the current approach to setting rebates does not include other groups with limited incomes. The scheme could be expanded in several ways to improve the affordability for other vulnerable households:

- **Expanding rebates to renters.** Around a quarter of pensioner households are renters and do not pay rates. However, renters can be required to pay water usage charges which are billed to their landlord. Expanding the rebate to cover renters who pay for water usage could increase access to rebates.
- **Expanding rebates to Healthcare Card Holders:** the Commonwealth Health Care Card is available to recipients of other income support payments such as JobSeeker, Youth Allowance and Parenting Payments. In regional and remote NSW around 11% of households receive a payment that makes them eligible for a Health Care Card, of these around half are homeowners⁷⁹. Extending rebates to homeowners on the Health Care Card would mean up to an additional 6% of total households are eligible for rebates (around 50,000 households).⁸⁰
- **Expanding rebates to low-income households:** around 21% households are in areas serviced by LWU that currently do not receive a pension⁸¹, but still have a household income in the bottom quintile for NSW (less than \$61,355 a year).⁸² Expanding the rebates to all low-income households (excluding renters) would increase the number of properties eligible for rebates by around 70%.

77 Service NSW, [Apply for pensioner council rates rebates](#), accessed 5 February 2024.

78 Calculated based on the number of households whose largest income support payment was the age pension or disability support pension in the 2021 census. This approach may undercount some households which receive income support from multiple different payments.

79 Based on the number of households whose main form of government support was a non-pension allowance in the 2021 Census: the largest being Newstart allowance and Youth allowance. This approach may overcount households which receive multiple payments. The 2021 Census also recorded unusually high numbers of New Start recipients due to the impact of COVID-19 related layoffs.

80 Based on the proportion of health care card eligible households which are also owner occupied in the 2021 Census.

81 Based on 2021 Census data.

82 Income quartiles based on the ABS Australian National Accounts: Distribution of Household Income, Consumption and Wealth 2021-22.

5.2.4 Facilitating social impact investment

Social impact investment is an approach for government to address social issues in collaboration with the for purpose (not-for profit, social enterprise, philanthropy) and for-profit sectors through a focus on outcomes.

Since 2013, the NSW Government has launched a number of initiatives, for example, to achieve better outcomes for families with experience of out-of-home care, reducing recidivism, improving mental health care and reducing youth unemployment and homelessness. These programs operate through outcomes-based contracts between the service provider and the NSW Government, where a part of the funding to service providers is dependent on achievement of outcomes.

A focus on outcomes supports innovation and provides flexibility to better meet the needs of the individuals receiving support. It also ensures accountability and helps to build an evidence base of what works. There is no NSW Government funding currently available for social impact investment in water initiatives.

Appendix E provides an illustrative example of how social impact investment could be applied to improve water quality in regional and remote communities.

5.2.5 Utilising developer charges

Developer charges allow LWUs to pass some of the cost of connecting new properties onto developers and are an important source of capital funding. Between 2016 and 2022, larger utilities and those in regional areas typically received significantly more developer charges because of their higher growth rates.

Over the next 15 years, the population served by medium and large LWUs is projected to continue growing strongly, while the population served by smaller utilities is expected to grow more slowly or even fall in some areas (see Table 16). This means smaller utilities will continue to miss out on developer charges as a source of capital funding. However, it also means there is scope for larger utilities to maximise their use of this funding source.

Table 16: Average revenue from developer charges for LWUs and projected population changes

LWU size	Average annual value of developer charges \$'000s 2016-2022 ⁸³		Projected change in population 2023 to 2038 ⁸⁴	
	Regional	Remote	Regional	Remote
Very Small (Less than 2,000 connections)	58	0 ⁸⁵	0%	-19%
Small (2,000-10,000 connections)	489	130	5%	-5%
Medium (10,000-20,000 connections)	3,595	NA	10%	NA
Large (20,000-50,000 connections)	8,407	NA	15%	NA

Source: DCCEEW, Frontier Economics analysis, Productivity Commission analysis.

83 Developer charges includes both cash contributions and gifted capital assets.

84 DHI [NSW Population Projections](#), accessed 8 February 2024

85 It is unlikely that the value of developer contributions for the Very Small and Remote grouping is zero, however, no utilities in this grouping reported a value in NSW performance database.

86 Orana Water Utilities Alliance, [Submission to the Joint Select Committee on Protecting Local Water Utilities from Privatisation](#), November 2023, p 2; Water Directorate, [Submission to the Joint Select Committee on Protecting Local Water Utilities from Privatisation](#), November 2023, p 2.

87 Shoalhaven Water, [Submission to the Joint Select Committee on Protecting Local Water Utilities from Privatisation](#), October 2023, p 2.

5.3 Addressing lack of economies of scale

Regional and remote communities face greater challenges around water bills and service levels, particularly due to their lack of economies of scale. Addressing this issue may involve additional collaboration and increasing geographic pricing boundaries.

5.3.1 Greater use of regional collaboration

LWUs do not always have the scale to provide complex water-related functions,⁸⁶ such as large-scale design and construction services.⁸⁷ In addition, the Commonwealth Productivity Commission recognised it can be unreasonably costly for smaller providers to employ specialist or technical occupations.⁸⁸ Therefore, multiple reviews have recommended greater collaboration among LWUs when delivering their water and sewerage services.⁸⁹

In NSW, there are several examples of greater collaboration occurring across LWUs. These include Regional Alliances⁹⁰, County Councils⁹¹ and Regional Organisations of Councils.⁹² Another example of collaboration is through the Joint Organisation (JO) framework, which was established to improve infrastructure and service delivery to regional communities.⁹³ Local Government NSW noted that regional water alliances through JOs enable efficiencies by “capturing economies of scale, resource sharing and coordinated service planning.”⁹⁴ Whilst the JOs are generally interested in partnering with state agencies to deliver regional projects, there are also potential efficiencies in negotiations at the JO level with the private sector for services.⁹⁵

A 2021 review found there was not always a full understanding by councils or state government agencies of the potential to leverage the JO model.⁹⁶

Further, not all eligible councils have joined their JO.⁹⁷ This would suggest there may be room to better leverage the JO framework or another form of regional collaboration to address.

- procurement of technical services or sharing of technical expertise
- whole of catchment water quality monitoring and reporting
- program management and financial management
- outsourcing operational requirements through long term contracts with the private sector (e.g. to operate water treatment plants)
- development of infrastructure projects.

In addition to more effective collaboration between LWUs, there may be benefits from broadening collaboration across government agencies, LWUs and regional stakeholders in water reliant industries. The Central NSW JO has proposed forming Strategic Regional Water Committees⁹⁸ to implement the NSW regional water strategies⁹⁹ and better coordinate water and sewerage services, particularly in times of extreme weather events.

In areas outside of water there is extensive collaboration by local councils to provide services to regional and remote communities. For example, the NSW Environment Protection Authority funds voluntary regional waste groups. These groups undertake regional waste and recycling projects, which allow them to negotiate cost-effective contracts while share skills and resources.¹⁰⁰

Regional collaboration is occurring in Queensland through the Queensland Water Regional Alliance Program (QWRAP). This industry-led program provides participating local councils with funding support and regional scale for their projects, helping them achieve greater efficiencies in water and sewerage service delivery for their customers (see the box below).

88 Productivity Commission, *Urban water services: regional and remote communities, Supporting Paper G*, May 2021, p 27.

89 Productivity Commission, *Urban water services: regional and remote communities, Supporting Paper G*, May 2021, p 27.

90 Orana Water Utilities Alliance, *OWUA*, accessed 5 February 2024.

91 Riverina Water, *About us*, accessed 5 February 2024.

92 Riverina Eastern Regional Organisation of Councils, *REROC | About us*, accessed 5 February 2024.

93 NSW Office of Local Government NSW, *Joint Organisations*, accessed 5 February 2024.

94 Local Government NSW, *Submission to the Joint Select Committee on Protecting Local Water Utilities from Privatisation*, November 2023, p 6.

95 The importance of the private sector in providing services needed by LWUs was noted by the Water Directorate at the Joint Select Committee on Protecting Local Water Utilities from privatisation. Mr Brendan Guiney, Water Directorate, *Public Hearing for the Joint Select Committee on Protecting Local Water Utilities from Privatisation*, <https://www.parliament.nsw.gov.au/committees/listofcommittees/Pages/committee-details.aspx?pk=321#tab-hearingsandtranscripts>, 8 December 2023, pp 5-6.

96 ARTD Consultants, *Joint Organisations Review, Volume 1: Overview Report*, October 2021, p 11.

97 ARTD Consultants, *Joint Organisations Review, Volume 1: Overview Report*, October 2021, p 11.

98 Central NSW Joint Organisation, *Submission to the Joint Select Committee on Protecting Local Water Utilities from Privatisation*, October 2023, p 3.

99 NSW Department of Climate Change, Energy, the Environment and Water, *Regional water strategies in New South Wales*, accessed 5 February 2024.

100 NSW Environment Protection Authority, *Funding for voluntary regional waste groups*, accessed 5 February 2024.

Box 5.1: Queensland Water Regional Alliance Program

QWRAP is a collaborative program between:

- over 60 participating Queensland local councils
- the Queensland Water Directorate (*qldwater*), a key advocacy and advisory body in the Queensland urban water industry
- LGAQ, the peak body for Queensland local councils
- Queensland Government, through the Department of Regional Development, Manufacturing and Water.¹⁰¹

Established in 2011, QWRAP encourages regionalisation of water and sewerage services. The aim is to strengthen economies of scale, improve strategic planning and investment and encourage competition by comparison among the participating councils.¹⁰²

QWRAP has established a 'Maturity Model'. It sets out the typical stages of regional collaboration. QWRAP directs funding for projects that promote ongoing regionalisation and progression towards greater maturity in collaboration.

To receive funding support from QWRAP for their projects, councils need to consider three or more alternative institutional models for regionalisation. This process encourages greater awareness among councils of ways they can share resources and build expertise to deliver water and sewerage services.¹⁰³ Incentivisation through modest QWRAP funding is a "proven method for accelerating progress through the maturity model and achieving strategic objectives at a regional scale".¹⁰⁴







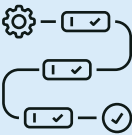


101 QLD Water, [Queensland Water Regional Alliance Program](#), accessed 5 February 2024.

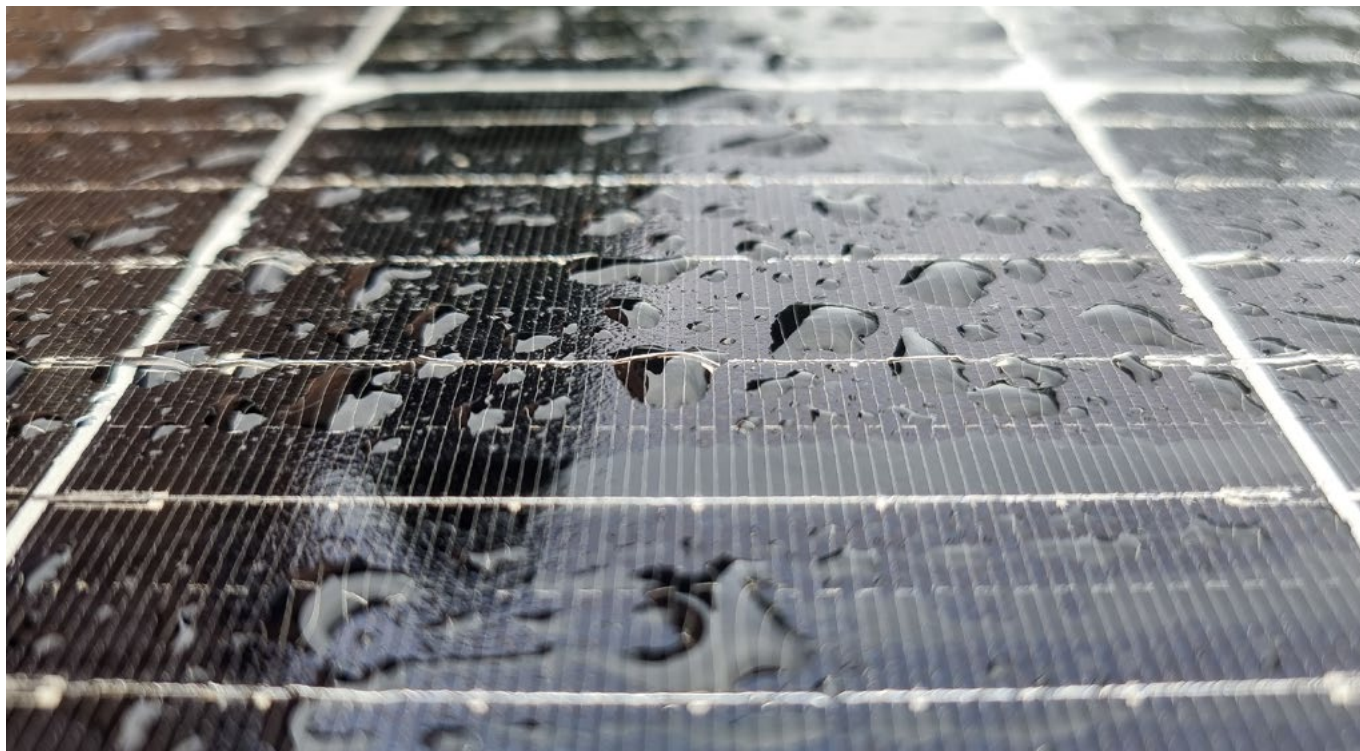
102 Queensland Water Regional Alliance Program, [QWRAP Annual Progress Report 2022](#), p 4.

103 Queensland Water Regional Alliance Program, [QWRAP Annual Progress Report 2022](#), p 6.

104 Queensland Water Regional Alliance Program, [QWRAP Annual Progress Report 2022](#), p 8.

QWRAP Maturity Model

	1	Little Collaboration <ul style="list-style-type: none">• Collaboration ad hoc or in times of mutual disaster or emergency
	2	Undertaking Joint Activities <ul style="list-style-type: none">• Two or more councils collaborating regularly• Priority project(s) underway
	3	Basic Collaboration <ul style="list-style-type: none">• Scheduled regional meetings• Joint activities and project(s) in planning and underway
	4	Advanced Formal Collaboration <ul style="list-style-type: none">• Council agreed memorandum scoping documentation• Review of cooperative opportunities• Projects and activities underway across entire region
	5	QWRAP 'Pilot Region' <ul style="list-style-type: none">• Council agreement to consider at least three alternative regional institutional models
	6	Water Alliance (Formal Alliance) <ul style="list-style-type: none">• Formal Water Alliance agreed to formed by all participating councils• Active projects enhancing regional collaboration
	7	Considering New Models <ul style="list-style-type: none">• Joint capital planning, investment or management• Shared services and staff development• Pre-feasibility studies on alternative regional entity
	8	Alternative Regional Arrangements <ul style="list-style-type: none">• Council controlled entity exists across region• Projects and strategic activities to address regional sustainability and efficiencies



5.3.2 Broadening the role of State Owned Corporations

In NSW, State Owned Corporations (SOCs) are established on behalf of the people of NSW to provide critical services.¹⁰⁵ Hunter Water Corporation, Sydney Water Corporation, WaterNSW, and Essential Water are SOC that deliver water and sewerage services to metropolitan and regional populations and also provide bulk water for irrigation.

SOCs are set up to replicate the organisational structure, commercial discipline and accountability of the private sector, with the aim of getting better outcomes for customers and taxpayers.¹⁰⁶ For example, they are governed by a board to achieve a rate of return for government shareholders and are required to comply with the NSW Treasury Commercial Policy framework. CSOs are provided to SOC to undertake activities outside the commercial purpose under their respective legislations.

Compared to LWUs, water utility SOC generally serve a larger population base and are able to achieve greater economies of scale. Water utility SOC are also able to attract and retain a larger pool of technical expertise in order to maintain and operate assets and deliver the required services. Leveraging the existing expertise of water utility SOC, and expanding on existing collaboration between LWUs and WaterNSW outlined in Chapter 3, could address the challenges LWUs have in attracting and retaining technical expertise.

A greater role for SOC in reducing the risks for LWUs can include:

- Service level agreements on an as needed basis between LWUs and SOC to fill capability gaps in regional and remote communities, such as dam safety, water quality and strategic analysis (described in Chapter 3).
- Long term partnership agreements between LWUs and SOC to deliver water and sewerage services.
- Regional operational hubs which centralise the technical skills and coordinates resourcing across the region.
- Long term lease agreements for SOC to operate the assets for a period of time and recover the associated user charges.

The NSW DCCEEW also has a team of strategic planning and technical experts, and regionally based inspectors and engineers that provide support and advice to LWUs, and this capability would need to be taken into account in the regional operational hubs model.

Appendix E sets out several options to broaden the role of State Owned Corporations in reducing LWU risks. It also summarises some of the key advantages and disadvantages for each option.

105 NSW Treasury, [State Owned Corporations](#), accessed 7 February 2024.

106 NSW Treasury, [Policy and Guidelines: Ownership and Portfolio Expectations Policy](#), February 2022, p 3.

5.3.3 Moving to regionally based usage and service charges

In the Sydney metropolitan area, a ‘postage stamp’ pricing approach is applied for water and sewerage services, which applies the same basis for charges irrespective of location. This approach has advantages from a social equity perspective, and is also arguably more efficient from a regulation perspective, as the cost of deriving efficient costs at specific locations may outweigh the benefits.

Regionally based pricing is currently being used by County Councils in NSW. County Councils are set up to provide a specific function of a local council, such as supplying water.¹⁰⁷ For example, Riverina Water is a County Council that provides drinking water to customers in several local government areas (City of Wagga Wagga and Lockhart Shire Council, as well as parts of Greater Hume Council and Federation Council). It adopts postage stamp pricing for this service.¹⁰⁸

Taking this approach to other regional and remote communities – i.e. applying postage stamp pricing across a wider geographical area than the current local government boundaries – presents advantages and disadvantages. If costs are averaged over different areas, it can make water charges less cost-reflective. This reduces the signal customers receive from prices about the costs of their water service. It could also lead to significant changes compared to current customer bills. Therefore, the advantages outlined above – greater social equity, lower administrative costs – need to be weighed against these other factors.

Our analysis indicates that if postage stamp pricing is established based on Joint Organisation areas, there could be relatively large bills increases (greater than 35%) for some LWUs, to offset bill decreases for other LWUs in the Joint Organisation. Accordingly, other groupings could be explored for regionally based pricing (e.g. small and remote LWUs).

5.4 Improving resilience

Improving resilience for LWUs – ensuring water is safe, secure and sustainable in their areas – benefits and protects their customers. Moving to optimise LWU funding – such as targeted CSOs for small and remote LWUs – provides an opportunity to introduce mechanisms aimed at addressing resilience and driving better performance. These include a focus on innovation, training and education, as well as introducing independent oversight.

5.4.1 Addressing water safety, security and sustainability through a more targeted, whole of investment life cycle funding model

Several reviews have highlighted the critical importance of LWUs having resilient water systems in place that can respond to the changing climate. For example, the Australian Government’s Productivity Commission noted that increasing average temperatures, higher-intensity rainfall and other extreme weather events could threaten long-term water security in regional and remote Australia.¹⁰⁹ Further, it can be difficult for some LWUs to prepare for these challenges due to limited financial resources and organisational capabilities.¹¹⁰

One option may be moving to a more holistic model for funding LWU services. LWUs would receive targeted funding based on their system risks or financial needs. Funds would be drawn from a sustainable, ongoing combination of sources, such as:

- government funding (e.g. CSOs, grants)
- industry contributions
- philanthropic donations.

Where funding is applied towards a project, it would use whole-of-life costing. This means funding would factor in the capital investment, as well as the ongoing operational costs.

107 Rous County Council, [Our organisation](#), accessed 5 February 2024.

108 Riverina Water, [Fees & Charges](#), accessed 5 February 2024.

109 Productivity Commission, *Urban water services: regional and remote communities, Supporting Paper G*, May 2021, p 15.

110 Productivity Commission, *Urban water services: regional and remote communities, Supporting Paper G*, May 2021, p 13.

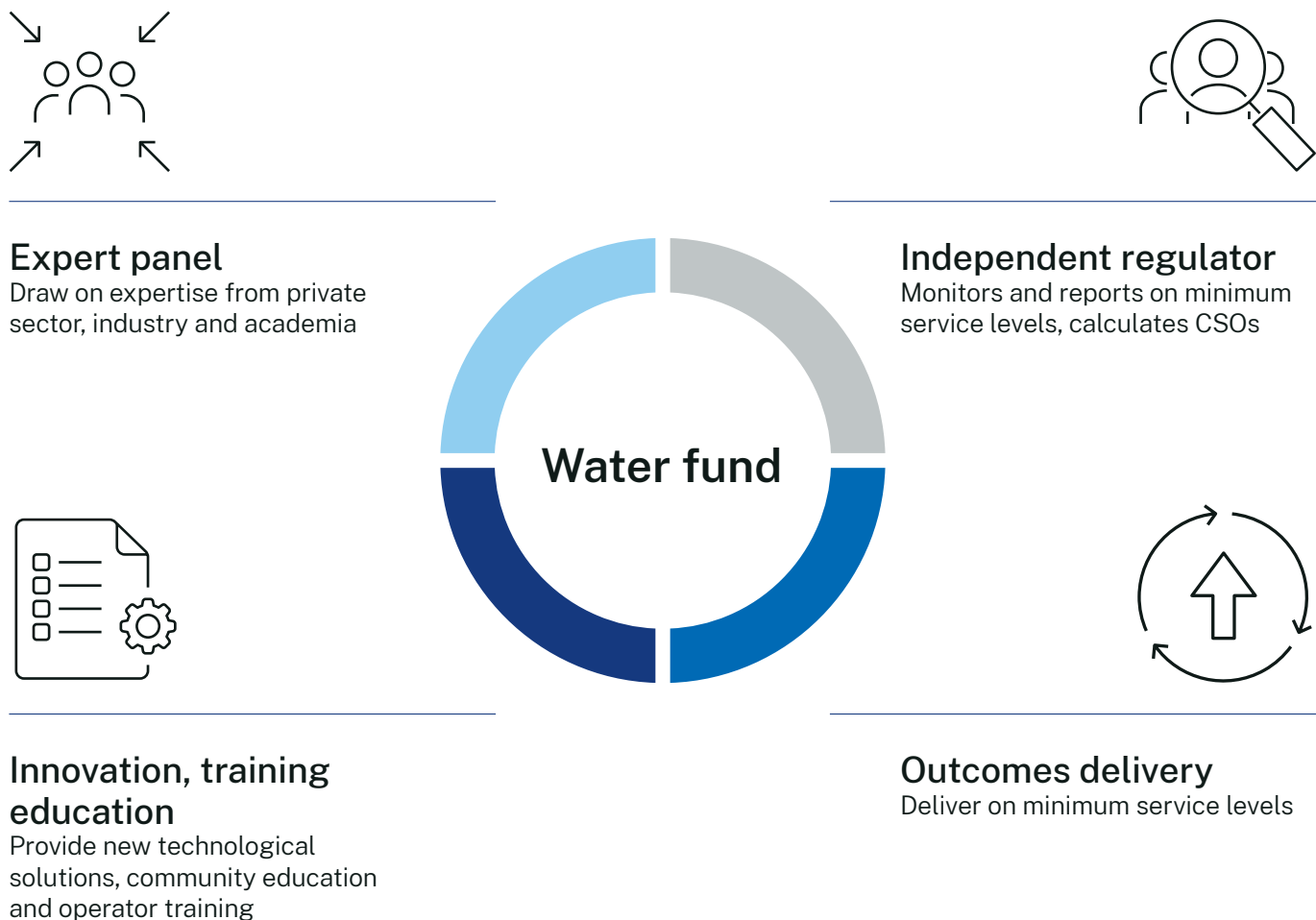
Stakeholders recognise that funding needs to be combined with better operational support, such as access to skills training and newer technologies.¹¹¹ Therefore, having additional mechanisms to complement the water fund could incentivise continuous improvement across LWUs.

As outlined in the diagram below, this could include:

- an expert panel, enabling LWUs to draw on expertise from the private sector, industry and academia

- an independent regulator, which could monitor and report on how LWUs are performing against their minimum service levels, as well as calculate the amount of CSO funding they receive
- a strong focus on outcomes delivery, which may involve a component of CSO funding being linked to LWUs delivering on minimum service levels
- funding to provide greater technological, training and community education support to LWUs.

Figure 5 Illustrative example of a water fund



111 Mr Brendan Guiney, Water Directorate, [Public Hearing for the Joint Select Committee on Protecting Local Water Utilities from Privatisation](#), 8 December 2023, pp 4, 6; Water Directorate, [Submission to the Joint Select Committee on Protecting Local Water Utilities from Privatisation](#), November 2023, p 8.

These mechanisms provide LWUs with resources they could draw on when planning, implementing and maintaining infrastructure. For example, the expert panel could assist LWUs identify a comprehensive set of options that improve water security, ranging from existing technologies to more innovative approaches. Another example is harnessing greater funding for community education, which could broaden customer support for services that improve resilience, such as purified recycled water. A further example is additional training support for LWUs, which could enable them to apply for funding in a timelier way, so their customers receive the benefits of water infrastructure sooner. Local Government NSW has identified that smaller LWUs often do not have the resources needed to prepare funding submissions, creating a barrier to them accessing grants.¹¹²

Stakeholders have noted the challenges of dealing with multiple government agencies when delivering water infrastructure in their regions. Further they have highlighted there are already significant reporting requirements in place for LWUs.¹¹³

Any shift to a more holistic way of funding LWUs, and its associated governance and reporting structure, would need to be mindful of the current requirements on LWUs and the potential overlaps with other government agencies. Stakeholders have also highlighted any new funding model should ensure the application process does not create an undue burden on smaller LWUs.¹¹⁴

Improving water resilience in remote Aboriginal and Torres Strait Islander Communities – in particular, drinking water quality – is a key initiative identified by national reviews. Therefore, any new funding model should ensure it is consistent with the NSW Aboriginal Water Strategy. This strategy identifies ways to increase water rights and ensure Aboriginal people are empowered to contribute to water management and planning decisions.¹¹⁵ See section 3.1 for further information.

5.4.2 Introducing independent oversight to drive continuous improvement and accountability

In NSW, LWUs are currently not subject to the same level of price scrutiny as water utility SOCs, who are regulated by IPART.¹¹⁶ IPART audits whether SOCs are meeting minimum service standards set out in their operating licences, which are designed to protect customers. It also sets prices to ensure customers only pay what SOCs need to efficiently deliver their services.

Advantages of regulation by IPART include the transparency of the process for governments and the emphasis on promoting value for customers. However, the existing regulation is mainly designed for larger scale water utilities. Any independent oversight for LWUs more generally would need to be proportionate to the capacity and resources of those LWUs to meaningfully engage with it.

The Productivity Commission recommended independent oversight to analyse reported information. This would provide greater scrutiny of outcomes, as well as better highlighting where LWU performance is poor and improvement is required.¹¹⁷ It would also provide assurance that LWUs are delivering services efficiently.¹¹⁸

Chapter 4 sets out potential minimum service standards for LWUs, covering water quality, water security, environmental impacts and service reliability. An independent body could monitor the performance of LWUs against these minimum service standards, which provides incentives for improved water resilience and operational performance. Independent oversight could also determine eligibility for CSO payments and ensure accountability for funds spent.

112 Mr David Reynolds, Local Government NSW, [Public Hearing for the Joint Select Committee on Protecting Local Water Utilities from Privatisation](https://www.parliament.nsw.gov.au/ladocs/transcripts/3183/CORRECTED_TRANSCRIPT-8%20December%202023-Joint%20Select%20Committee%20on%20Protecting%20Local%20Water%20Utilities%20from%20Privatisation.pdf), [https://www.parliament.nsw.gov.au/ladocs/transcripts/3183/CORRECTED_TRANSCRIPT - 8 December 2023 - Joint Select Committee on Protecting Local Water Utilities from Privatisation.pdf](https://www.parliament.nsw.gov.au/ladocs/transcripts/3183/CORRECTED_TRANSCRIPT-8%20December%202023-Joint%20Select%20Committee%20on%20Protecting%20Local%20Water%20Utilities%20from%20Privatisation.pdf), 8 December 2023, pp 49-50.

113 Mr John Truman, Ballina Shire Council, [Public Hearing for the Joint Select Committee on Protecting Local Water Utilities from Privatisation](https://www.parliament.nsw.gov.au/ladocs/transcripts/3183/CORRECTED_TRANSCRIPT-8%20December%202023-Joint%20Select%20Committee%20on%20Protecting%20Local%20Water%20Utilities%20from%20Privatisation.pdf), 8 December 2023, p 23.

114 Mr David Reynolds, Local Government NSW, [Public Hearing for the Joint Select Committee on Protecting Local Water Utilities from Privatisation](https://www.parliament.nsw.gov.au/ladocs/transcripts/3183/CORRECTED_TRANSCRIPT-8%20December%202023-Joint%20Select%20Committee%20on%20Protecting%20Local%20Water%20Utilities%20from%20Privatisation.pdf), 8 December 2023, pp 49-50.

115 NSW Department of Climate Change, Energy, the Environment and Water, [NSW Aboriginal Water Strategy](https://www.dccceew.nsw.gov.au/aboriginal-water-strategy), accessed 5 February 2024.

116 Note the Central Coast Council is the exception. IPART sets the maximum prices it can charge customers for water, wastewater and stormwater services.

117 Productivity Commission, [National Water Reform](https://www.prc.gov.au/publications/national-water-reform), December 2017, p 217.

118 Productivity Commission, [Urban water services: regional and remote communities](https://www.prc.gov.au/publications/urban-water-services-regional-and-remote-communities), Supporting Paper G, May 2021, p 49.

Appendix A

Terms of Reference

NSW Productivity Commission Review of funding models for Local Water Utilities

The NSW Productivity Commission should investigate the range of alternative funding arrangements that would help reduce service risks for local water utilities and provide advice to the NSW Government on next steps for a future direction.

The investigation should consider:

- The current funding arrangements for the 89 council-owned local water utilities in NSW and strategies that could better optimise the current funding approaches, including:
 - NSW Government funding programs
 - Existing requirements for user charges and levies.
- The minimum level of service for water supply and sewerage services (see assumptions and limitations).
- The diversity of local water utility performance, financial performance and business models and unresolved service risks
- The extent to which alternative funding arrangements could lift the performance of the most poorly performing, smaller utilities to minimum performance without creating disincentives to the efficient operation of good performers.
- Pathways to transition to a new approach over time, including different levels of NSW Government funding or opportunities to reduce risks by better leveraging the State Government's existing investments in publicly owned state-owned corporations.
- Pensioner rebates, noting this part of the review spans regional and metro settings.

Assumptions and limitations

The NSW Government's policy position is that there shall be no forced amalgamations and that councils will continue as the owners of their water and sewerage assets. Continuation of this policy position is a critical assumption of this investigation.

In order to investigate the options for alternative funding arrangements, and in particular the Community Service Obligation option, the NSW Productivity Commission should consider a minimum service standard for water supply and sewerage services. A complete portfolio of basic service levels is not set in NSW, however for the purposes of this investigation can be assumed that the following policy and regulatory settings would continue:

- **Water quality:** Australian Drinking Water Guidelines as the minimum service level for safe drinking water.
- **Water security:** Risk based water security service levels.
- **Environmental:** Compliance with Environment Protection Licences as the minimum service level for the environmental performance of wastewater treatment.
- **Fluoridation:** All relevant facilities will comply with the Code of Practice for Fluoridation of Public Water Supplies.



Through the consultation the NSW Productivity Commission should consider views as to whether the minimum level of service should change for these assumptions now or over time. Further, whether any key basic service levels are missing from this list. For example, reliability (service interruptions) or water pressure.

In undertaking its review, the Productivity Commission should:

- consult with councils, local water utilities, joint organisations of councils, industry groups, NSW Government agencies, and the community, as appropriate
- leverage from the analysis report from phase 1 of the Town Water Risk Reduction Program, entitled *Financial and operating performance of local water utilities (2022)*, and produced by Frontier Economics, which outlines the historical operational and financial performance of local water utilities
- assemble and analyse any other relevant data
- draw on best practice in other jurisdictions, previous reviews, and published research

Please visit [Review of funding models for local water utilities, NSW Productivity Commission](#) for more details on the timeline and consultations for the Review.

Appendix B

Local water utility performance

Cost recovery analysis

Very Small Regional

On average utilities which cost recovered tended to:

- Have fewer total connections: 2,583 vs 2,721 but more water connections per 100 km of mains (2,571 vs. 2,209).
- Have significantly more revenue per connection: \$1,030 vs \$795
- Have somewhat higher total expenses per connection: \$971 vs \$957 and lower operating expenses per connection \$620 vs \$644.
- Has fewer FTE per 1000 connections, 5.5 vs 6.7.
- Have lower SEIFA scores 939 vs 984, but no trend in location.
- Have lower water usage 472 kL vs 480 kL per connection.

Very Small Remote

On average utilities which cost recovered tended to:

- Have more total connections 1,921 vs 1,888 but fewer water connections per 100 km of mains: 1,701 vs. 2,489
- Have significantly higher water usage 1,206 kL vs 1,053 kL per connection and a little more revenue per connection: \$1,320 vs \$1,271
- Have significantly lower total expenses per connection: \$1,219 vs \$1,474, in particular much lower operating expenses per connection (\$773 vs \$1,028).
- Have lower SEIFA scores 903 vs 907 and are generally in less remote areas outside western NSW.
- Has more FTE per 1000 connections 10.9 vs 6.7.

Small Regional

On average utilities which cost recovered tended to:

- Have more total connections: 9,905 vs 6,457 but fewer water connections per 100 km of mains (3,259 vs. 2,742).
- Have slightly more revenue per connection: \$996 vs \$878, and lower water usage 358 kL vs 404 kL per connection.
- Have somewhat higher total expenses per connection: \$929 vs \$855, and lower operating expenses per connection \$646 vs \$679.
- Has fewer FTE per 1000 connections 4.3 vs 4.7.
- Have higher SEIFA scores 956 vs 951.

Small Remote

On average utilities which cost recovered tended to:

- Have fewer total connections: 4,472 vs 5,825 but more water connections per 100 km of mains (2,238 vs. 2,090).
- Have significantly more revenue per connection: \$1,538 vs \$1,055, and higher water usage 600 kL vs 505 kL per connection.
- Have significantly higher total expenses per connection: \$1,612 vs \$1,193, and higher operating expenses per connection \$933 vs \$887.
- Has fewer FTE per 1000 connections 6.5 vs 7.6.
- Have lower SEIFA scores 894 vs 940.

Service reliability

LWUs provides regular reporting to NSW DCCEEW as the regulator on key service metrics. Larger LWU's with more than 10,000 connections also report against key metrics to the Bureau of Meteorology's National Performance Report (NPR).

On metrics like main breaks and leaks, LWUs in NSW appear to compare on par with utilities in other jurisdictions based on the NPR. However, NSW LWUs appear to experience more water supply interruptions.

As shown in Table 18 some remote utilities experience around twice as many main breaks and lose almost twice as much water to leakage compared to similarly sized utilities in regional areas.

Table 18: Rates of main breaks, water supply disruptions and leaks, by LWU size

LWU size	Average Main Breaks per 100 km of mains		Water supply interruptions per 1,000 connections		Leaks L/connection/day	
	Regional	Remote	Regional	Remote	Regional	Remote
National median (NPR) for >10,000 connections in 2021-22 ¹¹⁹	12.15		72.9		72.0	
Very Small (Less than 2,000 connections)	18.1	31.0	92.4	299.6	70.6	112.2
Small (2,000-10,000 connections)	12.1	26.7	315.9	127.2	78.2	172.0
Medium (10,000-20,000 connections)	11.3	NA	306.7	NA	75.6	NA
Large (20,000-50,000 connections)	10.4	NA	318.6	NA	68.4	NA

Source: DCCEEW, Bureau of Meteorology National Performance Report 2022, NSW Productivity Commission analysis.

119 Bureau of Meteorology, [National Performance Report 2022](#), accessed 8 February 2024.

Assets condition and maintenance

Smaller utilities appear to spend more on maintenance and renewals than larger utilities, and more remote utilities spend more than regional utilities. Table 19 compares the ratio of the expenditure a LWU has on maintenance and renewals per connection to the amount of money it recovers in revenue from the depreciation of existing assets¹²⁰; a high ratio indicates the utility is spends much more on maintenance and renewals than would be expected to maintain existing assets. Ideally depreciation should roughly equal the costs of renewals and maintenance, however there are several reasons a utility could have a high ratio¹²¹:

- existing assets are now required to meet higher service standards
- cost of maintaining and renewing assets have increased significantly over time
- the utility has delayed expected maintenance and renewals and now needs to catch up
- existing assets have degraded faster than anticipated.

Table 19: Ratio of maintenance and renewals to depreciation, by LWU size

LWU size	Ratio of maintenance and renewals to depreciation	
	Regional	Remote
Very Small (Less than 2,000 connections)	1.9x	2.9x
Small (2,000-10,000 connections)	1.7x	2.8x
Medium (10,000-20,000 connections)	1.9x	NA
Large (20,000-50,000 connections)	1.1x	NA

Source: DCCEEW, Frontier Economics analysis, NSW Productivity Commission.

120 This is different to the asset renewal ratio reported by local governments as part of the Integrated Planning and Reporting Framework

121 This ratio is an indicative measure, a high ratio does not mean a utility is managing its assets poorly.

Appendix C

National Water Initiative funding model for water utilities

Table 20 sets how the NWI pricing principles apply to the user-pays model for water utility funding.

Table 20: The NWI user-pays model for water utility funding

Cost	Description	Funding principle based on NWI
Operational, maintenance and administration (OMA)	The day-to-day costs of operating and maintaining a utilities assets, including labour, materials, IT, consultants etc.	Customer bills
Asset renewals (depreciation)	The cost of replacing capital assets like pipelines and treatment plants when they wear-out.	The utility pays the upfront cost through borrowing, retained earnings or capital contributions from its owner. Customers then pay the asset's depreciation cost.
Asset upgrades	New assets or upgrades to existing assets to meet new requirements. For example, upgrading a treatment plant to improve environmental performance, or build a new pipeline to improve water security.	The utility pays the upfront cost through borrowing, retained earnings or capital contributions from its owner. Customers then pay the asset's depreciation cost.
Growth assets	New assets required to provide water or sewerage services to new customers	Developer charges
Return on capital	A profit the utility pays to its owner for the capital it invests in the utility	Customer bills

Appendix D

Minimum service levels

Issues to consider

The concept of minimum service levels applies across a range of different sectors. For example, universal service policies commonly apply in the telecommunication services. Across OECD countries, for example, most have longstanding universal service policies focused on voice-based telecommunications services. The policies generally address the *availability*, *accessibility* and *affordability* of such services. For broadband services, most OECD countries tend to focus their efforts largely on ensuring universal availability.¹²²

In the health sector, the concept of universal health coverage applies meaning that all people have access to the full range of quality health services they need, *when* and *where* they need them, *without financial hardship*. It covers the full continuum of essential health services, from health promotion to prevention, treatment, rehabilitation and palliative care. In Australia, Medicare provides a universal health insurance scheme. It guarantees all Australians (and some overseas visitors) access to a wide range of health and hospital services at low or no cost, but it does not cover all services or locations.

In Tasmania, the regulator has established minimum service standard targets within the Customer Service Code or water and sewerage. The service standards typically relate to number of incidents, response time to incidents and duration of incidents. The “minimum service standards are usually developed following consultation with customers on current levels of service and price implications of alternative levels of service provision”.¹²³

In the UK, the regulator (OFWAT) sets a range of minimum service levels that must be achieved. These include making/keeping customer appointments, response time to customer complaints, response times to supply disruptions, pressure standards, and sewer overflow events. There are penalties for non-compliance.¹²⁴

Service standards may vary in terms of:

- The performance categories which are included in the service standard. That is, which of water quality, water security, environment and service reliability should be covered by the service standard?
- How service standards within each category are defined. This relates to how good or poor performance under the service standard is defined, and is the detailed which underpins what the service standard is and how it can be measured. This detail includes:
 - the data or information used to measure performance against the service standard
 - the threshold used to define the minimum level of service, and compliance with the service standard
 - the frequency with which service standards are measured
 - governance arrangements around demonstrating compliance with minimum service levels and enforcement of those standards

122 Productivity Commission, Telecommunications Universal Service Obligation, Inquiry Report, No. 83, 28 April 2017, p 377.

123 <https://www.economicregulator.tas.gov.au/Documents/Water%20and%20Sewerage%202018%20Price%20Determination%20Draft%20Chapter%204.pdf>, p63.

124 <https://www.ofwat.gov.uk/wp-content/uploads/2017/03/The-guaranteed-standards-scheme-GSS-summary-of-standards-and-conditions.pdf>

- How service standards are applied. For example, minimum service levels could be allowed to vary (i.e. apply different service standards) depending on LWU characteristics, such as applying different service standards or minimum service levels based on LWU:
 - size¹²⁵
 - location
 - network densities.
- the communities to which service standards apply – for instance whether they apply to areas currently serviced by the LWU or unserved communities within or on the fringe of the urban boundaries.
- the overall governance arrangements for service standards, which includes how they are determined, compliance and enforcement and arrangements to review and update service standards or service levels.

In the following section we provide a range of potential options to apply service standards and minimum service levels to LWUs. They are constructed along two dimensions, in terms of

- the performance categories which are included in the service standard, and how service standards within each category are defined.

There is a trade-off between service levels and cost. Therefore, a balance needs to be found between the desired minimum service levels in the potential options and the costs of achieving them. Selecting an option with higher minimum service levels could involve higher costs.

Coverage to communities in NSW

Currently, LWUs provide services to a wide range of towns/communities in their service area. Some are served by established networks of water/wastewater assets to deliver the service. However, some smaller and remote communities may not have an established network. For example, in some communities wastewater services may be in the form of septic tanks rather than a network, with the households being responsible for the maintenance of these assets. In other cases, towns may rely on household water tanks for their potable supply of water. Again, the maintenance of these tanks would be the responsibility of the property owner. In setting the minimum service standard, consideration will need to be given to whether the standard should apply to all towns/communities (e.g. including those on the fringe of the urban boundary). Applying the minimum standard could also trigger investments to install the network if it currently does not exist.

Some examples where this has occurred in the past include the Priority Sewage Program which funded the extension of a reticulated wastewater network to small villages (within a metropolitan utilities' operational boundary) previously serviced via onsite wastewater disposal systems.¹²⁶ In the early years of the Program it was funded via the whole customer base of the metropolitan utility. The NSW Government's Aboriginal Communities Water and Sewerage Program also sought to provide safe and effective water and sewerage services to communities to receive a similar level of services to nearby non-indigenous communities.¹²⁷

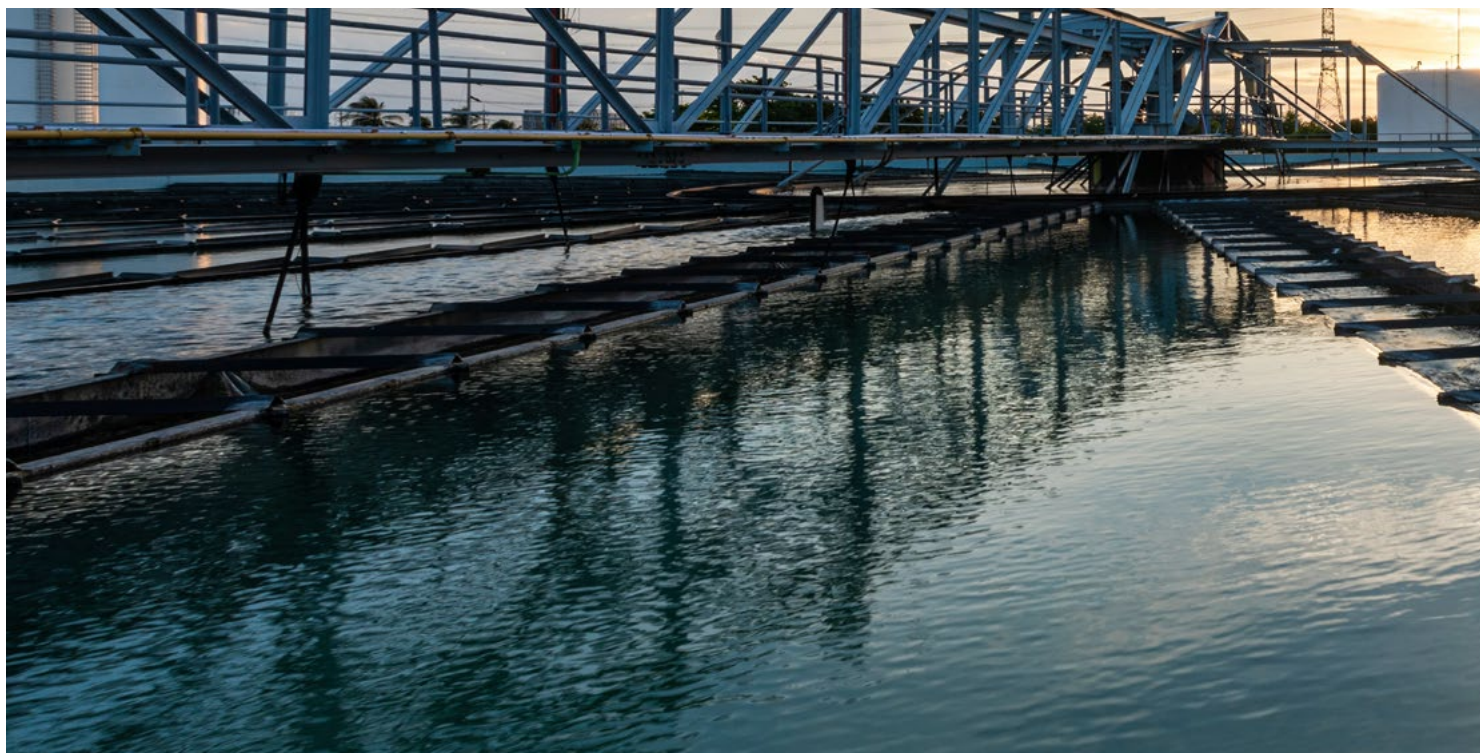
Voluntary or compulsory?

Minimum service standards could be imposed on LWUs on a voluntary basis or could be considered compulsory to achieve (e.g. via defined regulatory obligations). These would need to be considered in the context of the overall governance arrangements. Voluntary adoption is unlikely to incentivise an LWU to achieve the minimum standards. A compulsory standard, on the other hand, may be more challenging for some LWUs where there is a high cost of achieving these standards. In this context, CSO arrangements would need to be considered where it is not profitable to provide the minimum service levels.

¹²⁵ For example, New Zealand's water quality regulations apply different water quality rules depending on population served. See Taumata Arowai 2022, Drinking Water Quality Assurance Rules.

¹²⁶ In the Sydney context this included villages such as Bargo, Buxton, Douglas Park, Wilton and Jamberoo.

¹²⁷ NSW Water, Aboriginal Communities Water and Sewerage Program, accessed 31 January 2024.



Leading, real time and lagging service standards

Service standard indicators could fall into different categories of the point in time which the performance is being measured. The indicators may differ depending on whether the standards are aiming to improve current outcomes or protect from risks into the future. Water security indicators are commonly defined in terms of probabilistic modelling against future events, rather than reflecting current performance. Maintenance and renewals expenditure, for example, may not be observed in current performance levels but may prevent the deterioration of the asset base which is reflected in future performance.

Process and outcome service standards

Broadly speaking there are two types of service applied to LWUs:¹²⁸

- Process service standards – these relate to actions that utilities are required to do. Generally, for these types of service standard are binary (i.e. compliant or non-complaint) based on whether a utility has undertaken a specific action, which results in a desirable outcome. The NZ Drinking Water Assurance Rules defines these as “Assurance Rules”. Examples include:
 - requirement to have a water quality risk management plan
 - requirement to comply with clean drinking water or environmental standards
- Outcome service standards – these are defined by measurable outcomes. These relate to parameters which must be continuously or regularly sampled and may have explicit limits or thresholds for compliance. Examples include, for example:
 - *E. coli* concentrations
 - Number of main breaks.

Both process and outcome service standards have their own strengths and weaknesses. Ultimately regulators and customers care about outcomes. Process service standards with weak or uncertain relationships with outcomes are less useful. However, there are also risks that may not be readily observable in the outcomes indicators (process standards can help capture these risks). Combinations of process and outcomes service standards could be considered, drawing on the relative strengths of each.

128 Taumata Arowai 2022, Drinking Water Quality Assurance Rules, released 25 July 2022.



Table 21: Comparison of process and outcome service standards

Category	Strengths	Weaknesses
Process service standards	<ul style="list-style-type: none"> • Potentially easier to determine compliance (in particular when they relate to the existence of a plan of some sort) 	<ul style="list-style-type: none"> • Binary measure (provides little information) • May not be strongly correlated with outcomes • May require additional oversight (e.g. auditing) or analysis to ensure that process translates to desired outcome (i.e. that LWUs follow through plans, or provide evidence that a specific process results in a desirable outcomes)
Outcome service standards	<ul style="list-style-type: none"> • Transparent measure of actual performance • Show how far away from thresholds • Provides data to regulators which may be useful for policy • LWUs record many parameters already (potentially low cost to report these to a regulator) 	<ul style="list-style-type: none"> • Subject to measurement error • May be resource intensive where LWU do not already collect or report data

Source: Analysis based on Taumata Arowai 2022, Drinking Water Quality Assurance Rules, released 25 July 2022.

Water Quality

Current regulatory framework in NSW

Under the NSW Public Health Act 2010 and Public Health Regulation 2022, LWUs are required to have and comply with a risk based drinking water management system in accordance with the Framework for the Management of Drinking Water Quality from the ADWG.¹²⁹ Monitoring requirements are set out in LWUs DWMS and under the NSW Health Drinking Water Monitoring Program, each LWU is advised of the minimum number of drinking water samples to be collected and the characteristics to be tested.

Drinking water management systems and implementation must be reviewed, which will assess how effective current management practices are, and helps identify gaps and improvements. Reviews are required:

- annually as part of an internal review by LWUs, the results of which should be provided to NSW Health
- based on the external audit frequency agreed to with NSW Health. The external audit should be undertaken by an approved auditor. However, these external audits have yet to be widely undertaken in NSW, in contrast to the mature auditing arrangements in place in other jurisdictions, such as Qld and Victoria, and in NZ.

Comparison across jurisdictions

- The regulation of water quality in Australia, is similar across jurisdictions and for large urban water providers, primarily consisting of process service standards, which require utilities to have and implement water quality management systems or management plans based on ADWGs. The main differences appear to be in terms of governance arrangements around how they are implemented.

Table 22: Comparison of water standards imposed across jurisdictions

Standard imposed	NSW LWUs	Sydney Water/ Hunter Water	Queensland	Victoria	NZ	Canada (Alberta)
Requirement to have a water quality management system/plan	√	√	√	√	√	√
Compliance with fluoridation requirements	√	√	X	√	√	√
Monitoring and outcome reporting requirements to regulator	√	√	√	√	√	√
Monitor and outcome reporting requirements to public	√	√	√	√	X	√ (limited)
Compliance against specific drinking water quality standards	√	X	√ (limited)	√ (limited)	√ (extensive)	√ (extensive)

Note: the *Fluoridation of Public Water Supplies Act 1957*, *Fluoridation of Public Water Supplies Regulation 2022* and the *New South Wales Code of Practice for Fluoridation of Public Water Supplies* prescribes the procedures water utilities must follow when adding fluoride including the fluoride concentration that must be maintained. Water utilities must undertake daily fluoride measurements, provide a monthly report of these results to NSW Health, submit monthly samples to a laboratory, and notify NSW Health of incidents including overdosing incidents, underdosing incidents, and when they are not able to fluoridate for more than 24 hours. The *Fluoridation of Public Water Supplies Act 1957* provides enforcement mechanisms. NSW Health's preferred method to achieve compliance is to work with water utilities to support the safe operation of water fluoridation. There is a drinking water monitoring standard but there no specific requirement to reports results to the public.

Under the NSW Health Drinking Water Monitoring Program, each LWU is advised of the minimum number of drinking water samples to be collected and the characteristics to be tested.

129 NSW Public Health Regulation 2022, Part 5 Safety measures for drinking water – the Act, Part 3, Div 1

The *Public Health Act 2010* (NSW) provides enforcement mechanisms. NSW Health's preferred method to achieve compliance is to work with water utilities to improve outcomes. Local Public Health Units monitor sampling compliance (sample numbers and frequency) and follow up with any non-compliant utilities. Public Health Units also follow up non-compliant test results.

Source: *Public Health Act 2010* (NSW); Public Health Regulation 2022 (NSW); IPART 2022, Sydney Water Reporting Manual; IPART 2022, Hunter Water Reporting Manual; *Safe Drinking Water Act 2003* (Vic); Safe Drinking Water Regulations 2015 (Vic); Public Health Regulation 2018 (Qld); Taumata Arowai 2022, Drinking Water Quality Assurance Rules, released 25 July 2022; <https://www.alberta.ca/drinking-water-overview>.

Some jurisdiction and utilities have additional requirements compared to LWUs, which include:

- Detailed monitoring and reporting requirements
 - Both Sydney Water and Hunter Water have a range of reporting requirements under their operating licences.¹³⁰ This includes requirements to publicly publish water quality information on their websites.
 - Providers in Queensland are obligated to conduct quarterly monitoring and reporting on *E. coli* and fluoride (where added).¹³¹ Reporting on a defined list of parameters is mandatory if they are part of the service provider's routine monitoring program. These include aesthetic parameters like pH, hardness, turbidity; disinfection residuals like chlorine; and health related contaminants including metals, disinfection by products and nitrate, among others.¹³²
 - In Victoria, drinking water is regulated under These regulations also mandate water suppliers to have a Drinking Water Quality Risk Management Plan,¹³³ thereby implementing both process-based and outcomes-based service standards. Water agencies must also prepare an annual report on the quality of drinking water and regulated water.
- Explicit standards for some parameters.
 - the Queensland Public Health Regulation 2018 explicitly requires utilities to test drinking water, under section 52, for
 - *E. coli*, with the frequency of testing outlined based on the number of people supplied by the service. The regulations include acceptable thresholds.
 - each required parameter at the frequency stated in the management plan for the water utility.

The regulations also explicitly state that drinking water should not contain an amount of an ADWG parameter more than the guideline value for health

- In Victoria, drinking water is regulated under *Safe Drinking Water Act 2003* and associated Safe Drinking Water Regulations 2015. Under section 17 of the act water supplier are required to ensure specific parameters are within acceptable values, specified in schedule 2 of the regulations.¹³⁴ The regulations include the relevant sampling frequency for each parameter and the quality standard. This covers the following parameters:
 - *E. coli*
 - total trihalomethanes
 - turbidity.

New Zealand has experienced significant changes in the way water quality is regulated, following the 2016 Havelock North drinking water contamination event. Changes have included removing components from acts related to water quality, which made compliance discretionary in many cases (removing 'all practicable steps' test and removing affordability components) and including more prescriptive requirements for water suppliers. Further information on these new regulations are provided in Box A.

130 IPART 2022, Sydney Water Reporting Manual, accessed https://www.ipart.nsw.gov.au/sites/default/files/cm9_documents/Reporting-Manual-changes-to-Water-Conservation-Report-December-2021.PDF, and IPART 2022, Hunter Water Reporting Manual, https://www.ipart.nsw.gov.au/sites/default/files/cm9_documents/Reporting-Manual--Hunter-Water-2022-2027.PDF.

131 Water Quality and Reporting Guideline for a Drinking Water Service. September 2010. Available at: https://www.rdmw.qld.gov.au/___data/assets/pdf_file/0008/45593/water-quality-reporting-guideline.pdf

132 Explanatory notes and instructions Drinking Water Quality: Quarterly Report. February 2011. Available at: https://www.rdmw.qld.gov.au/___data/assets/pdf_file/0004/45598/wsr501-quarterly-explan-notes.pdf

133 Victorian Legislation. Safe Drinking Water Regulations 2015. Available at: <https://www.legislation.vic.gov.au/in-force/statutory-rules/safe-drinking-water-regulations-2015/001>

134 Safe Drinking Water Regulations 2015. Available at: <https://www.legislation.vic.gov.au/in-force/statutory-rules/safe-drinking-water-regulations-2015/001>

Box A: Water quality standards in New Zealand

Tauma Arowai was established as New Zealand's water service regulator in 2021. This was followed by the introduction of the Drinking Water Quality Assurance Rules, Drinking Water Standards, Aesthetic Values and Acceptable Solutions on 14 November 2022. This represented a change in how safe drinking water is regulated. This sees local councils and suppliers now having to provide assurance to the regulator that the water they supply is safe¹³⁵, where previously regulations did not impose an absolute duty to comply with drinking water standards.¹³⁶

The Drinking Water Quality Assurance Rules¹³⁷ is the central document of the regulations. The rules are structured into modules, covering:

- general rules, which relate to two types of rules:
 - Monitoring Rules, which relate to demonstrating compliance against water quality parameters and other rules in the regulations (e.g. sampling

frequencies, compliance periods, and reporting periods).

- Assurance rules, that identify activities that utilities must undertake (e.g. demonstrating compliance, delivering water samples, calibrating equipment, using suitably trained personnel etc.). Compliance with assurance rules needs to be reported to Taumata Arowai within 40 days of the end of each calendar year.
 - Rules which are specific to the stage of the water treatment process (source, treatment and distribution) and for specific drinking water supply categories. These include both monitoring and assurance rules.
 - Specific rules for very small communities defined as up to 25 people, up to 50 people for up to 60 days in any 12 month period. These cover both monitoring and assurance standards.
- Water carrier service rules, which is not likely to be relevant for utilities.
 - Rules for Supplies with Varying Population, which only consist of monitoring rules where the base population of a drinking water supply increases for limited periods of time.
 - Temporary drinking water supplies, which relate to planned short-term events where people gather, such as music festivals, farm field days, civil defence operations, or military exercises. This is not likely to be relevant for utilities.

The rules which are applied to utilities vary depending on the size of the serviced population, the nature of the water supply (networked, self-supplied buildings).

Minimum or maximum values for parameters are provided in water services or a range of parameters related to safety and aesthetics of drinking water.¹³⁸



135 Media Release. New drinking water Rules and Standards take effect. 14 November 2021. Available at: <https://www.taumataarowai.govt.nz/news/articles/new-drinking-water-rules-and-standards-take-effect/>

136 Government Inquiry into Havelock North Drinking Water 2017, Report of the Havelock North Drinking Water Inquiry: Stage 1. 1

137 Taumata Arowai 2022, Drinking Water Quality Assurance Rules, released 25 July 2022.

138 See for *Water Services (Drinking Water Standards for New Zealand) Regulations 2022* and *Aesthetic Values for Drinking Water Notice 2022* for minimum or maximum allowed values for parameters.

Box B: Case Study: water quality standards in Alberta, Canada

Alberta Ministry of Environment and Protected Areas regulates drinking water quality, in addition to a range of other water services, for small and remote communities.¹³⁹

The Potable Water Regulation (part of the Environment Protection and Enhancement Act (RSA 2000, c.E-12)) mandates that water from regulated waterworks systems in Alberta complies with Health Canada's Guidelines for Canadian Drinking Water Quality. This regulation stipulates criteria for the design, performance, and operation of waterworks facilities.

Drinking water systems are required to meet government's design standards and operated according to provincial facility approvals. This is verified through performance assurance, which consist of approvals, compliance and enforcement activities ensure that drinking water providers meet the necessary standards.

- Facility approvals: designated Alberta municipal drinking water and wastewater facilities must be approved to meet consistent, provincewide standards.
- Compliance and enforcement. This imposes consequences for non-compliance, preventing economic benefit from violations and comprises:
 - annual Compliance Assessment and Enforcement Reports highlight key activities and enforcement actions, including fines and penalties.
 - capacity building build capacity to support initiatives such as monitoring (both compulsory and voluntary), reporting, and compliance assessments (including unannounced and announced inspections and performance reviews) to identify and address potential problems proactively.



139 See <https://www.alberta.ca/drinking-water-overview> for further details.

Water Security

A secure water supply will depend on the range of sources that can be accessed. In many areas, water can be sourced from regulated rivers with large storages that collect/store water for long periods. There is also a less secure supply from unregulated rivers and groundwater sources. In some regions there is also competition from other activities (e.g. agriculture, mining) to access the scarce water resources which can impact on water security.

Extent to which the LWU controls security

For minimum standards to be meaningful, LWUs should be able to impact service standards. In some cases, such as with larger storages on regulated rivers, these are the responsibility of WaterNSW. LWUs can provide input the assessment process of options, but it is typically WaterNSW (and the NSW Government) which makes the ultimate investment augmentation decisions around these assets.

However, there are a range of areas where LWUs can directly influence security of supply such as:

- capital investments (e.g. investing in recycled water facilities)
- water conservation investments to reduce demand and also introduce recycled wastewater facilities to reduce demand for potable water
- purchasing entitlements/shares from the trading market (either on a permanent or temporary basis).
- maintaining the network to reduce leakage
- triggering and monitoring water restrictions
- implementing emergency response measures.

Short term versus long term outcomes

Water security measures can be defined as a short term measure or longer term concept.

Short term measures can be directly observed (e.g. storage levels). However, changes to longer term water security risks need to be modelled as part of the broader process (e.g. calculating system yield via a stochastic process). Often this form of data is not readily available and, in particular, it is unlikely to be readily available to characterise water security risks for smaller towns.

Environmental impacts

Water extractors are required to be licenced except in some limited cases where 'basic landholder rights' apply. Extraction is commonly metered and monitored by NRAR, which is an independent regulator responsible for compliance with and enforcement of water management legislation in NSW. This includes granting and managing water licences and works approvals for LWUs and ensuring LWUs' compliance with water access licences. The *Natural Resources Access Regulator Act 2017* constitutes and confers functions although this does not cover all extraction.

Where construction of new assets requires involves land clearing, this will typically be subject to a separate Development Assessment process typically managed by the relevant Local Councils.

There are currently no regulations affecting LWU greenhouse gas emissions, emission data is collected and reported to and published by NSW DCCEEW in their LWU performance monitoring database.

In Victoria, similar requirements also apply to the discharges to the environment from sewage treatment plants. Annual Performance Statements (now called PIPS – Permission Information and Performance Statements) are available on EPA Victoria's website.

Greenhouse gas emissions are reported in Queensland and in NSW, however there are no minimum service standards applied.

Appendix E

Additional information on alternative funding options

Facilitating social impact investment

Box C provides an illustrative example of how social impact investment could be applied to improve water quality in regional and remote communities.

Box C: Illustrative example: social impact investment to achieve improvements in water quality in regional and remote communities

Investment objective:

Improvement in water quality for 5 regional/remote communities, relative to baseline

Investment type: payment by results contract

Contract length: 5 years

Cohort: 5 regional and remote communities that have less than 10,000 connections

Outcome payment metrics: independent audit results show monitoring and reporting processes have improved to meet Australian Drinking Water Guidelines.

Partners:

- Government agency: local councils
- Service provider: TAFE
- Local partner: NSW Department of Climate Change, Energy, the Environment and Water
- Funding partner: Philanthropic foundation



Broadening the role of State Owned Corporations

Table 23 sets out several options to broaden the role of State Owned Corporations in reducing LWU risks. It also summarises some of the key advantages and disadvantages for each option.

Table 23: Key advantages and disadvantages for each of the options

Options	Advantages	Disadvantages
Service level agreements on an as needed basis	<ul style="list-style-type: none"> Tailored to the individual needs of LWUs Reduces capability gaps in regional communities 	<ul style="list-style-type: none"> Higher overall transaction costs due to more negotiations required Lack of knowledge sharing between LWUs No change to level of customers' bills
<p>Long term partnership agreements for SOCs to deliver water and sewerage services at cost:</p> <ul style="list-style-type: none"> Local councils pay agreed amount to SOCs based on, for example number of connections May need CSO for SOCs Agreed key performance measures by SOCs Billing and strategic planning functions subject to service agreement 	<ul style="list-style-type: none"> Lower transaction costs from longer term agreements Use of KPIs and contractual incentives to provide improved services over time Reduces capability gaps in regional communities 	<ul style="list-style-type: none"> Lack of knowledge sharing between LWUs No change to level of customers' bills
<p>Regional operational hubs operated by SOCs that centralises the technical skills and coordinates resourcing across the region:</p> <ul style="list-style-type: none"> Initial set up and ongoing costs funded by council contributions and CSO Agreed key performance metrics Local councils retain billing responsibilities and strategic planning 	<ul style="list-style-type: none"> Greater scope for knowledge sharing from a hub and spoke model Leverage economies of scale from SOCs which may minimise the need for CSOs Greater opportunity for standardisation and improvement of services Reduces capability gaps in regional communities 	<ul style="list-style-type: none"> Initial set up costs Most disadvantaged communities may continue to pay the highest charges
<p>Long term lease agreements</p> <ul style="list-style-type: none"> Agreed lease payments from SOCs to local councils For the period of the agreement, SOCs undertake strategic planning, operational activities, billing etc 	<ul style="list-style-type: none"> Leverage economies of scale from SOCs which may minimise the need for CSOs Long term agreements minimise transaction costs Use of KPIs and contractual incentives to provide improved services over time Reduces capability gaps in regional communities 	<ul style="list-style-type: none"> Most disadvantaged communities may continue to pay the highest charges The terms of the lease need to ensure the ownership of the assets remain with local councils for accounting purposes

Appendix F

Calculations for numerical tables

Size and remoteness groupings

We categorised LWUs into size groups based on the number of water connections they reported in 2022. For LWUs which did not have water customers (e.g. they only provide sewerage services) we estimated the number of connections based on the number of households in the LGA in the 2021 Census.

To determine the remoteness groupings we referred to the Australian Bureau of Statistics Remoteness Areas, which categorise different areas of NSW into five categories: Major Cities, Inner Regional, Outer Regional, Remote, and Very Remote. No LWU was in an area categorised as a major city. LGAs in areas categorised as Inner Regional or Outer Regional we categorised as “Regional”, and LGAs in areas the ABS categorised as Remote or Very Remote we categorised as “Remote”. Where an LGA included both regional and remote areas, we categorised based on the location of major population centres within the LGA.

Inflation

All financial data was inflated into real 2022 dollars (except where noted) using the ABS Sydney all groups consumer price index for the June quarter of the financial year.

Table 24: Calculations for numerical tables

	Calculation	Assumptions
Table 1		
Water quality risk –LWUs with average scores above 4 (as a percentage of all LWUs)	$\frac{\text{Number of LWUs with a water quality risk score above 4 in a size and remoteness grouping}}{\text{Total number of LWUs in a size and remoteness group}}$	Excludes Central Coast Council, State Water Supply authorities, County Councils, and utilities which don't supply water Where a utility has multiple water supply systems, the LWU risk score was calculated as the average risk of each system weighted by population Excludes water supply systems without a water quality score.
Environmental risk –LWUs with average scores above 4 (as a percentage of all LWUs)	$\frac{\text{Number of LWUs with an environmental risk score above 4 in a size and remoteness grouping size and remoteness grouping}}{\text{Total number of LWUs in a size and remoteness group}}$	Excludes Central Coast Council, State Water Supply Authorities, County Councils, and utilities which don't supply water Where a utility has multiple water supply systems, the LWU risk score was calculated as the average risk of each system weighted by population

	Calculation	Assumptions
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Table 2

Number of water supply systems with water quality risk scores above 4	Sum of water supply systems with water quality risks of 4 or 5, grouped by the size and remoteness of the LWU which manages the system (i.e. a LWU may have multiple systems with scores of 4 or 5)	Excludes Central Coast Council, State Water Supply Authorities, County Councils, and utilities which don't supply water. Excludes water supply systems without a water quality score.
Water supply system with a water quality risk score of 4 or 5 as a percentage of all systems	$\frac{\text{Number of water supply systems with a water quality risk score of 3 or 4 in a size and remoteness grouping}}{\text{Total number of water supply systems with a water quality risk score}}$	<p>Excludes Central Coast Council, State Water Supply Authorities, County Councils, and utilities which don't supply water.</p> <p>Excludes water supply systems without a water quality score.</p>

Table 3

Percentage of utilities with average water security risk scores above 4	$\frac{\text{Number of LWUs with a water security risk score of more than 4 in a size and remoteness grouping}}{\text{Total number of LWUs in a size and remoteness group}}$	<p>Excludes Central Coast Council, State Water Supply Authorities, County Councils, and utilities which don't supply water</p> <p>Where a utility has multiple water supply systems, the LWU risk score was calculated as the average risk of each system weighted by population</p>
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Table 4

Proportion of utilities achieving cost-recovery between 2016 and 2022, by LWU size	$\frac{\sum_{\text{size}} \text{Cost recovering}_{\text{LWU size, remoteness}}}{\text{No. of LWU}_{\text{size, remoteness}}}$ <p>Where for each LWU:</p> $\text{Cost recovering}_{\text{LWU}} = \begin{cases} 1, & \frac{\sum_{\text{year}}^{2022} \text{Cost recovery rate}_{\text{year}}}{\text{No. years between 2016 and 2022 with data}} \geq 1 \\ 0, & \text{otherwise} \end{cases}$	Excludes Central Coast Council, State Water Supply Authorities, and County Councils.
	The cost recovery rate was determined by Frontier Economics by dividing a utilities revenue and expenses in a given year.	

	Calculation	Assumptions
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Table 5

Operating costs per connection, by LWU size	For each LWU: $\frac{\text{max}_{\text{years with data}} \text{Operational expenditure}}{\text{max}_{\text{years with data}} \text{Water supply connections}}$ Then averaged by LWU size.	Excludes Central Coast Council, State Water Supply Authorities, and County Councils.
Maintenance and renewals expenditure per connection, by LWU size	For each LWU: $\frac{\text{max}_{\text{years with data}} \text{Maint. and renewal costs}}{\text{max}_{\text{years with data}} \text{Water supply connections}}$ Then averaged by LWU size.	Excludes Central Coast Council, State Water Supply Authorities, and County Councils.

Table 6

FTEs per 1000 customers, by LWU size	For each LWU: $\frac{\text{max}_{\text{years with data}} \text{FTEs}}{\text{max}_{\text{years with data}} \text{Connections}}$ Then averaged by LWU size.	Excludes Central Coast Council, State Water Supply Authorities, and County Councils. Only uses data between 2016 and 2020.
Average number of FTEs per LWU, by LWU size	For each LWU: $\text{max}_{\text{years with data}} \text{FTEs}$ Then averaged by LWU size.	Excludes Central Coast Council, State Water Supply Authorities, and County Councils.

Table 7

Average SEIFA score	ISRD score for each LGA then averaged by LWU size and remoteness grouping.	Excludes Central Coast Council, State Water Supply Authorities, and County Councils.
Average annual bills \$FY2022	$\text{Charge}_{\text{usage}} + \text{Charge}_{\text{fixed water}} + \text{Charge}_{\text{fixed sewerage}}$ Then averaged by LWU size.	Excludes Central Coast Council, State Water Supply Authorities, and County Councils. Excludes LWUs which don't supply water.

	Calculation	Assumptions
Table 8		
Compounded annual growth rate in connection numbers	$\left(\frac{\sum \text{Connections}_{\text{Size,remoteness}} 2022}{\sum \text{Connections}_{\text{Size,remoteness}} 2016} \right)^{\frac{1}{6}} - 1$ <p>Connections were summed across all LWUs in a size and remoteness grouping.</p>	<p>Excludes Central Coast Council, State Water Supply Authorities, and County Councils.</p> <p>LWUs with no data for 2016 were excluded. Where data was missing for 2022 it was interpolated from 2021 data where available, otherwise the LWU was excluded.</p> <p>Connection numbers are both water and sewerage.</p>
Compounded annual growth rate in revenue	$\left(\frac{\sum \text{Revenues}_{\text{Size,remoteness}} 2022}{\sum \text{Revenue}_{\text{Size,remoteness}} 2016} \right)^{\frac{1}{6}} - 1$ <p>Revenue summed across all LWUs in a size and remoteness grouping.</p>	<p>Excludes Central Coast Council, State Water Supply Authorities, and County Councils.</p> <p>LWUs with no data for 2016 were excluded. Where data was missing for 2022 it was interpolated from 2021 data where available, otherwise the LWU was excluded.</p> <p>Where revenue numbers were missing from the NSW LWU database they were imputed from LGA financial statements.</p>
Compound annual growth rate in population	$\left(\frac{\text{Total population in 2022}}{\text{Total population in 2016}} \right)^{\frac{1}{6}} - 1$ <p>Summed across all size and remoteness groups</p>	<p>Excludes Central Coast Council, State Water Supply Authorities, and County Councils.</p> <p>Population numbers are from the DHI NSW population projections.</p>

	Calculation	Assumptions
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Table 9

% of operating to total expenses	$\frac{2016-2022 \text{ average annual expenditure on operating, maintenance, and administration (OMA)}}{2016-2022 \text{ average total annual expenditure}}$ <p>Averaged across all LWUs in a size grouping</p>	Excludes Central Coast Council, State Water Supply Authorities, and County Councils.
% of operating expenses covered by user charges	$\frac{2016-2022 \text{ average annual revenue from fees and charges}}{2016-2022 \text{ average annual expenditure on operating, maintenance, and administration (OMA)}}$ <p>Averaged across all LWUs in a size grouping</p>	<p>Excludes Central Coast Council, State Water Supply Authorities, and County Councils.</p> <p>All values are inflated by CPI to \$2022</p>
% of total expenses covered by user charges	$\frac{2016-2022 \text{ average annual revenue from fees and charges}}{2016-2022 \text{ average total annual expenditure}}$ <p>Averaged across all LWUs in a size grouping</p>	<p>Excludes Central Coast Council, State Water Supply Authorities, and County Councils.</p> <p>All values are inflated by CPI to \$2022</p>

Box 2.1

Value of grants \$ millions nominal	Sum of capital grants for all LWUs in a size and remoteness grouping between 2016 and 2026.	<p>Excludes Central Coast Council, State Water Supply Authorities, County Councils</p> <p>Only considers infrastructure and capital planning related grants under the Safe and Secure Water Program and Drought Funding programs</p>
Proportion of LWUs receiving grants	$\frac{\text{Number of LWUs in a size and remoteness grouping receiving grant funding between 2016-2022}}{\text{Total number of LWUs in a size and remoteness grouping}}$	<p>Excludes Central Coast Council, State Water Supply Authorities, County Councils</p> <p>Only considers infrastructure and capital planning related grants under the Safe and Secure Water Program and Drought Funding programs</p>

	Calculation	Assumptions
Table 10		
Annual growth rate in eligible households for rebate	$\frac{\left(\frac{PP_{2023} - PP_{2021}}{2} \right)}{PP_{2021}}$ <p>Where PP_{2021} and PP_{2023} is the population in an LWU over the age of 65 in 2021 and 2023 respectively. Values are averaged across all LWUs in a size and remoteness grouping.</p>	<p>Excludes Central Coast Council, State Water Supply Authorities, County Councils</p> <p>Population estimates are based on DHI NSW population projections.</p> <p>Assumes the size of pensioner households remained constant over time.</p>
Annual change in number of rebates claimed	$\frac{\left(\frac{NR_{2023} - NR_{2021}}{2} \right)}{NR_{2021}}$ <p>Where NR_{2021} and NR_{2023} is the number of rebates claimed in 2021 and 2023 respectively summed across all LWUs in a size and remoteness grouping.</p>	<p>Excludes Central Coast Council, State Water Supply Authorities, County Councils</p> <p>Data provided by OLG</p>
Annual change in value of rebates	$\frac{\left(\frac{VR_{2023} - VR_{2021}}{2} \right)}{VR_{2021}}$ <p>Where VR_{2021} and VR_{2023} is the value of rebates claimed in 2021 and 2023 respectively summed across all LWUs in a size and remoteness grouping.</p>	<p>Excludes Central Coast Council, State Water Supply Authorities, County Councils</p> <p>Data provided by OLG</p>

	Calculation	Assumptions
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Table 11

Proportion of LWUs with no debt	$\frac{\text{Number of LWUs in a size grouping}}{\text{Total number of utilities in a size grouping}}$	<p>Excludes Central Coast Council, State Water Supply Authorities, County Councils</p> <p>Based on 2022 data reported in LWU database.</p>
Average gross debt to equity ratio	<p>For each LWU:</p> $\frac{\text{Total borrowings}_{LWU}}{\text{Total borrowings}_{LWU}}$ <p>Then averaged across each LWU size grouping.</p>	<p>Excludes Central Coast Council, State Water Supply Authorities, County Councils</p> <p>Excludes utilities with no debt.</p> <p>Based on 2022 data reported in LWU database.</p>
Proportion of LWUs that can meet Interest Cover Ratio benchmark	<p>For each LWU:</p> $ICR = \frac{\text{Revenue}_{LWU} - \text{OMA}_{LWU}}{\text{Interest expense}_{LWU}}$ <p>If the ICR is greater than 4 the LWU is considered to have met the benchmark.</p> <p>The number utilities in the size grouping that passed the benchmark was then divided by the number of utilities in the size grouping with debt.</p>	<p>Excludes Central Coast Council, State Water Supply Authorities, County Councils</p> <p>Excludes utilities with no debt.</p> <p>Based on 2022 data reported in LWU database.</p>

	Calculation	Assumptions
Table 17		
Average annual value of developer charges \$'000s 2016-2022	Average value of developer charges and developer contributed assets for each utility between 2016 and 2022 (inflated into \$2022), summed by LWU size and remoteness grouping and divided by the number of utilities in the grouping with a non-zero value	Excludes Central Coast Council, State Water Supply Authorities, County Councils. Where a council reported a zero value, we assumed this was due to missing data and excluded that year from analysis. Utilities which did not report any developer charges were excluded entirely.
Projected change in population 2023 to 2038	$\frac{\Sigma \text{Projected population}_{2038}}{\Sigma \text{Population}_{2023}} - 1$ Summed by LWU size and remoteness group	Excludes Central Coast Council, State Water Supply Authorities, County Councils. Population estimates based on the NSW Government common planning assumptions

Table 18		
Average main breaks per 100 km of mains	For each LWU: $\left(\frac{\sum_{\text{year} = 2016}^{2022} \text{Main breaks}_{\text{year}}}{\text{No. years between 2016 and 2022 with data}} \right)$ $\frac{\text{max years with data}}{\text{Km of mains}}$ Then summed by LWU size and remoteness groups.	Excludes Central Coast Council, State Water Supply Authorities, County Councils, and utilities which don't supply water
Water supply interruptions per 1,000 connections	For each LWU: $\left(\frac{\sum_{\text{year} = 2016}^{2022} \text{Interruptions per 1000 connections}_{\text{year}}}{\text{No. years between 2016 and 2022 with data}} \right)$ $\frac{\text{max years with data}}{\text{Km of mains}}$ Then summed by LWU size and remoteness groups.	Excludes Central Coast Council, State Water Supply Authorities, County Councils, and utilities which don't supply water
Leaks L/connection/day	For each LWU: $\left(\frac{\sum_{\text{year} = 2016}^{2022} \text{Leakage}_{\text{year}}}{\text{No. years between 2016 and 2022 with leakages >0}} \right)$ Then summed by LWU size and remoteness groups.	Excludes Central Coast Council, State Water Supply Authorities, County Councils, and utilities which don't supply water

	Calculation	Assumptions
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Table 19

Ratio of maintenance and renewals to depreciation	<p>For each LWU:</p> $\left(\frac{\sum_{\text{year}=2016}^{2022} \text{Maint. \& renewals}_{\text{year}}}{\text{No. years between 2016 and 2022 with data}} \right)$ $\left(\frac{\sum_{\text{year}=2016}^{2022} \text{Depreciation}_{\text{Water, year}} + \sum_{\text{year}=2016}^{2022} \text{Sewage}_{\text{Water, year}}}{\text{No. years between 2016 and 2022 with data}} \right)$ <p>Then summed by LWU size and remoteness groups.</p>	Excludes Central Coast Council, State Water Supply Authorities, County Councils, and utilities which don't supply water
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Table 25 TCorp financial ratios used in 5.3.1.

All ratios were calculated based on 2022-23 council special purpose financial statements for their water and sewerage business.

Interest cover ratio	$\frac{\text{Earnings before interest depreciation and amortisation (EBITDA)}}{\text{Interest expense}}$ <p>Also excludes tax equivalents and government guarantee fees.</p>	4
Unrestricted current ratio	$\frac{\text{Current assets}}{\text{Current liabilities}}$	1.5
Operating Ratio	$\frac{\text{Operating result excluding capital grants + depreciation}}{\text{Total continuing revenue excluding capital grants}}$	Greater than 0
Cash expense ratio	$\frac{\text{Current cash and cash equivalents x 12 months}}{\text{Operating expenses – depreciation – borrowing costs}}$	3 months

Source: NSW TCorp.

NSW Productivity Commission

Published by the NSW Productivity Commission

First published February 2024

T24/00321

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52 Martin Place
Sydney NSW 2000

W: treasury.nsw.gov.au

GPO Box 5469
Sydney NSW 2001