Essential Water Pricing Proposal
Submission

June 2021

Table of Contents

List of Figures

List of Tables

CEO Foreword

I am pleased to submit Essential Water's pricing proposal to the NSW Independent Pricing and Regulatory Tribunal (IPART) for water and wastewater services to our customers in Broken Hill and the surrounding areas of Menindee, Sunset Strip and Silverton.

This proposal outlines our expenditure plans and proposed prices to customers over five years, from 1 July 2022 to 30 June 2027. It has been informed by consultation with our customers and community and is aimed at ensuring we can continue to deliver safe and reliable water and sewerage services, meet our legislative and environmental obligations, and maintain customer service standards and affordable prices.

The Wentworth to Broken Hill Pipeline has provided us with a steady and reliable supply of water, which has brought stability to our operating environment. However, we still need to efficiently invest in and maintain our water and wastewater supply network, particularly given the age of our network and the challenging environment in which we operate.

Our focus for the next five years is to invest in our network where critical assets are aging and in need of repair or replacement. We forecast capital expenditure of about $75 million over 1 July 2022 to 30 June 2027, which includes major upgrades to the Wills Street wastewater treatment plant and repairs to or replacement of our key service reservoirs and parts of our water and sewer reticulation network. These investments will ensure we can continue to comply with our environmental and other regulatory requirements and deliver the services our customers want and need.

Our forecast operating and maintenance expenditure for the next five years is above IPART's allowances over the last three years, but slightly below current levels. Our forecasts reflect the practical constraints we face serving a small customer base, across a large area in a remote location, and the efficient costs of operating and maintaining our network and supplying services to our customers. In addition to the costs of purchasing water from the Wentworth to Broken Hill Pipeline, they include our labour, fleet, materials and energy costs.

Relative to IPART's 2019 price determination, our proposal would increase our costs (our 'Notional Revenue Requirement') from about $49 million in 2021-22 to approximately $52 million by 2026-27. However, we need to ensure our services are affordable to our customers. We therefore propose to share this increase in our expenditure requirements between our customers and the NSW Government.

Under our proposal, prices for most customers would increase at the same rate as our Notional Revenue Requirement (NRR), which is about 1.62% per annum, excluding the effects of inflation. Some prices would increase by marginally more than 1.62% per annum, including residential sewerage service charges, chlorinated water prices and pipeline unfiltered water prices, but we are confident all our proposed prices are reasonable and affordable. The NSW Government would fund the difference between the revenue we receive from prices and our NRR.

Our proposal aims to strikes the right balance between ensuring we have sufficient funds to invest in and maintain our network so we can reliably deliver the services customers want and need, while keeping prices affordable and achieving a reasonable share of costs between our customers and the NSW Government.

We encourage our customers and community to participate in IPART's price review process, and we look forward to ongoing engagement with all our stakeholders.

John Cleland

Chief Executive Officer

Executive summary

This document presents Essential Water's proposed prices for water, sewerage, and related services to our customers in Broken Hill and the surrounding areas of Menindee, Sunset Strip and Silverton, to apply from 1 July 2022.

Our pricing proposal reflects Essential Water's specific circumstances and the needs of our customers. While we are part of a large organisation in Essential Energy, Essential Water is a small business providing an essential service to customers in a remote and challenging environment. This imposes real and practical constraints on our business. Our customers need and value secure and reliable water and wastewater services. This requires efficient investment in an aging network, but this needs to be spread over a small and declining population which is one of the most disadvantaged in NSW and has limited capacity to pay.

Our focus for this upcoming determination period is on ensuring that we have sufficient funds to efficiently deliver our services to customers at acceptable standards, at prices they can afford.

We are now in a steady-state environment that supports a five-year determination period

We propose a five-year determination period, from 1 July 2022 to 30 June 2027. The commissioning of the Wentworth to Broken Hill Pipeline (the Broken Hill Pipeline) in 2019 has brought stability and certainty to our operating environment. We now have a reliable bulk water supply, accurate forecast water sales volumes, and our bulk water costs are relatively steady and predictable. There is a possibility of an uplift in demand during the upcoming determination period if a new mine commences operations, but we propose to manage this uncertainty through the demand volatility adjustment mechanism (DVAM). This means that IPART can be confident in setting a longer determination period.

Further, a five-year determination period would allow Essential Water to focus on delivering its services as efficiently as possible, minimise unnecessary regulatory burden, align the next Essential Water and Water NSW Pipeline determinations, and enable Essential Water to bring a longer time-series of data and experience to the next price review.

We note that Essential Water is a fraction of the size of the other water businesses regulated by IPART. The population we service is about 5% of the size of the population supplied by the Central Coast Council, 3% of the size of the population supplied by Hunter Water and only about 0.3% of the size of the population supplied by Sydney Water. Given our size, it is important that IPART adopts a proportionate approach to regulation and seeks to avoid any unnecessary regulatory costs – such as those that would be incurred with a shorter determination period.

Our forecast costs are efficient, but reflect the need for critical investment in key assets and practical constraints

From current levels, our NRR is increasing by about 5.1% in real terms (i.e., excluding the effects of inflation) over 2021-22 to 2026-27 (see Table 1 below). This increase in our costs is necessary to ensure the sustainable supply of our services at acceptable standards. Key drivers include capital expenditure to upgrade the Wills Street wastewater treatment plant, capital expenditure to repair and replace parts of the water and sewer reticulation network, and higher operating expenditure than allowed in IPART's 2019 determination (albeit lower operating expenditure, on average, than actual operating expenditure over the 2019 determination period).

The Wills Street wastewater treatment plant upgrade is a critical investment. Much of this expenditure was deferred in the last price determination, and there is no capacity to defer this expenditure further without reducing service standards. Similarly, capital expenditure on the water and sewerage reticulation networks is needed to repair and/or replace aging infrastructure to ensure we can reliably supply services to customers at acceptable standards.

To moderate cost increases and potential impacts on customers, our proposed corporate cost allowance to be included in our NRR is less than the amount allocated to Essential Water under Essential Energy's Cost Allocation Methodology (CAM) that was approved by the Australian Energy Regulator (AER). Essential Energy's corporate costs are increasing, but this is to deliver a transformation program that will achieve valuable efficiencies over time.

While we are working hard to deliver cost savings, we face unique challenges. In 2019, we received a Direction from the NSW Government preventing forced or voluntary redundancies for 12 months, on the basis that we play an important role as an employer in our community. It is not practical or desirable for Essential Water to deviate from this obligation too quickly or significantly, recognising the significant economic impact of COVID-19 on our

community. Further, we would face operational risks in reducing expenditure allowances beyond the proposed efficient levels, as our climate, size and location creates challenges in attracting and retaining the skilled labour required to maintain, operate, and renew our system. Our corporate transformation program will deliver efficiencies, but this will take time.

Table 1: Proposed Notional Revenue Requirement (NRR) ($000, $2021-22)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Operating expenditure (excluding bulk water)	12,434	15,486	14,664	14,492	14,617	13,860	73,119
Bulk water purchases	25,487	24,477	24,466	24,460	24,454	24,447	122,304
Return on assets	7,182	6,501	7,115	7,595	7,844	7,924	36,978
Return of assets	3,399	3,520	3,992	4,330	4,545	4,709	21,095
Return on working capital	260	216	229	249	296	296	1,286
Tax allowance	696	800	509	618	643	752	3,323
DVAM true-up	-	2,546	-	-	-	-	2,546
Cost of debt true-up	-	-1,400	-	-	-	-	-1,400
Total NRR	**49,459[a]**	**52,147**	**50,975**	**51,744**	**52,398**	**51,988**	**259,252**
Revenue from customers	**24,793[a]**	**23,988**	**24,379**	**24,775**	**25,176**	**25,580**	**123,898**
Level of proposed Govt contribution	**24,670**	**28,159**	**26,596**	**26,969**	**27,222**	**26,408**	**135,354**

a. Total NRR and tariff revenue for 2021-22 presented in this table are based on the 2019 determination, adjusted for inflation. Actual tariff revenue over 2019-20 to 2021-22 has been less than forecast due to sales volumes below forecast.

Our customers need and value secure and reliable services, but they have limited capacity to pay

Our proposed prices would not fully recover our efficient costs. Our community is one of the more disadvantaged in NSW and could not afford fully cost-reflective prices, particularly given the ongoing risks it faces from a downturn in economic activity brought about by COVID-19. Any necessary investment in the network is spread over a small and declining population. This means that an ongoing contribution from the NSW Government is required to ensure sustainable expenditure on our network while also avoiding unaffordable price increases. Such a Government contribution would cover the difference between our efficient costs (our NRR) and the revenue we receive from customers.

Over the 2022-23 to 2026-27 determination period, most of our proposed prices would increase by 1.62% per annum (or about 8.4% from 2021-22 to 2026-27). This is effectively the same rate of increase as our NRR over the 2022-23 to 2026-27 determination period.[1] We consider this is a reasonable way of sharing cost increases between our customers and the Government.

Our proposed prices are consistent with the NSW Government's commitment to subsidise costs so that prices to customers up to and including 2022-23 would not increase by more than inflation because of the Murray River to Broken Hill Pipeline. The proposed price increases above inflation are to contribute to the costs of investing in and maintaining Essential Water's water and sewerage network, above and beyond the costs of obtaining water from the Murray River to Broken Hill Pipeline.

[1] The present value of our NRR over 2022-23 to 2026-27 is $232.1 million, and the average annual increase to our NRR from 2021-22 to 2026-27 that equates to this present value is 1.62% per annum.

Table 2: Proposed Notional Revenue Requirement (NRR), Tariff Revenue and Government contribution ($000, $2021-22)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Change 2021-22 to 2026-27 (%)
Total NRR ($)	49,459 [a]	52,147	50,975	51,744	52,398	51,988	5.1%[b]
Revenue from customers $	24,793 [a]	23,988	24,379	24,775	25,176	25,580	3.1%[b]
Proposed Govt contribution $	24,670	28,159	26,596	26,969	27,222	26,408	7.1%

a. Total NRR and tariff revenue for 2021-22 presented in this table are based on the 2019 determination, adjusted for inflation. Actual tariff revenue over 2019-20 to 2021-22 has been less than forecast due to sales volumes below forecast.

b. The values in this column are based on changes from the 2019 determination values for 2021-22. The actual forecast change for NRR and Revenue from customers matches the NRR rate referenced in footnote 1 above.

We propose to largely maintain our existing price structure as it is efficient and generally supported by customers

Our proposed prices are listed in Table 3 and Table 4 below. We propose to largely maintain the existing price structure. This is because, as IPART recognised in its 2019 Final Report, our water and sewerage usage prices are within reasonable range of the respective marginal costs of supply – which means that they send efficient price signals. Further, our existing price structure is generally understood and supported by customers.

This means that most water and sewerage usage and fixed prices would increase by 1.62% real per annum. We consider this will keep usage prices within the reasonable range of estimates of the marginal cost of supply, and distribute the cost increases reasonably across the customer base.

An exception would be that untreated water prices for pipeline customers and chlorinated water prices would continue the transition towards cost-reflective levels that IPART established in its 2019 determination. This means that these prices would increase by 1.62% real per annum in addition to the real increases they face from continuation of the transition path that IPART established at the last price determination.

Further, in addition to the 1.62% per annum real increase in unit prices, the residential sewerage service charge would increase to also reflect an increase in the deemed residential sewerage discharge volume from 90kL per annum to 100kL per annum. In response to IPART's request in its 2019 Final Report[2], we examined discharge volumes and found that average residential discharges are likely to be between 105kL and 110kL per annum. Given the bill impacts on residential customers, we consider it is reasonable to increase their deemed sewerage discharge volumes from 90kL to 100kL per annum for the 2022 determination period as a means of gradually transitioning to higher deemed discharge volumes over time. This change applies from 2021-22 throughout the regulatory period.

Like most other prices, we propose to also increase the mines' water service charges by 1.62% real per annum. We consider this is reasonable as their share of total water consumption has remained relatively constant over time. Hence, it is reasonable that they contribute largely the same share of revenue as previously.

2 IPART, *Review of Essential Energy's prices for water and sewerage services in Broken Hill from 1 July 2019*, May 2019, P 118.

Table 3: Essential Water's proposed water prices ($2022-23)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Change 2021-22 to 2026-27 (%)
Service charges ($/year)							
Residential	351.46	357.16	362.94	368.82	374.80	380.87	8.4%
Non-residential							
20mm connection	351.46	357.16	362.94	368.82	374.80	380.87	8.4%
25mm connection	549.17	558.06	567.10	576.28	585.62	595.11	8.4%
40mm connection	1,405.87	1,428.62	1,451.77	1,475.29	1,499.19	1,523.47	8.4%
50mm connection	2,196.66	2,232.22	2,268.39	2,305.13	2,342.48	2,380.43	8.4%
80mm connection	5,623.46	5,714.50	5,807.07	5,901.14	5,996.74	6,093.89	8.4%
100mm connection	8,786.66	8,928.90	9,073.55	9,220.54	9,369.91	9,521.70	8.4%
150mm connection	19,769.97	20,090.02	20,415.48	20,746.21	21,082.30	21,423.83	8.4%
Mines ($'000)							
Perilya	2,468.61	2,508.61	2,549.25	2,590.54	2,632.51	2,675.16	8.4%
CBH	595.47	605.11	614.91	624.88	635.00	645.29	8.4%
Usage charges ($/kL)							
Treated	1.93	1.96	1.99	2.02	2.05	2.09	8.3%
Chlorinated	1.44	1.52	1.61	1.70	1.80	1.83	27.1%
Untreated – pipeline	1.09	1.19	1.30	1.41	1.52	1.63	49.5%
Untreated – Non-pipeline	1.69	1.72	1.75	1.77	1.80	1.83	8.3%

Table 4: Essential Water's proposed sewerage prices ($2022-23)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Change 2021-22 to 2026-27 (%)
Service charges ($/year)[a]							
Residential service charge[b]	560.03	583.06	592.50	602.10	611.86	621.77	11.0%
Non-residential[c]							
20mm connection	623.45	633.55	643.81	654.24	664.84	675.61	8.4%
25mm connection	974.13	989.92	1,005.95	1,022.25	1,038.81	1,055.64	8.4%
40mm connection	2,493.78	2,534.18	2,575.24	2,616.96	2,659.35	2,702.43	8.4%
50mm connection	3,896.54	3,959.66	4,023.81	4,088.99	4,155.24	4,222.55	8.4%
80mm connection	9,975.13	10,136.73	10,300.95	10,467.82	10,637.40	10,809.73	8.4%
100mm connection	15,586.15	15,838.65	16,095.23	16,355.97	16,620.94	16,890.20	8.4%
150mm connection	35,068.83	35,636.95	36,214.27	36,800.94	37,397.12	38,002.95	8.4%
Usage charges ($/kL)							
Non-residential	1.37	1.40	1.42	1.44	1.46	1.49	8.8%

a. Sewerage service charges for non-residential customers and mining customers are based on water meter size. The applicable meter charge is set using the formula: (meter size)2 x 20mm meter charge / 400 x discharge factor. We have calculated service charges for larger meter sizes using this formula.

b. We propose to increase the deemed residential discharge volume from 90kL per annum to 100kL per annum from 2022-23. This volume is multiplied by the same sewerage usage charge that is applied to non-residential customers to calculate the residential deemed discharge charge. This is included in the residential service charge.

c. Non-residential charges listed here assume a 100% discharge factor. Bills will depend on discharge factors for individual customers.

Our proposed prices ensure customers contribute to necessary investment in our network, at levels they can afford

Tables 5 and 6 below present indicative residential and non-residential water and sewerage bills under our pricing proposal. These figures exclude the effects of inflation.

This shows, for example, that a customer in a residential house or apartment who uses 300kL of treated water per annum would see an increase in their annual bill of around 9.3% from 2021-22 to 2026-27, or an average increase of 1.8% per annum. A pensioner who uses the same amount of water would face a bill increase of 12.2% from 2021-22 to 2026-27.[3]

Bills for non-residential customers will depend on their meter size, discharge factor and water usage. For example, a non-residential customer with a 25mm meter, a discharge factor of 70% and who uses 1,000 kL of treated water per annum would see an increase in their annual water and sewerage bill of around 8.4% from 2021-22 to 2026-27, or an average increase of 1.6% per annum.

[3] Pensioners will see their bills increase slightly more, as a percentage, compared to other residential customers. This is because the pensioner rebate is currently fixed in nominal terms at $175 per annum. The rebate is provided by Essential Water and funded by the NSW Government.

We consider our pricing proposal balances the need to invest in our network to ensure reliable services are provided to our customers at appropriate standards, while ensuring customers contribute to these costs at prices that they can afford.

Table 5: Residential annual water and sewerage bills ($2022-23)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Change 2021-22 to 2026-27 (%)
Residential – treated water – non pensioner							
200kL	1,298	1,332	1,353	1,375	1,397	1,421	9.5%
300kL	1,491	1,528	1,552	1,577	1,602	1,630	9.3%
400kL	1,684	1,724	1,751	1,779	1,807	1,839	9.2%
Residential – treated water - pensioner							
200kL	1,118	1,157	1,183	1,208	1,234	1,262	12.9%
300kL	1,311	1,353	1,382	1,410	1,439	1,471	12.2%
400kL	1,504	1,549	1,581	1,612	1,644	1,680	11.7%
Residential chlorinated water (water bills only, no sewerage)							
200kL	639	661	685	709	735	747	16.8%
300kL	783	813	846	879	915	930	18.7%
400kL	927	965	1,007	1,049	1,095	1,113	20.0%

Table 6: Non-residential annual water and sewerage bills ($2022-23)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Change 2021-22 to 2026-27 (%)
Non-residential – treated water[a]							
20mm with 250kL usage	1,510	1,536	1,560	1,584	1,608	1,637	8.4%
25mm with 1,000kL usage	4,120	4,191	4,255	4,320	4,385	4,467	8.4%
40mm with 2,100kL usage	9,218	9,377	9,521	9,666	9,812	9,994	8.4%
80mm with 21,000kL usage	73,275	74,550	75,682	76,817	77,955	79,454	8.4%
Non-residential – untreated water, pipeline customers (water only, no sewerage)							
20mm with 250kL usage	623	655	688	721	754	789	26.6%
25mm with 1,000kL usage	1,636	1,750	1,866	1,984	2,104	2,226	36.1%
40mm with 2,1000kL usage	3,688	3,932	4,180	4,432	4,688	4,948	34.2%
80mm with 21,000kL usage	28,440	30,744	33,086	35,466	37,884	40,341	41.8%
Non-residential – untreated water, non-pipeline customers (water only, no sewerage)							
20mm with 250kL usage	774	787	800	813	826	839	8.4%
25mm with 1,000kL usage	2,240	2,277	2,314	2,351	2,389	2,428	8.4%
40mm with 2,100kL usage	4,957	5,038	5,119	5,202	5,287	5,372	8.4%
80mm with 21,000kL usage	41,140	41,806	42,483	43,172	43,871	44,582	8.4%

a. Sewerage service charges for non-residential customers are based on water meter size. The applicable meter charge is set using the formula: (meter size)^2 x 20mm meter charge / 400 x discharge factor. For the purpose of showing indicative bills, we have calculated service charges for larger meter sizes based on this formula using a discharge factor of 70%. Actual bills will depend on discharge factors for individual customers.

Note on units

All historical costs and revenues in this proposal are in nominal dollars, except for aggregates over the 2019 determination period which are reported in 2021-22 dollars. All forecast costs and revenues are in 2021-22 dollars and all prices and bills in this proposal are in 2022-23 dollars, unless otherwise stated.

1. About this proposal

Essential Energy provides water and sewerage services to the communities of Broken Hill, Menindee, Sunset Strip and Silverton, through its water business - Essential Water.

The prices charged by Essential Water for the provision of water and sewerage services to Broken Hill and surrounding communities are regulated by the Independent Pricing and Regulatory Tribunal of NSW (IPART) under the NSW *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act). IPART's 2019 determination set maximum prices for Essential Water for the three-year period from 1 July 2019 to 30 June 2022 (the 2019 determination period).

On 11 December 2020, IPART provided Essential Water with a Submission Information Package, comprising submission guidelines and instructions to facilitate the smooth production, review, and approval of Essential Water's pricing proposal for IPART's 2022 determination. Under the guidelines, Essential Water is required to produce a pricing submission and supporting documents. This document and its attachments represent our pricing submission.

1.1 Our approach to this proposal

Our pricing proposal for the next determination period – over 5 years, from 1 July 2022 to 30 June 2027 (the 2022 determination period) – has been developed systematically and in consultation with our key stakeholders.

We have adopted a systematic approach to developing this submission

We have adopted a long-term perspective for this submission, recognising the importance of acting in the long-term interests of customers.

We have confirmed appropriate service standards in consultation with our customers. We have forecast our consumption and customer numbers taking into account recent demand and population trends.

We have developed robust and prudent estimates of our efficient expenditure requirements, which are consistent with our regulatory obligations and which have been confirmed as part of our strategic planning and the development of our Integrated Water Cycle Management Strategy (IWCM Strategy).

We have forecast the revenue required to efficiently deliver our services while meeting our regulatory obligations. This revenue requirement is higher than the revenue we would recover from customers with our proposed prices, as our pricing proposal recognises that our customers have limited capacity to pay. An ongoing and significant government contribution will be required to ensure the Essential Water recovers its costs and price increases remain affordable for our customers.

We have addressed the issues raised by IPART in the 2019 Determination and in its Submission Information Package.

We have consulted with our key stakeholders in the development of this submission

We have consulted with our customers in the development of this submission and our IWCM Strategy. Many of Essential Water's residential customers are vulnerable. The difficult economic environment in the Broken Hill area creates a challenging operating environment for Essential Water's business customers. Our submission reflects their limited capacity to manage price rises over the determination period.

We have worked with WaterNSW to provide it with demand forecasts required to estimate bulk water prices for the Broken Hill pipeline over the 2022 determination period. Our submission is consistent with the bulk water prices proposed by WaterNSW in its submission to its concurrent price review.

We have engaged with the NSW Government to discuss its contribution to prevent unaffordable price rises for our customers over the proposed 2022 to 2027 determination period.

1.2 Structure of this proposal

This submission presents our pricing proposal for the period from 1 July 2022 to 30 June 2027

This submission sets out Essential Water's proposed service levels, operating expenditure (opex) and capital expenditure (capex) programs, together with expected prudent and efficient costs, revenue requirements and pricing arrangements for water and sewerage services. We consider our performance over the 2019 determination period before presenting our proposal for the 2022 determination period in each chapter.

This submission is structured as follows:

- Chapter 2 describes who we are and what we do
- Chapter 3 discusses meeting the needs of our customers
- Chapter 4 outlines our proposed form of regulation
- Chapter 5 presents our proposed service standards
- Chapter 6 sets out our capital expenditure requirements
- Chapter 7 outlines our operating expenditure requirements (excluding bulk water pipeline costs)
- Chapter 8 presents our bulk water pipeline costs
- Chapter 9 sets out our consumption and customer numbers
- Chapter 10 sets out our proposed allowances for return on assets, regulatory depreciation, tax and working capital
- Chapter 11 presents our proposed revenue requirement and the amount to be recovered from customers
- Chapter 12 sets out our proposed price structures and price path
- Chapter 13 presents the impacts of our proposal on customer bills, our operations and financial position, and the Government.

Additional information is in the appendices, including:

- the CEO declaration
- miscellaneous charges
- the results of our March 2021 customer survey.

All historical costs and revenues in this proposal are in nominal dollars, except for aggregates over the 2019 determination period which are reported in 2021-22 dollars. All forecast costs and revenues are in 2021-22 dollars and all prices and bills in this proposal are in 2022-23 dollars, unless stated otherwise.

2. Who we are and what we do

2.1 Overview

Essential Water is a small business operating in a unique and remote operating environment. Understanding who we are, what we do, and our customers' needs is the starting point for our submission. This chapter sets out our system, services, and the customers we serve. It considers recent changes in our operating environment and key challenges for our business.

Key messages

- Essential Energy provides water and sewerage services to the communities of Broken Hill, Menindee, Sunset Strip and Silverton, through its water business - Essential Water.
- Essential Water is a small business providing an essential service to customers in a remote and challenging physical environment.
- Our system is aging, with many of our critical assets nearing the end of their useful life. This threatens our capacity to meet our mandatory standards.
- We are required to comply with a wide range of legislative and regulatory requirements in delivering our services, including environmental, public health and safety obligations, as well as any relevant regulatory requirements that apply to Essential Energy.
- Our community is already one of the most socio-economically disadvantaged in NSW and facing ongoing risks from the downturn in economic activity brought about by COVID-19. Most of our customers cannot afford substantial bill increases.
- At the same time, the unique environment of Broken Hill and surrounding areas means that it is imperative that our customers have access to reliable, safe, and affordable water services.
- We have entered a new era of stable operation with the commissioning of the Broken Hill pipeline. After years of drought and severe water restrictions, Essential Water is now able to reliably access water to supply our customers. Our customer demand, and the costs associated with meeting that demand, are now relatively predictable.

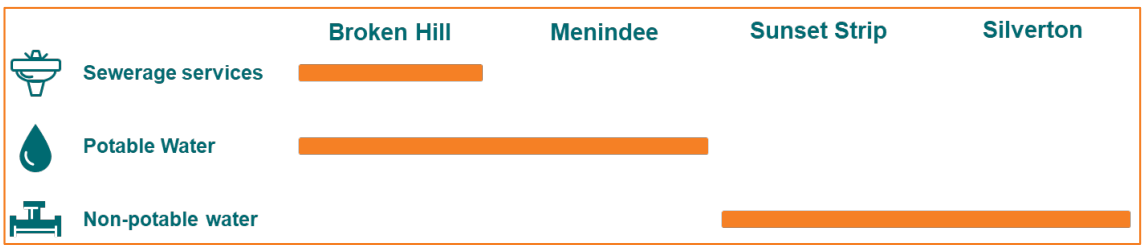
2.2 Our services and system

Essential Water provides water and sewerage services in Broken Hill and surrounding areas

Essential Water provides potable (drinking quality) water to around 18,000 people in Broken Hill and Menindee, and non-potable water to the settlements of Silverton and Sunset Strip. Essential Water provides sewerage services to Broken Hill, where we operate two sewage treatment plants. Essential Water also provides non-potable water to 47 rural users for stock and domestic purposes.

Essential Water supplies approximately 5.6 gigalitres (GL) of water per year to around 9,900 residential customers and around 600 non-residential customers. Our two largest customers are mines, which together account for approximately one-third of our customers' total water consumption.

Figure 1: Essential Water's services

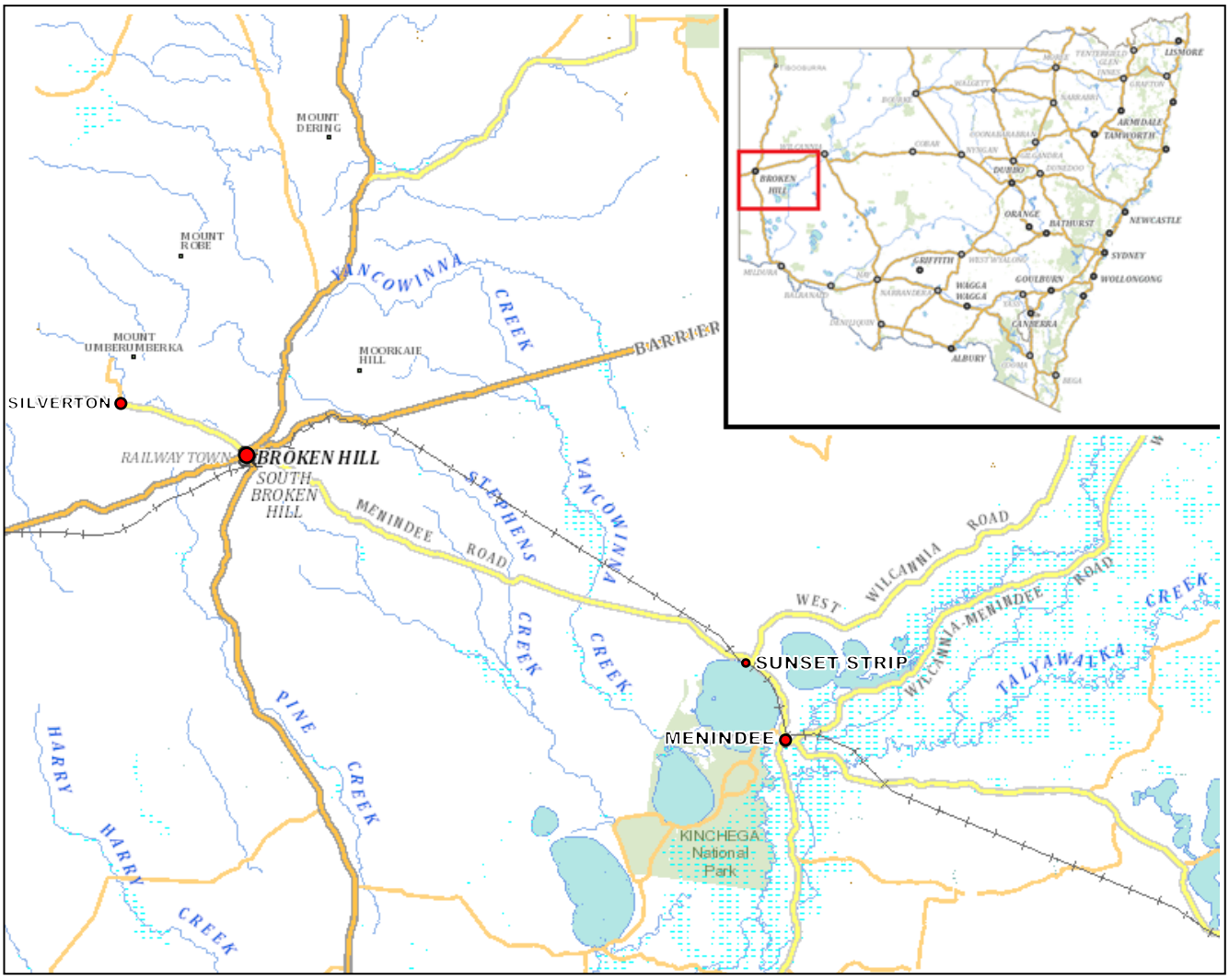


Our area of operations is the most arid in the state

Our service area covers:

- the local government area of Broken Hill City Council
- the Stephens Creek, Umberumberka Creek and Yancowinna Creek areas
- the localities of Menindee and Sunset Strip, and
- the land over which the Menindee to Stephens Creek pipeline is situated.

Figure 2: Essential Water serviced communities – map



Our community is unique

Broken Hill is the gateway to the Australian Outback and supports mining operations and a vibrant artist community. Silverton, as the original settlement site, is an historic village that is often home to film crews from around the world. The villages of Menindee and Sunset Strip are located on the edges of the Menindee Lakes. The City of Broken Hill was listed as a National Heritage Place in 2015, recognising its unique mix of architecture and mining infrastructure, set in a vast arid landscape.

Our system is significant and aging

Essential Water supplies potable water from the Mica Street water treatment plant at Broken Hill and the Menindee water treatment plant. Broken Hill receives water from the Murray Pipeline Bulk Water Storage and Stephens

Creeks balance storage. Menindee sources raw water from the Darling River at Menindee and the Menindee Common Bore.

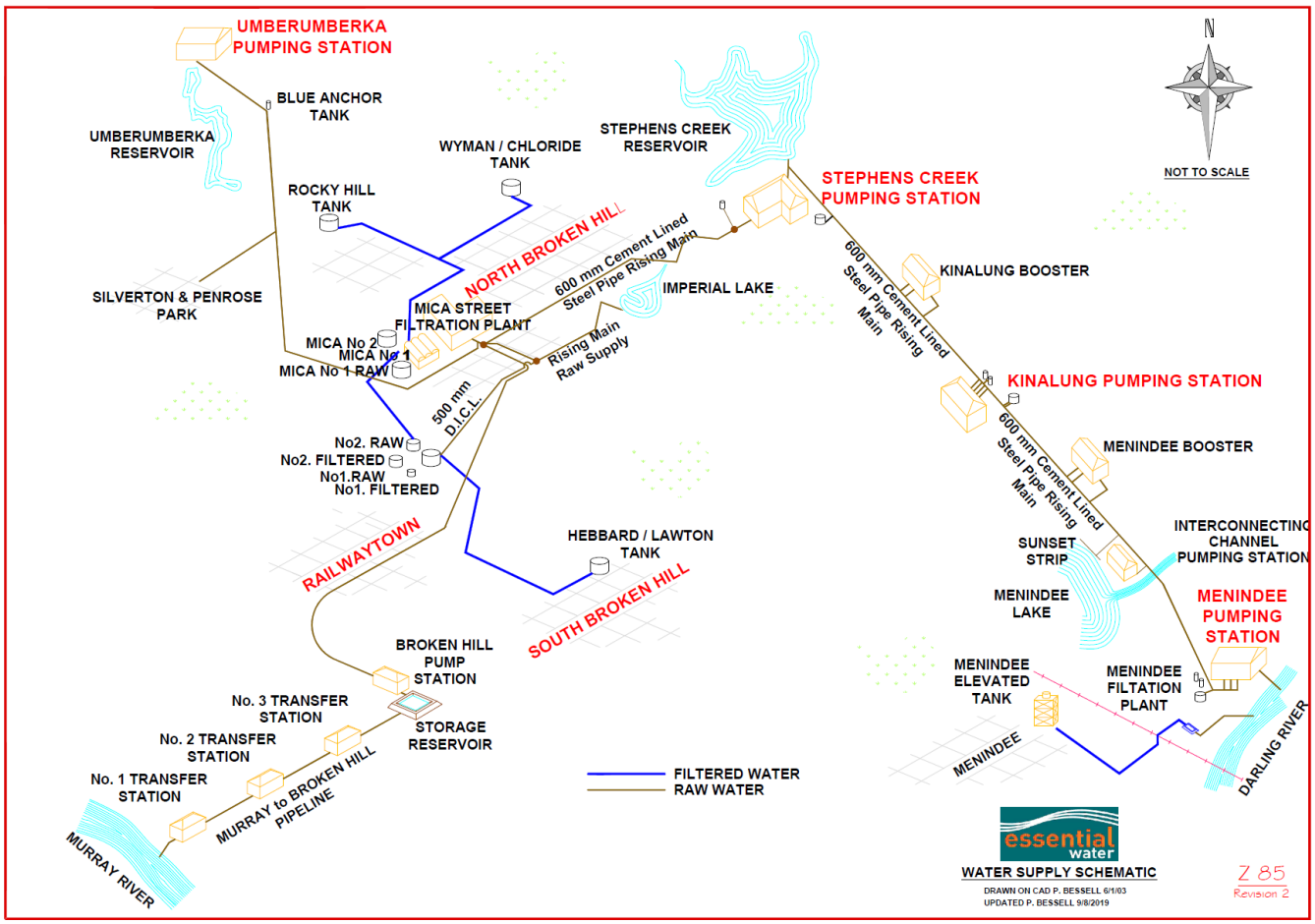
Essential Water also operates two sewage treatment plants in Broken Hill: the Wills Street sewage treatment plant and the South Broken Hill sewage treatment plant.

In addition, we operate a network comprising 220 kilometres of reticulation mains pipelines.

While our Mica Street water treatment plant is relatively new, the remainder of our system is aging. Many of our critical assets including sewage treatment plants, water mains and sewage mains are nearing the end of their useful life. Most of the water and sewer mains in our network were installed in the 1960s and have reached the end of their life. Mains bursts are becoming much more frequent and threatening our capacity to meet our mandatory standards. Significant investment is required over this decade to upgrade these mains.

The addition of the Wentworth to Broken Hill Pipeline to our network has resulted in the decoupling of Broken Hill's water supply from the Darling River and the Menindee Lakes, apart from Menindee and Sunset Strip which retain them as their primary source of supply. As such, we are decommissioning the Menindee Pipeline. Existing customers along this pipeline will be supplied by the new Grazier's Pipeline, due to be commissioned in 2022-23.

Figure 3: Essential Water system – map



2.3 Our roles and responsibilities

Essential Water has a complex operating environment with a range of economic, environmental, public health and safety obligations

Essential Water operates under the *Water Management Act 2000* and the *Water Management (General) Regulation 2011*. We are required to comply with a wide range of other legislative and regulatory requirements in delivering our services, including environmental, public health and safety obligations (see Figure 4).

In August 2019, Essential Energy was issued with a Ministerial Direction known as the Workforce Redundancy Restriction. This prevented Essential Energy, and its subsidiary Essential Water, from making voluntary or forced redundancies.

The Workforce Reduction Restriction has now expired, meaning we are no longer prevented from making people forcibly redundant, or offering voluntary redundancies. However, since its expiry there is sensitivity within our business around redundancies, which is coupled with the economic impacts of COVID-19 on our community. As such, Essential Energy has made a commitment to 'no redundancies in Western NSW for the remainder of the 2019-24 determination period' (the regulatory period that applies to Essential Energy's electricity network business).

Further, Essential Water would face operational risks if we reduced labour expenses beyond our proposed efficient levels for the upcoming determination period, as our climate, size and location create challenges in attracting and retaining the skilled labour required to maintain, operate and renew our systems.

Safety is a key priority for Essential Energy and Essential Water. We take the safety of our employees and customers seriously. Our expenditure requirements reflect this commitment, recognising our remote and expansive service area.

Figure 4: Essential Water legislative obligations

- **Water Management Act 2000**
  Regulates Water Utilities, outlines functions of both water and sewer services/infrastructure, creates special areas, provides for Water Access Licences to be issued, legislates EW area of operations, allows levying of service charges and enforcement proceedings.
- **Dam Safety Act 1978**
  Constitutes the Dam Safety Committee, which is tasked with surveillance, investigation and formulates measures to ensure the safety of prescribed dams.
- **Fluoridation of the Water Supplies Act 1957**
  Creation of the Fluoridation of Public Water Supplies Advisory Committee, which makes proposals for the addition of fluoride to public water supplies. Committee also enforces the continuation of fluoridation and associated penalties
- **Public Health Act 2010 and Public Health Regulation 2012**
  Legislate safety measures for drinking water and if not complied with penalties apply. Also compels compliance with the Australian Drinking Water guidelines.
- **Work Health and Safety Act 2011 and WHS Regulation 2011**
  This Act has an objective to provide a consistent framework to secure the health and safety of workers and workplaces.
- **Water Management (General) Regulation 2011**
  Categorises Water Access Licences, provides detailed powers for Sewerage and Water, provides functions of special areas, service charges and pensioner concessions, penalty notice offences.
- **Protection of the Environment Operations Act 1997**
  Regulates our Wastewater Treatment Plants which are under an Environmental Protection Licence. The Act imposes significant regulatory constraints on EW operations which include potential penalties in the event of a pollution incident.
- **Environmental Planning and Assessment Act 1979**
  Allows EW to operate as a determining authority.
- **Independent Pricing and Regulatory Tribunal Act 1992**
  The Independent Pricing and Regulatory Tribunal (IPART) determines the allowed customer charges.
- **Local Government Act (1993)**
  This Act aims to provide the legal framework for an effective, efficient, environmentally responsible, and open system of Local Government including the provision, management and operation of water supply and sewerage works and facilities.

Recognising our complex operating environment, our objectives are to:

- provide safe and reliable drinking water in accordance with the Australian Drinking Water Guidelines (ADWG)
- provide water and wastewater services that meet customers' needs for reliability, quality, environmental protection, and performance
- maintain a water and sewerage system that is safe for the community, customers, and employees
- provide a high level of customer service
- minimise costs to Essential Water and the consequential impacts on customer prices.

2.4 Recent changes to our operating environment

We have entered a new era of stable operation with the Broken Hill pipeline

The commissioning of the Broken Hill pipeline has significantly changed our operations – with implications for our services and costs.

Historically, town water supply was dependent on water sourced from the Darling River and pumped to Broken Hill via more than 120 km of pipeline. In 2019, the Murray River to Broken Hill Pipeline was commissioned. This 280 km pipeline and 760 ML bulk water storage connects the Murray River at Wentworth to Essential Water's system.

We now take most of our bulk storage requirements from the Murray River via the Broken Hill Pipeline. The Broken Hill Pipeline has improved water security for our customers.

Our customer's water consumption is no longer affected by drought

After years of drought and severe water restrictions, Essential Water is now able to reliably access water to supply our customers. Our customer demand is now relatively steady.

Notably, our steady-state water sales have been significantly less than IPART forecast when it determined our prices in 2019.

Government contributes to help fund keep prices affordable for our customers

We pay bulk water charges to WaterNSW, which owns the Broken Hill pipeline and delivers our water via the pipeline. In 2019, the NSW Government made a commitment to provide Essential Water with a contribution over 2019-20 to 2022-23 to ensure that customer prices do not increase by more than inflation as a result of the pipeline.

An ongoing government contribution over the remainder of the 2022 determination period will be required to ensure we can provide our services to an acceptable standard while preventing unaffordable price increases for our customers.

2.5 Key challenges

We face significant challenges

We face a series of key challenges in providing water and wastewater services to our customers. This necessarily constrains the services we provide and the prudent and efficient cost of providing those services:

- We are a small water business with limited resources operating at a small scale. This means we are unable to achieve the economies of scale accessible to many other water businesses.
- Our challenging physical environment influences the way we work. Our remote and arid location means we must undertake significant works over winter and retain core skill sets in-house, but it also makes it challenging to attract and retain skilled labour. It also introduces additional safety challenges.
- We have a complex operating environment which necessarily constrains our operations, including an on-going commitment to no redundancies in Western NSW before 30 June 2024 following on from the Workforce Redundancy Restriction and COVID-19, in addition to environmental, public health and safety obligations. Our prudent and efficient costs reflect these regulatory obligations.

- Our aging system requires investment and renewal to ensure we meet our mandatory standards. However, this places pressure on the prices we charge to our customer base, which has a high proportion of vulnerable customers.

Our key challenge remains addressing customer affordability, while ensuring we have sufficient funding to meet our service standard obligations and achieve financial sustainability.

We see significant opportunity

Despite these challenges we have identified significant opportunity. We are taking actions to maintain the service levels our customers require while delivering services at least cost, consistent with the long-term interests of customers. This includes updating our asset management strategy, upgrading our asset management and workflow systems, and undertaking a program of renewals. We look forward to our ongoing role in meeting the needs of our customers reliably and efficiently.

3. Meeting the needs of our customers

3.1 Overview

Understanding our customers allows us to put their preferences at the centre of our planning and operations, and ensures we meet their needs reliably and efficiently. This chapter sets out how we have considered the needs of our customers and other stakeholders in developing this proposal.

Key messages

- We undertook a targeted, proportionate, and representative customer engagement program. This allowed us to better understand our customers' views, preferences and demographic characteristics, identify whether customers are satisfied with existing services and the extent to which they would be willing and have the capacity to pay more for the services they receive.
- We engaged with customers using three key activities – targeted meetings and workshops, a customer survey, and platforms for complaints. We carefully considered all feedback from customers and community members when developing our proposal.
- We found that our customer base has unique characteristics, reflecting the demographics of the communities we serve. Most importantly, many of our customers are vulnerable, with limited capacity to pay for essential services.
- We consider that our customers cannot afford significant price increases. While our bills are in line with other similar-sized water utilities in NSW, our customer base is one of the most socio-economically disadvantaged communities in NSW. Affordability of water and wastewater services is a critical issue for our customers, which has been exacerbated by COVID-19.
- The outcomes of our customer engagement program have played a key role in shaping our pricing proposal.

3.2 Our proposal is informed by customer engagement

Effective customer engagement puts customer preferences at the centre of our planning and operations

Effective customer engagement allows us to understand the needs of our customers and put their preferences at the centre of our planning and operations.

To understand and reflect the needs of our customers in this submission, we developed a targeted, proportionate, and representative engagement program. Our engagement program was consistent with Essential Energy's Stakeholder Engagement Framework and the criteria set out in IPART's Guidelines for Water Agency Pricing Submissions.[4]

We engaged with customers using three key activities described in the sections below. We carefully considered all feedback from customers and community members when developing our pricing proposal.

3.2.1 Targeted meetings and workshops

We met with customers in the development of our Integrated Water Cycle Management Strategy

To ensure that our approach was proportionate and did not place an undue burden on stakeholders, we sought feedback on our service standards as part of our IWCM Strategy workshops. Table 7 summarises the dates and

[4] IPART, Guidelines for Water Agency Pricing Submissions, November 2020.

number of attendees at each of these workshops. As part of these workshops, we consulted with stakeholders on current service standards and sought feedback on whether they thought they were reasonable.

We also held discussions with Essential Water's Customer Council (representing Broken Hill City Council, Broken Hill Health Council, Broken Hill Chamber of Commerce, Broken Hill mining industry, Pastoralists Association of West Darling and Menindee, Sunset Strip and Copi Hollow communities).

This feedback indicated that stakeholders were broadly comfortable with the current service standards relating to water quality, as well as availability and reliability of water supply and sewerage services.

Table 7: Integrated Water Management Strategy workshops

Date	Number of people invited	Number of attendees	Stakeholder Groups
11 December 2020	15	4	Council
20 January 2021	15	3	Council and community
21 January 2021	12	3	Community and customers

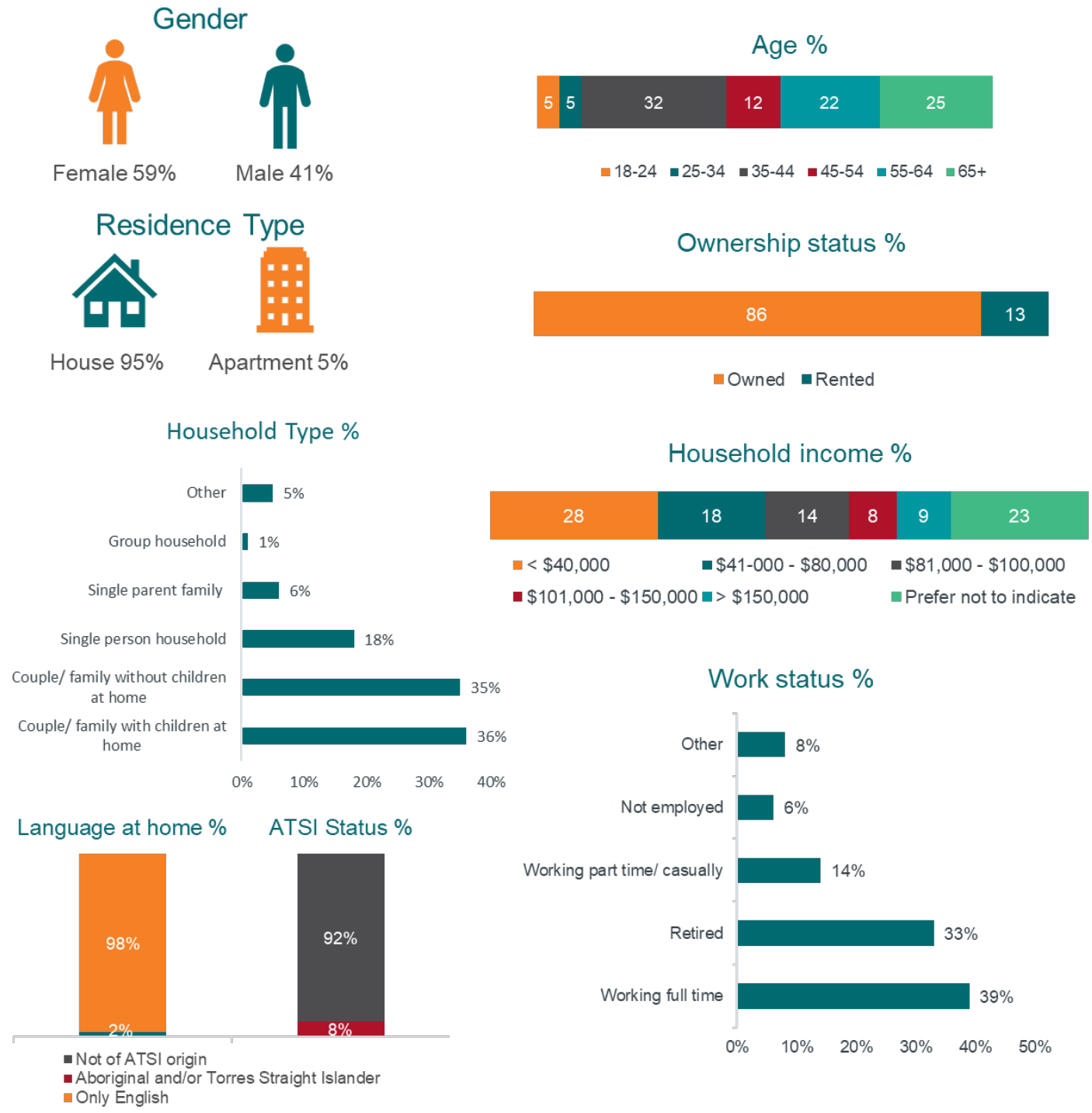
3.2.2 Representative customer survey

We consulted with customers to inform our submission

To ensure that we heard from a representative group of residential and business customers, we engaged Woolcott Research to facilitate an independent survey and summarise feedback. The key demographic characteristics of the customers surveyed are summarised in Figure 5. Woolcott asked which factors were most important to customers and how well they thought Essential Water performed on each aspect of service. It also asked customers about whether they were willing to pay more or less to change the level of service they received from Essential Water.

A summary of the feedback we received as part of the survey is provided in Figure 6 and the results of our customer survey are included as an appendix. The survey shows our customers consider access to a reliable supply of clean, safe drinking water and a reliable and safe sewerage service to be very important. Customers felt that Essential Water provided water and sewerage services well, however there is room to improve performance, for example in access to customer service for residential customers and information available for businesses during interruptions. There has been an increase in the number of customers who feel Essential Water offer good value for money. The survey results indicate customers prefer the number of water interruptions and cost of service to stay the same.

Figure 5: Essential Water's customer demographics



Key insights from the Woolcott survey are presented in **Figure 6**.

Figure 6: Key insights from the customer survey

Source: Woolcott Research & Engagement, Essential Water survey April 2021

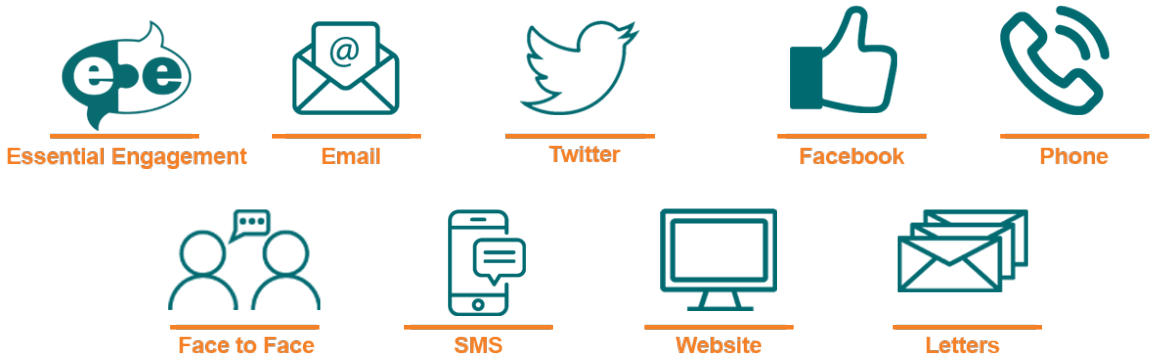
3.2.3 Ongoing feedback from customers

Our customers provide feedback on an ongoing basis

To ensure that customers can engage on an ongoing basis, we provide several platforms for them to provide feedback (see Figure 7). Customers can provide ongoing feedback on service standards through various platforms including making complaints via phone, email, or social media.

Over the past 3 years we have received very few customer complaints regarding our levels of service. We received 44 complaints in 2018-19, 25 complaints in 2019-20, and 22 complaints in 2020-21.

Figure 7: Customer feedback platforms



3.3 Our customer base

Our customer base has unique characteristics, reflecting the demographics of the communities we serve

The population of Broken Hill has declined by approximately one per cent each year since 2006. From 2009 to 2019, Australian Bureau of Statistics (ABS) data indicates this is the fourth fastest declining population centre in Australia.[5]

The proportion of population aged 65 years and older in Broken Hill is 25 per cent, significantly higher than the NSW and national averages of 16 per cent.[6,7] This means a large proportion of Essential Water's customers are on a fixed income.

Aboriginal and/or Torres Strait Islander people make up more than eight per cent of the population.[8] The Wilyakali people traditionally occupied the lands around Broken Hill. Today, the Indigenous population continue to look after their traditional lands and are joint managers of the Mutawintji National Park, the first national park handed back to the traditional owners in NSW.

Many of our customers are vulnerable, with limited capacity to pay for essential water services

We assessed our customers' capacity to pay for water and wastewater services using the same indicators that IPART often uses. These include:

- growth in typical customer bills in recent times
- comparison of typical customer bills with similar water utilities
- comparison of typical customer bills as a proportion of household income with similar water utilities
- Socio-Economic Indexes for Areas (SEIFA) – a measure that ranks regions in terms of socio-economic conditions
- the ongoing impact of the COVID-19 pandemic.

Over the past few years, water and sewerage bills have increased by less than inflation for most residential customers and have remained broadly similar for most non-residential customers.

Our bills are in line with other utilities, but our customers have limited capacity to pay these bills

Compared to a group of similar-sized water utilities in NSW, our typical annual residential bills are currently below the median. We compared our typical annual residential bills among a group of ten medium sized water utilities based on the Bureau of Meteorology's Urban National Performance Report for 2019-20.[9] The results are

5 ABS (2020), Regional population, available at: https://www.abs.gov.au/statistics/people/population/regional-population/2018-19

6 NSW Department of Planning Industry and Environment (2020), Population Projections Broken Hill, available at: https://www.planningportal.nsw.gov.au/population/

7 ABS (2019), 3101.0 – Australian Demographic Statistics, Jun 2019, available at: https://www.abs.gov.au/ausstats/abs@.nsf/0/1CD2B1952AFC5E7ACA257298000F2E76

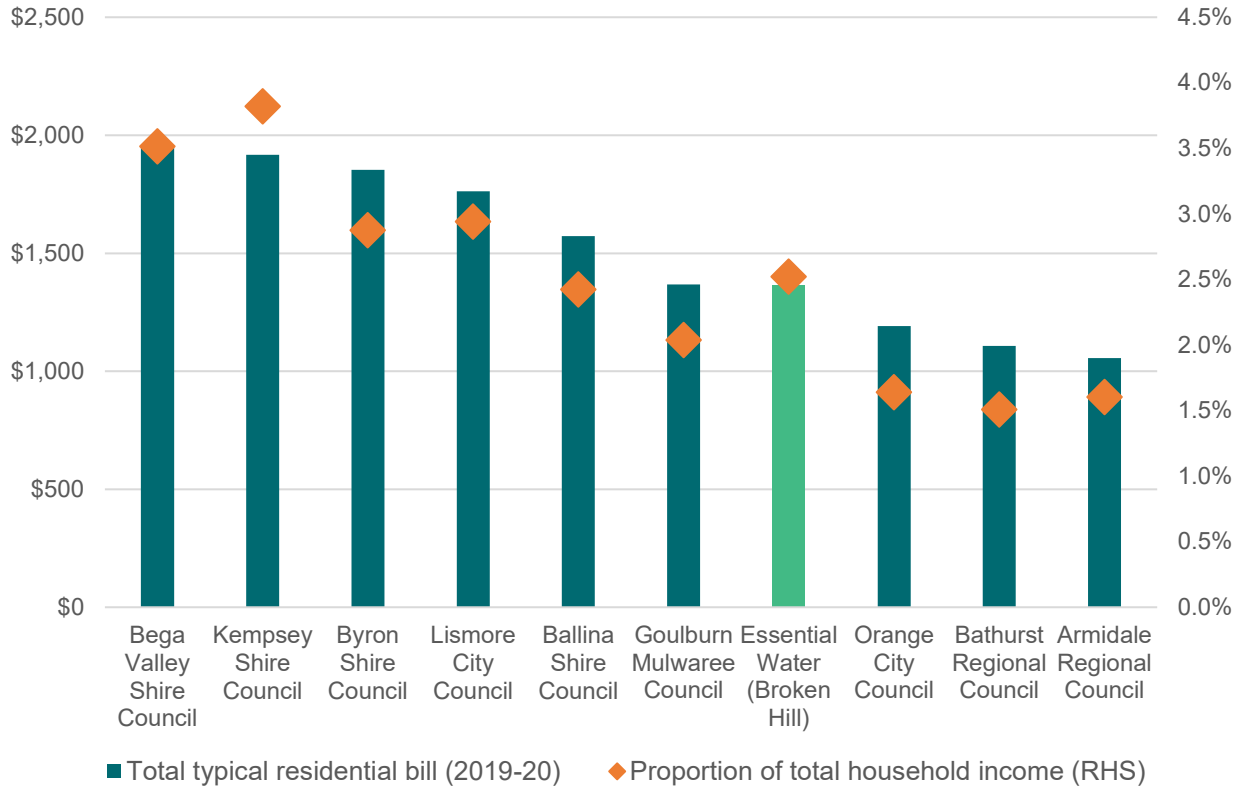
8 ABS (2016), 2016 Census QuickStats, available at: https://quickstats.censusdata.abs.gov.au/census_services/getproduct/census/2016/quickstat/SSC10592?opendocument

9 BOM, Urban National Performance Report 2019-20, available at: http://www.bom.gov.au/water/npr/

summarised in Figure 8. Essential's Water's typical annual residential bill ($1,365) is the fourth lowest in this group, and the median annual bill is $1,470.

The Broken Hill region has the second lowest average household income among this peer group. Therefore, when looking at typical residential bills as a proportion of household income, Essential Water's rank moves to fifth highest at 2.5%. This is shown on the right-hand axis of Figure 8. Essential Water's ratio is also higher than in major urban areas, including Sydney Water (1.3%), Hunter Water (1.8%) and the Central Coast Council (1.3%).[10]

Figure 8: Comparison of typical annual residential water and sewerage bills



Affordability of water and wastewater services is a critical issue

A broader consideration of the socio-economic characteristics of our customer base (beyond typical bills and income) indicates that affordability of water and wastewater services is a critical issue.

Broken Hill is rated in the lowest 10 per cent of communities in Australia, according to ABS analysis of Relative Socio-economic disadvantage. Under this measure, a component of the SEIFA index, Broken Hill is ranked 1,303 out of 13,691 state suburbs in Australia and 372 out of 4,112 suburbs in NSW. Broken Hills' socio-economic disadvantage score is 902 out of 1,000.[11] Broken Hill also has a similar ranking for other components of the SEIFA index.

As at February 2021, Broken Hill had almost double the proportion of its working age population (aged 15-64) receiving JobSeeker and Youth Allowance (14.1%) relative to NSW overall (7.4%).[12] Around 17% of the Broken Hill population is receiving the Age Pension compared to 10% across NSW. As of March 2021, Essential Water had over 7% of its customers on payment plans. 19% of our customers had overdue amounts greater than $50, this compares with just over 7% in November 2019. Reasons for this increase include the economic impacts of COVID-19, and the cessation of debt collection activities as a relief measure to customers during the pandemic.

10 IPART, Review of Prices for Sydney Water – From 1 July 2020, Final Report, June 2020, p 129.

11 ABS (2016), 2033.0.55.001 – Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016

12 ID Community profile for Broken Hill, available at: https://profile.id.com.au/broken-hill/job-seeker.

COVID-19 has exacerbated the economic challenges for our customers

The economic impacts of COVID-19 also remain an ongoing concern for our community. The JobKeeper Payment scheme, supporting businesses significantly affected by COVID-19, ended on 28 March 2021. The impact of this on labour markets and the unemployment rate is yet to be seen, however the relative disadvantage Broken Hill residents face compared to other areas in NSW and Australia puts the Broken Hill community at greater risk of a downturn in economic activity. Our recent customer survey indicated that in the 12 months to March 2021, over one in ten customers and 14% of small businesses had experienced at least one form of financial difficulty (cutting back on groceries, bill extensions/delays, payment plans, borrowing to pay bills, etc.).

Our customers cannot afford price increases significantly above inflation

Our assessment is that our customers cannot afford bill increases that significantly exceed inflation. This reflects our community being one of the most socio-economically disadvantaged in NSW, and the ongoing risks it faces from a downturn in economic activity brought about by COVID-19.

4. Form of regulation and other matters

4.1 Overview

The first step in determining prices for Essential Water's services is to decide on the form of regulation. This includes matters such as:

- the length of the determination period
- the method used to determine how prices move over time (e.g. whether to use price caps or a different form of price control such as a revenue cap or weighted average price cap)
- the method used to calculate how much revenue should be recovered through prices over the determination period (e.g. a building block approach)
- mechanisms to promote future efficiency savings and manage revenue and cost risks.

The sections below discuss our proposals for each of these areas in more detail.

Key messages

We propose:

- Adopting a 5-year determination period from 1 July 2022 to 30 June 2027, which reflects the stability of our current operating environment and outlook and is a more proportionate approach to regulation for a business of our size.
- Retaining 'price caps' that set prices for each of Essential Water's services in each year of the determination period.
- Retaining a 'building block approach' to calculating Essential Water's revenue requirements to recover its efficient costs of providing services, through a combination of prices to customers and a government contribution.
- Introducing cost pass-through mechanisms for certain events.
- To continue the efficiency carryover mechanism and an amended demand volatility adjustment mechanism for the 2022 determination period. We do not propose to trigger the efficiency carryover mechanism for the 2019 determination period. We do propose to trigger the demand volatility adjustment mechanism for the 2019 determination period.

4.2 Adopting a five-year determination period is now appropriate

We propose a five-year determination period

The length of the determination period is a key element of the regulatory framework. For the 2019 Determination, IPART adopted a three-year term, from 1 July 2019 to 30 June 2022. IPART considered that this determination period balanced the increased uncertainty of forecasts resulting from major changes to the Broken Hill water network, against the need to reduce regulatory burden.[13]

We consider that a five-year determination period now provides an appropriate balance of risk and certainty. We are proposing a longer determination period for the 2022 Determination compared to the 2019 Determination as there is now greater certainty around forecast demand and associated capital expenditure. In addition, a five-year determination period would align the determination periods for Essential Water and WaterNSW's Broken Hill Pipeline, under each utility's proposal. A five-year determination period would also reduce regulatory burden,

[13] IPART, Review of Essential Energy's prices for water and sewerage services in Broken Hill – Final Report, 2019, p 40.

enhance Essential Water's incentives to pursue efficiency gains and be consistent with IPART's recently flagged support for longer determination periods in its review of its regulatory framework.[14] We are also proposing several risk management mechanisms to deal with any uncertainties or risks that may arise under a five-year period. Each of these areas are discussed in turn in the sections below.

4.2.1 Greater certainty around forecast demand and efficient costs of consequential work

Since the 2019 Determination, we have developed a greater understanding of how the Broken Hill Pipeline has impacted demand in Broken Hill. In addition, we have further investigated our proposed expenditures through the development of our IWCM Strategy. We are therefore confident in our forecasts of expected demand and required capital expenditure (including the timing of the Wills Street sewage treatment plant upgrade and renewals expenditure) for the 2022 determination period. Our proposed forecasts of demand and capital expenditure are provided in Chapters 9 and 6.

4.2.2 A five-year period aligns Essential Water and WaterNSW's Broken Hill Pipeline Determinations

We understand that WaterNSW is also proposing a 5-year determination period. Since the Broken Hill Pipeline makes up a substantial proportion of the costs of providing water services in Broken Hill, we consider it appropriate to align these price determinations.

4.2.3 A five-year period would reduce regulatory burden and enhance incentives for Essential Water to pursue efficiency gains

A five-year determination period would significantly reduce the cost to Essential Water of participating in price reviews; and allow it to draw on operational experiences over a longer period of time to better inform the next price review. Given the now relatively static state of Essential Water's operating environment and the size of Essential Water, a five-year determination period would represent a more proportionate approach to regulation.

For context, the population we service is about 5% of the size of the population supplied by the Central Coast Council, 3% of the size of the population supplied by Hunter Water and about 0.3% of the size of the population supplied by Sydney Water. Given our size, it is important that IPART adopts a proportionate approach to regulation and seeks to avoid any unnecessary regulatory costs – such as those that would be incurred with a shorter determination period.

Furthermore, under a five-year determination period, Essential Water would hold onto any efficiency gains it realises for a longer period of time, thus providing enhanced incentives for it to pursue such gains before they are revealed and 'handed back' to customers at the next price determination. This would benefit customers in the long run.

4.2.4 Any uncertainty over the determination period to be managed by risk management mechanisms

It is common regulatory practice to incorporate risk management mechanisms to amend the regulatory settings if there are unanticipated, material changes in revenues and costs during the determination period that are outside the control of the regulated business. Common risk management mechanisms include cost pass-through and demand volatility adjustment mechanisms. Our proposed risk management mechanisms are outlined in Section 4.5.

4.3 Setting maximum prices provides certainty to customers and Essential Water

We propose a price cap

There are several forms of price control that can be used to review or adjust prices for regulated businesses. These include price caps, revenue caps and hybrids of these two approaches.

We propose that a 'price cap' should continue as the form of price control for the 2022 determination period. We consider that this approach continues to be fit-for-purpose for Broken Hill as it provides certainty and stability for both customers and Essential Water. In our view, other forms of price control would be too costly to develop and apply given the relatively small size of our water and sewerage business.

[14] IPART, *Lifting Performance in the Water Sector, Discussion Paper*, May 2021.

4.4 A building block approach is IPART's standard method for calculating a notional revenue requirement

We propose to adopt IPART's building block approach

IPART typically adopts the building block approach to establish the regulated utility's efficient costs, or NRR, of providing its regulated services. This involves separately estimating the underlying components (or 'building blocks') of efficient costs (or revenue requirements), having regard to projections of efficient capital and operating costs of providing regulated services.

We support IPART continuing to use the building block approach to calculate NRR for providing Essential Water's services. Under this approach, the building block components are:

- **Operating expenditure**, which represents an estimate of the efficient level of Essential Water's forecast operating, maintenance and administration costs incurred in providing its regulated water and wastewater services.
- **A return on the assets** Essential Water uses to provide its regulated services. This amount represents an assessment of the opportunity cost of the capital invested in Essential Water and ensures that it can continue to make efficient capital investments in the future. To calculate this amount, IPART decides on the efficient and prudent levels of Essential Water's past and forecast capital expenditure, incorporates this capital expenditure into Essential Water's regulatory asset base (RAB), and calculates the return on assets by multiplying the RAB by the appropriate weighted average cost of capital (WACC).
- **A return of those assets** (regulatory depreciation). This allowance recognises that through the provision of services to customers, Essential Water's capital infrastructure will wear out over time, and therefore regulatory depreciation allows the cost of the RAB to be recovered throughout its expected life. To calculate this allowance, IPART decides on the appropriate asset lives and depreciation method. Regulatory depreciation is usually calculated using the 'straight-line' method, which means that the value of assets is recovered evenly over their lives.
- **An allowance for meeting tax obligations**. In the 2019 Determination, IPART used a real post-tax WACC to calculate the allowances for return on assets; and calculated the allowance for tax as a separate cost block.
- **An allowance for working capital**, which represents the holding cost of net current assets.

Figure 9 shows how the sum of these building blocks is equal to the revenue requirement and where each of these building blocks are discussed in this submission.

Figure 9: Building block approach to calculating the notional revenue requirement (NRR)

4.5 Some changes to the risk management framework are needed

We consider that a well-functioning regulatory framework needs to ensure a reasonable sharing of risks and enable a business to recover its efficient costs. In our view, changes are required to the types of costs that can be passed through to customers to meet this objective.

We do not propose to change the efficiency carryover mechanism, but we propose an amendment to the demand volatility adjustment mechanism for the 2022 determination.

4.5.1 Cost pass-through mechanisms need to be introduced

We propose a cost pass-through for specified pass-through events

We consider that introducing an effective cost pass-through framework will improve our ability to appropriately manage cost risk in the long-term interest of customers. In our view, it is important for an infrastructure business to have the reasonable opportunity to recover the efficient costs it incurs as a result of unexpected events, which are beyond its control, in future years.

We propose a cost pass-through mechanism be adopted for the 2022 determination period. Our proposal draws on our experience of the effective cost pass-through arrangements for Essential Energy under the National Electricity Rules. We propose a symmetric framework that applies for both positive and negative cost events.

The cost pass-through mechanism should be limited to unexpected events that are beyond a business's control, to not undermine incentives for the business to effectively manage cost risks. These unexpected events could relate to:

- Changes to WaterNSW's regulated bulk water prices – due to any cost pass throughs in its price determination
- A regulatory or service standard change event
- A tax change event
- Other nominated events, including terrorism, natural disaster, and insurance coverage.

The cost pass-through mechanism should provide for a business to recover the efficient costs associated with these unexpected events. If businesses are unable to recover these efficient costs, it could compromise their ability to optimally invest in and operate their networks – which would not be in the long-term interest of customers.

A cost pass-through event in these circumstances would provide an appropriate balance in the allocation of risks between Essential Water (to recover its efficient costs of providing its regulated services) and its customers (to ensure that prices are no more than necessary to provide an appropriate level of service). Given these cost pass-through mechanisms would only apply to events beyond the water business's control, they would also ensure the business still has incentives to efficiently manage its cost risks.

Such a cost pass-through mechanism could be designed so that if the pre-defined trigger event occurs, IPART then conducts a process to assess the efficient costs of this event to be passed through to customers via prices.[15] This would mean that only events beyond Essential Water's control are eligible for the mechanism (eliminating any concerns IPART may have regarding perverse incentives for risk management), and only efficient costs of that event are passed through to prices – thus, ensuring prices reflect efficient costs.

We consider that IPART can conduct in-period assessments of the efficient costs of pre-defined trigger events, and that efficient costs of such pass-through events do not have to be specified ex ante in a price determination. There are several examples where an IPART price determination (e.g. Sydney Water) has specified a price adjustment to occur in-period following an in-period IPART assessment of efficient costs or prices (e.g. to adjust Sydney Water's prices for a subsequent determination of the Sydney Desalination Plant's prices).

Given the sensitivity we have to price rises for our customers, we would assess on a case-by-case basis whether to apply to activate a cost pass-through true-up for inclusion at the next price determination, after considering potential impacts on our financial position and on customers. Regardless, there is still a strong case to include the above-mentioned cost pass through framework in our price determination.

4.5.2 We do not propose to activate the efficiency carryover mechanism for the 2019 determination period

In the 2019 Determination IPART introduced an efficiency carryover mechanism to allow permanent efficiency gains (i.e. cost decreases) to be held by Essential Water for a specified period (equal to the length of the determination period – e.g. three years) before they are passed on to customers, regardless of when they are achieved within a determination period. This was intended to equalise the incentive to make permanent efficiency savings over a determination period.

---

15 However, it would not need to assess the efficiency of any costs it had already deemed as efficient in its determination of WaterNSW's prices or in its assessment of WaterNSW's application for a cost pass-through.

We will not activate the efficiency carryover mechanism for the 2019 determination period

As we discuss in Chapter 7, the operating expenditure allowance set in the 2019 did not recognise the unique and challenging circumstances of Essential Water. As a result, we have not been able to realise efficiencies relative to the allowance provided. We therefore do not propose to activate the efficiency carryover mechanism for the 2019 determination period.

We do not propose to change the efficiency carryover mechanism for the 2022 determination period

We do not propose changes to the efficiency carryover mechanism for the 2022 determination period. We consider that an appropriate operating expenditure allowance – which reflects the efficient costs of delivering our services, in our environment, with our regulatory requirements – combined with a five-year determination period, should provide enhanced incentives for Essential Water to pursue sustainable efficiency gains.

4.5.3 We propose to activate the demand volatility adjustment mechanism for the 2019 determination period

Actual water sales will depend on a number of factors that can vary unexpectedly, including weather patterns and population changes. This creates a risk in setting prices based on forecast water sales, as actual sales may vary and are difficult to predict accurately.

The demand volatility faced by Essential Water is not limited to the normal deviations from average weather conditions and demand. The small size of Essential Water and its customer base means that if one or more large customers leaves or enters the network (e.g. a mine), actual water sales could deviate substantially from forecast water sales.

The demand volatility adjustment mechanism addresses this risk by enabling us to adjust our revenue at the start of the subsequent determination period, based on the variation between actual water sales over the determination period and the forecasts used by IPART to make the determination, however we suggest that the ± 5 per cent deadband should be removed.

We propose to trigger the demand volatility adjustment mechanism for the 2019 determination period

As we discuss in Chapter 9, our forecast water sales for the 2019 determination period are significantly lower than the forecasts used by IPART for the 2019 determination. We therefore propose to activate the demand volatility adjustment mechanism for the 2019 determination period, in determining our NRR for the 2022 determination period. We discuss the impact on our revenue requirement in Chapter 10.

We propose an amendment to the demand volatility adjustment mechanism for the 2022 determination period

For the 2022 determination period, we propose continuing with the demand volatility adjustment mechanism, however, we recommend that IPART review the ± 5 per cent deadband. The removal of the deadband will provide for more long term cost-reflective pricing for customers but still provide price stability in the 2022 determination period. This will enable us to adjust our revenue at the start of the subsequent determination period for any variation between actual and forecast water sales over the 2022 determination period. It will continue to provide a mechanism to ensure our prices and revenue are consistent with any unexpected changes in demand over the 2022 determination period, including the potential commissioning of the Cobalt Blue mine (discussed in more detail in Chapter 9). Given that the demand volatility adjustment mechanism is symmetrical, the application of this adjustment without a deadband provides comfort that customers can also benefit in the next determination period, if water sales are higher than forecast.

The demand volatility adjustment mechanism without a deadband, is an important complement to a longer, five-year, determination period.

5. Service standards

5.1 Overview

In developing our forecasts of efficient costs, we need to consider how best to meet the needs of our customers and stakeholders. To ensure this, we have developed standards of service that capture our regulatory requirements, as well as community and customer expectations. The chapter describes:

- how we performed against the current service standards for the 2019-22 determination period
- our proposed standards for the 2022-27 determination period.

Key messages

- We strive to meet all industry standards required of water utilities and provide a standard of service that reflects community expectations and customers' willingness to pay.
- We have met all service standards over the 2019 determination period. These standards cover our regulatory requirements on water quality as well as customers' expectations on the availability and reliability of water supply and sewerage services.
- We are also implementing procedures to improve how we measure and report performance against our quantitative targets. We expect these procedures to be in place for all quantitative targets for the 2022-27 determination period.
- We propose maintaining our current service standards for the 2022 determination period. Our customer engagement confirmed that these standards continue to reflect customer expectations and ensure that our operating and capital expenditure is efficient.

5.2 Service standards were met or exceeded in the 2019 determination period

Essential Water met our customers' needs in the 2019 determination period

Essential Water strives to meet all industry standards required of a water utility. In addition, we provide standards of service that reflect the community's expectations and customers' willingness to pay. Table 8 and Table 9 set out our current service standards for water supply and sewerage services and our performance against these standards. These cover areas such as the availability of water supply, water quality, response times and customer complaints.

Essential Water has met or exceeded its customer service standards over the 2019 determination period, except for our water availability standard relating to water restrictions. Level 1 water restrictions were introduced in December 2018 and lifted in March 2021.

Table 10 shows our compliance with the ADWG for 2019 and 2020.

We are improving information collection and reporting of our service levels

As part of the 2019 Determination, IPART accepted our proposed service levels. However, it also recommended that we should implement procedures to adequately measure performance against quantitative targets and provide a quantitative assessment of our performance in future reviews. It considered that this would help when communicating with customers on the levels of service they are to receive.[16]

[16] IPART, Review of Essential Energy's prices for water and sewerage services in Broken Hill – Final report, 2019.

In developing our IWCM Strategy, we identified a gap in our data and systems relating to response time service standards. Response times were not previously recorded in a consolidated system that allowed tracking and reporting against our service standards. This prevented us from communicating with customers regarding the actual level of service that they received and not simply whether the targets are being met. We are developing a procedure where all response times for Priority 1-4 events are recorded in a database that allows results to be consolidated and compared against service standards. To facilitate this, we have commenced the upgrade of our MainPac asset management system, to provide a mechanism to record real time information on our response times.

Our service standards reporting does not demonstrate our increasing issue with mains bursts

We have experienced an increasing number of mains leaks and bursts over the 2019 determination period because of our aging mains infrastructure. The nature of the service standards means that, to date, these mains bursts, although disruptive and increasingly frequent, have not compromised our ability to meet these standards.

Table 8: Our water service standards

Service area	Service standards	2019-20	2020-21 to date
Availability of water supply	> Minimum pressure of 15 metres head of water in the reticulation system, conveying six litres per minute per residential connection under normal conditions.	> 100%	> 98%
	> Water restrictions should not be applied more than five per cent of the time.	> 0%	> 0%
	> 3,000L/tenement/per day for residential potable water – (four-month peak season).	> 100%	> 100%
	> Planned works: residential customers two days written notice, non-residential seven days' written notice.	> 100%	> 100%
	> Water will be available from reticulation fire hydrants for firefighting at minimum flow rates determined by guidelines.	> 100%	> 100%
Water quality	> Potable water supply should meet Australian Drinking Water Guidelines.	> 100%	> 100%
	> Non-potable water supply should meet public health standards with respect to bacteria, contaminants, and pathogens, consistent with its use.	> 100%	> 100%
	> Recycled water supply should meet Australian Guidelines for Water Recycling, Managing Health and Environmental Risks 2006.	> 100%	> 100%

Service area	Service standards	2019-20	2020-21 to date
Response times	> Priority 1 - defined as failure to maintain continuity or quality of supply to a large number of customers or to a critical use at a critical time. Response time: > 30 minutes (business hours) > one hour (after hours) > Priority 2 - defined as failure to maintain continuity or quality of supply to a small number of customers or to a critical user at a non-critical time. Response time: > one hour (business hours) > two hours (after hours) > Priority 3 - defined as failure to maintain continuity or quality of supply to a single customer. Response time: > one working day > Priority 4 - defined as a minor problem or complaint which can be dealt with at a time convenient to the customer and the water authority. Response time: > Within two weeks	> 100% > 100% > > 100% > > 100%	> 100% > 100% > > 100% > > 100%
Customer complaints	> Customer complaints other than supply failure: > Respond to 95 per cent of written complaints or enquiries within four working days of receipt. > Respond to 95 per cent of personal complaints or enquiries within four working days.	> 100%	> 100%

Table 9: Our sewerage service standards

Service area	Service standards	2019-20	2020-21 to date
Availability of sewerage service	> Connections for domestic sewage should be provided to all houses, units, or businesses within the defined service area of Broken Hill. There are no plans at present for sewerage services to other locations. > Acceptance of commercial and industrial wastes (trade waste) should be in accordance with approval conditions for each discharger	> 100% > 100%	> 100% > 100%[17]
Average system failures	> Controlled, expected (overflow structure) - related to rainfall and design: > Not more than two times in one year on average. > Controlled, unexpected (flow relief structure): > Not more than once in five years. > Uncontrolled, unexpected: > Private property: not more than 50 per 1000 properties per year. > Public property - sensitive areas: not more than once per three years. > Public property - elsewhere: not more than once per 10 kilometres of main per year.	> 100% > 100% > 100%	> 100% > 100% > 100%[18]

[17] Essential Water is complying with its current policy relating to the review of Development Applications. The current policy will be reassessed as necessary to reflect any changes required to implement new trade waste charges.

[18] Essential Water has notified all uncontrolled, unexpected spills to the Environment Protection Authority as required by this service standard. Compliance with this measure does not suggest there have been no uncontrolled, unexpected spills, as we discuss later in this submission in the context of our renewals expenditure.

Service area	Service standards	2019-20	2020-21 to date
Response times	> Priority 1 - defined as 'major failure to contain sewage within the sewer system or any problem affecting a critical user at a critical time. Response time: > 30 minutes (working hours) > one hour (after hours) > Priority 2 - defined as 'minor failure to contain sewage within the sewer system or any problem affecting a critical user at a non-critical time. Response time: > one hour (working hours) > two hours (after hours) > Priority 3 - defined as 'minor failure to contain sewage affecting a single property or as bad odours'. Response time: > next working day	> 100% > 100% > 100% >	> 100% > 100% > 100% >
Customer complaints	> Respond to 95 per cent of written complaints or enquiries within four working days of receipt. > Respond to 95 per cent of personal complaints or enquiries within four working days.	> 100% > 100%	> 100% > 100%
Odours/vectors	> Not more than two incidents per year that result in complaints.	> 100%	> 100%
Impact of sewerage treatment plants	> The maximum level of noise should not be more than 5 dB above the background noise level. > Odour should not be detectable outside the utility's buffer zone around the treatment works	> 100% > 100%	> 100% > 100%
Effluent discharge/biosolids management	> The minimum performance standards for effluent discharge and bio-solids management are set by statutory requirements and regulations through licensing.	> 100% >	> 100% >

Table 10: Broken Hill drinking water quality 2019 and 2020

Broken Hill			Filtered water compliance	
	Characteristics	ADWG Target	2019	2020
Health	E. coli	0 orgs / 100mL (100 %)	100%	100%
	Fluoride	0.9 to 1.5 mg/L	100%	100%
	Free Chlorine	0.2 to 5 mg/L	100%	100%
	Lead	<0.01 mg/L	100%	100%
	Arsenic	<0.01 mg/L	100%	100%
	Manganese	<0.5 mg/L	100%	100%
	Cadmium	<0.002 mg/L	100%	100%
	Copper	<2 mg/L	100%	100%
	Mercury	<0.001 mg/L	100%	100%
	Trihalomethanes	<0.25 mg/L	100%	100%
Aesthetics	Turbidity	<5 NTU	100%	100%
	True Colour	15 HU	100%	100%
	pH	pH 6.5-8.5	100%	100%
	EC	<1090 µS/cm	100%	100%
	Zinc	<0.3 mg/L	100%	100%
	Iron	<3 mg/L	100%	100%

Note: Filtered water compliance is reported for calendar years rather than financial years.

5.3 Proposed service standards for the 2022 determination period

We propose to maintain service standards

We propose maintaining the current service standards for the 2022 determination period set out in Table 8 and Table 9. In our view, these standards ensure that we meet our regulatory requirements such as compliance with Australian Drinking Water Guidelines (see Box 4.1) and reflect our customers' expectations and willingness to pay for service outcomes. The feedback we received through our three key engagement activities supports maintaining these standards.

Box 4.1 Australian Drinking Water Guidelines

A stringent regime of testing and quality assurance ensures Essential Water meets the Australian Drinking Water Guidelines set by the National Health and Medical Research Council and the Agriculture and Resource Management Council of Australia and New Zealand. The testing process includes taking water samples from 38 locations including reservoirs, at the inlet and outlet of water filtration plants and from various other locations throughout the water network.

Testing is conducted by the Australian Water Quality Centre and the Department of Analytical Laboratories (independent laboratories certified to the National Association of Testing Authorities standards). NSW Health reviews the results. This strict water quality testing ensures the Australian Drinking Water Guidelines are met. Each year, Essential Water publishes a summary of test results for samples collected over the previous 12 months, outlining health and key aesthetic characteristics that have been selected in consultation with NSW Health. The results are also issued annually in a brochure sent to customers with their water accounts.

Reliability and safety are critical to our customers

As part of our customer survey we sought feedback on the most important factors for residential and small business customers. Providing a reliable water supply, clean safe drinking water, and a reliable safe sewerage service were the three most important factors for residential and small business customers. Furthermore, support for vulnerable customers and offering easy access to customer service were labelled as important by 67% and 65% of respondents, respectively. Customers agreed that Essential Water provided water and sewerage services well, with room for improvement on the quality of the water and providing better value for money.

Our customers are not willing to pay more for higher levels of service

We also found that most customers were not willing to pay more or less for a change in the level of service they receive. Most customers (around 71%) indicated that they preferred to keep the price and number of interruptions to supply about the same. This supports our proposed approach to maintaining the current service standards for the 2022-27 determination period.

The results of the survey also confirmed that our key challenge remains unchanged from the 2019-2022 determination period. That is, to continue to address customer affordability, while also ensuring we have sufficient funding to meet our service standard obligations and achieve financial sustainability.

We comply with best practice management

In addition, Essential Water continues to comply with the six criteria set by the NSW Government for the best practice management of water supply and sewerage services. The six criteria for best practice management are:

- strategic business planning
- pricing
- water conservation
- drought management
- performance reporting, and
- integrated water cycle management.

Best practice management helps to ensure the effective and efficient delivery of services and promotes sustainable water practices and demand management.

Our aging infrastructure will affect our capacity to meet the service standards required by our customers in the future

Our aging water and sewerage mains are becoming increasingly unreliable. As we discuss in Chapter 6, the number of main bursts increased from 7 in calendar year 2018, to 88 in 2019. Although these main bursts have not yet impinged our ability to meet our service standards to date, Essential Water's aging infrastructure means

significant and urgent renewals investment is required. Addressing our aging infrastructure to enable us to adopt a proactive approach to maintenance is a key driver of our expenditure proposal in this submission.

6. Capital expenditure

6.1 Overview

Under the building block approach, prudent actual capital expenditure over the 2019 determination period and efficient forecast capital expenditure for the 2022 determination period is added to the regulatory asset base and recovered through a return on assets and regulatory depreciation.

This chapter sets out our proposed levels of capital expenditure. The section below provides an overview of our proposal. Next, we discuss our risk-based approach to asset management that applies to all capital expenditure. Finally, we set out our prudent expenditure for the 2019 determination period and forecasts of efficient capital expenditure for the 2022 determination period.

Key messages

- Our capex proposals have been designed to be both prudent and efficient, while also supporting safe and secure water and sewerage supply to our customers. We are focused on adopting a risk-based approach to maintaining and replacing assets where necessary to meet our mandatory requirements and service standards.
- Over the 2019 determination period, we are expecting capital expenditure of $51.1 million. That is $4.4 million or 8 per cent lower than IPART's allowances at the 2019 Determination. The main reasons for this underspend are:
  - Lower brine pond decommissioning costs: We incurred costs of $3.5 million (direct) compared to IPART's 2019 allowance of $8 million ($2018-19).
  - Lower expenditure on the Wills Street wastewater treatment plant: IPART's 2019 Determination allowed $9.3 million ($2018-19) to commence the plant upgrade. We have commenced preliminary work, including preparation of a business case, over the 2019 determination period. We are not proposing to fully commence the upgrade until the 2022 determination period.
  - This lower sewage expenditure was offset somewhat by higher water related capital expenditure, including non-system capital expenditure.
- We forecast efficient capital expenditure of $75.0 million over the 2022 determination period. Our forecasts are made up of ongoing maintenance works as well as several key projects and programs:
  - Wills Street wastewater treatment plant replacement of $29.9 million over the 2022 determination period. This project was delayed during the 2019 determination period and it is now critical that it proceeds to ensure we meet mandatory environmental standards.
  - Water and sewer reticulation repairs and replacement of $10.7 million. This urgent work is required to upgrade aging infrastructure and enable us to put greater focus on planned rather than unplanned maintenance, which will result in more efficient management of our network and cost savings for customers over time.
  - Mica Street service reservoir replacement of $3.1 million. This will increase network capacity in summer months, optimise energy consumption, and improve the resilience of the network to a range of risks.
  - Rocky Hill service reservoir refurbishment and replacement of $1.9 million. This crucial element of the reticulation network has reached the end of its useful life and requires material refurbishment.
- Non-system (support assets) capital expenditure of $6.0 million required to support the delivery of water and wastewater services, in the following "non-system" expenditure categories:
  - Information Technology (IT) of $3.5 million - a key enabler of delivering an efficient and affordable network service to our customers.

- Furniture, fittings, plant, and equipment (FFP&E) of $0.2 million
- Motor vehicles of $1.9 million – representing a steady level of investment in heavy and light commercial vehicles, which are required to support our network programs across our large geographical area.
- Buildings of $0.4 million - ongoing investment to ensure properties are appropriately maintained and comply with relevant workplace safety legislation.

6.2 Our capital expenditure reflects our risk-based asset management approach

Our Integrated Water Cycle Management Strategy forms a robust basis for our capital expenditure forecasts

We have recently developed an IWCM Strategy. This ensures our proposed capital works projects are appropriately sized and essential for the provision of cost-effective and affordable urban water services that meet customer needs and protect public health and the environment. Our IWCM Strategy has been developed in consultation with our customers, the community and the Department of Planning, Industry and Environment (DPIE). We prepared an Issues Paper, setting out our operating environment, levels of service, system, and services. The Issues Paper presents an assessment of our water and sewerage scheme capacity and performance assessment, and the resulting capital expenditure requirements.

Our capital expenditure forecasts were developed through this comprehensive assessment process.

Our robust systems and approaches ensure capital expenditure is prudent and efficient

We have established a sound asset management system and processes to ensure that our capital and operating expenditure programs are prudent and efficient.

Essential Water follows a risk-based approach to asset management and uses several inter-related processes to ensure expenditure is prudent and efficient. These processes relate to water and sewerage network augmentation, demand management, reliability, quality and security of supply, asset renewal and asset maintenance.

Our asset management system covers our processes for planning, development, operation, inspection, condition assessment and maintenance of all components of our water distribution and sewerage collection and disposal network.

Through this system, the physical water and sewerage system assets and other resources are efficiently and effectively managed, to meet service delivery targets, ensure risks are minimised and asset economic life is maximised, in a cost-effective manner.

The system incorporates a detailed Water Asset Management Plan and Strategic Business Plan. These plans are reviewed and updated periodically, to ensure they reflect the current priorities and challenges for Essential Water. Together, these form an operational framework that enables us to consistently provide customers with high quality, safe and reliable water and sewerage services at the lowest possible price, while providing an adequate return for our shareholder.

Our general asset management approach is reflected in our capital expenditure program, through our planned investments in capacity, security and reliability-driven asset augmentation, asset replacement, asset refurbishment and asset maintenance.

We are introducing incremental improvements to our risk-based approach

To underpin the above planning process, we record the condition of assets in the field during periodic inspections and subsequently download the data into an integrated asset management system. This enables us to track asset inspection and maintenance work. By relating the data to system performance, we can identify and prioritise problem areas for maintenance and / or capital investment. By analysing data captured in the system, Essential Water can develop more efficient and effective asset management strategies and practices.

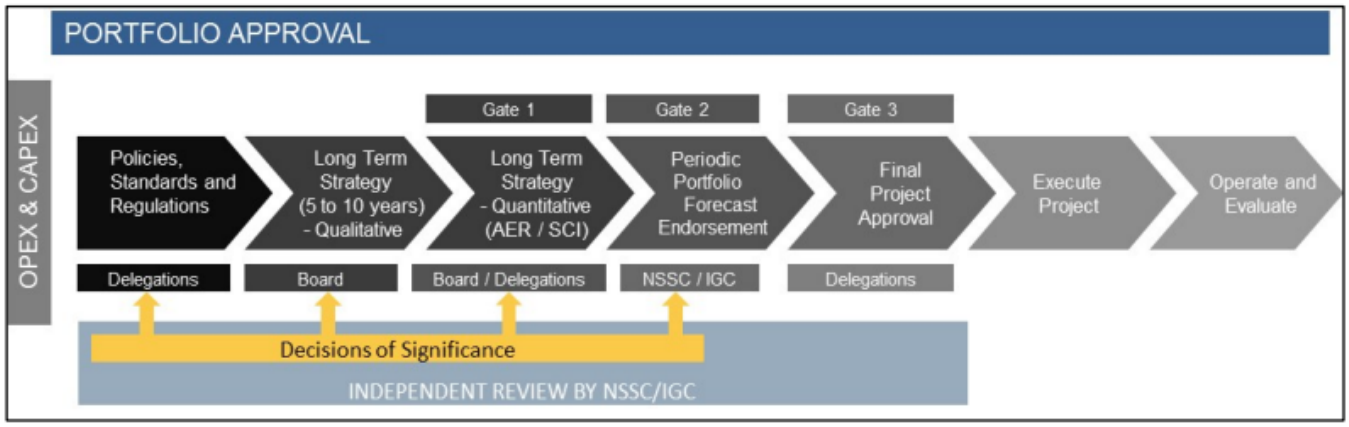
We are continuing to strive for improvements to our asset management and planning. We are currently investing in improved asset management tools and training to ensure our capital expenditure is driven by condition-based assessment. For example, we are currently introducing a new asset management system, MainPac. The MainPac asset management system provides a platform for scheduling, tracking and reporting works, including inspections. This will enable us to efficiently plan and execute capital expenditure, while minimising the costs and disruptions of reactive activities. This is particularly important as renewal of our aging network becomes more urgent.

We have a structured approval process to ensure prudent and efficient investment

Following the risk assessment, we develop business cases to ensure appropriate justification of projects for all future investments. There are several approval 'Gates' before we incur expenditure (see Figure 10):

- Gate 1: The total proposed program requires Gate 1 approval.
- Gate 2: Larger projects over $2 million (direct costs plus overheads) are placed before Essential Energy's Non-System Steering Committee for Gate 2 approval.
- Gate 3: When final tender prices are obtained, Gate 3 approval is required prior to final approval to proceed.

Figure 10: Essential Energy gateway approvals process



Essential Water follows a defined investment governance process to ensure that expenditure is prudent, reasonable, and efficient.

The Non-System Steering Committee (Water) (NSSC Water) oversees Essential Water's investment governance process. The purpose, duties and responsibilities of this committee are contained in the Committee's charter.

This ensures our capital expenditure program delivers value for money for our customers and community.

6.3 Capital expenditure during the 2019 determination period is prudent

We have delivered on our capital expenditure commitments during the 2019 determination period

Essential Water has delivered on our capital expenditure commitments during the 2019 determination period. This capital expenditure program focused on the delivery of a series of consequential works to integrate our network with the Broken Hill Pipeline (see Box 6.1).

We have already delivered the Mica Street water treatment plant upgrades and decommissioned the brine pond. The remaining consequential work, the graziers' pipeline, is on track to be completed in 2022. We have been working to identify the most cost-effective option to deliver this pipeline and undertake detailed design. Further options analysis after IPART's 2019 Determination identified installing an underground pipeline is the most cost-effective option. This reflects recent technological improvements which mean an underground pipeline can be installed relatively quickly and cost effectively. The cultural and heritage analysis required to install an underground pipeline is underway, with the pipeline installation expected to take place in 2022.

Box 6.1 Essential Water's consequential works and 2019 determination allowances

- Mica Street water treatment plant upgrades ($2.2 million, $2018-19): This project involves upgrades to the Mica Street water treatment plant to protect against blue green algae and corrosion, managing the two major water quality risks from water pumped from the Murray River for our chlorinated and untreated water customers. It was expected to be completed in June 2023.
- Decommissioning the desalination plant brine pond ($8.5 million, $2018-19): This project involves decommissioning the brine evaporation pond and pipeline for the city's desalination plant, which is no longer required now the Pipeline is operational.
- Replacement supply for Menindee pipeline customers ($11.4 million, $2018-19): This project involves decommissioning the Menindee pipeline, supplying potable water to Sunset Strip from Menindee WTP, and supplying 11 graziers from a new gravity fed pipeline from Stephens Creek reservoir. This project was expected to be completed in 2023.

We have delivered our capital expenditure prudently and efficiently in the 2019 determination period

We expect total capital expenditure over the 2019 determination period of $51.1 million, which is about $4.4 million or 8 per cent less than IPART's allowances at the 2019 Determination (Table 11).

Table 11: Comparison of actual and allowed capital expenditure 2019-20 to 2021-22 ($2021-22, $000)

	2019-20	2020-21	2021-22	Total
Total				
IPART allowance	27,821	12,729	14,890	55,440
Actual	10,995	12,052	28,033	51,080
Difference	**-16,826**	**-677**	**13,143**	**-4,360**
Water				
IPART allowance	23,456	9,185	4,175	36,816
Actual	8,101	9,047	22,969	40,117
Difference	**-15,355**	**-138**	**18,795**	**3,302**
Sewerage				
IPART allowance	2,696	2,526	9,918	15,140
Actual	765	1,374	2,822	4,960
Difference	**-1,932**	**-1,151**	**-7,097**	**-10,180**
Non-system				
IPART allowance	1,668	1,019	797	3,483
Actual	2,130	1,631	2,242	6,002
Difference	**461**	**612**	**1,445**	**2,519**

Note: 2020-21 and 2021-22 are based on forecasts

The main drivers for the capex underspend in the 2019 determination period include:

- **Lower brine pond decommissioning costs**: In the 2019 Determination, IPART allowed capital expenditure of $8.5 million ($2018-19) for decommissioning the brine pond following completion of the Broken Hill Pipeline. It considered that the costs should be recovered gradually over time as capital expenditure. As noted in our submissions to the 2019 Determination, we consider that this work should be included as operating expenditure because under accounting standards it is expensed rather than capitalised. However, consistent with IPART's regulatory approach, we have recorded $3.5 million as actual capital expenditure in 2019-20 and 2020-21. The expenditure is lower than IPART's allowance because the contractor used a different method to evaporate the brine, and we minimised contract variations using new NSW Government contracts.
- **Lower than expected expenditure on the Wills Street wastewater treatment plant**: We expect to spend $1 million over the 2019 determination period, compared to IPART's allowance of $9.3 million ($2018-19). IPART's allowance provided funding for Essential Water to complete a comprehensive business case in the first two years of the 2019 determination period (2019-20 and 2020-21) and commence works in the third year (2021-22). The size and complexity of the upgrade means Essential Water will seek external service providers to deliver this project. However, given the extent of the project, lack of clarity on agreed funding beyond the first year of works, and some delays because of COVID, we have deferred the expenditure on the Wills Street wastewater treatment plant to the 2022 determination period. The expenditure of $1.0 million over the 2019 determination involves the development of the business case, the preparation of the design and the initial tender.
- **This lower expenditure was offset somewhat by higher water capital expenditure**: Non-system capex was higher than IPART's allowance, reflecting higher IT costs allocated from Essential Energy's cyber strategy and transformation programs. Some of the shared systems require upgrading for compliance with critical infrastructure licence conditions, and other changes reflect system upgrades that will result in efficiencies and lower IT expenditure by the end of the 2022 determination period.

6.4 Proposed capital expenditure for the 2022 determination period is efficient

Our forecast capital expenditure reflects deferrals from the 2019 determination period

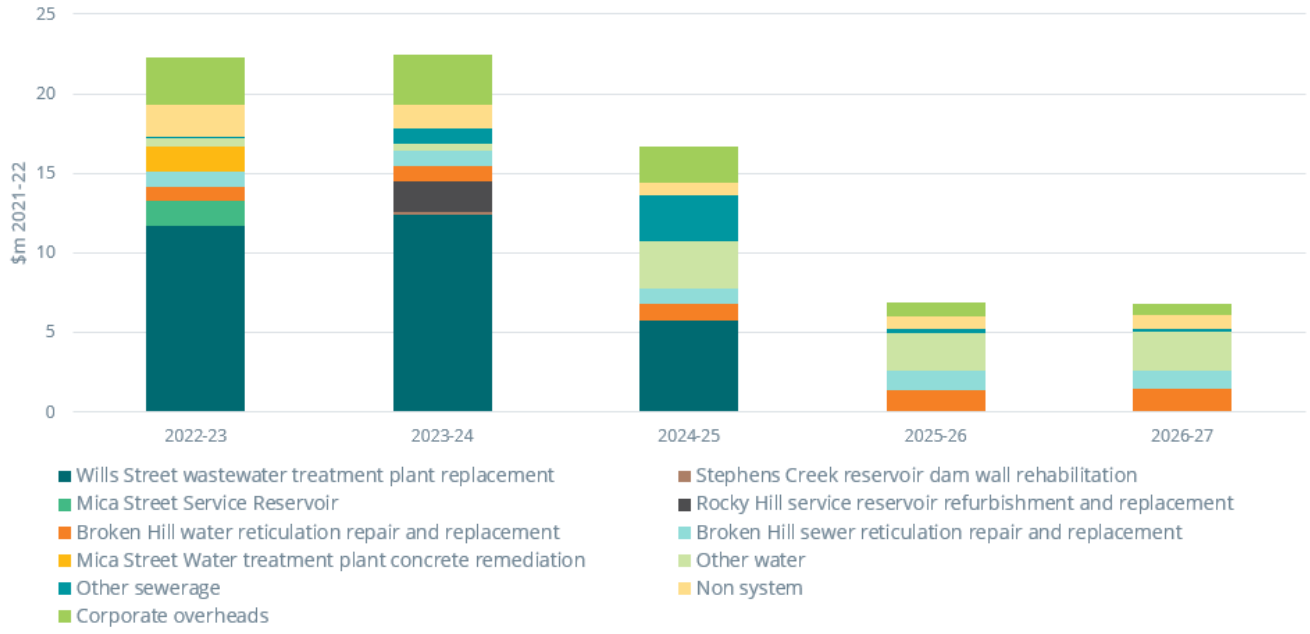
We forecast total capital expenditure over the 2022 determination period of $75.1 million, comprising $22.9 million for water services, $46.2 million for sewerage services and $6.0 million for non-system assets (Table 12). This expenditure is required to ensure that we continue to meet customer service levels and our legislative and environmental obligations.

Table 12: Proposed efficient capital expenditure for the 2022 determination period ($2021-22, $000)

	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Water	5,309	4,143	4,690	4,330	4,367	22,839
Sewerage	15,000	16,805	11,117	1,680	1,592	46,192
Non-System	1,944	1,481	853	856	856	5,989
Total	**22,252**	**22,429**	**16,660**	**6,865**	**6,815**	**75,021**

Figure 11 sets out our direct capital expenditure for our key projects over the 2022-27 determination period. The following sections provide further details on these projects.

Figure 11: Key projects direct capital expenditure 2022-23 to 2026-27 ($million, $2021-22)



We have the capacity to deliver this capex program

We have the systems and processes in place to deliver this capex program efficiently and effectively. We have reduced the underlying capex in the forecast in line with our current capex delivery. The IWCM process has focused on identifying high priority assets and programs.

Overall, we are moving our capex delivery to a system in which most major projects, such as the Wills Street wastewater plant, are outsourced, with Essential Water focused on smaller projects and day-to-day operations. This makes the most of in-house capability, manages risk efficiently, and allows more efficient management of ongoing capex programs alongside operating expenditure.

An overview of some of the major capex programs and projects is provided below.

6.4.1 Wills Street wastewater treatment plant replacement

Our largest and most significant project is the $30.9 million replacement of the Wills Street wastewater treatment plant ($1.0 million forecast expenditure in the 2019 determination period and the balance in following period). This plant was built in the 1930s and is nearing the end of its useful life. The plant needs to be replaced to ensure that we comply with our environmental obligations and service standards.

This project was deferred until 2021-22 as part of IPART's 2019 Determination. IPART was concerned about our ability to deliver the capital program over the 2019-22 determination period and decided to defer this replacement. IPART encouraged Essential Water to complete a comprehensive business case in the first two years and commence works in the third year of the 2019 determination period. We are currently finalising a comprehensive business case (see Box 6.2) and will progress preliminary work in 2021-22.

Box 6.2 Wills Street wastewater treatment plant business case

Broken Hill currently has two sewage treatment plants (STP's), the Wills Street and South Broken Hill STP's. The Wills Street STP was commissioned in 1939, upgraded in 1956 and again in the 1980's. This STP is at the end of its serviceable life and requires replacement to ensure compliance with its NSW Environment Protection Authority (EPA) Licence for discharges. Treated effluent from the Wills Street STP is reused by local mines and the Broken Hill Golf Course. Excess effluent is piped to the White Leeds wetland. The South Broken Hill STP was built in the 1960's and is in a relatively poor condition reflecting the age of the plant. This STP now requires significant remedial works to ensure reliable ongoing service and compliance with its EPA Licence for discharges.

The **primary objective** of this project is to enable Essential Water to meet its EPA licence for Wills St and South STPs. The objective(s) in detail are:

- Ensure ongoing compliance with the EPA Licence requirements for Wills St STP
- Reduce operating costs of sewage treatment in Broken Hill
- Complete the majority of the upgrade of Wills St STP by 2024-25
- Provide opportunity for greater use of recycled water within Broken Hill and reduce the use of potable water on parks, gardens, and commercial use where appropriate.

The adopted upgrade strategy is a consolidation of the two STPs at the Wills Street site. The Intermittently Decanted Extended Aeration (IDEA) process has been selected as the preferred technology based on the Public Works Advisory (PWA) Option Study.

The implementation of the project is scheduled to commence in July 2021 and will be completed by June 2025.

This project will be outsourced to external service providers, with oversight from Essential Water. This will include the oversight of the planning approvals, project establishment, design, construction and transition to operations. A procurement strategy identified the use of a traditional design and construction approach to engagement with the construction market. This will be further refined during the detailed planning phase and prior to tendering of the works.

In April 2021, the EPA updated the conditions of our licence for the Wills Street plant to increase the standards of the treated effluent to meet contemporary standards. The age and condition of our plant means it is currently unable to meet those standards. Urgent action to upgrade Wills Street is therefore required to ensure we do not violate our EPA licence.

This work will be undertaken over 4 years (2021-22 to 2024-25) at a total cost of $30.9 million. We consider that we can deliver this project on time and on budget by relying on external service providers to undertake this significant and time critical work.

This project has also obtained approval for 25% funding from the NSW DPIE's Safe and Secure Water Program. The funding commitment recognises the importance of upgrading the aging treatment plant to ensure it complies with mandatory service standards. We account for this funding as a capital contribution of $7.1 million in estimating our revenue requirement for the 2022 determination period.[19]

6.4.2 Stephens Creek reservoir dam wall rehabilitation

For the 2019 Determination we proposed $2.1 million ($2018-19) for Stephens Creek dam wall rehabilitation works. We considered that these works were needed to reduce the risk of dam failure, with potential risk of loss of life and assets.

Following consultation with the Dam Safety Committee, IPART decided to exclude the proposed Stephens Creek dam wall rehabilitation costs until new dam safety legislation was in place and encouraged Essential Water to review the need for the works during the next determination period.

[19] The capital contribution of $7.1 million is calculated as 25% of the project direct capital expenditure excluding divisional overheads, which is $28.5 million.

We propose to undertake this review as part of a comprehensive assessment of the role of our reservoirs in our Water Storages Strategy, discussed in Chapter 7.

6.4.3 Mica Street service reservoir replacement

Mica Street No. 1 service reservoir was constructed in 1892, has serious structural issues and is beyond refurbishment. We have decided to convert a decommissioned 3ML tank (No.3 service reservoir) to replace the old No. 1 service reservoir. Replacing the No. 1 service reservoir with the proposed No. 3 service reservoir will provide the following benefits:

- Network capacity: meeting demand during peak summer months
- Optimise energy costs: providing reservoir storage capacity to permit pumping at high rates during low energy tariffs
- Network risk reduction: providing an additional 3ML accessible emergency storage during failure periods of the Mica Street Water Treatment Plant
- Pumping redundancy: No. 3 service reservoir will provide positive suction pressure to the largest pump, booster No. 4 and increased capacity for booster pumps No.1-3
- Network risk reduction: providing a second storage to permit the removal of the No. 2 steel service reservoir from service to restore its internal lining and perform emergency and planned repairs.

Work will be conducted during 2021-22 and 2022-23, at a cost of $3.1 million.

6.4.4 Rocky Hill service reservoir refurbishment and replacement

Essential Water provides water and sewerage services to approximately 10,500 customers in Broken Hill, Menindee and surrounding smaller communities. Raw water is treated to potable standards at the Mica Street Water Treatment Plant and then stored in two service reservoirs at Mica Street. From here, the water is distributed to other strategically placed service reservoirs around Broken Hill, which in turn deliver water to dedicated service districts for household consumption.

One of the locations of the strategically located service reservoirs is on Rocky Hill. This repurposed gas tank was installed in the late 1970's with a capacity of 4.6ML and was painted internally (in 1980) to protect the steel structure of the tank. The internal protective painting for such service reservoirs usually lasts around 15 years. Monitoring of the tank has indicated that the internal protective coating is reaching the end of its life.

The Rocky Hill service reservoir is located at the highest relative level in the treated water reticulation system. The reticulation system uses gravity to generate pressure for the reticulation system. As there is no other tank higher than Rocky Hill that could supply water pressure to this dedicated zone, this poses the operational issue as to how to service this district while the existing Rocky Hill service reservoir is taken offline for approximately three months while preparation, repair and the internal repainting is carried out.

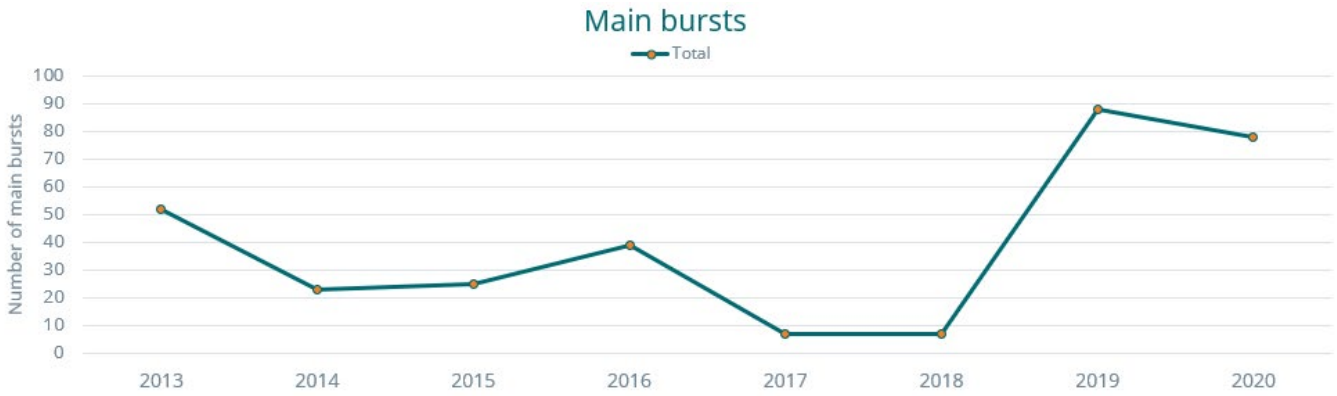
We are building a supplementary 2.5ML tank at the Rocky Hill site to solve the problem of maintaining a supply while the existing tank is taken off-line for internal surface repair. This new tank will have the same hydraulic profile as the existing tank – i.e., the same floor and top water level. This volume of the tank is optimal for the future needs of the reticulation system.

We expect these works to be completed in 2023-24 at a total cost of $1.9 million.

6.4.5 Broken Hill water and sewer reticulation repair and replacement

Main bursts have increased in the Broken Hill reticulation network from 7 bursts per year in calendar year 2017 and 2018, to 88 bursts in 2019. Based on recent data, there were 78 main bursts in 2020. This increase in main bursts has resulted in an increase to maintenance costs and has raised concerns that if this trend continues it will impact Essential Water's ability to maintain the required quality, reliability and security of water services for customers and the community.

Figure 12: Essential Water main bursts 2013-2020



There is a strong relationship between the age of pipelines and the rate of failure. Essential Water's recent investigations have revealed most bursts were occurring in cement pipes that were laid in the 1960s, a majority of the burst cement pipes were approaching their 60-year asset life and the concrete pipes show significant internal and external deterioration.

Essential Water has 120kms of cement water mains that were installed before 1965 and require replacement at approximately $600,000 per km. We expect to spend $10.7 million (direct costs excluding corporate overheads) on these repairs and replacements over the 2022-27 determination period.

6.4.6 Mica Street Water treatment plant concrete remediation

In 2014-15, we engaged City Water Technology to assess the condition of the concrete infrastructure at the Mica Street water treatment plant. City Water Technology found that operating the Mica Street water treatment plant at the low pH conditions required for greater organics removal (enhanced coagulation), caused calcium to be leached from concrete and that seal coating of the concrete surfaces would be required to protect the tanks from further degradation. Once the concrete surfaces are sealed, the operations team would have the confidence to continue the use of enhanced coagulation for the improved reduction of organics as the design originally intended.

Unless we recoat the concrete, the strength of the structures will be affected, resulting in asset failure prior to reaching its design life or the need for extensive remediation. It is important to undertake the works as soon as practical to mitigate further deterioration. Further degradation would increase the costs of this investment.

Essential Water's proposal for $1.8 million ($2018-19) to undertake the concrete remediation at Mica Street water treatment plant was rejected in IPART's 2019 Determination. IPART considered the repair costs were not efficient because corrosion protection should have been installed at the time of construction.

Since that time Essential Water has been engaged in legal action regarding the concrete degradation. As a result of this legal action, Essential Water has received a $500,000 settlement from the service provider for the concrete degradation.

The successful settlement demonstrates Essential Water did not act inefficiently by failing to require corrosion protection be installed at the time of construction. We are therefore seeking funding for this urgent and important work.

We expect these works to be completed in 2022-23 at a cost of $2.5 million.

6.4.7 Non-system assets

Non system expenditure is an important support cost associated with providing network infrastructure. Our proposed capital expenditure program of $6.0 million contains the following "non system" expenditure categories:

- **Information Technology (IT) ($3.5 million):** During the 2022 determination period, Essential Water will undertake a steady level of IT investment to ensure the provision of an affordable network service to our customers. Our investment in technology is aimed at improving efficiency and lowering operating and capital costs over time. We are looking to investigate the introduction of smart meter technology that will allow for us to monitor pipelines to improve the efficiency of our operations. Enhancements to pressure monitoring are intended to aid in burst detections, as are potential integrations between SCADA and

Mainpac for workflows. We will continue to investigate how we can utilise advancements in technologies to further drive productivity.

- **Furniture, fittings, plant and equipment (FF, P&E) ($0.2 million**): Minor expenditure is proposed over the 2022 determination period to replace furniture, fittings, plant and equipment.
- **Motor vehicles ($1.9 million):** Most of our network programs are carried out using heavy and light commercial vehicles, so managing our fleet assets efficiently is vital and the impact of fleet reliability on work program efficiency is part of our fleet asset management strategy. We have forecast a steady investment in our fleet, to ensure customer prices reflect the optimum balance between new vehicle costs and maintenance and repair costs. This is particularly important given the size and nature of our service area.
- **Buildings ($0.4 million):** Essential Water manages properties across an expansive area. Each site requires ongoing investment and maintenance to ensure we comply with relevant workplace safety legislation and to support the efficient delivery of network investment programs.

6.4.8 Overheads

We have allocated corporate overheads to our capex. Essential Water's overhead costs are allocated from Essential Energy in accordance with our CAM, which is outlined in detail in Chapter 7.

Based on the direct application of this CAM, the corporate overheads amount that would be allocated to Essential Water capex is $17.5 million. However, we recognise the importance of maintaining affordability for our customers, so have decided not to propose collecting the full amount of corporate overheads in the NRR. We propose to collect a total of $9.9 million over the regulatory period, $7.6 million lower than total expected costs. This is outlined in further detail in Table 17 in Chapter 7.2.6.

7. Operating expenditure (excluding pipeline bulk water costs)

Operating costs (excluding bulk water purchases) make up around 28% of our NRR each year. These costs include labour, energy, hire services, materials, plant, fleet and corporate overheads.

In this chapter we discuss our operating expenditure for the 2019 determination period and forecasts of our efficient operating expenditure for the 2022 determination period.

Key messages

- Our operating expenditure (opex) forecasts have been designed to be both prudent and efficient, while also supporting a safe and secure water supply to our customers.
- Essential Water has entered a new era of water supply to Broken Hill from the Murray River, establishing a steady state operating environment. Our operating and maintenance activities are fit for purpose, reflect our operating constraints and regulatory requirements, and seek to minimise costs in the long-term interests of customers.
- Over the 2019 determination period, we expect to incur operating expenditure (excluding bulk water pipeline costs) of $45.9 million. These costs are $7.5 million or 20% higher than IPART's allowances for the 2019 determination period.
- The main drivers of higher costs in the 2019 determination period are labour and, relatedly, corporate overheads and fleet costs. The 2019 determination period operating expenditure allowance was based on large reductions in expenditure which would not have allowed us to meet our service standards.
- We forecast efficient operating expenditure (excluding bulk water pipeline costs) of $73.1 million over the 2022 determination period. These forecasts are in line with our actual costs over the 2019 determination period, updated for our transformation strategy and taking into account our operating environment.

7.1 Operating expenditure over the 2019 determination period

The principal components of our operating costs are labour (salaries and wage), contractors, materials (chemicals), property, electricity, fleet, and other costs specifically related to water (e.g. travel). We also incur operating costs for accessing bulk water from the Broken Hill Pipeline (see Chapter 8).

Table 13 sets out our actual operating expenditure (excluding bulk water purchases) over the 2019 determination period and compares it to IPART's allowances from the 2019 Determination. Over the 2019 determination period, we expect to incur operating expenditure (excluding bulk water pipeline costs) of $45.9 million. These costs are $7.5 million or 20% higher than IPART's allowances in the 2019 Determination.

Table 13: Actual operating expenditure and IPART allowances, excluding bulk water purchase costs ($000, $2021-22)

	2019-20	2020-21	2021-22	Total
IPART allowance	13,163	12,755	12,434	38,353
Actual	14,435	14,946	16,492	45,874
Variation	**1,271**	**2,191**	**4,058**	**7,520**

Figure 13 presents a breakdown of the differences between our actual operating expenditure and the operating expenditure allowance over the 2019 determination period. Several of the drivers of our actual operating expenditure are discussed further below:

- Labour cost reductions have been limited by operational constraints

- Corporate overheads are driven by our allocation from Essential Energy
- Fleet costs are higher due to our operational needs
- Materials and energy costs have decreased due to greater use of the Broken Hill pipeline.

Figure 13: Differences between actual operating expenditure and IPART allowances over the 2019 determination period, excluding bulk water purchase costs ($million, $2021-22)

Operational constraints limited our ability to achieve labour savings

As part of our proposal to IPART's 2019 Determination, we forecast expenditure savings following the decommissioning of the Menindee pipeline and associated pumping stations. However, we are not able to decommission the Menindee pipeline until the graziers' pipeline is completed. As discussed in Chapter 6, heritage issues and further consultation has delayed the completion of the graziers' pipeline. As a result, we do not expect the Menindee pipeline to be decommissioned until June 2022.

In addition, we have been subject to a NSW Government Direction that limited our expected reduction in headcount to natural attrition. In 2019, we received a direction from the NSW Government preventing forced or voluntary redundancies for 12 months, which recognised our important role as an employer in our community. Compliance with the directive meant we were not able to achieve headcount reductions in 2019-20. Whilst the Direction has now expired, it is not practical or desirable for Essential Water to deviate from this obligation too quickly or significantly, recognising the significant economic impact of COVID on our community.

Despite the above factors, we have managed to achieve reductions of ~10% in headcount through natural attrition but not to the extent expected by IPART.

As outlined in Chapter 6.4.5, mains bursts have also increased significantly in recent years. This has required a diversion of labour resources from capex to opex to address breaks and leaks. This has exacerbated the allocation expectations that IPART had for labour.

Importantly, we face unique operational risks in reducing labour expenditure further. Our climate, size and location creates challenges in attracting and retaining the skilled labour required to maintain, operate and renew our system. Our remote location means we must retain core skill sets in-house, to ensure we have ready access to the resources required to maintain a secure and reliable water supply.

These operational constraints have important implications for the cost of our activities moving forward.

Essential Water's corporate overheads reflect our allocation from Essential Energy

IPART's 2019 Determination assumed a series of reductions in corporate overhead costs. Essential Water's proposed overhead allocation rate of 18% was reduced to 17.5% for 2019-20, 17% for 2020-21 and 16.5% for 2021-22 of all direct operating and capital expenditure for both water and sewerage.

Essential Water's overheads are determined by the CAM of Essential Energy. Essential Water has limited control to deliver the reductions in its corporate overheads assumed by IPART. Our corporate overhead allocation is $2.4 million higher than IPART's allowance.

Further information on the corporate transformation program is contained later in this section.

Higher fleet costs reflecting staff numbers, upgrades, and safety improvements

Our vehicle fleet costs reflect a share of Essential Energy's fleet costs based on the number of hours fleet assets are used to provide Essential Water's services. Both Essential Energy's total fleet costs and the number of hours that assets are used to provide Essential Water services have increased over the 2019 determination period. This reflects:

- Limitations on our capacity to control our labour costs, and the necessity of ensuring our staff have access to the fleet required to undertake their functions
- The increase in Essential Energy fleet costs associated with an increase in maintenance works undertaken in-house over the 2019 determination period
- The renewal and upgrading of Essential Energy and Essential Water's fleet to ensure it is fit-for-purpose via a targeted reduction in age profile
- The installation of In-Vehicle Monitoring Systems (IVMS) in all Essential Energy and Essential Water vehicles to ensure the safety of our team.

The increase in fleet costs associated with changes to in-house maintenance and fleet upgrades will drive cost savings in the future, predominantly via a reduction to our corporate overheads.

The In-Vehicle Monitoring System is necessary to ensure the safety of our team (see Box 7.1). It reflects the cost of doing business safely in remote and regional locations.

Our fleet costs over the 2019 determination are $2.0 million higher than IPART's allowance.

Box 7.1 Essential Energy's In-Vehicle Monitoring System

Essential Energy vehicles travel around 40 million kilometres each year. In Vehicle Monitoring Systems (IVMS) have been installed in all our operational fleet vehicles, improving safety, helping us better manage our fleet, and reducing costs. IVMS measures the asset, speed, and location of our vehicles. It also allows immediate response in the event of duress, in addition to automatic activation from sudden impact. It includes a duress button that can be manually activated if the occupant is under threat or in an accident.

The IVMS was part of a long-term strategy for technology driven improvements. Its implementation was brought forward following the roll-over of a vehicle in a remote location and the significant benefits from improving the safety of our employees and their workplaces. Many employees work in areas without good communication signals and away from passing traffic. Additional benefits of IVMS were highlighted recently when an Essential Energy employee came across a person trapped in a vehicle following an accident in a mobile phone blackspot. Essential Energy employees were able to alert the control room through the IVMS to initiate an emergency response with the NSW Ambulance Service.

Lower chemical and energy costs from greater use of water from the Broken Hill Pipeline

Since the 2019 Determination we have largely met demand using water from the Broken Hill Pipeline. The water from the Broken Hill Pipeline is higher quality than our historical water sources. This has resulted in a reduction in the chemical and energy costs required to treat water before distributing it to our customers. Our forecast materials and energy costs are $2.8 million lower than IPART's allowances over the 2019 determination period.

We've updated our cost reporting approach to increase transparency

From 2020-21 onwards, we've updated our approach to reporting operating expenditure breakdowns, better aligning with our Statement of Corporate Intent. The main change has been to move from allocating support expenditure across reporting categories to reporting support costs within each respective category. For example, support labour was previously allocated between categories but is now reported entirely within labour. Overall, this has increased the cost allocation to labour, and decreased the cost allocation to other categories. We consider this improves transparency and supports our ongoing efforts to ensure all operating expenditure is efficient and supports the long-term interests of our customers.

7.2 Proposed operating expenditure for the 2022 determination period

Our proposed operating expenditure is prudent and efficient, while also meeting the quality and service levels required by the industry and our customers. In the 2022 determination period, we are focused on making incremental improvements by improving our systems and the implementation of our corporate transformation program to position us to deliver future efficiency gains that are achievable without compromising current levels of service, quality and reliability. This is an ambitious goal given the constraints we face and reflects our commitment to the long-term interests of our customers.

Table 14 sets out our forecast operating expenditure for our water and sewerage services for the 2022 determination period, excluding the cost of bulk water purchases. We forecast efficient operating expenditure (excluding bulk water pipeline costs) of $73.1 million over the 2022 determination period. These forecasts are in line with our actual costs over the 2019 determination period, adjusted for any one-off expenditures and taking into account our operating environment.

Overall, operating expenditure is forecast to decrease over the period, by approximately 16% from 2021-22 to 2026-27.

Table 14: Proposed efficient operating expenditure ($000, $2021-22)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Water	13,635	12,863	12,097	11,942	12,039	11,413	60,354
Sewerage	2,857	2,624	2,567	2,550	2,578	2,447	12,765
Total	**16,492**	**15,486**	**14,664**	**14,492**	**14,617**	**13,860**	**73,119**

Table 15 and Table 16 provide a breakdown by expenditure category of our proposed operating expenditure for water and sewerage services.

Table 15: Proposed efficient operating expenditure for water services ($000, $2021-22)

	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Labour (excluding employee provisions)	6,433	6,432	6,223	6,348	6,223	31,659
Hire services (contractors)	1,365	880	895	913	828	4,881
Materials	803	776	896	914	830	4,219
Energy	705	682	466	476	432	2,761
Licence fees	262	253	246	251	227	1,238

	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Fleet	1,107	1,052	1,270	1,299	1,161	5,888
Other	104	101	104	101	113	523
Direct Costs	**10,779**	**10,176**	**10,100**	**10,301**	**9,814**	**51,169**
Corporate overheads	2,084	1,921	1,842	1,738	1,600	9,185
Total	**12,863**	**12,097**	**11,942**	**12,039**	**11,413**	**60,354**

Table 16: Proposed efficient operating expenditure for sewerage services ($000, $2021-22)

	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Labour (excluding employee provisions)	1,489	1,489	1,441	1,470	1,441	7,330
Hire services (contractors)	354	342	348	355	322	1,722
Materials	123	119	137	140	127	647
Energy	84	82	56	57	52	331
Fleet	233	222	267	274	245	1,240
Direct costs	**2,284**	**2,254**	**2,250**	**2,296**	**2,187**	**11,270**
Corporate overheads	339	313	300	283	260	1,495
Total	**2,624**	**2,567**	**2,550**	**2,578**	**2,447**	**12,765**

The types of activities we undertake in providing water and sewerage services are summarised in Box 7.2.

Box 7.2 Major operating activities

The following section provides an overview of the approach we used to establish efficient operating expenditure forecasts. We then provide further details on the key factors impacting each expenditure category.

Mains and pipelines

Water – Operational activities include patrols and inspections, specialised testing and recording (primarily of wall thickness, pressure and flow measurements), inspection of cathodic protection equipment, noting and logging cathodic protection instrument readings, programmed maintenance including replacement of sections of pipe, patches and repairs or replacement of concrete chairs. Maintenance also includes emergency repairs.

Sewerage – Operational activities include patrols and inspection of the sewerage system. Maintenance activities include clearing blockages and cleanout with a high-pressure jet and vacuum pumps, emergency and planned repairs and replacement of pipe sections.

Reservoirs and tanks

Water reservoirs – These costs include inspection, measurement and recording of water levels and quality, inspections and reports associated with dam maintenance and keeping surrounding catchments clear of weeds, tree growth and obstructions. Expenditure also includes inspection and maintenance of associated plant, valves, pipes, buildings, and fences.

Water tanks – Costs are associated with inspection and reporting on tank condition, inspection of cathodic protection equipment, noting and logging cathodic protection instrument readings, periodic tank cleanout and inspection and maintenance of associated plant, valves, pipes, buildings, and fences. Tanks periodically require exterior painting and repairs to corroded equipment such as hatch covers.

Pumping stations

Water – Costs are associated with inspection, testing and measurement of the condition of electrical and mechanical equipment. Measurements include pump pressures, flow rates, efficiency, vibration, and tolerances. Other costs involve repairs to failed plant, lubrication and service of mechanical and electrical plant, inspections, testing and reporting on ancillary services, such as building lights and power, SCADA control, fire-fighting equipment, security and communications equipment. Building and grounds maintenance, station operational requirements, changeover pumps, open/close valves and electricity consumption to operate pumps are covered in this category.

Sewerage – Costs are similar to water but on a smaller scale and involve additional clearance of blockages and cleanout with a high-pressure jet and vacuum pumps.

Reticulation

Water – Costs are associated with patrol, inspection and testing (especially for leaks), emergency and planned repairs, systematic operations of reticulation apparatus, valves, and hydrants. Periodic cleanout of pipes with high pressure air injection also falls under this category.

Sewerage – Costs are associated with patrol, inspection and testing (especially for root invasion), emergency and planned repairs, systematic operations of reticulation apparatus, valves, and hydrants. Clearance of blockages and cleanout with a high-pressure jet and vacuum pumps are also included.

Water Treatment Plants

The water treatment plant is operated on a 24/7 basis with the following Shift Operator functions:

- act as the after-hours call centre, vetting urgent and non-urgent customer response calls and water and sewerage station faults, calling out after-hours field staff as required or monitoring the situation to determine if response can be delayed until regular working hours
- offload chemical deliveries, load chemical feeders and respond to chemical feeder problems
- monitor SCADA alarms, reservoirs, tank storages, sewerage stations and security
- optimise energy costs by controlling remote pumping stations and water treatment plants in accordance with time of use energy tariffs
- respond to changes in water quality and demand, undertake routine and emergency water sampling to ensure compliance with the Australian Drinking Water Guidelines and respond to online instrument problems, and
- maintain operational records.

Other costs include inspection, testing and condition monitoring of electrical, mechanical, chemical and filtration equipment. Monitoring includes filtration and pump pressures, flow rates efficiency, vibration, and tolerances extending the time between major overhauls where practical. Repairs to plant failure, lubrication and service of mechanical and electrical plant are covered by this category.

Further costs are associated with building and grounds maintenance, inspection, testing and reporting on ancillary service, such as building lights and power, fire fighting equipment, SCADA, security, and communications equipment. Treatment plant operational requirements, changeover pumps, open / close valves and electricity consumption to operate pumps are included in this category.

Sewerage Treatment Plants

The Wills Street and South Broken Hill treatment plants are manually operated throughout normal working hours, with the operators scheduling, controlling, and switching the pumps, filters, and digesters, as well as transferring and storing sludge from tanks to drying beds, and final storage locations. Operation of the ultraviolet recycled water disinfection system and pumps is also included. Operational costs cover similar items to water, but on a smaller scale.

7.2.1 Approach to establishing operating expenditure forecasts

We have a robust approach to establishing operating expenditure forecasts

We developed our forecasts of efficient operating costs over the 2022 determination period. For each cost category we:

- Considered our performance over the 2019 determination period to identify any new drivers of expenditure, including for example our lower chemical and energy costs because of the Broken Hill Pipeline
- Identified the key drivers of costs over the 2022 determination period
- Forecast costs to reflect the movements in key drivers over the 2022 determination period.

We discuss the drivers for each of the key expenditure categories below.

7.2.2 Labour and hire services (contractors)

We are delivering savings in labour and hire services costs

Labour and hire services (contractors) costs make up 62% of our forecast operating expenditure over the 2022 determination period.

Given the importance of this cost, we plan on actively managing staff numbers over the 2022 determination period, to the extent possible given our operational constraints. Essential Water has an aging workforce, with 39 per cent of full time employees between the ages of 56 and 70. We have undertaken strategic planning in the context of this

aging workforce, recognising the need to recruit and train new team members to manage the risk associated with retirement of labour with specialist skills. This strategic planning has identified that there are major challenges in reducing our labour costs in real terms between 2020-21 and 2026-27, given the need to recruit and train replacement staff. We forecast a small increase to labour costs in 2021-22 from the introduction of trainees. As natural attrition occurs over subsequent years, this will decrease. However, future reductions are limited, as discussed earlier in section 7.1.

Consistent with our enterprise agreement, we expect to hold wages constant in real terms.

We are developing efficiency initiatives to manage our ongoing labour costs. These include:

- Reducing overtime and travel costs: we have continued the efficiency initiatives that commenced during the 2019-22 determination period. These include minimising overtime levels, with any overtime now almost exclusively related to unplanned work, as well as reducing travel costs.
- Better tracking and cost controls: we undertook an initiative to consolidate our cost codes to better reflect the departments and assets. This will help us track and control costs more effectively.

From these efficiencies we forecast a reduction in labour costs of approximately 10% from 2021-22 to 2026-27, despite the significant challenges from our operating environment.

Essential Water also incurs expenditure for hire services, which includes contractor and consultant fees. We are forecasting hire service costs to remain at typical historical average levels of approximately $1.2 million per annum over the 2022 determination period, except for 2022-23. We have forecast an additional $0.5 million of expenditure in this year to prepare a water storages strategy (see Box 7.3). This strategy is critical to inform the ongoing function and therefore expenditure requirements of our water storages.

Box 7.3 Essential Water's Water Storages Strategy

We identified the need to prepare a Water Storages Strategy during the preparation of our Integrated Water Cycle Management Strategy.

Since the commissioning of the Broken Hill Pipeline, Essential Water has been operating Stephens Creek reservoir as an emergency water source. However, the history of unreliable rainfall and no runoff means water may not be available at Stephens Creek for long periods when emergency supply may be required.

Infrastructure at Stephens Creek is aging. A better understanding of the future use of Stephens Creek reservoir in the context of Essential Water's system is required, to establish the future operating regime of Stephens Creek reservoir and the associated expenditure requirements.

We have budgeted to undertake a comprehensive water storages strategy in 2023, at a cost of $0.5 million.

7.2.3 Materials and energy

Our materials and energy costs are stable reflecting our steady operating environment

Our materials and energy (electricity) costs have stabilised following the commissioning of the Broken Hill Pipeline. As noted above, we have also reduced our spend on chemicals compared to historical levels. These are now at a steady state, and we've held costs for treating water constant at current levels. We forecast other materials, largely associated with the maintenance program, to remain relatively flat overall but with fluctuations driven by the expected maintenance program.

We forecast some ongoing reductions in energy expenditure over the 2022 determination period, due to Essential Energy contract negotiations.

7.2.4 Licence fees

Our licence fees are stable, reflecting our steady operating environment

Our licence fees are an uncontrollable cost, mostly associated with drawing water from the Murray River. Similar to materials and energy, our licence fee costs have stabilised over the last two years, and we expect them to remain relatively flat throughout the 2022 determination period.

7.2.5 Fleet costs

Our fleet costs reflect our operating environment

We expect our fleet costs to remain relatively constant over the 2022 determination period. Our fleet costs are a function of our staff numbers, which we have limited flexibility to manage in practice as outlined above. Fleet costs are an allocation from Essential Energy, with the total driven by the CAM outlined in Box 7.4.

7.2.6 Corporate overheads

Corporate overheads relate to centralised functions undertaken by Essential Energy on behalf of Essential Water. The main components of these costs relate to governance, information technology, human resources, billing, finance and safety.

In its 2019 Final Report, IPART recommended that Essential Energy should continue to pursue efficiencies in its corporate operating costs and identify a more accurate way of attributing corporate overheads to Essential Water at its next pricing review. This recommendation was based on the findings of IPART's expenditure review consultant, Aither. Specifically, Aither recommended that Essential Water should undertake a bottom-up assessment of its corporate related functions to better establish its forecast operating cost needs.[20]

This recommendation has been addressed through the Essential Energy CAM and corporate transformation, discussed in turn below. We recognise that minimising costs is crucial for maintaining affordability for our customers. Therefore, we have not included the full amount of corporate overheads determined by the CAM in our NRR.

Our cost allocation methodology is approved by the AER

We have developed our forecasts of efficient corporate operating costs using the Essential Energy CAM. The CAM is based on the principles shown in Box 7.4 and has been developed according to the requirements contained in the National Electricity Rules and approved by the AER. It is consistent with IPART's principles for cost allocation.[21]

[20] IPART, Review of Essential Energy's prices for water and sewerage services in Broken Hill – Final Report, 2019, p 52.

[21] IPART, Cost allocation guide Water Industry Competition Act 2006 – March 2018. p 13.

Box 7.4 Essential Water's cost allocation methodology principles

The CAM is based on the following principles:

- costs are directly attributed to, or allocated between, categories of distribution services, based on the substance of the underlying transaction or event, rather than its legal form,
- the same costs are not allocated more than once,
- costs will not be re-allocated between service lines during a regulatory control period,
- direct costs can only be attributed once to a single category of distribution services and shared costs are only allocated once between categories of distribution services,
- shared costs are collated into a pool and allocated across standard control services, alternative control services, unclassified distribution services and unregulated business activities, including water and sewerage services for Essential Water, and
- detailed principles, policies and the approach used to attribute costs directly to categories of distribution services are consistent with the AER's Ring-Fencing Guideline. That is, only costs associated with distribution services are attributed or allocated to distribution services and using the principles set out in the CAM.
- Essential Energy uses one allocator – direct costs – to allocate its shared costs. This allocator is used because it best reflects the way that shared costs are driven across the business and its services.

Our corporate transformation will deliver savings for customers

Since the 2019 Determination, Essential Energy and Essential Water have commenced a corporate transformation program. Costs of the transformation are expected to peak in 2023-24. Savings from this program will be delivered from 2024-25, and fully realised from 2025-26. Box 7.5 includes a description of key elements of corporate transformation program and the associated benefits.

Box 7.5 Essential Energy and Essential Water's Corporate Transformation Program

Essential Energy has plans to invest around $250 million in new technology and systems, that will facilitate a material reduction in future expenditure and uplift cyber security for critical infrastructure. This will deliver long term benefits to customers across regional, rural, and remote NSW. These plans have been supported by customers and the AER as they will result in long term benefits for customers. To establish a sustainable operating model in the longer term, we need to transform our business framework and redefine the way we operate and perform.

The transformation project consists of multiple initiatives. A number of key achievements have already been completed, including:

- Enterprise Resource Planning (ERP) – We have just gone live with the first release of our new ERP system, introducing more efficient HR processes and procurement activity.
- Field Portal Digital tools – Field digitisation via iPads and Field Portal making it easier for our employees to do their jobs. We have also digitised a number of paper-based forms, streamlining operations for our frontline staff and making our service delivery more efficient.
- Customer contact system (ServiceNow) – We have implemented ServiceNow which has transformed the way we interact with our customers and improved workflows within the organisation.
- Interactive Voice Response (IVR) – Improved customer call answering system giving customers the information they need and reducing call volumes
- In -Vehicle Monitoring Systems (IVMS) – We have installed IVMS in all Essential Energy and Essential Water operational fleet, improving vehicle safety across our footprint helping us better manage our fleet, reduce costs, and improve safety.
- Copperleaf C55 – The management of our capital expenditure program has improved significantly using a best of breed risk optimisation tool (Copperleaf C55) which has and will continue to reduce costs because we can better target our resources to the work that is most important.
- Data enablement – The accuracy of data has been improved which has led to improved decision making. We have also automated how data is transferred throughout the organisation.
- Workforce planning framework – We have just started a pilot of a workforce planning framework and digital tool to help us better match our workforce to the needs of the future.
- Cyber Security – The cyber safety of our business has improved significantly, and we are on target to deliver on our critical infrastructure plan. We have improved our systems and processes to manage escalating cyber risks.
- Concur – We have implemented a new travel and expense management system making it easier and more efficient for our employees.
- Zoom – We implemented zoom video and teleconferencing which has transformed the way we work together. This has been critical during the pandemic to ensure teams remain connected and productive in the work environment.
- Capability uplift – The roll out of training programs to uplift the capabilities of our workforce are also underway, for example, technology enabled contract management uplift training has been delivered to almost 100 business contract managers.

Future work includes:

- Increased sophistication of asset management – This will include a best of breed Enterprise Asset Management System (EAM), improved management of the investment and works pipeline, digital twin capability and a fully integrated risk valued approach to work.

- Efficient works delivery – This will include scheduling, dispatch and field logistics, inventory optimisation, efficiency through work standardisation and risk-based vegetation management.
- Improved support services – This will include release 2 of the ERP system, a new framework for critical risk control, uplifted records and information management and further enhancements to the IVMS.
- Improved customer service – This will include an improved customer experience driven by streamlined connection processes, data driven analytical capabilities and uplifted technical capability
- Modernised IT environment – Through an enhanced cyber security capability and digitally enabled processes for the business, connecting all transformation initiatives.

We do not propose to recover the full corporate overhead costs allocated by the cost allocation methodology

Essential Water has developed its corporate expenditure forecasts using the AER approved CAM. The proportion of Essential Energy's corporate costs allocated to Essential Water is based on the business's share of Essential Energy's total direct expenditure. The significant expenditure program for Essential Water for the 2022 determination period means it attracts a larger share of corporate costs. This has served to increase the corporate costs proposed by Essential Water for the 2022 determination period.

Essential Energy's corporate costs are increasing, but this is to deliver a transformation program that will achieve valuable efficiencies over time. Our corporate transformation program will deliver efficiencies, but this will take time. The Workforce Redundancy Restriction, and our commitment not to move away from this restriction too quickly in the current environment, is a key consideration in our capacity to deliver the transformation strategy and valuable efficiencies in the future.

We recognise that the corporate overheads allocated to Essential Water can make up a material share of total operating expenditure. Therefore, we have not proposed to recover the full amount of corporate overheads that would be allocated to Essential Water by the CAM. We have developed our proposed corporate overheads by:

- Starting with the value from direct application of the CAM
- Removing any costs associated with transformation departments that don't directly apply to water
- Applying a 50% reduction factor to any individual items allocated to Essential Water valued at over $200,000

The outcome is proposed corporate overheads for operating expenditure of $10.7 million, which is $4.6 million lower than the direct allocation from the CAM.

Table 17: Proposed corporate overheads ($000, $2021-22)

	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Operating expenditure						
Direct application of the CAM	3,005	2,818	3,172	3,212	3,068	15,274
Proposed corporate overheads	2,423	2,234	2,142	2,021	1,860	10,680
Proposed variation	**-582**	**-584**	**-1,030**	**-1,191**	**-1,208**	**-4,594**
Capital expenditure						
Direct application of the CAM	5,518	5,855	3,805	1,211	1,135	17,524
Proposed corporate overheads	2,978	3,164	2,222	809	747	9,920
Proposed variation	**-2,540**	**-2,691**	**-1,583**	**-402**	**-388**	**-7,604**

8. Broken Hill Pipeline bulk water costs

8.1 Overview

Pipeline bulk water costs make up around 60-65% of our operating expenditure each year. Over the 2019 determination period, actual pipeline costs have been slightly higher than IPART allowed. Our forecasts for the 2022 determination period reflect our expected demand and WaterNSW's estimates of bulk water prices.

Key messages

- Over the 2019 determination period, we are expecting pipeline bulk water costs of $78.2 million. These costs are a little higher than IPART's allowances at the 2019 Determination of $76.5 million.
- Pipeline bulk water volumes were 31% higher than IPART's forecast for the 2019 determination period. We made greater use of water from the Broken Hill Pipeline to meet demand than IPART assumed. This is because Stephens Creek was less reliable than forecast due to insufficient rainfall and there are water quality risks associated with switching supply sources.
- The impact of increased volumes on pipeline bulk water costs was small as WaterNSW's charges were largely comprised of a fixed charge.
- We forecast efficient bulk water costs of $122.3 million over 2022-23 to 2026-27, or an average of $24.5 million per annum over this period. These forecasts are a little lower than our actual costs over the 2019 determination period (noting that we are now proposing a 5-year determination period) and are based on continuing to source the majority of our water demand from the pipeline.

8.2 Bulk water costs over the 2019 determination period

Pipeline bulk water volumes were higher than IPART's 2019 Determination forecasts

IPART's May 2019 Final Report noted that "Given the cost of pumping water from the Murray River to Broken Hill, we consider it is more cost effective for Essential Water to access water from its storages in preference to the Pipeline, if there is sufficient rainfall to do so."[22]

However, during the current determination period, water demand has been met with little use of Stephens Creek. Stephens Creek is effectively dry six years in ten, making the pipeline a more reliable source of supply for providing drought resilience to Broken Hill. In addition, changing the water source for the Mica Street water treatment plant from the pipeline to Stephens Creek carries a level of risk. The dosage and composition of chemicals required to treat the water varies significantly and introduces an opportunity for human error and failure to comply with the Australian Drinking Water Guidelines. Furthermore, heavily relying on Stephen's Creek places a larger burden on the existing aging infrastructure, potentially shortening its usable life.

Contractual arrangements with WaterNSW locks Essential Water into drawing 8ML a day from the pipeline. This is representative of winter demand volumes, and just less than summer demand volumes. This means there is limited flexibility for Essential Water to take volumes from Stephens Creek in winter. In summer, when Essential Water could top up pipeline bulk water volumes with water from other sources, Stephens Creek is not reliably available.

In 2020, only 108 ML of water was sourced from Stephen's Creek, with close to zero before that due to the drought. This represents less than 1.5% of Broken Hill's water. Currently, Stephens Creek is at 16.6% capacity (3,300ML), which is the minimum volume required to meet emergency requirements. Water was pumped from the Murray in 2019 to enable the capacity to reach that emergency amount. The ability to take volumes from Stephens Creek depends on rainfall increasing the available capacity substantially above the emergency amount in the lead

[22] IPART, Final Report on *Review of Essential Energy's prices for water and sewerage services in Broken Hill*, July 2019, p 99.

up to summer. Evaporation in summer, which results in the water source declining by 1cm a day, further reduces the water available for Essential Water.

For these reasons, over the 2019 determination period, the majority of our bulk water has been sourced from the Pipeline. Essential Water's purchases from Water NSW were therefore 31% higher than IPART assumed when setting prices in 2019 (see Table 18).

Table 18: Actual water sales and IPART allowances (ML)

	2019-20	2020-21	2021-22	Total
IPART's forecast of Essential Water's purchases from WaterNSW	4,401	4,387	4,370	13,158
Essential Water's actual purchases from WaterNSW	6,145	5,584	5,560	17,289
Variation	**40%**	**27%**	**27%**	**31%**

Bulk water expenditure is similar to IPART's forecast in the 2019 determination period

The price Essential Water pays to WaterNSW for bulk water comprises two components:

- a fixed service price ($ per day)
- a usage price ($ per kL of water supplied).

The vast majority of the bulk water charges paid by Essential Water are fixed. In 2019-20, fixed charges accounted for 95% of Essential Water's bulk water expenditure.

As we are sourcing a higher proportion of water from the Pipeline than IPART's 2019 Determination forecasts, our bulk water costs are higher than IPART allowed. However, since most of the bulk water supply costs consist of a fixed charge that is not impacted by volume of water supplied, there is only a small difference between IPART's allowed bulk water supply charge costs (($76.5 million across the determination period) and Essential Water's actual bulk water supply charge costs ($78.2 million across the determination period) (see Table 19).

Table 19: Actual bulk water expenditure and IPART allowances ($000, $2021-22)

	2019-20	2020-21	2021-22	Total
IPART's allowed bulk water supply charge	25,510	25,518	25,487	76,515
Actual bulk water supply charge	26,303	26,142	25,739	78,184
Variation	**3%**	**2%**	**1%**	**2%**

8.3 Forecast bulk water over the 2022 Determination period

We expect to source the majority of bulk water volumes from the Pipeline

For the reasons outlined in Section 8.2, we propose to continue to source close to all of our water needs from the Broken Hill Pipeline. This reflects:

- Our expectation of continuing to take small volumes from Stephens Creek each year, consistent with its limited reliability. Moreover, the infrastructure at Stephens Creek is aging, and by using it sparingly (predominately for emergencies) we hope to extend its usable life with minimal investment.
- The continued supply of Menindee by the Darling River.
- The losses associated with treating water and transporting it through our network to deliver to customers.

We forecast our bulk water use to be around 5.5GL per year across the 2022 determination period, as shown in Table 20.

Table 20: Proposed bulk water volumes (ML)

	2021-22[a]	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Pipeline volumes	5,560	5,539	5,517	5,496	5,475	5,453	27,480

a. Volumes reported for 2021-22 are forecast actuals.

We plan on conducting a review of our water storages strategy in 2023. This will allow us to analyse and plan for the future of water storages beyond this determination period, drawing on the experience of several years of the Pipeline's operation.

We expect bulk water costs to remain stable over the 2022 determination period

We have worked with WaterNSW to provide it with demand forecasts required to estimate bulk water prices for the Broken Hill pipeline over the 2022 determination period. Our submission is consistent with the bulk water prices proposed by WaterNSW in its submission. These prices are presented in Table 21.

Table 21: Proposed bulk water prices ($2020-21)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Fixed service price ($ per day)	67,281.0	63,693.8	63,519.8	63,693.8	63,693.8	63,693.8
Usage price ($ per kL)	0.213	0.222	0.221	0.220	0.220	0.220

Due to pipeline volumes remaining similar to current volumes and the largely fixed costs of the Pipeline, we expect bulk water costs to remain relatively stable over the 2022 determination period at around $24.5 million per year.

Table 22: Proposed bulk water costs ($000, $2020-21)

	2021-22[a]	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Pipeline costs	25,739	24,477	24,466	24,460	24,454	24,447	122,304

a. Costs reported for 2021-22 are forecast actuals.

9. Forecast sales and customer numbers

9.1 Overview

Forecast water demand, sewerage volumes and customer numbers are instrumental in calculating the water and sewerage price levels to allow Essential Water to recover its NRR, less the NSW Government contribution. It is important these forecasts are reasonable, to ensure Essential Water can recover its costs over the determination period.

Key messages

- There has not been a bounce back in demand over the 2019 determination period, as expected by IPART. Our water sales are 12% lower than IPART assumed for the 2019 Determination.
- We expect a continuation of the trend of a declining population across the service area, with marginally more connections but less occupied houses.
- Given the declining population and the relatively static demand per household, we expect water sales to gradually decline over the 2022 determination period relative to current actual sales levels.
- We expect non-residential water sales and sewerage volumes over the 2022 determination period to remain relatively consistent with actual volumes over the 2019 determination period.

9.2 Past sales and customer numbers for the 2019 determination period

There has not been a bounce back in demand

IPART's decision for the 2019 determination period was to adopt forecast metered water sales that were about 16% higher than Essential Water's forecasts. This mainly reflected IPARTs decision to incorporate a 10% 'bounce-back' in demand from customers due to increased water security resulting from the Broken Hill Pipeline.

Table 23 compares actual water sales to the forecasts IPART used to set prices in 2019. In aggregate, over 2019-20 to 2021-22, our water sales have been 12% lower than IPART forecast. This suggests that, although supply security has increased, this has not resulted in a 'bounce-back' in sales (differing to IPART's expectations in the 2019 determination).

Table 23: Actual water sales and IPART forecasts (ML)

	2019-20	2020-21	2021-22	Total
Treated water sales				
IPART's forecast treated water sales	4,840	4,827	4,811	14,478
Actual treated water sales	4,337	4,081	4,059	12,478
Variation	-10%	-15%	-16%	-14%
Chlorinated water sales				
IPART's forecast chlorinated water sales	19	19	19	57
Actual chlorinated water sales	45	43	43	132
Variation	135%	127%	127%	130%
Untreated water sales				
IPART's forecast untreated water sales	1,109	1,109	1,109	3,327
Actual untreated water sales	1,056	1,006	1,006	3,068
Variation	-5%	-9%	-9%	-8%
Total water sales				
IPART's forecast	5,968	5,955	5,939	17,862
Actual	5,438	5,131	5,109	15,678
Variation	-9%	-14%	-14%	-12%

9.3 Forecast sales and customer numbers for the 2022 determination period

9.3.1 Customer number forecasts

We expect a declining population for the 2022 determination period

In developing forecasts, we have made the following assumptions:

- Population is declining in line with NSW DPIE's projections[23]
- The number of dwellings is increasing by an average of 5 per year across the determination period (this is consistent with the trend in new connections over 2006-07 to 2019-20, and information on the Broken Hill Council's website that indicates several development applications for new dwellings per year)
- The number of occupied dwellings is continuing to decline in line with DPIE's projections.
- All new dwellings will be served with reticulated water and sewer.

[23] NSW Department of Planning, Industry and Environment 2019, Population growth projects on a Local Government Areas basis, Broken Hill, and Central Darling Local Government Areas.

The above indicates a declining population density in Broken Hill – i.e. marginally more dwellings, but less people and less occupied dwellings.

We forecast non-residential customers to remain constant.

Table 24: Forecast customer numbers for potable water (excl mines)

Number of customers	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Total population	17,819	17,652	17,485	17,318	17,152	16,974
Total residential billable entities	9,952	9,958	9,963	9,969	9,974	9,980
Number of non-residential customers	798	798	798	798	798	798
Number of non-residential customers 20mm meter equivalents	1,957	1,957	1,957	1,957	1,957	1,957

9.3.2 Water demand forecasts

We expect a slight decrease in demand in the 2022 determination period

In the 2019 determination IPART disagreed with our approach to forecasting demand. IPART's main concern was we used a single consumption year to establish our baseline demand forecasts. IPART considered this year a low residential consumption year based on historical demand and that basing forecasts on a single year of consumption was potentially unreliable given the high variability in Essential Water's historical demand.

To forecast water demand for the 2022 determination period, we drew on information and analysis from our IWCM Strategy, developed with PWA. The IWCM analysis assessed the impact of a range of a factors on water consumption, including demographic trends, climate, pricing and restrictions, and developed forecasts of household annual unrestricted demand, under average conditions. We applied this estimate of household demand to our forecast number of occupied dwellings to generate our residential water sales forecasts.

Our demand forecasts reflect our expectations of a decline in residential demand for water relative to actual sales over the 2019 determination period. In turn, this reflects a general continuation of current water demand per occupied house, rather than the uplift in demand expected by IPART in its 2019 determination; and a continuing gradual decline in the residential population and number of occupied houses, consistent with historical trends.

We forecast non-residential treated water, chlorinated water and untreated water sales to remain generally consistent with actual sales over the 2019 determination period.

The following tables summarise Essential Water's forecast water sales by customer type.

Table 25: Treated water sales (ML)

Consumption Volumes	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Residential	2,362	2,342	2,323	2,303	2,283	2,263
Non-residential (excl. mines)	305	305	305	305	305	305
Mines	1,055	1,055	1,055	1,055	1,055	1,055
Exempt customers	337	337	337	337	337	337
Total	**4,059**	**4,040**	**4,020**	**4,000**	**3,981**	**3,961**

Table 26: Chlorinated water sales (ML)

Consumption Volumes	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Total chlorinated	43	43	43	43	43	43

Table 27: Untreated water sales (ML/year)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Pipeline customers	70	70	70	70	70	70
Mines	520	520	520	520	520	520
Other non-residential	416	416	416	416	416	416
Total	**1,006**	**1,006**	**1,006**	**1,006**	**1,006**	**1,006**

New mining demand is too uncertain to include in forecasts

Essential Water has been notified of a potential new large customer, Cobalt Blue Mine. The mine is planned to be located to the south west of the town and is estimated to require 1GL per annum from 2023 or 2024. The existing pilot plant is currently using a small quantity of water.

Capacity is available within the existing network to cater for this mine. There is an existing water pipeline in place that could be used to supply Cobalt Blue. It is planned that all connection assets would be built, owned, and maintained by the mine, yet there would be some very small capital cost for Essential Water to support the connection (currently estimated at less than $50,000).

There is considerable uncertainty surrounding if and when this mine will come online, and as such its demand is not included in these forecasts. We therefore assume the Cobalt Blue pilot plan continues over the 2022 determination period. The demand volatility adjustment mechanism provides a mechanism for returning revenue to customers if demand is higher than forecast because of the Cobalt Mine.

9.3.3 Forecast sewerage customers

We expect sewerage customer numbers and volumes to remain relatively static over the 2022 determination period

The number of residential sewerage connections is expected to marginally increase over the 2022 determination period, driven by the increase in dwellings, as shown in Table 28.

Table 28: Forecast sewerage customer numbers (excl. mines)

Number of customers	2021-22[a]	2022-23	2023-24	2024-25	2025-26	2026-27
Total Population	17,148	16,987	16,827	16,666	16,506	16,335
Residential billable entities	9,375	9,377	9,379	9,381	9,383	9,385
Number of non-residential customers	675	675	675	675	675	675
Non-residential 20mm equivalents	1,602	1,602	1,602	1,602	1,602	1,602

a. 2021-22 values are estimated actuals

9.3.4 Forecast sewerage demand volumes

Our sewerage volumes are 1.5% higher than IPART's forecasts for the 2019 determination period

Over the 2019 Determination period, IPART expected non-residential sewerage volumes to be on average 555 ML a year, and a total of 1,665 ML over the period. We are tracking close to these volumes, with an average of 563 ML a year, and a total of 1,689 ML over the determination period. As such, we are forecasting to be 1.5% higher than IPART's forecasts.

We expect steady state demand in the 2022 determination period

Non-residential customers' discharges to the sewerage network are charged at the sewerage usage price. Residential customers are also charged a deemed sewerage usage amount - currently 90kL per annum multiplied by the sewerage usage price, which we propose to increase to 100kL per annum for the 2022 determination period.

Our forecasts of non-residential customers' discharge volumes to the sewerage network for the 2022 determination period are consistent with discharge volumes over the 2019 determination period.

Table 29: Forecast non-residential sewerage volumes (ML)

Customer type	2021-22[a]	2022-23	2023-24	2024-25	2025-26	2026-27
Non-residential	249	249	249	249	249	249
Mines	30	30	30	30	30	30
Exempt	280	280	280	280	280	280
Total	**559**	**559**	**559**	**559**	**559**	**559**

a. 2021-22 values are estimated actuals

10. Allowances for return on assets, regulatory depreciation, tax and working capital

10.1 Overview

Essential Water needs to be able to earn an adequate rate of return on capital to continue to invest, operate and maintain water and wastewater services in Broken Hill. It also needs to recover the capital invested in the business over the period in which there is likely to be demand for regulated services.

Key messages

To establish Essential Water's NRR, we propose:

- To set an allowance for the return on assets of $37.0 million over the 2022 determination period. This is based on:
  - Setting the opening regulatory asset base (RAB) at 1 July 2022 at $167.9 million
  - Adopting the value of the RAB in each year of the 2022 Determination Period as shown in Table 31.
  - Applying a placeholder real post-tax WACC of 3.7% (real, vanilla) for the purposes of calculating the appropriate rate of return on Essential Water's assets
  - Accounting for annual changes in the cost of debt over the 2022 determination period through a regulatory true up at the 2027 Determination.
- To set an allowance for regulatory depreciation of $21.1 million over the 2022 determination period. This is based on:
  - Adopting a straight-line depreciation method for the 2022 Determination Period.
  - Adopting the asset lives as set out in Table 37 and Table 38.
- To set an allowance for tax of $3.3 million over the 2022 determination period.
- To set an allowance for working capital of $1.3 million over the 2022 determination period.
- To include an adjustment for the demand volatility adjustment mechanism for the 2019 determination period of $2.5 million.
- To include a negative adjustment for the cost of debt true-up for the 2019 determination period of $1.4 million.

The building block approach that we propose using to calculate Essential Water's NRR includes several components. While Chapter 7 discusses the operating and maintenance cost allowance, this section discusses the remaining building block components or allowances. These are:

- capital allowance, consisting of the return on assets and regulatory depreciation (return of assets)
- tax allowance, and
- working capital allowance.

To calculate these allowances, we propose applying:

- A value of the regulatory asset base in each year of the determination period. This represents the economic value of the assets used to deliver our services and includes any adjustments for asset disposals and capital cash contributions.
- An appropriate rate of return (e.g. using the WACC) on the regulatory asset base.
- The appropriate asset lives and depreciation method for the regulatory asset base.
- The appropriate tax rate.
- IPART's working capital allowance methodology.
- Revenue adjustments for the demand volatility adjustment mechanism and the cost of debt true-up for the 2019 determination period.

This section discusses these proposals and their impact on the relevant allowances.

10.2 Allowance for the return on assets

The building block approach includes an allowance for a return on assets. This represents our assessment of the opportunity cost of capital invested to provide our water and wastewater services. To calculate this allowance, we determine a value of the regulatory asset base and multiply that value by an appropriate rate of return in each year of the determination period. Our proposed regulatory asset base values and rate of return are discussed further below.

We propose a total allowance for a return on assets over the 2022 determination period of $37.0 million. Our proposal on the return on assets in each year of the determination period is presented in Table 30.

Table 30: Proposed return on asset allowances ($000, $2021-22)

	2021-22[a]	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Water	4,999	4,429	4,556	4,651	4,736	4,812	23,183
Sewage	2,183	2,072	2,559	2,944	3,108	3,113	13,795
Total	**7,182**	**6,501**	**7,115**	**7,595**	**7,844**	**7,924**	**36,978**

a. The return on assets for 2021-22 presented in this table is based on the 2019 determination, adjusted for inflation.

10.2.1 Value of the regulatory asset base used to set allowances

The value of the regulatory asset base changes over time. As we invest in new assets, this expenditure is added to the regulatory asset base. As our assets depreciate, this value is subtracted from the regulatory asset base. If we dispose of assets, these proceeds are also subtracted from the regulatory asset base.

We have calculated these values consistent with IPART's regulatory asset base roll-forward methodology. This involved:

- taking the opening regulatory asset base for the 2019 determination period and rolling it forward to the start of the 2022 determination period by:
- including actual efficient capital expenditure incurred over that period
- deducting allowed regulatory depreciation over the 2019 determination period, and
- indexing for inflation
- estimating the regulatory asset base values for each year of the 2022 determination period by:
- adding efficient capital expenditure as it is forecast to be incurred
- deducting forecast regulatory depreciation.

We do not propose disposing of any assets over the 2022 determination period. We have included capital cash contributions of $7.1 million from 2021-22 to 2024-25.[24] This is the estimated contribution from the DPIE for the Wills Street upgrade discussed in Chapter 6.

Our proposed opening regulatory asset base at 1 July 2022 and proposed regulatory asset base roll-forward over the 2022 Determination Period is shown in Table 31.

Table 32, Table 33 and Table 34 show this calculation for our water, sewage and non-system assets, respectively.

Our forecast efficient capex used to calculate the regulatory asset base was discussed in Chapter 6. Our regulatory depreciation is discussed later in this section.

Table 31: Proposed regulatory asset base ($000, nominal to 2021-22, then real $2021-22)

	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Opening RAB	**120,571**	**127,891**	**139,698**	**167,898**	**186,360**	**201,199**	**212,444**	**214,682**
Plus: Capex net of cash contributions	10,475	11,758	27,823	22,047	18,904	15,655	6,865	6,815
Less: Asset disposals	-	-	-	-	-	-	-	-
Less: Allowed regulatory depreciation	2,779	3,161	3,463	3,585	4,065	4,410	4,628	4,795
Plus: Indexation	-377	3,210	3,840	-	-	-	-	-
Closing RAB	**127,891**	**139,698**	**167,898**	**186,360**	**201,199**	**212,444**	**214,682**	**216,701**

Table 32: Proposed regulatory asset base – water ($000, nominal to 2021-22, then real $2021-22)

	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Opening RAB	**77,132**	**82,790**	**91,687**	**115,094**	**118,514**	**120,719**	**123,426**	**125,727**
Plus: Capex net of cash contributions	**7,718**	**8,826**	**22,969**	**5,309**	**4,143**	**4,690**	**4,330**	**4,367**
Less: Asset disposals	-	-	-	-	-	-	-	-
Less: Allowed regulatory depreciation	**1,817**	**2,023**	**2,141**	**1,890**	**1,938**	**1,983**	**2,029**	**2,073**
Plus: Indexation	- **243**	**2,093**	**2,579**	-	-	-	-	-
Closing RAB	**82,790**	**91,687**	**115,094**	**118,514**	**120,719**	**123,426**	**125,727**	**128,021**

[24] The value of any regulatory assets a regulated busines disposes of during a determination period are typically deducted from the RAB. This ensures customers are not charged a return on assets or regulatory depreciation for assets that are no longer used to provide regulated services. Cash capital contributions that a utility receives from third parties towards its capital expenditure, such as government grants, do not enter the RAB (i.e. they are netted off capital expenditure). This ensures that customers do not pay a return on assets or regulatory depreciation for capital expenditure that the utility has not funded.

Table 33: Proposed regulatory asset base – sewerage ($000, nominal to 2021-22, then real $2021-22)

	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Opening RAB	43,439	43,150	44,607	47,337	61,122	73,233	82,047	82,361
Plus: Capex net of cash contributions	729	1,341	2,612	14,794	13,279	10,112	1,680	1,592
Less: Asset disposals	-	-	-	-	-	-	-	-
Less: Allowed regulatory depreciation	886	936	1,029	1,010	1,168	1,299	1,365	1,384
Plus: Indexation	-131	1,052	1,148	-	-	-	-	-
Closing RAB	43,150	44,607	47,337	61,122	73,233	82,047	82,361	82,569

Table 34: Proposed regulatory asset base – non-system assets ($000, nominal to 2021-22, then real $2021-22)

	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27
Opening RAB	-	1,950	3,404	5,466	6,725	7,246	6,971	6,593
Plus: Capex net of cash contributions	2,029	1,591	2,242	1,944	1,481	853	856	856
Less: Asset disposals	-	-	-	-	-	-	-	-
Less: Allowed regulatory depreciation	76	203	292	685	959	1,128	1,234	1,338
Plus: Indexation	-3	66	113	-	-	-	-	-
Closing RAB	1,950	3,404	5,466	6,725	7,246	6,971	6,593	6,111

10.2.2 The rate of return

The rate of return is a key input used to calculate the return on capital allowance. It represents the costs of funding Essential Water's investments through borrowings from debt markets and investments from equity holders. Essential Water needs to be able to earn an adequate rate of return on capital to continue to invest, operate and maintain water and wastewater services to Broken Hill customers.

Our proposed rate of return is consistent with the IPART methodology, with one important exception

Our proposed rate of return is based almost entirely on the rate of return methodology set out by IPART in its 2018 final decision on its most recent WACC methodology review.[25] For the purposes of this proposal, we have adopted as a placeholder, the rate of return derived using IPART's February 2021 WACC update—recognising that IPART will update the allowed rate of return in its final determination.

Essential Water proposes that the allowed rate of return be set commensurate with a five-year determination period, consistent with our proposed length for the 2022 determination period.

We propose an alternative approach to forecasting inflation

Essential Water's rate of return proposal departs from IPART's 2018 WACC methodology decision in only one respect: the approach to forecasting inflation.

25 IPART, Review of our WACC method, Final Report, February 2018

IPART's existing method for forecasting inflation in calculating the real WACC involves two steps:

- IPART adopts the 1-year ahead RBA forecast of inflation, and then assumes that inflation will be 2.5% (the midpoint of the RBA's inflation target range) in every remaining year of the determination period.
- IPART then calculates a geometric average of the expected rates of inflation over the determination period.

In the case of a business with a five-year determination period, four out of the five numbers over which IPART computes a geometric average will be 2.5%. This guarantees that IPART's forecast of inflation will always be close to 2.5%, irrespective of whether that is a realistic forecast or not. This approach assumes that inflation will always be 2.5% in the second year of every determination period, and remain at that level, regardless of:

- prevailing economic conditions
- whether actual inflation is close to 2.5%
- whether the RBA's 1-year ahead forecast rate of inflation is close to 2.5%
- whether the RBA's 2-year ahead forecast is close to 2.5%
- whether investors' prevailing expectations of inflation over the next five years is close to 2.5%.

We consider that a more reasonable approach would be to adopt the RBA's 2-year ahead forecast for the second year of the determination period, and to then transition gradually in a linear manner, from that forecast to 2.5% by the end of the determination period. This is the AER's new glidepath approach to inflation[26].

The AER has recently recognised that its previous approach (which produced very similar outcomes to IPART's existing approach) was not producing reasonable forecasts of inflation over a determination period. In response to that concern, the AER determined in December 2020 that it would replace its old inflation forecasting approach with the glidepath method described above (in addition to linking the target inflation horizon to a term that matches the regulatory period). Since then, the Independent Competition and Regulatory Commission has also decided to adopt the glidepath approach. In addition, the Essential Commission of South Australia and Essential Commission of Victoria have both recently modified their inflation forecasting approaches to improve the reliability of their inflation forecasting methodologies. Furthermore, the Queensland Competition Authority has recently launched a review into its methodology for forecasting inflation, and is consulting on whether it too, should adopt a glidepath approach. This leaves IPART as one of the few economic regulators that has not already changed, or is in the process of reconsidering, its inflation forecasting approach.

Given the concerns over the reliability of IPART's inflation forecasting approach, Essential Water proposes that IPART should adopt the AER's glidepath approach to forecast inflation over Essential Water's forthcoming determination period.

We propose a placeholder rate of return of 3.7% (real, vanilla)

Essential Water's placeholder rate of return proposal of 3.7% (real, vanilla), summarised below in Table 35, has adopted the glidepath approach to forecasting inflation.

[26] AER, Final Position, Regulatory treatment of inflation, December 2020

Table 35: Proposed rate of return

	Current	Long-term
Nominal return on equity	**7.9%**	**6.9%**
Risk free rate	2.0%	2.7%
Equity beta	0.7	0.7
Market risk premium	8.4%	6.0%
Nominal return on debt	**3.9%**	**5.2%**
Risk free rate	2.0%	2.7%
Debt margin	1.9%	2.5%
Gearing	60%	60%
Gamma	0.25	0.25
Nominal vanilla WACC	**5.5%**	**5.9%**
Inflation	1.9%	1.9%
Real vanilla WACC	**3.5%**	**3.9%**
Point estimate	**3.7%**	

We propose an end of period cost of debt true-up

IPART's 2018 WACC methodology states that IPART will determine — on a case-by-case basis — whether to pass through in prices annual changes to the trailing average return on debt allowance, or address the changes in the return on debt allowance through an end-of-period true-up. We propose an end of period cost of debt true-up for the 2022 determination period, consistent with IPART's usual approach.

Our NRR for the 2022 determination period includes the end of period cost of debt true-up for the 2019 determination period, as we discuss in Section 10.6.

10.3 Allowance for regulatory depreciation

We propose a total allowance for regulatory depreciation (or return of assets) of $21.0 million over the 2022 determination period. Our proposal on the regulatory depreciation allowance in each year of the determination period is presented in Table 36.

Table 36: Proposed regulatory depreciation allowance ($000, $2021-22)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Water	2,263	2,288	2,509	2,659	2,771	2,881	13,108
Sewage	1,136	1,232	1,483	1,671	1,773	1,828	7,987
Total	**3,399**	**3,520**	**3,992**	**4,330**	**4,545**	**4,709**	**21,095**

a. The regulatory depreciation for 2021-22 presented in this table is based on the 2019 determination, adjusted for inflation.

An allowance for regulatory depreciation is included in the revenue requirement (and used in calculating the value of the RAB, as discussed above). This ensures that the capital invested in the regulatory assets is returned over the useful life of each asset. To calculate this allowance, we apply appropriate asset lives associated with the assets that make up the RAB, and an appropriate depreciation method. Our proposals on the asset lives and depreciation method to apply to assets are discussed in the sections below.

10.3.1 Use straight line depreciation method

Forecast depreciation is calculated using IPART's straight-line methodology adopted for the current determination. The straight-line depreciation method allows for an equal proportion of the asset's value to be recovered in each year of its useful life. This approach is simple, transparent and consistent with regulatory practice used by other Australian regulators in the context of water and by the AER in the context of gas and electricity.

10.3.2 Asset lives

We propose maintaining our asset lives for new water and new sewerage assets from the 2019 Determination. In addition, we have updated asset lives for existing water and sewerage assets as at 1 July 2022 to reflect the capital expenditure undertaken over the 2019 determination period. Table 37 presents the proposed asset lives for water and sewage assets. Table 38 presents our proposed asset lives for non-system assets.

Table 37: Proposed asset lives for water and sewerage

Asset type	Water	Sewerage
New assets	98.0	89.0
Remaining life of existing assets	61.8	51.1

Table 38: Proposed asset lives for non-system assets

Asset type	ICT	FFP&E	Vehicles	Buildings
New assets	5.0	7.0	15.0	50. 0
Remaining life of existing assets	8.8	5.0	13.5	48.2
Tax life new assets	4.0	7.0	15.0	50.0

We propose to update the regulatory asset life for new ICT assets from 10 years to 5 years. This better reflects the useful life of the assets in this category and aligns with the regulatory asset life for ICT assets used by Essential Energy. We also propose to update the tax life for new ICT assets to 4 years, in line with the tax life used by Essential Energy.

10.4 Allowance for tax

We propose a tax allowance of $3.3 million over the 2022 determination period. Our proposal in each year of the determination period is presented in Table 39. Our proposed tax allowance for our water and sewage businesses are presented in Table 40 and Table 41, respectively.

Table 39: Proposed tax allowance ($000, $2021-22)

	2021-22[a]	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Water	501	748	344	394	418	458	2,361
Sewerage	195	52	165	224	226	294	961
Total	**696**	**800**	**509**	**618**	**643**	**752**	**3,323**

a. The tax allowance for 2021-22 presented in this table is based on the 2019 determination, adjusted for inflation.

We calculated the tax allowance for each year using IPART's standard approach. This involved applying the relevant tax rate, adjusted for gamma, to our (nominal) taxable income. For this purpose, taxable income is the NRR (excluding tax allowance) less operating cost allowances, tax depreciation, and interest expenses. We included the DVAM and cost of debt adjustment in revenue. As part of calculating the appropriate tax allowance, we also forecast tax depreciation for the determination period. Other items such as interest expenses are based on the parameters used for the rate of return, and the value of the regulatory asset base.

Table 40: Proposed tax allowance ($000, nominal) - water

	2022-23	2023-24	2024-25	2025-26	2026-27
Notional revenue requirement (excl tax)	**46,725**	**45,539**	**46,488**	**47,685**	**48,099**
Less:					
Operating expenditure	38,049	37,966	38,517	39,346	39,399
Tax depreciation	2,576	2,708	2,760	2,872	2,918
Interest expense allowance	3,476	3,635	3,775	3,916	4,050
Taxable income	2,625	1,230	1,437	1,551	1,732
Less tax accumulated tax losses	0	0	0	0	0
Taxable income after tax losses	**2,625**	**1,230**	**1,437**	**1,551**	**1,732**
Tax before adjustment for franking credits					
Less: Adjustment for franking credits	1,016	476	556	601	670
Tax allowance	**254**	**119**	**139**	**150**	**168**

Table 41: Proposed tax allowance ($000, nominal) - sewage

	2022-23	2023-24	2024-25	2025-26	2026-27
Notional revenue requirement (excl tax)	**5,597**	**6,863**	**7,608**	**8,117**	**8,193**
Less:					
Operating expenditure	2,673	2,665	2,698	2,780	2,688
Tax depreciation	1,182	1,630	1,764	1,972	1,811
Interest expense allowance	1,560	1,975	2,329	2,528	2,579
Taxable income	182	592	816	838	1,114
Less tax accumulated tax losses	0	0	0	0	0
Taxable income after tax losses	**182**	**592**	**816**	**838**	**1,114**
Tax before adjustment for franking credits					
Less: Adjustment for franking credits	70	229	316	324	431
Tax allowance	**18**	**57**	**79**	**81**	**108**

10.5 Allowance for working capital

Our proposed return on working capital allowance is based on IPART's 2018 working capital allowance policy.[27] Our proposal in each year of the determination period is presented in Table 42.

Table 42: Proposed working capital allowance ($000, $2021-22)

	2021-22[a]	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Water	244	234	229	224	227	226	1,139
Sewerage	16	-17	1	25	69	70	147
Total	**260**	**216**	**229**	**249**	**296**	**296**	**1,286**

a. The return on working capital allowance for 2021-22 presented in this table is based on the 2019 determination, adjusted for inflation.

[27] IPART, Working Capital Allowance - Policy Paper, November 2018

10.6 Other revenue adjustments

10.6.1 We propose to include an adjustment for the demand volatility adjustment mechanism for the 2019 determination period

We have included an adjustment for the demand volatility adjustment mechanism for the 2019 determination period of $2.5 million. To calculate this adjustment, we have applied the methodology adopted by IPART in its recent Hunter Water determination.[28] We have:

- Compared target water consumption (treated, untreated and chlorinated) with actual water consumption (treated, untreated and chlorinated) to confirm the variance is outside the +/- 5% deadband
- Compared target water revenue (treated, untreated and chlorinated) with actual water revenue (treated, untreated and chlorinated) to identify the variance in sales revenue. This revenue was discounted to the start of the 2022 determination period and presented in $2021-22
- Calculated the variance in target and actual water revenue outside the +/- 5% deadband over the 2019 determination period.

Our analysis is presented in Table 43.

Table 43: Proposed demand volatility adjustment mechanism allowance ($000, $2021-22)

	2019-20	2020-21	2021-22	Total
Target water consumption (ML)	5,968	5,955	5,939	17,862
Actual water consumption (ML)	5,438	5,131	5,109	15,678
Variance (ML)	-530	-825	-830	-2,184
Variance (%)	**-9%**	**-14%**	**-14%**	**-12%**
Target water revenue ($000)	11,570	11,328	11,084	33,981
Actual water revenue ($000)	10,503	9,728	9,506	29,736
Variance ($000)	-1,067	-1,600	-1,578	-4,245
Variance (%)	**-9%**	**-14%**	**-14%**	**-12%**
+-5% deadband	578	566	554	1,699
Variance above deadband	**-488**	**-1,034**	**-1,024**	**-2,546**

10.6.2 We propose to include an adjustment for the cost of debt true-up for the 2019 determination period

The 2019 Determination allowed for an end of period true-up to account for cumulative annual changes in the cost of debt. Overall, the annual updates resulted in a lower cost of debt relative to the allowance. The annual cost of debt from March 2010 to March 2021 is presented in Table 44. We have calculated the adjustment for the cumulative cost of debt true-up in line with IPART's 2018 WACC Methodology.[29] We propose a negative adjustment to the NRR of $1.4 million.

[28] IPART, Review of prices for Hunter Water Corporation from 1 July 2020, Final Report, June 2020.

[29] IPART, Review of our WACC method, Final Report, February 2018

Table 44: Annual nominal cost of debt

Tranche	Nominal annual cost of debt (%)
March 2021	3.0%
March 2020	3.4%
March 2019	4.4%
March 2018	4.6%
March 2017	4.9%
March 2016	5.7%
March 2015	4.7%
March 2014	6.9%
March 2013	6.8%
March 2012	8.1%
March 2011	7.9%
March 2010	8.1%

11. Revenue requirement and amount to be recovered from customers

11.1 Overview

This chapter presents the revenue requirement calculated using the building block approach. We propose a target revenue to be recovered from customers, recognising their limited capacity to manage price increases, and the government contribution required to ensure Essential Water recovers its NRR.

Key messages

We propose:

- A NRR of $259.3 million over the 2022 determination period. This reflects our view of the total efficient costs of providing Essential Water's water, sewerage and other services in each year of the determination period.
- Recovering $123.9 million from customers over the 2022 determination period. This reflects our proposed prices, and our position that current prices for most services should only increase by about 1.62% above inflation each year over the 2022 determination period.
- Recovering the remaining $135.4 million via a NSW Government funding contribution.

11.2 Net revenue requirement proposed for 2022 determination period

As outlined in Chapter 4, we propose using IPART's standard building block approach to calculate Essential Water's NRR in each year of the determination period. This represents our view of the total efficient costs over the determination period, including allowances for:

- operating expenditure
- a return on assets
- a return of assets (or depreciation)
- tax obligations
- revenue adjustments and
- working capital.

Table 45 presents our proposed NRR for the water and sewerage businesses. We propose a NRR of $259.3 million over the 2022 determination period.

Table 45: Proposed notional revenue requirement ($000, $2021-22)

	2021-22[a]	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Water	43,221	46,602	44,201	44,330	44,644	44,236	224,013
Sewerage	6,237	5,545	6,774	7,414	7,754	7,752	35,239
Total	**49,459**	**52,147**	**50,975**	**51,744**	**52,398**	**51,988**	**259,252**

a. The notional revenue requirement for 2021-22 presented in this table is based on the 2019 determination, adjusted for inflation.

Table 46 and Table 47 summarises our proposed building block allowances and NRR to recover Essential Water's total efficient costs over the 2022 determination period for water and sewerage services, respectively.

Table 46: Proposed notional revenue requirement ($000, $2021-22) - water

	2021-22[a]	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Operating expenditure (excluding bulk water)	9,728	12,863	12,097	11,942	12,039	11,413	60,354
Bulk water purchases	25,487	24,477	24,466	24,460	24,454	24,447	122,304
Regulatory depreciation	2,263	2,288	2,509	2,659	2,771	2,881	13,108
Return on assets	4,999	4,429	4,556	4,651	4,736	4,812	23,183
Return on working capital	244	234	229	224	227	226	1,139
Tax allowance	501	748	344	394	418	458	2,361
Cost of debt true-up	-	-982	-	-	-	-	-982
DVAM true up	-	2,546	-	-	-	-	2,546
Total	**43,221**	**46,602**	**44,201**	**44,330**	**44,644**	**44,236**	**224,013**

a. The notional revenue requirement for 2021-22 presented in this table is based on the 2019 determination, adjusted for inflation.

Table 47: Proposed notional revenue requirement ($000, $2021-22) - sewerage

	2021-22[a]	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Operating expenditure (excluding bulk water)	2,706	2,624	2,567	2,550	2,578	2,447	12,765
Regulatory depreciation	1,136	1,232	1,483	1,671	1,773	1,828	7,987
Return on assets	2,183	2,072	2,559	2,944	3,108	3,113	13,795
Return on working capital	16	-17	1	25	69	70	147
Tax allowance	195	52	165	224	226	294	961
Cost of debt true-up	-	-418	-	-	-	-	-418
DVAM true up	-	-	-	-	-	-	-
Total	**6,237**	**5,545**	**6,774**	**7,414**	**7,754**	**7,752**	**35,239**

a. The notional revenue requirement for 2021-22 presented in this table is based on the 2019 determination, adjusted for inflation.

The annual NRR in the 2022 determination period is on average around $3.2 million higher than during the 2019 determination period. This is largely a result of our higher forecast operating and capital expenditure over the 2022 determination period.

11.3 Revenue to be recovered from customers for the 2022 determination period

We propose to recover revenue of $123.9 million from customers over the 2022 determination period. This revenue is consistent with the prices set out in Chapter 12. This revenue to be recovered from customers is lower than our NRR, reflecting the limited capacity of our customers to pay.

Table 48: Proposed revenue from customers ($000, $2021-22)

	2021-22[a]	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Revenue from tariffs	24,502	23,767	24,125	24,487	24,855	25,226	122,460
Non-regulated revenue (50%)	17	26	26	26	26	26	129
Trade waste revenue	161	195	228	262	295	329	1,309
Total revenue from customers	**24,679**	**23,988**	**24,379**	**24,775**	**25,176**	**25,580**	**123,898**

a. The revenue from customers for 2021-22 presented in this table is based on the 2019 determination, adjusted for inflation.

11.4 NSW Government contribution

The difference between our NRR and the revenue we would receive from customers under our pricing proposal, is $135.4 million in total over the 2022 determination period or an average of $27.1 million per annum. We propose to seek a contribution from the NSW Government to fund this shortfall.

The NSW Government contribution incorporates the NSW Government trade waste transition contribution ($0.7 million over the 2022 determination period) and the NSW Government affordability contribution ($134.7 million over the 2022 determination period).

Table 49 presents the proposed NSW Government contribution over the determination period.

This compares to a NSW Government contribution of $23.9 per annum on average over the 2019 determination period. The higher NSW Government contribution reflects:

- Lower consumption than assumed for IPART's 2019 Determination. This means the same prices recovers a lower amount of revenue from customers
- Higher efficient operating expenditure required to meet our obligations having regard to our operational constraints
- Higher efficient capital expenditure, reflecting the requirement to maintain and upgrade our aging infrastructure to ensure we can meet our mandatory standards, and reduce additional expenditure on reactive repairs.

Table 49: Proposed NSW Government contribution ($000, $2021-22)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Total
NSW Government trade waste transition contribution	233	200	166	133	99	66	664
NSW Government affordability contribution	24,431	27,959	26,430	26,837	27,123	26,342	134,691
NSW Government total contribution	**24,664**	**28,159**	**26,596**	**26,969**	**27,222**	**26,408**	**135,354**

As we discuss in Chapter 13, it is imperative Essential Water is able to recover its NRR, from a combination of revenue from customers and the Government contribution. This is necessary to ensure Essential Water is

financially viable and able to meet its mandatory obligations to provide services to customers. Ensuring Essential Water is financially viable is in the long-term interests of customers. Table 50 summarises our proposed recovery of the NRR over the 2022 determination period.

Table 50: Proposed recovery of the notional revenue requirement ($000, $2021-22)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Total
Total revenue from customers	24,679	23,988	24,379	24,775	25,176	25,580	123,898
NSW Government total contribution	24,664	28,159	26,596	26,969	27,222	26,408	135,354
Total notional revenue requirement	**49,459**	**52,147**	**50,975**	**51,744**	**52,398**	**51,988**	**259,252**

12. Price structures and price path

12.1 Overview

Key messages

We propose to maintain our current price structures. This is on the basis that:

- they are broadly cost-reflective and send appropriate signals to customers
- customers generally support the current split of fixed to variable charges, and value price stability
- they reflect IPART's 2019 decisions, and there has been no material change to Essential Water's operating environment since then to justify a change to price structures.

While broadly maintaining our current price structure, we propose to increase prices for most customers (fixed and usage) by 1.62% per annum real (excluding inflation) over 2022-23 to 2026-27, which is effectively the same rate of increase as our NRR (our efficient costs).[30] This would ensure customers contribute to the efficient costs of the services they receive, while still facing prices that are affordable.

12.2 Principles underpinning proposed price structures

Best practice pricing principles suggest that prices should balance:

- recovering efficient costs, and sending efficient price signals to customers
- stability, transparency, and ease of understanding for customers
- administrative efficiency – i.e., not cost too much to implement and administer
- the views and preferences of customers.[31]

We have sought to balance these considerations in putting forward this price proposal.

12.3 Water prices

12.3.1 Our current water price structure

Essential Water's prices for water services comprise two components:

- a fixed service price ($ per year)
- a usage price ($ per kL of water supplied).

Currently, all residential water customers pay a standard service charge, regardless of whether their property is a house or a unit in a multi-premise property ($342.89 per annum, $2021-22). For non-residential customers, the service charge depends on a customer's meter size, and is set with reference to a 20mm meter (i.e. the service charge for each customer is scaled-up from the base 20mm meter charge to reflect the actual size of their meter).

Customers pay a different water usage price depending on whether they receive treated water ($1.88 per kL, $2021-22), chlorinated water ($1.40 per kL, $2021-22) or untreated water ($1.06 per kL for pipeline customers, and $1.65 per kL for other untreated water customers, $2021-22).

30 The present value of our NRR over 2022-23 to 2026-27 is $232.1 million, and the average annual increase to our NRR from 2021-22 to 2026-27 that equates to this present value is 1.62% per annum.

31 For example, see National Water Initiative Pricing Principles.

The two mines pay the same water usage prices as all other customers, but their own specific service charge. Under IPART's 2019 determination, a new mine would pay the applicable non-residential service charge, based on its meter size.

Box 12.1 IPART's 2019 decisions on water prices and price structures

In its 2019 determination, IPART decided to maintain:

- water service prices for residential and non-residential customers in real terms
- water service prices for mining customers in real terms
- the water usage price for treated water in real terms
- the water usage price for untreated water for most customers in real terms.

It also decided to:

- gradually increase the untreated water usage price for customers who received water directly from the Menindee, Stephens Creek and Umberumberka pipelines (pipeline customers) over the determination period towards the price for other untreated water customers
- gradually increase the chlorinated water usage price over the determination period so that it transitions towards the untreated water usage price.

12.3.2 Our current water price structure balances cost-reflectively, price stability and customer preferences

Our current water prices are consistent with National Water Initiative (NWI) pricing principles, as usage prices are set with reference to estimates of the Long Run Marginal Cost (LRMC) of supply, and service charges are set to recover residual costs – with variations in service charges between customers depending on service demands and equity considerations.

There is no foreseeable need for future large-scale augmentation of the water supply system for Broken Hill, given the Murray River to Broken Hill Pipeline is now operating. This means estimates of Essential Water's LRMC and Short Run Marginal Cost (SRMC) should converge, as IPART observed in 2019. Further, as IPART concluded in its 2019 Final Report, our current water usage price is "within a reasonable range of the true marginal cost of supplying water."

We agree with IPART's 2019 decision that it is appropriate to maintain a single standard residential service charge for houses and apartments, and that introducing different service charges would increase complexity with little potential benefit.

We also consider that the path IPART established over the 2019 determination period to transition chlorinated water usage prices and untreated water usage prices for pipeline customers towards untreated water prices for other customers is reasonable. This moves these prices towards cost-reflective levels, while avoiding bill shock and adverse impacts on affected customers.

We considered whether there is merit in changing the water service charges for mines. In its 2019 Final Report, IPART noted that at its next price determination it would consider the approach to setting the mines' service charges, and the share of Essential Water's costs that should be allocated to the mines. In doing so, it said that it would examine the mines' share of water usage over the 2019 determination period compared to previous periods and that long-term average usage could be used to establish the mines' share of fixed costs. Using a longer time period of historical water usage (e.g. over 10 years) could smooth out temporary fluctuations in demand and improve cost-reflectivity.

We reviewed the two current mines' share of water usage over the 2019 and 2014 determination periods. We found that each mine's respective share of total water usage has remained reasonably constant over this period.

Further, Essential Water expects water sales to the two mines to remain constant at current levels over the 2022 determination period.

We understand that a new mine, Cobalt Blue, may come on line from 2023 or 2024, and may require about 1 GL of water per annum (an increase of about 20% in Essential Water's total water sales).[32] There is existing capacity in the network to supply Cobalt Blue, although we expect that it would build, own and maintain connection assets and pay for any incremental cost to Essential Water of connecting it to the system (e.g. connection valves). If Cobalt Blue did come online within the 2022 determination period, we propose that it pay the applicable new mine (or non-residential) service charge, based on its meter size, and the same water usage charges as all other customers.

Finally, we note that our current prices and price structures are broadly consistent with customer preferences. Our customer survey found that most would like the current fixed/variable proportion of their water bills to be maintained.[33]

12.3.3 We propose to retain the current water price structure for the 2022 determination period

We propose to retain the existing water price structure but increase prices for most customers (fixed and usage) by 1.62% per annum (or about 8.4% from 2021-22 to 2026-27) – which is effectively the same rate of increase as our NRR. We consider this is a reasonable way of ensuring our customers contribute to the efficient costs of the services they receive, without facing prices that are unaffordable.

As outlined above, we consider the current structure appropriately balances considerations of cost-reflectivity, equity, administrative efficiency, price stability and customer preferences.

This structure is also consistent with IPART's decisions in 2019, which is appropriate as there has been no material change to Essential Water's water supply network and operating environment since the 2019 determination.

Under our proposal, chlorinated water prices and untreated water prices for pipeline customers would continue their rate of gradual transition towards untreated water prices for other customers over the 2022 determination period. All other water prices would increase by effectively the same rate as our NRR, in real terms.

Our proposed water prices for the 2022 determination period are listed in Table 51 below.

32 The pilot plant is currently using a small quantity of water.

33 Essential Water's April 2021 survey, undertaken by Woolcott Research & Engagement, found that 75% of customers surveyed prefer to maintain the current fixed and variable portions of their bill.

Table 51: Proposed residential, non-residential and mines water prices ($2022-23)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Change 2021-22 to 2026-27 (%)
Service Charges $/year							
Residential	351.46	357.16	362.94	368.82	374.80	380.87	8.4%
Non-residential							
20mm connection	351.46	357.16	362.94	368.82	374.80	380.87	8.4%
25mm connection	549.17	558.06	567.10	576.28	585.62	595.11	8.4%
40mm connection	1,405.87	1,428.62	1,451.77	1,475.29	1,499.19	1,523.47	8.4%
50mm connection	2,196.66	2,232.22	2,268.39	2,305.13	2,342.48	2,380.43	8.4%
80mm connection	5,623.46	5,714.50	5,807.07	5,901.14	5,996.74	6,093.89	8.4%
100mm connection	8,786.66	8,928.90	9,073.55	9,220.54	9,369.91	9,521.70	8.4%
150mm connection	19,769.97	20,090.02	20,415.48	20,746.21	21,082.30	21,423.83	8.4%
Mines ($'000s)							
Perilya Ltd.	2,468.61	2,508.61	2,549.25	2,590.54	2,632.51	2,675.16	8.4%
CBH Ltd.	595.47	605.11	614.91	624.88	635.00	645.29	8.4%
Usage Charges $/kL of water supplied							
Treated	1.93	1.96	1.99	2.02	2.05	2.09	8.3%
Chlorinated	1.44	1.52	1.61	1.70	1.80	1.83	27.1%
Untreated - Pipeline	1.09	1.19	1.30	1.41	1.52	1.63	49.5%
Untreated - Non-pipeline	1.69	1.72	1.75	1.77	1.80	1.83	8.3%

12.4 Sewerage price structure

12.4.1 Our current sewerage price structure

Residential customers currently pay a fixed service charge, which is the same for houses and apartments. This is comprised of a base level service charge and a deemed discharge amount (which is the sewerage usage price multiplied by the deemed volume of residential discharge to the sewerage network). Non-residential customers pay a fixed service charge based on their meter size adjusted for each customer's discharge factor, set with reference to a 20mm meter (i.e. the service charge for each customer is scaled-up from the base 20mm meter charge to

reflect the actual size of their meter, before a discharge factor is applied). Non-residential customers also pay a sewerage usage price for actual discharges to the sewerage network.

Like other non-residential customers, the mines pay a service charge applicable to their meter(s) sizes and discharge factors, plus the non-residential sewerage usage price for their discharges to the sewerage network.

Box 12.2 IPART's 2019 decisions on sewerage prices and price structures

In its 2019 determination, IPART decided to:

- Maintain constant revenue generated from sewerage prices, on average, over the determination period
- Maintain the current sewerage usage price in real terms over the determination period
- Introduce a deemed sewerage discharge allowance of 90kL per annum for all residential customers
- Maintain the current approach for setting sewerage prices for mining customers.

In 2019, IPART's Final Report noted that:

- Essential Water's sewerage usage price is within a reasonable range of the marginal cost of supply.
- The approach to setting the mines' service charge is reasonable.
- Essential Water should further refine its estimate of average residential sewerage discharges at the next price review, as 90kL per annum may be somewhat conservative given average water consumption in Broken Hill.

12.4.2 Our current sewerage price structure balances cost-reflectivity, price stability and administrative efficiency

Our current sewerage usage price ($1.34 per kL, in $2021-22) reflects a reasonable estimate of the marginal costs of supply, as recognised by IPART in its 2019 Final Report. Hence, it provides appropriate signals to customers. Further, allocating the residual sewerage costs to customers on the basis of their meter size is broadly cost-reflective and equitable – as meter size, adjusted for discharge factors, is a reasonable indicator of a customer's draw on the capacity of the network.

We consider the current sewerage price structure appropriately balances considerations of cost-reflectivity, equity, price stability and administrative efficiency.

12.4.3 Our proposed sewerage tariff structure for the 2022 determination period

We propose to broadly retain the existing price structure, as listed in Table 52 below.

Consistent with water prices, we propose that sewerage prices (fixed and usage) increase at the same rate as our NRR, 1.62% real per annum from 2022-23 to 2026-27. This will still maintain an efficient, cost-reflective and stable pricing structure, while spreading the cost increase smoothly across customers and charges.

In addition, we also propose to increase the deemed residential sewerage discharge volume from 90kL per annum to 100kL per annum. In response to IPART's request in its 2019 Final Report[34], we examined discharge volumes and found that average residential discharges are likely to be between 105kL and 110kL per annum. Given the bill impacts on residential customers, we consider it is reasonable to increase their deemed sewerage discharge volumes from 90kL to 100kL per annum for the 2022 determination period as a means of gradually transitioning to higher deemed discharge volumes over time.

[34] IPART, *Review of Essential Energy's prices for water and sewerage services in Broken Hill from 1 July 2019*, May 2019, P 118.

Table 52: Essential Water's proposed sewerage prices ($2022-23)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Change over period
Service charges ($/year)[a]							
Residential service charge[b]	560.03	583.06	592.50	602.10	611.86	621.77	11.0%
Non-residential[c]							
20mm connection	623.45	633.55	643.81	654.24	664.84	675.61	8.4%
25mm connection	974.13	989.92	1,005.95	1,022.25	1,038.81	1,055.64	8.4%
40mm connection	2,493.78	2,534.18	2,575.24	2,616.96	2,659.35	2,702.43	8.4%
50mm connection	3,896.54	3,959.66	4,023.81	4,088.99	4,155.24	4,222.55	8.4%
80mm connection	9,975.13	10,136.73	10,300.95	10,467.82	10,637.40	10,809.73	8.4%
100mm connection	15,586.15	15,838.65	16,095.23	16,355.97	16,620.94	16,890.20	8.4%
150mm connection	35,068.83	35,636.95	36,214.27	36,800.94	37,397.12	38,002.95	8.4%
Usage charges ($/kL)							
Non-residential	1.37	1.40	1.42	1.44	1.46	1.49	8.8%

a. Sewerage service charges for non-residential customers and mining customers are based on water meter size. The applicable meter charge is set using the formula: (meter size)2 x 20mm meter charge / 400 x discharge factor. We have calculated service charges for larger meter sizes using this formula.

b. We propose to increase the deemed residential discharge volume from 90kL per annum to 100kL per annum from 2022-23. This volume is multiplied by the same sewerage usage charge that is applied to non-residential customers to calculate the residential deemed discharge charge. This is included in the residential service charge.

c. Non-residential charges listed here assume a 100% discharge factor. Bills will depend on discharge factors for individual customers.

12.5 Trade waste prices

Trade waste is any liquid waste other than sewage of a domestic nature. Trade waste discharge places greater demands on the sewerage system and has higher costs of treatment than domestic sewage. Trade waste is largely discharged by commercial and industrial customers. Customers liable for trade waste charges also pay sewerage charges.

Essential Water has developed a Trade Waste Policy[35] and DPIE (previously DoI[36]) has issued Liquid Trade Waste Management Guidelines.[37]

Essential Water's Trade Waste Policy breaks its trade waste customers into categories, based on level of risk (and hence cost) associated with their trade waste discharges. This is consistent with DPIE's Guidelines. Essential Water's charging categories are:

- Category 1 – discharges requiring nil or minimum pre-treatment
- Category 1A – low impact dischargers

35 Essential Water, *Manual – Water: Discharge of Liquid Trade Waste Policy*, CEOM7046, October 2016.

36 The Department of Industry (DoI).

37 NSW Department of Planning, Industry and Environment (DPIE), *Liquid Trade Waste Management Guidelines for councils in regional NSW, 2021*. The DoI's previous Guidelines were: *Liquid Trade Waste Regulation Guidelines*, April 2009.

- Category 2 – discharges with prescribed pre-treatment
- Category 3 – large (20 kL/day) and industrial discharges.

12.5.1 The current structure of trade waste prices

Under IPART's 2019 Determination, Essential Water's trade waste prices include fixed charges and variable charges ($ per kL or $ per kg discharged).

Fixed charges include:

- **Application fee** – which recovers the costs of administration and technical services provided in processing a trade waste application
- **Re-inspection fee** – which recovers the costs of unplanned or re-inspections of premises (eg, where there may be suspected non-compliance with approval conditions), above and beyond the costs of inspection activities covered by application or annual fees
- **Annual fees** – which recover the costs for ongoing administration and scheduled inspections (including monitoring), and varies by the different trade waste categories to reflect the varying complexity of the inspection and administration requirements of different types of discharge
- **Food Waste Disposal Charge** – which applies where Essential Water has approved the use of an existing food waste disposal unit for a hospital, nursing home or other eligible facility, and is charged on the basis of the number of beds in that facility.

Variable charges include:

- **Usage charges ($/kL) for Categories 1, 1a and 2 customers** – which reflect the additional costs (above domestic-strength sewage) of trade waste discharges imposed on the sewerage network
- **Non-compliant ($/kL) usage charges ($/kL) for Categories 1, 1a and 2 customers** – which are higher usage fees that are applied when a discharger has not installed or maintained appropriate pre-treatment equipment (Category 1a and 2)
- **Mass-based charges ($/kg) for Category 3 customers** – which reflect the additional costs (above domestic-strength sewage) of trade waste discharges imposed on the sewerage network, which vary by waste type.
- **Non-compliance fees for mass-based charges ($/kg) for Category 3 customers** – which are higher mass-based fees that are applied when a discharger fails to comply with acceptance limits specified in its approval conditions (Category 3).

In 2019, IPART set Essential Water's:

- **Variable charges for Category 1, 1a, 2 and 3 customers** to transition towards the volume and mass-based charges in DoI's Liquid Trade Waste Regulation Guidelines, at an assumed rate of 10% per year.
    - the exception being non-compliant excess mass charges for Category 3 discharges, which were to be charged "As per Essential Water's Trade Waste Policy"
- **Fixed charges for all trade water customers** equal to DoI's Guideline Prices, exempt for mines.
    - Essential Water's fixed trade waste charges for the mines were maintained at existing levels in real terms.

In 2019, IPART also made the following findings and recommendations in relation to Essential Water's trade waste prices:

- The only trade waste charges Essential Water had been levying was an annual fee to two mining customers. Relative to more cost-reflective prices (e.g. DoI's prices), this resulted in a shortfall of between $370,000 and $534,000 per annum from trade waste customers. This shortfall, estimated by IPART's consultants Marsden Jacob Associates (MJA), was calculated on the basis that 13% of flows in Essential Water's sewerage catchments may be trade waste related.
- The shortfall between the revenue from cost-reflective trade waste prices and IPART's-determined trade waste prices (which gradually transition towards more cost-reflective prices) should be funded by the Government rather than Essential Water's other customers. IPART estimated this shortfall to be between $223,000 and $287,000 ($2018-19) over 2019-20 to 2021-22

- Essential Water should consult with its trade waste customers to establish the efficient cost of providing trade waste services, and how best to levy charges, to inform its next pricing proposal.

Under the 2019 determination, IPART forecast that Essential Water would recover trade waste revenue of about $122,000 per annum, on average, over 2019-20 to 2021-22, across about 270 trade waste customers.

12.5.2 We deal with relatively little trade waste, which means trade waste prices should not be too burdensome to implement and administer

In 2019, IPART and its consultant, MJA, recognised that it would take some time for Essential Water to consult with its trade waste customers, collect further information on trade costs and establish how to best implement trade waste charges over the long-term. IPART and MJA also recognised the importance of avoiding price shocks, given economic conditions in the region.

MJA proposed a 10-year transition path to cost-reflective trade waste prices, during which time Essential Water could sets its trade waste prices with reference to DoI's volumetric prices and collect more information for it to potentially be able to set and apply prices to reflect its specific trade waste costs. MJA stated that a transition would include:

- application of the default volumetric prices recommended by the Department of Primary Industries (Liquid Trade Waste Regulation Guidelines 2009) for Category 2 and 3 customers, phased in over a 10-year period
- collection of trade waste quality data from Category 3 customers over a 3-year period, to support the calculation of mass-based charges
- application of either calculated or default prices for trade waste from 2028 onwards.[38]

Notably, MJA recognised that a transition period of at least three years would be required to support the calculation of mass-based charges, given the need to collect the necessary data from Category 3 customers. In response, IPART's Draft Determination in 2019 did not set mass based charges for Category 3 customers because Essential Water did not have sufficient information to charge on that basis, and flagged that it would give more time for Essential Water to implement mass based charges. However, IPART included mass-based charges for Category 3 customers in its Final Determination in 2019.

Since 2019, economic conditions in our region have become more tenuous, with the COVD-19 pandemic. Our workforce has also had to respond to other operational priorities over the three-year determination period, including an increase in the need to conduct reactive repairs and maintenance to our network. For a small water utility, trade waste prices are relatively complex and costly to administer and implement.

Further complicating matters, we have found that a key element of IPART's determination is inconsistent with our Trade Waste Policy, DPIE's Guidelines and MJA's advice. IPART's 2019 Determination includes trade waste usage prices for Category 1 and 1a customers. In contrast, DPIE's Guidelines and Essential Water's Trade Waste Policy do not, as they simply include an annual fee for Category 1 customers in recognition that it is not administratively efficient to impose a usage fee on these low risk and low impact customers.[39] Consistent with DPIE's Guidelines and Essential Water's Trade Waste Policy, MJA recommended the application of default DoI volumetric prices for Category 2 and 3 customers only.[40]

These factors have meant that, while we have conducted some stakeholder consultation and preliminary analysis of trade waste customers, we have not applied the trade waste prices to most customers and have not been able to undertake a detailed review of trade waste flows and costs over the 2019 determination period.

To date, we have found that 64% of residential customers think that businesses should pay an additional charge to reflect the higher cost of treatment; whereas 34% of residential customers consider these additional costs should be shared across all customers. Amongst non-residential customers, 50% believe that only business customers should pay an additional charge to reflect the higher cost of treatment; and 50% consider these additional costs should be shared across all customers.[41]

---

38 Marsden Jacob Associates, *Review of Essential Water's proposed prices for trade waste and miscellaneous services*, 2019, pp 11-12.

39 Both documents include a non-compliance usage charge for Category 1 customers – but this is only applied to customers who have not installed or maintained appropriate pre-treatment equipment.

40 Marsden Jacob Associates, *Review of Essential Water's proposed prices for trade waste and miscellaneous services*, 2019, p 5.

41 Woolcott Research & Engagement, Essential Water Survey, April 2021.

Over the 2022 determination period, we plan to engage more with our customers on trade waste and conduct sampling of trade waste customers' discharges to better assess the nature and costs of these discharges. This will enable us to better apply trade waste prices and inform the development of our proposed trade waste prices for the next price review.

12.5.3 Our proposed trade waste prices for the 2022 determination period

Relative to the 2019 Determination, we propose the following for trade waste charges:

- maintain current fixed prices in real terms
- remove usage prices for 'compliant' Category 1 and 1a customers, to ensure administrative efficiency and consistency with DPIE's Guidelines
- set usage prices for non-compliant Category 1, Category 2 and Category 3 customers to continue to transition towards the volume and mass-based charges in DoI's Liquid Trade Waste Regulation Guidelines (now DPIE's Guidelines), at an assumed rate of 10% per year
- remove mass-based prices, to allow time for Essential Water to collect the necessary information to be able to implement these prices at the next price determination.

Our proposed trade waste prices for the 2022 determination are listed in the tables below.

Over the next few years, we plan to work on getting a better understanding of our trade waste customers', their discharges to the network and the costs these impose, to consider the extent to which we should deviate from DPIE's prices over time to set prices that reflect the costs imposed on our network.

In the meantime, we consider our proposed approach, is proportionate given the potential complexity of trade waste pricing and the size of Essential Water. Moreover, it ensures that trade waste customers contribute to the costs they impose on the network, sends reasonable price signals and minimises the extent of price shock on trade waste customers.

Table 53: Proposed fixed Trade Waste Charges for categories 1, 1a, 2 and 3, $/year ($2022-23)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Change 2021-22 to 2026-27 (%)
Annual Trade Waste fee for Category 1 Trade Waste Discharge	102.97	102.97	102.97	102.97	102.97	102.97	0.0%
Annual Trade Waste fee for Category 1a Trade Waste Discharge	102.97	102.97	102.97	102.97	102.97	102.97	0.0%
Annual Trade Waste fee for Category 2 Trade Waste Discharge	207.01	207.01	207.01	207.01	207.01	207.01	0.0%
Annual Trade Waste fee for Category 3 Trade Waste Discharge	692.90	692.90	692.90	692.90	692.90	692.90	0.0%
Annual Trade Waste fee per operating mine	1,725.80	1,725.80	1,725.80	1,725.80	1,725.80	1,725.80	0.0%
Trade Waste discharge application fee	254.20	254.20	254.20	254.20	254.20	254.20	0.0%
Trade Waste re-inspection fee	94.38	94.38	94.38	94.38	94.38	94.38	0.0%
Food waste disposal charge (per bed, per eligible facility)	32.17	32.17	32.17	32.17	32.17	32.17	0.0%

Table 54: Proposed variable trade waste prices, $/kL ($2022-23)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Change 2021-22 to 2026-27 (%)
Trade waste usage charge for Category 1 and 1a	0.58	Nil	Nil	Nil	Nil	Nil	N/A
Non-compliant trade waste usage charge for Category 1 and 1a	0.66	0.77	0.96	1.16	1.35	1.54	133.3%
Trade waste usage charge for Categories 2	0.58	0.77	0.96	1.16	1.35	1.54	165.5%
Trade waste usage charge for Categories 3	N/A	0.77	0.96	1.16	1.35	1.54	N/A
Non-compliant trade waste usage charge for Category 2	6.06	7.08	8.85	10.62	12.39	14.16	133.7%
Non-compliant trade waste usage charge for Category 3	N/A	7.08	8.85	10.62	12.39	14.16	N/A

a. Under the 2019 Determination, Category 3 trade waste customers were liable for mass-based charges ($/kg) rather than usage charges ($/kL), including non-compliant mass-based charges "As per Essential Water's Trade Waste Policy".

12.6 Miscellaneous charges

Essential Water provides a range of miscellaneous services to its water and sewerage customers, generally for one-off services such as connections and disconnections, replacing damaged services, plumbing inspections, site inspections and building plan approvals. These charges are levied on a relatively small number of customers, as they are incurred (i.e. as the service is provided).

Essential Water has historically recovered most of its miscellaneous charges' revenue from three charges:

- Conveyancing certificates with meter reads
- Drainage diagrams, and
- Personal service of final warning notice for late payment prior to restriction.

12.6.1 Our current schedule of miscellaneous charges

Essential Water's current schedule of miscellaneous charges is listed in the appendix.

12.6.2 Our miscellaneous charges are cost-reflective

In 2019, IPART's consultant, MJA, assessed our miscellaneous charges. According to IPART, MJA found that our 2019 proposed prices reflected efficient costs and did not recommend any changes to these proposed prices.

12.6.3 We propose our current miscellaneous charges remain constant in real terms for the 2022 determination period

We propose our miscellaneous charges remain constant in real terms. MJA's analysis in 2019 suggests these charges are reasonable, and there has been nothing has occurred since 2019 to indicate a need for change.

12.7 Recycled water prices

We currently supply recycled water (or effluent water) to a small number of customers for non-potable uses, following treatment of wastewater collected in our sewerage network.

12.7.1 Recycled water prices are currently unregulated

In 2019, consistent with Essential Water's proposal, IPART decided not to set maximum recycled water prices for Essential Water, and to instead treat recycled water revenue as non-regulated revenue.

12.7.2 We propose to maintain the current approach to recycled water prices for the 2022 determination period

The current treatment of Essential Water's recycled water (or effluent water) prices is consistent with IPART's approach to 'voluntary' recycled water schemes[42], where it encourages unregulated pricing agreements (with the possibility that IPART can step in and determine prices via a scheme-specific review if asked by a water utility or customer).

We propose that recycled water prices remain unregulated, as these services are provided to customers voluntarily (i.e. the customers could choose to purchase regulated water services instead) and we have been able to reach agreement with our effluent water customers.

We also propose that we continue the current practice of deducting 50 per cent of the revenue received from recycled water sales from the NRR for regulated services – thus, effectively sharing the non-regulated revenue 50/50 between Essential Water and the broader customer base (or the Government, if there is a subsidy in place).

12.8 Prices for unmetered properties

12.8.1 Current prices for unmetered properties

Currently, unmetered residential and non-residential customers are subject to:

- the standard residential water service charge
- a water usage price for a deemed consumption of 300kL per annum, for the applicable water quality
- the standard residential sewerage charge (which includes a deemed discharge of 100kL per year).

12.8.2 We propose to maintain the current approach to unmetered properties for the 2022 determination period

The average level of residential water consumption over the 2019 determination period was around 250 kL per year. Consistent with IPART's 2019 determination, we consider it is appropriate to maintain a deemed consumption of 300kL per year, which potentially provides an incentive for small users to have a meter installed.

We therefore propose to maintain the current price structure for unmetered properties.

12.9 Prices for unconnected properties

Unconnected properties account for about 3% of Essential Water's customer base. Most of Essential Water's unconnected properties are vacant land.

12.9.1 Current approach to unconnected properties

In 2019, IPART decided that properties that are not connected to the water or sewerage system should not pay water or sewerage service charges, on the basis that:

- properties that are not connected to the water or sewerage system are generally not directly imposing costs on Essential Water's network, and

[42] IPART, *Review of pricing arrangements for recycled water and related services*, Final Report, July 2019.

- properties that have been disconnected due to non-payment of fees should not continue to be levied water or sewerage service charges.

12.9.2 We propose to continue not charging unconnected properties over the 2022 determination period

We propose to maintain the current approach of not charging unconnected properties, for the reasons outlined in IPART's 2019 Final Report.

13. Customer and financial impacts

13.1 Overview

This chapter presents potential impacts of our pricing proposal on our customers, Essential Water and the NSW Government.

Key messages

- Our proposal caps price increases for most customers at about the same rate as the increase in our NRR (efficient costs). This keeps prices affordable, while also ensuring customers contribute to the efficient costs of supplying water and wastewater services to them.
- Prices for chlorinated water and pipeline untreated water customers will increase at a higher rate, but this is from a much lower base and is the continuation of a price path established by IPART in 2019 to gradually bring these prices into line with those faced by other untreated water customers.
- Our proposed prices would require an increase in the NSW Government contribution. This is necessary to ensure we have sufficient funds to efficiently invest in our network and provide our services to acceptable standards, at prices our customers can afford.
- Essential Water will be financeable if the NSW Government funds the difference between our NRR and the revenue we expect to receive from customers under our pricing proposal.

13.2 Customer bill impacts

Our proposed prices ensure customers contribute to necessary investment in our network, at levels they can afford

Table 55 and Table 56 below present indicative residential and non-residential water and sewerage bills under our pricing proposal. These figures are in real $2022-23, therefore they exclude the effects of inflation.

This shows, for example, that a customer in a residential house or apartment who uses 300kL of treated water per annum would see an increase in their annual bill of around 9.3% from 2021-22 to 2026-27, or an average increase of 1.8% per annum. A pensioner who uses the same amount of water would face a bill increase of 12.2% from 2021-22 to 2026-27.

Pensioners would see their bills increase slightly more, as a percentage, compared to other residential customers. This is because the pensioner rebate is fixed in nominal terms at $175 per annum. The rebate is provided by Essential Water and funded by the NSW Government. Pensioners' bills in dollar terms would still be lower than non-pensioner bills.

Bills for non-residential customers will depend on their meter size, discharge factor and water usage. For example, a non-residential customer with a 25mm meter, a discharge factor of 70% and who uses 1,000 kL of treated water per annum would see an increase in their annual bill of around 8.4% from 2021-22 to 2026-27, or an average increase of 1.6% per annum.

Combined water and sewerage bills for residential customers would increase slightly more than for non-residential customers because we have proposed to increase the deemed sewerage discharge volume for residential customers from 90kL per annum to 100kL per annum, to better reflect our estimates of the volume of residential discharges to our sewerage network.

We consider our pricing proposal balances the need to invest in our network to ensure reliable services are provided to our customers at appropriate standards, while ensuring customers contribute to these costs through prices that they can afford.

Table 55: Residential annual water and sewerage bills ($2022-23)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Change 2021-22 to 2026-27 (%)
Residential – treated water – non pensioner							
200kL	1,298	1,332	1,353	1,375	1,397	1,421	9.5%
300kL	1,491	1,528	1,552	1,577	1,602	1,630	9.3%
400kL	1,684	1,724	1,751	1,779	1,807	1,839	9.2%
Residential – treated water - pensioner							
200kL	1,118	1,157	1,183	1,208	1,234	1,262	12.9%
300kL	1,311	1,353	1,382	1,410	1,439	1,471	12.2%
400kL	1,504	1,549	1,581	1,612	1,644	1,680	11.7%
Residential chlorinated water (water bills only, no sewerage)							
200kL	639	661	685	709	735	747	16.8%
300kL	783	813	846	879	915	930	18.7%
400kL	927	965	1,007	1,049	1,095	1,113	20.0%

Table 56: Non-residential annual water and sewerage bills ($2022-23)

	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	Change 2021-22 to 2026-27 (%)
Non-residential – treated water[a]							
20mm with 250kL usage	1,510	1,536	1,560	1,584	1,608	1,637	8.4%
25mm with 1,000kL usage	4,120	4,191	4,255	4,320	4,385	4,467	8.4%
40mm with 2,100kL usage	9,218	9,377	9,521	9,666	9,812	9,994	8.4%
80mm with 21,000kL usage	73,275	74,550	75,682	76,817	77,955	79,454	8.4%
Non-residential – untreated water, pipeline customers (water only, no sewerage)							
20mm with 250kL usage	623	655	688	721	754	789	26.6%
25mm with 1,000kL usage	1,636	1,750	1,866	1,984	2,104	2,226	36.1%
40mm with 2,1000kL usage	3,688	3,932	4,180	4,432	4,688	4,948	34.2%
80mm with 21,000kL usage	28,440	30,744	33,086	35,466	37,884	40,341	41.8%
Non-residential – untreated water, non-pipeline customers (water only, no sewerage)							
20mm with 250kL usage	774	787	800	813	826	839	8.4%
25mm with 1,000kL usage	2,240	2,277	2,314	2,351	2,389	2,428	8.4%
40mm with 2,100kL usage	4,957	5,038	5,119	5,202	5,287	5,372	8.4%
80mm with 21,000kL usage	41,140	41,806	42,483	43,172	43,871	44,582	8.4%

a. Sewerage service charges for non-residential customers are based on water meter size. The applicable meter charge is set using the formula: (meter size)^2 x 20mm meter charge / 400 x discharge factor. For the purpose of showing indicative bills, we have calculated service charges for larger meter sizes based on this formula using a discharge factor of 70%. Actual bills will depend on discharge factors for individual customers.

13.3 Impact on Essential Water and the level of NSW Government contribution

Before IPART finalises its pricing decisions, it undertakes a financeability test to assess how its pricing decisions are likely to affect the business' financial sustainability and ability to raise funds to manage its activities over the upcoming regulatory period.

Provided we receive our NRR to recover our efficient costs of providing our water and wastewater services over the 2022 determination period, Essential Water will be able to deliver our services to customers at required standards, while complying with our regulatory requirements, and remain financeable.

Under our pricing proposal, this would require an increase in the NSW Government's contribution from $24.7 million in 2021-22 to an average of $27.1 million in 2026-27.

If we do not recover our NRR through a combination of revenue from customers and a Government contribution, this would impact on our financeability and/or our ability to deliver our services to customers at required standards.

Appendices:

CEO Declaration

In accordance with the *Guidelines for Water Agency Pricing Submissions*, November 2020 (the Guidelines), of the Independent Pricing and Regulatory Tribunal of New South Wales, I declare that:

a) The information provided in this pricing submission is the best available information of the financial and operational affairs of Essential Water and has been checked in accordance with the Guidelines; and

b) There are no circumstances of which I am aware that would render the information provided to be misleading or inaccurate.

Certified by the Chief Executive Officer:

29 June 2021

John Cleland

Chief Executive Officer Dated

Miscellaneous charges

Table 57: Charges for ancillary and miscellaneous customer services ($2022-23)

	2022-23	2023-24	2024-25	2025-26	2026-27
Conveyancing Certificate					
Statement of outstanding charges					
a) Full certificate with meter read	76.68	76.68	76.68	76.68	76.68
b) Updated meter read request (special meter read)	57.47	57.47	57.47	57.47	57.47
c) Full certificate with history search	134.98	134.98	134.98	134.98	134.98
d) Urgent full certificate with meter read (within 48 hours)	132.90	132.90	132.90	132.90	132.90
Meter Test					
Refunded if meter is ± 3%	79.69	79.69	79.69	79.69	79.69
Drainage Diagram	22.48	22.48	22.48	22.48	22.48
Plumbing Inspection	37.18	37.18	37.18	37.18	37.18
Plumbers application	39.72	39.72	39.72	39.72	39.72
Site inspection for water and sewerage	127.72	127.72	127.72	127.72	127.72
Statement of available water pressure	184.82	184.82	184.82	184.82	184.82
Building plan approval - extension	35.88	35.88	35.88	35.88	35.88
Building plan approval - new connection	54.20	54.20	54.20	54.20	54.20
Fire Service application	94.80	94.80	94.80	94.80	94.80
Relocation/increase in size of water service (tapping fee)	91.79	91.79	91.79	91.79	91.79
Backflow prevention device testing and certification (per hour plus materials)	76.83	76.83	76.83	76.83	76.83
Install Water Service					
a) 20mm Service up to 3 metres	787.05	787.05	787.05	787.05	787.05
b) 20mm Service over 3 metres and less than 30 metres	2,030.97	2,030.97	2,030.97	2,030.97	2,030.97
c) All others	By quote	By quote	By quote	By quote	By quote
Alter existing water service					
a) Actual Cost	By quote	By quote	By quote	By quote	By quote
b) Relocate existing service	By quote	By quote	By quote	By quote	By quote
Downgrade Meter Size					

a) 25mm to 20mm	101.19	101.19	101.19	101.19	101.19
b) All others	By quote	By quote	By quote	By quote	By quote
Repair damaged water service					
a) First repair within 5-year period	Nil	Nil	Nil	Nil	Nil
b) Second and subsequent repairs (per hour plus materials)	101.19	101.19	101.19	101.19	101.19
Rectification of Illegal Service	246.08	246.08	246.08	246.08	246.08
Replace Damaged Water Meter					
(a) First replacement in a 5-year period	Nil	Nil	Nil	Nil	Nil
(b) 20mm	118.37	118.37	118.37	118.37	118.37
(c) 25mm	233.63	233.63	233.63	233.63	233.63
(d) 32mm	339.53	339.53	339.53	339.53	339.53
(e) 40mm	818.20	818.20	818.20	818.20	818.20
(f) 50mm	1,020.67	1,020.67	1,020.67	1,020.67	1,020.67
(g) 80mm	1,121.39	1,121.39	1,121.39	1,121.39	1,121.39
(h)100mm or greater	By quote	By quote	By quote	By quote	By quote
Water Service Disconnection					
a) First disconnect within 1-year period	Nil	Nil	Nil	Nil	Nil
b) Capping	98.70	98.70	98.70	98.70	98.70
c) 20mm to 25mm	165.10	165.10	165.10	165.10	165.10
d) Greater than 25mm	By quote	By quote	By quote	By quote	By quote
e) Bitumen Repairs ($ per metre) (minimum 1 metre)	19.21	19.21	19.21	19.21	19.21
Water Service Reconnection					
a) First reconnect within 1-year period	Nil	Nil	Nil	Nil	Nil
b) Un-capping	105.91	105.91	105.91	105.91	105.91
c) 20mm to 25mm	177.55	177.55	177.55	177.55	177.55
d) Greater than 25mm	By quote	By quote	By quote	By quote	By quote
e) Bitumen Repairs ($ per metre) (minimum 1 metre)	19.21	19.21	19.21	19.21	19.21
Asset Location					
a) Major or Critical Infrastructure (per hour)	101.19	101.19	101.19	101.19	101.19
b) Minor or non-critical Initial Location	Nil	Nil	Nil	Nil	Nil

c) Reinspect asset location (per hour)	101.19	101.19	101.19	101.19	101.19
Relocate existing stop valve or hydrant	By quote	By quote	By quote	By quote	By quote
Replace water main before customer installations	By quote	By quote	By quote	By quote	By quote
Standpipe Hire					
a) Monthly (Minimum Charge)	32.71	32.71	32.71	32.71	32.71
b) Annually	392.48	392.48	392.48	392.48	392.48
c) Water usage charges ($ per kL)					
i. Treated	1.87	1.87	1.87	1.87	1.87
iii. Untreated	1.66	1.66	1.66	1.66	1.66
Personal Service of Final Warning Notice	22.38	22.38	22.38	22.38	22.38
Water Reconnections - after restrictions					
a) during business hours	96.57	96.57	96.57	96.57	96.57
b) outside business hours	133.95	133.95	133.95	133.95	133.95

Customer survey results

Essential Water Survey

Essential Water survey

April 2021

Executive summary

Most residents were aged between 25 and 64 years old and received bills from Essential Water. SMEs tended to be owners of a business that had been operating for more than 10 years.

The vast majority of both residents and SMEs were aware of Essential Water. Many felt that they supplied water well and had not experienced an issue in recent years.

Providing a safe water and reliable sewerage supply was the most important service that Essential Water delivers. Both residents and SMEs felt that encouraging the use of recycled water was less important than the other factors mentioned.

Residents and SMEs tended to feel that Essential Water supplied water and sewerage services well, however there is room to improve satisfaction with the service across the board.

The proportion of respondents that felt that Essential Water provided good value for money increased from 2018.

There is room to improve satisfaction with being kept informed during water interruptions, especially among SMEs. Most wanted to keep the number of interruptions and the structure of their bill the same.

Residents

Demographics

Values

Customer service

Service levels

Pricing

Demographics

Age and gender

	2018 (n=430)	2021 (n=200)
Age %		
18-24	4	**5**
25-34	11	**5**
35-44	26	**32**
45-54	11	**12**
55-64	23	**22**
65+	25	**25**
Gender %		
Female	53	**59**
Male	47	**41**

Similar to 2018, most residents were between 25 and 64 years old

Resi

Q2. RECORD:
Q3. Which of the following age groups best describes you?
Base: All residents 2018 (n=430), 2021 (n=200)

Residence, ATSI status and language at home

	2018 (n=430)	2021 (n=200)
Language at home %		
Only English	98	**98**
Not only English	2	**2**
ATSI Status %		
Not of ATSI origin	95	**92**
Aboriginal and/or Torres Strait Islander	4	**8**
Residence %		
Broken Hill	96	**99**
Menindee	2	**1**
Silverton	1	**<1**
Sunset Strip	1	**<1**

Q4. Do you speak a language other than English at home?
Q5. Are you of Aboriginal or Torres Strait Islander origin?
Q6. Which area are you a resident of?
Base: All residents 2018 (n=430), 2021 (n=200)

Resi

The vast majority of 2021 residents only spoke English at home, did not identify as ATSI and lived in Broken Hill, which was on par with 2018

Ownership status and household type

	2018 (n=430)	2021 (n=200)
Ownership status %		
Owned	88	**86**
Rented	11	**13**
Household type %		
Couple/family with children at home	38	**36**
Couple/family without children at home	31	**35**
Single person household	20	**18**
Single parent family	5	**6**
Group household	2	**1**
Other	3	**5**

Most owned their property and lived with their partner and/or children

Resi

Q19. Is the place you live in:
Q21. Which best describes your household:
Base: All residents 2018 (n=430), 2021 (n=200)

Work status and household income

	2018 (n=430)	2021 (n=200)
Work status %		
Working full time	45	**39**
Retired	30	**33**
Working part time/casually	13	**14**
Not employed	3	**6**
Other	7	**8**
Household income %		
< $40,000	22	**28**
$41,000 - $80,000	19	**18**
$81,000 - $100,000	9	**14**
$101,00 - $150,000	10	**8**
> $150,000	8	**9**
Prefer not to indicate	32	**23**

Resi

Q22. What is your work status?
Q23. What is your approximate annual household income before tax?
Base: All residents 2018 (n=430), 2021 (n=200)

Similar to the previous read, over half of residents worked full or part time and had a household income of less than $100,000 p.a.

Type of bills received

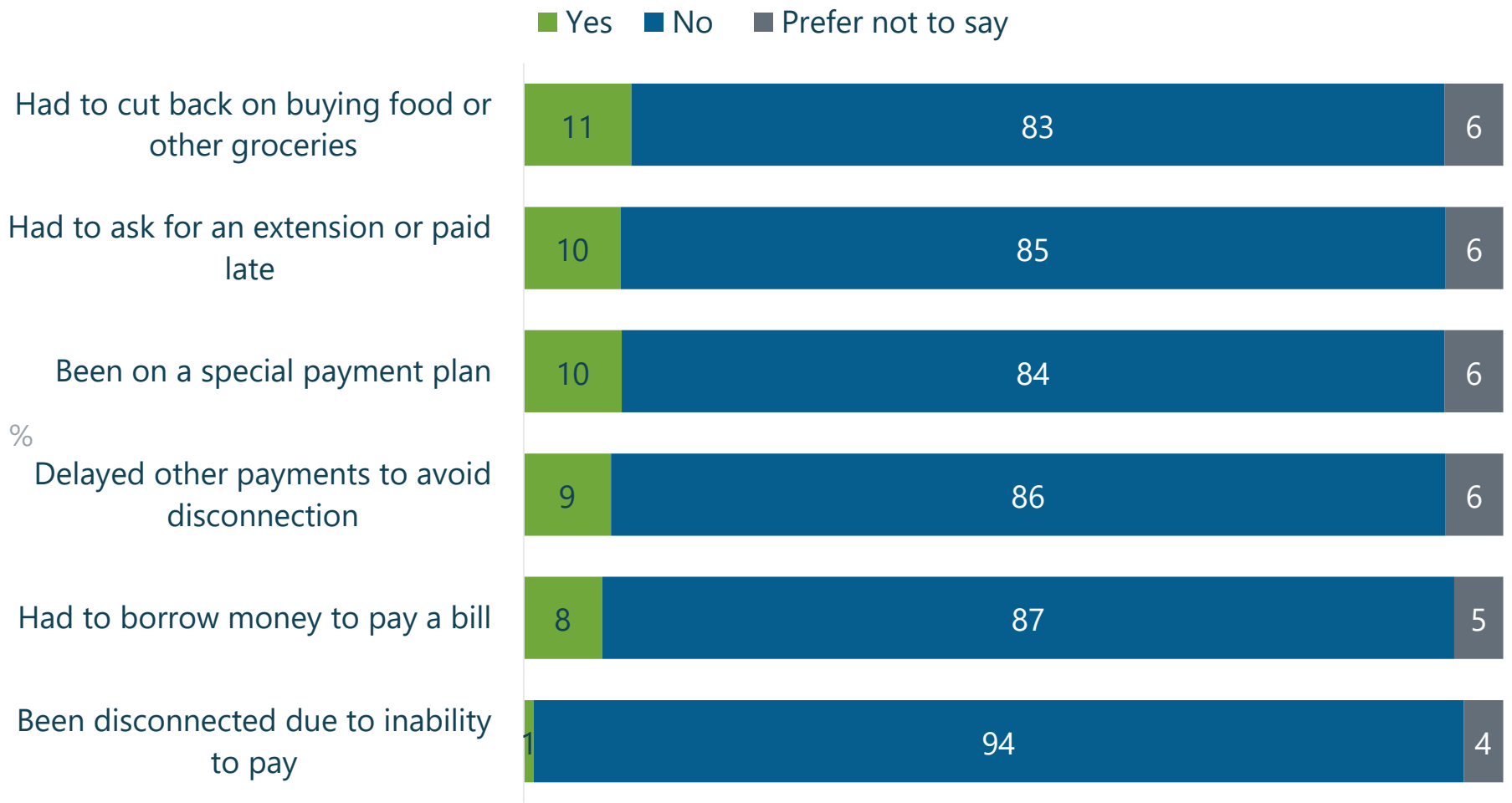
Type of bill %	2018 (n=430)	2021 (n=200)
I receive bills from Essential Water	89	**87**
I do not directly pay any amount for water and sewerage	4	**6**
My landlord charges me a specific amount for water and sewerage, but I don't know how that amount relates to the Essential Water Bill	2	**3**
My landlord receives bills from Essential Water and charges the full amount to me as a specific charge separate from rent	3	**2**
My landlord receives bills from Essential Water and charges part of the bill to me as a specific charge separate from rent	2	**1**
I receive bills from Essential Water and from my body corporate	-	**<1**

As with 2018, most residents received their water and sewerage bills from Essential Water

Resi

Q20. Which of the following best describes the water and sewerage bills you receive for the residence you live in?
Base: All residents 2018 (n=430), 2021 (n=200)

Experience of financial difficulties



Over one in ten residents had experienced at least one of the financial difficulties listed

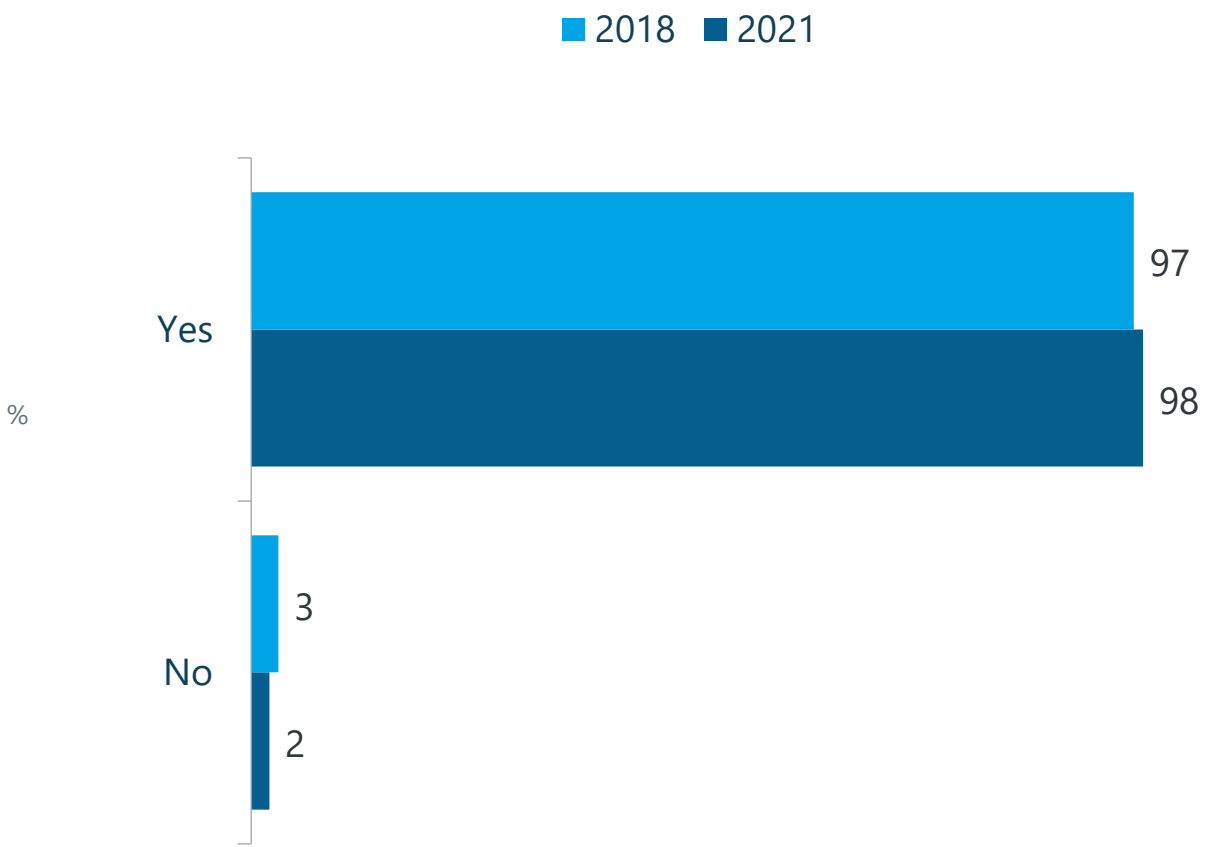
Resi

Q24. The last year has been a difficult time financially for many people. Just thinking about utility bills, such as electricity and water, in the last 12 months have you experienced any of the following:
Base: All residents 2021 (n=200)

Values


Innovation
Inspiration
Experience
Inspiration
INSPIRATION
Experience
Inspiration
EXPERIENCE
Innovation
EXPERIENCE

Awareness of Essential Water

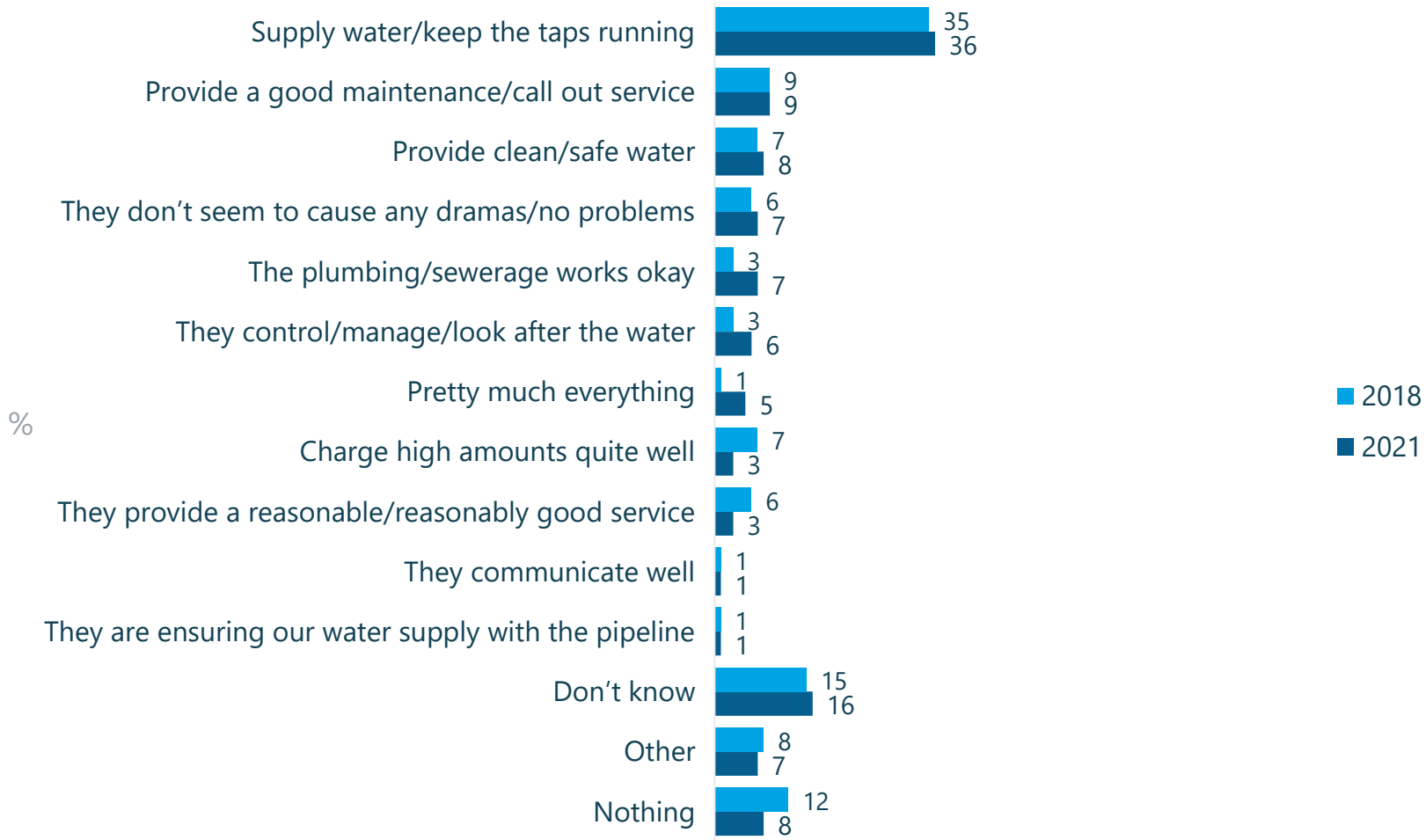


The vast majority had heard of Essential Water before, which was similar to 2018

Resi

Q7. Before today, had you heard of Essential Water?
Base: All residents 2018 (n=430), 2021 (n=200)

What Essential Water does well

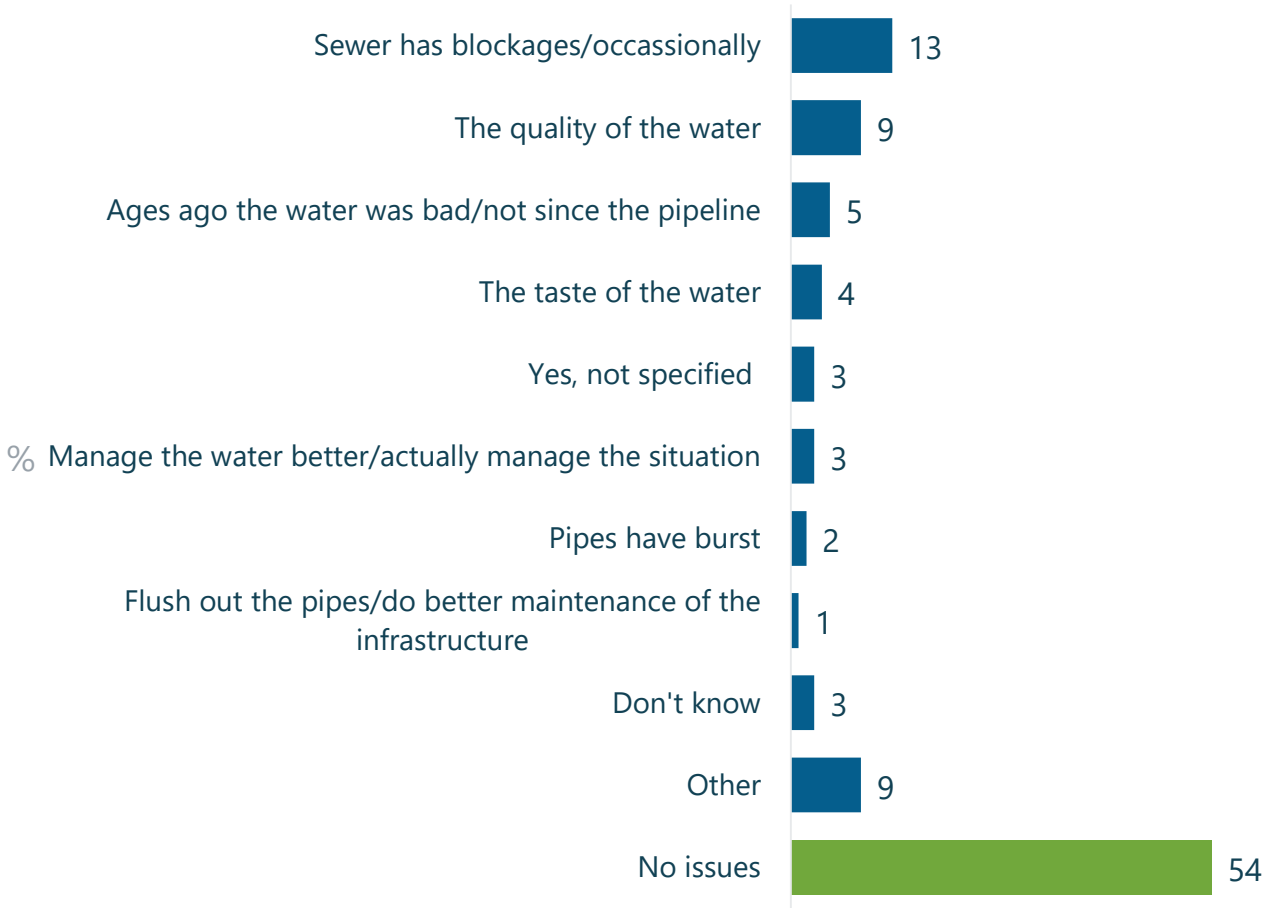


Similar to 2018, more than one third felt that Essential Water supplies water well

Resi

Q8. From what you know or have heard, what do you think Essential Water does well?
Base: All residents 2018 (n=430), 2021 (n=200)

Issue with water or sewerage service

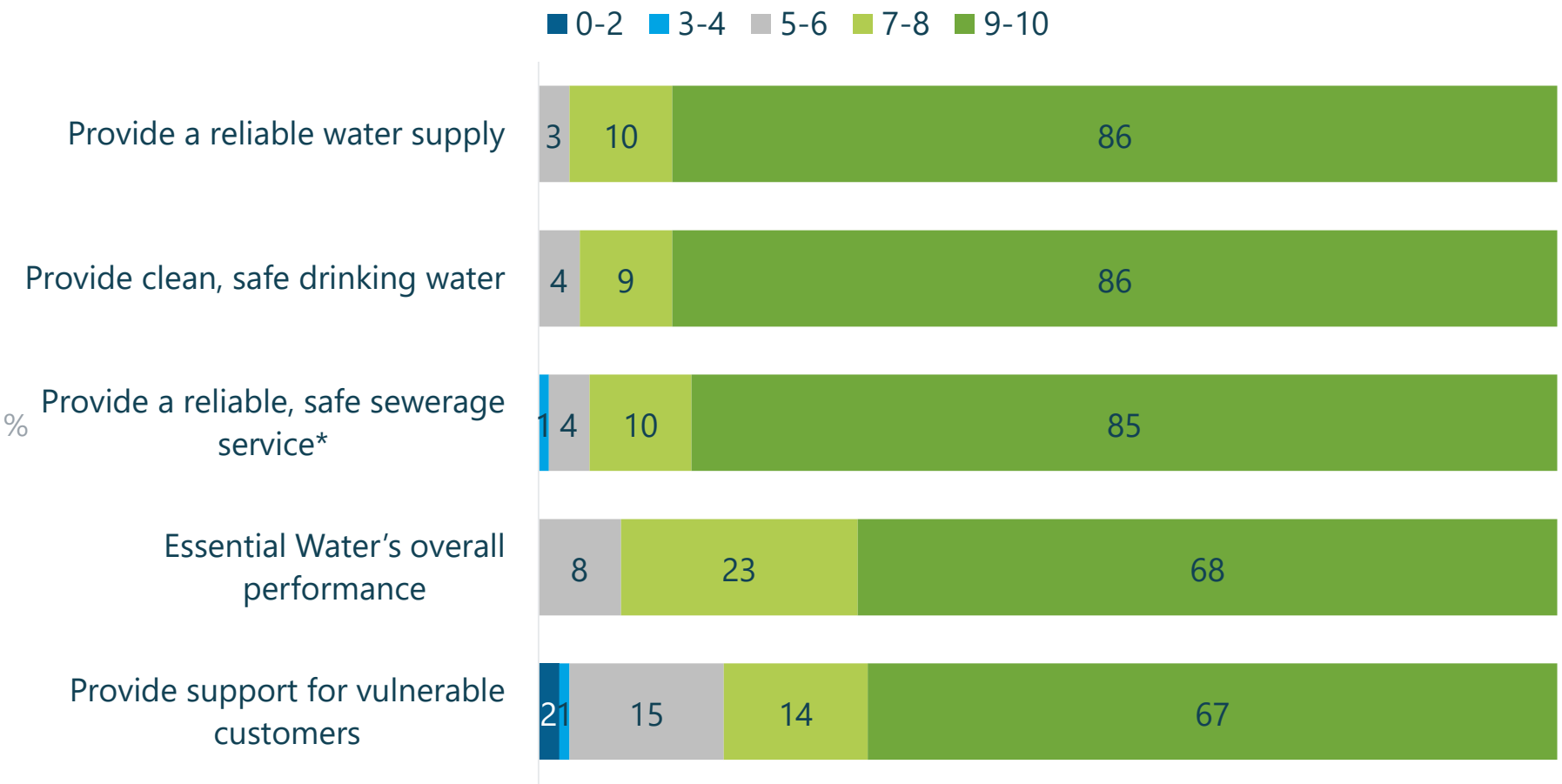


The most common issues experienced were sewer blockages and water quality, but over half had not experienced an issue in recent years

Resi

Q9. Have you had an issue with your water or sewerage service in recent years? If so, when and how often?
Base: All residents 2021 (n=200)

Importance of factors

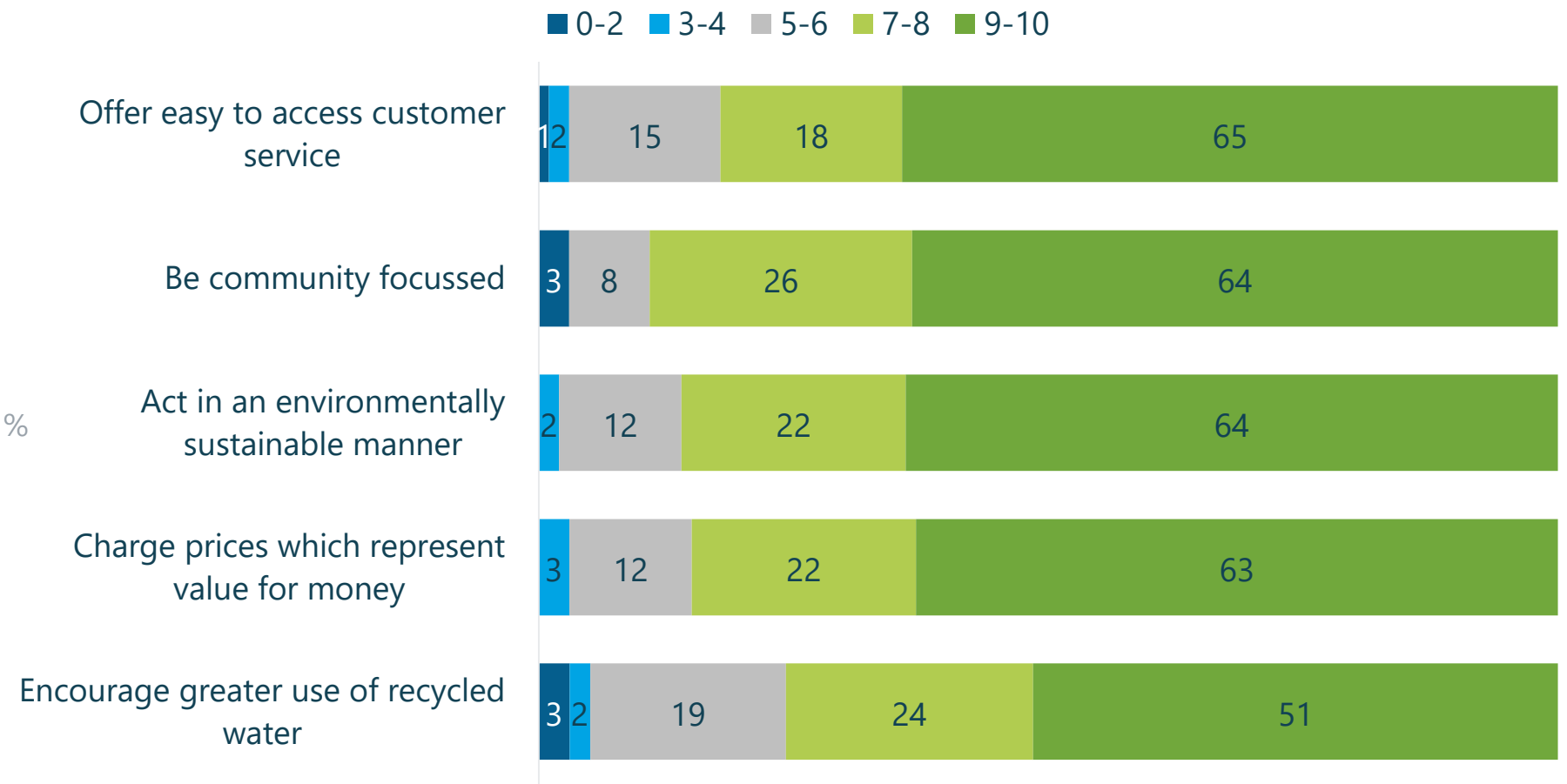


Q10. Just thinking about your water and sewerage service, how important are each of the following factors to you personally? Please give a rating out of 10, where 0 means you feel that the phrase associated with Essential Water is very unimportant, and 10 means the phrase associated with them is very important.
Base: All residents 2021 (n=200)

*Only asked to Broken Hill residents

The majority of residents felt that a reliable and safe water supply was very important

Importance of factors continued



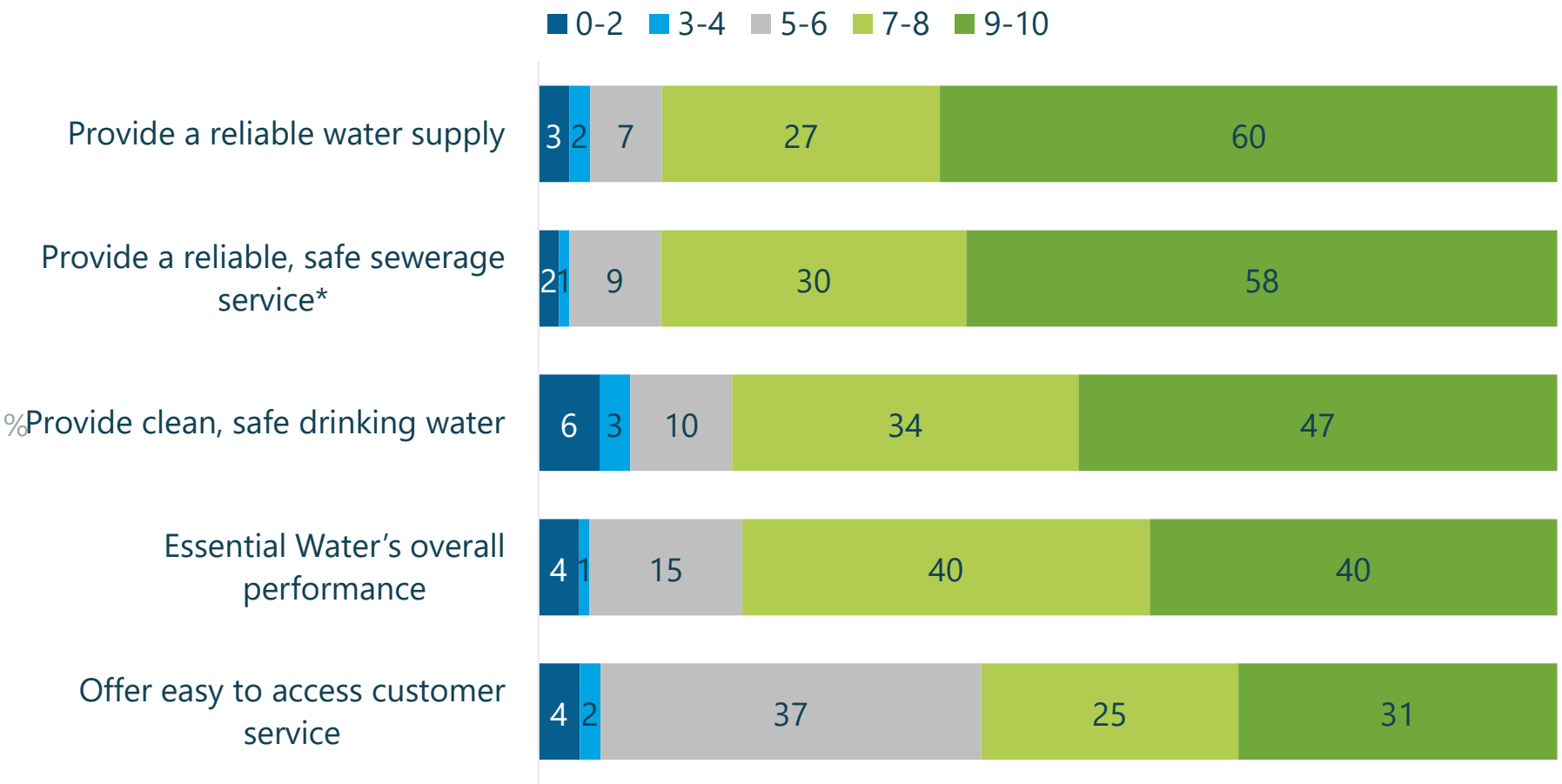
Q10. Just thinking about your water and sewerage service, how important are each of the following factors to you personally? Please give a rating out of 10, where 0 means you feel that the phrase associated with Essential Water is very unimportant, and 10 means the phrase associated with them is very important.
Base: All residents 2021 (n=200)

While still being somewhat important, encouraging greater use of recycled water was not very important to some residents

Resi

Customer service

Performance of Essential Water

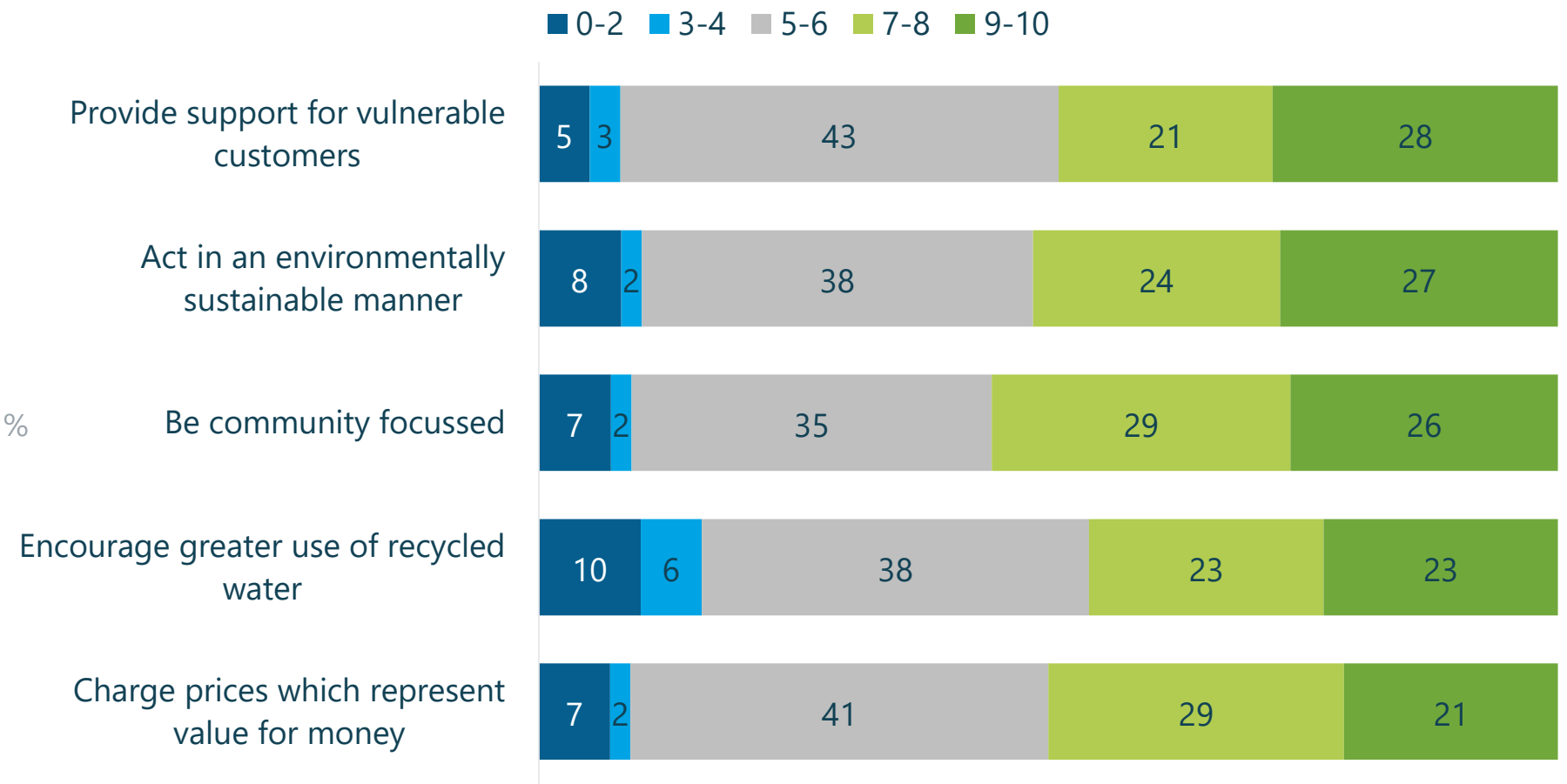


Q11. Now I'd like you to indicate how well you personally think Essential Water performs on each aspect of service? Please give a rating out of 10 where 0 means you think Essential Water performs extremely poorly on this service aspect and 10 means you think they perform extremely well on this service aspect.
Base: All residents 2021 (n=200)

*Only asked to Broken Hill residents

Residents felt that Essential Water provided water and sewerage services well, however there is room to improve the ease of access to customer service

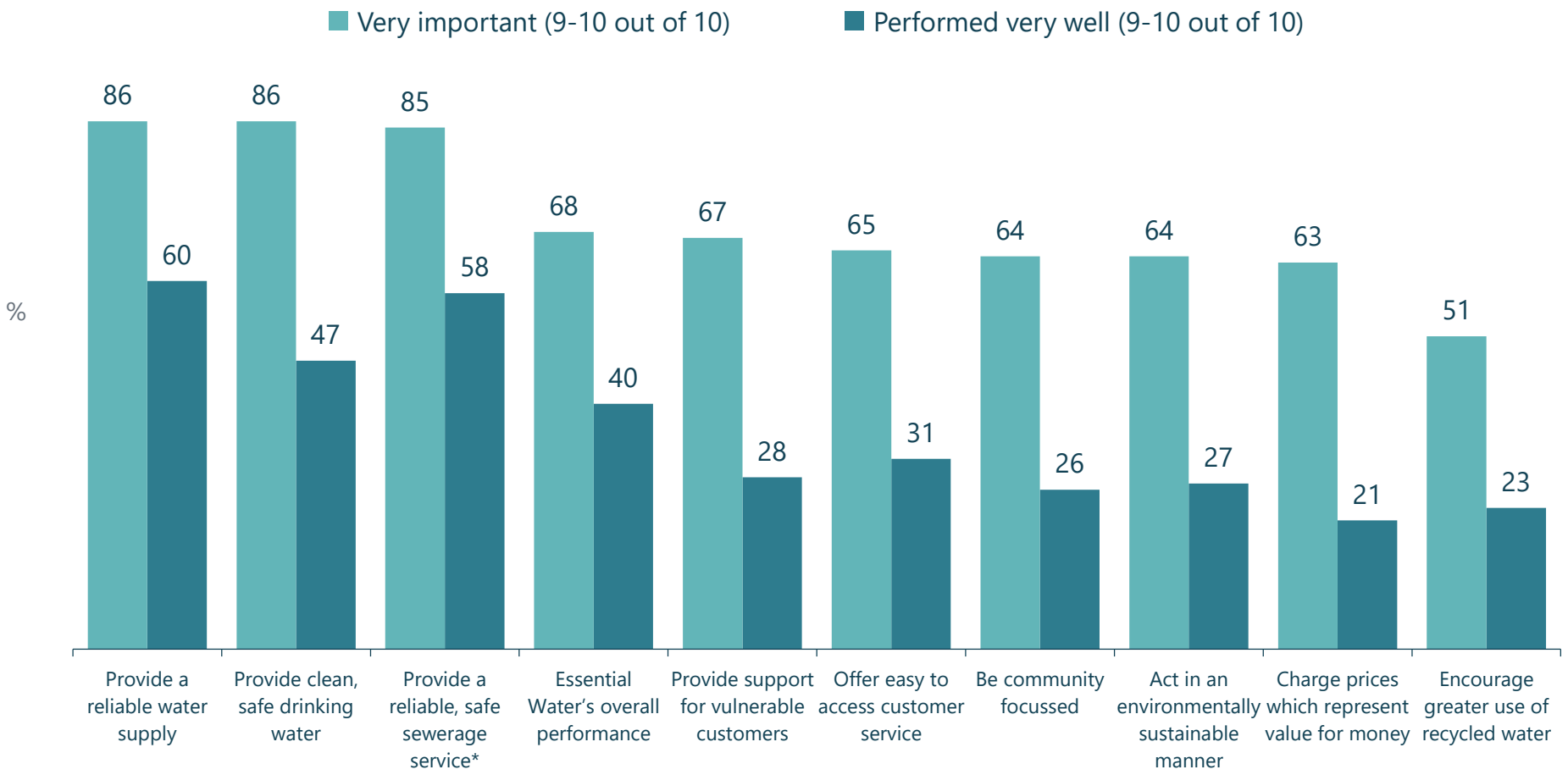
Performance of Essential Water



Q11. Now I'd like you to indicate how well you personally think Essential Water performs on each aspect of service? Please give a rating out of 10 where 0 means you think Essential Water performs extremely poorly on this service aspect and 10 means you think they perform extremely well on this service aspect.
Base: All residents 2021 (n=200)

There is room to improve Essential Water's encouragement of recycled water and value for money

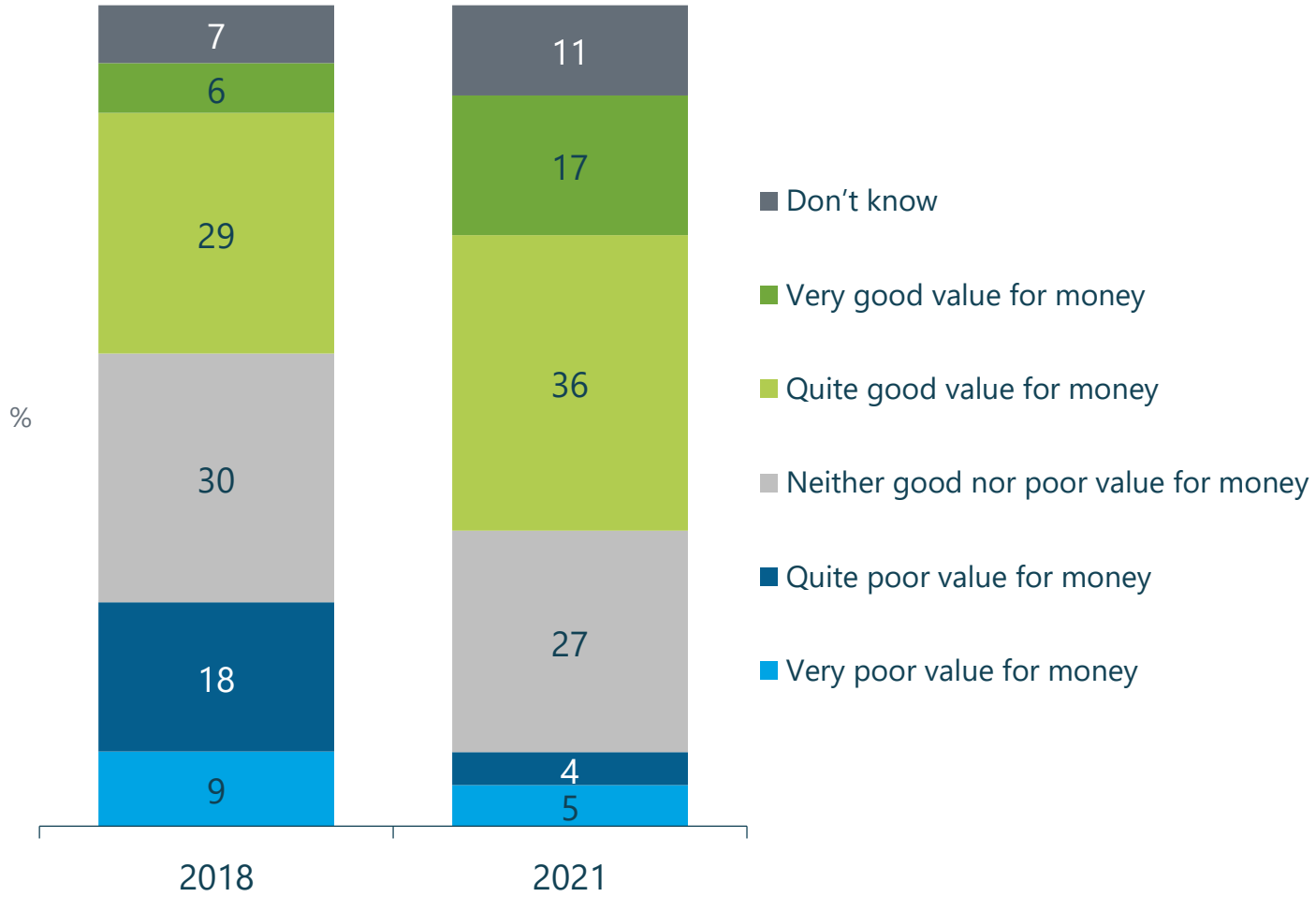
Importance vs performance



Q10. Just thinking about your water and sewerage service, how important are each of the following factors to you personally? Please give a rating out of 10, where 0 means you feel that the phrase associated with Essential Water is very unimportant, and 10 means the phrase associated with them is very important.
Q11. Now I'd like you to indicate how well you personally think Essential Water performs on each aspect of service? Please give a rating out of 10 where 0 means you think Essential Water performs extremely poorly on this service aspect and 10 means you think they perform extremely well on this service aspect.
Base: All residents 2021 (n=200) *Only asked to Broken Hill residents

Respondents tended to feel that Essential Water performed well in the tasks that were very important, however there is still room to improve performance

Value for money



The proportion of residents who felt that Essential Water was good value for money somewhat increased in 2021

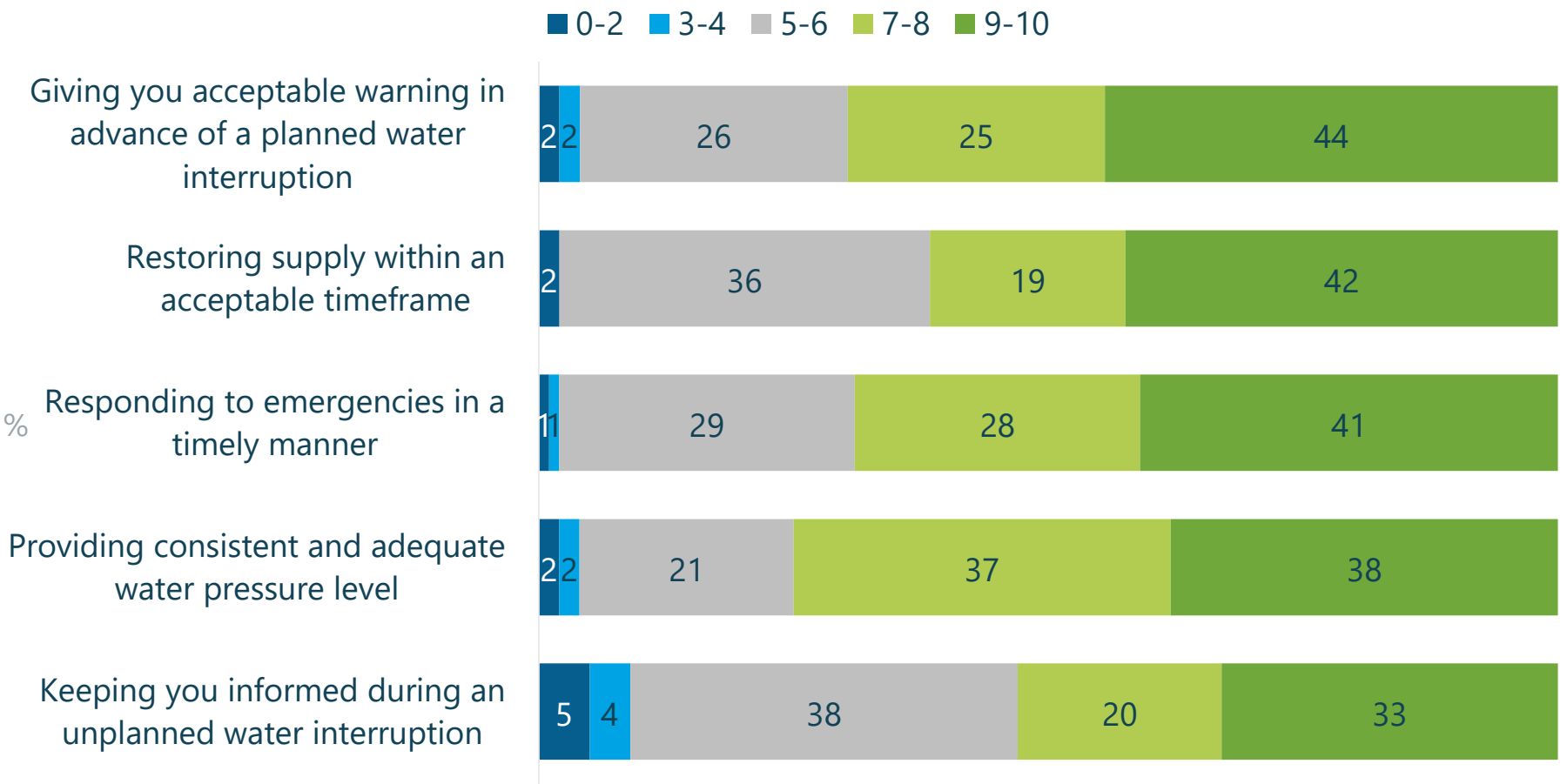
Resi

Q11. How would you rate your service in terms of value for money?
Base: All residents 2018 (n=409*), 2021 (n=200)

* Only asked to Broken Hill residents in 2018

Service levels

Satisfaction with service in terms of water interruptions

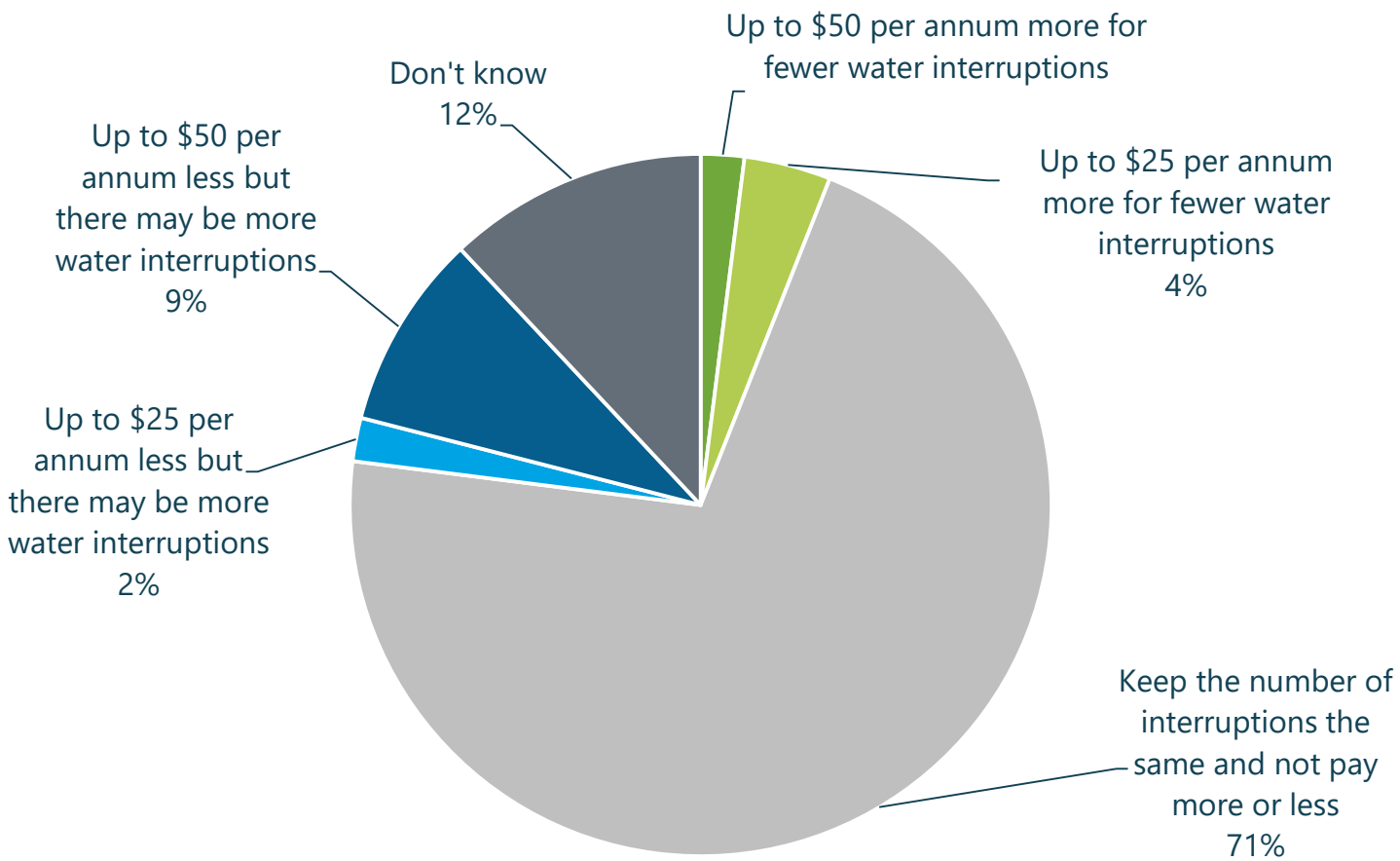


Q13. I would now like you to rate the service you receive from Essential Water in times of water interruptions. That is, when your water supply is turned off for maintenance work or to fix a problem. Please give a rating out of 10, where 0 means you think Essential Water performs extremely poorly on this service aspect, and 10 means you think they perform extremely well on this service aspect.
Base: All residents 2021 (n=200)

Resi

Over half felt were somewhat satisfied with the aspects of water interruptions listed

Price trade-off



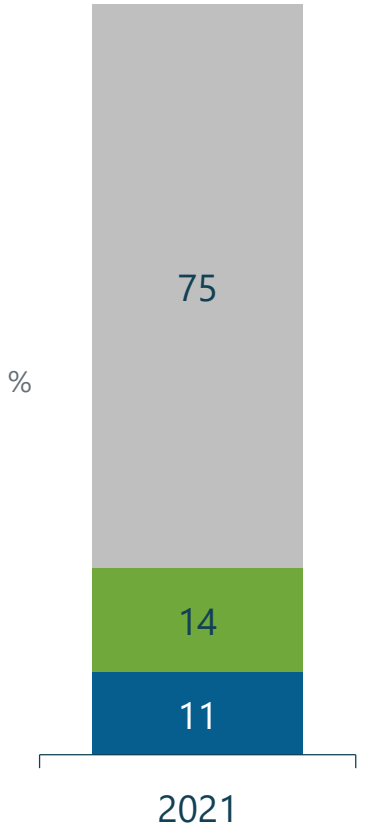
Most preferred that the number of water interruptions and cost of service stayed the same

Resi

Q14. Which of the following statements best describes your preparedness to pay or reduce your water bills to change the level of service you receive from Essential Water? Would you be prepared to....
Base: All residents 2021 (n=200)

Price trade-off continued

Fixed vs variable component

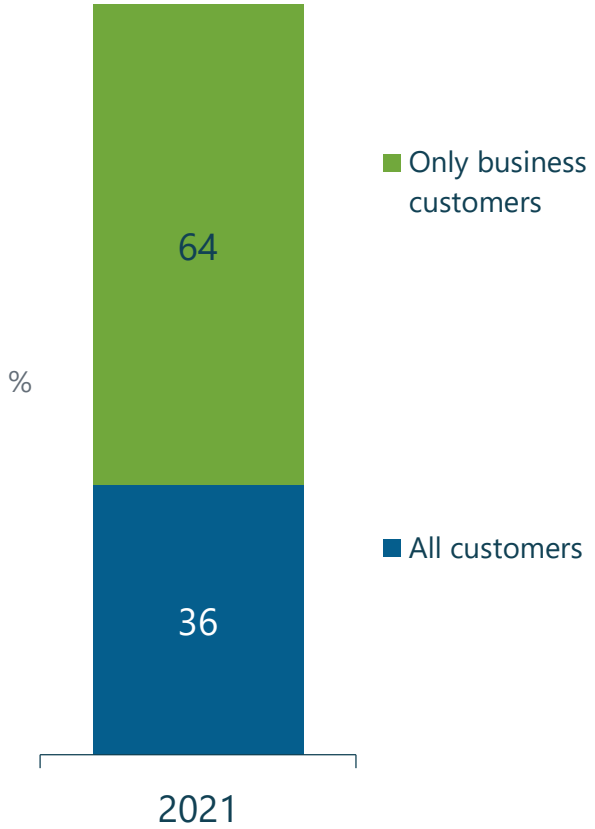


- Keep the fixed and variable proportions the same as it is now
- Increase the variable component
- Increase the fixed component

Preferred increase of variable component from more than half to...	
80%	n=22
100%	n=6

Preferred increase of fixed component from less than half to...	
100%	n=2
75%	n=10
50%	n=10

Charging for trade waste



- Only business customers
- All customers

Q15. When you receive your water bill, there is a fixed charge component (that stays the same each quarter) and a variable charge (which goes up and down according to how much water you use)... Bearing this in mind, would you prefer... Base: All residents 2021 (n=200)
Q16. What proportion would you like your fixed component to increase to on your water bill? Base: Preferred to increase fixed component (n=22)
Q17. What proportion would you like the variable component to increase to on your water bill? Base: Preferred to increase variable component (n=28)

Q18. ... Do you think that businesses should pay an additional charge to reflect the higher cost of treatment, or should the cost be shared across all customers? ... Base: All residents 2021 (n=200)

Most wanted to keep their fixed and variable proportions the same

Almost two in three residents felt that only businesses should be charged for trade waste

Resi

SMEs

Demographics

Values

Customer service

Service levels

Pricing

Demographics

Gender and location

	2018 (n=100)	2021 (n=50)
Gender %		
Female	50	**48**
Male	50	**52**
Business location %		
Broken Hill	97	**96**
Menindee	2	**2**
Silverton	1	**-**
Sunset Strip	-	**2**

Similar to 2018, there was a fairly even split of gender and most businesses operated in Broken Hill

SME

Q6D. RECORD:
Q6B. Which area does your business operate in?
Base: All SMES 2018 (n=100), 2021 (n=50)

Employees and position in company

	2018 (n=100)	2021 (n=50)
Number of employees in the company %		
No employees/sole trader	20	**12**
1 – 4 employees	39	**42**
5 – 10 employees	26	**22**
11 – 199 employees	15	**24**
Position in the company %		
Owner/proprietor	48	**66**
Senior management	26	**24**
Other staff	26	**10**

SME

Q6C. How many employees do you have in your business (full time equivalents other than the proprietor)?
Q27. What is your position or title within your organisation?
Base: All SMES 2018 (n=100), 2021 (n=50)

Most SMEs had 1-10 employees, which was similar to the previous read

There was a slight increase in the proportion of owners/proprietors responding

Years of operation and premises ownership

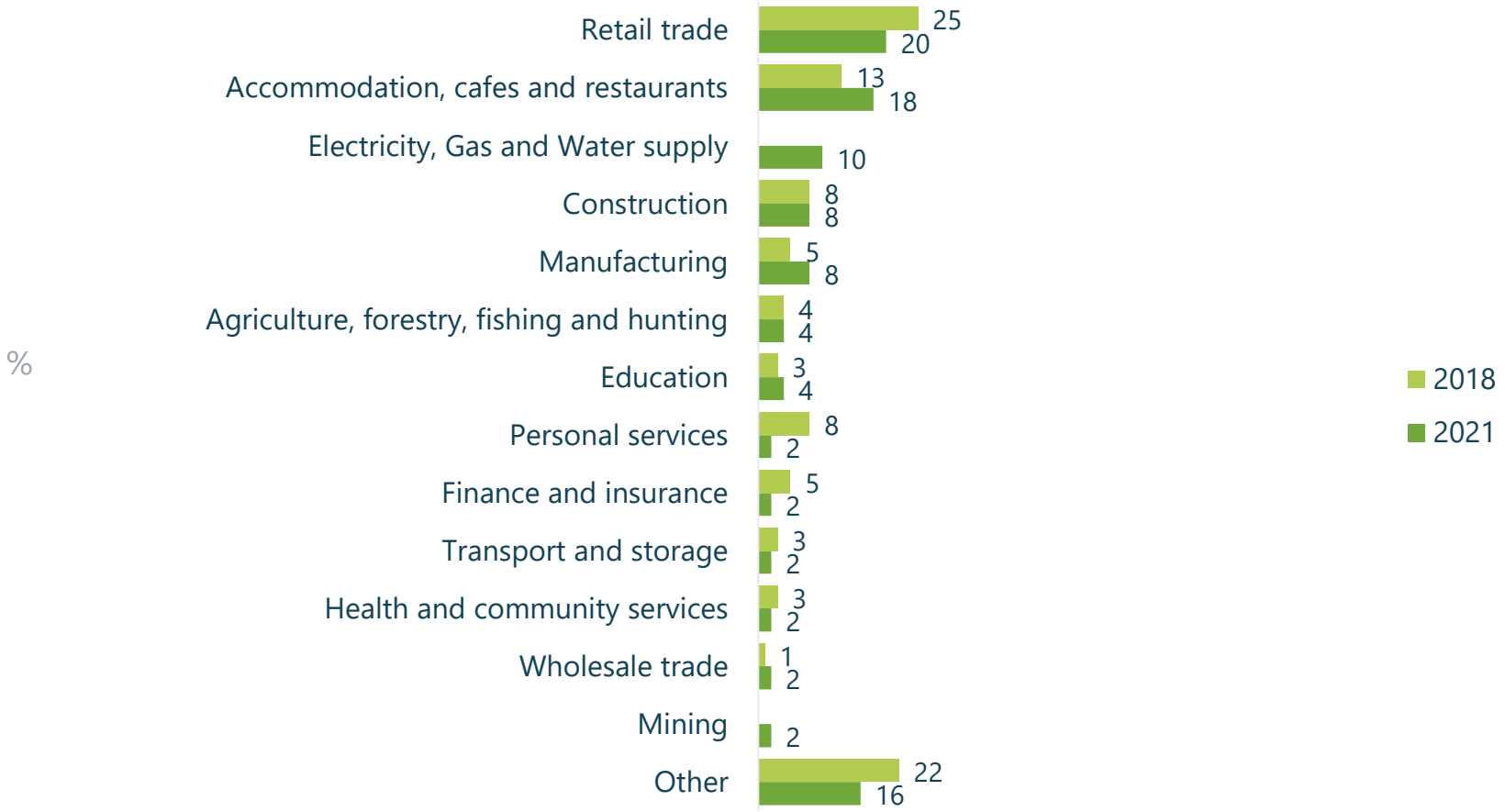
	2018 (n=100)	2021 (n=50)
Years of business operation %		
Less than 2 years	-	**-**
2 – 5 years	6	**12**
5 – 10 years	12	**8**
More than 10 years	82	**78**
Premises ownership %		
Own	75	**78**
Rent/lease	18	**18**
Other	4	**-**
Not applicable (business run from home)	3	**4**

The majority of businesses had been operating for more than 10 years, with the premises being owned rather than rented/leased

SME

Q28. How many years has your business been operating?
Q29. Does your business own or rent/lease its business premises?
Base: All SMES 2018 (n=100), 2021 (n=50)

Type of industry

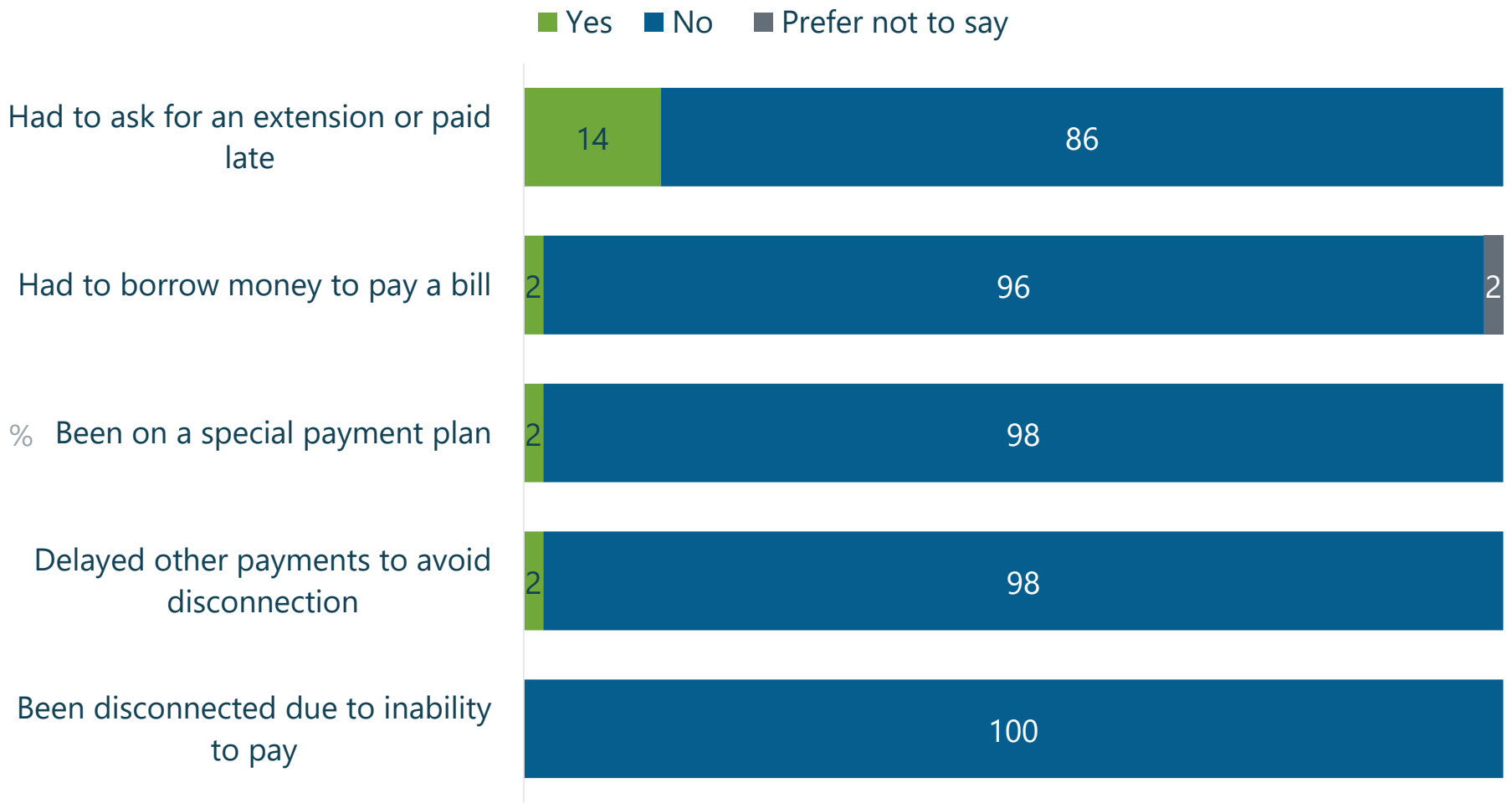


The most common types of industry continued to be retail trade and accommodation/ hospitality

SME

Q26. And what industry does your business operate within?
Base: All SMES 2018 (n=100), 2021 (n=50)

Experience of financial difficulties



14% of businesses had experienced at least one of the financial difficulties listed in the last 12 months

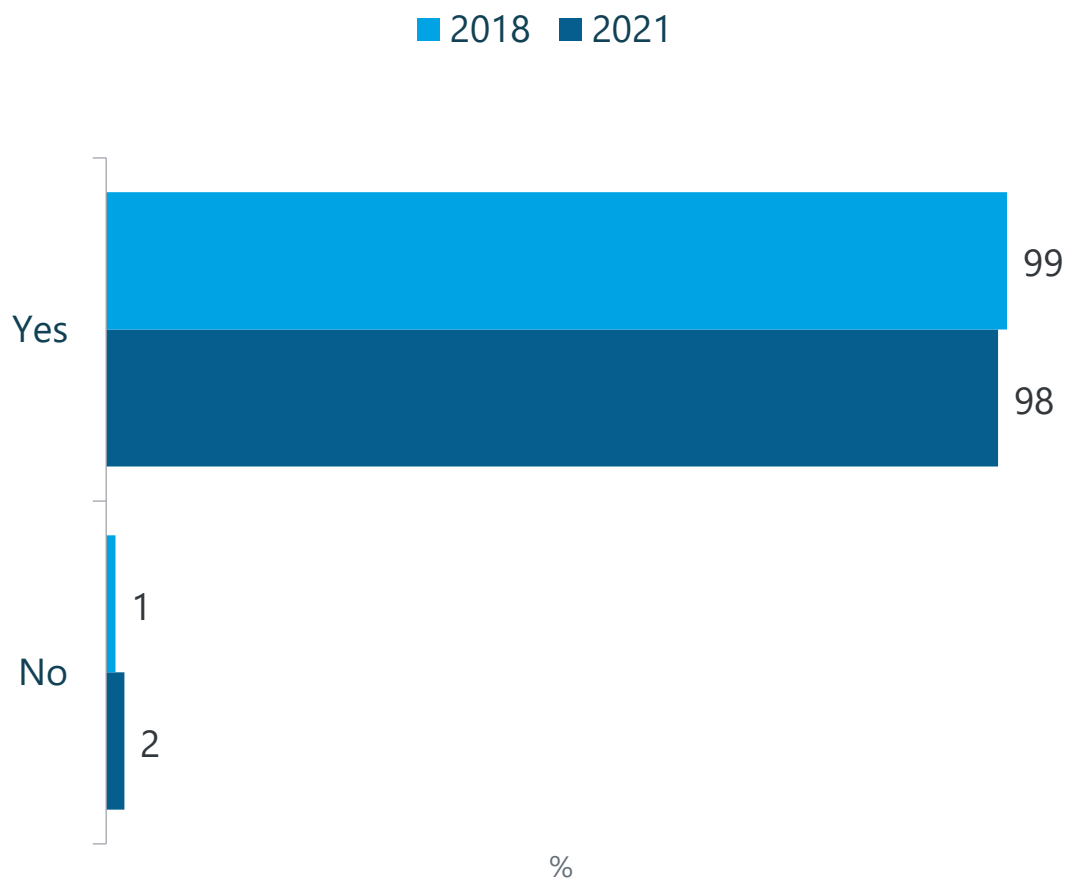
SME

Q25. The last year has been a difficult time financially for many people. Just thinking about utility bills, such as electricity and water, in the last 12 months have you experienced any of the following:
Base: All SMES 2021 (n=50)

Values


Innovation
Inspiration
Experience
Inspiration
INSPIRATION
Experience
Inspiration
EXPERIENCE
Innovation
EXPERIENCE

Awareness of Essential Water

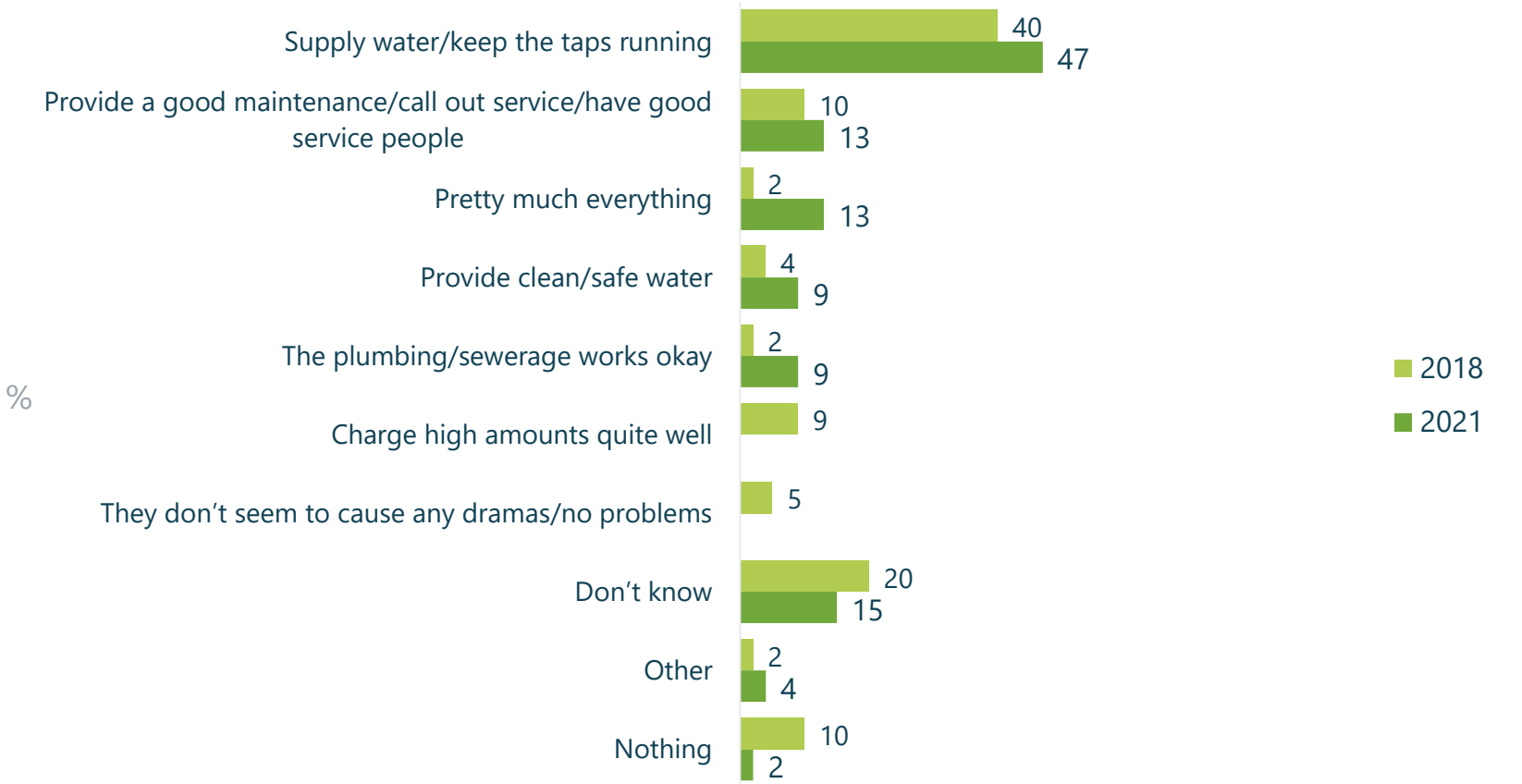


The vast majority had heard of Essential Water before, which was similar to 2018

SME

Q7. Before today, had you heard of Essential Water?
Base: All SMES 2018 (n=100), 2021 (n=50)

What Essential Water does well

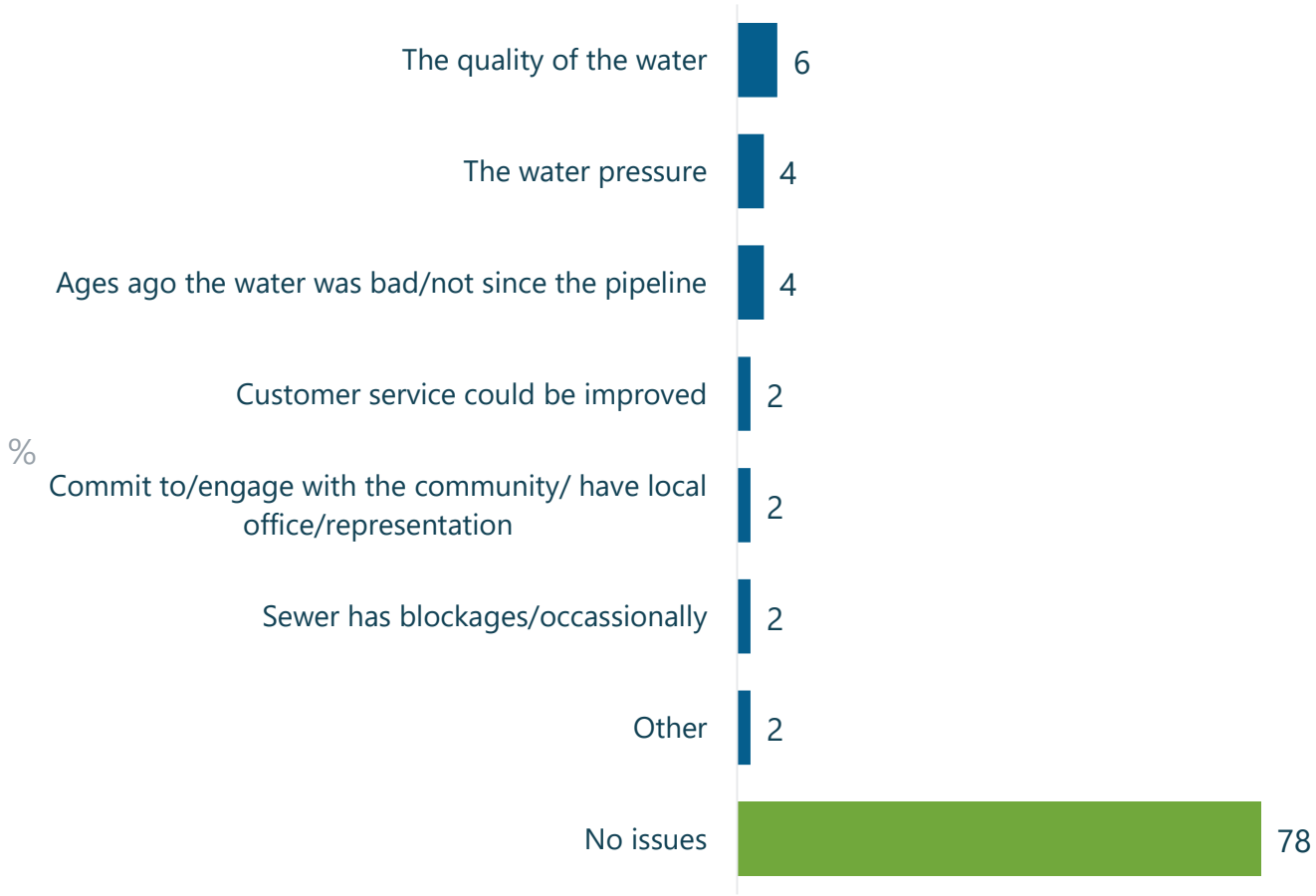


Many said that Essential Water does supply water well

SME

Q8. From what you know or have heard, what do you think Essential Water does well?
Base: All SMES 2018 (n=100), 2021 (n=50)

Issue with water or sewerage service

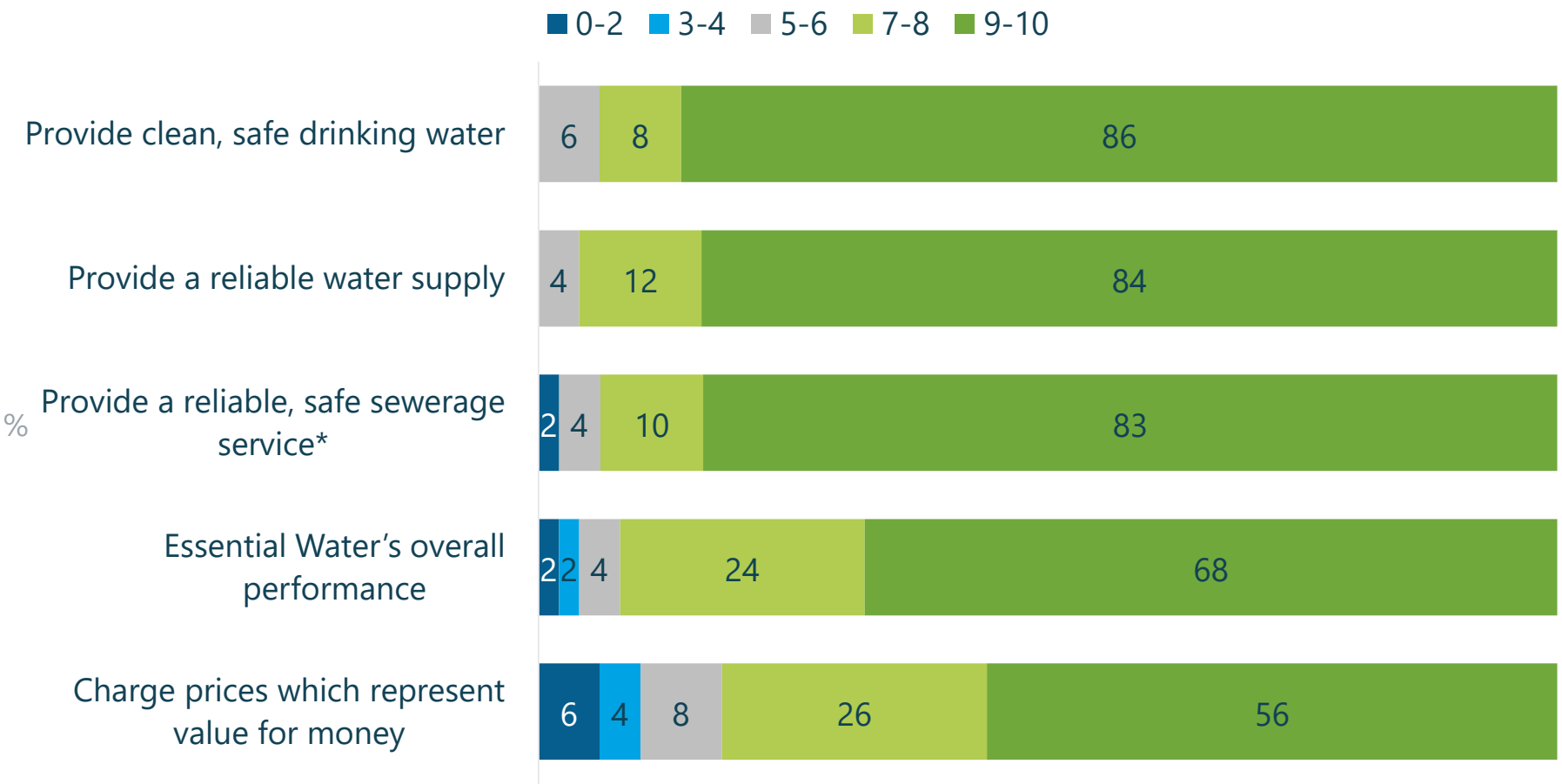


Just under four in five SME's had not experienced an issue with their water or sewerage

SME

Q9. Have you had an issue with your water or sewerage service at your place of business in recent years? If so, when and how often?
Base: All SMES 2018 (n=100), 2021 (n=50)

Importance of factors



Most SMES felt that a reliable and safe water supply was very important

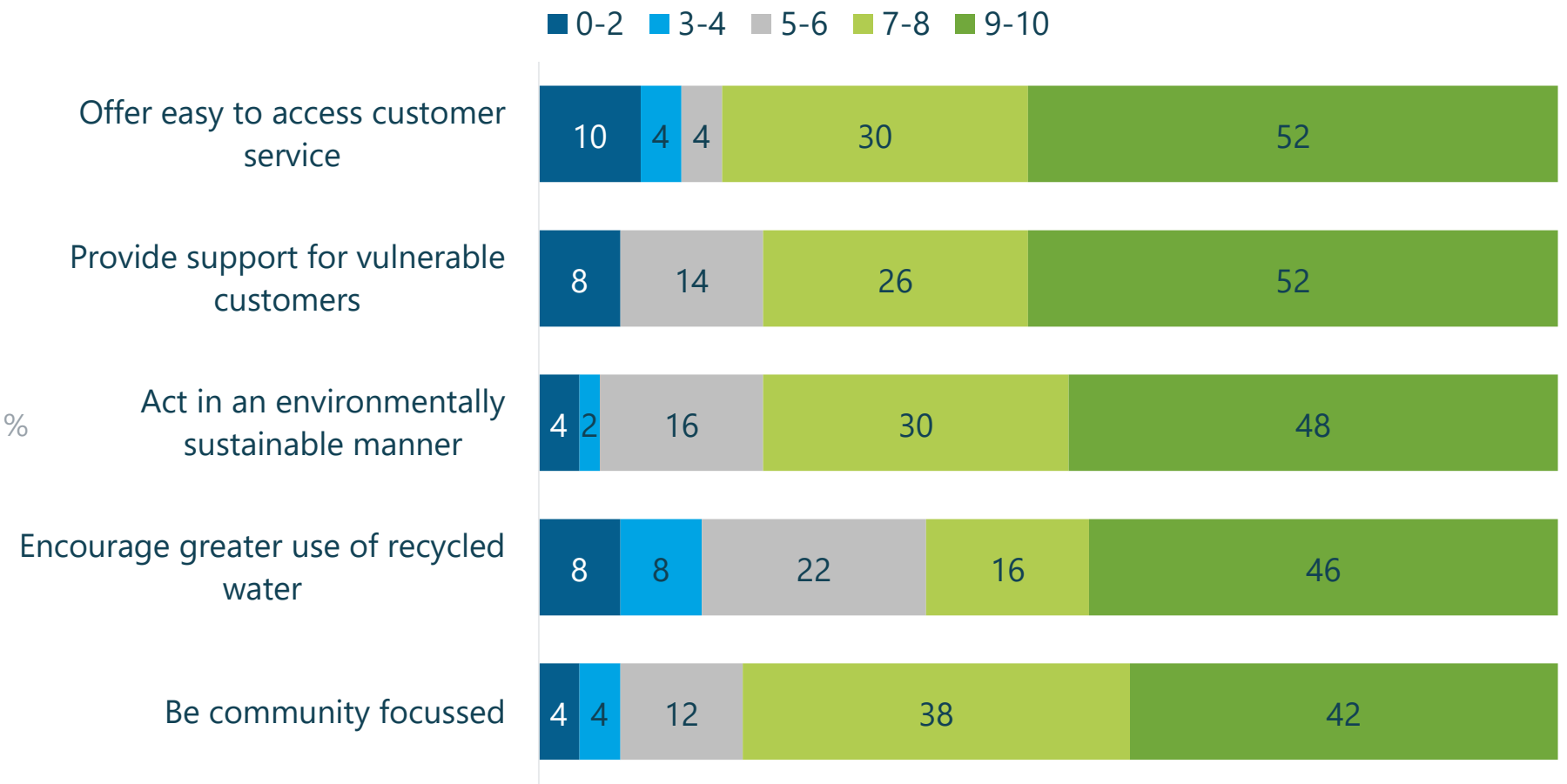
Q10. Just thinking about your water and sewerage service, how important are each of the following factors to your business? Please give a rating out of 10, where 0 means you feel that the phrase associated with Essential Water is very unimportant, and 10 means the phrase associated with them is very important.

Base: All SMES 2021 (n=50)

*Only asked to SMEs operating in Broken Hill

SME

Importance of factors



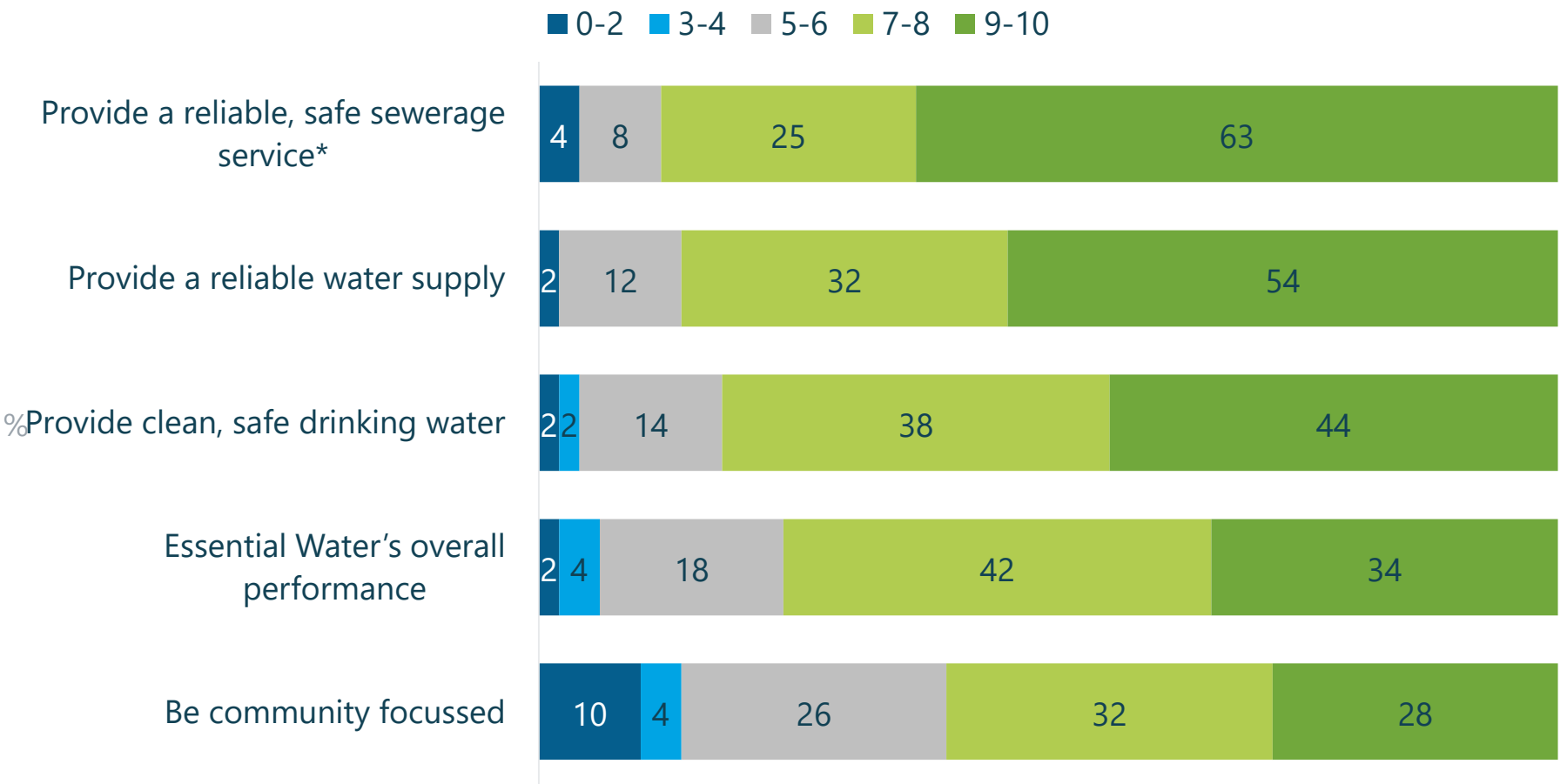
Q10. Just thinking about your water and sewerage service, how important are each of the following factors to your business? Please give a rating out of 10, where 0 means you feel that the phrase associated with Essential Water is very unimportant, and 10 means the phrase associated with them is very important.
Base: All SMES 2021 (n=50)

SME

Despite being important to many, encouraging use of recycled water and being community focused were less important to SMEs

Customer service

Performance of Essential Water



Q11. Now I'd like you to indicate how well you personally think Essential Water performs on each aspect of service? Please give a rating out of 10 where 0 means you think Essential Water performs extremely poorly on this service aspect and 10 means you think they perform extremely well on this service aspect.

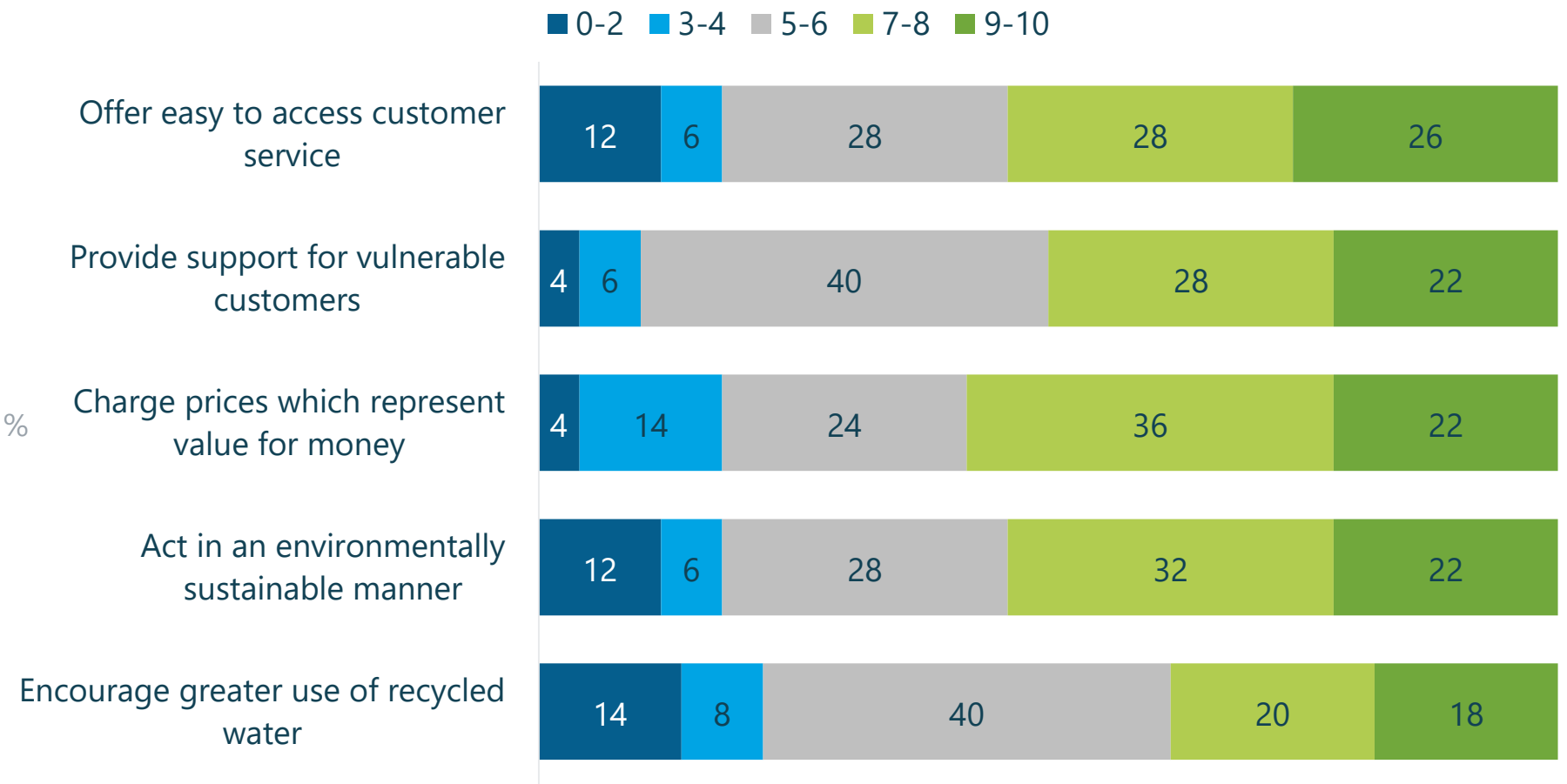
Base: All SMES 2021 (n=50)

*Only asked to SMEs operating in Broken Hill

SME

SMEs rated Essential Water's supply of water and sewerage highest

Performance of Essential Water



Q11. Now I'd like you to indicate how well you personally think Essential Water performs on each aspect of service? Please give a rating out of 10 where 0 means you think Essential Water performs extremely poorly on this service aspect and 10 means you think they perform extremely well on this service aspect.

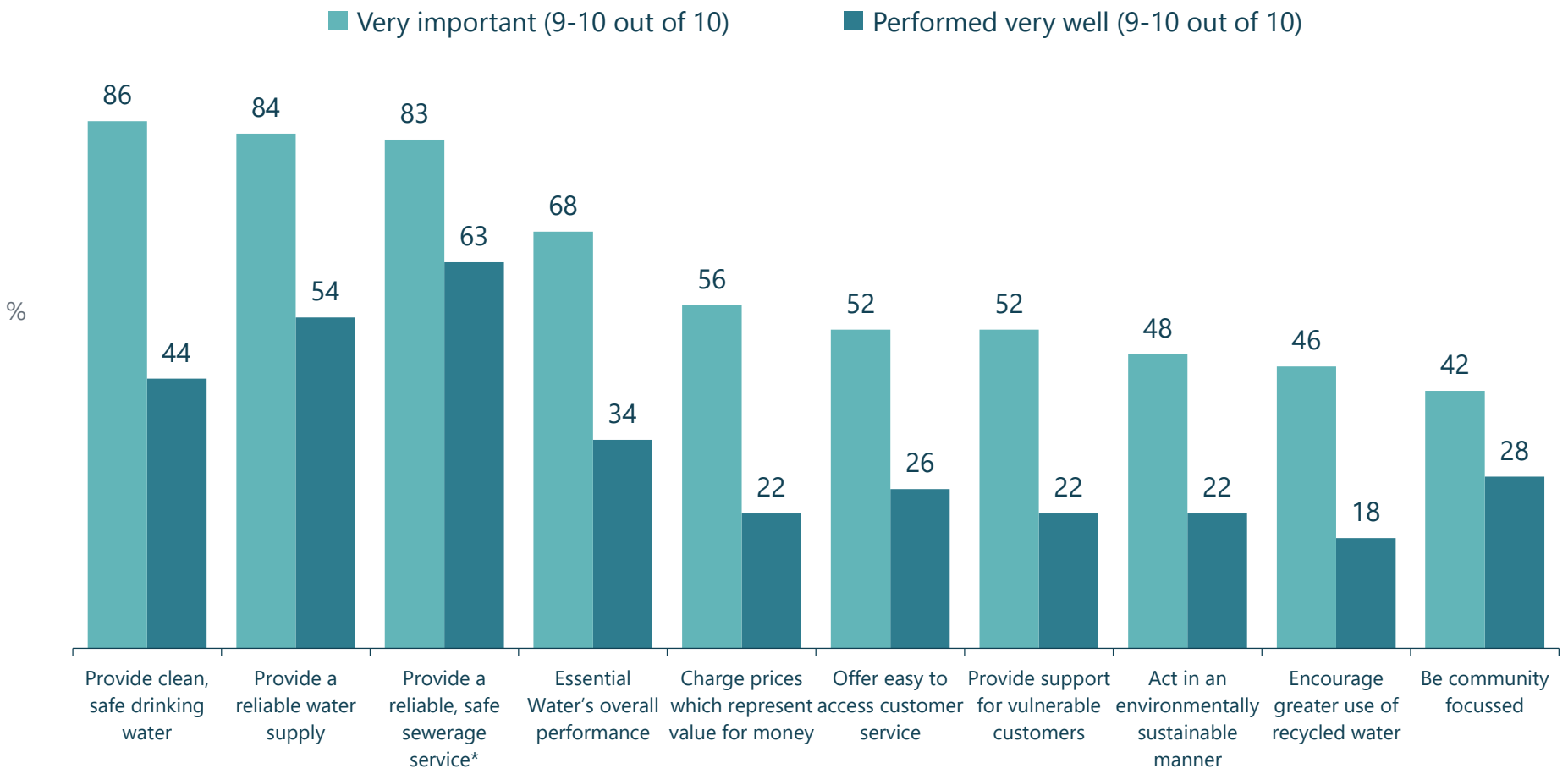
Base: All SMES 2021 (n=50)

*Only asked to SMEs operating in Broken Hill

SME

There is room to improve the extent to which Essential Water encourages recycled water

Importance versus performance

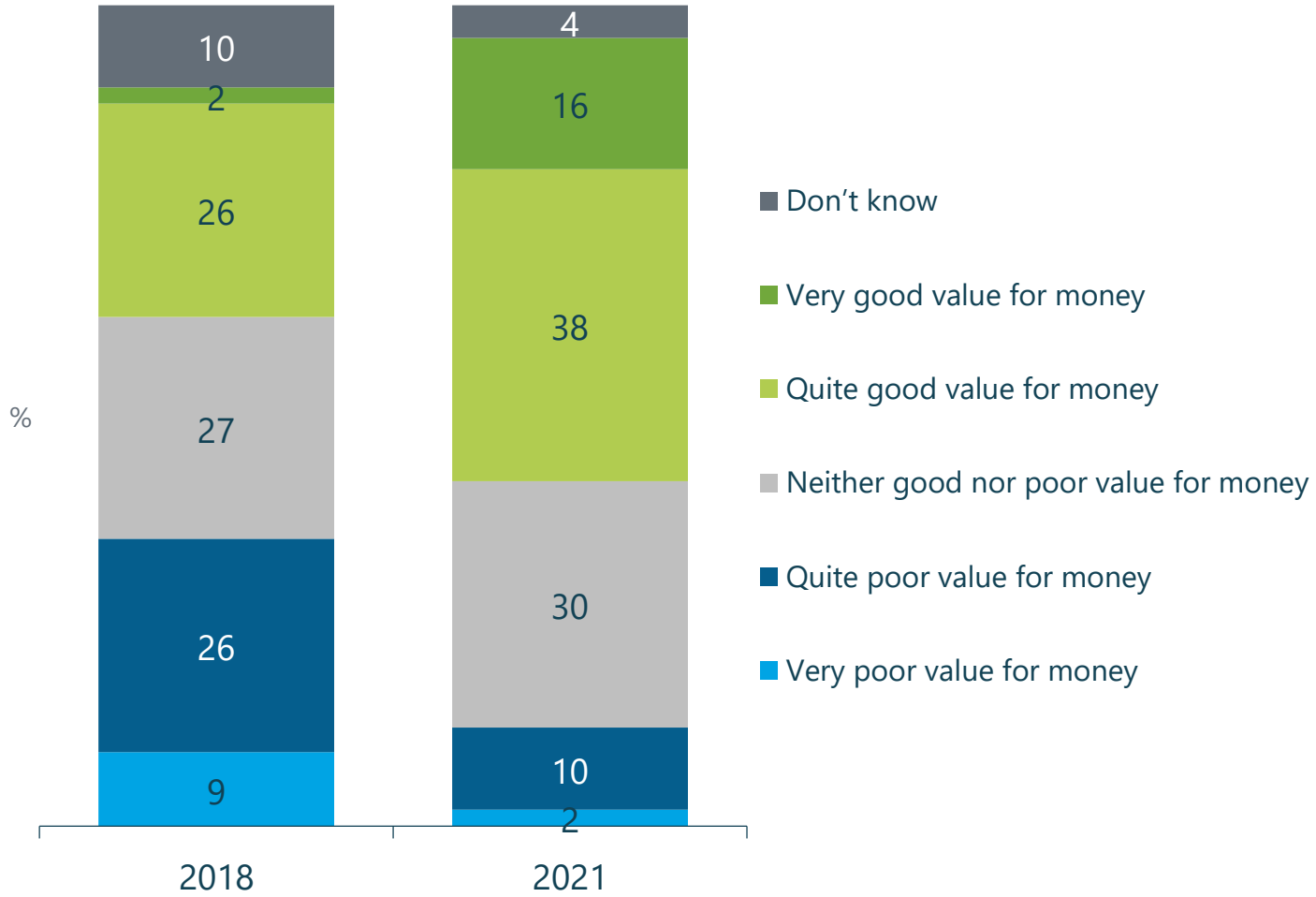


Q10. Just thinking about your water and sewerage service, how important are each of the following factors to you personally? Please give a rating out of 10, where 0 means you feel that the phrase associated with Essential Water is very unimportant, and 10 means the phrase associated with them is very important.
Q11. Now I'd like you to indicate how well you personally think Essential Water performs on each aspect of service? Please give a rating out of 10 where 0 means you think Essential Water performs extremely poorly on this service aspect and 10 means you think they perform extremely well on this service aspect.
Base: All SMEs 2021 (n=50) *Only asked to Broken Hill residents

SME

There is room to improve Essential Water's performance regarding services that were important to SMEs

Value for money



The proportion of SMEs who felt that Essential Water was good value for money increased in 2021

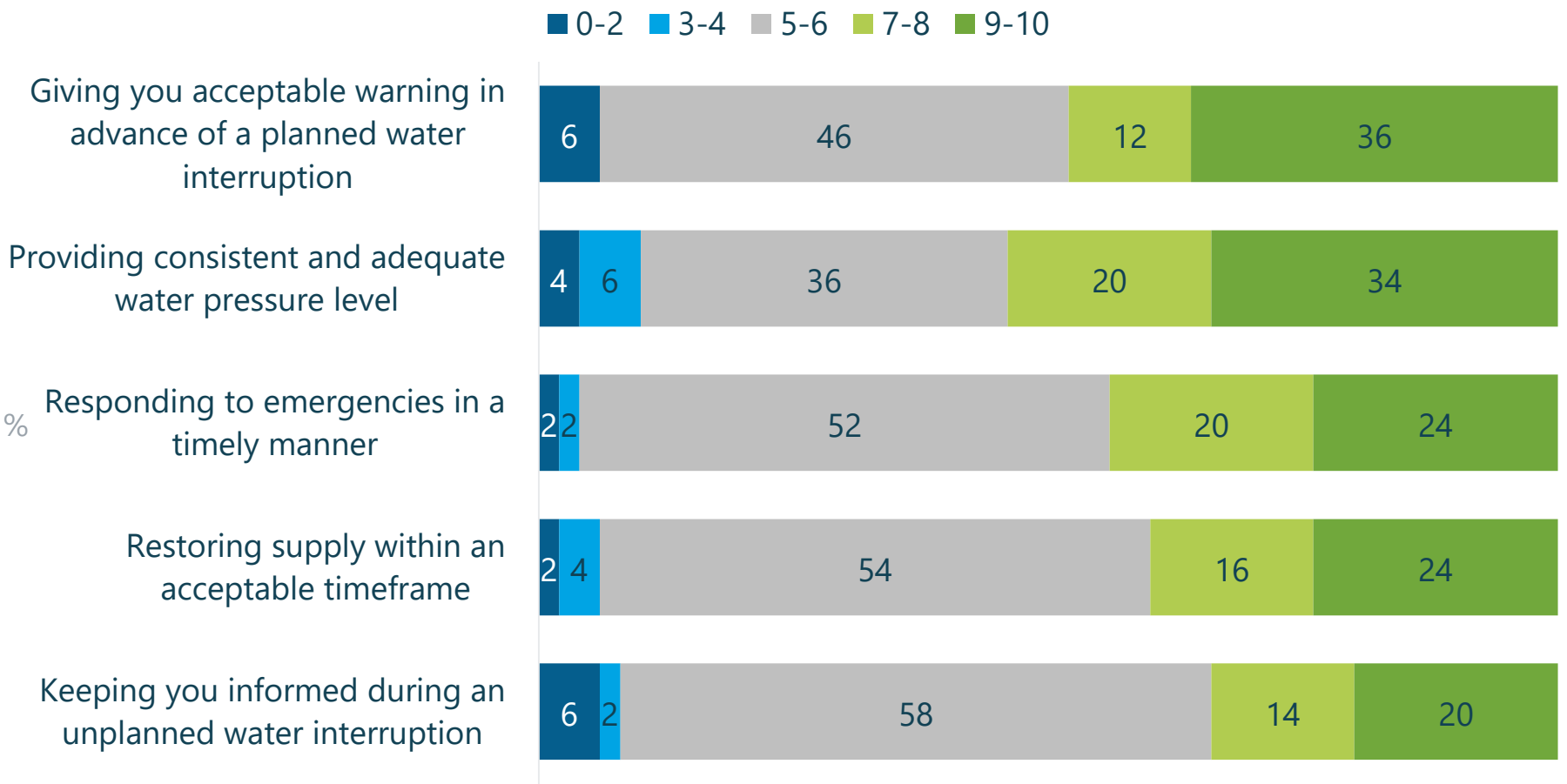
SME

Q12. How would you rate your service in terms of value for money?
Base: All SMES 2018 (n=100), 2021 (n=50)

* Only asked SMES operating in Broken Hill in 2018

Service levels

Satisfaction with service in terms of water interruptions

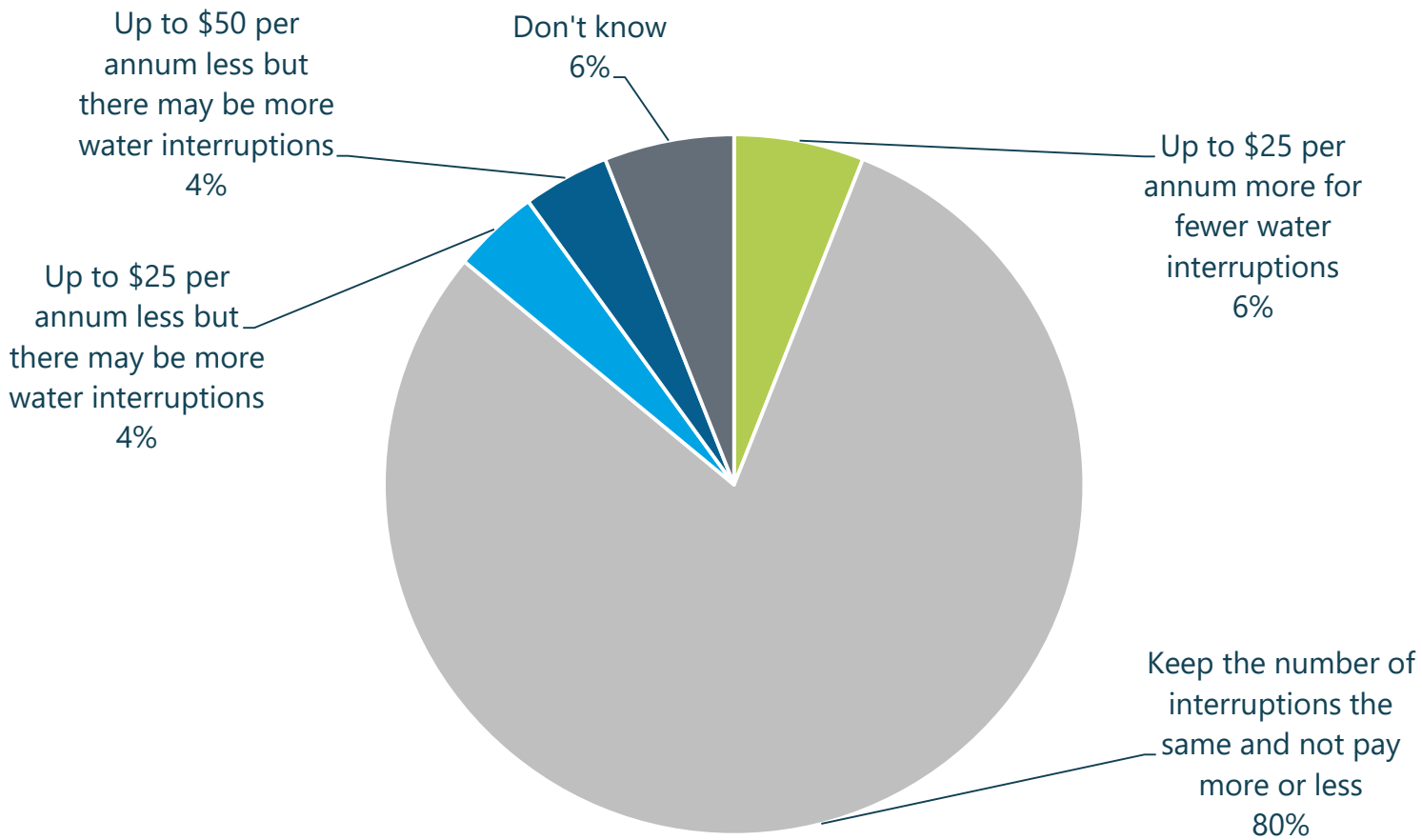


There is room to improve SMEs satisfaction with being kept informed during water interruptions

SME

Q13. I would now like you to rate the service you receive from Essential Water at your place of business in times of water interruptions.
Base: All SMES 2021 (n=50)

Price trade-off



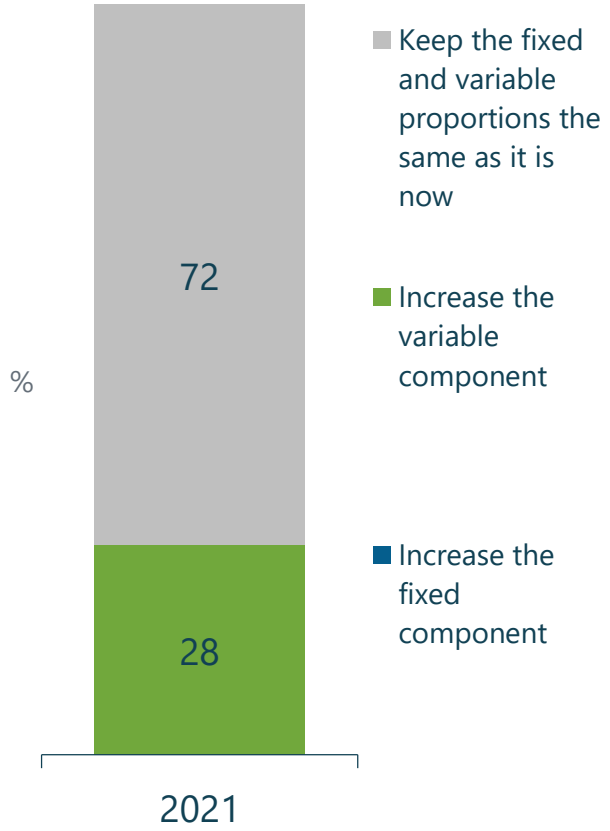
Most SMEs preferred to keep the number of interruptions and the cost of their bills the same

SME

Q14. Which of the following statements best describes your preparedness to pay or reduce your water bills to change the level of service you receive from Essential Water at your place of business? Would you be prepared to....
Base: All SMES 2021 (n=50)

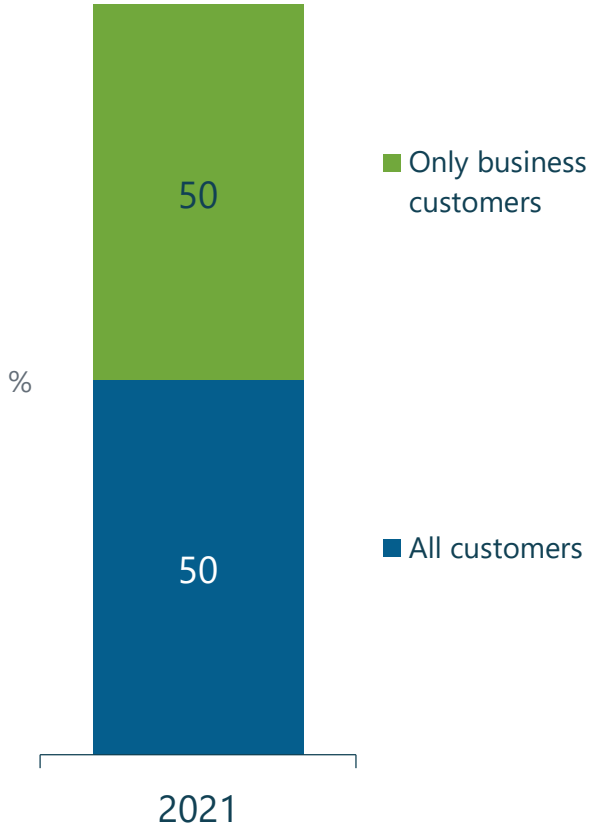
Price trade-off continued

Fixed vs variable component



Preferred increase of variable component from more than half to...	
80%	n=9
100%	n=5

Charging for trade waste



The majority of SMEs also wanted to keep the fixed and variable cost the same

SMEs were evenly split in terms of their perception of who should be charged for trade waste

Q15. When you receive your water bill at your place of business, there is a fixed charge component (that stays the same each quarter) and a variable charge (which goes up and down according to how much water you use)... Bearing this in mind, would you prefer... Base: All SMES 2021 (n=50)
Q17. What proportion would you like the variable component to increase to on your water bill?
Base: Preferred to increase variable component (n=14)

Q18. ... Do you think that businesses should pay an additional charge to reflect the higher cost of treatment, or should the cost be shared across all customers? ...
Base: All SMES 2021 (n=50)

SME

Woolcott Research & Engagement
L6, 104 Mount Street, North Sydney 2060
+61 29261 5221
woolcott.com.au

Essential Water Survey

April 2021

Contact: Karyn Wong