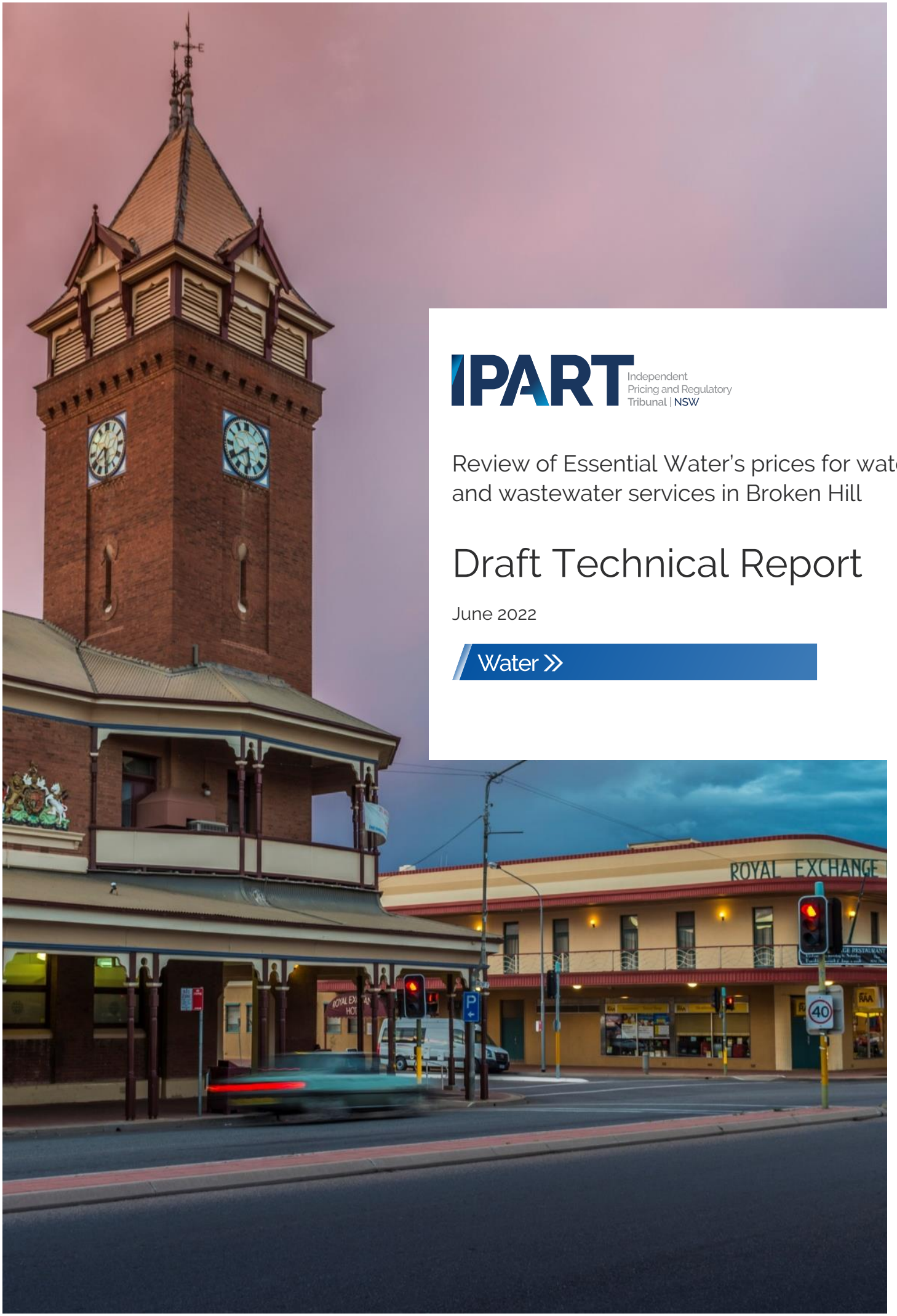


IPART Independent Pricing and Regulatory Tribunal | NSW

Review of Essential Water's prices for water and wastewater services in Broken Hill

Draft Technical Report

June 2022

Water »

Tribunal Members

The Tribunal members for this review are:

Carmel Donnelly, Chair
Deborah Cope
Sandra Gamble

Enquiries regarding this document should be directed to a staff member:

Matthew Mansell	(02) 9113 7770
Maricar Horbino	(02) 9290 8409
Letitia Watson-Ley	(02) 9290 8402

The team working on this review: Eva McBride, Bee Thomson, Courtney Barry, Milo Letho and Adrian Thomas.

Invitation for submissions

IPART invites comment on this document and encourages all interested parties to provide submissions addressing the matters discussed.

Submissions are due by Friday, 9 September 2022

We prefer to receive them electronically via our online submission form. You can also send comments by mail to:

2021 Essential Water water and wastewater price review in Broken Hill
Independent Pricing and Regulatory Tribunal
PO Box K35
Haymarket Post Shop, Sydney NSW 1240

If you require assistance to make a submission (for example, if you would like to make a verbal submission) please contact one of the staff members listed above.

Late submissions may not be accepted at the discretion of the Tribunal. Our normal practice is to make submissions publicly available on our website as soon as possible after the closing date for submissions. If you wish to view copies of submissions but do not have access to the website, you can make alternative arrangements by telephoning one of the staff members listed above.

We may decide not to publish a submission, for example, if we consider it contains offensive or potentially defamatory information. We generally do not publish sensitive information. If your submission contains information that you do not wish to be publicly disclosed, please let us know when you make the submission. However, it could be disclosed under the *Government Information (Public Access) Act 2009* (NSW) or the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW), or where otherwise required by law.

If you would like further information on making a submission, IPART's submission policy is available on our website.

The Independent Pricing and Regulatory Tribunal (IPART)

Further information on IPART can be obtained from IPART's website.

Acknowledgment of Country

IPART acknowledges the Traditional Custodians of the lands where we work and live. We pay respect to Elders, past, present and emerging. We recognise the unique cultural and spiritual relationship and celebrate the contributions of First Nations peoples.

Contents

Chapter 1

Introduction

01

1.1 Overview of our draft decisions

IPART sets prices that Essential Energy can charge its customers for water and wastewater services provided through its Essential Water business. Essential Water provides these services to customers in Broken Hill and the surrounding areas of Menindee, Sunset Strip and Silverton. The first step of our price review was to consider Essential Water's pricing proposal which it submitted to IPART in June 2021. We released an Issues Paper in September 2021 where we sought feedback from the community on Essential Water's pricing proposal.

This Draft Technical Report sets out our draft decisions on Essential Water's prices to apply from 1 January 2023 to 30 June 2026. This is a shorter pricing period than the 5 years Essential Water proposed. We also prepared a Draft Report that sets out the key outcomes of our review.

Under our draft decisions, water and wastewater bills for most residential and business customers would remain stable, before inflation. As we adjust Essential Water's prices every year for inflation, our draft decisions mean bills would only increase each year by inflation.

Our draft bills are lower than Essential Water's proposal, where bills for most residential and business customers were proposed to increase by around 2% each year, before inflation. Essential Water's proposal included NSW taxpayers funding a new affordability subsidy. Otherwise Essential Water's proposed bills would have increased by closer to 6% each year, before inflation.

> Under our draft decisions, water and wastewater bills for most residential and business customers would remain stable, before inflation.

Some customers will face higher increases in their bills. There are currently 3 groups of customers who receive an untreated or chlorinated water service. Essential Water currently supplies:

- untreated water to a small number of customers along the Menindee, Stephens Creek and Umberumberka pipelines (the EW Pipelines)
- untreated water to other customers, such as Broken Hill City Council and the mines
- chlorinated water to customers in Silverton and Sunset Strip.

The EW Pipeline customers currently do not pay the same water usage price as other untreated water customers, because in the past they received untreated water from different sources. Therefore the cost of supplying untreated water to them was not the same. Since the WaterNSW's Murray River to Broken Hill Pipeline (WaterNSW Pipeline) came into operation, the cost of supplying these untreated services is the same. All untreated water now runs through the same reticulation network.

For this reason, we have made a draft decision to continue to transition untreated water usage prices, so eventually there will be a single untreated water usage price for all of Essential Water's untreated water customers. We are also continuing to transition the chlorinated water usage price to this single untreated water usage price. This is consistent with the decisions we made in the last review, and better reflects the cost of supplying untreated and chlorinated water to customers.

To manage the bill impacts for these customers, we have made the price transition gradual. Over 4 years, water bills for EW Pipeline customers would increase by 3.3% a year on average,[a] while chlorinated water customer bills would increase by 2.4% a year on average[b] (in each case, before inflation).

Section 1.1.3 discusses the draft prices we have set for each customer group and the breakdown of prices for water and wastewater services.

1.1.1 Our approach to setting prices for this review

When we set prices for a regulated business like Essential Water, we generally aim to set prices to cover the costs of providing services to customers. We assessed the costs of providing water and wastewater services in the Broken Hill region and asked expert consultants to provide advice on whether Essential Water's proposed costs are reasonable. We looked at Essential Water's costs over the last 3 years (the 2019 Determination), as well as its proposed costs over the next 4 years (the 2022 Determination) and considered:

- the projects Essential Water proposes to do to ensure quality services for its customers
- the ongoing costs of running a water business in Broken Hill
- the prices WaterNSW can charge Essential Water for water transportation services provided by the WaterNSW Pipeline, which we reviewed at the same time as Essential Water's prices
- the number of customers who will share these costs and the quantity of services they will use.

Based on our assessment of Essential Water's costs, our draft decision is to set the amount of money Essential Water can recover through prices (the revenue requirement) at around $44 million on average per year, over the next 4 years. This is around 15% lower than Essential Water's proposed revenue requirement. There are 3 factors driving the difference between Essential Water's proposed revenue requirement and our draft decision on the revenue requirement:

1. the real rate of return (the WACC) we have applied to estimate Essential Water's return on assets. We used our standard method to apply a WACC of 2.9% which is lower than Essential Water's proposed WACC of 3.7%.
2. the cost of transporting water using the WaterNSW Pipeline has declined since our review in 2019

[a] The water bill estimate is for an EW Pipeline customer with a 20mm meter and 250kL per year water usage.
[b] The water bill estimate is for a chlorinated water customer with 300kL per year water usage.

3. while we found that most of Essential Water's proposed operating costs (excluding the cost of the WaterNSW Pipeline) and capital costs were reasonable, we found some opportunities for Essential Water to find cost savings. The operating and capital cost allowances we have set reflect these opportunities for Essential Water to provide better value for money for its customers.

We found opportunities for Essential Water to lower its operating and capital costs by around 10% to ensure customers pay no more than they need to.

We also looked at the amount of water and wastewater services Essential Water expects to sell to its customers over the next 4 years and found that Essential Water's expectations are reasonable.

1.1.2 We considered feedback from the community on service quality and affordability

We sought feedback from the community on a number of issues relating to this review, including the quality of services they receive from Essential Water and whether these services are affordable. Some people told us that water quality in Broken Hill has noticeably improved since the new Pipeline came into use in 2019. The Pipeline has also created a reliable and secure source of water for the Broken Hill region, after many years of drought and water restrictions. However, people told us that Essential Water's infrastructure in Broken Hill is ageing and needs to be upgraded.

Essential Water's proposal outlined a number of projects it plans to do to repair and replace its ageing infrastructure. To test the need for these projects, we assessed how Essential Water is performing in key areas such as supply interruptions and rates of main breaks. While Essential Water receives a low number of complaints from customers, it has a high rate of main breaks and chokes. We consider our draft decisions on Essential Water's operating and capital costs will enable it to do the infrastructure repairs and upgrades it outlined in its proposal.

In our Issues Paper we noted that affordability is a key concern for customers in the Broken Hill region. Many people also told us that they did not support price increases and felt that activities that require water, such as maintaining greenspaces and using water to reduce exposure to lead, could become unaffordable if prices were to increase in line with Essential Water's proposal.

We found that it costs Essential Water around $4,100 per customer per year to provide water and wastewater services in Broken Hill, but customers currently pay around half that cost. The rest is paid for by NSW taxpayers through a subsidy that covers the cost of the WaterNSW Pipeline. Our draft prices assume that the existing Pipeline subsidy will continue for the next 4 years. If this subsidy did not continue, bills would be substantially higher than they currently are. We expect that the NSW Government will confirm whether the Pipeline subsidy will continue before our final report is complete.

Essential Water proposed an additional affordability subsidy to cover some of Essential Water's costs as well as the costs of the Pipeline. However, because draft prices will increase by much less than what was proposed, we consider this additional subsidy is not needed.

1.1.3 Our draft decisions on water and wastewater prices for Essential Water customers

Table 1.1 sets out our draft decision on Essential Water's water prices, without inflation.

- We are holding most water usage prices constant, apart from the usage prices for untreated water for EW Pipeline customers and chlorinated water customers. These prices will continue to gradually increase towards the untreated water usage price that most customers pay.
- We are holding the water service prices constant.

Table 1.1 Draft decision on Essential Water's water prices – without inflation

Prices ($2021-22)	2021-22 (current)	2022-23	2023-24	2024-25	2025-26	% change from current to 2025-26
Usage prices ($/kL)						
Treated	1.88	1.88	1.88	1.88	1.88	0.0%
Untreated[a]	1.65	1.65	1.65	1.65	1.65	0.0%
Untreated (EW Pipeline customers)[b]	1.06	1.14	1.23	1.31	1.40	31.8%
Chlorinated[c]	1.40	1.46	1.53	1.59	1.65	17.9%
Service prices ($/year)						
Residential	342.89	342.89	342.89	342.89	342.89	0.0%
Non-residential meter based 20mm price[d]	342.89	342.89	342.89	342.89	342.89	0.0%
• 25mm connection	535.78	535.78	535.78	535.78	535.78	0.0%
• 40mm connection	1,372	1,372	1,372	1,372	1,372	0.0%
• 50mm connection	2,143	2,143	2,143	2,143	2,143	0.0%
• 80mm connection	5,486	5,486.24	5,486	5,486	5,486	0.0%
• 100mm connection	8,572	8,572	8,572	8,572	8,572	0.0%
• 150mm connection	19,288	19,288	19,288	19,288	19,288	0.0%
Mines ($'000s)						
• Perilya	2,408	2,408	2,408	2,408	2,408	0.0%
• CBH	581	581	581	581	581	0.0%

a. Untreated water is supplied to customers in Broken Hill, including Broken Hill City Council and the mines.
b. Customers along the EW Pipelines (i.e. the Menindee, Stephens Creek and Umberumberka pipelines) are connected to the Mica Street reticulation network in Broken Hill. They receive untreated water sourced from the Murray River via the WaterNSW Pipeline.
c. Chlorinated water is supplied to residential and non-residential customers in Silverton and Sunset Strip.
d. The meter-based prices are set with reference to the 20mm meter price using the following formula: (meter size)^2 x 20mm meter price / 400. We have calculated service prices for larger meter sizes using this formula.
Source: IPART analysis.

We adjust Essential Water's prices each year for inflation. Table 1.2 shows our draft decisions on water prices to apply from 1 January 2023, including inflation of 5.1%.

Table 1.2 Draft decision on Essential Water's water prices ($2022-23) – with inflation

	2022-23	Change from current to 2022-23
Usage prices ($/kL)		
Treated	1.98	5.1%
Untreated	1.73	5.1%
Untreated (EW Pipeline customers)	1.20	13.5%
Chlorinated	1.54	9.8%
Service prices ($/year)		
Residential	360.38	5.1%
Non – residential meter based 20mm price[d]	360.38	5.1%
• 25mm connection	563.09	5.1%
• 40mm connection	1,442	5.1%
• 50mm connection	2,252	5.1%
• 80mm connection	5,766	5.1%
• 100mm connection	9,010	5.1%
• 150mm connection	20,271	5.1%
Mines ($'000s)		
• Perilya	2,531	5.1%
• CBH	611	5.1%

Source: IPART analysis.

Table 1.3 shows our draft decision is to keep all wastewater prices constant and only increase by inflation.

Table 1.3 Draft decision on Essential Water's wastewater prices, without inflation

Prices ($2021-22)	2021-22 current	2022-23	2023-24	2024-25	2025-26	Change from current to 2025-26 (%)
Usage price ($/kL)						
Non-residential	1.34	1.34	1.34	1.34	1.34	0.0%
Service prices ($/year)						
Residential	546.37	546.37	546.37	546.37	546.37	0.0%
Non–residential[a]						
• 20mm connection	608.24	608.24	608.24	608.24	608.24	0.0%
• 25mm connection	950.38	950.38	950.38	950.38	950.38	0.0%
• 40mm connection	2,433	2,433	2,433	2,433	2,433	0.0%
• 50mm connection	3,802	3,802	3,802	3,802	3,802	0.0%
• 80mm connection	9,732	9,732	9,732	9,732	9,732	0.0%
• 100mm connection	15,206	15,206	15,206	15,206	15,206	0.0%
• 150mm connection	34,214	34,214	34,214	34,214	34,214	0.0%

a. The meter-based prices are set with reference to the 20mm meter price using the following formula: (meter size)^2 x 20mm meter price / 400. We have calculated service prices for larger meter sizes using this formula.

We have calculated service prices for larger meter sizes based on this formula, using a standard discharge factor of 100% as per Essential Water's proposal.
Source: IPART analysis.

Table 1.4 shows our draft decisions on wastewater prices to apply from 1 January 2023, including inflation of 5.1%.

Table 1.4 Draft decision on Essential Water's wastewater prices ($2022-23) - with inflation

	2022-23	Change from 2022-23 (%)
Usage price ($/kL)		
Non-residential	1.41	5.1%
Service prices ($/year)		
Residential	574.23	5.1%
Non – residential[a]		
• 20mm connection	639.26	5.1%
• 25mm connection	998.84	5.1%
• 40mm connection	2,557	5.1%
• 50mm connection	3,995	5.1%
• 80mm connection	10,228	5.1%
• 100mm connection	15,982	5.1%
• 150mm connection	35,958	5.1%

Source: IPART analysis.

1.2 Structure of our report

The rest of this report provides more information about how we reached our decisions, and how these decisions compare to Essential Water's pricing proposal:

Chapter	
02	outlines the context and regulatory setting for the review, including decisions we make before setting prices, such as the form of regulation, risk sharing mechanisms, the length of the determination period, and our approach to calculating the revenue requirement
03	explains our decisions on operating expenditure allowances
04	explains our decisions on capital expenditure which informs capital allowances
05	sets out our decisions on the other cost allowances and total Notional Revenue Requirement (NRR)
06	explains our decisions on forecast water sales and customer numbers used to set prices
07-09	set out our price structure decisions and prices for water, wastewater and other services
10-11	present customer bill impacts of our pricing decisions, and implications on Essential Water and the environment.

1.3 List of draft decisions

8.	To expand Essential Water's existing output measures to align with current best practice as shown in Table 4.5.	49
9.	To set the notional revenue requirement at $176.2 million over the 2022 determination period as shown in Table 5.1.	52
10.	We calculate the regulatory asset base for 2018-19 to 2025-26 by using: – a 2019-2020 opening regulatory asset base of $123.8 million. The regulatory asset base for each year is shown in Table 5.3 – $35.7 million (nominal) of prudent and efficient historical capital expenditure added to the RAB over the 2019 determination period (Chapter 4) – $77.3 million of prudent and efficient forecast capital expenditure added to the RAB over the 2022 determination period (Chapter 4) – Essential Water's reported historical and forecast cash capital contributions as shown in Table 5.2 – Essential Water's reported historical and forecast asset disposals of zero.	53
11.	To calculate the allowance for return of assets (regulatory depreciation), using: – a straight-line depreciation method – for existing assets, the rolled forward asset lives from the 2019 determination period as listed in Table 5.5 – for new assets, the asset lives listed in Table 5.5.	56
12.	To set the allowance for return of assets at $16.6 million over the 2022 determination period as shown in Table 5.6.	56
13.	To set an allowance for return on assets of $22.7 million over the 2022 determination period (shown in Table 5.7). This is calculated by using: – the RAB values shown in Table 5.4 – a real post-tax weighted average cost of capital of 2.9% – a sampling date of 31 December 2021 for market observations as outlined in Appendix D. cell	58
14.	To set a true-up for differences between the forecast and actual cost of debt over the 2019 determination period of -$1.3 million.	60
15.	To use a true-up for differences between the forecast and actual cost of debt over the 2022 determination period in the next Determination.	60
16.	To set the working capital allowance for the 2022 determination period as shown in Table 5.8.	61
17.	To set the tax allowance as shown in Table 5.9, using: – a tax rate of 30% – IPART's standard methodology.	62
18.	To include $0.6 million in the NRR to account for differences between the forecast and actual water sales over the 2019 determination period.	63
19.	To accept Essential Water's proposed customer numbers and total water sales volumes over the 2022 determination period, as shown in Table 6.1 and in Table 6.2, respectively.	70
20.	To accept Essential Water's proposed wastewater volumes for non-residential customers as shown in Table 6.3.	70

21.	At the next determination of Essential Water's prices, to consider an adjustment to its notional revenue requirement to account for over-recovery or under-recovery of revenue due to material differences between forecast water sales and actual water sales over the 4 years from 1 July 2021 to 30 June 2025. – A material difference is defined as ± 5% of forecast revenue from water sales over the 4-year period. – Water sales forecasts for 2019-20 are the same as in IPART's 2019 final report.	72
22.	To accept Essential Water's proposal to maintain the current 2-part tariffs for water and wastewater prices.	79
23.	To hold the current treated water usage price of $1.88 per kL constant (i.e. without inflation) over the 2022 determination period. This means it would only increase by the rate of inflation.	80
24.	To hold the current usage price for untreated water of $1.65 per kL constant (i.e. without inflation) over the 2022 determination period. This means it would only increase by the rate of inflation.	80
25.	To gradually transition the usage price for untreated water (EW Pipeline customers) to $1.40 per kL by 2025-26, as per Table 7.3.	80
26.	To gradually transition the usage price for chlorinated water to $1.65 per kL by 2025-26, as per Table 7.4.	81
27.	To hold the current water service prices constant over the 2022 determination period (i.e. without inflation), as shown in Table 7.6. This means water service prices would only increase by the rate of inflation.	85
28.	To maintain our current pricing approach for new mining customers who commence operations during the 2022 determination period.	85
29.	To hold the current wastewater usage price of $1.34 per kL constant over the 2022 determination period (i.e. without inflation). This means it would only increase by the rate of inflation.	91
30.	To hold the current wastewater service prices constant over the 2022 determination period (i.e. without inflation). This means they would only increase by the rate of inflation.	91
31.	To increase the deemed residential discharge allowance for wastewater from 90 kL per year to 100 kL per year.	91
32.	To maintain our current approach for setting the wastewater service price for the mines.	91
33.	To hold the current fixed trade waste prices constant (i.e. without inflation) over the 2022 determination period, as set out in Table 9.1. This means they would only increase by the rate of inflation.	99
34.	To set volume-based prices for Category 2 customers that continue on the price transition path set in our 2019 review.	101
35.	To set non-compliant volume-based prices for Category 1, Category 1A and Category 2 customers that continue on the price transition path set in our 2019 review.	101

36.	To remove volume-based prices for compliant Category 1 and Category 1a customers, as these customers are low risk and have a low impact on Essential Water's wastewater system.	101
37.	To set mass-based prices for Category 3 customers that either: – continue on the price transition path set in our 2019 review, or – where the DPE has revised its guideline prices for a specific substance, transition mass-based prices for that substance to DPE's 2021 guideline price.	102
38.	To subtract $395,000 per year from Essential Water's wastewater notional revenue requirement. This represents our forecast of the revenue Essential Water would recover from trade waste customers if it were charging trade waste prices that align with DPE's guideline prices.	104
39.	To hold the current miscellaneous prices constant (i.e. without inflation) over the 2022 determination period. This means it would only increase by the rate of inflation.	105
40.	To continue not setting recycled water prices.	106
41.	To deduct 50% of the revenue received from recycled water sales from Essential Water's notional revenue requirement for regulated services.	106
42.	To accept Essential Water's proposal to maintain the current price structures for unmetered properties and unconnected properties.	106

1.4 List of draft recommendations

Recommendations

1.	Essential Water explore opportunities for sharing resources with Essential Energy and options to overcome any constraints.	31
2.	We recommend the NSW Government fund the difference ($81.7 million) between the total revenue to be recovered from customers and the target revenue via a direct contribution to Essential Water. This funding contribution would reflect: – the shortfall in revenue associated with transitioning the chlorinated water usage price to $1.65 per kL by 2025-26 – this is $16,000 over the 2022 determination period – revenue associated with transitioning usage price for untreated water (EW Pipeline customers) to $1.40 per kL by 2025-26 – this is $106,000 over the 2022 determination period – the shortfall in revenue associated with transitioning trade waste prices towards cost-reflective levels – this is $600,000 over the 2022 determination period – the shortfall in Pipeline costs such that all other prices stay constant in real terms over the determination period - this is $81.0 million over the 2022 determination period.	63
3.	The NSW Government fund the cost of transitioning untreated water (EW Pipeline customers) and chlorinated water usage prices over time.	81
4.	The NSW Government fund the cost of transitioning trade waste prices over time. That is, the difference between the revenue Essential Water would recover under	

1.5 List of questions for stakeholder feedback

We seek comment on the following

1.6 How you can have your say

We are seeking submissions to our Draft Report and Draft Technical Reports from all interested stakeholders by 9 September 2022. Page 2 at the front of this document explains how to make a submission. We will hold a public hearing on 30 August 2022, which will provide the community with an opportunity to provide feedback and comments on our Draft Report.

In making final decisions and setting prices, we will consider all feedback we receive in response to this Draft Technical Report (including Draft Report) and at our public hearing.

Have your say

Your input is critical to our review process.

You can get involved by making a submission, submitting feedback or attending a public hearing.

We are seeking feedback by 9 September 2022 on our draft decisions and the issues we have identified.

Submit feedback »

Attend the public hearing »

Chapter 2

Regulatory settings

02

Summary of our draft decisions for regulatory settings

We set prices for a 4-year determination period

Our draft decision is to set Essential Water's prices for a 4-year period. We did not accept Essential Water's proposed 5-year determination period. We consider 4 years balances providing price certainty for customers, while also allowing for an earlier opportunity to manage uncertainty in water demand or Essential Water's operating environment.

The timing of the Essential Water review and WaterNSW's Broken Hill Pipeline review will remain aligned. This is to ensure that related issues between the 2 reviews can be considered at the same time.

We continued to set maximum prices

We accepted Essential Water's proposal to set maximum prices (i.e. price caps), as we consider this provides price certainty to both customers and Essential Water.

We used the building block approach to calculate Essential Water's notional revenue requirement. This approach involves breaking down Essential Water's costs into operating and capital allowances, tax and working capital allowances, and making separate calculations for these allowances. The sum of the building blocks represents the total efficient costs Essential Water should incur in delivering its services.

We used a 3-step process to assess Essential Water's proposed expenditure

This process is consistent with our approach for other recent water reviews. It involves making scope, catch-up and continuing efficiency adjustments.

We did not accept Essential Water's proposed cost pass throughs

Essential Water proposed mechanisms to 'pass-through' unexpected costs to its customers if specific events occur (e.g. natural disaster, regulatory changes). We consider that Essential Water's proposed cost pass-throughs would place too much risk on customers and have made a draft decision not to accept them.

Before setting prices, we need to decide how long to set prices for and the 'form of regulation' to use to regulate prices.

2.1 We set prices for a 4-year determination period

Our draft decision is:

1. To adopt a 4-year determination period and to delay the commencement of new prices until 1 January 2023.

For each water pricing review, we need to decide how long to set prices for (the length of the determination period), which is generally between 1 and 5 years. Our draft decision is to adopt a 4-year determination period, which we consider provides a balance between reducing regulatory burden on Essential Water and managing the risks of unforeseen events or circumstances. When deciding the length of the determination period, we consider:

- our confidence in demand forecasts for water and wastewater services, which we have used to set prices
- the risk of substantial changes in the industry
- the need for price flexibility and incentives to increase efficiency
- the need for regulatory certainty and financial stability
- timing of other relevant reviews
- views of stakeholders.

Last time we set prices in 2019, we decided a 3-year period was necessary because there was uncertainty with the operation of the new Pipeline and its impact on Essential Water's water demand forecasts.

Because the WaterNSW Pipeline has been in operation for 3 years and demand forecasts are more stable, Essential Water proposed a 5-year determination period for this review. It considered its operating conditions had become more stable, allowing it to forecast water use and costs with more certainty.[1]

While we agree there is less uncertainty in forecasts from the WaterNSW Pipeline, we consider the effect of a possible new large customer means there is still some uncertainty for Essential Water's demand forecasts. Essential Water is aware of a potential new mining customer, Cobalt Blue Mine, which is estimated to require 1GL per year from 2023 or 2024,[2] (an increase of around 20% in Essential Water's total water sales). We consider a 4-year period will provide an opportunity for Essential Water to assess the impact of the new mine.

Consistent with our announcement on our website, we are delaying the commencement of new prices under the 2022 Determination until 1 January 2023. The draft prices we present in this report would apply from 1 January 2023 to 30 June 2026, which is a 3.5 year period. When we set final prices for this review, we will factor in the final WACC and an adjustment for foregone inflation in the period from 1 July 2022 to 31 December 2022. Our final prices will reflect the overall costs Essential Water would incur over the next 4 years on a net present value neutral basis. For this reason, we continue to refer to the length of the determination as a 4-year period throughout this report.

2.2 We continued to use price caps

Our draft decision is:

2. To set maximum prices for Essential Water services in each year of the determination period (a price cap).

There are several forms of price control that can be used to review or adjust prices for regulated businesses. These include maximum prices (or price caps), revenue caps and combinations of these 2 approaches. Our draft decision is to accept Essential Water's proposal to continue to set maximum prices.[3] We consider price caps provide transparency and pricing certainty to customers and Essential Water. Price caps also help ensure prices reflect efficient costs, and reflect the long-run cost of providing the service.

2.3 We used the building block approach

We continued to use the building block approach to calculate Essential Water's notional revenue requirement. This approach breaks down Essential Water's costs into the following components (or building blocks):

- **operating allowance**, to cover costs such as labour and administration costs
- **capital allowance**, comprised of:
  - return on assets that Essential Water uses to provide its services
  - regulatory depreciation (or a return of the assets that Essential Water uses to provide its services), which involves deciding on the appropriate asset lives and depreciation method
- **tax allowance**, which approximates the tax liability for a comparable commercial business
- **working capital allowance**, which represents the holding cost of net current assets.

The annual sum of these building blocks is the notional revenue requirement and is our assessment of the total efficient costs Essential Water should incur in delivering its services.

We then convert Essential Water's notional revenue requirement into prices by setting the target revenue requirement for each year – that is, the actual revenue we expect Essential Water to generate from prices and charges for that year. We consider a range of factors including price levels, the rate prices would change and any other impacts on Essential Water and water users.

Figure 2.1 shows our approach to calculating the notional revenue requirement and how we set prices.

Figure 2.1 The building block approach

2.4 We did not accept Essential Water's proposed cost pass-throughs

Our draft decision is:

> 3. To not accept Essential Water's proposal to have cost pass-through mechanisms for regulatory change, insurance events and catastrophic events.

Essential Water proposed mechanisms to 'pass-through' unexpected costs to their customers if specific events occur (e.g. natural disaster, regulatory changes).[4]

Our draft decision is to not accept Essential Water's proposed cost pass-throughs. In a competitive market, no business can automatically pass onto customers all unexpected cost increases. They need to look carefully at how they minimise the impact on their customers because that is what their competitors will be doing.

Allowing monopoly businesses to automatically pass on the full amount of unexpected cost increases is risky. It takes away the incentive for them to do what they can to avoid the increase and minimise its impact on customers. Both of these incentives are important to the long-term interests of customers.

We have not yet seen any proposals from Essential Water that seriously attempt to retain these incentives in the way cost pass-throughs are designed. If an unexpected event does have a large negative impact on Essential Water's financial position, it may be more appropriate for it to request an early price review.

2.5 We retained the current efficiency carryover mechanism

Our draft decision is:

> 4. To maintain the efficiency carryover mechanism for operating expenditure for the 2022 determination period.

In 2019, we introduced an efficiency carryover mechanism for operating expenditure, which allows Essential Water to retain permanent efficiency savings for a fixed period regardless of when in the determination period they are achieved. This mechanism aims to remove the incentive for a regulated business to delay efficiency savings from the end of one determination period to the beginning of the next.

Essential Water did not propose to activate the efficiency carryover mechanism for the 2019 determination period. It also did not propose changes to the efficiency carryover mechanism for the 2022 determination period.[5] We have accepted Essential Water's proposal and have maintained the efficiency carryover mechanism for operating expenditure for the 2022 determination period.

2.6 We assessed expenditure using a 3-step process

We used a 3-step process to set Essential Water's efficient expenditure. The sections below outline our 3-step approach. Chapters 3 and 4 outline our detailed assessment of Essential Water's expenditure.

Step 1 – Reviewing proposed activities and costs

This step considers whether any proposed changes to a utility's specific activities or new projects it is proposing to do are efficient. It does not apply to the utility's base (or 'business as usual') expenditure. If the utility's activities and projects (and associated costs) are not efficient, a **scope adjustment** is made.

Step 2 – Reviewing business processes relative to a benchmark efficient business

This step identifies the effectiveness of the utility's business processes (e.g. decision making and procurement processes) relative to a benchmark efficient business. Where we identify opportunities for improvements to the utility's business processes, we apply a **catch-up efficiency adjustment.** It takes into account the efficiencies we consider the utility could achieve by 'catching up' to its efficient peers.

Step 3 – Reviewing available data to capture possible future efficiencies

We apply a **continuing efficiency adjustment** to take account of the ongoing improvements that even the most efficient utilities should be able to make over time, as more productive ways of working emerge. We use long-term multi-factor productivity trends to set this adjustment. This recognises that in competitive markets (which we are trying to replicate through our regulatory framework) firms must innovate to achieve continuing efficiency gains over time.

Chapter 3

Operating expenditure

03

Summary of our draft decisions for operating expenditure

Essential Water proposed expenditure increases due to operating constraints

Essential Water proposed operating expenditure of around $15 million per year over the 2022 determination period. This is around 17% per year higher than the average expenditure used to set prices in 2019. The proposal reflects the business' operating constraints. While Essential Water's proposal shows lower materials and energy costs, the business has limited ability to significantly reduce the rest of its day-to-day costs.

We found opportunities to set expenditure 9% lower than proposal

After considering Essential Water's proposal and our consultants' expenditure review, our draft decision is to accept most of the expenditure proposal. However, we found some opportunities to reduce operating expenditure in later years. For example, we have incorporated cost savings that were originally planned for, but were not included in the proposal. We have also encouraged the business to pursue productivity enhancing activities over the next 4 years by setting annual targets for the business.

In providing water and wastewater services to customers, Essential Water incurs 2 types of costs:

- operating expenditure, which is the day-to-day costs involved in running its business and maintaining the infrastructure and equipment to provide services (e.g. staff wages, electricity, contractors, water transportation costs)
- capital expenditure, which is the investments it makes to buy, build and renew the infrastructure and equipment it uses to provide services (e.g. building or upgrading a wastewater treatment plant).

We assessed how much of each type of cost Essential Water would need to incur to provide services that meet customers' expectations if it managed the business with minimum wasted effort and expense. Our draft decisions on these costs, which we call the efficient costs, determine how much expenditure Essential Water will be able to recover through prices over the 2022 determination period. We aim to set the efficient costs so they are no more and no less than necessary, to ensure Essential Water has an incentive to improve how it manages its business, and enough revenue to provide services of acceptable quality.

This chapter outlines our assessment of Essential Water's proposed operating expenditure. Chapter 4 outlines our assessment proposed capital expenditure. Operating expenditure makes up around 40% of the notional revenue requirement (NRR) each year.

To assist us, we engaged AECOM to help us assess Essential Water's historical and proposed costs. Our draft decisions represent the overall level of operating expenditure that we consider sufficient to efficiently operate and maintain the WaterNSW Pipeline over the 2022 determination period. They are based on the best available data at the time of the review. The consultants' reports can be found on our website.

In most of our analysis in this chapter, we have excluded the cost of using the WaterNSW Pipeline. These costs are not recovered through prices paid by customers. Rather, these costs are currently paid by the NSW Government. We have set out why the WaterNSW Pipeline is being used at the end of this chapter. More details on costs are set out in Chapter 5 of this document and in our concurrent review of costs and prices for the WaterNSW Pipeline.

Essential Water proposed operating expenditure of $59 million for the 2022 determination period, averaging around $15 million per year and excluding costs for transporting water using the WaterNSW Pipeline.[6] This is higher than the average operating expenditure of $13 million per year included in prices set for the 2019 determination period.

Overall, our draft decision is to set Essential Water's efficient total operating expenditure at $54 million (see Table 3.1). This is 7% higher than the expenditure we set in our last review in 2019, and 9% lower than Essential Water's proposed operating expenditure.

Our decision is:

5. To set Essential Water's total operating expenditure allowance for the 2022 determination period at $54 million, as shown in Table 3.1.

Table 3.1 Draft decision on efficient operating expenditure ($ millions, $2021-22)

	Average 2019[a]	2022-23	2023–24	2024–25	2025–26	Total 2022[b]
Essential Water actuals and proposed						
Water	12.1[c]	12.9	12.1	11.9	12.0	48.9
Wastewater	2.6[c]	2.6	2.6	2.5	2.6	10.3
Total	14.8[c]	15.5	14.7	14.5	14.6	59.3
IPART 2019 decision and 2022 draft decision						
Water	10.2[d]	12.3	11.5	10.6	10.0	44.4
Wastewater	2.5[d]	2.5	2.5	2.4	2.3	9.7
Total	12.7[d]	14.8	14.0	13.0	12.3	54.1
Difference (total)	-2.1[d]	-0.6	-0.7	-1.5	-2.3	-5.1
Difference (total, %)	-14%	-4%	-5%	-10%	-16%	-9%

a. This column represents the average of operating expenditure per year during the 2019 determination period.
b. This refers to the sum of operating expenditure for the 2022 determination period.
c. This represents the average of actuals for 2019-20 and 2020-21 and estimates for 2021-22 reported by Essential Water.
d. This represents the average of operating expenditure per year as set out in the 2019 Determination.

Note: This table excludes the cost of transporting water using the WaterNSW Pipeline. Refer to Chapter 5 for more details. The figures may not add up due to rounding.

Source: IPART analysis.

3.1 Essential Water spent more than expected over the last 3 years

Over the 2019 determination period, Essential Water reported around $15 million per year of actual operating expenditure (excluding WaterNSW Pipeline costs).[7] This amount is around $2 million (16%) per year higher than the allowance we used to set prices.

This increase was mainly driven by higher labour, fleet and corporate overhead costs.[a] AECOM found Essential Water had limited ability to achieve labour savings because of operating constraints.[8] Fleet costs were higher because of additional spending on vehicles to improve safety and gradual upgrade of old fleet.[9] Meanwhile, corporate overhead costs were higher because of increased investment to transform the corporate system.[10]

Offsetting these higher costs, Essential Water achieved lower materials and energy costs. Depending on how water is sourced for the community, Essential Water could have higher (or lower) materials and energy costs if water is sourced from its own supply infrastructure (or by transporting water using the WaterNSW Pipeline). AECOM found Essential Water had mostly used the WaterNSW Pipeline to transport water for the community over the last 3 years.[11]

AECOM found actual costs over the last 3 years were mostly efficient.

3.2 Essential Water proposed increases reflect its operating constraints

Essential Water proposed operating expenditure of around $15 million per year (or $59 million in total) over the 2022 determination period, which is (see Figure 2):

- $2.1 million (17%) per year *higher* than the average expenditure used to set prices in 2019
- $0.1 million (0.3%) per year *higher* than the average of Essential Water's reported actual expenditure per year over the 2019 determination period.

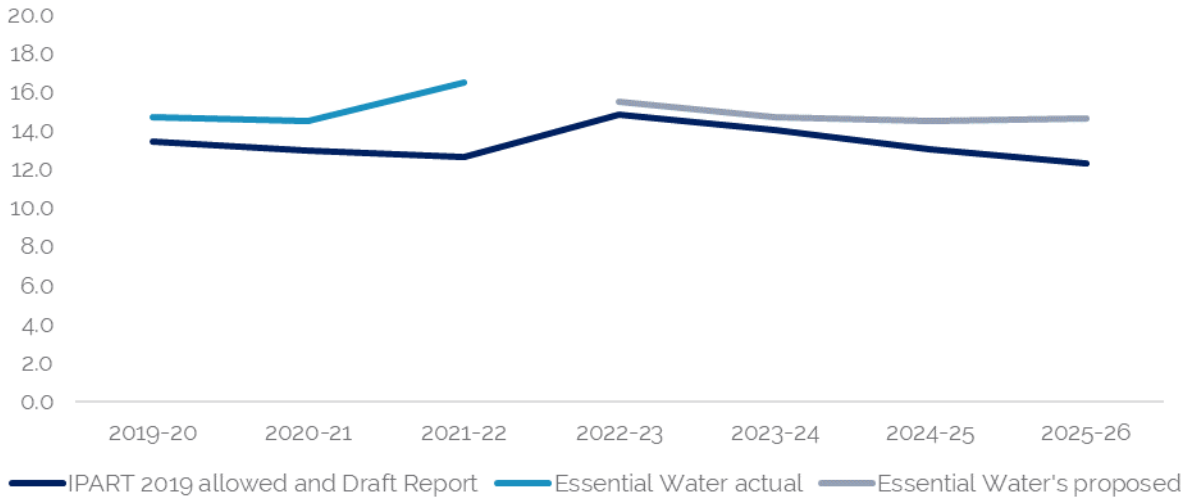
Of the proposed total amount, around $12 million per year relates to providing water services and $3 million per year relates to wastewater services.

Essential Water's proposed operating expenditure is based on its limited ability to manage its operating constraints:[12]

> "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…"

[a] AECOM found the higher labour costs were due to project delays, increase incidence in main bursts and a mandate from the NSW Government preventing Essential Water from making redundancies in 2020-21. These factors prevented Essential Water from achieving lower labour costs that were assumed in the 2019 price review.

Figure 2 Operating expenditure allowance compared with Essential Water's actual and proposed operating expenditure ($ millions, $2021-22)



Source: IPART analysis.

3.3 We found opportunities to set expenditure 9% lower than proposed

We have largely accepted Essential Water's proposed operating expenditure (excluding WaterNSW Pipeline costs) having considered both our consultants' recommendations on expenditure and Essential Water's responses to our consultants' findings.

Over the 2022 determination period, our draft decision is to slightly reduce Essential Water's total operating expenditure by $5 million to $54 million in total (i.e. around $14 million per year). This is:

- $1.3 million (9%) lower per year than proposed by Essential Water
- $0.9 million (7%) higher per year than the allowance we used to set prices in 2019.

Based on this, around $11 million per year would be for providing water services and $2 million per year would relate to providing to wastewater services.

Table 3.2 summarises our adjustments to Essential Water's total proposed operating expenditure and is based on our findings that:

- there is some opportunity to reduce labour costs in future years
- there is scope to reduce hire service costs by ensuring one-off costs are removed
- there is scope to reduce fleet costs towards the end of the determination period
- there is scope to reduce corporate overheads to reflect the other adjustments we made
- Essential Water could make ongoing efficiency savings over the determination period.

These findings are discussed in detail in the sections below. In section 3.4, we test our draft decision by comparing Essential Water's operating expenditure against other water utilities in NSW.

Table 3.2 Draft decision on efficient operating expenditure ($ millions, $2021-22)

Expenditure items	2022-23	2023-24	2024-25	2025-26	Total
Essential Water proposed					
Total excluding WaterNSW Pipeline costs	15.5	14.7	14.5	14.6	59.3
IPART draft decision					
Labour and support cost allocation	-0.1	-0.1	-0.5	-0.6	-1.4
Hire services	-0.4	-0.4	-0.4	-0.4	-1.6
Fleet	0.0	0.1	-0.2	-0.2	-0.4
Corporate overheads and corporate transformation	0.0	0.0	-0.1	-0.7	-0.8
Continuing efficiency	-0.1	-0.2	-0.3	-0.3	-0.9
Total	14.8	14.0	13.0	12.3	54.1
Difference from proposed (total, %)	-4.1%	-4.5%	-10.1%	-16.0%	-9.4%
Difference from proposed (total, $)	-0.6	-0.7	-1.5	-2.3	-5.1

Note: The figures may not add up due to rounding.

Source: IPART analysis.

There is some opportunity to reduce labour and support costs in future years

Labour costs comprise around 50% of Essential Water's total proposed operating expenditure (excluding WaterNSW Pipeline costs) over the 2022 determination period.[13]

Over the last 3 years, Essential Water spent more on labour costs than expected in our 2019 review. Essential Water expects this trend to continue over the next 4 years because:[14]

- it requires more labour resources to undertake reactive works due to deteriorating assets
- it has limited ability to reduce its labour force. It has an aging workforce that needs to be managed appropriately to reduce risk of losing skills and institutional knowledge.

AECOM found Essential Water's proposed costs to be generally efficient and recommended small adjustments in 2024-25 and 2025-26. AECOM found several initiatives in place that should reduce costs towards the end of the determination period. Specifically, AECOM found the decommissioning of the Menindee Pipeline and completion of the Will Street wastewater treatment plant projects should help reduce Essential Water's full-time equivalents (FTEs) based on the original business cases.[15] During the expenditure review, Essential Water contended that any reductions in FTEs would result in higher operating risks for them (such as issues meeting service standards). While AECOM acknowledged this potential risk, it maintained its recommendation.[16] AECOM concluded that the business should have the opportunity to manage the risk since its recommended adjustments are towards the end of 2022 determination period.[17]

AECOM identified that sharing resources between Essential Water and Essential Energy could help address barriers in attracting and retaining skilled staff in the region. We recommend Essential Water explore opportunities for sharing resources with Essential Energy and options to overcome any constraints.

Our draft decision is to accept AECOM's recommendations and set the total efficient labour costs at $0.9 million (excludes adjustments for support costs). We agree with AECOM that labour costs should reflect savings that have been identified in businesses cases. Based on this, the proposed labour costs would be slightly reduced towards the end of the determination period. We also encourage Essential Water to continue to find opportunities to reduce costs where possible and we have factored this when setting the ongoing efficiency adjustment.

We recommend:

1. Essential Water explore opportunities for sharing resources with Essential Energy and options to overcome any constraints.

There is scope to reduce hire service costs by ensuring one-off costs are removed

Essential Water's proposed total hire service costs of $5.5 million are broadly based on historical costs.[b] AECOM generally prefers a bottom-up analysis of future requirements when forecasting costs instead of using historical costs. However, Essential Water was unable to provide information on its future contractor requirements.[18]

AECOM assessed the limited information and recommended to remove one-off works in calculating historical costs.[c] As a result, AECOM recommended to set the efficient hire service cost at around $0.8 million per year over the 2022 determination period. In addition, AECOM recommended to accept the proposed one-off cost of $0.5 million in 2022-23 for Essential Water to undertake its Water Storages Strategy.

We found AECOM's recommendation to be reasonable. Therefore, our draft decision is to set the total efficient hire service cost at $1.6 million.

[b] Essential Water added one-off future works to its historical calculations. For example, Essential Water added its proposed one-off preparation cost for Water Storages Strategy Plan in 2022-23 to its historical calculation.

[c] AECOM observed high expenditure in 2017-18 due to one-off costs for project assessments and business cases for new supply arrangements. AECOM also removed one-off costs for IWCMS and regulatory compliance. AECOM excluded these one-off costs from its calculations.

There is scope to reduce fleet costs towards the end of the determination period

Fleet costs are allocated from Essential Energy to Essential Water using staff numbers as the allocator. The following are key outcomes of AECOM's analysis on the proposed fleet costs and approach:[19]

- AECOM analysed the ratio of proposed fleet costs to Essential Water's FTEs. It found the ratios to be fluctuating, which were not in line with the expected stable outlook for FTEs that underpins Essential Water's proposal.
- AECOM observed increased investments in Essential Water's vehicle fleet, which started during the 2019 determination period. AECOM expected these investments would deliver efficiencies over the 2022 determination period (e.g. lower costs for maintaining the fleet). However, AECOM could not find these efficiencies over the next 4 years.
- AECOM observed fleet costs in the last 2 years of the 2022 determination period to be substantially higher than in earlier years.

Therefore, AECOM considered the proposal was inefficient and recommended removing the high costs in 2024-25 and 2025-26.[20] After considering AECOM's findings, our draft decision is to set fleet costs at $5.4 million for the 2022 determination period. This is lower than Essential Water's proposal as we agree with AECOM that there is scope to slightly reduce costs.

Corporate overheads to reflect the other adjustments we made

Essential Water proposed a total corporate overhead cost of $18 million over the 2022 determination period, with $8.8 million (49%) allocated to operating expenditure and the remaining $9.2 million (51%) to capital expenditure (see Table 3.3). This is higher than previous corporate overheads used to set prices in the 2019. Box 3.1 explains Essential Water's approach for its proposed corporate overheads.

Table 3.3 Essential Water's proposed corporate overheads ($ millions, $2021-22)

	Average 2019[a]	2022-23	2023–24	2024–25	2025–26	Total 2022[b]
Operating expenditure	2.8	2.4	2.2	2.1	2.0	8.8
Capital expenditure	2.3	3.0	3.2	2.2	0.8	9.2
Total	**5.1**	5.4	5.4	4.4	2.8	**18.0**

a. This represents the average of corporate overheads that Essential Water reported as actuals during the 2019 determination period.
b. This refers to the sum of proposed corporate overheads for the 2022 determination period.

Note: Totals may not add up due to rounding.
Source: IPART analysis.

Box 3.1 Our understanding of Essential Water's approach

Essential Water took the following steps to set its proposed corporate overheads:

1. Allocate corporate overheads based on Essential Water's share of Essential Energy's total direct costs.
2. Remove direct costs from Step 1 that are unrelated to Essential Water's services.
3. Apply a 50% reduction factor to any individual cost item allocated to Essential Water that is more than $0.2 million.

Source: Essential Water, Essential Water Pricing Proposal, June 2021, p 64.

AECOM assessed the proposal and raised several concerns:[21]

- The use of direct cost as an allocator for corporate overheads may not be appropriate at all times. This is because there are times when direct cost is not the causal driver for corporate overheads. However, AECOM indicated that the cost of setting alternative allocators may outweigh the benefits.[22]
- The pricing proposal indicated Essential Energy's corporate costs are increasing because of investments on transformational programs. But these programs should deliver cost savings over time. However, AECOM noted the pricing proposal, and subsequent information from Essential Water, did not explicitly quantify those savings.
- AECOM agreed with the approach of removing costs that are unrelated to water and wastewater services when allocating corporate overheads to Essential Water. However, AECOM noted the proposed 50% reduction on allocated costs over $0.2 million is arbitrary and temporary to achieve a broad allocation target of around 17%. While this is favourable in achieving lower costs, this presents a risk that costs could rise in future periods.

As a result, AECOM considered the proposed costs were broadly reasonable but recommended small adjustments:

- $0.2 million to proportionately reduce the operating corporate overheads as a result of AECOM's recommendations of lower labour, support, hire service and fleet costs.
- $1 million upward adjustments for capital corporate overheads as a result of AECOM's recommendations for capital expenditure.
- $0.6 million from 2025-26 to account for operating cost savings that could be realised as part of the transformation program.

After considering both the proposal and our consultants' recommendation, our draft decision is to set Essential Water's total corporate overheads at $18.6 million. We allocated around $8.4 million in operating expenditure and around $10.2 million in capital expenditure over the 2022 determination period (see Table 3.4).

Table 3.4 Draft decision on corporate overheads ($ millions, $2021-22)

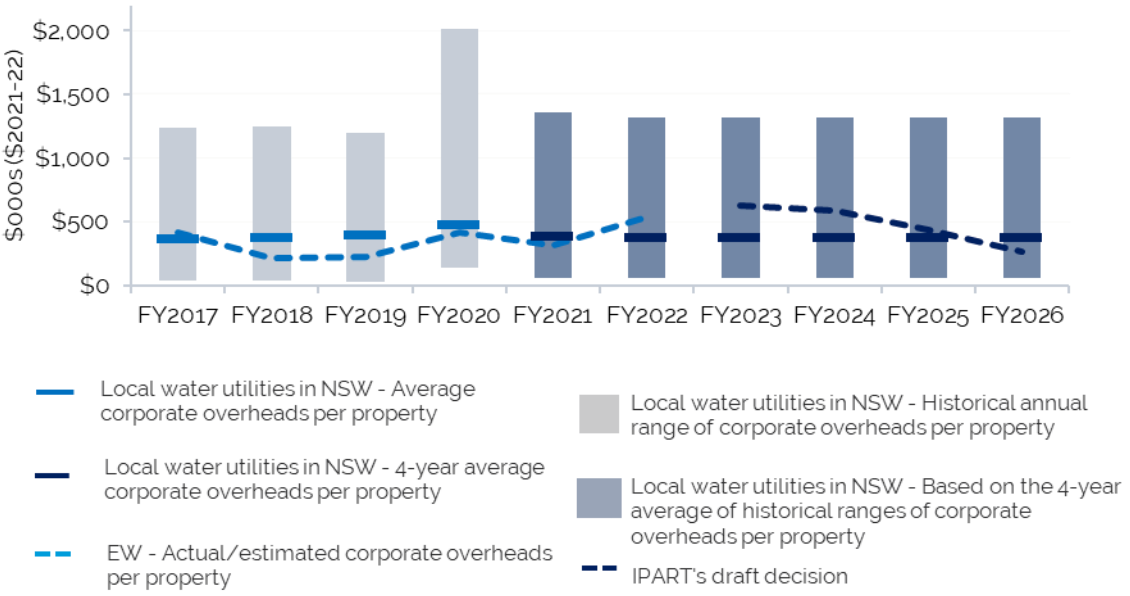
	Average 2019[a]	2022-23	2023–24	2024–25	2025–26	Total 2022[b]
Essential Water actuals and proposed						
Operating expenditure	2.3	2.4	2.2	2.1	2.0	8.8
Capital expenditure	2.8	3.0	3.2	2.2	0.8	9.2
Total	5.1	5.4	5.4	4.4	2.8	18.0
IPART 2019 decision and 2022 draft decision						
Operating expenditure	1.9	2.4	2.2	2.0	1.8	8.4
Capital expenditure	1.5	3.7	3.5	2.2	0.8	10.2
Total	1.9	6.1	5.7	4.2	2.6	18.6

a. This column represents the average of corporate overheads that Essential Water reported as actuals during the 2019 determination period.
b. This refers to the sum of proposed corporate overheads for the 2022 determination period.

Note: Totals may not add up due to rounding.
Source: IPART analysis.

Our draft decision is based on AECOM's recommendations. To sense-check our draft decision, we compared Essential Water's actual total corporate overheads and our draft decisions against other local water utilities in NSW. We did the analysis on a per property basis. In Figure 3.3, we observed Essential Water's actual total corporate overheads were trending below the average cost in NSW in most years from 2016-17 to 2021-22. Under our draft decision for the 2022 determination period, Essential Water's total corporate overheads would be above the average cost in NSW in 2022-23 then declining below the average by 2025-26. Overall, we consider our draft decision is reasonable and in line with other utilities in NSW.

Figure 3.3 Comparison of Essential Water's total corporate overheads with other water utilities in NSW



Note: Over the FY2017 to FY2020, we used the actual data reported by Essential Water in its pricing proposal and compared them with the Department of Planning and Environment's local water utilities performance monitoring data in NSW. Over the 2022 determination period, we used the results of our draft decisions and compared them with 4-year averages using the performance monitoring data.
Source: IPART analysis and the Department of Planning and Environment's local water utilities performance monitoring data.

For future price reviews, we recommend Essential Water should address its allocation targets for corporate overheads by considering a long-term approach to avoid arbitrary allocation.

Essential Water could make ongoing efficiency savings of $0.9 million

When setting prices for public water utilities, we generally apply a continuing efficiency adjustment to all operating expenditure and capital expenditure. This adjustment is important because it ensures our maximum prices capture the impact of management initiatives and new technologies that enable firms to do more with less input. We favour a forward-looking adjustment because it:

- incentivises the regulated firms to pursue productivity enhancing activities over the determination period
- recognises market-based firms continuous push to innovate and become more productive over time
- is consistent with the incentive-based framework under which we set prices for public water utilities.

By putting a quantitative target in place, we establish an expectation of continuous productivity improvement that efficient businesses should reasonably be able to achieve over the determination period.

Our draft decision is to apply a continuing efficiency adjustment of 0.7% per year, totalling $0.9 million in efficiency savings over the 2022 determination period (see Table 3.5).

This adjustment is based on our current methodology which reflects the long-run shift in the efficient frontier. This includes:

- Using the market sector-based estimate of the Australian multi-factor productivity (MFP) growth data to calculate the continuing efficiency adjustment. We continue to prefer market sector data rather than data specific to the utilities or a subset of industries. This approach represents the efficiencies that could be available to utilities, through internal initiatives or incorporated through supply chains.
- Using the long-run average of the entire time series data rather than a shorter time period (or favouring more recent data). A longer time series provides more data points and helps to reduce the impacts on final estimates of unusual MFP growth over a single business cycle. Further, this approach does not require judgement about what part of the business cycle we will experience over the determination period.

Table 3.5 Draft decision on continuing efficiency factors ($ millions, $2021-22)

Efficiency adjustment	2022-23	2023-24	2024-25	2025-26	Total
Continuing efficiency (cumulative %)	-0.7%	-1.4%	-2.1%	-2.8%	N/A
Continuing efficiency ($ million)	-0.10	-0.20	-0.28	-0.35	-0.9

3.4 We compared Essential Water's costs with other utilities

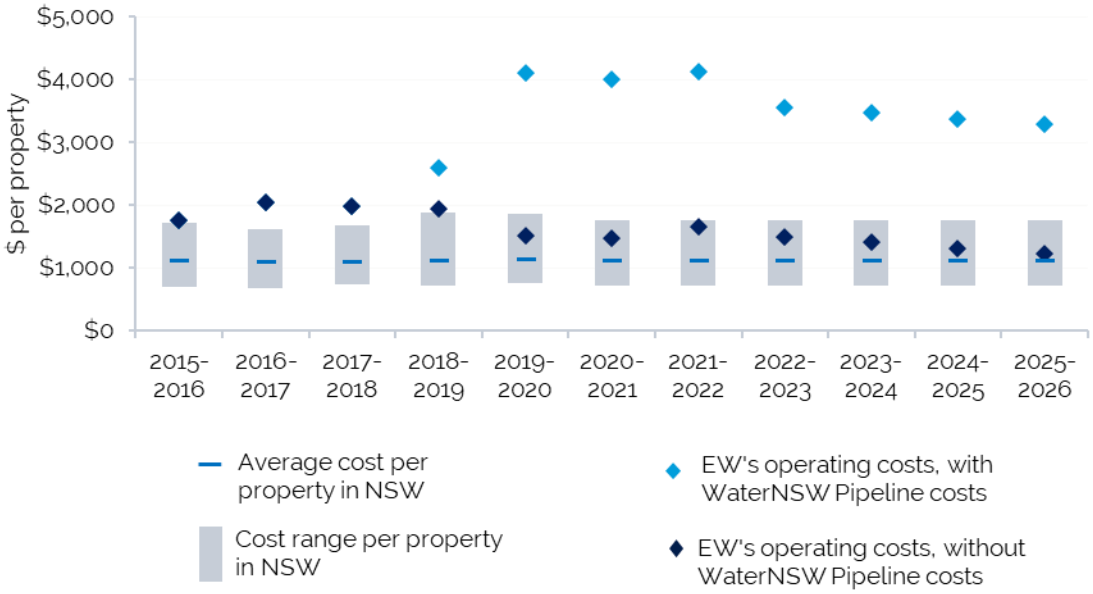
To sense-check our draft decisions, we compared the operating expenditure for Essential Water against other water utilities in NSW. We did the analysis on per property basis to compare how much the utilities spend on servicing each property in NSW.

As shown in Figure 3.4, we observed that Essential Water's historic costs were one of the highest in NSW before the WaterNSW Pipeline became operational in 2019. This is because Essential Water has a relatively large network of water and wastewater infrastructure that services a small customer base, which includes few mines, in a remote location in NSW.

Since 2019, Essential Water's operating expenditure (excluding the WaterNSW Pipeline costs) per property has fallen but are still above the average in NSW. Because Essential Water now sources most of its water from the WaterNSW Pipeline instead of its own infrastructure, its energy and materials costs have decreased. Over the 2022 determination, we expect Essential Water's operating expenditure to be well within the range in NSW and trending closer to the average in NSW and have set draft prices on this basis. We consider our draft decision on efficient operating expenditure is reasonable and wouls give Essential Water enough time to lower its costs while managing the challenges of operating a business in a remote location.

However, if we were to include the cost of the WaterNSW Pipeline, our analysis shows the operating expenditure per property in Broken Hill region would be the highest in NSW. The cost of using the WaterNSW Pipeline is being recovered from the NSW Government. Customers in Broken Hill region currently do not pay for the WaterNSW Pipeline.

Figure 3.4 Analysis of our draft operating expenditure against other utilities



Note: Over the 2015-16 to 2021-22 period, we used the data reported by Essential Water in its pricing proposal and compared them with Bureau of Meteorology's 2019-20 national performance report for utilities in NSW. Over the 2022 determination period, we used the results of our draft decisions and compared them with 5-year averages using the national performance report. In addition, the cost analysis is undertaken on per property basis, which is different to how we set prices or analyse bill impacts.
Source: IPART analysis and Bureau of Meteorology's 2019-20 national performance report.

3.5 The WaterNSW Pipeline will be used to meet water demand in Broken Hill

Historically, water supply for Broken Hill was dependent on water sourced from the Darling River via a 120 km of pipeline and stored in Stephens Creek Reservoir. These pipeline and water storage assets are owned and operated by Essential Water.

Since 2019, Essential Water sourced the majority of its water supply needs by transporting water from the Murray River using the WaterNSW Pipeline. For the next 4 years, Essential Water proposes to continue to use the WaterNSW Pipeline to meet majority of customer water demand. Appendix C provides more information on Essential Water's water supply arrangements.

AECOM found this proposal is efficient because:[23]

- The Stephens Creek Reservoir is dry 60% of the time.
- By using the WaterNSW Pipeline more, Essential Water can reduce its spending on energy and materials (e.g. chemical treatments).
- This would result in lower operating risk for Essential Water. Essential Water advised that it needs to do more water testing and chemical dosing if water is obtained from multiple sources.

After considering the proposal and our consultants' findings, our draft decision is to accept the proposal to set efficient costs based on Essential Water using the WaterNSW Pipeline efficiently.

This draft decision has further implications in our price review:

- In Chapter 5, we discuss our draft decision on Essential Water's notional revenue requirements based on full efficient costs, which include the WaterNSW Pipeline costs.
- In Chapter 6, we discuss our draft decision on how much water would need to be transported using the WaterNSW Pipeline.
- In Chapters 7 and 10, we discuss the government subsidy arrangements for the use of the WaterNSW Pipeline and what it means for customer prices and bills.

Chapter 4

Capital expenditure and output measures

04

Summary of our draft decisions for capital expenditure

We accepted most of Essential Water's proposed past capital expenditure and set the allowance at $37 million

We found that Essential Water's capital expenditure over the 2019 determination period is mostly efficient and our draft decision is to largely accept it. Essential Water spent less than the allowance set by IPART for the 2019 Determination due to delaying the Wills Street wastewater treatment plant (WWTP) replacement and achieving savings on a project. We have reduced capital expenditure to reflect AECOM's views on reasonable timing for Essential Water's capital projects, and a reasonable allowance for capitalised corporate overheads in 2021-22.

We accepted most of Essential Water's proposed capital expenditure for the next 4 years and set the allowance at $77 million

Our draft decision is that Essential Water's proposed capital expenditure for the 2022 determination period is efficient. The forward-looking capital expenditure allowance considers project delays from the 2019 determination period and has been increased to reflect AECOM's views on reasonable timing for the Grazier's Pipeline project.

We expanded output measures to align with best practice

We found there is scope for Essential Water to improve reporting on its existing output measures and to expand these measures to better reflect customer priorities and align with best practice.

This chapter outlines our assessment of Essential Water's capital expenditure. It discusses:

- Essential Water's actual capital expenditure during the 2019 determination period and compares this to the allowance we set in the previous review
- Essential Water's proposed capital expenditure for the 2022 determination period
- our decisions on Essential Water's actual and proposed capital expenditure.

Capital expenditure is needed to renew existing assets and build new assets that provide services to customers over the long term. Key drivers of capital expenditure are meeting customer service standards and compliance with safety and regulatory requirements.

The capital expenditure allowance we set for Essential Water does not represent the amount it is required to spend on specific capital projects. It represents our view on the overall level of capital expenditure (to be recovered through prices) that we consider reasonable to maintain or improve services over the determination period. Essential Water decides how to prioritise capital expenditure within a determination period.

As with operating expenditure, we engaged AECOM to review Essential Water's past and proposed capital expenditure. AECOM also reviewed Essential Water's performance against service standards (output measures) over the 2019 determination period. AECOM's report, which includes detailed analysis of Essential Water's capital expenditure, is available on our website. We also considered submissions from stakeholders in making our decisions.

Under the building block method, capital expenditure is added to the Regulatory Asset Base (RAB) and recovered over time through allowances for return on assets and depreciation.

4.1 Essential Water spent less than expected over the last 3 years

AECOM found that Essential Water's capital expenditure over the last 3 years is mostly efficient and that it delivered the Brine Pond decommissioning project at lower cost than initially estimated.[24] Essential Water also spent less than the allowance because it delayed capital expenditure on the Wills Street WWTP replacement and proposes to spend most of this money over the next 3 years instead.[25]

In our 2019 review, we set a capital expenditure allowance of around $56 million over 3 years for Essential Water to do a range of upgrades, as well as consequential works to integrate the WaterNSW Pipeline into its existing network. Essential Water proposed to spend around $49 million and completed many of these projects. The 13% underspend is mostly due to project delays for the Wills Street WWTP, for which Essential Water proposed to defer around $8 million to the 2022 determination period. AECOM agreed that deferring this project is reasonable, but also recommended further decreases of around $10 million to capital expenditure to reflect expected delays for the Graziers' Pipeline project.[26] The capital expenditure allowance for the 2022 Determination would be subsequently increased by around $10 million to reflect this additional timing adjustment. We agree with AECOM's recommended timing adjustments and have accepted its recommended capital expenditure allowance of $37 million for the 2019 determination period.

The Wills Street WWTP was built in the 1930s and needs to be replaced to meet environmental standards. It was delayed from the 2019 Determination because of COVID-19 and uncertainty around funding for the rest of the project.[27]

The Grazier's Pipeline project involves decommissioning the Menindee pipeline, supplying potable water to Sunset Strip from Menindee water treatment plant, and supplying 11 graziers from a new pipeline from Stephens Creek reservoir. It has been delayed due to heritage issues and community consultation processes.[28]

AECOM also recommended reducing capitalised overhead costs by around $2 million in 2021-22.[29] This is because capitalised overheads in 2021-22 are substantially higher than previous years and more than double the allowance set by IPART in the 2019 Determination.[30] Our draft decision is to accept AECOM's recommendation. Chapter 3 discusses our approach to reviewing Essential Water's corporate overheads in more detail.

Table 4.1 summarises all of AECOM's recommended adjustments to capital expenditure for the 2019 determination period and IPART's draft decision on total capital expenditure. Table 4.2 provides a breakdown of the capital expenditure by asset type.

Table 4.1 AECOM recommended adjustments to capital expenditure - 2019 Determination ($ millions, $2021-22)

Expenditure items	2019-20	2020-21	2021-22	Total
Essential Water proposed				
Actual capital expenditure	11.2	10	28	49.2
AECOM recommendations				
Efficiency adjustments (corporate overheads)			-2.3	-.2.3
Adjustments for timing of Grazier's Pipeline project			-10.3[a]	-10.3
IPART draft decision				
Capital expenditure	11.2	10	15.4	36.7

a. AECOM has recommended a corresponding increase to capital expenditure for the 2022 determination period. It recommends a $6.75 million and $3.4 million increase in 2022-23 and 2023-24, respectively as shown in Table 4.3 below.

Source: IPART analysis.

Our draft decision is:

6. To set Essential Water's efficient capital expenditure to be included in the Regulatory Asset Base (RAB) for the 2019 determination period as shown in Table 4.2

Table 4.2 IPART's draft decision on capital expenditure – 2019 determination ($ millions, $2021-22)

Asset type	2019-20	2022-21	2021-2022	Total
Water	7.5	6.2	8.6	31.2
Wastewater	0.7	1.3	2.1	4.1
Corporate overheads	0.8	1. 4	2.5	8
Non-system (ICT)	1.0	0.7	1.6	3.4
Non-system (FFP & E)	0.2	0.3	0	0.6
Non-system (vehicles)	0.5	0	0.4	0.6
Non-system (buildings)	0.5	0.1	0.2	0.7
Total	**11.2**	**10.0**	**15.4**	**49.2**

Source: IPART analysis.

4.2 Essential Water proposed capital expenditure to upgrade ageing infrastructure

For the 2022 determination period, Essential Water proposed around $68 million in capital expenditure, made up of several capital projects to upgrade its ageing infrastructure. This is slightly lower than the amount of capital expenditure we set in the last review, when compared on an average annual basis.[a]

Key capital projects proposed by Essential Water include:

- replacing Wills Street WWTP (around $30 million)
- water and sewer reticulation repairs and replacements (around $11 million)
- Mica Street service reservoir replacement (around $3 million)
- Mica Street concrete remediation (around $2.5 million)
- Rocky Hill service reservoir refurbishment and replacement (around $2 million)
- non system expenditure on IT, motor vehicles, buildings, fittings, furniture, plant and equipment (around $6 million).[31]

Essential Water's pricing proposal outlines these projects in more detail.

4.3 Our draft decision is to accept Essential Water's proposed capital expenditure

AECOM found that most projects proposed by Essential Water are necessary and that proposed costs are reasonable, and so our draft decision is to largely accept Essential Water's proposal. We have made a draft decision to:

- increase the allowance to reflect our views on reasonable timing for project delays from the 2019 determination period
- slightly decrease the allowance to reflect our expectation that Essential Water should become more productive and find cost savings over time.

Our draft decisions on capital expenditure are discussed further in section 4.3.1.

[a] We set an average annual allowance of around $19 million over 2019 determination period. This compares to a draft annual average allowance of around $17 million over 2022 determination period, expressed in $2021-22.

Stakeholders who commented on capital expenditure generally agreed that these projects are necessary, but also raised concerns about recovering costs from customers. For example, Broken Hill City Council agreed that infrastructure repairs and renewals are important but preferred that these are funded through capital grants, rather than through prices paid by customers.[32] Essential Water's pricing proposal includes a capital grant of around $7 million for the Wills Street WWTP[33] project and the Government has recently announced funding for the Grazier's Pipeline.[34] We have also recommended that the cost of the Wentworth to Broken Hill Pipeline continue to be fully subsidised by NSW taxpayers. Because there is already a range of assistance in place to keep water and wastewater prices in Broken Hill affordable, our view is that it is reasonable for customers to pay for other proposed capital projects.

PIAC expressed support for maintaining and replacing infrastructure to avoid high costs of repairs such as leaks and bursts. It also preferred that any replacements are done in accordance with long-term planning to improve efficiency and sustainability.[35] Our assessment of Essential Water's long-term planning processes is at section 4.4 below.

4.3.1 We have accepted some of AECOM's recommended adjustments to proposed capital expenditure

While AECOM found Essential Water's capital expenditure proposal to be mostly reasonable, it found one project (Mica Street concrete remediation) to be inefficient and also recommended timing adjustments to reflect delays from the 2019 determination period. Our draft decision is to accept AECOM's recommended timing adjustments, but not its recommendation on the Mica Street concrete remediation. Our reasoning for departing from AECOM's recommendation on this project is discussed in section 4.4.

Table 4.3 outlines:

- Essential Water's proposed capital expenditure allowance
- AECOM's recommended adjustments
- IPART's draft decision on efficient capital expenditure
- IPART's draft decision on efficient capital expenditure including a continuing efficiency adjustment to Essential Water's proposed capital expenditure. As discussed in Chapter 3, IPART applies a continuing efficiency adjustment to proposed costs to reflect ongoing productivity improvements that we expect water businesses to achieve.

Table 4.3 AECOM recommended adjustments to capital expenditure - 2022 Determination ($ millions, $2021-22)

	2022-23	2023-24	2024-25	2025-26	Total
Essential Water proposed					
2022 capital expenditure	22.3	22.4	16.7	6.9	68.2
AECOM recommendations					
Efficiency adjustments for Mica Street concrete remediation	-2.8		+0.1		-2.7
Adjustments for timing of Grazier's Pipeline project	+6.8	+3.4			10.2
IPART draft decision					
Capital expenditure *excluding* continuing efficiency adjustment	29.0	25.8	16.7	6.9	78.4
Capital expenditure *including* continuing efficiency adjustment	28.8	25.5	16.3	6.7	77.3

Source: IPART analysis.

Our draft decision is:

7. To set Essential Water's efficient capital expenditure for the 2022 determination period as shown in Table 4.4.

Table 4.4 IPART's draft decision on capital expenditure – 2022 determination ($ millions, $2021-22)

Asset type	2022-23	2023-24	20224-25	2025-26	Total
Water	10.4	6.4	3.9	3.6	24.4
Wastewater	12.7	14.1	9.4	1.4	37.6
Corporate overheads	3.7	3.5	2.2	0.8	10.2
Non-system (ICT)	1.4	1.0	0.4	0.4	3.1
Non-system (FFP & E)	0	0.0	0.0	0	0.1
Non-system (vehicles)	0.4	0.4	0.4	0.4	1.5
Non-system (buildings)	0.1	0.1	0.1	0.1	0.3
Total	**28.8**	**25.5**	**16.3**	**6.7**	**77.3**

Note: Totals may not add due to rounding.
Source: IPART analysis.

4.3.2 We did not accept AECOM's recommendation on Mica Street concrete remediation

Essential Water proposed around $2.5 million in capital expenditure to address premature concrete corrosion at the Mica Street water treatment plant (see details in Box 4.1). This project was also proposed for our 2019 review, where our cost consultant at the time, Aither found that it was not efficient because concrete corrosion protection should have been installed at the time of construction. While Aither considered the project was necessary, it concluded that it was not reasonable to include this project in the capital expenditure allowance.[36] Since our last review, Essential Water has engaged in legal action against the contractor who built the plant.[37] However, it does not appear that the full cost of the concrete remediation works has been recovered from the contractor and so Essential Water has again proposed to recover these costs from customers.

AECOM reviewed this project and found that it is not efficient because it considers that a whole of life cost/risk assessment may help to determine the optimum timing of this project and instead recommends an allowance for ongoing monitoring of around $0.3 million.[38] While we acknowledge AECOM's preference for ongoing monitoring, we consider there is evidence that the repairs are needed more urgently and that delays may lead to higher costs. Therefore, we have not accepted AECOM's recommendation to defer the project. We also recognise Essential Water's efforts in pursuing the original contractor and consider on balance there is not clear evidence that Essential Water acted inefficiently at the time of construction. Therefore, our draft decision is to include the costs of Mica Street concrete remediation in the capital expenditure allowance.

Box 4.1 Mica Street concrete remediation

In 2014-15, Essential Water engaged a consultant to assess the condition of the concrete infrastructure at the Mica Street water treatment plant. They found that the low pH conditions required for greater organics removal (enhanced coagulation), caused calcium to be leached from concrete, resulting in corrosion. To protect the tanks from further degradation and premature asset failure, a seal coating of the concrete surfaces was recommended.

Essential Water proposed to undertake the concrete remediation in IPART's 2019 review. IPART's cost consultant Aither concluded that the repair costs were prudent, but not efficient because corrosion protection should have been installed at the time of construction.

Since that time Essential Water has engaged in legal action and received a $500,000 settlement from the service provider for the concrete degradation. However, the basis for the settlement is unclear.

Essential Water again proposed the concrete remediation project for the 2022 review. AECOM reviewed this proposal and concluded that:

- There appears to be no urgency in the application of a coating system, and AECOM instead recommends on-going monitoring.
- Coating systems have a finite life themselves and introduce additional maintenance requirements (and associated costs). If the coating system is applied in the next period, it would likely need to be replaced during the design life of the asset.
- A whole of life cost/risk assessment should be carried out to determine the optimum timing of this maintenance solution in combination with an ongoing monitoring program to monitor deterioration rates to support the proposal. Alternatively, the work can be carried out in stages as on-going maintenance.

AECOM acknowledges that Essential Water has subsequently identified further issues with the concrete (such as cracks in the clarifier tank walls exhibiting staining from corroded steel reinforcement). However, AECOM considers that the cause of these cracks in unclear and it has not been confirmed that the steel reinforcement is corroding.

Source: AECOM, Expenditure review of Essential Water's services, March 2022, Essential Water, Essential Water Pricing Proposal, June 2021, Aither, Essential Water expenditure review, January 2019, IPART analysis.

4.4 Essential Water's long-term planning processes are sound and consider the impacts of climate change

AECOM reviewed Essential Water's long-term asset management and planning processes and found that they reflect good practice, but also recommended some improvements to documentation processes including:

- improving definitions around how documents interact with each other to influence the asset management decisions
- improving clarity around governance and responsibility for asset management documentation
- Essential Water's asset management decision making is informed by multiple data sources/systems. Improvements could be achieved by documented or applied data management processes to reduce risks to data consistency, quality and accuracy.[39] AECOM found that Essential Water's planning processes consider the impacts of climate change through demand management strategies and supply augmentation projects.[40] We commend Essential Water on its efforts to plan for climate change impacts.

AECOM's report includes a detailed assessment of Essential Water's long-term asset management and planning processes.

4.5 We are expanding output measures to better reflect customer priorities

Essential Water has adopted service standards (output measures) to track and report on whether it is delivering on its regulatory requirements, as well as community and customer expectations. Essential Water proposed to maintain its existing set of output measures for the 2022 Determination. We asked AECOM to review:

- how Essential Water has performed against its current output measures over the last 3 years (shown in Table 4.5). AECOM found Essential Water has met its water quality targets, but not reported performance against 3 of its 7 output measures (response times, notice periods and duration of planned interruptions).[41]
- Essential Water's proposal to maintain its current output measures for the 2022 Determination. AECOM found there is scope for Essential Water to expand its output measures to align with current best practice by reporting on service quality and performance from its customers' perspective.[42]

We expect Essential Water to collect and report on performance information against all existing indicators and would like to see improvements in this area. Essential Water has indicated it plans to have systems in place that will enable reporting on all existing indicators for the next review. We are interested in hearing the community's views on Essential Water's output measures and whether these measures will provide valuable information about the quality of services customers receive.

Our draft decision is to accept AECOM's recommendation to expand Essential Water's output measures to align with current best practice. To support this, we are recommending that Essential Water start to collect and report on information about duration of service interruptions (both planned and unplanned) and the number of customers affected. This will help Essential Water better understand the quality of services received by its customers.

Table 4.5 shows our draft decisions on output measures for the 2022 Determination.

Table 4.5 Essential Water's performance against output measures

Output measure	AECOM findings	IPART draft decisions
The availability (reliability) of water supply	Some aspects reported, no data provided for verification	Essential Water to collect information and report on **water supply interruptions** (frequency, duration and number of customers affected by planned and unplanned interruptions)
Water quality	All targets achieved (100%), comprehensive data provided for verification	Essential Water to collect information and report on **water quality events** (frequency and duration of all events out of specification, frequency and duration of selected specific events (such as colour) out of specification)
Response times	All targets achieved for 4 priority definitions (100%), no data provided for verification	This measure has been addressed under customer complaints
Wastewater performance	All targets achieved (100%), only EPA data provided for verification	Essential Water to collect information and report on **wastewater service interruptions** (frequency, duration and number of customers affected by planned and unplanned interruptions)
Customer complaints	All targets achieved (100%), verification data on complaints provided but not on response times	Essential Water to collect information and report on **customer complaints** (number by type (as reportable to BOM); response time)
Notice periods	Not reported, no data provided for verification	Essential Water to continue to collect information and report on notice periods.
Duration of planned interruptions	Not reported, no data provided for verification	This measure has been addressed under water supply interruptions and wastewater service interruptions
		Essential Water to collect information and report on **notifiable environmental impacts** (number by type (as reportable to BOM); response time).

AECOM, Expenditure review of Essential Water's services, March 2022, p 79, IPART analysis.

Our draft decision is:

8. To expand Essential Water's existing output measures to align with current best practice as shown in Table 4.5.

We seek comment on the following:

1. What are your views on Essential Water's output measures? Do these measures provide valuable information about the quality of services customers receive?

Chapter 5

Other costs & revenue requirement

05

Summary of our decisions for other building block costs and notional revenue requirement

Essential Water's notional revenue requirement is $176.2 million

This amount is $31.0 million (15.0%) less than what Essential Water proposed.

The difference largely reflects our reduction in Essential Water's operating expenditure to an efficient level (see Chapter 3) and using a lower cost of capital than proposed.

Essential Water's return of assets (regulatory depreciation) is $16.6 million

We calculated this allowance using a straight-line depreciation method and by determining the appropriate asset lives for the assets in Essential Water's RAB.

Essential Water's return on assets is $22.7 million

The opening RAB for the 2022 determination period is $158.9 million and we added $77.3 million of forecast capital expenditure for the period.

We used a real post-tax weighted average cost of capital (WACC) estimate of 2.9% as the efficient rate of return.

Essential Water's working capital allowance is $0.7 million

We set the allowance by calculating the net amount of working capital Essential Water requires and multiplying it by the nominal post-tax WACC.

Essential Water's tax allowance is $0.9 million

We calculated the tax allowance using a tax rate of 30% and our standard methodology.

We have included a cost of debt true up of -$1.3 million

The actual annual changes in the cost of debt over the 2019 determination period were lower relative to the cost of debt allowed for in the WACC.

We included a Demand Volatility Adjustment of $0.6 million

Overall, Essential Water sold less water than forecast over the 2019 determination period.

To set prices, we first determine the efficient costs that Essential Water would require to deliver its services. The notional revenue requirement (NRR) represents our view of the total efficient costs of providing Essential Water's regulated services in each year of the determination period. In general, we then set water and wastewater prices to recover this amount of revenue.

This chapter sets out our calculation of the notional revenue required to fund Essential Water's regulated services over the determination period.

5.1 Essential Water's total notional revenue requirement is $176 million

Our draft decision is:

9. To set the notional revenue requirement at $176.2 million over the 2022 determination period as shown in Table 5.1.

Our draft decision to set total NRR over the 2022 determination period at $176.2 million, which is $31.0 million (15.0%) lower than Essential Water's proposed revenue requirement of $207.3 million. Table 5.1 compares our Draft decision on NRR with Essential Water's proposal.

Table 5.1 Draft decision total notional revenue requirement for the 2022 determination period ($ millions, $2021–22)

Building block	2019[a]	2022-23	2023-24	2024-25	2025-26	Total
Essential Water's proposed						
Total notional revenue requirement		52.1	51.0	51.7	52.4	207.3
Draft decision						
Operating expenditure (excluding bulk water purchases)	13.0	14.8	14.0	13.0	12.3	54.1
Bulk water purchases	26.0	20.5	20.5	20.5	20.5	82.0
Regulatory depreciation	3.2	3.7	4.1	4.3	4.5	16.6
Return on assets	6.8	5.0	5.6	6.0	6.2	22.7
Working capital allowance	0.2	0.1	0.2	0.2	0.2	0.7
Tax allowance	0.3	0.2	0.2	0.3	0.3	0.9
Cost of debt true up		-1.3	0.0	0.0	0.0	-1.3
DVAM true up		0.6	0.0	0.0	0.0	0.6
Total notional revenue requirement	**49.5**	**43.5**	**44.5**	**44.3**	**43.9**	**176.2**
Difference proposed & Draft decision		-8.6	-6.5	-7.5	-8.5	-31.0
Difference proposed & Draft decision (%)		-16.6%	-12.7%	-14.4%	-16.1%	-15.0%

a. The figures presented in the column headed 2019, are the average allowance over the 2019 determination, adjusted for inflation.

Source: IPART analysis.

5.2 We used the building block approach to calculate the NRR

We used the 'building block' approach to calculate Essential Water's NRR as outlined in Chapter 2. This approach involves determining an allowance for each year of the determination for each of the 5 components (or building blocks):

- operating expenditure (Chapter 3)
- return of those assets (regulatory depreciation) (section 5.4)
- return on the regulatory value of its assets (section 5.5 and Appendix D)
- an allowance for working capital (section 5.7)
- an allowance for meeting tax obligations (section 5.8).

The annual sum of these building block items is the NRR and represents our assessment of the total efficient costs Essential Water should incur in delivering its services.

We make 2 adjustments for the previous determination period; one for the difference in the cost of debt and the other for demand volatility (discussed in sections 5.6 and 5.9). Once we have calculated the NRR, we account for any revenue that Essential Water will receive from other sources.

5.3 We determine the regulatory asset base using our usual methodology

Our draft decisions are:

10. We calculate the regulatory asset base for 2018-19 to 2025-26 by using:
    - a 2019-2020 opening regulatory asset base of $123.8 million. The regulatory asset base for each year is shown in Table 5.3
    - $35.7 million (nominal) of prudent and efficient historical capital expenditure added to the RAB over the 2019 determination period (Chapter 4)
    - $77.3 million of prudent and efficient forecast capital expenditure added to the RAB over the 2022 determination period (Chapter 4)
    - Essential Water's reported historical and forecast cash capital contributions as shown in Table 5.2
    - Essential Water's reported historical and forecast asset disposals of zero.

The regulatory asset base (RAB) represents the value of Essential Water's assets on which it should earn a return on capital and an allowance for regulatory depreciation.

5.3.1 We deducted $4.9 million in cash capital contributions and deducted no asset disposals

Cash capital contributions are external funding that Essential Water receives towards its capital expenditure, such as government grants. Cash capital contributions are netted off capital expenditure so that they do not enter the RAB. This ensures that customers do not pay a return on assets or regulatory depreciation for capital expenditure that has already been funded from other sources.

However, businesses would normally need to pay tax on capital contributions. Therefore, we deduct the cash contributions net of tax from the capital expenditure allowance, effectively capitalising the tax impact on capital contributions into the RAB.

Essential Water's proposal included $7.1 million of capital cash contributions from 2021-22 to 2024-25 for the Wills Street upgrade. This project has a total cost of $28.5 million (excluding divisional overheads) and has approval for 25% funding from NSW DPE's Safe and Secure Water Program. Allowing for tax, this amount is $4.9 million over the 2 determination periods and is shown in Table 5.2.

Table 5.2 Draft decision on cash capital contributions ($ millions, $2021–22)

	2021-22	2022-23	2023-24	2024-25
Cash capital contribution (total)	0.3	0.3	5.0	1.4
Cash capital contribution (net of tax)	0.2	0.2	3.5	1.0

Source: IPART analysis.

Asset disposals can include asset sales, write-offs and write-downs. Essential Water has proposed zero asset disposals and therefore we have not made a deduction from the RAB for asset disposals.

5.3.2 The opening regulatory asset base for the 2022 determination period is $158.9 million

We calculated the opening RAB for the 2022 determination period by rolling the RAB forward from the previous determination period. To roll the RAB forward, we started with an opening RAB on 1 July 2018 of $114.1 million (as set in the 2019 price review) and made the following adjustments:

- adding $10.3 million ($2018-19) of prudent and efficient capital expenditure for 2018-19 (as this was a forecast capital expenditure for that year in the 2019 determination period)
- adding $35.7 million (nominal) of prudent and efficient historical capital expenditure for the 2019 determination period (Chapter 4)[a]
- deducting $0.2 million of cash capital contributions (net of tax) (section 5.3.1)

[a] Total capital expenditure shown in chapter 4 is slightly higher ($36.7 million) because the amounts in that chapter are presented in $2021-22, rather than in nominal terms.

- deducting zero for the regulatory value of asset disposals (section 5.3.1)
- deducting $12.0 million for regulatory depreciation (as allowed in the 2019 price review)
- adding $11.1 million of annual indexation of the RAB.

Our RAB roll forward calculations for the 2019 determination period are set out in Table 5.3.

Table 5.3 RAB calculation for the 2019 determination period ($ millions, $nominal)

RAB	2018-19	2019-20	2020-21	2021-22
Opening RAB	114.1	123.8	131.1	142.8
Plus: Efficient capital expenditure	10.3	10.5	9.7	15.4
Less: Cash capital contributions (net of tax)	0.0	0.0	0.0	0.2
Less: Asset disposals	0.0	0.0	0.0	0.0
Less: Regulatory depreciation	2.5	2.8	3.2	3.5
Plus: Indexation	1.9	-0.4	5.2	4.4
Closing RAB	123.8	131.1	142.8	158.9

Source: IPART analysis.

We calculated the RAB in each year of the 2022 determination period by rolling forward the RAB to 2025–26 by:

- adding $77.3 million of prudent and efficient forecast capital expenditure (Chapter 4)
- deducting $4.7 million of cash capital contributions (net of tax) (section 5.3.1)
- deducting zero for the regulatory value of forecast asset disposals (section 5.3.1)
- deducting $16.8 million for regulatory depreciation (section 5.4).

Our RAB roll forward calculations for the 2022 determination period are shown in Table 5.4.

Table 5.4 RAB calculation for the 2022 determination period ($ millions, $2021–22)

RAB	2022-23	2023-24	2024-25	2025-26
Opening RAB	158.9	183.8	201.6	212.5
Plus: Efficient capital expenditure	28.8	25.5	16.3	6.7
Less: Cash capital contributions (net of tax)	0.2	3.5	1.0	0.0
Less: Asset disposals	0.0	0.0	0.0	0.0
Less: Regulatory depreciation	3.7	4.1	4.4	4.6
Closing RAB	183.8	201.6	212.5	214.6

Source: IPART analysis.

5.4 Essential Water's regulatory depreciation is $17 million

Our draft decisions are:

11. To calculate the allowance for return of assets (regulatory depreciation), using:
    - a straight-line depreciation method
    - for existing assets, the rolled forward asset lives from the 2019 determination period as listed in Table 5.5
    - for new assets, the asset lives listed in Table 5.5.

12. To set the allowance for return of assets at $16.6 million over the 2022 determination period as shown in Table 5.6.

We included an allowance for regulatory depreciation in the revenue requirement, to ensure the capital invested in regulatory assets is returned over the useful life of each asset. We calculated this allowance by determining the appropriate asset lives for the assets in Essential Water's RAB and the appropriate depreciation method to use.

5.4.1 We used straight-line depreciation to calculate regulatory depreciation

Consistent with our usual approach, we used the straight-line depreciation method to calculate regulatory depreciation. Under this method, the assets in the RAB are depreciated by an equal value in each year of their economic life. We consider this method is superior to alternatives in terms of simplicity, consistency and transparency.

5.4.2 We maintained our approach for rolling forward asset lives for existing assets

We typically calculate the remaining lives of existing assets by rolling forward our previous determination to incorporate new efficient assets and accounting for asset disposals. We maintained this approach for the 2022 determination period.

The asset lives we calculated are different to those proposed by Essential Water due to adjustments to starting asset lives and historical capital expenditure. Table 5.5 lists the asset lives for existing assets.

5.4.3 We accepted the proposed asset lives for new assets except for ICT assets

We reviewed the proposed asset lives for new assets and found that they were consistent with the 2019 determination and remain appropriate for the 2022 determination period, with one exception - ICT assets. We asked AECOM for advice on Essential Water's proposed asset lives. AECOM agreed that 5 years may be reasonable for small hardware such as computers. However, the ICT assets in question include larger, longer-lived assets (such as enterprise software systems). In addition, a 10-year asset life is consistent with our decision in the previous determination. We agree with AECOM's advice on ICT assets and have adopted the asset lives for new assets shown in Table 5.5.

Table 5.5 Draft decision on asset lives for the 2022 determination period (years)

	Remaining lives of existing asset		Expected lives of new assets	
	Proposed	Draft Report	Proposed	Draft Report
Water	61.8	53.1	98	98
Wastewater	51.1	49.6	89	89
ICT	8.8	8.7	5	10
Furniture, Fittings, Plant and Equipment	5.0	5.2	7	7
Vehicles	13.5	13.5	15	15
Buildings	48.2	48.1	50	50

Note: For existing assets, the figures above are rolled forward asset lives from the 2019 determination period.
Source: IPART analysis.

5.4.4 The proposed and draft decision for regulatory depreciation are similar

Despite the different asset lives used, our return of assets allowance is similar to what was proposed. This is because the opening RAB for the draft report is lower than that proposed by Essential Water which offsets the lower asset lives for existing assets used in the draft report.

Table 5.6 Draft decision on regulatory depreciation for the 2022 determination period ($ millions, $2021–22)

	2022-23	2023-24	2024-25	2025-26	Total
Essential Water proposed	3.5	4.0	4.3	4.5	16.4
Draft decision	3.7	4.1	4.3	4.5	16.6
Difference	0.1	0.1	0.0	0.0	0.2
Difference %	4%	2%	0%	-1%	1%

Note: The allowance for return of assets is a mid-year figure (i.e. the RAB roll forward depreciation figure is discounted by half a year of WACC). It will therefore not match the end of year figures in Table 5.4

Source: IPART analysis and Essential Water, Essential Water Pricing Proposal, June 2021, p 79.

5.5 Essential Water's return on assets is $23 million

Our draft decision is:

13. To set an allowance for return on assets of $22.7 million over the 2022 determination period (shown in Table 5.7). This is calculated by using:
    - the RAB values shown in Table 5.4
    - a real post-tax weighted average cost of capital of 2.9%
    - a sampling date of 31 December 2021 for market observations as outlined in Appendix D. cell

We included an allowance for a return on assets in the revenue requirement, to account for the opportunity cost of capital invested to provide regulated services. Our approach ensures the business can continue to make efficient capital investments in the future. We calculated the return on assets by multiplying the value of the RAB over the determination period by an efficient rate of return. As in previous reviews, we determined the rate of return using a weighted average cost of capital (WACC).

5.5.1 Our approach to forecasting inflation expectations remains unchanged

Our WACC methodology involves first calculating a nominal WACC based on current and long-term market parameters measured in nominal terms. We then subtract our best estimate of inflation expectations from this nominal WACC to generate a real WACC, which we use to set prices over the determination period. All else being equal, a lower estimate of inflation expectations results in a higher real WACC.

Our standard approach to estimating inflation expectations is to take the geometric mean of the Reserve Bank of Australia's (RBA) 1-year ahead inflation forecast, and the midpoint of the RBA's target range (2.5%) for each other year of the determination.

In its proposal, Essential Water disagreed with our approach. It suggested using a glide path approach to estimating inflation expectations.[43] This was due to:

- Inflation expectations over the 2022 determination period, at the time Essential Water submitted its proposal, were significantly lower than the forecasts produced using IPART's approach.
- Other Australian regulators changed their approach to estimating inflation expectations to recognise the current low inflation environment. For example, the Essential Services Commission of South Australia, Australian Energy Regulator and Independent Competition and Regulatory Commission are using a glide path approach to the mid-point of the RBA's inflation target over a period.

We decided to maintain our current approach to estimating inflation expectations. We would need strong and compelling evidence to change how we estimate a single WACC parameter in isolation, because the financial market data underlying many elements of the WACC are interrelated. We consider it is more appropriate to consider the WACC methodology in a holistic and internally consistent way as part of our periodic WACC reviews. We intend to commence a review of our WACC methodology in 2022.

5.5.2 We set the real rate of return on capital of 2.9%

We used our standard methodology to calculate the WACC. Under our approach we estimate one WACC based on current market data and one based on long-term average data. When our uncertainty index, which indicates the level of volatility in capital markets, is within one standard deviation of its mean value, we select the mid-point of the current and long-term WACC values. The uncertainty index is currently within this range. The average of the 2 WACC values is 2.9%. Appendix D shows the parameters we used to calculate the WACC. Essential Water proposed a WACC of 3.7%.[44]

The WACC of 2.9% is set using market parameters as at 31 December 2021. It is currently influenced by the prevailing low interest rate environment. Under our standard methodology, should interest rates increase or decrease over the 2022 determination, this would be factored into the cost of debt true-up that would occur annually. The net changes would be factored in prices at the next determination. This end-of-period true-up adjustment will insulate Essential Water to movements in interest rates.

5.5.3 The Draft decision on return on capital allowance is 22% lower than proposed

Table 5.7 shows the resulting return on assets (i.e. RAB x WACC%), based on the RAB values set out in section 5.3, and our decisions to apply a real post-tax WACC of 2.9%. The Draft Report return on capital allowance is 22% lower than that proposed by Essential Water mostly because of the lower WACC value applied.

Table 5.7 Draft decision on return on assets for the 2022 determination period ($ millions, $2021–22)

	2022-23	2023-24	2024-25	2025-26	Total
Essential Water's proposed	6.5	7.1	7.6	7.8	29.1
Draft decision	5.0	5.6	6.0	6.2	22.7
Difference	-1.5	-1.5	-1.6	-1.7	-6.4
Difference %	-24%	-22%	-21%	-21%	-22%

Source: IPART analysis and Essential Water, Essential Water Pricing Proposal, June 2021, p 75.

5.6 We included a cost of debt true-up in the NRR of -$1 million for the 2019 determination period

Our draft decisions are:

14. To set a true-up for differences between the forecast and actual cost of debt over the 2019 determination period of -$1.3 million.

15. To use a true-up for differences between the forecast and actual cost of debt over the 2022 determination period in the next Determination.

Our 2018 review of the WACC methodology introduced a trailing average cost of debt. We considered that this approach would allow regulated businesses to better manage their refinancing risk, while maintaining their incentives for efficient investment.

One consequence is that the WACC changes every year, as new tranches of debt are introduced to the trailing averages and the oldest tranches drop out. To address this, we decided at each price review we would consider whether to:

- update prices annually to reflect the updates in the WACC annually, or
- use a regulatory true-up at the next period, which we would pass through to prices at the beginning of the next period.[45]

These options are equivalent in present value terms to customers and Essential Water.

The previous Essential Water price review allowed for an end of period true-up to account for cumulative annual changes in the cost of debt over the 2019 determination period.[46] Overall, the annual updates resulted in a lower cost of debt relative to the cost of debt allowed for in the WACC. Essential Water proposed a negative adjustment of $1.4 million.[47] We reviewed the calculation and decided to include a negative adjustment of $1.3 million.

5.6.1 An end-of-period true-up will account for annual changes in the WACC over the 2022 determination period

In its proposal, Essential Water proposed an end of period cost of debt true-up for the 2022 determination period.[48] We agree with Essential Water and decided to undertake the regulatory true-up at the next price review as we have done for the 2019 determination period. This approach provides greater certainty to water users about their prices over the determination period – that is, changes in prices would be impacted by inflation only, rather than also being impacted by annual changes in the cost of debt.

5.7 Essential Water's working capital allowance is almost $1 million

Our draft decision is:

16. To set the working capital allowance for the 2022 determination period as shown in Table 5.8.

The working capital allowance component of the NRR represents the return the business could earn on the net amount of working capital it requires each year to meet its service obligations. It ensures the business recovers the costs it incurs due to the time delay between providing a service and receiving the money for it (i.e. when bills are paid).

In 2018, we developed a standard approach to calculate the working capital allowance, which can be found on our website.[49] We applied the standard approach to this review.

The $727,000 we allowed for the 2022 determination period represents the holding cost of net current assets (Table 5.8). The allowance is lower than that proposed by Essential Water because both the WACC and net working capital we used are lower.[b]

Table 5.8 Draft decision for the working capital allowance for the 2022 determination period ($'000s, $2021–22)

	2022-23	2023-24	2024-25	2025-26	Total
Essential Water proposed	216	229	249	296	991
Draft decision	129	166	197	235	727
Difference	-87	-64	-52	-61	-264
Difference %	-40%	-28%	-21%	-20%	-27%

Source: IPART analysis.

[b] Essential Water's proposed working capital allowance is higher than ours is because Essential Water used a higher WACC (5.7%) than us (5.4%) and because our receivables are lower due to a lower overall revenue requirement. We use a nominal post-tax WACC to calculate the return on working capital.

5.8 Essential Water's tax allowance is also almost $1 million

Our draft decisions are:

17. To set the tax allowance as shown in Table 5.9, using:
    - a tax rate of 30%
    - IPART's standard methodology.

We included an explicit allowance for tax because we use a post-tax WACC to estimate the allowance for a return on assets in the revenue requirement (Table 5.7). This tax allowance reflects the regulated business's forecast tax liabilities.

Table 5.9 Draft decision on the tax allowance for the 2022 determination period ($ '000s, $2020–21)

	2021–22	2022–23	2023–24	2024–25	Total
Essential Water proposed	800	509	618	643	2,571
Draft decision	184	191	270	277	923
Difference	-616	-318	-348	-366	-1,648
Difference %	-77%	-63%	-56%	-57%	-64%

Source: IPART analysis.

We calculated the tax allowance for each year by applying a 30% statutory corporate tax rate adjusted for franking credits to the business's (nominal) taxable income.[c] We applied our standard methodology to set the tax allowance. Our tax allowance is lower than proposed predominantly because of the lower WACC used in the draft report.

The tax allowance is not intended to recover Essential Water's actual tax liability over the determination period. Rather, it reflects the liability that a comparable commercial business would be subject to. Including this allowance is consistent with our aim to set prices that reflect the fully efficient costs a utility would incur if it were operating in a competitive market. It is also consistent with the principle of competitive neutrality – that is, that a government business should compete with private business on an equal footing and not have a competitive advantage due to its public ownership.

[c] Under a post-tax framework, the value of franking credits (gamma) enters the regulatory decision only through the estimate of the tax liability. The value of gamma is given as a WACC parameter in Appendix D.

5.9 We added $0.6 million to the NRR under the demand volatility adjustment mechanism

Our draft decisions are:

18. To include $0.6 million in the NRR to account for differences between the forecast and actual water sales over the 2019 determination period.

Section 6.5 outlines the risks involved in setting prices based on forecast water sales, as actual sales may vary and are difficult to predict accurately. To address this risk, at the 2019 review, we indicated we would include a demand volatility adjustment mechanism (DVAM) to adjust Essential Water's revenue in the subsequent determination period if actual water sales were 5% higher or lower than forecast (i.e. a demand volatility adjustment with a ±5% materiality threshold).

Our draft decision is to adjust the NRR by $0.6 million to account for lower than forecast water sales over the 2019 determination period. This is lower than the proposed adjustment of $2.5 million because of 2 differences. We decided to calculate the DVAM:

- including a deduction for avoided costs, such as transportation and treatment costs, that were not incurred as a result of lower water sales. This reduces the adjustment by about 60%; and
- based on actual water sales. This means we did not include the last year of the 2019 determination period (i.e. 2021-22) as it is currently a forecast. That is, we included an adjustment for the first 2 years (2019-20 and 2020-21) only.

For the forward looking DVAM for the 2022 determination period, we would continue to calculate the DVAM on a one year lagged basis. This is explained in further detail in section 6.5.

5.10 We smoothed the revenue requirement before setting prices

We then set a target revenue for each year for each service; that is, the actual revenue we expect Essential Water to generate from prices for that year for both water and wastewater. To set target revenue we subtracted our recommended government subsidies from the NRR then smoothed the remaining revenue requirement across the determination period to keep most prices constant in real terms over the 4 years. In making these decisions on target revenue, we considered a range of factors including implications for price levels, the rate they would change, and any impacts on Essential Water and its customers.

Recommendations

2. We recommend the NSW Government fund the difference ($81.7 million) between the total revenue to be recovered from customers and the target revenue via a direct contribution to Essential Water. This funding contribution would reflect:

- the shortfall in revenue associated with transitioning the chlorinated water usage price to $1.65 per kL by 2025-26 – this is $16,000 over the 2022 determination period
- revenue associated with transitioning usage price for untreated water (EW Pipeline customers) to $1.40 per kL by 2025-26 – this is $106,000 over the 2022 determination period
- the shortfall in revenue associated with transitioning trade waste prices towards cost-reflective levels – this is $600,000 over the 2022 determination period
- the shortfall in Pipeline costs such that all other prices stay constant in real terms over the determination period - this is $81.0 million over the 2022 determination period.

Our recommended Pipeline subsidy ($81.0 million) is slightly lower than the cost to Essential Water of Pipeline services ($82.0 million) to prevent over-recovery with constant (real) prices (see Table 5.10 and Table 5.11). We discuss the subsidies in Chapters 1, 7, 8 and 9.

To set prices for each service, we calculate a separate NRR and target revenue for water and wastewater services. Each NRR is based on the cost build-up for the individual service, with an allocation of corporate costs.

The target revenue for both water and wastewater has been kept constant over the 4 years of the 2022 determination period. This means that we can keep most prices constant for this price review (not including inflation). At the 2019 price review, we decided not to remove the cross-subsidy between water and wastewater, noting that there was significant capital expenditure expected for wastewater for the next price review and that this would increase the NRR for wastewater. The last row in Table 5.10 and Table 5.11 shows that the cross-subsidy between water and wastewater is reducing over time.

Table 5.10 Draft decision notional revenue requirement for water for the 2022 determination period ($ millions, $2021–22)

Water	2019[a]	2022-23	2023-24	2024-25	2025-26	Total
Essential Water's proposed						
Total notional revenue requirement		46.6	44.2	44.3	44.6	179.8
Draft decision						
Operating expenditure (excluding bulk water purchases)	10.2	12.3	11.5	10.6	10.0	44.4
Bulk water purchases (i.e. Pipeline costs)	26.0	20.5	20.5	20.5	20.5	82.0
Regulatory depreciation	2.1	2.4	2.6	2.8	2.8	10.6
Return on assets	4.8	3.3	3.5	3.7	3.7	14.2
Working capital allowance	0.2	0.1	0.2	0.2	0.2	0.7
Tax allowance	0.2	0.1	0.2	0.2	0.2	0.7
Cost of debt true up		-0.9	0.0	0.0	0.0	-0.9
DVAM true up		0.6	0.0	0.0	0.0	0.6
NRR for water	**43.4**	**38.4**	**38.5**	**37.9**	**37.4**	**152.2**
Target revenue		16.6	16.6	16.5	16.5	66.3
Government subsidy for chlorinated water		0.0	0.0	0.0	0.0	0.0
Government subsidy for untreated water		0.0	0.0	0.0	0.0	0.1
Government Pipeline subsidy		20.2	20.3	20.2	20.2	81.0
Difference between NRR and target revenue (including government subsidies)		-1.5	-1.6	-1.1	-0.7	-4.8

a. The figures presented in the column headed 2019, are the average allowance over the 2019 determination, adjusted for inflation.

Source: IPART analysis.

Table 5.11 Draft decision total notional revenue requirement for wastewater for the 2022 determination period ($ millions, $2021–22)

Wastewater	2019[a]	2022-23	2023-24	2024-25	2025-26	Total
Essential Water's proposed						
Total notional revenue requirement		5.5	6.8	7.4	7.8	27.5
Draft decision						
Operating expenditure (excluding bulk water purchases)	2.5	2.5	2.5	2.4	2.3	9.7
Regulatory depreciation	0.9	1.2	1.4	1.6	1.7	5.9
Return on assets	1.8	1.7	2.0	2.3	2.5	8.5
Working capital allowance	0.0	0.0	0.0	0.0	0.1	0.1
Tax allowance	0.2	0.1	0.0	0.1	0.1	0.2
Cost of debt true up		-0.4	0.0	0.0	0.0	-0.4
NRR for wastewater	**5.4**	**5.1**	**6.0**	**6.4**	**6.5**	**24.0**
Target revenue		7.0	7.0	7.1	7.1	28.2
Government subsidy		0.2	0.2	0.1	0.1	0.6
Difference between NRR and target		2.1	1.2	0.8	0.7	4.8

a. The figures presented in the column headed 2019, are the average allowance over the 2019 determination, adjusted for inflation.

Source: IPART analysis.

Chapter 6

Forecast water sales and customer numbers

06

Summary of our decisions for operating expenditure

We set forecast customer numbers, water sales volumes and wastewater discharge proposed based on Essential Water's proposal

Our draft decision is to accept Essential Water's proposal. The proposal is broadly in line with actuals and relatively stable over the next 4 years. This means:

- forecast customer numbers are around 11,000 and 10,000 per year for water and wastewater services in Broken Hill
- forecast sales volumes are around 5,000 ML per year
- forecast wastewater discharge volumes are around 559 ML per year.

Essential Water will continue to have a demand volatility adjustment mechanism

Our draft decision is to consider applying a demand volatility adjustment at the next determination period. This is to manage the risk that actual customer numbers and water sales over the 2022 determination period are materially higher or lower than the forecasts we used in setting prices.

Understanding past and future demand for water and wastewater services in Broken Hill and surrounding communities is important for setting prices. We set prices using forecasts of:

- the number of residential and non-residential customers we expect would receive water and wastewater services in each of the 4 years of the 2022 determination period (forecast customer numbers)
- the volume of water we expect Essential Water would provide to residential and non-residential customers in each of those years (forecast water sales volumes)
- the volume of wastewater we expect residential and non-residential customers would discharge in each of those years (discharge allowances and discharge factors).

It is important that these forecasts are reasonable. If Essential Water's actual customers numbers, actual water sales and discharge volumes differ markedly from the forecasts over the 2022 determination period, the determined prices could result in Essential Water significantly over or under-recovering its required revenue.

Because forecasting is not an exact science, we also consider how to manage the risk that actual water sales and customer numbers over the determination period may be materially higher or lower than the forecasts we used to set prices. A way to manage this risk is by having a demand volatility adjustment mechanism (DVAM) to help protect both customers and Essential Water.

This chapter discusses our draft decisions on Essential Water's forecast customer numbers, water sales volume and discharge volumes over the 2022 determination period. To assist us in making our decisions, we engaged the CIE to review Essential Water's proposal for these forecasts. We also considered stakeholder submissions and undertook our own analysis. The consultants' reports can be found on our website.

6.1 We have accepted Essential Water's forecast customer numbers

Essential Water proposed a small change in customer numbers going forward:[50]

- A small increase in **residential** customer numbers for water and wastewater services. This is to reflect historical demographic trends and the NSW Department of Planning and Environment's (DPE) projections for occupied dwellings in the region.
- Adopt a constant profile for **non-residential** customers for water and wastewater services based on its estimate for 2020-21.

Our demand consultant, the CI.E. assessed this proposal and made small changes to the proposed forecasts for the 2022 determination period:[51]

- The CIE recommended setting forecasts using the latest data from the Australian Bureau of Statistics and development approval numbers. This resulted in a slightly higher forecast than proposed by Essential Water.
- The CIE found using actuals for 2020-21 was reasonable when forecasting non-residential customer numbers. However, it recommended using the most up to date resulting in a slightly higher forecasts than proposed by Essential Water.

Our draft decision is to set customer number forecasts based on Essential Water's proposal. While the CIE's recommendations may result in a more precise set of forecasts, we consider the difference between the CIE's recommendations and Essential Water's proposal is not material enough to justify moving away from the proposal.

Table 6.1 Draft decision on forecast water and wastewater customer numbers

	2022-23	2023-24	2024-25	2025-26
Water				
Residential	9,955	9,961	9,966	9,972
Non-residential	900	900	900	900
Wastewater				
Residential	9,376	9,378	9,380	9,382
Non-residential	677	677	677	677

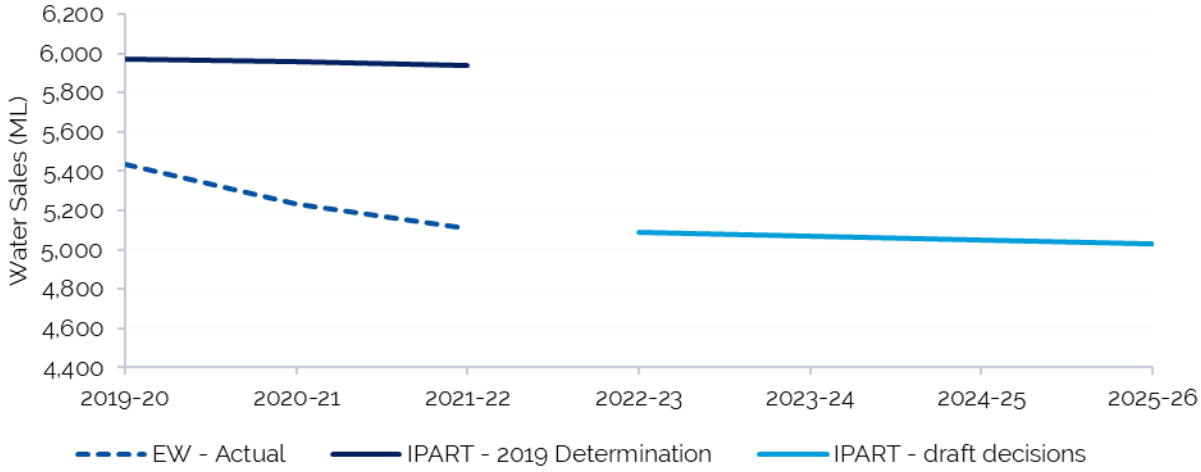
Note: The table shows the average number of customers for the year, rather than as at year end. Non-residential customers include the mines and refers to the number of metered connections.

Source: IPART analysis

6.2 We have accepted Essential Water's water sales volumes

In 2019, we set the water sales forecast at around 6,000 ML per year, which was significantly higher than historical water sales volumes. We decided to include a 'bounce back' in the water sales forecasts because of the behavioural impact of having a more secured water source (i.e. the WaterNSW Pipeline) on the amount of water used by customers. However, Essential Water showed there was no bounce in water sales and that actuals were consistently below the forecasts used in 2019 (see Figure 6.1).

Figure 6.1 Historical and forecast water sales volumes



Source: Essential Water, Essential Water Pricing Proposal, June 2021, p 70, Essential Water's AIRSIR submission and IPART analysis.

For the next 4 years, Essential Water proposed to set water sales forecasts at around 5,000 ML per year.[52] Essential Water proposed not to include a bounce back in water sales forecasts given this has not been realised in recent years. Further, it is expecting a gradual declining trend in water sales. Essential Water's proposal is based on its latest water modelling that considered a range of factors such as demographic trends, climate and water restrictions. Essential Water did not include the impact of a potential new mine on water sales because of the uncertainty of when this mine would be operational.

The CIE assessed the proposal and recommended a small step increase to Essential Water's proposal. The CIE used a different forecasting approach that considered the impact of rainfall, temperature and water restrictions. While the CIE is recommending a small step increase, its forecasts are showing an overall decline which is similar to Essential Water's proposal.

We also received a number of submissions to our Issues Paper on water use. For example:

- Public Interest Advocacy Commission, Broken Hill City Council and Regional Development Australia Far West noted that water use would remain low because the community has maintained smart water habits even after restrictions ended.[53]
- Broken Hill City Council noted that the community would continue to use water to maintain green spaces and remain lead safe. However, higher water prices would cause the Council to reduce water use.[54]

- Regional Development Australia Far West noted that water use would increase because of new mining activity expected to start in the next few years. Foundation Broken Hill added that we should forecast growth in the region rather than decline.[55]

After considering the proposal, community submissions and our consultant's recommendation, our draft decision is to adopt Essential Water's water sales forecasts (see Table 6.2). While the CIE's recommendations may result in a more precise set of forecasts, we consider the difference between the CIE's recommendations and Essential Water's proposal is not material enough to justify moving away from the proposal.

Table 6.2 Draft decision on forecast water sales volumes (ML)

	2022-23	2023-24	2024-25	2025-26
Treated water	4,040	4,020	4,000	3,981
Chlorinated water	43	43	43	43
Untreated water	1,006	1,006	1,006	1,006
Total	**5,089**	**5,069**	**5,050**	**5,030**

Note: Totals may not sum due to rounding.
Source: IPART analysis.

Our draft decision is

19. To accept Essential Water's proposed customer numbers and total water sales volumes over the 2022 determination period, as shown in Table 6.1 and in Table 6.2, respectively.

6.3 We have accepted Essential Water's wastewater volumes

Our draft decision on wastewater volumes only relate to non-residential customers. This is because residential customers do not face an explicit wastewater usage price. Rather, we used a discharge allowance of 100 kL per year for residential customers to set prices (see Chapter 8).

Our draft decision is

20. To accept Essential Water's proposed wastewater volumes for non-residential customers as shown in Table 6.3.

For non-residential customers, Essential Water proposed wastewater volumes of 559 ML per year over the 2022 determination period. This is based on its estimate of actual wastewater volume for 2020-21.

The CIE assessed this proposal and found the approach reasonable. However, the CIE recommended to use the latest information it received from Essential Water for 2020-21. This resulted in wastewater volumes of 552 ML per year.

After considering both the proposal and our consultant's recommendation, our draft decision is to adopt Essential Water's wastewater sales forecasts (see Table 6.3). We consider the difference between the CIE's recommendations and Essential Water's proposal is not material enough to justify moving away from the proposal.

Table 6.3 Draft decision on forecast wastewater (ML)

	2022-23	2023-24	2024-25	2025-26
Non-residential	559	559	559	559

Source: IPART analysis.

6.4 Essential Water will continue to use the WaterNSW Pipeline to transport the majority of its water needs

In our 2019 review, we considered Essential Water could source water to meet some of the water demand from the Broken Hill community using its own water supply infrastructure.[56] Therefore, we assumed the WaterNSW Pipeline would be used to meet about 70% of the water demand in Broken Hill.

Over the last 3 years, Essential Water reported it relied on the WaterNSW Pipeline to transport water to meet the community's water needs rather than using its own supply infrastructure. For the 2022 determination period, Essential Water proposed to continue to use the WaterNSW Pipeline to transport water and meet the majority of its water sales volumes outlined in Table 6.2.

Our demand consultants assessed this proposal and found this efficient noting that:

- it was able to verify the historical preference for Essential Water to source its bulk water needs by transporting water from the Murray River via the Pipeline since 2019
- it was able to verify with Essential Water using the WaterNSW Pipeline to transport water and meet the water demand in the Broken Hill region for the 2022 determination period.[57]

After considering the proposal and our consultants' recommendations, our draft decision is to accept the proposal that Essential Water continue to use the WaterNSW Pipeline to meet the majority of water needs in Broken Hill.

Table 6.4 shows the volume of water Essential Water would need to transport using the Pipeline each year. The difference between this table and Table 6.2 is the estimated water losses that Essential Water proposed within its existing network.

In any water supply system, there are system losses as a result of leaking pipes, main breaks, system flushing, etc. From Essential Water's perspective, these water losses are treated as non-revenue water for billing purposes. However, Essential Water will need to transport water to cover these losses. In its pricing proposal, Essential Water proposed water losses of about 460 ML per year. These losses occur when treating water and transporting water through its existing network to deliver water services to customers. Essential Water assumed losses to be around 9% of its proposed water sales in 2020-21.

Table 6.4 Comparison of Essential Water's water sales to customers and its purchases from WaterNSW using the WaterNSW Pipeline (ML)

	2022-23	2023-24	2024-25	2025-26
Draft decision on Essential Water's forecast water sales volumes	5,089	5,069	5,050	5,030
Plus: Real water losses in Essential Water's existing network	460	458	456	453
Forecast of Essential Water's purchases from the WaterNSW Pipeline	5,549	5,527	5,505	5,483

Note: Totals may not sum due to rounding.
Source: IPART analysis.

6.5 Essential Water will continue to have a demand volatility adjustment mechanism

Our draft decision is

21. At the next determination of Essential Water's prices, to consider an adjustment to its notional revenue requirement to account for over-recovery or under-recovery of revenue due to material differences between forecast water sales and actual water sales over the 4 years from 1 July 2021 to 30 June 2025.
    - A material difference is defined as ± 5% of forecast revenue from water sales over the 4-year period.
    - Water sales forecasts for 2019-20 are the same as in IPART's 2019 final report.

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

In addition, the demand volatility faced by Essential Water is different to other water utilities due to its small size and customer base, meaning that if one or more large customer leaves or enters the network (e.g. a mine), actual water sales could deviate substantially from forecast water sales.

To address this risk, at the 2019 review, we accepted Essential Water's proposal to include a demand volatility adjustment mechanism (DVAM). We indicated at the 2019 review we would consider adjusting Essential Water's revenue in the subsequent determination period if actual water sales were 5% higher or lower than forecast (i.e. a demand volatility adjustment with a ±5% materiality threshold). This would ensure there is a reasonable match between Essential Water's revenue from water sales and revenue requirement.

Box 6.1 provides information how this mechanism works.

Box 6.1 How the demand volatility adjustment mechanism works

The DVAM gives IPART flexibility to adjust Essential Water's revenue in the following determination period if actual water sales materially differ from forecast water sales.

For example, in the case where actual sales are lower than forecast, we would consider whether:

- Essential Water's costs could decline with reduced demand.
- There is an economic case for 'stranding' some of Essential Water's assets.
- A DVAM should be used to recover some of the revenue shortfall from Essential Water's customers.

In section 5.9, we discussed how actual water sales volumes were lower than the volumes we used to set prices over the 2019 determination period. Essential Water proposed to include an adjustment when setting prices over the next 4 years to recover the revenue shortfall over the last 3 years because of lower water sales. The adjustments we made are discussed in detail in section 5.9.

Essential Water proposed we continue to apply a DVAM in the next determination period. However, it would not include the ±5% materiality threshold or 'deadband' we typically include for DVAMs.[58] This means we would adjust Essential Water's revenue requirement in the next determination period for any under-recovery (or over-recovery) of revenue due to differences between actual and forecast water sales in the 2022 determination period.

Our draft decision is to consider applying a DVAM at the next determination period. However, we have not accepted Essential Water's proposal to remove the materiality threshold, as this may reduce its incentive to accurately forecast water sales. We consider the DVAM should include a ±5% materiality threshold, consistent with the current deadband for Essential Water, as well as the deadbands we have used for DVAMs in other water reviews.

We would also continue to calculate the DVAM on a one year lagged basis. So, at the next determination, we would compare forecast and actual water sales over the period from 2021-22 to 2024-25 (that is, the last year of the 2019 Determination and the first 3 years of the 2022 Determination). This ensures any adjustments are based on actual water sales.

Chapter 7

Water prices

07

Summary of our draft decisions for water prices

Most water prices would be stable

The treated and untreated water usage prices for almost all customers would remain stable over 4 years, without inflation. We are also holding the water service price constant (i.e. without inflation). If the WACC changes between Draft and Final Reports, this may change our approach to water pricing.

We continued to harmonise untreated and chlorinated water usage prices

Consistent with our approach in the 2019 review, we are continuing to:

- Gradually increase the untreated water usage price for customers who currently receive water directly from the EW Pipelines (i.e. the Menindee, Stephens Creek and Umberumberka pipelines) over the determination period, so that it transitions towards the usage price for other untreated water customers.
- Gradually increase the chlorinated water usage price so that it transitions to the untreated water usage price.

We consider these prices are affordable

NSW taxpayers currently subsidise water prices in Broken Hill to offset the significant cost of building the WaterNSW Pipeline. We expect the NSW Government will continue this existing funding commitment, so that Essential Water's prices do not increase as a result of the WaterNSW Pipeline.

In addition to the WaterNSW Pipeline subsidy, Essential Water considered NSW taxpayers should fund a new affordability subsidy to partly offset a proposed increase in its own costs. However, we found opportunities to reduce Essential Water's proposed costs. We also adopted a lower WACC than proposed by Essential Water. This means most prices are only increasing by inflation, and so we consider there is currently no case for the proposed affordability subsidy.

That said, we do recommend the NSW Government fund the cost of gradually transitioning chlorinated water and untreated water customers to a consistent usage price. We are gradually implementing the increases to minimise the potential bill shock for these customers.

Essential Water's prices for water services comprise 2 components:

- A variable usage price (expressed as $ per kilolitre (kL) of metered water supplied).
- A fixed service price (expressed as $ per year).

Customers pay a different water usage price if they receive treated water, chlorinated water or untreated water.

Residential customers pay a standard service price, regardless of whether their property is a house or a unit in a multi-premises property. For larger non-residential customers, the service price depends on their meter size, and is set with reference to a 20mm meter.

7.1 Most water prices would be stable

Table 7.1 sets out our draft decision on Essential Water's water prices, without inflation.

- We are holding most water usage prices constant, apart the usage prices for untreated water for EW Pipeline customers and chlorinated water customers. These prices will continue to gradually increase towards the untreated water usage price that most customers pay.
- We are also holding the water service prices constant.

In comparison, Essential Water proposed NSW taxpayers fund a new affordability subsidy. The aim was to keep its proposed price increases to around 7% over 4 years, without inflation (Table 7.2). Otherwise its prices would increase by closer to 22% over that period under its proposal, without inflation.

Table 7.1 Draft decision on Essential Water's water prices ($2021-22) – without inflation

	2021-22 (current)	2022-23	2023-24	2024-25	2025-26	% change from current to 2025-26
Usage prices ($/kL)						
Treated	1.88	1.88	1.88	1.88	1.88	0.0%
Untreated[a]	1.65	1.65	1.65	1.65	1.65	0.0%
Untreated (EW Pipeline customers)[b]	1.06	1.14	1.23	1.31	1.40	31.8%
Chlorinated[c]	1.40	1.46	1.53	1.59	1.65	17.9%
Service prices ($/year)						
Residential	342.89	342.89	342.89	342.89	342.89	0.0%
Non–residential meter based 20mm price[d]	342.89	342.89	342.89	342.89	342.89	0.0%
• 25mm connection	535.78	535.78	535.78	535.78	535.78	0.0%
• 40mm connection	1,372	1,372	1,372	1,372	1,372	0.0%
• 50mm connection	2,143	2,143	2,143	2,143	2,143	0.0%
• 80mm connection	5,486	5,486.24	5,486	5,486	5,486	0.0%
• 100mm connection	8,572	8,572	8,572	8,572	8,572	0.0%
• 150mm connection	19,288	19,288	19,288	19,288	19,288	0.0%

	2021-22 (current)	2022-23	2023-24	2024-25	2025-26	% change from current to 2025-26
Mines ($'000s)						
• Perilya	2,408	2,408	2,408	2,408	2,408	0.0%
• CBH	581	581	581	581	581	0.0%

a. Untreated water is supplied to customers in Broken Hill, including Broken Hill City Council and the mines.
b. Customers along the EW Pipelines (i.e. the Menindee, Stephens Creek and Umberumberka pipelines) are connected to the Mica Street reticulation network in Broken Hill. They receive untreated water sourced from the Murray River via the WaterNSW Pipeline.
c. Chlorinated water is supplied to residential and non-residential customers in Silverton and Sunset Strip.
d. The meter-based charges are set with reference to the 20mm meter charge using the following formula: (meter size)^2 x 20mm meter charge / 400. We have calculated service charges for larger meter sizes using this formula.
Source: IPART analysis.

Table 7.2 Essential Water's proposed water prices ($2021-22) – without inflation

	2021-22 (current)	2022-23	2023-24	2024-25	2025-26	Change from current to 2025-26
Usage prices ($/kL)						
Treated	1.88	1.91	1.94	1.97	2.00	6.4%
Untreated[a]	1.65	1.68	1.71	1.73	1.76	6.4%
Untreated (EW Pipeline customers)[b]	1.06	1.16	1.27	1.38	1.48	39.9%
Chlorinated[c]	1.40	1.48	1.57	1.66	1.76	25.4%
Service prices ($/year)						
Residential	342.89	348.45	354.09	359.82	365.66	6.6%
Non – residential meter based 20mm price[d]	342.89	348.45	354.09	359.82	365.66	6.6%
• 25mm connection	535.78	544.45	553.27	562.22	571.34	6.6%
• 40mm connection	1,372	1,394	1,416	1,439	1,463	6.6%
• 50mm connection	2,143	2,178	2,213	2,249	2,285	6.6%
• 80mm connection	5,486	5,575	5,665	5,757	5,850	6.6%
• 100mm connection	8,572	8,711	8,852	8,996	9,141	6.6%
• 150mm connection	19,288	19,600	19,918	20,240	20,568	6.6%
Mines ($'000s)						
• Perilya	2,408	2,447	2,487	2,527	2,568	6.6%
• CBH	581	590	600	610	620	6.6%

a. Untreated water is supplied to customers in Broken Hill, including Broken Hill City Council and the mines.
b. Customers along the EW Pipelines (i.e. the Menindee, Stephens Creek and Umberumberka pipelines) are connected to the Mica Street reticulation network in Broken Hill. They receive untreated water sourced from the Murray River via the WaterNSW Pipeline.
c. Chlorinated water is supplied to residential and non-residential customers in Silverton and Sunset Strip.
d. The meter-based charges are set with reference to the 20mm meter charge using the following formula: (meter size)^2 x 20mm meter charge / 400. We have calculated service charges for larger meter sizes using this formula.
Note: Essential Water's pricing proposal presented its prices in $2022-23. To allow comparison with our draft prices in Table 7.1, we have converted Essential Water's proposed prices to $2021-22 in this table.
Source: IPART analysis. Essential Water, Essential Water Pricing Proposal, June 2021, p 92.

7.1.1 Our draft decisions mean most of Essential Water's water prices would increase by inflation only

We adjust Essential Water's prices each year for inflation. Table 7.3 shows our draft water usage and service prices for Essential Water that will apply in 2022-23, including inflation of 5.1%.

Table 7.3 Draft decision on Essential Water's water prices ($2022-23) – with inflation

	2022-23	Change from current to 2022-23
Usage prices ($/kL)		
Treated	1.98	5.1%
Untreated[a]	1.73	5.1%
Untreated (EW Pipeline customers)[b]	1.20	13.5%
Chlorinated[c]	1.54	9.8%
Service prices ($/year)		
Residential	360.38	5.1%
Non–residential meter based 20mm price[d]	360.38	5.1%
• 25mm connection	563.09	5.1%
• 40mm connection	1,442	5.1%
• 50mm connection	2,252	5.1%
• 80mm connection	5,766	5.1%
• 100mm connection	9,010	5.1%
• 150mm connection	20,271	5.1%
Mines ($'000s)		
• Perilya	2,531	5.1%
• CBH	611	5.1%

Source: IPART analysis.

7.2 We consider these prices are affordable

We consider our draft decisions on prices are affordable. Prices for most customers are remaining stable, before inflation. This means most prices would only increase by the rate of inflation.

NSW taxpayers currently subsidise water prices in Broken Hill to offset the significant cost of building the WaterNSW Pipeline. When we set prices for Essential Water in 2019, the NSW Government committed to subsidising Essential Water's prices for 4 years, so prices would not increase as a result of the WaterNSW Pipeline.[59] While any decision about the subsidy will ultimately be made by the NSW Government, we expect it will continue to provide a Pipeline subsidy for this next determination period.

In addition to the WaterNSW Pipeline subsidy, Essential Water proposed NSW taxpayers fund a new affordability subsidy, covering some of the proposed increase in its non-Pipeline costs.[60] The aim was to keep its price increases to less than 2% a year on average, without inflation. Otherwise they would increase by closer to 6% a year on average, without inflation.

As most prices under our draft decisions are only increasing by inflation, we consider there is currently no case for the proposed subsidy. However, an increase in the WACC between our Draft Report and Final Report may mean we need to reconsider this issue.

Our draft decision to continue increasing the usage prices for untreated water (EW Pipeline customers) and chlorinated water means they will better reflect the cost of Essential Water supplying these water services to its customers. We are gradually implementing the increases to minimise the potential bill shock for these customers.

Given our decision to hold water service prices constant (i.e. without inflation), this moderates the overall bill impacts for EW Pipeline customers receiving untreated water and chlorinated water customers. Over 4 years, water bills for EW Pipeline customers would increase by around 3.3% a year on average,[a] while chlorinated water customer bills would increase by around 2.4% a year on average[b] (in each case, without inflation). See Chapter 10 for a discussion on how our draft prices affect customer bills.

7.3 We maintained the current water and wastewater price structures

Our draft decision is:

22. To accept Essential Water's proposal to maintain the current 2-part tariffs for water and wastewater prices.

Essential Water proposed to maintain the current price structures for water and wastewater services.[61] This would mean that variable usage charges continue to account for around 60% of residential bills on average, and fixed service charges account for the remaining 40%.

Essential Water's customer survey results suggest that about 75% of residential customers and 72% of business customers would like the current fixed/variable proportion of their water bills to be maintained. About 14% of residential customers and 28% of business customers said that if the proportion were to change, that they would prefer to increase the proportion of variable usage charges.[62]

We consider maintaining the current 2-part price structure for water and wastewater services is appropriate as it provides certainty and stability for both customers and Essential Water. We note that Essential Water's customer survey results suggest that most customers would prefer we maintain the current price structure and balance between fixed and usage charges.

[a] The water bill estimate is for an EW Pipelines customer with a 20mm meter and 250kL per year water usage.
[b] The water bill estimate is for a chlorinated water customer with 300kL per year water usage.

7.4 We are holding the treated water usage price constant

Our draft decision is:

> 23. To hold the current treated water usage price of $1.88 per kL constant (i.e. without inflation) over the 2022 determination period. This means it would only increase by the rate of inflation.

Our draft decision is to hold the current treated water usage price of $1.88 per kL constant (i.e. without inflation) over the 2022 determination period. This means it would increase by the rate of inflation only.

This decision takes account of customer preferences to maintain the current split of variable/fixed charges for their water bills. It also reflects our preference for setting usage prices with reference to the marginal cost of supply.

- As outlined in section 7.3, Essential Water's customer survey results suggest that most customers prefer we maintain the current variable/fixed proportion of their bills. Usage and service charges account for around 60% and 40% of residential water charges, respectively. Our draft decision would maintain these proportions.
- In the 2019 review, we estimated Essential Water's short run marginal cost (SRMC) of supplying treated water.[c] We found the current price of $1.88 per kL was within a reasonable range of our estimate of SRMC.[63] We have not been provided with information to suggest this is no longer the case.

7.5 We continued to harmonise untreated and chlorinated water usage prices

Our draft decisions are:

> 24. To hold the current usage price for untreated water of $1.65 per kL constant (i.e. without inflation) over the 2022 determination period. This means it would increase by the rate of inflation only.

> 25. To gradually transition the usage price for untreated water (EW Pipeline customers) to $1.40 per kL by 2025-26, as per Table 7.3.

[c] We typically set water usage prices with reference to the long run marginal cost (LRMC) of water supply in price reviews where future growth and water augmentation is expected. In the 2019 review, we noted that, following construction of the WaterNSW Pipeline, no further large-scale augmentation of the water supply was foreseeable in the future for Broken Hill. Therefore, we considered the LRMC and SRMC estimates should converge. Given it is more straightforward to calculate SRMC compared with LRMC, we estimated SRMC in the 2019 review.

26. To gradually transition the usage price for chlorinated water to $1.65 per kL by 2025-26, as per Table 7.4.

We recommend:

3. The NSW Government fund the cost of transitioning untreated water (EW Pipeline customers) and chlorinated water usage prices over time.

Our draft decision is to hold the current untreated water usage price of $1.65 per kL constant (i.e. without inflation) over the 2022 determination period. This means it will increase by the rate of inflation only. In the 2019 review, we estimated Essential Water's SRMC of supplying untreated water.[64] The current price was within a reasonable range of our estimate of SRMC. We have not been provided with information to suggest this is no longer the case.

Consistent with our approach in the 2019 review, we are continuing to:

- Gradually increase the untreated water usage price for customers who currently receive water directly from the EW Pipelines (i.e. the Menindee, Stephens Creek and Umberumberka pipelines) over the determination period, so that it transitions towards the usage price for other untreated water customers.
- Gradually increase the chlorinated water usage price so that it transitions to the untreated water usage price.

Essential Water considered the trajectory we established over the 2019 determination period to transition these prices was reasonable. It noted this would move these prices towards cost-reflective levels, while avoiding bill shock and adverse impacts on affected customers.[65] Our draft decisions mean these prices follow the same trajectory for the 2022 determination period.

7.5.1 Accepting Essential Water's proposal to continue transitioning towards a single untreated water usage price

Essential Water supplies untreated water to a small number of customers along the Menindee, Stephens Creek and Umberumberka pipelines, as well as to other customers such as Broken Hill City Council and the mines. These customers currently pay different usage prices. Our draft decisions move these prices closer to a single usage price, which better reflects the cost of supplying untreated water.

The untreated water price is $1.65 per kL for most untreated water customers and $1.06 per kL for EW Pipeline customers. Our draft decision is to hold the general untreated water of $1.65 per kL constant over the 2022 determination period, and to gradually transition EW Pipeline customers towards $1.65 per kL as per Table 7.4 below.

Table 7.4 Draft decision on usage price transition for untreated water (EW Pipeline customers) ($2021-22)

	2021-22 (current)	2022-23	2023-24	2024-25	2025-26
Untreated (EW Pipeline customers)	1.06	1.14	1.23	1.31	1.40

Source: IPART analysis.

At the 2014 review, we set usage prices for EW Pipeline customers lower than usage prices for other untreated water customers. This was to reflect lower costs of supply to service EW Pipeline customers, because they were not on the reticulation network. That is, they were supplied with untreated water directly from the Menindee pipeline and sourced from the Darling River (see section C.4 in Appendix C).

However, when the WaterNSW Pipeline came into operation during the 2019 determination period, this resulted in a change in the direction of water flowing through the Menindee, Stephens Creek and Umberumberka pipelines. These EW Pipeline customers started receiving untreated water sourced from the Murray River via the WaterNSW Pipeline. This meant the untreated water now travelled through Essential Water's reticulation network from Mica St and then to their pipelines (see section C.5 in Appendix C).

At the 2019 review, we decided to set a single usage price for untreated water, in line with the current price for most untreated water customers. The price difference between EW Pipeline customers and other untreated water customers was no longer justified once the WaterNSW Pipeline came into operation, as the cost of supplying the various untreated water customers was similar. To manage customer bill impacts, we decided to gradually transition EW Pipeline customers towards this single usage price for untreated water.

We have accepted Essential Water's proposal to continue this gradual transition, and follow the same price trajectory adopted at the 2019 review.[66] We have recommended the NSW Government should fund the cost of the transition for the 2022 determination period ($106,000 over the 4-year period).

After 4 years, EW Pipeline customers will be paying usage prices that are around 85% of the usage prices paid by most untreated water customers.

Stakeholder submissions

In its submission to our Issues Paper, PIAC supported Essential Water's proposal.[67] However, an EW Pipeline customer disagreed with transitioning to the single untreated water usage price.[68] They indicated:

- Essential Water's proposed price increases were too high, as there had been no change in supply or service to justify the price changes.[69] In particular, IPART's decision in 2019 to increase prices for EW Pipeline customers was due to changes in the Menindee pipeline sourcing water from the Darling River. It did not take into consideration customers receiving untreated water from pipelines who are not located in the Menindee segment.[70]
- EW Pipeline customers who received untreated water from their pipelines would pay almost as much as customers in Broken Hill who received treated water.[71] Further, it was expensive to treat the EW Pipeline water to achieve water that meets Australian Drinking Water Guidelines.[72]
- The quality of untreated water received by EW Pipeline customers could often be described as muddy, smelly or discoloured.[73]

When the WaterNSW Pipeline came into operation, it meant there was a change in water supply and service costs. This is why we are moving to a single untreated water price. EW Pipeline customers now source their untreated water from the Murray River, which travels through Essential Water's reticulation network and then to their pipelines. Gradually increasing the usage price for EW Pipeline customers towards the usage price for other untreated water customers will better reflect the cost of supplying untreated water to them.

We have taken affordability concerns into account by making the price transition a gradual one. Untreated water usage prices for EW Pipeline customers would still be below the untreated water usage price for other customers at the end of the 2022 determination period. Bills for typical EW Pipeline customers would increase by around 3.3% a year on average (without inflation) over the 2022 determination period (see section 10.4 for discussion on customer impacts).

Our draft prices aim to reflect the costs Essential Water incurs in supplying customers with untreated water. The cost that some EW Pipeline customers may incur to treat the water from their pipelines is specific to them and we do not factor it into prices. The single untreated water usage price which EW Pipeline customers are moving towards is less than the treated water usage price. As explained above, it is within a reasonable range of our most recent estimate of Essential Water's supply costs (i.e. the SRMC of untreated water).

We discuss issues around water quality in section 1.1.2.

7.5.2 Accepting Essential Water's proposal to continue transitioning the chlorinated water usage price

Essential Water supplies chlorinated water to customers in Silverton and Sunset Strip.

Our draft decision is to gradually transition chlorinated water customers towards the untreated water usage price ($1.65 per kL) as per Table 7.5 below.

Table 7.5 Draft decision on usage price transition for chlorinated water ($2021-22) – without inflation

	2021-22 (current)	2022-23	2023-24	2024-25	2025-26
Chlorinated ($/kL)	1.40	1.46	1.53	1.59	1.65

Source: IPART analysis.

The usage price for chlorinated water is currently less than the untreated water usage price paid by most customers. In the 2019 review, we found Essential Water's cost of supplying chlorinated water was higher than the cost of supplying untreated water.[74] We therefore decided to increase the chlorinated water usage prices to the untreated water usage price, but spread the increases over several years to manage customer bill impacts.

We have accepted Essential Water's proposal to continue this gradual transition, and follow the same price trajectory adopted at the 2019 review.[75] We have recommended the NSW Government should fund the cost of the transition for the 2022 determination period ($16,000 over the 4-year period).

After 4 years, chlorinated water customers will be paying usage prices that are equal to the usage prices paid by most untreated water customers.

Stakeholder submissions

In its submission to our Issues Paper, the Silverton Village Committee expressed concern about Essential Water's proposed price increases.[76]

We are increasing the chlorinated water usage prices over several years, so it better reflects the costs of supplying chlorinated water to customers in Silverton and Sunset Strip. We are aiming to manage potential bill shocks by gradually implementing these increases. Bills for typical chlorinated water customers would increase by around 2.4% a year on average (without inflation) over the 2022 determination period (see section 10.2 for discussion on customer impacts).

7.6 We are holding the water service prices constant for residential, non-residential and mining customers

Our draft decisions are:

27. To hold the current water service prices constant over the 2022 determination period (i.e. without inflation), as shown in Table 7.6. This means water service prices would only increase by the rate of inflation.

28. To maintain our current pricing approach for new mining customers who commence operations during the 2022 determination period.

Our draft decision is to hold the current water service prices constant over the 2022 determination period (i.e. without inflation), as shown in Table 7.6. This means water service prices would only increase by the rate of inflation.

Table 7.6 Draft decision on water service prices ($2021-22) – without inflation

	2021-22 (current)	2022-23	2023-24	2024-25	2025-26	Change from current to 2025-26
Residential	342.89	342.89	342.89	342.89	342.89	0.0%
Non–residential meter based 20mm price	342.89	342.89	342.89	342.89	342.89	0.0%
• 25mm connection	535.78	535.78	535.78	535.78	535.78	0.0%
• 40mm connection	1,372	1,372	1,372	1,372	1,372	0.0%
• 50mm connection	2,143	2,143	2,143	2,143	2,143	0.0%
• 80mm connection	5,486	5,486	5,486	5,486	5,486	0.0%
• 100mm connection	8,572	8,572	8,572	8,572	8,572	0.0%
• 150mm connection	19,288	19,288	19,288	19,288	19,288	0.0%
Mines ($'000s)						
• Perilya	2,408	2,408	2,408	2,408	2,408	0.0%
• CBH	581	581	581	581	581	0.0%

Source: IPART analysis.

7.6.1 Setting prices for existing mining customers

We accepted Essential Water's proposal and have maintained our current approach for setting the water service price for mining customers.[77] Therefore, we have held it constant, along with the water service prices for residential and non-residential customers.

In the Issues Paper, we indicated we may review how we set prices for existing mining customers. PIAC supported IPART considering if Essential Water's proposed prices reflected the impact mining customers had on its costs.[78] Further, Foundation Broken Hill noted that setting fairer prices for mining customers would incentivise water efficiency and provide a pathway for the cessation of mining in Broken Hill without the price shock to Essential Water.[79]

Once we determined Essential Water's efficient level of costs, we were able to set stable water service prices to recover these costs. Therefore, for simplicity, we have decided to maintain our current approach for setting the mines' water service prices. We plan to review our approach at the next determination, including to consider the impact of any new mines.

7.6.2 Setting prices for new mining customers

Essential Water also proposed to maintain the current pricing approach for new mines.[80] It indicated a new mine (Cobalt Blue Mine) may become operational during the 2022 determination period.

We have accepted Essential Water's proposal. That is:

- If a new mine commences operations in the 2022 determination period, it will pay the same water usage charges as the existing mines and other customers.
- As an interim measure until the next price determination, any new mining customers will pay the same meter-based water service prices as other non-residential customers.

Chapter 8

Wastewater prices

Summary of our draft decisions for wastewater prices

Wastewater prices would be stable

The wastewater water usage price and service prices would remain stable over 4 years, without inflation. If the WACC changes between Draft and Final Reports, this may change our wastewater prices.

We have increased the estimate of wastewater discharged by residential customers

We accepted Essential Water's proposal to increase the deemed residential discharge allowance from 90 kL per year to 100 kL per year. We consider it is a reasonable estimate of the average yearly discharge by residential customers into the wastewater system.

We have maintained the way we set wastewater service prices for mining customers

Mining customers pay the wastewater service price applicable to a 100mm meter with a 100% discharge factor. Our draft decision is to maintain this approach, as we consider it best reflects the cost of providing wastewater services to these customers.

We have maintained total revenue from wastewater prices

Our draft decision to hold wastewater prices constant means Essential Water recover slightly more revenue than the wastewater notional revenue requirement. Conversely, water prices recover slightly less revenue than the water notional revenue requirement.

We consider that it is more appropriate to maximise price stability for customers, rather than remove this relatively small cross-subsidy between water and wastewater services.

- Residential customers pay a fixed service price, which is the same for houses and apartments. It comprises an access charge and a deemed wastewater usage charge.
- Non-residential customers pay a fixed service price based on their meter size, and a usage price for actual discharges into the wastewater system.[a]

[a] The service price for each customer is scaled-up from the base 20mm meter price to reflect the actual size of their meter before a discharge factor is applied.

8.1 Wastewater prices would be stable

Table 8.1 sets out our draft decision on Essential Water's wastewater prices, without inflation. Our draft decision is to hold all wastewater prices constant.

In comparison, Essential Water proposed NSW taxpayers fund a new affordability subsidy. The aim was to keep most of its proposed price increases to around 7% over 4 years, without inflation, see Table 8.2 Otherwise most of its prices would increase by closer to 22% over that period under its proposal, without inflation.

Table 8.1 Draft decision on Essential Water's wastewater prices ($2021-22) – without inflation

	2021-22 current	2022-23	2023-24	2024-25	2025-26	Change from current to 2025-26 (%)
Usage price ($/kL)						
Non-residential	1.34	1.34	1.34	1.34	1.34	0.0%
Service prices ($/year)						
Residential	546.37	546.37	546.37	546.37	546.37	0.0%
Non – residential[a]						
• 20mm connection	608.24	608.24	608.24	608.24	608.24	0.0%
• 25mm connection	950.38	950.38	950.38	950.38	950.38	0.0%
• 40mm connection	2,432.96	2,432.96	2,432.96	2,432.96	2,432.96	0.0%
• 50mm connection	3,801.50	3,801.50	3,801.50	3,801.50	3,801.50	0.0%
• 80mm connection	9,731.84	9,731.84	9,731.84	9,731.84	9,731.84	0.0%
• 100mm connection	15,206.00	15,206.00	15,206.00	15,206.00	15,206.00	0.0%
• 150mm connection	34,213.50	34,213.50	34,213.50	34,213.50	34,213.50	0.0%

a. Non-residential prices assume a 100% discharge factor. Bills will depend on discharge factors assigned by Essential for individual customers.
Note: Wastewater service prices for non-residential customers and mining customers are based on water meter size. The meter-based prices are set with reference to the 20mm meter price using the following formula: (meter size)^2 x 20mm meter price / 400 x discharge factor. We have calculated service prices for larger meter sizes based on this formula,
Source: IPART analysis.

Table 8.2 Essential Water's proposed wastewater prices ($2021-22) – without inflation

	2021-22 current	2022-23	2023-24	2024-25	2025-26	Change from current to 2025-26 (%)
Usage price ($/kL)						
Non-residential	1.34	1.37	1.39	1.40	1.42	6.3%
Service prices ($/year)						
Residential	546.37	568.84	578.05	587.41	596.94	9.3%
Non – residential[a]	608.24	618.10	628.11	638.28	648.62	6.6%
• 25mm connection	950.37	965.78	981.41	997.32	1,013.47	6.6%
• 40mm connection	2,432.96	2,472.37	2,512.43	2,553.13	2,594.49	6.6%
• 50mm connection	3,801.50	3,863.08	3,925.67	3,989.26	4,053.89	6.6%
• 80mm connection	9,731.83	9,889.49	10,049.71	10,212.51	10,377.95	6.6%
• 100mm connection	15,206.00	15,452.34	15,702.66	15,957.04	16,215.55	6.6%
• 150mm connection	34,213.49	34,767.76	35,331.00	35,903.36	36,485.00	6.6%

[a] Non-residential prices assume a 100% discharge factor. Bills will depend on discharge factors assigned by Essential for individual customers.
Note: Wastewater service prices for non-residential customers and mining customers are based on water meter size. The meter-based prices are set with reference to the 20mm meter price using the following formula: (meter size)^2 x 20mm meter price / 400 x discharge factor.
Source: IPART analysis, Essential Water, Essential Water Pricing Proposal, June 2021, p 94.

8.1.1 Our draft decisions mean Essential Water's wastewater prices would increase by inflation only

We adjust Essential Water's prices each year for inflation. Table 8.3 shows our draft wastewater prices for Essential Water that will apply in 2022-23 including inflation of 5.1%

Table 8.3 Essential Water's wastewater prices ($2022-23) – including inflation

	2022-23	Change from current to 2022-23 (%)
Usage price ($/kL)		
Non-residential	1.41	5.1%
Service price ($/year)		
Residential	574.23	5.1%
Non – residential		
• 20mm connection	639.26	5.1%
• 25mm connection	998.84	5.1%
• 40mm connection	2,557.04	5.1%
• 50mm connection	3,995.38	5.1%
• 80mm connection	10,228.16	5.1%
• 100mm connection	15,981.51	5.1%
• 150mm connection	35,958.39	5.1%

Source: IPART analysis

8.2 We are holding the wastewater usage price constant

Our draft decision is:

29. To hold the current wastewater usage price of $1.34 per kL constant over the 2022 determination period (i.e. without inflation). This means it would increase by the rate of inflation only.

Our draft decision is to hold the wastewater usage price of $1.34 per kL constant over the 2022 determination period (i.e. without inflation). This means it would increase by the rate of inflation only.

This decision reflects our preference for setting usage prices with reference to the marginal cost of supply. In the 2019 review, we estimated Essential Water's short run marginal cost (SRMC) of supplying treated water.[b] We found the current price of $1.34 per kL was within a reasonable range of our estimate of SRMC.[81] We have not been provided with information to suggest this is no longer the case.

8.3 We are holding the wastewater service prices constant

Our draft decisions are:

30. To hold the current wastewater service prices constant over the 2022 determination period (i.e. without inflation). This means they would increase by the rate of inflation only.

31. To increase the deemed residential discharge allowance for wastewater from 90 kL per year to 100 kL per year.

32. To maintain our current approach for setting the wastewater service price for the mines.

After calculating the revenue from wastewater usage prices and trade waste prices, wastewater service prices are calculated as a residual to recover Essential Water's efficient costs of providing wastewater services.

Our draft decision is to hold the wastewater service prices constant over the 2022 determination period (i.e. without inflation). This means they would increase by the rate of inflation only.

[b] While we typically set water usage prices with reference to the long run marginal cost (LRMC) of water supply in price reviews, in Essential Water's case we use SRMC (see Chapter 7). We currently set Essential Water's wastewater prices with reference to the SRMC of supplying wastewater services, as there is a lack of information on the LRMC.

We have also made draft decisions to accept Essential Water's proposal to:

- Increase the deemed residential discharge allowance from 90 kL to 100 kL per year. We consider it is a reasonable estimate of the average yearly discharge by residential customers into the wastewater system.
- Maintain the way we set wastewater service prices for mining customers.

8.3.1 Increasing the deemed residential discharge allowance

Residential customers pay a fixed wastewater service price that is the same for houses and apartments. It comprises an access charge and a deemed wastewater usage charge,[c] and is typically calculated using the following formula:

$$\textbf{Residential wastewater service price} = discharge\ factor_1 \times non-residential\ wastewater\ service\ price + \left(discharge\ factor_2 \times typical\ residential\ water\ usage\right)^{d} \times wastewater\ usage\ price$$

The first line of the formula is the access charge, while the second line is the deemed wastewater usage charge.

- The access charge is a standard charge that applies to all residential customers. It is calculated as: 70% discharge factor x 20mm meter charge.
- The deemed wastewater usage charge reflects an estimate of average residential wastewater discharges. It is calculated as the deemed residential discharge allowance x the wastewater usage price.

We have made a draft decision to accept Essential Water's proposal to increase the deemed residential discharge allowance from 90 kL to 100 kL per year.[82] This is supported by our consultant, The CI.E. who analysed Essential Water's residential wastewater connections, Integrated Water Cycle Management Strategy and discharge volumes.

- In preparing its pricing proposal, Essential Water examined discharge volumes and concluded that average residential discharges were likely to be between 105 kL and 110 kL per year.[83] To reduce bill shock, Essential Water proposed increasing the residential discharge volume from 90 kL to 100 kL per year over the 2022 determination period as a means of gradually transitioning to higher volumes over time.[84]
- The CIE analysis found the average discharge volume for residential customers would be similar to Essential Water's projections.[85] It therefore recommended accepting Essential Water's proposal to increase the residential deemed discharge allowance from 90 kL to 100 kL per year.[86]

[c] This means that residential customers do not face an explicit wastewater usage charge.

[d] This part of the formula ($discharge\ factor_2 \times typical\ residential\ water\ usage$) is the deemed residential discharge allowance.

- That said, the CIE did consider Essential Water's proposal was conservative. It noted using a deemed residential discharge allowance of 100 kL per year implied an effective discharge factor of around 40%.[87] In comparison, Sydney Water estimated an effective discharge factor of 68% per household.[88]

While we have increased the deemed residential discharge allowance, we have departed from using the existing formula to set the residential wastewater service price. Adhering to this formula would have meant that – even if all other wastewater usage and service prices remain constant – the residential wastewater service price would increase.[e] Instead, we have held the residential wastewater service price constant. This maximises price stability for customers, while also ensuring Essential Water's efficient costs are recovered.

8.3.2 Maintaining the way we set wastewater service prices for mining customers

Mining customers currently pay the wastewater service price applicable to a 100mm meter with a 100% discharge factor.[89] Our draft decision is to maintain this approach.

Essential Water considered its current wastewater price structure for mining customers remains cost-reflective and equitable, as meter size, adjusted for discharge factors, is a reasonable indicator of a customer's draw on the network. Because the mines' wastewater discharge has remained stable over the 2014 and 2019 determinations, Essential Water proposed maintaining the current approach for setting wastewater prices for mining customers.[90]

In making our draft decision we considered that mining customers' discharges into the wastewater system have remained constant over the previous determination periods and are forecast to continue to remain constant.[91] Charging mines the wastewater service price applicable to a 100mm meter with a 100% discharge factor continues to best reflect the cost of providing wastewater services to these customers.

8.4 We have maintained total revenue from wastewater prices

Our draft decision to hold wastewater prices constant means Essential Water recovers slightly more revenue than the wastewater notional revenue requirement. Conversely, water prices recover slightly less revenue than the water notional revenue requirement (see Table 8.4).

[e] The shift to a higher deemed residential discharge allowance – from 90 kL to 100 kL per year – would have resulted in a higher residential wastewater service price under the existing formula.

Table 8.4 IPART's draft decisions on revenue from water and wastewater prices ($millions, $2021-22)

	2022-23	2023-24	2024-25	2025-26	Total
Water					
• Water revenue[a]	16.6	16.6	16.5	16.5	66.3
• Government subsidies[b]	20.3	20.3	20.3	20.2	81.1
Less water notional revenue requirement	38.4	38.5	37.9	37.4	152.2
Difference	*-1.5*	*-1.6*	*-1.1*	*-0.7*	-4.8
Wastewater					
• Wastewater revenue (including trade water revenue from customers)	7.0	7.0	7.1	7.1	28.2
Government subsidy[c]	0.2	0.2	0.1	0.1	0.6
Less wastewater notional revenue requirement	5.1	6.0	6.4	6.5	24.0
Difference	*2.1*	*1.2*	*0.8*	*0.7*	4.8

a. This includes water revenue from water prices, as well as miscellaneous and ancillary charges.
b. This includes our recommended government subsidies for Pipeline costs, as well as to transition EW Pipeline customers receiving untreated water and chlorinated water customers towards the usage prices for other untreated water customers.
c. This is the difference between the full revenue that Essential Water would recover under DPE's guideline prices and the revenue Essential Water is expected to recover under our transitioned prices (see section 9.1).
Note: Totals may not sum due to rounding.
Source: IPART analysis.

We consider that it is more appropriate to maximise price stability for customers, rather than remove the relatively small cross-subsidy between water and wastewater services at this point in time.

Chapter 9

Prices for other services

09

Summary of our draft decisions for other services

We have largely accepted Essential Water's proposed trade waste prices

Our draft decision is to accept Essential Water's proposal to hold fixed prices constant (i.e. without inflation) and continue to transition usage prices to the Department of Planning and Environment's (DPE) guideline prices.

We have also accepted Essential Water's proposal to remove usage prices for compliant Category 1 and Category 1a customers because they are relatively low impact customers.

We have not accepted Essential Water's proposal to remove mass-based pricing for Category 3 customers. Mass-based pricing is an important element of best practice wastewater management for local governments and water utilities. We have decided to retain all prices from 2019 and continue to increase them to DPE's guideline prices.

We increased miscellaneous prices by inflation only

Our draft decision is to hold miscellaneous prices constant for the 2022 Determination period. They have previously been reviewed in 2019 and there has been no material change since then.

We have continued to not set recycled water prices

Our draft decision is to continue to defer setting recycled water prices and to deduct 50% of the revenue received from recycled water sales from the NRR for regulated services.

We have maintained the current price structures for unmetered properties and unconnected properties

Consistent with our pricing principles we have made a draft decision that unmetered properties should pay the standard residential water service price plus a higher deemed level of water consumption of 300 kL.

Setting the deemed consumption amount higher provides an incentive for small water users to have a meter installed. This approach is consistent with other utilities we regulate.

We have made a draft decision to maintain the current price structure for unconnected properties. Unconnected properties should not be charged service and usage prices because recovering these are inherently difficult and places an administrative cost on Essential Water's business. Unconnected properties do not directly impose costs on Essential Water's business. Properties that have been disconnected due to non-payment should not be charged water or wastewater prices.

9.1 We have largely accepted Essential Water's proposed trade waste prices

Trade waste is any liquid waste other than wastewater of a domestic nature. Trade waste discharge places greater demands on the wastewater system and has higher costs of treatment than domestic wastewater. If trade waste is not managed, it could pose problems for the wastewater system, as well as to public health and the environment.

Trade waste is discharged by commercial and industrial customers. Essential Water has 4 charging categories – 1, 1a, 2 and 3. The higher the category, the higher the risks of discharge to the wastewater system.

- **Category 1** dischargers require nil or minimal pre-treatment.
- **Category 1a** dischargers are low risk.[a]
- **Category 2** dischargers are medium risk and have prescribed pre-treatment.
- **Category 3** dischargers are high risk and are usually large industrial businesses.

Box 9.1 provides an overview of the different types of fixed and variable trade waste prices we have set for Essential Water.

Box 9.1 Essential Water's trade waste prices

Essential Water's trade waste prices include fixed prices and variable prices ($ per kL or $ per kg discharged).

Fixed prices 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 (e.g. where there may be suspected non-compliance with approval conditions), above and beyond the costs of inspection activities covered by application or annual fees.
- **Food waste disposal fee** – 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.

[a] Essential Water has advised it is currently reviewing its trade waste policy and may no longer include a separate category for 'Category 1a customers' in the revised policy.

Box 9.1 Essential Water's trade waste prices

- **Annual fee** – which recovers 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.

Variable prices include:

- **Volume-based prices** ($/kL) for Category 2 customers – which reflect the additional costs (above domestic-strength wastewater) of trade waste discharges imposed on the wastewater network.
- **Non-compliant volume-based prices** ($/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
- **Mass-based prices** ($/kg) for Category 3 customers – which reflect the additional costs (above domestic-strength wastewater) of trade waste discharges imposed on the wastewater network, which vary by waste type.
- **Non-compliant mass-based prices** ($/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.

Source: IPART analysis and Essential Water, Essential Water Pricing Proposal, June 2021, p 95.

9.1.1 Essential Water is still developing its trade waste pricing framework

While it has a trade waste policy,[92] in our 2019 review we found Essential Water was not recovering the costs of providing trade waste services to its customers.[93] We therefore decided to set its trade waste prices with reference to guideline prices for trade waste issued by DPE (see Box 9.2). This meant that we set most of:

- Essential Water's fixed prices equal to DPE's guideline fixed prices
- Essential Water's variable prices on a transition path that gradually increases them to DPE's guideline variable prices.

We consider that Essential Water should levy its trade waste prices on all trade waste customers. We also consider that Essential Water should consult customers to better understand the impacts of these prices on them and inform its proposed trade waste prices at its next price review.[94] We set a transition period for variable prices to minimise bill shock, while allowing Essential Water to collect data to establish the efficient cost of providing its trade waste services.[95]

In its pricing proposal, Essential Water indicated it had not applied these trade waste prices to most customers. Further, it was unable to undertake a detailed review of trade waste costs and flows. This was due to several factors, including:

- Economic conditions in the Broken Hill area becoming more tenuous due to the COVID-19 pandemic
- Essential Water's workforce having to respond to other operational priorities
- Trade waste prices being relatively complex and costly to administer for a small water utility.[96]

It therefore proposed generally keeping in place the trade waste prices and transition paths from the 2019 review.

Box 9.2 DPE's guideline prices

DPE has developed the Liquid Trade Waste Management Guidelines for local governments and water utilities to implement. Sound regulation and pricing of wastewater and liquid trade waste is a key component of the NSW Government's *Best-Practice Management of Water Supply and Sewerage Guidelines*.

DPE sets guideline prices for liquid trade waste and mass-based prices. Councils or regulated water utilities may adopt DPE's guideline prices. Alternatively, they may develop trade waste prices based on the principle of achieving full cost-recovery.

Department of Planning and Environment, Recommended Liquid Trade Waste Fees and Charges 2021, p 1.

9.1.2 Increasing the fixed trade waste prices only for inflation

Our draft decision is:

33. To hold the current fixed trade waste prices constant (i.e. without inflation) over the 2022 determination period, as set out in Table 9.1. This means they would only increase by the rate of inflation.

Table 9.1 sets out our draft decision on Essential Water's fixed trade waste prices, without inflation. We have accepted its proposal to hold all fixed trade waste prices constant (i.e. without inflation) over the 2022 determination period.[97] This means they would only increase by the rate of inflation.

Table 9.1 Draft decision on fixed trade waste prices $/year ($2021-22) – without inflation

	2021-22 current	2022-23	2023-24	2024-25	2025-26	Change 2021-22 to 2025-26 (%)
One-off fees						
Application fee	248.00	248.00	248.00	248.00	248.00	0%
Re-inspection fee	92.08	92.08	92.08	92.08	92.08	0%
Food waste disposal fee (per bed. per eligible facility)	31.39	31.39	31.39	31.39	31.39	0%
Annual fees						
Category 1 Trade Waste Discharge	100.46	100.46	100.46	100.46	100.46	0%
Category 1a Trade Waste Discharge	100.46	100.46	100.46	100.46	100.46	0%
Category 2 Trade Waste Discharge	201.96	201.96	201.96	201.96	201.96	0%
Category 3 Trade Waste Discharge	676.00	676.00	676.00	676.00	676.00	0%
Per operating mine	1,683.71	1,683.71	1,683.71	1,683.71	1,683.71	0%

Source: IPART analysis, Essential Water, Essential Water Pricing Proposal, June 2021, p 98.

We adjust Essential Water's prices each year for inflation. Table 9.2 shows our draft fixed trade waste prices for Essential Water that will apply in 2022-23, including inflation of 5.1%

Table 9.2 Essential Water's fixed trade waste prices ($2022-23) – with inflation

	2022-23	Change from current to 2022-23
One-off fees		
Application fee	260.65	5.1%
Re-inspection fee	96.78	5.1%
Food waste disposal fee (per bed. per eligible facility)	32.99	5.1%
Annual fees		
Category 1 Trade Waste Discharge	105.58	5.1%
Category 1a Trade Waste Discharge	105.58	5.1%
Category 2 Trade Waste Discharge	212.26	5.1%
Category 3 Trade Waste Discharge	710.48	5.1%
Per operating mine	1,769.58	5.1%

Source: IPART analysis

9.1.3 Continue transitioning volume-based trade waste prices over time

Our draft decisions are:

34. To set volume-based prices for Category 2 customers that continue on the price transition path set in our 2019 review.

35. To set non-compliant volume-based prices for Category 1, Category 1A and Category 2 customers that continue on the price transition path set in our 2019 review.

36. To remove volume-based prices for compliant Category 1 and Category 1a customers, as these customers are low risk and have a low impact on Essential Water's wastewater system.

As set out in Table 9.3, we have accepted Essential Water's proposal to:

- Set volume-based prices that continue on the price transition path set in our 2019 review.[98] This means they will continue to increase towards DPE's volume-based guideline prices over 10 years.
- Remove volume-based prices for 'compliant' Category 1 and Category 1a customers. We agree with Essential Water's position that it is administratively inefficient to apply volume-based prices to these customers, since they are low risk and have a low impact on Essential Water's wastewater system. Further, removing these charging categories will ensure consistency with DPE's guidelines and Essential Water's trade waste policy.[99]

Table 9.3 Draft volume-based trade waste prices, $/kL ($2021-22) – without inflation

	2021-22 (current)	2022-23	2023-24	2024-25	2025-26	Change 2021-22 to 2025-26 (%)
Volume-based prices						
Category 2	0.57	0.75	0.94	1.13	1.32	132%
Non-compliant volume-based prices						
Category 1	0.64	0.75	0.94	1.13	1.32	106%
Category 1a	0.64	0.75	0.94	1.13	1.32	106%
Category 2	5.91	6.91	8.63	10.36	12.09	105%

Source: IPART analysis, Essential Water, Essential Water Pricing Proposal, June 2021, p 99.

Our decisions in 2019 mean;

- Volume-based prices for Category 2 customers and non-compliant volume-based prices for Category 1 and Category 1a customers are increasing by around $0.19 per year over 10 years to align with DPE's guideline prices.
- Non-compliant usage prices for Category 2 customers are increasing by around $1.73 over 10 years to align with DPE's guideline prices.

After 4 years, Essential Water's trade waste customers would be paying volume-based prices that are around 70% of DPE's guideline prices.

Table 9.4 shows our draft volume-based prices for Essential Water that will apply in 2022-23, including inflation of 5.1%.

Table 9.4 Essential Water's volume-based trade waste prices ($2022-23) - including inflation

	2022-23	Change from current to 2022-23
Volume-based prices		
Category 2	0.79	23.4%
Non-compliant volume-based prices		
Category 1	0.79	38.6%
Category 1a	0.79	38.6%
Category 2	7.26	22.8%

Source; IPART analysis

9.1.4 Continue transitioning mass-based trade waste prices over time

Our draft decision is:

37. To set mass-based prices for Category 3 customers that either:
    - continue on the price transition path set in our 2019 review, or
    - where the DPE has revised its guideline prices for a specific substance, transition mass-based prices for that substance to DPE's 2021 guideline price.

Our draft decision is to set mass-based prices that either continue on the price transition path set out in our 2019 review or transition substances to the prices included in DPE's 2021 guidelines (as applicable).[100] This means they will generally continue to increase towards DPE's mass-based guideline prices over the 10-year period from 2019. A full list of substances and prices can be found in our Draft Determination.

Essential Water proposed removing mass-based prices for Category 3 customers, because it had not conducted enough research into their discharges at this stage.[101] Instead, it proposed we set volume-based prices for Category 3 customers. This would allow it more time to collect the necessary information to be able to implement mass-based prices at the next price determination.[102]

Setting mass-based prices for high risk, Category 3 customers is consistent with both Essential Water's trade waste policy and DPE's guidelines. Further, the NSW Government's *Best-Practice Management of Water Supply and Sewerage Guidelines* indicate that mass-based prices are an essential outcome for achieving best practice wastewater management.[103]

As we noted in our 2019 review, since setting volume-based prices for Category 3 customers is inconsistent with Essential Water's trade waste policy (which has been approved by DPE), this could pose problems for it implementing the policy.[104] Therefore, we are retaining mass-based prices for these customers and setting them on the transition path outlined in Box 9.5.

Box 9.3 Price transition path for mass-based prices

- In our 2019 review, we set mass-based prices for around 40 substances to transition them to DPE's then guideline prices over a 10-year period. As with the other trade waste prices, we used DPE's guideline prices as a transition target because Essential Water had not yet developed prices specific to the Broken Hill region.
- In 2021, DPE released updated guideline prices. Several of them were unchanged from its 2019 guideline prices. However, others were revised to reflect changes in a substance's risk profile. Further, DPE no longer outlined guideline prices for some substances.
- In response to these changes, we have adopted the following approach:
  - Where substances are listed in DPE's 2021 guideline prices: either continue to transition them on the price path set in our 2019 review, or where DPE has revised the guideline price, adjust the 10-year transition path to this new price.
  - Where substances are no longer listed in DPE's 2021 guideline prices: continue to transition them on the price path set in our 2019 review. These substances are still referred to in Essential Water's trade waste policy, so it is appropriate we continue to set a price for them.

9.1.5 Continue excluding forecast trade waste revenue from the notional revenue requirement

Our draft decision is:

38. To subtract $395,000 per year from Essential Water's wastewater notional revenue requirement. This represents our forecast of the revenue Essential Water would recover from trade waste customers if it were charging trade waste prices that align with DPE's guideline prices.

We recommend:

4. The NSW Government fund the cost of transitioning trade waste prices over time. That is, the difference between the revenue Essential Water would recover under DPE's guideline prices and the revenue under the transitional prices set in the 2022 Draft Determination.

We have made a draft decision to subtract $395,000 per year from Essential Water's wastewater notional revenue requirement, before setting wastewater prices for wastewater customers. This represents our forecast of the revenue Essential Water would recover from trade waste customers if it were charging trade waste prices that align with DPE's guideline prices. It is our best available estimate of the costs of supplying trade waste services to these customers. This draft decision is consistent with our approach in 2019.[105]

We also recommend the difference between the full revenue ($395,000 per year) that Essential Water would recover under DPE's guideline prices and the revenue Essential Water is expected to recover under our transitioned prices is funded by a NSW Government subsidy (see Table 9.3). This means the cost of transitioning trade waste prices would not be borne by Essential Water or its other customers. Again, this recommendation is consistent with our approach in 2019.[106]

Table 9.5 Trade waste subsidy over the 2022 determination period ($'000, $2021-22)

	2022-23	2023-24	2024-25	2025-26	Total
Estimated full revenue from trade waste charges	395.0	395.0	395.0	395.0	1,580.0
Trade waste revenue excluding NSW Government subsidy	194.7	228.2	261.8	295.3	980.0
Required NSW Government trade waste customer subsidy	200.3	166.8	133.2	99.7	600.0

Source: IPART analysis.

In its proposal, Essential Water indicated it plans to engage more with its customers over the 2022 determination period and conduct sampling of discharges to better assess the costs imposed on its wastewater system.[107] We encourage Essential Water to continue with this customer engagement, so it can better understand the costs of treating trade waste in the Broken Hill region and propose prices at the next determination to recover these costs.

9.2 We are holding miscellaneous prices constant

Our draft decision is:

> 39. To hold the current miscellaneous prices constant (i.e. without inflation) over the 2022 determination period. This means it would increase by the rate of inflation only.

Our draft decision is to accept Essential Water's proposal and hold the current miscellaneous prices constant (i.e. without inflation) over the 2022 determination period. This means they would increase by the rate of inflation only.

Essential Water provides a range of miscellaneous services to its water and wastewater customers, generally for one-off services such as connections and disconnections, replacing damaged services, plumbing inspections, site inspections and building plan approvals.[108] These prices are levied on a relatively small number of customers, when the service is provided. Essential Water has historically recovered most of its miscellaneous prices revenue from 3 charges:

- conveyancing certificates with meter reads
- drainage diagrams, and
- personal service of final warning notice for late payment prior to restriction.[109]

Essential Water proposed keeping miscellaneous prices constant in the 2022 determination period. It considered there had been no change since the 2019 review to indicate a need for revision.[110]

In 2019, IPART's consultant, MJA, assessed Essential Water's miscellaneous prices. MJA found that Essential Water's proposed prices were efficient and did not recommend any changes to prices in 2019.[111] We consider Essential Water's current proposal reasonable considering miscellaneous prices were reviewed last determination period and there has been no material change since the 2019 review.

Essential Water's total recovered revenue from miscellaneous prices is approximately $60,000 per year. Essential Water's current schedule of miscellaneous prices is listed in our Draft Determination.

9.3 We have continued to not set recycled water prices

Our draft decisions are:

40. To continue not setting recycled water prices.

41. To deduct 50% of the revenue received from recycled water sales from Essential Water's notional revenue requirement for regulated services.

We have made a draft decision to accept Essential Water's proposal and continue not setting recycled water prices, as well as deducting 50% of the revenue from recycled water sales from the Essential Water's notional revenue requirement for regulated services.[112]

Essential Water supply recycled water (or effluent water) to a small number of customers for non-potable uses, following treatment of wastewater.

In 2019 IPART undertook a review of pricing arrangements for recycled water and other services. In its review, IPART changed the regulatory framework for utilities for recycled water services and encouraged unregulated pricing agreements for utilities to charge for recycled water in most settings.[113]

Essential Water proposed to retain its approach of entering into voluntary unregulated pricing agreements with recycled water customers. Essential Water proposed continuing the practice of deducting 50% of the revenue received from recycled water sales from the NRR for regulated services.[114] The purpose is to share the non-regulated revenue evenly between Essential Water and the broader customer base.

We maintain that Essential Water's proposal to keep unregulated pricing agreements for recycled water services is in line with IPART's regulatory principles. We also accept Essential Water's proposal to continue to deduct 50% of the revenue received from recycled water sales from the NRR for regulated services.

9.4 We are maintaining the current price structures for unmetered properties and unconnected properties

Our draft decision is:

42. To accept Essential Water's proposal to maintain the current price structures for unmetered properties and unconnected properties.

We have made a draft decision to accept Essential Water's proposal and maintain the current price structures for unmetered properties and unconnected properties in the 2022 Determination period.[115]

9.4.1 We have maintained the current price structure for unmetered properties

In its proposal, Essential Water stated the average level of residential water consumption over the 2019 determination period was approximately 250 kL per year.[116] Similar to IPART's 2019 Determination, Essential Water considered it appropriate to maintain a deemed consumption amount of 300 kL per year for unmetered properties. Therefore, Essential Water proposed to maintain the current price structure for unmetered properties set in 2019.

Consistent with our pricing principles, unmetered residential and non-residential properties should pay the standard residential water service price, plus a deemed level of water consumption. As the average level of residential water consumption has remained constant at around 260 kL per year, our draft decision is to maintain the deemed consumption amount at 300 kL per year for unmetered properties. By setting the deemed consumption amount higher, this may provide an incentive for small water users to have a meter installed. Furthermore, this approach is consistent with the approach we apply for other utilities we regulate.[b]

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

- the standard residential water service price
- a water usage price for a deemed consumption of 300kL per year, for the applicable water quality
- the standard residential wastewater service price (which includes a deemed discharge allowance of 100kL per year).[117]

Our draft decision continues this current price structure for unmetered properties.

9.4.2 We have maintained the current price structure for unconnected properties

We have made a draft decision to accept Essential Water's proposal and maintain the current price structure for unconnected properties. Essential Water proposed to maintain the current approach of not charging unconnected properties.[118]

Essential Water may levy water and wastewater service prices to unconnected properties under the *Water Management Act 2000,* as long as, in the utility's opinion, it is reasonably practicable for water and wastewater services to be provided to that land.[119]

We maintain the same position set in 2019, that unconnected properties should not be charged any water or wastewater fees.[120] Therefore, our draft decision is to accept Essential Water's proposal.

[b] For example, our Sydney Water and Hunter Water reviews (see IPART, Review of prices for Hunter Water Corporation, June 2016, p 143; IPART, Review of prices for Sydney Water Corporation, June 2016, pp. 177-178).

In 2019, IPART decided to set the water and wastewater prices to zero for unconnected properties. While Essential Water was able to charge unconnected properties, IPART understood that in practice it was very difficult to recover these charges, especially when owners cannot be traced. This created additional expenses for Essential Water to pursue debt recovery. Therefore, it was pragmatic to set the water and wastewater prices to zero because:[121]

- unconnected properties were not directly imposing costs on Essential Water's network, and
- properties that have been disconnected due to non-payment of fees should not continue to be levied water or wastewater charges.

Chapter 10

Customer bill impacts of our pricing decisions

10

Summary of bill impacts on customers

Bills would be stable for residential, non-residential and mining customers

Our draft decisions to hold prices constant means bills would generally be stable for residential, non-residential and mining customers over 4 years, without inflation.

This is largely driven by us using a WACC of 2.9%. If the WACC changes between Draft and Final Reports, this may change our approach to pricing and therefore the bill impacts.

Bills would increase for EW Pipeline customers receiving untreated water and chlorinated water customers

Over 4 years, water bills for EW Pipeline customers would increase by around 3.3% a year on average,[a] while chlorinated water customer bills would increase by around 2.4% a year on average[b] (in each case without inflation).

Bill impacts are reasonable

As bills are remining stable, we consider they are affordable for residential customers in Broken Hill. Under our draft prices, typical water and wastewater bills would continue to represent about 2.5% of the median household income in Broken Hill.

This chapter outlines the bill impacts of our draft decisions for Essential Water's customers. We have forecast bills using the draft prices set out in Chapters 7 to 9.

10.1 Bills would be stable for residential customers receiving treated water

Our analysis shows that – before inflation – a typical household consuming 300 kL per year of treated water would see its annual bill remain stable over determination period (see Table 10.1). This is due to our draft decisions to hold water and wastewater prices constant for 4 years.

[a] The water bill estimate is for an EW Pipeline customer with a 20mm meter and 250kL per year water usage.
[b] The water bill estimate is for a chlorinated water customer with 300kL per year water usage.

Table 10.1 Forecast bills for residential customers receiving treated water ($2021-22) – without inflation

	2021-22 current	2022-23	2023-24	2024-25	2025-26	Change 2021-22 to 2025-26
Residential – non-pensioner						
Small household – 200 kL per year	1,265	1,265	1,265	1,265	1,265	0.0%
Typical household – 300 kL per year	1,453	1,453	1,453	1,453	1,453	0.0%
Large household – 400 kL per year	1,641	1,641	1,641	1,641	1,641	0.0%
Residential – pensioner[a]						
Small household – 200 kL per year	1,090	1,099	1,103	1,107	1,111	1.9%
Typical household – 300 kL per year	1,278	1,287	1,291	1,295	1,299	1.6%
Large household – 400 kL per year	1,466	1,475	1,479	1,483	1,487	1.4%

a. Pensioners will see their bills increase slightly more, as a percentage, compared to other residential customers. This is because the pensioner rebate of $175 per year (for water and wastewater) is fixed in nominal terms and not indexed in line with inflation. In other words, while prices increase each year in line with inflation the rebate stays the same and the 'real' value of the rebate falls relative to prices. We have assumed an inflation rate of 2.5% from 2023-24. The rebate is provided by Essential Water and funded by the NSW Government.

Source: IPART analysis.

Taking inflation of 5.1% into account, a typical residential customer consuming 300 kL of water per year would pay an annual bill of $1,527 under our draft prices in 2022-23 (see Table 10.2). This is $40 lower than the annual bill under Essential Water's proposed prices.

Table 10.2 Residential customers bills for treated water ($2022-23) – with inflation

	kL per year	2022-23	Change from current to 2022-23
Residential – treated water – non-pensioner			
Small household	200	1,330	5.1%
Typical household	300	1,527	5.1%
Large household	400	1,725	5.1%
Residential – treated water – pensioner[a]			
Small household	200	1,155	5.9%
Typical household	300	1,352	5.8%
Large household	400	1,550	5.7%

a. Pensioners will see their bills increase slightly more, as a percentage, compared to other residential customers. This is because the pensioner rebate of $175 per year (for water and wastewater) is fixed in nominal terms and not indexed in line with inflation. In other words, while prices increase each year in line with inflation the rebate stays the same and the 'real' value of the rebate falls relative to prices. We have assumed an inflation rate of 2.5% from 2023-24. The rebate is provided by Essential Water and funded by the NSW Government.
Source: IPART analysis.

10.2 Bills would increase for residential customers receiving chlorinated water

A typical household consuming 300 kL per year of chlorinated water would see its bills increase by around 2.4% a year on average (see Table 10.3). This is due to our draft decision, discussed in Chapter 7, to continue transitioning the chlorinated water usage price towards the untreated water usage price.

Table 10.3 Forecast bills for residential customers receiving chlorinated water ($2021-22) – without inflation

	2021-22 current	2022-23	2023-24	2024-25	2025-26	Change 2021-22 to 2025-26	Average annual change
Residential - chlorinated water (water bills only, no wastewater)							
Small household – 200 kL per year	623	635	648	660	673	8.0%	1.9%
Typical household – 300 kL per year	763	782	800	819	838	9.8%	2.4%
Large household – 400 kL per year	903	928	953	978	1,003	11.1%	2.7%

Source: IPART analysis.

Taking inflation of 5.1% into account, a typical chlorinated water customer consuming 300 kL of chlorinated water per year would pay an annual bill of $822 under our draft prices in 2022-23 (see Table 10.4). This is $12 lower than the annual bill under Essential Water's proposed prices.

$822

IPART's draft decision

$834

Essential Water's proposal

Table 10.4 Residential customer bills for chlorinated water ($2022-23) including inflation

	kL per year	2022-23	Change from current to 2022-23 (%)
Residential - chlorinated water (water bills only, no wastewater)			
Small household	200	668	7.2%
Typical household	300	822	7.7%
Large household	400	975	8.0%

Source: IPART analysis.

10.3 Bills would be stable for non-residential customers

Non-residential customer bill impacts will depend on their meter size and discharge factors, as well as their water usage.

Under our draft prices, treated and untreated water bills for businesses would be stable over the determination period, before inflation (see Table 10.5). This is due to our draft decisions to hold water and wastewater prices constant for 4 years. For example, a non-residential customer on a 20mm meter using 250 kL per year of treated water would see bills remain constant for the next 4 years before inflation.

Table 10.5 Forecast bills for non-residential customers ($2021-22) – without inflation

	2021-22 current	2022-23	2023-24	2024-25	2025-26	Change 2021-22 to 2025-26
Non-residential - treated water						
20 mm with 250kL usage	1,473	1,473	1,473	1,473	1,473	0.0%
25 mm with 1,000kL usage	4,019	4,019	4,019	4,019	4,019	0.0%
40 mm with 2,100kL usage	8,992	8,992	8,992	8,992	8,992	0.0%
80 mm with 21,000kL usage	71,477	71,477	71,477	71,477	71,477	0.0%
Non-residential - untreated water (water only, no wastewater)						

	2021-22 current	2022-23	2023-24	2024-25	2025-26	Change 2021-22 to 2025-26
20 mm with 250kL usage	755	755	755	755	755	0.0%
25 mm with 1,000kL usage	2,186	2,186	2,186	2,186	2,186	0.0%
40 mm with 2,100kL usage	4,837	4,837	4,837	4,837	4,837	0.0%
80 mm with 21,000kL usage	40,136	40,136	40,136	40,136	40,136	0.0%

Note: Wastewater service prices for non-residential customers are based on water meter size. The applicable meter price is set using the formula: (meter size)2 x 20mm meter price / 400. We have calculated service prices for larger meter sizes using this formula, based on Essential Water's stated 20mm price. We have estimated bills using a standard discharge factor of 70% discharge factor, as indicated in Essential Water's pricing proposal (p 104). Actual bills will depend on discharge factors for individual customers.

Source: IPART analysis.

Taking inflation of 5.1% into account, a typical non-residential customer consuming 250 kL of treated water per year would pay an annual bill of $1,548 under our draft prices in 2022-23 (see Table 10.6). This is $27 lower than the annual bill under Essential Water's proposed prices.

$1,548

IPART's draft decision

$1,575

Essential Water's proposal

Table 10.6 Non-residential treated and untreated water bills ($2022-23) – with inflation

	2022-23	Change from current to 2022-23
Non-residential - treated water		
20 mm with 250kL usage	1,548	5.1%
25 mm with 1,000kL usage	4,224	5.1%
40 mm with 2,100kL usage	9,451	5.1%
80 mm with 21,000kL usage	75,122	5.1%
Non-residential - untreated water (water only, no wastewater)		
20 mm with 250kL usage	794	5.1%
25 mm with 1,000kL usage	2,297	5.1%
40 mm with 2,100kL usage	5,083	5.1%
80 mm with 21,000kL usage	42,183	5.1%

Note: Wastewater service prices for non-residential customers are based on water meter size. The applicable meter price is set using the formula: (meter size)2 x 20mm meter price / 400. We have calculated service prices for larger meter sizes using this formula, based on Essential Water's stated 20mm price. We have estimated bills using a standard discharge factor of 70% discharge factor, as indicated in Essential Water's pricing proposal (p 104). Actual bills will depend on discharge factors for individual customers.

Source: IPART analysis.

10.4 Bills would increase for EW Pipeline customers receiving untreated water

Under our draft prices, bills for EW Pipeline customers would increase (see Table 10.7). This is due to our draft decision, discussed in Chapter 7, to continue transitioning the untreated water usage price for EW Pipeline customers towards a single untreated water usage price. Our analysis shows that before inflation an EW Pipeline customer on a 20mm connection consuming 250 kL per year of untreated water would see its bills increase by around 3.3% a year on average.

Table 10.7 Forecast bills for EW Pipeline customers receiving untreated water ($2021-22) – without inflation

	2021-22 current	2022-23	2023-24	2024-25	2025-26	Change 2021-22 to 2025-26	Average annual change
20 mm with 250kL usage	608	629	650	671	692	13.9%	3.3%
25 mm with 1000kL usage	1,596	1,680	1,764	1,849	1,933	21.1%	4.9%
40 mm with 2100kL usage	3,598	3,775	3,952	4,129	4,306	19.7%	4.6%

Note: This bill only relates to untreated water for EW Pipeline customers. It does not include wastewater.

Source: IPART analysis.

Taking inflation of 5.1% into account, a typical EW Pipeline customer consuming 250 kL of treated water per year would pay an annual bill of $661 under our draft prices in 2022-23 (see Table 10.8). This is $10 lower than the annual bill under Essential Water's proposed prices.

$661

IPART's draft decision

$671

Essential Water's proposal

Table 10.8 EW Pipeline customer bills ($2022-23) – with inflation

	2022-23	Change from current to 2022-23 (%)
Non-residential - untreated water, EW Pipeline customers (water only, no wastewater)		
20 mm with 250kL usage	661	8.7%
25 mm with 1000kL usage	1,766	10.7%
40 mm with 2100kL usage	3,967	10.3%

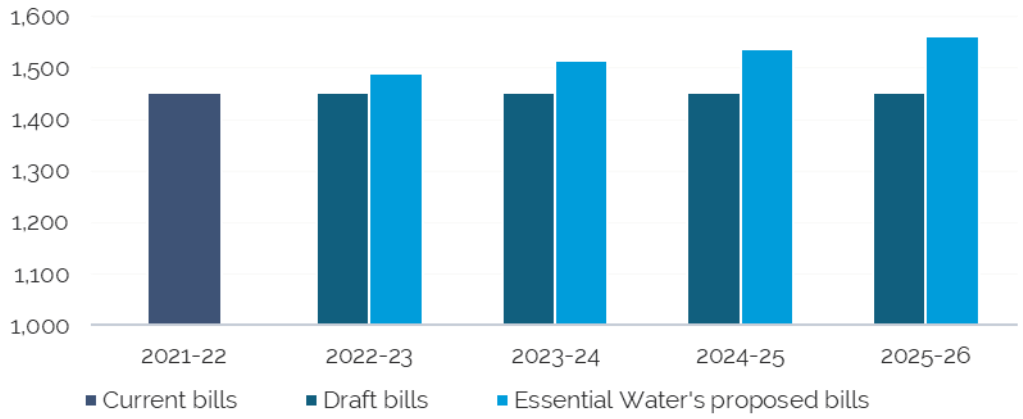
Source: IPART analysis.

10.5 Bill impacts are affordable

We recognise that affordability of water services is a key concern for Broken Hill customers. We received multiple submissions from Broken Hill community members and stakeholders about affordability concerns with any potential bill increase, especially for those experiencing socio-economic disadvantage.

As bills are remaining stable for most customers, we consider they are affordable for residential customers in Broken Hill. A typical residential customers water bill will remain stable over the determination period, before inflation, whereas there will be increases to all components under Essential Water's proposal (see Figure 10.1).[c] Under our draft prices, typical water and wastewater bills would continue to represent about 2.5% of the median household income in Broken Hill.[d]

Figure 10.1 A typical residential customer's water bill under our draft prices, compared to Essential Water's proposed prices ($2021-22) – without inflation



Source: IPART analysis.

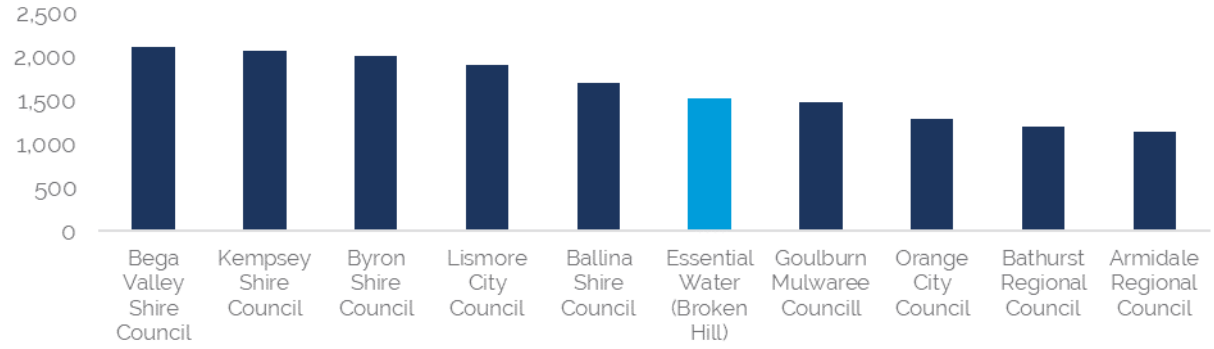
Our draft prices will mean bills are affordable when compared to similar utilities. A typical Broken Hill household would still pay the average bill compared to what typical households serviced by similar water and wastewater utilities in NSW pay (see Figure 10.2).[e]

[c] Essential Water's proposed prices and bill impacts include an affordability subsidy.

[d] The average annual income in Broken Hill is $57,785 per year. This is based on 2016 ABS Census data and adjusted with inflation to $2022-23.

[e] We compared our draft bill impacts for a typical Broken Hill customer against typical residential bills for the same water utilities used in Essential Water's proposal (p 28). These nine water utilities are comparable because they service similar customer numbers.

Figure 10.2 Typical residential customer bills for comparable water utilities ($2022-23)



Source: IPART analysis.

Chapter 11

Implications of pricing decisions

11

Implications of our pricing decisions

Essential Water will be able to meet service standards for Broken Hill

Our draft decisions will allow Essential Water to achieve both operating and capital efficiency savings. Essential Water will be able to achieve service standards at or above those expected by customers and to meet the standards required by its regulators.

There are no financeability concerns for Essential Water as a result of our pricing decisions

As a result of our benchmark financeability test, we see no concern for Essential Water to raise finances for its debt, have sufficient operating cash flows to service this debt, and remain financeable during the regulatory period.

We have considered impacts on the Consolidated Fund

There are no impacts on the Consolidated Fund as a result of our draft decisions. We also have considered any potential impact on the Consolidated Fund under Section 16 of the IPART Act and have assumed in our decisions that the NSW Government will continue its subsidy of the WaterNSW Pipeline. Any tax implications of the NSW Government contribution is a matter between the NSW Government and Essential Water.

Essential Water can recover all efficient costs in meeting its environmental obligations

In determining Essential Water's revenue requirements, we have ensured it can fully recover all efficient costs it incurs in meetings its environmental obligations. Essential Water has environmental obligations to the NSW Government and has environmental protection programs that place a cost on its business.

There are no impacts on general inflation as a result of our pricing determination

Our draft decisions have no impact on general inflation because Essential Water has a significantly smaller customer base compared to Sydney Water and prices are generally remaining constant.

11.1 Essential Water will be able to meet service standards for Broken Hill

Under our determination, we expect Essential Water to achieve both operating and capital efficiency savings and are satisfied that Essential Water can achieve these savings. We consider Essential Water would receive sufficient revenue if it receives our recommended NSW Government funding contribution. The NSW Government funding is to help Essential Water achieve service standards at or above those expected by customers and to meet the standards required by its regulators.

Essential Water considered its proposal would permit it to provide services in accordance with regulatory requirements. This was based on its proposed operating and capital expenditure.[122]

Although Essential Water receives a low number of complaints and customers have told us that water quality has improved, its network has a high rate of main breaks and chokes. We consider our draft decisions on Essential Water's operating and capital costs will enable it to do the infrastructure repairs and upgrades to meet service standards.

While we are accepting most of Essential Water's proposal on capital expenditure, we have applied efficiencies that reflect AECOM's views on reasonable timing for Essential Water's capital projects and a reasonable allowance for capitalised corporate overheads in 2021-22.

Our draft decisions provide an efficient allowance for Essential Water to upgrade and repair ageing infrastructure at an efficient cost in this determination period. As outlined in Chapter 4. key capital expenditure projects that will help Essential Water meet service standards are:

- replacing Wills Street WWTP
- water and sewer reticulation repairs and replacements
- Mica Street service reservoir replacement
- Mica Street concrete remediation
- Rocky Hill service reservoir refurbishment and replacement
- non system expenditure on IT, motor vehicles, buildings, fittings, furniture, plant and equipment.

11.2 There are no financeability concerns for Essential Water as a result of our draft decisions

Under our draft decisions, we do not see any financeability concerns for Essential Water resulting from our benchmark financeability test.

Before finalising our pricing decisions, we undertake a financeability test to assess how our pricing decisions are likely to affect the business's financial sustainability and ability to raise funds to manage its activities over the upcoming regulatory period.

To assess Essential Water's financeability over the 2022 determination period, we analysed its forecast financial performance, financial position and cash flows for both the benchmark and actual business. We then forecast financial ratios for the benchmark test and assessed Essential Water's financial ratios against our target ratios. See Box 11.1 for a description of our financeability target ratios.

We conduct financeability tests using 3 steps

1. calculate using our standard financial ratios
2. analyse the trends over the determination period
3. conclude whether there is a finaceability concern or not.

Step 1: Calculate our standard financial ratios

We have conducted the financeability test using the revenues and costs for Essential Water only (i.e. as opposed to Essential Energy as a whole). This is consistent with our decisions for Essential Water's tax allowance and post-tax WACC parameters.

We assume that Essential Water would recover our full Notional Revenue Requirement (NRR) for the water and wastewater businesses. That is, we assume our recommended NSW Government funding contribution is accepted.

While, Essential Water is part of a larger consolidated business (Essential Energy), we do not have enough financial information from Essential Energy to conduct a benchmark and actual financeability test on Essential Energy as an entity. Therefore, we can only conduct a benchmark test on Essential Water as an entity.

Box 11.1 Our financeability target ratios for the benchmark test

Real Interest Coverage Ratio (RICR) >2.2x

The RICR is a measure of the business's ability to service interest payments on debt. We developed our target value for the RICR with reference to the RICR used by Moody's, S&P Global and Fitch Ratings. In 2018 we reviewed how we conduct financeability tests and concluded that the RICR should be set at >2.2x.

Real FFO over Debt >7.0%

FFO over Debt measures how much free cash a business generates (i.e. after covering its operating costs, interest expense and tax) relative to the size of its total borrowings. Therefore it is a measurement of a business's ability to generate cash flows to repay the principal of the debt.

Net Debt/RAB Gearing ratio <70%

Box 11.1 Our financeability target ratios for the benchmark test

Gearing is a measurement of the entity's financial leverage, which demonstrates the degree to which it is funded by creditors. In our 2018 review of financeability tests, we placed greater emphasis on the RICR and the FFO over Debt ratios and place less emphasis on the Gearing ratio. These 2 ratios are both measures of whether the business generates sufficient cash flows to remain financeable. Our view is that focusing on the cash flows of the business is very important in assessing financeability.

Source: IPART, Review of our financeability test, November 2018, p 50.

Step 2: Analyse the trends in the financial ratios over the 2022 determination period

Table 11.1 Draft Report Financeability test results

	Target ratios	2022-23	2023-24	2024-25	2025-26
Real Interest Coverage Ratio (RICR)					
Benchmark test	>2.2x	4.4x	4.5x	4.5x	4.6x
Does it meet the target?		✓	✓	✓	✓
Real FFO / Net Debt					
Benchmark test	>7.0%	6.2%	6.3%	6.4%	6.5%
Does it meet the target?		✗	✗	✗	✗
Net Debt / RAB					
Benchmark test	<70%	60%	60%	60%	60%
Does it meet the target?		✓	✓	✓	✓

Source: IPART analysis

Benchmark test – RICR

Essential Water is expected to meet the benchmark target for RICR of 2.2x over the 2022 determination period. By consistently meeting the target, this indicates that it can comfortably meet its annual interest expense. Meeting interest expense is critical for any business.

Essential Water is forecast to have a minimum headroom of 2.2x from the target RICR ratio of 2.2x over the 2022 determination period. This indicates that it has strong cash flows that can withstand some financial shocks before it is unable to meet its annual interest expense.

The current low WACC environment primarily contributes to this benchmark result.

Benchmark test – Real FFO over Debt

Essential Water is forecast to be below our target by 0.65 percentage points on average over the 2022 determination period. Essential Water's FFO over debt is trending upwards over the determination period to 6.5% in 2024-25. The results relate to higher capital expenditure over the determination as outlined in Chapter 4. We assume this capital expenditure will require more debt funding compared to the 2019 determination period.

The underperformance is driven by:

- The FFO[a] is being affected by the current low WACC of 2.9%, which is causing lower returns on assets. An increase in the WACC between the Draft and Final Report may improve the results, however it will not be enough to offset 2 other factors discussed below.
- Our draft decision to increase Essential Water's capital expenditure, even with some efficiency savings, is still placing downward pressure on its FFO over Debt ratio.
- Essential Water is investing in assets with very long economic lives which results in lower depreciation allowances.

These factors have put downward pressure on the FFO over Debt ratio so that it is below the target ratio throughout the 2022 determination period.

The results of the FFO over Debt ratio in the benchmark test does not mean that there is a medium or long term financeability concern for Essential Water. The underperformance in the short-term can be explained by lower returns on assets as a result of the low WACC of 2.9%, these assets having long lives and being mostly funded by debt.

Step 3: Conclusion

Reading the benchmark results together, we did not identify a financeability concern for Essential Water. It is our view that Essential Water can remain financially sustainable and continue to provide sustainable services over the determination period.

Below we outline a range of other factors that support Essential Water's financeability over the 2022 determination period.

There is significant headroom in the RICR

Essential Water is forecast to have a RICR well above the target over the 2022 determination period. This indicates that Essential Water could still comfortably meet its interest payments, even if interest rates increase significantly over the determination period, under our benchmark assumptions.

[a] In our 2018 Financeability Review, we defined FFO as: FFO = NRR – Operating expenditure – Tax – Changes in Working Capital – Return on Debt (i.e. RAB x cost of debt)

The FFO over Debt result is not significant in the medium-long term

Essential Water is forecast to have an average FFO over Debt of 6.35%, which is below the target. The low FFO over Debt ratio is explained by the combined effects of the current low WACC, low interest rate environment. Further, Essential Water has an asset base of relatively long-lived assets (which means the initial investment in assets is recovered over a relatively long period of time through the depreciation allowance). In particular, we have allowed a higher level of capital expenditure in this review (see Chapter 4).

Transparent and predictable regulatory framework results in revenue predictability

We have followed the well-established principles of the building block framework when reviewing and setting Essential Water's prices and revenue allowances over the 2022 determination period. We consider the transparency of the regulatory framework and the revenue stability and predictability that is generated supports its long-term financial sustainability.

The visibility of future cash flows that is generated by the regulatory framework provides Essential Water with an opportunity to implement counter measures to protect its credit risk profiles. These counter measures could include finding efficiency savings, re-profiling expenditure, seeking equity injections or using retained earnings or dividends to pay down debt.

Essential Water and NSW Treasury can consider the results of our test to address any actual financeability concerns the business may face as a result of its financing and investment decisions.

11.3 We have considered impacts on the Consolidated Fund

Under section 16 of the IPART Act, IPART is required to report on the likely impact to the Consolidated Fund if prices are not increased to the maximum levels permitted. If this is the case, then the level of tax equivalents and dividends paid to the Consolidated Fund will fall. The extent of this fall will depend on NSW Treasury's application of its financial distribution policy and how the change affects after-tax profit.

Our financial modelling is based on a tax rate of 30% for pre-tax profit and dividend payments at 70% of after-tax profit. Under our modelling, a $1 decrease in pre-tax profit would result in a loss of revenue to the Consolidated Fund of 49 cents in total, which is 70% of the decrease in after-tax profit of 70 cents.

Our draft prices for the WaterNSW Pipeline will reduce Essential Water's water transportation costs by about 20%, before inflation. This means the level of the Government subsidy would also fall by about 20%. We are also recommending that the Government's commitment to subsidise the WaterNSW Pipeline be extended to cover the entire 2022 determination period. For more information on WaterNSW's Pipeline prices see the Draft Report for our review of WaterNSW's Murray to Broken Hill Pipeline prices.

11.4 Essential Water can recover all efficient costs in meeting its environmental obligations

The DPE is responsible for determining the risk of negative impacts of Essential Water on the environment, and imposing standards or requirements to address these risks and minimise any impacts.

Essential Water's environment-related programs include:

- Water savings initiatives, including the provision of educational resources to manage water consumption, and active monitoring of high water accounts and customer visits to address water consumption.
- The re-use of partially treated wastewater (effluent water) for non-drinking purposes, which is sold to a range of customers in selected areas of Broken Hill.

In determining Essential Water's revenue requirements, we have ensured it can fully recover all efficient costs it incurs in meetings its environmental obligations.

11.5 There are no significant impacts on general inflation as a result of our pricing determination

Under section 15 of the IPART Act, we are required to consider the effect of our determinations on general price inflation.

We have made draft decisions to hold most of Essential Water's water prices constant. Therefore, our decisions will not put upward pressure on general inflation.

Appendix A

Matters to be considered by IPART under Section 15 of the IPART Act

This appendix explains how we have considered matters we are required to consider under the *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act).[a]

A.1 Matters under section 15(1) of the IPART Act

IPART is required under section 15(1) of the IPART Act to have regard to the following matters in making determinations and recommendations:

a. the cost of providing the services concerned

b. the protection of consumers from abuses of monopoly power in terms of prices, pricing policies and standard of services

c. the appropriate rate of return on public sector assets, including appropriate payment of dividends to the Government for the benefit of the people of New South Wales

d. the effect on general price inflation over the medium term

e. the need for greater efficiency in the supply of services so as to reduce costs for the benefit of consumers and taxpayers

f. the need to maintain ecologically sustainable development (within the meaning of section 6 of the *Protection of the Environment Administration Act 1991*) by appropriate pricing policies that take account of all the feasible options available to protect the environment

g. the impact on pricing policies of borrowing, capital and dividend requirements of the government agency concerned and, in particular, the impact of any need to renew or increase relevant assets

h. the impact on pricing policies of any arrangements that the government agency concerned has entered into for the exercise of its functions by some other person or body

i. the need to promote competition in the supply of the services concerned

j. considerations of demand management (including levels of demand) and least cost planning

k. the social impact of the determinations and recommendations

l. standards of quality, reliability and safety of the services concerned (whether those standards are specified by legislation, agreement or otherwise).

Table A.1 outlines the sections of the report that address each matter.

[a] The IPART Act 1992.

Table A.1 Consideration of section 15(1) matters by IPART

Section 15(1)	Report reference
a) Cost of providing the services	Chapters 3 and 4 set out our forecast of the total efficient costs Essential Water will incur to deliver its services (including the WaterNSW Pipeline transportation costs and consequential works). Further detail is provided in Chapters 5 and 6 on other costs, NRR and forecast water sales and demand.
b) Protection of consumers from abuses of monopoly power	We consider our decisions will protect consumers from abuses of monopoly power, as they reflect the efficient costs Essential Water requires to deliver its services. This is addressed throughout the report, particularly in Chapters 7 to 10 where we set out our draft pricing decisions.
c) Appropriate rate of return and dividends	Chapter 5 outlines that we have allowed a market-based rate of return on debt and equity, and that this will enable a benchmark business an efficient level of dividends to its owner.
d) Effect on general price inflation	Chapter 11 outlines that the impact of our draft prices on general inflation is negligible.
e) Need for greater efficiency in the supply of services	Chapters 3 and 4 set out our decisions on Essential Water's prudent historical expenditure and efficient forecast expenditure. We have continued to incorporate an on-going efficiency adjustment to its operating expenditure. Further, Chapter 2 discusses our decision to continue to use an efficiency carryover mechanism to encourage Essential Water to identify further efficiencies.
f) Ecologically sustainable development	Chapters 3 and 4 set out Essential Water's historical expenditure and efficient forecast expenditure that allows it to meet all of its regulatory requirements, including its environmental obligations.
g) Impact on borrowing, capital and dividend requirements	Chapters 5 and 11 explain how we have provided Essential Water with an allowance for a return on and of capital, and our assessment of financeability.
h) Impact on pricing policies of any arrangements that the government agency concerned has entered into for the exercise of its functions by some other person or body	Chapters 3 and 4 determine Essential Water's prudent historical and forecast efficient expenditure, including the efficient costs of any contracted works to deliver its capital expenditure.
i) Need to promote competition	In determining efficient costs, we have been mindful of relevant principles such as competitive neutrality. However, we have also been mindful of the NSW Government's commitment and have recommended a contribution as set out in Chapter 5. This means that our prices recover less than Essential Water's efficient costs and would be below the prices expected to prevail in a competitive market.
j) Considerations of demand management and least cost planning	Chapters 7 and 8 outlines how we have set usage prices with reference to marginal cost to send price signals to consumers about the impact of their demand on Essential Water's supply capacity.
k) Social impact	Chapters 10 and 11 consider the potential impact of our pricing decisions on Essential Water, its customers and the NSW Government (on behalf of the broader community).
l) Standards of quality, reliability and safety	Chapters 3, 4 and 11 detail our assessment of Essential Water's prudent historical and efficient forecast costs so that it can meet the required standards of quality, reliability and safety in delivering its services. Section 11.1 outlines the implications of our decisions on Essential Water's service standards.

Appendix B

Essential Water's regulatory framework

B.1 We set maximum prices for water, wastewater and other related services provided by Essential Water

In this review, our role is to regulate the prices Essential Water can charge its customers for water, wastewater, and other water-related services. The goal of this review is to set prices that allow Essential Water to provide services of the quality its customers expect. We also want to ensure that Essential Water charges no more or no less than it needs to.

The way we regulate these prices is by setting the maximum prices Essential Water can charge for each water-related service in each year of the determination period. We discuss our decisions on this matter in Chapter 2 of this paper.

Our role in setting Essential Water's prices is set out by the *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act). The IPART Act also sets out the matters that we must consider in making our pricing decisions to ensure consumers are protected, service standards are maintained, and prices generate enough money to cover the costs of providing services. These matters are set out in Appendix A of this paper.

B.2 We consider a range of requirements for Essential Water when setting prices

A number of regulators oversee Essential Water's water and wastewater functions. Essential Water's primary regulators are listed in Table B.1.

Table B.1 Essential Water's legislative obligations

Regulator	Responsibility
IPART	Sets the maximum prices that Essential Water can charge to its customers for delivering water, wastewater and other water-related activities.
Department Planning and Environment	Administers ministerial approval to construct, extend or modify works for water and wastewater treatment, and for reusing effluent and biosolids. It also oversees the performance of local water utilities and publishes annual performance monitoring data and reports which benchmarks the performance of all NSW water utilities.
Dam Safety Committee	Responsible for formulating measures to ensure the safety of dams and maintaining the surveillance of prescribed dams. This includes those dams under the management of Essential Water.
NSW Health	Responsible for regulating the quality and safety of Essential Water's drinking water, consistent with the *Australian Drinking Water Guidelines 2011*.
NSW Environment Protection Authority (EPA)	Responsible for licencing and monitoring the wastewater discharges from Essential Water's wastewater system under the *Protection of the Environment Operation Act 1997*.
Natural Resource Access Regulator	Responsible for compliance and enforcement of natural resources management legislation. Essential Water's water licence limits its extraction of water from surface and groundwater sources under the *Water Management Act 2000* and the *Water Act 1912*.

Appendix C

Essential Water' services and operations

Essential Water is an operating division of Essential Energy,[123] which is a NSW Government State Owned Corporation responsible for the poles and wires that deliver electricity to 95% of NSW and parts of southern Queensland.[124]

Essential Water provides water, wastewater, trade waste and miscellaneous services to around 18,000 people in Broken Hill, Menindee, Silverton and Sunset Strip.[125] Its water supply functions are set out in the *Water Management Act 2000*.

This appendix provides an overview of Essential Water's services and operations.

C.1 Water supply services

Essential Water supplies water to around 10,500 customers in Broken Hill, Menindee, Silverton and Sunset Strip, as well as rural customers.[126] In doing so, it provides the following water services:

- **Treated water** – also known as drinking water or potable water – to Broken Hill and Menindee.
- **Untreated water** – also known as raw water – to some locations in Broken Hill and Menindee, and to customers along the EW Pipelines (i.e. the Menindee, Stephens Creek and Umberumberka pipelines).
- **Chlorinated water** – which is raw water that has been disinfected but not filtered – to customers in Silverton and Sunset Strip.
- **Recycled water** – wastewater that has been treated before being re-used or discharged to the environment – to a small number of customers for a range of non-potable uses.[127]

C.2 Wastewater services

Essential Water provides wastewater services to around 9,700 properties in the city of Broken Hill.[128] It operates 2 wastewater treatment plants, and after treating, sells some of this water as recycled water. The remainder is discharged to the environment.[129]

C.3 Trade waste and miscellaneous services

Trade waste is the wastewater from commercial and industrial customers in which the concentrations of pollutants exceed the level contained in household wastewater. Essential Water provides trade waste services to non-residential customers in the city of Broken Hill only.

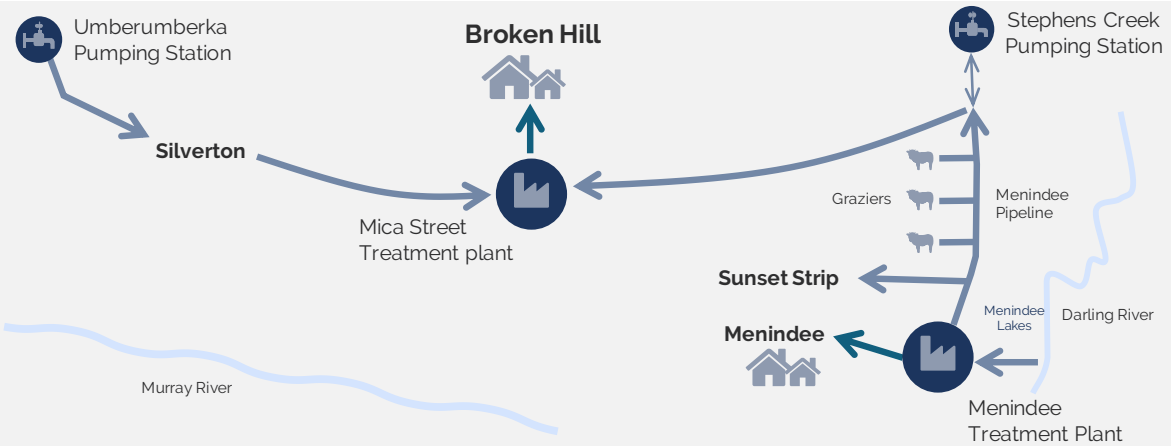
Essential Water also provides a range of miscellaneous services to its water and wastewater customers. These are generally one-off services such as connections and disconnections, replacing damaged services, plumbing inspections, site inspections and building plan approvals. Charges for these miscellaneous services are levied on a small number of customers and are charged on an as-needed basis.

C.4 Essential Water's past operations

Essential Water previously sourced most of its bulk water from the Darling River, using a pipeline from the Menindee Lakes (see Figure C.1).

To supply water to Broken Hill customers, water from Menindee was pumped from its source at the Darling River to the Mica Street water treatment plant in Broken Hill. In addition to the Menindee pipeline, Essential Water also managed other water sources, including Stephens Creek Reservoir and Umberumberka Dam.

Figure C.1 Essential Water's previous water supply network



Note: Map not to scale, for illustrative purposes only.
Source: IPART analysis, based on information provided by Essential Water.

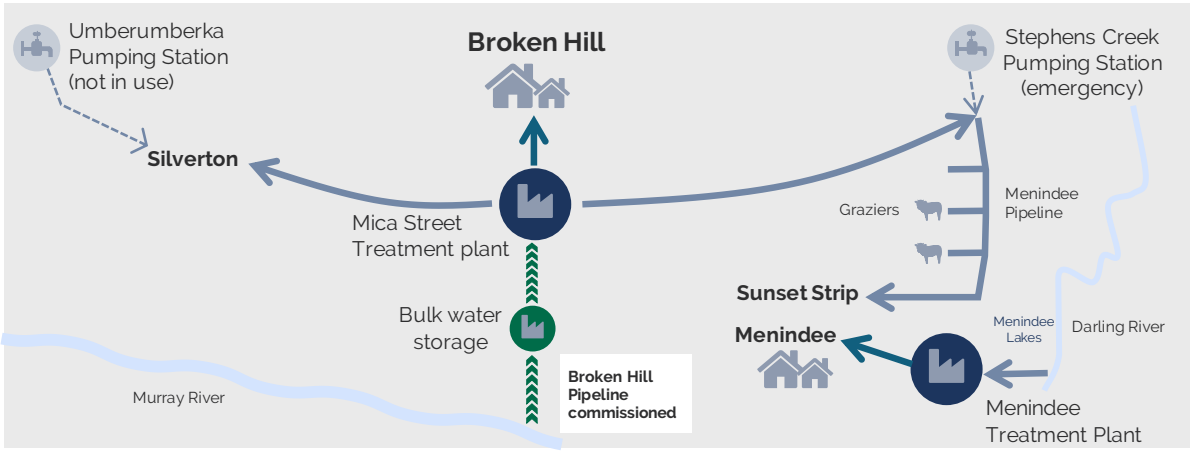
C.5 Essential Water's current operations

Essential Water now sources most of its bulk water from the Murray River. It comes via the WaterNSW Pipeline to its Mica Street water treatment plant in Broken Hill (see Figure C.2).

When the WaterNSW Pipeline became operational during the 2019 determination period, it meant that:

- Treated and untreated water customers in Broken Hill, as well as chlorinated water customers in Silverton and Sunset Strip, began receiving water sourced from the Murray River.
- There was a change in the direction of water flowing through the Menindee, Stephens Creek and Umberumberka pipelines. Customers along these EW Pipelines now source untreated water from the Murray River, rather than the Darling River.
- Customers in Menindee continued receiving water from the Darling River.

Figure C.2 Essential Water's current water supply network



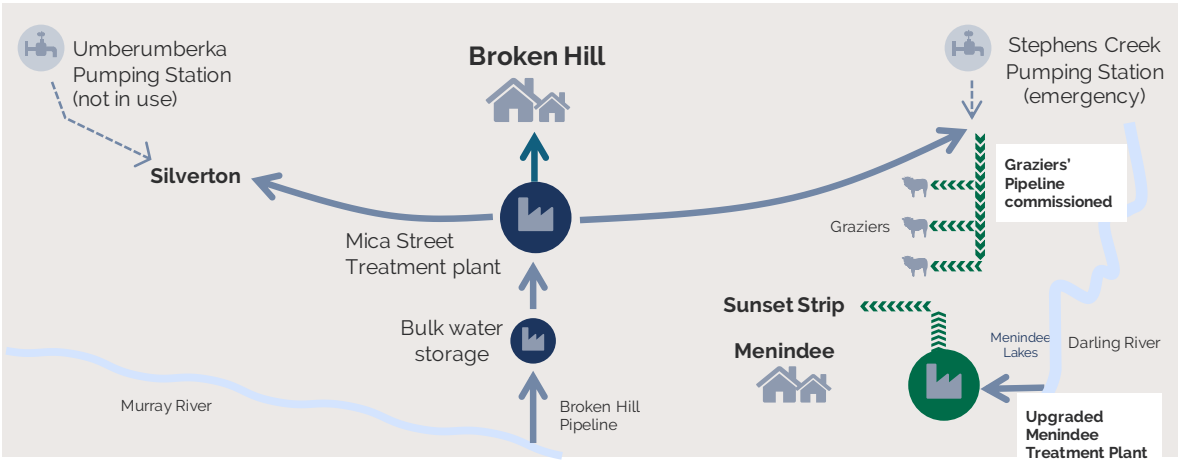
Note: Map not to scale, for illustrative purposes only.
Source: IPART analysis, based on information provided by Essential Water.

C.6 Essential Water's proposed operations

Essential Water's pricing proposal includes 2 main changes to its existing water supply network, which are summarised in Figure C.3. Essential Water has proposed:

- Providing customers in Sunset Strip with treated water sourced from the Darling River from a new water treatment plant in Menindee.
- Constructing a new pipeline (the Graziers' Pipeline) to replace the existing Menindee pipeline to continue providing untreated water to 11 graziers.

Figure C.3 Essential Water's proposed water supply network



Note: Map not to scale, for illustrative purposes only.
Source: IPART analysis, based on information provided by Essential Water.

Appendix D

Weighted average cost of capital

To calculate an allowance for the return on assets in the revenue requirement, we multiply the value of the regulatory asset base in each year of the determination period by an appropriate rate of return. To do this, we determine the rate of return using a weighted average cost of capital (WACC).

This appendix shows the parameters we used to calculate the WACC and explains our decision about how to treat annual changes in the WACC over the 2022 determination period.

D.1 We use our standard approach to calculate the WACC

We used our standard methodology to calculate the WACC. Under our approach we estimate one WACC based on current market data and one based on long-term average data. When our uncertainty index, which indicates the level of volatility in capital markets, is within one standard deviation of its mean value, we select the mid-point of the current and long-term WACC values. The uncertainty index is currently within this range.

Table 1 sets out the parameters used to derive the 2.9% post-tax real WACC.

Table D.1 WACC calculation using IPART's standard approach

	Step 1 – Market data		Step 2 – Final WACC range		
	Current	**Long term**	**Lower**	**Mid-point**	**Upper**
Nominal risk-free rate	1.6%	2.5%			
Inflation	2.4%	2.4%			
Implied Debt Margin	2.1%	2.3%			
Market Risk premium	8.4%	6.0%			
Debt funding	60%	60%			
Equity funding	40%	40%			
Total funding (debt + equity)	100%	100%			
Gamma	0.25	0.25			
Corporate tax rate	30%	30%			
Effective tax rate for equity	30%	30%			
Effective tax rate for debt	30%	30%			
Equity beta	0.70	0.70			
Cost of equity (nominal post-tax)	7.5%	6.7%			
Cost of equity (real post-tax)	5.0%	4.2%			
Cost of debt (nominal pre-tax)	3.7%	4.8%			
Cost of debt (real pre-tax)	1.3%	2.3%			
Nominal vanilla (nominal post-tax) WACC	5.2%	5.6%	5.2%	5.4%	5.6%
Post-tax real WACC	**2.7%**	**3.1%**	**2.7%**	**2.9%**	**3.1%**
Pre-tax nominal WACC	6.1%	6.3%	6.1%	6.2%	6.3%
Pre-tax real WACC point estimate	3.6%	3.8%	3.6%	3.7%	3.8%

Source: IPART calculations.

D.2 Our methodology to calculate WACC parameters

Sections D.3 to D.7 explain the methodology for each parameter used to calculate the WACC under our standard approach.

D.3 Gearing and beta

In selecting proxy industries, we consider the type of business the firm is in. If we can't directly identify proxy firms that are in the same business, we would consider what other industries exhibit returns that are comparably sensitive to market returns.

We adopted the standard values of 60% gearing and an equity beta of 0.7. We undertook preliminary proxy company analysis on several different types of industries with risk profiles that appear similar to water utilities. The results for the electric utilities industry and the multiline utilities activity support continuing to use an equity beta of 0.7 when 60% gearing is used. While some other industries and activities analysed suggest a higher beta, the sample sizes for those proxy groupings are too small to warrant making what would be a major change from the status quo.

D.4 Sampling dates for market observations

We sampled all market observations to the end of December 2021. We decided not to sample at a later date because:

- sampling at a different time of year creates unnecessary complexity and may introduce seasonal effects
- failing to use the most up-to-date market data is not a particular problem given we use the trailing average cost of debt, which minimises the impact of any one interest rate sample
- any movements in the cost of debt within the determination period will be picked up in our true-up calculation.

For earlier years in the trailing average calculation of the historic cost of debt we sampled to the end of March in each year.

Our inflation forecast was produced using IPART's standard approach,[130] with the Reserve Bank of Australia 1 year ahead forecast sourced from the February 2021 Statement of Monetary Policy.

D.5 Tax rate

We assumed the Benchmark Equivalent Entity is a large public water utility. The scale economies that are important to firms of this type suggested the Benchmark Equivalent Entity would be likely to be well above the turnover threshold at which a firm becomes ineligible for a reduced corporate income tax rate. Therefore, we used a tax rate of 30%.

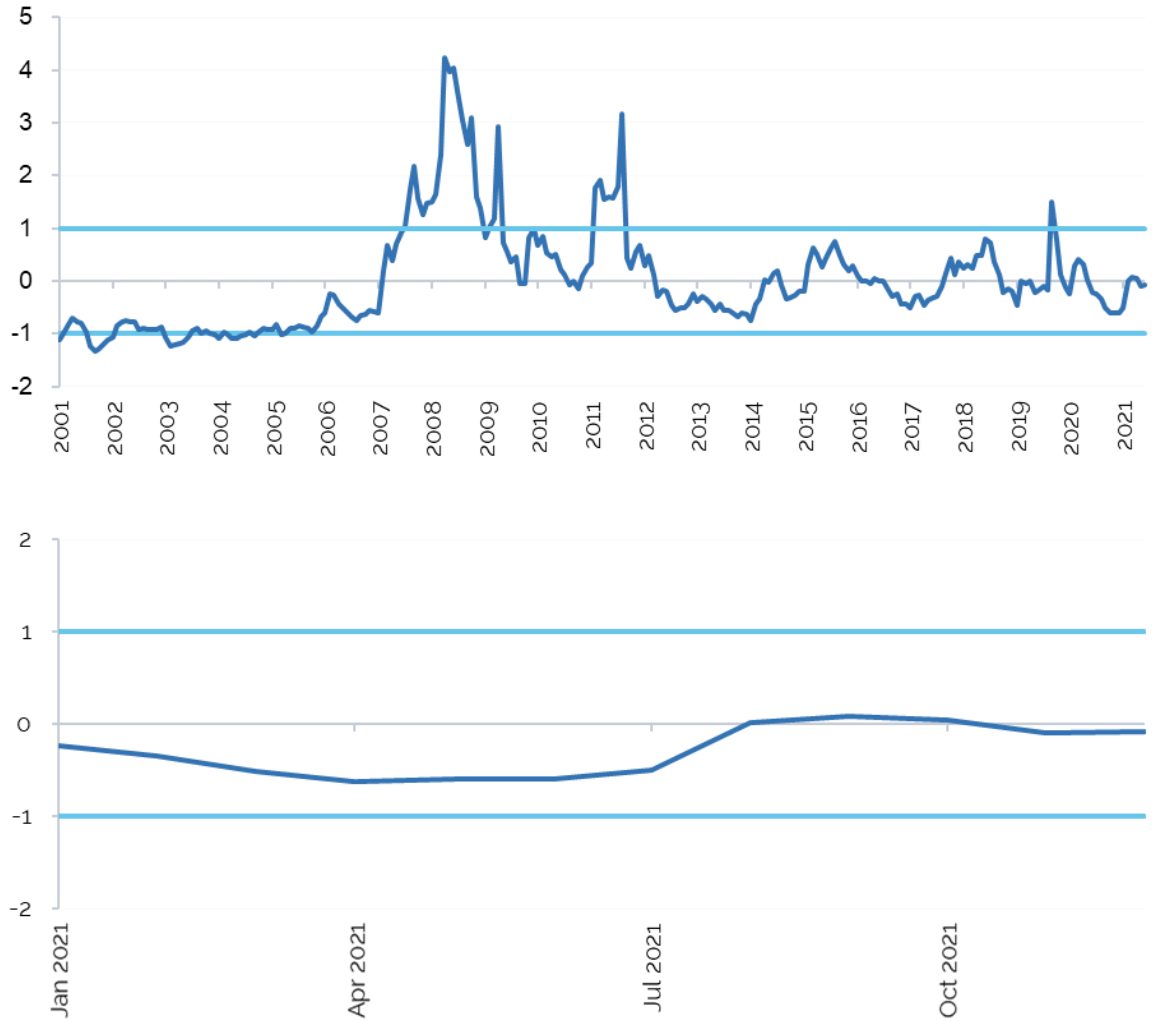
D.6 Application of trailing average method

Our 2018 review of the WACC method introduced a decision to estimate both the long-term and current cost of debt using a trailing average approach, which updates the cost of debt annually over the regulatory period. As foreshadowed in our 2018 review of the WACC method, we employed a transition to trailing average in the calculations presented above.

D.7 Uncertainty index

We tested the uncertainty index for market observations to the end of December 2021. It was within the bounds of plus and minus one standard deviation of the long-term mean value of zero. Therefore, we maintained the default 50%/50% weighting between current and historic market estimates of the cost of debt and the cost of equity (Figure D.1).

Figure D.1 IPART's uncertainty index



Source: Refinitiv and IPART calculations.

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