Independent Pricing and Regulatory Tribunal
New South Wales

REVIEW OF PRICES FOR HUNTER WATER CORPORATION

FROM 1 JULY 2020

Final Report

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The Independent Pricing and Regulatory Tribunal (IPART)

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1 Executive summary

The Independent Pricing and Regulatory Tribunal of NSW (IPART or 'we') is responsible for determining the maximum prices Hunter Water Corporation (Hunter Water) can charge for the water, wastewater and stormwater services it provides to residential and non-residential customers. We have decided to set prices for four years, from 1 July 2020 to 30 June 2024 (the 2020 determination period). We also:

- Determined maximum prices for its trade waste services and miscellaneous services.
- Reviewed Hunter Water's recycled water prices for its 'mandatory' schemes, in line with our 2019 Final Report on our approach to regulating the public water utilities' recycled water prices.[1]
- Specified the maximum dishonoured or declined payment fees that Hunter Water can charge.[2]

We consulted extensively with Hunter Water and other stakeholders

Our review has spanned the last 12 months, and commenced with a pricing proposal that Hunter Water submitted on 1 July 2019. We conducted extensive consultation with Hunter Water and other stakeholders, including releasing an Issues Paper and a Draft Report, to which we invited written submissions and online feedback. We also held a public hearing and an after-hours drop-in session in Newcastle. We took all stakeholder views into account in making our decisions.[3]

1.1 Hunter Water's area of operations has faced low water storage levels during our review

Hunter Water's dams have been at low storage levels during our review, triggering water restrictions for the first time since the early 1990s. This has intensified the focus in this review on the price charged per kL of water.[4]

In response, we have decided to accept Hunter Water's proposal and introduce a dynamic water usage price, with a price uplift that applies in times of low water storage levels. What this means is that customers pay more for water when water storage levels are below 60% until they return to 70% (with a 31-day lag). This allows Hunter Water to recover the efficient costs it incurs to ensure the supply of water in times of low water storage levels, and takes into account the impact of restrictions on the volume of water sold. It also signals to customers

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

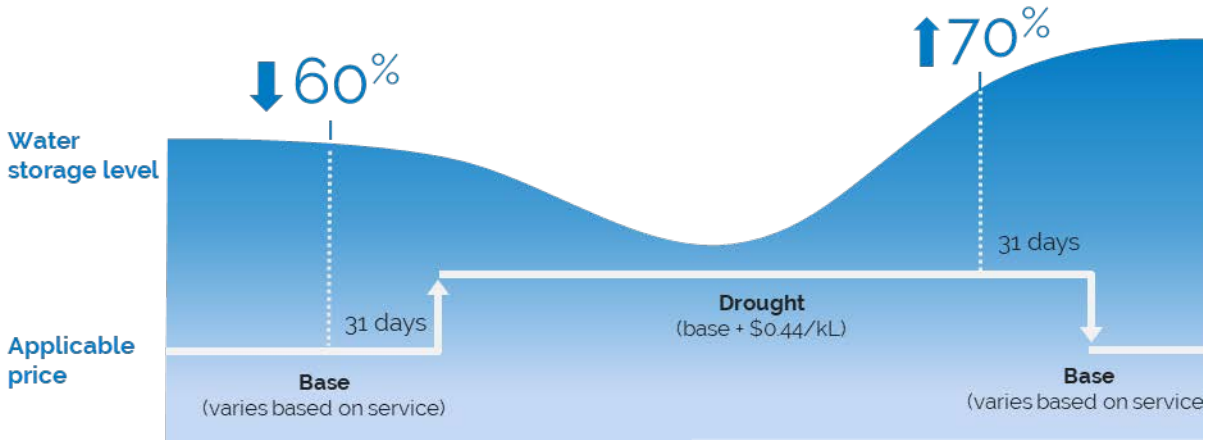
2 We received a referral to undertake this review from the Premier under section 12A of the IPART Act as a dishonoured or declined payment fee is not a fee for the provision of a monopoly service.

3 Hunter Water's Pricing Proposal, our Issues Paper and Draft Report, submissions received and the transcript of our Public Hearing can be found on our website, https://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Metro-Pricing/Prices-for-Hunter-Water-Corporation-from-1-July-2020.

4 In this report, we may use 'drought' as shorthand for when water storage levels reach 60% and below, and therefore trigger actions such as restrictions and the need for additional water supply augmentation and conservation measures; this does not necessarily mean there is technically a drought.

through the higher price that it is a time when water conservation is particularly important, and rewards customers that reduce their water consumption.

Figure 1.1 How the dynamic usage price works



We have also decided to increase Hunter Water's base water usage price, and reduce its fixed water service charge. This ensures the water usage price reflects the long run marginal costs of supplying water, and provides signals to customers to promote the efficient use and conservation of water.

In addition, we have decided to phase out the discount currently given to large, non-residential users of water. This decision means that large users will no longer pay less per kL of water because they are using more. We have decided to delay transitioning the removal of this discount by a year, to provide large users with time to investigate alternative water supply solutions, such as onsite recycling.

In line with our recycled water framework, we have allowed Hunter Water to retain revenue from its sales of recycled water from least-cost schemes where this has displaced potable water sales. This provides it with a greater incentive to pursue recycled water initiatives that save potable water.

1.2 We have balanced the risks faced by Hunter Water so it can continue to deliver its services while remaining financially sustainable

A dynamic usage price will mitigate the risk of low water storages in continued or future drought-like conditions. This reduces Hunter Water's cost and revenue risks related to climate variability.

We have disaggregated Hunter Water's Regulatory Asset Base from 4 to 21 asset categories. This ensures that we can set more accurate asset lives for different types and classes of assets. We have also reduced the lives of assets we use compared to our previous Determination. These decisions have increased Hunter Water's depreciation allowance by 84.4% when compared to the depreciation allowance we used to set prices in the previous determination period. This will contribute to ensuring Hunter Water's financial sustainability over the next four years, while also ensuring an equitable distribution of capital costs between current and future customers.

We have also set Hunter Water's prices at levels that reflect increasing operating and capital expenditure allowances. Hunter Water's average annual operating expenditure will be 10.4% higher compared to that used to set prices in the previous determination period. Its level of capital expenditure will be 64.2% higher than that used to set prices for the last determination period.

Our decisions reflect our view that Hunter Water's operating and capital expenditure need to increase to ensure that the level of service to customers does not deteriorate. While our decision on the efficient level of expenditure over the 2020 determination period is lower than proposed by Hunter Water, it is still considerably higher than we used to set prices in 2016. This will help maintain assets and the services they deliver, avoid service interruptions or future higher costs from asset failure, and enable Hunter Water to deliver better environmental outcomes for its customers and the community.

Our existing regulatory mechanisms also moderate risks faced by Hunter Water. Our demand volatility adjustment mechanism will ensure that Hunter Water does not materially under or over recover on its revenue requirement due to any differences between forecast and actual water sales over the 2020 determination period. Our approach to 'truing up' the trailing average cost of debt addresses refinancing risk.

As a result of these and our other decisions, including the higher Weighted Average Cost of Capital (WACC) compared to the WACC we used for our Draft Report, Hunter Water meets the metrics under our financeability test, on average, over the determination period, meaning it is financially sustainable and will be able to continue to provide its services to customers.

Table 1.1 Hunter Water's financeability test results over 2020 determination period

	Benchmark		Actual[a]	
	Target	Average 2020-21 to 2023-24	Target	Average 2020-21 to 2023-24
Interest cover	>2.2x	4.2x	>1.8x	2.5x
▼ Pass / fail		✓		✓
FFO over debt	>7.0%	7.0%	>6.0%	6.1%
▼ Pass / fail		✓		✓
Gearing	<70%	60%	<70%	52%
▼ Pass / fail		✓		✓

a Using 4.2% cost of debt, consistent with updated information provided by Hunter Water.

1.3 We have taken steps to ensure Hunter Water's prices remain affordable

We have set prices at levels to provide Hunter Water with sufficient revenue to ensure a sustainable and resilient water and wastewater supply network, while also ensuring that Hunter Water's customers pay no more than the efficient costs of the services they receive.

In addition to specific adjustments to Hunter Water's operating and capital expenditure allowances to bring it to the efficiency frontier, we have also applied a continuing efficiency adjustment to these allowances to provide further incentives for Hunter Water to innovate and continually look for efficiency gains for the benefit of its customers.

As a result of our demand volatility adjustment mechanism, Hunter Water will be returning $10.1 million to customers in the form of lower prices in the 2020 determination period, due to water sales exceeding forecast levels in the previous determination period.

We have accepted Hunter Water's proposal to remove the Environmental Improvement Charge, which it previously used to fund backlog sewerage schemes. This is a saving of $41 per year for most customers.

Prices for major residential services are shown in Table 1.2. These prices are in $2020-21, which means they will be adjusted for inflation from 2021-22 onwards.

Table 1.2 Prices for major residential services from 1 July 2020

	2019-20	2020-21	2021-22	2022-23	2023-24	Change
Charge description	**($2019-20)**	**($2020-21)**				**2020-2024[c]**
Water						
Base usage ($/kL)	2.37	2.46	2.49	2.51	2.54	7.2%
Uplifted usage[a] ($/kL)	-	2.90	2.93	2.95	2.98	-
Service – houses & apartments	100.40	24.26	24.26	24.26	24.26	-75.8%
Wastewater						
Service – houses[b]	649.28	694.43	694.43	694.43	694.43	7.0%
Service – apartments[b]	535.66	590.26	607.62	624.98	642.34	19.9%
Stormwater						
Houses	79.63	85.35	85.35	85.35	85.35	7.2%
Apartments	29.47	31.58	31.58	31.58	31.58	7.2%

[a] Applies when dam levels fall below 60% and remains in place until dam levels return to 70%.

[b] This is calculated by multiplying the meter connection charge by a discharge factor and adding a deemed usage allowance. For example, for 2019-20, the connection charge of $758.51 for houses is multiplied by a 75% discharge factor and a deemed usage allowance of $80.40 is added. Apartments are charged at 82.5% of the total charge for houses in 2019-20. This increases by 2.5% each year over the 2020 determination period.

[c] The percentage change includes inflation to $2020-21.

Source: Hunter Water, *Pricing Proposal to IPART*, 1 July 2019, pp 38, 42; *Technical Paper 8*, p 45; and IPART analysis.

As a result of our decisions, the bill for a typical residential customer in a house and a typical pensioner in a house will fall for the first year of the determination period, then increase by slightly more than inflation for each of the following three years. By the end of the determination period, bills for these typical customers will still be less than they are now. As a result of our decision to increase Hunter Water's water usage price, customers that use more water will face larger percentage bill increases than customers that are low water users. This provides an incentive for people to use less water at all times, not just when water storage levels are low.

Bills for typical residential customers in apartments will also fall in the first year of the determination period, but will increase slightly each year to be 1.3% higher than current bills by the end of the determination period (excluding the effects of inflation from 2021-22 to 2023-24). This is due to our transitioning of the wastewater service charges for apartments to match those for houses.

Table 1.3 Bill impacts for typical residential customers

	2019-20	2020-21	2021-22	2022-23	2023-24	Change 2020-2024[a]
Customer (usage)	**($2019-20)**	**($2020-21)**				
House (189 kL)	1,318	1,271	1,276	1,280	1,286	
Annual change	-	*-3.6%*	*0.4%*	*0.3%*	*0.4%*	*-2.5%*
Apartment (115 kL)	979	931	952	971	992	
Annual change	-	*-4.9%*	*2.2%*	*2.1%*	*2.1%*	*-1.3%*
Pensioner (House – 100 kL)	748	737	738	739	741	
Annual change	-	*-1.5%*	*0.2%*	*0.1%*	*0.2%*	*-1.0%*

a The percentage change includes inflation to $2020-21.

Note: Includes stormwater charges and charges for discretionary programs.

The prices for major non-residential services are shown in Table 1.4 below.

Table 1.4 Prices for major non-residential services from 1 July 2020

Charge description	2019-20 ($2019-20)	2020-21 ($2020-21)	2021-22	2022-23	2023-24	Change 2020-2024[e]
Water						
Usage – non-drought[a] ($/kL)	2.37	2.46	2.49	2.51	2.54	7.2%
Usage –drought[b] ($/kL)	-	2.90	2.93	2.95	2.98	-
Service – small customers (20mm meter stand-alone)	100.40	24.26	24.26	24.26	24.26	-75.8%
Service – other (25mm meter equivalent)[c]	156.89	37.91	37.91	37.91	37.91	-75.8%
Wastewater						
Usage non-residential ($/kL)	0.67	0.68	0.68	0.68	0.68	1.5%
Service – small customers (20mm meter stand-alone)[c]	758.51	817.10	817.10	817.10	817.10	7.7%
Service – other (25mm metre equivalent)[c, d]	1,185.18	1,276.72	1,276.72	1,276.72	1,276.72	7.7%
Stormwater						
Small (≤1,000m^2) or low impact	79.63	85.35	85.35	85.35	85.35	7.2%
Medium (1,001 to 10,000m^2)	260.08	278.75	278.75	278.75	278.75	7.2%
Large (10,001 to 45,000m^2)	1,654.10	1,772.82	1,772.82	1,772.82	1,772.82	7.2%
Very large (>45,000m^2)	5,255.48	5,632.68	5,632.68	5,632.68	5,632.68	7.2%

a First 50,000 kL per year. Some users receive a discount for usage exceeding 50,000 kL per year.

b Applies when dam levels fall below 60% and remains in place until dam levels return to 70%.

c Larger meters pay a multiple of the 25mm meter charge depending on the size of the meter.

d This calculation is derived in the same way as for residential customers except a 100% discharge allowance is used.

e The percentage change includes inflation to $2020-21.

Source: Hunter Water, *Pricing Proposal to IPART*, 1 July 2019, pp 38, 42, 45, 49; *Technical Paper 8*, p 15 and IPART analysis.

Bill impacts for non-residential customers are more varied. Non-residential customers that use less water, for example small shops and small industrial firms, will on average experience bills that are lower than current bills by the end of the determination period. This is due to our decisions to reduce the water service charge, and charge for estimated wastewater discharges rather than for a minimum amount of discharge. Non-residential customers that use more water will experience larger percentage bill increases, for example large licensed clubs could expect bills that are 4% higher than now by the end of the determination period (excluding the effects of inflation from 2021-22 to 2023-24). This reflects our decision to increase the water usage price over the next four years, and increases to wastewater charges to allow Hunter Water to undertake additional expenditure on its wastewater system.

Table 1.5 Indicative bill impacts of IPART decisions on prices – non-residential customers

Customer type	2019-20	2020-21	2023-24	Annual change 2019-20 to 2023-24[a]
	$2019-20	$2020-21		
Service station	2,042	2,019	2,051	0.1%
Small shop – 20mm	1,104	1,023	1,031	-1.7%
Small shop – 25mm	1,961	1,907	1,926	-0.5%
Large licensed club	52,300	53,182	54,302	0.9%
Medium licensed hotel	5,736	5,764	5,860	0.5%
Regional shopping centre	320,028	329,885	338,045	1.4%
Large office – Newcastle	20,679	21,022	21,462	0.9%
Regional office – Maitland	6,515	6,508	6,612	0.4%
Small industrial firm	1,065	956	960	-2.6%
Medium industrial firm with location-based charge	313,672	323,061	336,661	1.8%
Large industrial firm with location-based charge and no sewer	391,949	401,662	467,262	4.5%
Large industrial firm with location-based charge and sewer	539,040	553,327	618,927	3.5%
Small nursery low discharge factor	2,233	2,215	2,263	0.3%
Large nursery low discharge factor	15,411	15,642	16,090	1.1%
Fast food outlet	2,675	2,642	2,682	0.1%
Shopping centre – 4,000 kL p.a.	23,442	23,383	23,703	0.3%
Shopping centre – 9,000 kL p.a	32,644	33,272	33,992	1.0%
Large industrial firm – 45,600 kL p.a./50mm meter	122,858	126,774	130,422	1.5%
Large industrial firm – 13,000 kL p.a./multiple meters	43,657	44,705	45,745	1.2%

[a] The percentage change includes inflation to $2020-21.

Source: Hunter Water, *Pricing Proposal to IPART*, 1 July 2019, pp 38, 42; *Technical Paper 8*, p 45; and IPART analysis.

Where prices are increasing, we have phased in changes to mitigate impacts. We are continuing to gradually increase the wastewater service charges paid by customers in apartments to match those paid by customers in houses to reflect that they are receiving the same service. We have delayed by one year increases to large non-residential water users due to the removal of their discounts on the water usage price. We have also delayed by one year restructures to trade waste prices.

1.4 We have given customers more control over their bills

Our decision to increase the water usage price and decrease the water service charge gives all customers more control over their bills. This will reward people for reducing their water usage, and our decision to substantially reduce the water service charge means people that have low water use will have smaller bills than before. For example, a typical residential customer in a house that reduces their water consumption by 15% can save $70 per year.

Table 1.6 Indicative reduction in customer bill following usage reduction for 2020-21

	kL/year	Difference (kL/year)	Bill ($/year)	Difference in bill ($/year)	% reduction in bill[a]
House (typical)	189		1,271		
▼ 30% usage reduction	132	57	1,131	139	11.0%
▼ 15% usage reduction	161	28	1,201	70	5.5%
Apartment (typical)	115		931		
▼ 30% usage reduction	81	35	846	85	9.1%
▼ 15% usage reduction	98	17	888	42	4.6%
Pensioner (house)	100		737		
▼ 30% usage reduction	70	30	663	74	10.0%
▼ 15% usage reduction	85	15	700	37	5.0%
Pensioner (apartment)	100		606		
▼ 30% usage reduction	70	30	532	74	12.2%
▼ 15% usage reduction	85	15	569	37	6.1%

[a] The percentage change includes inflation to $2020-21.

Source: IPART analysis.

Our decision to remove the wastewater discharge allowance (ie, the deemed wastewater discharge volume) for non-residential customers, and instead apply the wastewater usage price explicitly to their actual estimated volumes of wastewater discharge, means they now pay in direct proportion to their wastewater discharges to the network. This is more cost-reflective, and means that the 48% of non-residential customers that discharge less than we had previously assumed will pay less for their wastewater services.

1.5 Our decisions encourage Hunter Water to continue engaging with its customers

We encourage Hunter Water to engage with its customers, with the aim of better meeting customers' needs. We have decided to allow Hunter Water to recover the costs of two discretionary expenditure projects that it demonstrated its customers were willing to pay for. These projects will enable Hunter Water to irrigate public spaces with recycled water and improve the amenity of some stormwater channels, which its customer engagement identified as priorities.

We have widened the eligibility for unregulated pricing agreements to enable customers to meet the threshold by aggregating water usage across multiple sites. These agreements provide flexibility for Hunter Water to better respond to customers' preferences and behaviour.

1.6 Our regulatory approach is robust and flexible enough to accommodate the uncertainty from COVID-19

We have consulted with Hunter Water in taking into account the impact of COVID-19. Given the uncertain impacts of COVID-19, we have decided not to apply a continuing efficiency adjustment to Hunter Water's expenditure allowance for the first year of the determination period. Over the four years of the Determination, the average continuing efficiency adjustment we have applied is 0.5%, which is less than the 0.8% we proposed in our Draft Report.

We have also adjusted the working capital allowance to reflect expectations that customers may take longer to pay their bills due to COVID-19.

Other existing elements of our regulatory model provide flexibility that can accommodate the uncertainty from COVID-19. Our demand volatility adjustment mechanism means that Hunter Water will be compensated in the next regulatory period if water sales decline considerably due to the impacts of COVID-19. In rolling forward the Regulatory Asset Base (RAB) at the next price review, in 2023-24, we will account for any difference between the capital expenditure allowance we have provided Hunter Water over the 2020-21 to 2023-24 period through this price determination and the efficient level of expenditure that it actually incurs over this period.

1.7 We will conduct a review of our regulatory framework

After the completion of this price review, we will commence a public review of our regulatory framework, to seek to identify ways we can further improve our framework and approach to regulating water utilities; to strengthen incentives for the water utilities to innovate and be efficient; and to enhance outcomes for customers. We will draw on stakeholder views, and the approaches and experiences of other economic regulators, to inform our approach to future price reviews.

1.8 List of decisions

Form of regulation

1 To set a 4-year determination period. 27

2 To implement the 2016 demand volatility adjustment in the 2020 determination period to address over-recovered revenue from water sales over the 2016 determination period, and as a result, return $10.1 million to customers over the 2020 determination period. 29

3 To consider a demand volatility adjustment mechanism at the next review of Hunter Water's prices, to apply to any differences between forecast and actual water sales revenue over the 2020 determination period beyond a 5% (+ or -) materiality threshold, operating on a one year lag. 29

4 To not adopt Hunter Water's proposed modified demand volatility adjustment mechanism. 31

5 To allow Hunter Water to retain the revenue from recycled water schemes where the water displaces some potable water sales, as compensation for lost potable water sales. 31

6 To share with customers 50% of forecast non-regulated revenue (except from bio-banking), as shown in Table 3.1, including from 31

a. Rentals, and 31

b. Recycled water schemes where the water does not displace potable water sales. 31

7 To share with customers 10% of the forecast revenue from the sale of bio-banking credits as shown in Table 3.1. 31

8 To maintain the efficiency carryover mechanism for operating expenditure for the 2020 determination period. 33

9 To maintain an option to enter unregulated pricing agreements with large non-residential customers (defined as those with annual water consumption greater than 7.3 ML per annum). 34

Operating expenditure

10 To set Hunter Water's operating expenditure allowance at $618.6 million over four years as shown in Table 4.1. 38

11 To include an additional $8.8 million per year in Hunter Water's operating expenditure during water restrictions as shown in Table 4.5. 47

Capital expenditure

12 To set the efficient level of past capital expenditure since 2015-16 to be included in the Regulatory Asset Base (RAB) as set out in Table 5.1. 51

13 To set Hunter Water's efficient level of capital expenditure to be included in the Regulatory Asset Base (RAB) for the 2020 determination period at $652.6 million, as set out in Table 5.3. 51

Notional revenue requirement

14 To set the notional revenue requirement (NRR) of $1,370.1 million as set out in Table 6.1. 63

15 To subtract from the NRR the revenue from our decisions on the demand volatility adjustment mechanism, trade waste services, miscellaneous services, non-regulated assets, and raw water and bulk water services, in accordance with Table 6.3. 69

16 To set prices to recover the total adjusted NRR over four years, in present value terms. 69

17 To calculate the return on assets using: 70

a. An opening RAB of $2,813.5 million for 2020-21, and the RAB for each year as shown in Table H.2. 70

b. A WACC of 3.4%. 70

18 To calculate the depreciation allowance by: 70

a. Disaggregating the current RAB into 21 categories, accounting for the 'line in the sand' approach when the RAB was first set in 2000. 70

b. Using the straight-line depreciation method, and 70

c. Using the asset lives set out in table G.5 for existing assets, and Table G.7 for new assets. 70

19 To calculate the tax allowance using: 70

a. A tax rate of 30% 70

b. Hunter Water's forecast of assets free of charge, and 70

c. Hunter Water's forecast tax depreciation, adjusted for our decisions on capital expenditure. 70

20 To calculate the working capital allowance: 70

a. Accept Hunter Water's proposed parameters that: 70

– Half of the service charge is billed in advanced and half in arrears 70

– There is a delay of 25 days before bills need to be paid. 70

b. Calculate the proportion of revenue derived from service charges separately for each service based on forecast revenue. 70

c. Adjust Hunter Water's proposal to account for a delay in its move to quarterly billing. 70

Demand and customer numbers

21 To adopt forecast water sales volumes for non-drought periods as shown in Table 7.2. 74

22 To adopt forecast water sales volumes for drought periods as shown in Table 7.4. 78

23 To adopt forecast water and wastewater customer numbers as shown in Table 7.5 and Table 7.6. 80

24 To adopt Hunter Water's forecast number of billable stormwater properties for 2020-21 to 2023-24 for setting stormwater charges for the 2020 determination period presented in Table 7.7. 82

25 To adopt the forecast proportion of houses and apartments for residential and Small, Medium, Large and Very Large property categories for non-residential presented in Table K.2 in Appendix K. 82

26 To adopt forecast wastewater discharge volumes as shown in Table 7.8. 85

Prices – Water

Prices – Wastewater

Recycled water prices

52 To continue to defer setting prices for Hunter Water's recycled water schemes. 139

Other prices

53 To set the maximum trade waste prices by maintaining the current price structure in 2020-21 and implementing the new price structure from 2021-22, with these charges to be indexed annually in line with changes in the CPI, as presented in Appendix S, Table S.1, Table S.2 and Table S.3. 145

54 To deduct the trade waste revenue of $2.5 million per annum from the notional revenue requirement. 145

55 To adopt Hunter Water's proposed miscellaneous and ancillary charges as presented in Appendix T, and for these charges to be indexed annually in line with changes in the CPI. 151

56 To defer setting maximum prices for the 'Reservoir construction inspection and WAE fee', which Hunter Water Corporation will charge by quote. 151

57 To deduct the miscellaneous and ancillary services revenue as set out in Table 13.3 from the notional revenue requirement, for the purpose of setting other water and wastewater prices. 151

58 To specify a maximum dishonoured and declined payment fee of $28.46 ($2020-21) to apply from 1 July 2020, annually adjusted for inflation as presented in Table 13.4. 153

2 Context for the review

IPART sets the maximum prices for services that Hunter Water Corporation (Hunter Water) supplies under the *Hunter Water Act 1991*. This is our 11th pricing determination for Hunter Water. We first reviewed prices for water, wastewater and stormwater services in 1993. We also administer Hunter Water's operating licence, which includes service standards.

In determining maximum prices, we have considered the matters under section 15 of the *Independent Pricing and Regulatory Tribunal Act* (IPART Act). Section 15 requires us to consider a range of matters when determining prices, including the costs of providing the services, customer affordability, environmental impact and service standards (see Appendix A for how we have addressed these matters).

This chapter outlines our review process, the broader setting, and themes for this review including Hunter Water's operating environment and the drivers of Hunter Water's costs. At the same time as reviewing Hunter Water's prices, we reviewed prices that Sydney Water and Water NSW - Greater Sydney can charge.

2.1 The services Hunter Water provides

Hunter Water provides services to residential and non-residential customers in the Lower Hunter region, including Newcastle, as shown in Figure 2.1.

Figure 2.1 Area of Hunter Water's operations

Data source: Hunter Water, *Pricing Proposal to IPART*, 1 July 2019, p vi.

Hunter Water provides water, wastewater and stormwater services[5]:

- **Its water services include** to source water (from two dams and/or two sandbeds), treat water, store water in reservoirs, and deliver the water to customers (around 60 billion litres per year). Hunter Water differs from Sydney Water as it manages water sources (ie, dams and sandbeds). It also provides some customers with raw water, recycled water and bulk water. Hunter Water has around 269,000 water customers (connections).
- **Its wastewater services include** to collect wastewater from customers, treat it at one of 19 separate wastewater treatment plants, either reuse or discharge treated wastewater, and dispose of biosolids. It also accepts and treats liquid trade waste from commercial customers. Hunter Water has around 246,000 wastewater customers (connections).
- **Its stormwater services include** to maintain about 90 kilometres of stormwater channels. These constitute the 'trunk drainage' of the larger stormwater system, most of which is the responsibility of local councils. Hunter Water has around 71,000 stormwater customers.

Most customers receive both water and wastewater services, and pay through a combination of fixed and usage prices. Around 30% of customers also pay stormwater charges.

2.2 We undertook a comprehensive review when setting prices

Our periodic pricing reviews span 12 months and consider, broadly, the utility's efficient costs (or revenue needs), forecast demand for services, appropriate price structures, and the impacts of our decisions.

Our regulatory framework aims to ensure that Hunter Water's prices provide it with sufficient revenue to recover its efficient costs of delivering its services to its customers, while complying with its regulatory requirements (including environmental regulatory requirements and service standards in its operating licence).

Our price review began with Hunter Water's pricing proposal, which it submitted to us on 1 July 2019. This review was our response to Hunter Water's proposal.

Hunter Water proposed operating and capital expenditure, prices, and a preferred regulatory framework for the five years from 1 July 2020. It provided some more information in two submissions to our Issues Paper (on 21 October 2019, and a supplementary submission on 6 November 2019), and a submission to our Draft Report. All of these documents are available on our website.

Figure 2.2 outlines the process undertaken by Hunter Water and by us prior to and during this review.

5 Hunter Water, *Pricing Proposal to IPART*, 1 July 2019, p vii, 48; and Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, pp 19, 22. Number are approximate and based on meter equivalent connections for water and wastewater non-residential customers.

Figure 2.2 Summary of our propose-respond model

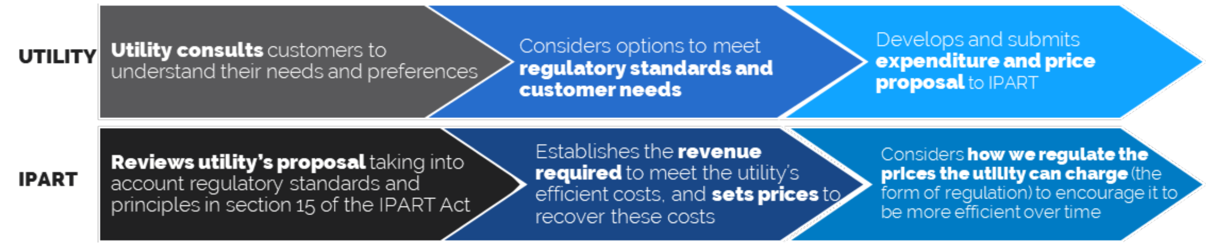


Figure 2.3 provides an overview of key decisions we make when setting prices and where they are discussed in this Final Report. Appendix B provides a more detailed explanation of our approach to setting prices.

Figure 2.3 Key decisions in our price review

Throughout this report, we compare the prices and bills that we have set, to Hunter Water's proposed prices, in $2020-21 terms. We compare current prices to what customers will pay from 1 July 2020, with the prices and bills in future years of the Determination increasing by inflation.

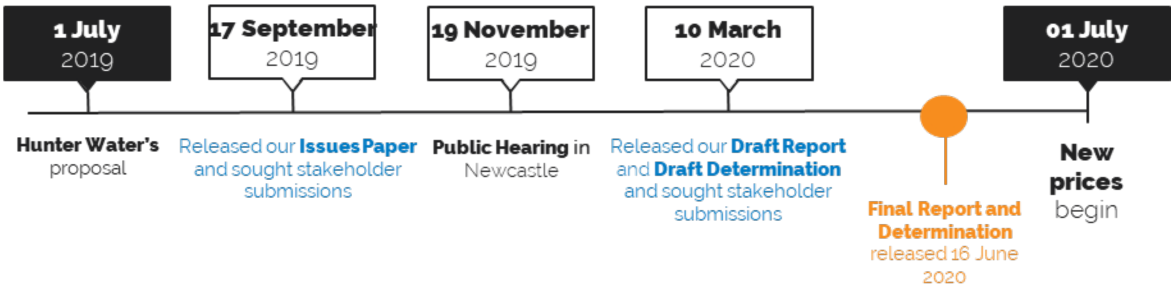
2.3 We undertook a consultative review process

We have completed our assessment of:

- Hunter Water's efficient costs of supplying its services
- Appropriate prices and price structures to recover these costs from customers.

In doing so, we have sought feedback from stakeholders on an Issues Paper and a Draft Report, and held a public hearing. Figure 2.4 below sets out the review timeline, including when stakeholders could have their say.

Figure 2.4 Timetable for this review



2.4 What are the key themes that influenced this price review?

Hunter Water's typical operating environment and cost drivers

Hunter Water is a State Owned Corporation (SOC), wholly owned by the NSW Government. It is governed by a suite of legislative instruments covering obligations to public health, the environment, dam safety, water management and competition in the water industry. We set prices to recover the efficient cost of Hunter Water delivering its monopoly services, while complying with its regulatory requirements.

Broadly, Hunter Water's costs are driven by:

- Meeting its service standards and regulatory obligations, including existing and new or amended standards or obligations as they arise.
- Expanding its monopoly services to new customer areas ('growth costs'). Since 2008, developer charges that would otherwise cover these costs have been set to zero in line with NSW Government policy. Accordingly, costs related to growth are recovered from the broader customer base through retail prices.
- Implementing the Lower Hunter Water Plan.[6] This includes:
  - Reacting to short-term water supply issues, such as demand management through water restrictions and customer education, and
  - Planning to ensure water supply for the long term, as the plan is under review (see below).
- Implementing discretionary projects, where it demonstrates its customers are willing to pay to receive services above its regulated standards or are willing to pay for any external benefits of recycled water schemes. This is a relatively new element of our price review framework.

6 NSW Department of Finance and Services, Metropolitan Water Directorate, *Lower Hunter Water Plan*, January 2014.

Drought and water restrictions

At the time of publication, the Hunter region has been in a state of drought and Hunter Water's customers are subject to level one water restrictions.[7] The prospect of on-going drought has brought a degree of uncertainty to Hunter Water's operations, specifically regarding:

- Additional expenditure to manage demand, such as water efficiency programs, community engagement, and operational impacts such as sewer chokes, and managing leakage.
- Reduced demand and lower revenue (or, at least, demand and revenue variability).
- Expenditure to plan for a proposed desalination plant. This would only be built if dams reach low enough levels (and after implementing less expensive conservation measures), however, Hunter Water has been required to begin the planning phase for the construction.[8]

In spite of recent rains, this highlights the need to plan and prepare for climate variability.

Long-term planning for water security

The Lower Hunter Water Plan (LHWP) is aimed at ensuring a reliable water supply in the Hunter and Newcastle area. The first LHWP was released in 2014 and was developed by the Metropolitan Water Directorate in consultation with Hunter Water and other government agencies involved in water management.[9] Hunter Water is responsible for implementing many of the actions in the plan.

Currently, the 'safe yield' of drinking water for Hunter Water is around 76 billion litres a year, and current estimates are that demand for water will reach the safe yield in 2037,[10] that is, the Lower Hunter's water supply is secure for the next 17 years.

The LHWP is currently under review, with an updated plan expected to be released in 2021. The review is taking into account a broad range of options to prepare for the longer-term water needs of the community in the context of increased climate variability, with some of these actions already being undertaken, particularly on the demand management side. Considerations include to:[11]

- **Manage demand**, through water conservation programs, reducing leaks and increasing re-use through recycled water for non-drinking purposes and potentially stormwater harvesting, and

7 Level 1 water restrictions were implemented on 16 September 2019 for the first time in 25 years and replaced by Level 2 water restrictions on 20 January 2020. The Lower Hunter region returned to Level 1 water restrictions from 24 February 2020 as a result of rainfall and improved dam storage levels. See Hunter Water's website for update on restrictions: https://www.hunterwater.com.au/Save-Water/Water-Restrictions/Water-Restrictions.aspx

8 Hunter Water, *Supplementary Response to IPART Issues Paper*, 6 November 2019, p 4.

9 NSW Department of Finance and Services, Metropolitan Water Directorate, *Lower Hunter Water Plan*, January 2014, p 1.

10 Hunter Water, *Water in the Lower Hunter*, p 2. Available online here: https://yourvoice.hunterwater.com.au/34086/documents/108753

11 Hunter Water, *Media Release All options under consideration in Lower Hunter Water Plan review*, 8 February 2020, pp 1-2.

- **Increase supply**, with options identified for additional dams, desalination, groundwater sources, and inter-regional transfers.

Hunter Water's review is comprehensive, and it is taking a holistic approach to managing water resources. It has engaged experts in the field and is undertaking community consultation to hear stakeholder views and preferences, including identification of options.[12]

Increased emphasis on risk

Hunter Water reviewed its risk framework in 2017 and used this to inform its ongoing forward program. In its pricing proposal, Hunter Water indicates that a review of its risks is a key driver of the increases in operating expenditure and capital expenditure, both for the 2016 and 2020 determination periods.[13] It states:

> We undertook a comprehensive review of all risk areas building on our existing Enterprise Risk Management Framework. This work has driven a re-assessment of our investment priorities…. We've built these risk assessments into all business cases and board papers. We have developed risk treatment plans for those risk areas that are outside of tolerance, being mindful of bill impacts for customers and tolerating a longer timeframe to reduce less critical risks. Our forward capital program is driven in large part by the outcomes of this work.[14]

We engaged expert consultants Aither to review Hunter Water's proposed expenditure. This review found Hunter Water has a maturing approach to risk management and its framework appears appropriate and robust. It found Hunter Water's proposed expenditure to be mostly efficient and with a reasonable allocation of risk, with some minor exceptions that shifted risk to customers.[15] We have accounted for this in our decisions on expenditure.

Low interest rate environment has muted the impact of increases in capital expenditure

The prices we have set are relatively stable compared to the 2019-20 prices – the water service charge is substantially lower, whilst the water usage, wastewater and stormwater charges increase in real terms (ie, excluding the effects of inflation). Typical bills will fall on 1 July 2020-21. This is significantly different from the prices Hunter Water proposed in its July 2019 submission, which would have resulted in substantial price increases.

However, a key driver of this difference between Hunter Water's proposed prices and our prices is a fall in the weighted average cost of capital (WACC), representing about 72% of the movement in its revenue requirement. Hunter Water's proposal used the same methodology to set the WACC as IPART, however between when Hunter Water submitted its proposal and now, market conditions have changed, lowering the WACC from 4.1% to 3.4%.[16]

12 See https://yourvoice.hunterwater.com.au/water-future for more information.
13 Hunter Water, *Pricing Proposal to IPART*, 1 July 2019, p 3.
14 Hunter Water, *Pricing Proposal to IPART*, 1 July 2019, p 3.
15 Aither, *Hunter Water expenditure review*, 14 December 2019, pp ix – x.
16 Hunter Water's initial proposal included a WACC of 4.1%. In response to our Issues Paper, it recalculated prices with a 3.2% WACC which was the same as we used in our Draft Report. Hunter Water, *Pricing Proposal to IPART*, 1 July 2019, p 33; and Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, pp i-ii.

That is, if Hunter Water submitted its pricing proposal now, with an updated WACC, its proposed revenue requirement and prices would be significantly closer to our final decisions. This is further highlighted by us finding Hunter Water's proposed expenditure to be mostly efficient.

Impacts of COVID-19

The COVID-19 pandemic began in the latter half of this review. The full impact on Hunter Water's operations and customers is unknown at this stage, however we have made efforts to address this to the extent possible:

- We have worked with Hunter Water to understand how the pandemic and the changed economic conditions could affect it in terms of productivity, forecast connections and water sales.
- We also considered impacts on customers, including businesses. For example, we recognise that financial hardship may result in some customers needing longer to pay their bills, so we have allowed for this in our assessment of Hunter Water's working capital requirements.

In most cases though, we have not made specific changes to our decisions because of COVID-19. We consider our regulatory framework is sufficiently flexible to accommodate changes to the environment over the next four years. For instance, at the next price review in 2023-24, we will undertake an ex-post review of capital expenditure to ensure that efficient, actual capital expenditure incurred over the next four years is rolled into the RAB at the next price re-set, and the demand volatility adjustment mechanism will account for and 'true-up' significant variances between forecast and actual water sales over the next four years.

We discuss the potential impacts of COVID-19 in relevant sections of the report.

3 Form of regulation

This chapter discusses the 'form of regulation', or the set of methods we use to regulate prices for the utility's monopoly services. The form of regulation can determine how risk is allocated amongst the regulated utility, its customers and taxpayers, and includes:

- How long we set prices for before our next review
- Whether prices are directly or indirectly controlled
- How we can incentivise the utility to improve its performance
- How revenue and cost risks are shared between the utility and its customers.

In 2016 we introduced some new mechanisms for Hunter Water (and Sydney Water), which aim to encourage these businesses to become more efficient and provide them some flexibility to better respond to customers' preferences and behaviour. These were:

- The demand volatility adjustment mechanism (DVAM)
- The efficiency carryover mechanism (ECM)
- The option for unregulated pricing agreements (UPAs).

Below, we assess the application of these mechanisms for the 2016 determination period, and whether to apply them for the next price path; we also assess an 'adjusted DVAM' that Hunter Water proposed.

We have decided to comprehensively review our form of regulation and will undertake this in a broad consultative process before our next review of Hunter Water's prices. This will seek to identify ways we can improve the framework and our approach, to strengthen incentives for the water utilities to innovate and be efficient, and to enhance outcomes for customers – drawing on stakeholder views and the approaches and experiences of other economic regulators.

3.1 A 4-year determination period

For each water pricing review, we decide how long to set prices for (the length of the determination period). In general, the determination period can be between one and five years, depending on the circumstances. In Appendix B we list the matters we consider when we set the determination length (Box B.4) and explain the pros and cons of longer and shorter determination periods.

Our decision is:

1 To set a 4-year determination period.

We have set prices from 1 July 2020 for four years, as we consider this appropriately balances a range of matters – including incentives for efficiency gains, minimising regulatory costs, and risks of inaccurate forecasts.

Hunter Water initially proposed a five-year period, but revised this down

Hunter Water initially proposed a 5-year determination period, noting that IPART's regulatory framework is robust enough to manage the risks of a longer determination period,[17] and that a 5-year period would best facilitate a comprehensive review of the broader regulatory framework, which was proposed by Hunter Water.[18]

However, in response to our Issues Paper, Hunter Water revised this to propose a 4-year determination period for two reasons:[19]

- It found the shorter period was the most appropriate way to manage the risk of un-forecast drought-related expenditure. It noted that, depending on water storages, Hunter Water may incur capital expenditure to construct a desalination plant ($100 million) to manage supply. These costs were not included in its pricing proposal.
- A comprehensive review of IPART's regulatory approach would work best if the Sydney Water and Hunter Water price reviews were aligned, noting that Sydney Water had proposed a 4-year Determination.

There was limited feedback from other stakeholders on this matter. Both the Public Interest Advocacy Centre (PIAC) and Cessnock City Council supported a 4-year determination period over a 5-year one.[20]

We agree that drought conditions and climate variability cause uncertainty around potential expenditure and revenue shortfalls from lower demand. Whilst our regulatory framework aims to appropriately manage and allocate expenditure and revenue risks, and we have introduced a dynamic water usage price with a price uplift should dams fall below 60%,[21] we have accepted Hunter Water's proposal for a 4-year determination period. This also is a reasonable balance of managing the matters listed in Box B.4, including the need for regulatory certainty, and incentives for Hunter Water to improve efficiency, and for these efficiencies to be passed on to customers through a reset of prices.

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17 This occurs with mechanisms including our expenditure review process, revised WACC methodology (which includes a 'true up'), the demand volatility adjustment mechanism, efficiency carryover mechanism, option for unregulated price agreements, and a new proposed drought cost pass-through mechanism.

18 Hunter Water, *Pricing Proposal to IPART, Technical Paper 3*, 1 July 2019, p A-5.

19 Hunter Water, *Supplementary Response to IPART Issues Paper*, 6 November 2019, pp 4, 7-8.

20 PIAC supports alignment with the Sydney Water Determination, and considers the increased risk of exceeding allowances in the 5-year period are unacceptable and unnecessary. Cessnock City Council's arguments related to reducing delays to introducing sewerage infrastructure to towns. PIAC, *Submission to IPART's Issues Paper – Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019, p 7; and Cessnock City Council, *Submission to IPART's Issues Paper – Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019, p 3.

21 See Chapter 8 for more information on the price uplift. Utilities can also propose a cost pass-through mechanism to manage unexpected expenditure (although this requires particular information being available to meet our criteria), and we have decided to consider a demand volatility adjustment mechanism at the next price review to address revenue risk over the determination period.

3.2 Demand volatility adjustment mechanisms to address uncertainty

Our 2016 price review included a DVAM to protect customers and Hunter Water from material variations between forecast and actual water sales. We stated we would consider, at the next price review, an adjustment to the utility's revenue requirement to address any over- or under-recovery of revenue over the 2016 determination period due to material variations (exceeding +/- 5% over the whole determination period) between forecast and actual water sales.[22]

In response to our Issues Paper, Hunter Water proposed a modified DVAM with an annual adjustment and end-of-period true-up to protect it against revenue risk in the case of prolonged water restrictions.[23]

3.2.1 Demand volatility adjustment for the 2016 determination period

During the first three years of the 2016 determination period, water sales for Hunter Water exceeded the 5% materiality threshold, and we have decided to apply the mechanism to return some revenue to customers in the 2020 determination period.

Our decisions are:

2 To implement the 2016 demand volatility adjustment in the 2020 determination period to address over-recovered revenue from water sales over the 2016 determination period, and as a result, return $10.1 million to customers over the 2020 determination period.

3 To consider a demand volatility adjustment mechanism at the next review of Hunter Water's prices, to apply to any differences between forecast and actual water sales revenue over the 2020 determination period beyond a 5% (+ or -) materiality threshold, operating on a one year lag.

Our decision for the 2016 demand volatility adjustment is higher than Hunter Water had proposed in response to our Issues Paper (an $8.8 million adjustment).[24] Hunter Water had calculated this using our preliminary framework, which we have amended (see below).

Applying the mechanism at this review

In our Issues Paper, we sought feedback on a preliminary approach to applying the DVAM, as our 2016 Final Report did not specify details on its application.[25] We have applied the DVAM as follows:

1. It is triggered when revenue from actual water sales differs from forecasts by more than 5% (+ or -). (The 2016 Final Report did not specify if the material variation referred to sales volumes or sales revenue.)

22 IPART, *Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020, Final Report*, June 2016, pp 97-98.
23 Hunter Water, *Supplementary Response to IPART Issues Paper*, 6 November 2019, pp 12-14.
24 Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, p 36.
25 See IPART, *Review of prices for Hunter Water Corporation From 1 July 2020 – Issues Paper*, September 2019, pp 74-76.

2. It is based on actual sales with a one year lag. For the 2016 determination period, our analysis has therefore considered three years of water sales. The actual sales for the final year of the Determination (2019-20) are not available at the time of our review, but will be included in our considerations at the next price review.
3. The revenue adjustment includes:
   a) All revenue above the 5% materiality threshold (comparatively, our preliminary position had been to subtract the efficient cost of providing the additional water).
   b) The holding costs (to the customer) of the additional revenue (this was not included in our preliminary approach).
4. We made the adjustment to the NRR and smoothed it over each year of the 2020 determination period in an NPV-neutral way.

Our final decision to return $10.1 million to customers over the 2020 determination period is slightly less ($0.2 million) than in the Draft Report. This is because we applied an updated inflation figure to our calculation. Appendix D provides a detailed explanation of our approach, including our consideration of stakeholder feedback.

The DVAM should be available for the 2020 determination period

We consider that a DVAM remains relevant for the 2020 determination period, particularly given the outcome over the 2016 determination period to date, and the uncertainty around the impact of water restrictions on water sales. We will set a DVAM for the 2020 Determination, where consideration of an adjustment is triggered when revenue from actual water sales differs from forecasts by more than 5% (+ or -).

Hunter Water also supported retaining the DVAM for the 2020 determination period. However, it proposed this to work in conjunction with a 'modified' DVAM (see below), if the modified DVAM were to be triggered, which we have not accepted.[26]

3.2.2 Hunter Water's proposed modified DVAM

In response to our Issues Paper, Hunter Water considered a modified DVAM could be designed and implemented to address material revenue shortfalls in exceptional circumstances. It proposed that:

- It would apply if:
  - mandated water restrictions were in place, and
  - water sales were more than 5% below IPART's allowance.
- Revenue shortfalls in one year would be recovered through an adjustment to the water service price the following year.

26 Hunter Water, *Supplementary Response to IPART Issues Paper*, 6 November 2019, p 13.

This would protect Hunter Water against the risk of a pro-longed period of water restrictions that could severely impact Hunter Water's water sales revenue.[27] Hunter Water argued that its performance against key financial metrics would deteriorate in any drought event, in the absence of such a mechanism.[28]

Our decision is:

4 To not adopt Hunter Water's proposed modified demand volatility adjustment mechanism.

We decided not to accept Hunter Water's proposal for two main reasons:

- The purpose of the mechanism is to safeguard Hunter Water's financial health in the event of a sustained and severe reduction in water sales. We have included a dynamic water usage price to mitigate the impact of drought-related expenditure and lower water sales if restrictions are in place. We have assessed Hunter Water's financeability (see Chapter 14), and consider that our prices, including the retrospective application of the DVAM, do not negatively affect Hunter Water's ability to raise capital efficiently.
- A modified DVAM and the proposed annual adjustments, if triggered, would lead to volatility in the water service charge. Comparatively, our water usage price uplift has the added benefit of providing a price signal to customers, and gives customers the flexibility to reduce their usage and therefore the additional cost.

The end-of-period DVAM enables Hunter Water to be compensated for any material under-recovery over the 2020 determination period, in the following price period – ie, Hunter Water can expect to recover its lost revenue in the short to medium term. This largely negates any lasting financial impacts and financeability concerns.

3.3 Sharing non-regulated revenue with customers

We encourage water utilities to optimise the use of their assets and seek ways to generate revenue in ways other than from traditional services – provided this does not compromise the delivery of their core services. We typically share this revenue with the customers that have paid for the asset. Sharing the revenue encourages the utilities to pursue non-regulated revenue, while ensuring customers also benefit from the arrangements where they have paid for the assets. In the past, we have typically applied a 50:50 sharing ratio of the revenue.

Our decisions are:

5 To allow Hunter Water to retain the revenue from recycled water schemes where the water displaces some potable water sales, as compensation for lost potable water sales.

6 To share with customers 50% of forecast non-regulated revenue (except from bio-banking), as shown in Table 3.1, including from

   a. Rentals, and

   b. Recycled water schemes where the water does not displace potable water sales.

7 To share with customers 10% of the forecast revenue from the sale of bio-banking credits as shown in Table 3.1.

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27 Hunter Water, *Supplementary Response to IPART Issues Paper*, 6 November 2019, p 12.
28 Hunter Water, *Supplementary Response to IPART Issues Paper*, 6 November 2019, p ii.

Table 3.1 Non-regulated revenue to be shared with customers ($'000, $2019-20)

Revenue source	2020-21	2021-22	2022-23	2023-24	Total
Bio-banking	54.2	54.2	54.2	54.2	216.6
Recycled water	0.3	0.3	0.3	0.3	1.1
Other, including rentals	1,305.7	1,299.8	1,296.4	1,296.6	5,198.6
Total	**1,360.1**	**1,354.3**	**1,350.9**	**1,351.0**	**5,416.3**

Note: Totals may not add due to rounding.

Source: Hunter Water, Annual Information Return to IPART, September 2019, 'Revenue' row 153; Correspondence with Hunter Water (email), 10 December 2019 and 20 January 2020; IPART analysis.

In its July 2019 pricing proposal, Hunter Water had proposed to share non-regulated revenue equally with its customers, in line with the approach IPART has previously taken. Since then, however:

- We decided that revenue from certain recycled water schemes could be retained by the utility in full as compensation for lost water sales, where the recycled water displaces potable water sales. This was decided in our 2019 review of recycled water, however we have clarified that where recycled water does not displace potable water, then this revenue should be shared with customers. In most cases, however, we would expect recycled water to displace potable water sales.
- Hunter Water informed us that it still has around $2.2 million of bio-banking certificates[29] to sell (which were not included in its July 2019 pricing proposal), likely in the 2020 determination period. We decided that Hunter Water should retain a greater proportion of revenue made through the bio-banking scheme, due to the high participation costs.

For more information on:

- Our approach to revenue from recycled water, see Chapter 12, or
- Our approach to other non-regulated revenue, including bio-banking credits, see Appendix H.

29 Bio-banking, or 'Biodiversity Banking and Offsets Scheme', enables landowners to earn credits for protecting biodiversity values on their land. The credits can be purchased by other parties and used, for example, to offset the impacts on biodiversity values that occur as a result of development or philanthropic organisations or others willing to invest in biodiversity outcomes.

3.4 We will retain the current efficiency carryover mechanism (ECM)

In 2016, we introduced an ECM for operating expenditure, which allows a utility to retain permanent efficiency savings for a fixed period regardless of when in the determination period they are achieved.[30]

This mechanism aims to remove the incentive for a utility to delay efficiency savings from the end of one determination period to the beginning of the next.[31] The ECM currently applies to the utility's operating expenditure only, and our decision is to maintain the current arrangement. Appendix C provides a detailed explanation of how the ECM works and provides stakeholder views on whether to expand the ECM to include capital expenditure.

To date, we have not applied the mechanism in practice – it was available for Hunter Water, Sydney Water and Water NSW[32] but none of the utilities made a claim under the mechanism for this price review.

Our decision is:

8 To maintain the efficiency carryover mechanism for operating expenditure for the 2020 determination period.

We maintain our views outlined in our 2016 price reviews, which are:

- To limit the ECM to operating costs only because of:
  - The risks of unintended consequences associated with strengthening capital expenditure incentives (such as to over-forecast and inefficiently defer capital expenditure).
  - The additional complexity, such as the practicality of undertaking an ex-post assessment of capital expenditure, and the nuances of achieving equalised incentives across operating and capital expenditure.

30 See IPART, *Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020, Final Report*, June 2016, pp 29-32.

31 Without this, utilities could be incentivised to delay implementing efficiencies. Under our pricing framework, we set maximum prices for the regulatory period based on our assessment of the business' efficient costs, and if the business can deliver its services at a lower cost, then it retains the benefits until we reassess its costs at the next price review. This is 'incentive regulation' because it rewards the utility for finding efficiencies, which, if permanent, are passed on to customers in the next pricing period. However, the financial reward to the utility is highest in the first year (as this means the reward is collected in each year of the determination) and deteriorates over the regulatory period, hence providing an incentive to delay efficiencies to the start of the following determination period.

32 IPART, *Review of prices for Hunter Water Corporation From 1 July 2016 to 30 June 2020 Final Report*, June 2016, pp 13-14; and IPART, *Review of prices for Sydney Water Corporation From 1 July 2016 to 30 June 2020 Final Report*, June 2016, pp 18-19.

- Our ECM is asymmetric in the sense that while it equalises the incentive to achieve permanent efficiency savings over time, it preserves all other features of the current form of regulation. That is:
  - Permanent cost increases are held by the business until the next price review, when they are assessed by the regulator and, if determined to be efficient, passed on to customers (through price increases as a result of an increase in the business's operating expenditure allowance) – this provides an incentive for the business to avoid inefficient increases in costs.
  - Temporary over and under spends are retained by the business – this provides an incentive for the business to manage within its budget.

3.5 We will retain the option for unregulated pricing agreements

Our current form of regulation involves setting maximum prices for regulated services that apply to all customers for each year of the determination period. In our 2016 review, we decided to allow Hunter Water to enter into unregulated pricing agreements (UPAs) with large non-residential customers, provided the costs and revenues of these unregulated agreements were ring-fenced from the regulated cost base.[33]

Hunter Water has entered into one UPA only – with the Central Coast Council.[34] It considered the potential for further UPAs at a high level but did not enter into any formal or informal negotiation processes with customers. It supports maintaining the mechanism in the 2020 determination period.[35]

Our decision is:

9 To maintain an option to enter unregulated pricing agreements with large non-residential customers (defined as those with annual water consumption greater than 7.3 ML per annum).

Our 2016 Determination defines the customers that could enter into a UPA as a non-residential property that is serviced by one or more individual meters, where that property has annual metered water consumption greater than 7.3 ML.[36] We acknowledge that some customers may have multiple properties where, combined, the water usage of the multiple properties would exceed 7.3 ML annually, but no individual property would have that level of water usage.

33 See IPART, *Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020, Final Report*, June 2016, pp 23-28.

34 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 7.

35 Hunter Water, *Pricing Proposal to IPART, Technical Paper 3*, 1 July 2019, pp A-22 – A-23.

36 And that property does not receive joint water supply/sewerage services. See IPART, *Hunter Water Corporation Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016 Determination*, June 2016, pp 2, 56 and 59.

We sought feedback on whether this definition should be expanded to include customers with multiple properties, with combined usage that exceeds 7.3 ML per annum. Both Hunter Water and Sydney Water supported the expansion of the definition – with Hunter Water finding this could add 25 to 30 customers to be eligible to enter a UPA (or about an extra 10% compared to the current definition).[37] We have incorporated this into the Determination.

Sydney Water identified scope for three different thresholds – one based on water use, one on wastewater discharge amount, and a hybrid of the two.[38] We consider that there may be merit in exploring this approach, but acknowledge that there have been barriers identified that impact the take-up of UPAs, including an inability to offer secure long-term prices, given the potential for these agreements to be overturned at future price determinations.[39] We will work with Sydney Water and Hunter Water as part of our usual quarterly engagement to see what other barriers exist to UPAs and suggest they do so with their customers. We intend to revisit this issue in the 2024 price reviews.

Appendix B contains more information about UPAs.

3.6 We will undertake a comprehensive review of our regulatory framework for water pricing before our next review of Hunter Water's prices

We have decided to comprehensively review our form of regulation and will undertake this in a broad consultative process before our next review of Hunter Water's prices. This will seek to identify ways we can improve the framework and our approach, to strengthen incentives for the water utilities to innovate and be efficient, and to enhance outcomes for customers – drawing on stakeholder views and the approaches and experiences of other economic regulators.

Typically, we have reviewed elements of our framework both:

- Outside of price reviews (eg, prices for recycled water, WACC), and
- Within a price review (eg, dynamic water usage prices). To some degree, this is inevitable under the propose-respond model (ie, where a utility has proposed a changed methodology, we will respond in making our final decisions).

During this current review, we have identified issues that would benefit from more in-depth reviews that are best addressed separate to a price review period and we highlight these throughout the report.

37 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 7.
38 Sydney Water, *Response to IPART's Draft Report and Determination*, 27 April 2020, p 131.
39 Sydney Water, *Pricing proposal to IPART*, June 2019, Attachment 7, p 8.

In its proposal, Hunter Water presented its vision of a 'regulatory roadmap', highlighting areas that it considered could be subject to review and have potential to evolve, and regulatory frameworks adopted by other regulators. It also noted that reviewing the framework on a separate timeline to the price review allows for better engagement than within the price review process.[40] Other stakeholders also supported having a separate review of the framework.[41]

We will take Hunter Water's comments into account in conducting our review, and work with all stakeholders to identify ways we can improve our regulatory framework in the long-term interests of consumers.

40 Hunter Water, Pricing Proposal, 1 July 2019, Technical Paper 3.

41 PIAC, Submission to IPART Issues Paper, *Submission to IPART's Issues Paper – Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019, p 8.

4 Operating expenditure

This chapter sets out our assessment of the operating expenditure allowance that we should provide for Hunter Water when setting its prices. Our decision on the operating expenditure allowance reflects our view of the efficient level of operating costs Hunter Water will incur in providing its services over the 2020 determination period. These costs include all day-to-day expenditure on items such as labour, energy, materials, plant and fleet, operating contracts, external consultants and/or contractors and employee provisions.

To inform our decision on operating expenditure, we engaged Aither to review the efficiency of Hunter Water's proposed operating expenditure allowance and recommend any efficiency savings that it considered that Hunter Water should achieve.

We also considered the potential impacts of COVID-19 on operating costs and the level of ongoing efficiency improvements that water utilities, including Hunter Water, should be able to make over the next four years.

In line with our decision to introduce dynamic water usage prices when Hunter Water's water storages are low, we also assessed Hunter Water's efficient operating expenditure during periods of water restrictions. Our decision was informed by Aither's assessment of Hunter Water's efficient costs when water restrictions are in force.

An explanation of the type of expenditure adjustments applied

We have applied a two-step approach in our review of the efficiency of both operating and capital expenditure. Specifically, our process involves an assessment of:

1. **Catch-up efficiency.** This step identifies inefficiencies within the scope or cost of specific programs, and any improvements Hunter Water should make to its business processes and systems to meet best-practice of frontier firms.
2. **The continuing efficiency that a utility can undertake to become even more efficient.**

   We consider a number of data points such as the efficiency gains of well-performing utilities and broader productivity trends (eg, multi-factor productivity (MFP) or total-factor productivity). 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.

   We have set the continuing efficiency adjustment with reference to long-term multi-factor productivity trends. Our methodology and rationale for applying a continuing efficiency factor to Hunter Water's expenditure is covered in detail at Appendix E.

4.1 Operating expenditure decision – non-drought

Our decision is:

10 To set Hunter Water's operating expenditure allowance at $618.6 million over four years as shown in Table 4.1.

Our decision is to set Hunter Water's allowance for operating expenditure at $618.6 million over the 2020 determination period.[42] This is $8.2 million (or 1.3%) lower than Hunter Water proposed in its July 2019 pricing proposal. It is $34.7 million (5.9%) higher than Hunter Water forecasts it will spend over the four years of the 2016 determination period.

Table 4.1 Decision on Hunter Water's efficient operating expenditure ($million, $2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Water	48.8	47.0	46.2	45.1	187.1
Wastewater	54.8	55.1	55.6	54.5	220.0
Stormwater	1.2	1.2	1.2	1.1	4.7
Corporate	52.2	51.4	52.0	51.3	206.9
Total	**157.0**	**154.7**	**154.8**	**152.1**	**618.6**

Note: Figures relate to non-drought periods. Operating expenditure includes bulk water purchase costs and excludes costs related to ring-fenced recycled water schemes. Totals may not add due to rounding.

Our decision reflects our assessment of the level of operating expenditure an efficient utility would incur in delivering services to Hunter Water's customers. In making our decision, we considered:

- Hunter Water's operating expenditure over the 2016 determination period
- The level of operating expenditure Hunter Water forecast over the 2020 determination period
- Efficiency savings we consider Hunter Water could make over the four years of the 2020 determination period.

We have accepted Aither's recommendations on adjustments to operating expenditure for specific items. However, we have applied a different ongoing efficiency factor (0.8% per annum) than recommended by Aither (0.4%).[43]

Our decision is $4.1 million (0.7%) higher than our draft decision of $614.5 million. This increase is primarily due to our decision to delay the application of the 0.8% per annum ongoing efficiency adjustment by one year, in recognition of the likely productivity challenges presented by COVID-19.

Our final decision for the 2020 determination period is compared with Hunter Water's proposed operating expenditure in Table 4.2.

42 This decision relates to periods outside of drought. Hunter Water's operating expenditure increases during periods of drought. Our decision on efficient operating expenditure during drought periods is set out in Section 4.4.

43 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 123.

Table 4.2 Decision compared to Hunter Water's proposed operating expenditure for the 2020 determination period ($million, $2019-20)

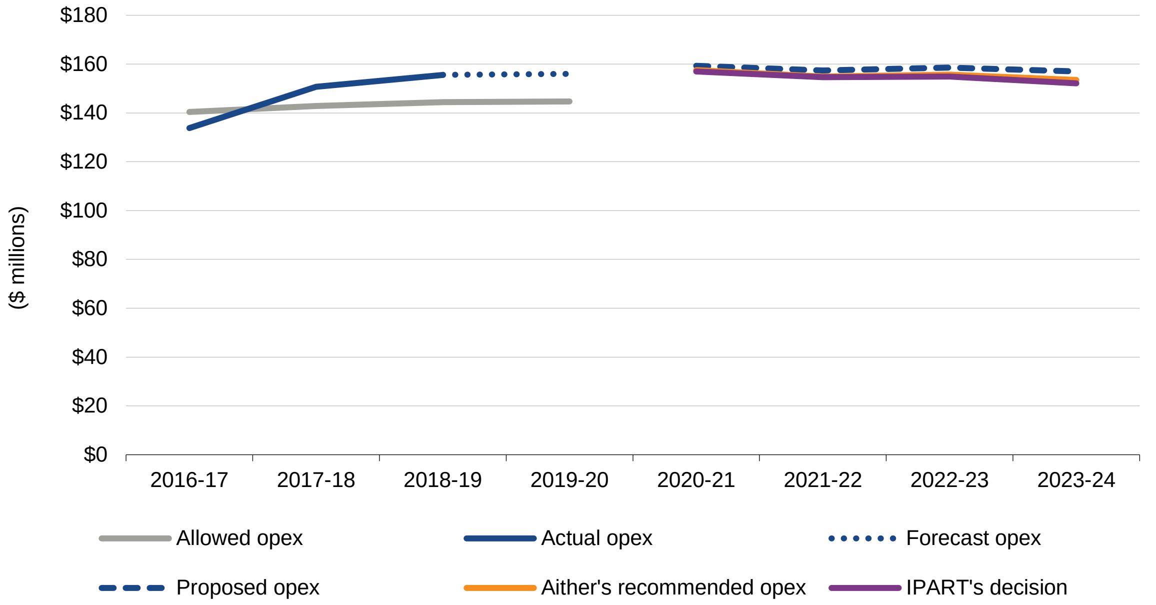
	2020-21	2021-22	2022-23	2023-24	Total
Hunter Water's 1 July proposal	157.3	156.2	157.5	155.8	626.8
Hunter Water's amendments to proposal					
Energy costs after error found	1.6	0.9	0.7	0.7	3.9
Opex from amended demand	0.4	0.4	0.4	0.4	1.5
Deferral of quarterly billing	-0.9	0.0	0.0	0.0	-0.9
IPART adjustments					
Changes to operations	-0.1	-0.3	-0.1	0.0	-0.5
Corporate labour expenditure	-1.0	-1.0	-1.0	-1.0	-4.0
Opex from demand reductions[a]	-0.3	-0.2	-0.1	-0.1	-0.8
Efficiency adjustment (0.8% per annum)	-	-1.2	-2.5	-3.7	-7.5
Decision	**157.0**	**154.7**	**154.8**	**152.1**	**618.6**
Difference	**-0.3**	**-1.6**	**-2.6**	**-3.7**	**-8.2**
Difference (%)	**-0.2%**	**-1.0%**	**-1.7%**	**-2.4%**	**-1.3%**

[a] Our decision on Hunter Water's water sales over the next four years is lower than it proposed in its July 2019 pricing proposal. This adjustment to operating expenditure reflects the treatment and pumping costs saved.

Source: Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, pp 101,111; and IPART analysis.

Figure 4.1 below shows our decision on Hunter Water's efficient operating expenditure over the 2020 determination period compared to Hunter Water's proposed and Aither's recommended levels of efficient expenditure. It also shows Hunter Water's actual operating expenditure over the 2016 determination period and the level of operating expenditure we used to set prices in 2016.

Figure 4.1 Decision on Hunter Water's efficient operating expenditure compared to actual and forecast expenditure in the 2016 determination period ($million, $2019-20)



Source: Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, pp 90, 127-130; IPART analysis.

4.2 Review of proposed operating expenditure – non-drought

4.2.1 Operating expenditure over the 2016 determination period

Over the 2016 determination period, Hunter Water's total actual operating expenditure was $583.9 million, or $146.0 million per year. This was $23.4 million (4.2%), or $5.9 million per year higher than we used to set prices in 2016. This is set out in Table 4.3.

Table 4.3 Hunter Water's operating expenditure over the 2016 determination period ($million, $2019-20)

	2016-17	2017-18	2018-19	2019-20	Total
Determination	137.5	139.7	141.4	141.9	**560.5**
Actual/forecast[a]	131.1	147.6	152.4	152.8	**583.9**
Difference	*-6.4*	*7.9*	*11.0*	*10.9*	***23.4***
Difference (%)	*-4.7%*	*5.7%*	*7.8%*	*7.7%*	***4.2%***

[a] Figure for 2019-20 is a forecast.

Source: Hunter Water, Annual Information Return update, October 2020; IPART analysis.

The difference between the allowance for operating expenditure in the 2016 determination period and the amount Hunter Water spent helps inform our decision on the efficient level of operating expenditure over the 2020 determination period.

Hunter Water's higher expenditure was in large part driven by:

- Unbudgeted long cycle preventative maintenance (LCPM)[44]
- Higher contract labour expenditure on corporate activities
- Energy expenditure for wastewater.[45]

4.2.2 Our assessment of efficient operating expenditure over the 2020 determination period

In its July 2019 pricing proposal, Hunter Water proposed operating expenditure of $626.8 million over the four years to 2023-24.[46] This is an average of around $156.7 million per year, which is:

- $10.7 million per year (or 7.3%) higher than Hunter Water's actual average operating expenditure per year over the 2016 determination period
- $16.6 million per year (or 11.8%) higher than the average operating expenditure per year we used to set prices in 2016.

Hunter Water stated in its pricing proposal that it is a low cost service provider, and that in 2015-16 and 2016-17 it had the "…lowest operating cost per property for water and sewerage services of any major [water] utility in Australia".[47] However, it argues that the result of very low operating expenditure has been the utility having a relatively high operational risk.

Following a comprehensive review of its risk, Hunter Water has taken steps to reduce its risks:

> We have committed to invest in activities that will result in risk reduction in areas currently outside of our risk appetite, thereby ensuring services continue to be provided in line with community expectations and meet safety, environmental and compliance requirements.[48]

In particular, Hunter Water proposes to increase expenditure in corporate and general operations, partially offset by reductions in labour and maintenance, relative to 2019-20.

In its submission to our Issues Paper in October 2019, Hunter Water increased its proposed operating expenditure by an additional $4.6 million over four years. This was to:

- Correct an error in its forecast energy costs contained in its July 2019 pricing proposal (+$3.9 million)[49]
- Include additional operating costs associated with higher water demand forecasts (+$1.5 million)[50]

44 LCPM aims to improve asset reliability, optimise the asset life of treatment plant infrastructure and reduce lifecycle asset costs. This is a change from their previous reactive approach to asset maintenance. Hunter Water states that they expect this higher up-front expenditure to defer future capital investment and ensure that they meet compliance requirements (Aither, *Hunter Water expenditure review, Final Report,* 14 December 2019, p 106).

45 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 89.

46 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, pp 127-130.

47 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 5*, 1 July 2019, p 4.

48 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 5*, 1 July 2019, p 4.

49 Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, p 56.

50 Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, p 35.

- Include savings from deferring its adoption of quarterly billing to 2021-22 (-$0.85 million).[51]

4.2.3 Aither recommended some adjustments

Aither reviewed Hunter Water's proposed operating costs and found them to be generally efficient. However, it recommended two adjustments:

- An annual reduction of $1 million (or 0.6% of operating expenditure) in **labour costs** as these were insufficiently justified compared to expenditure in earlier years.
- A reduction of $0.53 million over the determination period in **operations costs** due to the possible transition to a new operations provider resulting from contract expiry in the 2020 determination period (the total forecast transition costs cost are shared 50:50 between Hunter Water and customers).

Labour expenditure

Labour costs comprise 33% of Hunter Water's total forecast operating costs over the 2020 determination period.[52]

Hunter Water's labour expenditure over the 2016 determination period was $9.5 million (or 4.8%) higher than we used to set prices in 2016, and this expenditure has increased since 2016-17 (see Table 4.4).

Table 4.4 Hunter Water's labour expenditure over the 2016 determination period ($million, $2019-20)

	2016-17	2017-18	2018-19	2019-20[a]	Total
Determination	50.8	48.7	48.9	48.6	197.0
Actual/forecast	48.6	51.6	54.3	52.0	206.5
Difference	-2.2	2.9	5.4	3.4	9.5
Difference (%)	-4.3%	6.0%	11.0%	7.0%	4.8%

[a] Figures for 2019-20 are forecasts.

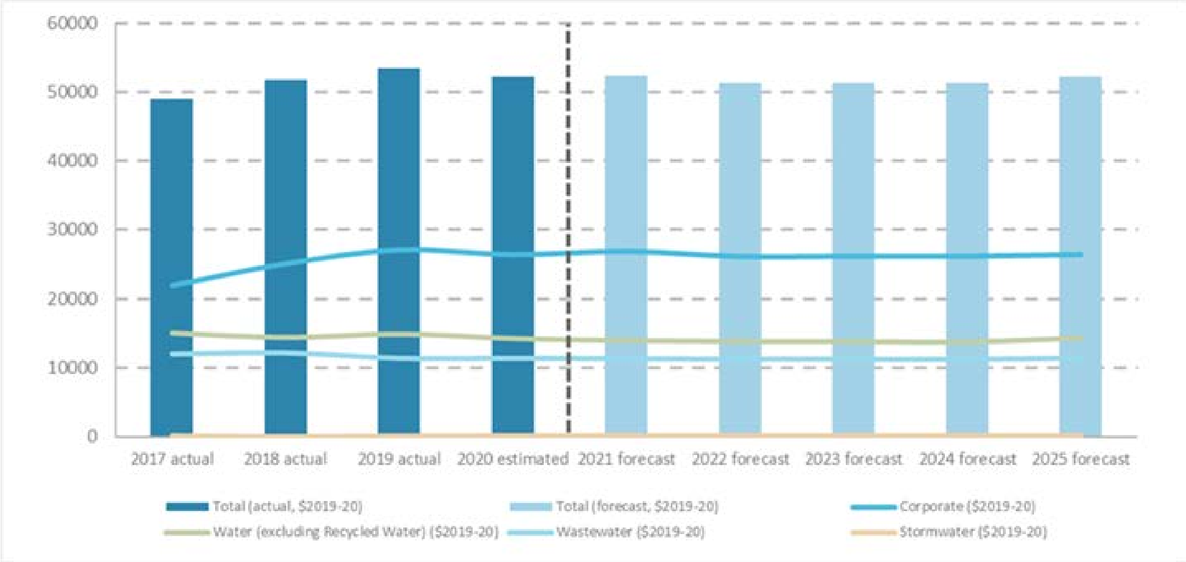
Note: Labour expdenditiure is net of capitalised labour.

Source: Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 95.

Hunter Water has used historical operating expenditure as the basis for its forecasts over the 2020 determination period[53], and its increase in labour expenditure since 2016-17 has been driven by increases in corporate expenditure (see Figure 4.2).

51 Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, p 58.
52 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, pp 93-101.
53 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 101.

Figure 4.2 Comparison of actual and forecast labour expenditure ($'000, $2019-20)



Note: Figures shown here are net of capitalised labour.

Data source: Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 96.

In its assessment of Hunter Water's labour expenditure, Aither made the following observations:

> Aither has concerns regarding the justification of the previous increases in labour expenditure that now form the basis for the forecast of labour expenditure in the upcoming regulatory period. Aither therefore proposes a downward adjustment to Hunter Water's forecast labour expenditure of $1 million per annum to reflect a lower level of base expenditure. This adjustment is a subjective assessment of the lack of robust justification provided for the increased labour expenditure rather than a build-up of definitive changes that occurred over that time.
>
> Corporate labour expenditure was the key driver behind this previous increase in labour expenditure for the business. Given this, Aither proposes that the adjustment be made to the corporate product, which will then be allocated across the other products within the framework.[54]

Our decision is to accept Aither's recommended adjustment of $1 million per year.

Operations expenditure

Operations costs comprise the expenditure required to operate infrastructure, including:

- Water and wastewater treatment plants
- Water and wastewater pumping stations
- Energy costs
- Chemical costs
- Laboratory costs to monitor water and wastewater quality.

54 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 101.

Hunter Water's treatment operations and laboratory functions are contracted out to external service providers via a competitive tender.[55]

In its July 2019 pricing proposal, Hunter Water proposed around $121.3 million in operations expenditure over the four years of the 2020 determination period.[56] In its October 2019 submission to our Issues Paper, it revised this upwards by around $1.5 million over the four years, to account for the operations costs associated with its revised higher water demand forecasts.[57]

Aither found that Hunter Water's proposed operating costs associated with both the operations contract and laboratory services contract were largely efficient. However, both contracts are due to expire during the 2020 determination period. As part of its pricing proposal, Hunter Water included additional operating costs relating to the transition to a new contract and, potentially, a new service provider.

Aither considers that while transition costs are inevitable in developing and negotiating a new contract, some of the proposed tranistion costs may not occur if the incumbent provider is selected. According to Aither:

> Hunter Water is proposing to recover all potential transition costs from customers regardless of the decision on the future service provider, however it will not necessarily incur all of these transition costs if the incumbent is reappointed. Given this, Aither does not think it appropriate that customers bear all of the risk associated with those costs when there is a chance that Hunter Water may not incur them at all. In order to share the risk, Aither therefore proposes to share these potential costs between Hunter Water and its customers. In the absence of any expected outcome of the procurement processes, Aither has assumed that these forecast costs should be shared 50:50 with the customer base.[58]

Our decision is to accept Aither's recommended adjustments to operations expenditure.

This results in a $0.53 million reduction in operations expenditure over the determination period, relative to Hunter Water's proposed costs.

4.3 Catch-up and ongoing efficiency

We have applied an ongoing efficiency adjustment of 0.8% per year from 2021-22

In making our decision on efficient operating expenditure, we consider applying efficiency factors to utilities' forecast operating expenditure to account for the productivity improvements that efficient companies would reasonably make.

55 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 105.
56 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 112.
57 Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, p 35.
58 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, pp 110-111.

There are two types of efficiency adjustments we consider:

- **Catch-up efficiency** - this is the efficiency 'gap' between an individual company within the industry and the efficiency frontier.
- **Ongoing efficiency** – this represents the frontier shift, the efficiency savings that even a perfectly efficient firm would make with assumed productivity gains over time.

Aither took a 'bottom-up' approach to catch-up efficiencies for Hunter Water. This entails assessing specific proposed programs and assessing whether the efficiencies are systematic and could be applied across the program of expenditure. Aither did not recommend any catch-up efficiency for Hunter Water for the 2020 determination period.

Aither did recommend an annual adjustment of 0.4% per year (compounding) over the 2020 determination period to reflect the scope for ongoing efficiency. This recommendation was based on a comparison of Hunter Water with the Victorian water industry. In making this recommendation, Aither found that:

- Hunter Water is currently a low to medium cost water utility
- The recommended adjustment would seek to bring Hunter Water's forecast operating expenditure on a per property basis more in line with the efficiencies evident in the Victorian water industry.[59]

However, we consider that long-term multi-factor productivity (MFP) in the Australian economy is an appropriate indicator of Hunter Water' potential for productivity gain over the 2020 determination period. Our analysis of historical data published by the Productivity Commission suggests that an appropriate range for ongoing productivity based on MFP is between 0.6% and 0.8% per annum.[60]

We present detailed analysis of productivity factors and MFP in Appendix E.

Our draft decision was to apply a 0.8% per year compounding efficiency factor. This reduced Hunter Water's proposed operating expenditure by $12.4 million over the 2020 determination period.

In its submission to our Draft Report, Hunter Water argued that the 0.8% per annum efficiency adjustment was excessive, in particular:

- Economy-wide MFP data is not appropriate, and that utility or water industry data is more appropriate.
- We had discounted periods of low productivity growth in deriving our annual factor of 0.8%.
- Our approach double counts potential efficiency gains, as Hunter Water had already built-in efficiency improvements into its forecasts.[61]

On the use of economy-wide MFP data, our objective is to establish a measure of long term average productivity growth for the Australian economy as a proxy measure of the expected efficient frontier shift over the 2020 determination period. Our approach includes the use of

59 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 123.
60 Productivity Commission (2019) *PC Productivity Bulletin* May 2019.
61 Hunter Water, *Submission to IPART Draft Report*, April 2020, p 10.

40 years of data across all market sectors and firms, while excluding the non-market sector. We consider that this provides the most objective measure of long term average productivity growth in the Australian economy. In addition, we have included all years since 1974-75 in our analysis – including periods of both low and high growth.

We have reviewed Hunter Water's position and do not consider there to be a strong case to change our approach. Selecting a subset of this data (utilities or water industry data only), as Hunter Water suggests, may not be consistent with our objective. This is because utility industries, including the water industry, often feature natural monopolies, and we are trying to replicate the innovation and efficiency outcomes of competitive markets in applying the continuing efficiency adjustment. We have not sought to exclude any particular market sector industries from our analysis.

On potential double-counting, we consider that the efficiency gains and savings set out in Hunter Water's submission represent savings that a frontier company should and would actively seek out. These savings and improvements therefore help ensure that Hunter Water remains at the frontier in future years.

Our continuing efficiency factor applies to the frontier firm, and represents the additional savings that a best-practice firm would make to stay on the efficiency frontier as that frontier moves out. As such, the continuing efficiency factor does not overlap with or double count other adjustments either recommended by Aither on certain programs, or identified and introduced by Hunter Water. This continuing efficiency adjustment accounts for economy-wide productivity improvements which contribute to the movement of that frontier.

Our decision is to maintain the 0.8% efficiency factor, but to defer its application to Hunter Water's expenditure by one year until 2021-22. Continuing efficiency gains requires the utility to seek out sources of efficiency and innovate, and we recognise this could be somewhat hampered in the short-term by the effects of COVID-19 on Hunter Water's operations.

Our assessment of ongoing efficiency and our decisions on the MFP, together with our consideration of the issues raised by Hunter Water, is set out in Appendix E.

Uncontrollable costs

Our decision on efficiency differs from Aither's because it does not exclude any 'uncontrollable' costs. We consider that all of Hunter Water's operating costs are controllable to some extent. Furthermore, economy wide long-term productivity growth is measured across all costs, including those that are less controllable by individual firms. As such, we consider that the continuing efficiency adjustment should be applied to all of Hunter Water's operating expenditure.

We consider the utilities' costs are all controllable to some extent

- We consider the costs incurred by Sydney Water, Hunter Water and Water NSW (ie, the utilities the subject of the current price reviews) are controllable to some extent, particularly in the medium to longer term.
- Costs driven predominantly by external factors – such as government requirements or changes in operating conditions (eg, land taxes, licence fees and water restrictions) – all have controllable elements that a utility can adjust to manage the cost. For example, if a utility acquires or sells parcels of land, this impacts on the amount of land tax it is liable to pay.
- As such, we have applied our efficiency adjustments to all costs proposed by the utility (ie, both costs directly driven by the utility and costs mainly driven by external factors). We consider the utility has the ability to find savings within these costs in a way that benefits its customers. Further, excluding specific costs from our efficiency adjustments would not create an incentive for the utility to look for improvements in its operations and find savings for these cost items.
- An exception to this principle is bulk water costs to Sydney Water. In this case, efficiency adjustments have already been applied to its bulk water costs in other reviews (eg, Water NSW Greater Sydney and Sydney Desalination Plant). We therefore exclude bulk water costs when applying efficiency adjustments to Sydney Water's proposed expenditure to avoid applying efficiencies to these costs twice.

4.4 Operating expenditure decision – in drought

Our decision is:

11 To include an additional $8.8 million per year in Hunter Water's operating expenditure during water restrictions as shown in Table 4.5.

Our decision is to allow an increase of $8.8 million per year in Hunter Water's allowance for operating expenditure during periods of water restrictions.[62] This is $1.6 million (or 15.3%) lower than Hunter Water proposed in its submission to our Draft Report.[63]

Table 4.5 Decision on Hunter Water's additional annual efficient operating expenditure during drought ($'000, $2019-20)

Program elements	Hunter Water proposal	IPART Decision
Water conservation measures	1,346	1,144
Restrictions implementation	548	466
Community engagement	1,564	1,329
Operational impacts	2,328	1,979
Drought response option development	1,108	942
Program support	444	377
Belmont desalination plant – Detailed design	2,500	2,500

62 This decision relates to periods of drought. $8.8 million is the amount of operating expenditure Hunter Water should incur if Hunter Water is in drought for exactly one year, with associated water restrictions in force. This represents about $24,000 each day water that restrictions are in force.

63 Hunter Water, *Submission to IPART Draft Report,* April 2020, p 53 and IPART analysis.

Expansion of WEMPs	500	425
Short-run operating expenditure reductions	NA	-405
Total drought-related expenditure	**10,337**	**8,757**
Difference from Hunter Water's proposal ($)		-1,580
Difference from Hunter Water's proposal (%)		-15.3%

Source: Aither, *Review of Hunter Water forecast responses*, *Final Report*, 14 May 2020, p 4 and IPART analysis.

As set out in Chapter 8, we have introduced a higher water usage charge in periods of drought. This usage charge needs to be set to recover any additional operating costs that Hunter Water would efficiently incur during drought periods.

Hunter Water proposed that it would spend about $10.3 million annually in times of water restrictions.[64] It estimated this level of operating costs based on its activities and expenditure during the 2019-20 water restrictions. It made adjustments for one-off expenditure undertaken already and new items forecast for the future.

We engaged Aither to review Hunter Water's proposed costs and recommend an efficient level of expenditure in restrictions. Aither found that, overall, Hunter Water's approach to developing its cost estimates was reasonable, but recommended a number of adjustments as set out below.

We have included the costs of designing the proposed Belmont desalination plant

The largest single component of the expenditure is the detailed design for the Belmont desalination plant as a drought response. Under the Lower Hunter Water Plan (LHWP), Hunter Water has committed to start the detailed design when dams reach 60%. It estimates this would take around 9 months, at an estimated cost of $14.5 million.[65] Aither accepted this estimated cost, but proposed that it be treated as a capital item rather than through operating expenditure.[66] Hunter Water has proposed that it recovers, at most, $2.5 million per year of this $14.5 million over the next four years – should the detailed design be triggered. We consider that this is a reasonable approach to recovering some of these design costs. Should the full expenditure occur over the 2020 determination period, we will decide on how Hunter Water should recover the balance of the efficient costs incurred when we next review its prices, in 2023-24.

However, we consider that there are reasonable grounds for the inclusion of this item in our operating expenditure allowance during restrictions. While design costs of capital infrastructure projects are typically capitalised, the detailed design costs of the Belmont desalination plant warrant a different approach. Detailed design will be triggered when Hunter Water's total storage levels fall to below 60%. However, construction is not due to commence until storages reach 30% of capacity. As such, we consider that construction of the plant is unlikely in the short term, and Hunter Water's design costs would need to be recovered through operating expenditure.

64 Hunter Water, *Submission to IPART Draft Report,* April 2020, p 53.
65 Hunter Water, *Submission to IPART Draft Report,* April 2020, p 53.
66 Aither, *Review of Hunter Water forecast responses,* May 2020, pp 8-9.

We have accepted Aither's recommended efficiency adjustments

The 2019 water restrictions are the first time that Hunter Water has imposed restrictions in around 30 years. In its review, Aither found that the business would be learning how it responds to these situations and what is required to manage supply and demand, and customer engagement. It expects that these learnings should result in a more efficient approach next time Hunter Water enters water restrictions, and recommends a 15% reduction to the expenditure forecast for repeated expenditure items.[67]

We consider this is reasonable and agree with Aither's recommendation.

Aither further recommends a reduction of $405,000 to account for the saved operating expenditure from lower water demand. This is based on the short-run marginal cost of supplying water ($0.11/kL) and its final demand estimates. We have accepted this further adjustment.[68]

67 Aither, *Review of Hunter Water forecast responses,* May 2020, p 10.
68 Aither, *Review of Hunter Water forecast responses,* May 2020, p 11.

5 Capital expenditure

This chapter presents our assessment of Hunter Water's efficient capital expenditure.

Under the building block method, capital costs are not recovered as they are spent. Instead, efficient capital expenditure is added to the Regulatory Asset Base (RAB) and recovered over time through allowances for a return on assets and regulatory depreciation.

As with operating expenditure, we engaged Aither to review Hunter Water's historical and forecast capital expenditure and recommend the efficient amount to include in the RAB. As part of its review, Aither also reviewed the appropriate asset lives for both new and existing assets. Asset lives are discussed further in Chapter 6 and Appendix G.

This chapter sets out our assessment of Hunter Water's efficient level of capital expenditure. It discusses:

- Hunter Water's actual capital expenditure during the 2016 determination period.
- Hunter Water's proposed capital expenditure for the 2020 determination period.
- Our decisions on Hunter Water's efficient level of capital expenditure.

5.1 Capital expenditure decision

We have made the decision to accept most of Hunter Water's past and proposed capital expenditure program as efficient.

Hunter Water forecasts that its capital expenditure over the 4-year 2016 determination period will be $497.5 million, which is $100.1 million (or 25.2%) higher than we used to set prices in 2016.[69] We have made some adjustments to this forecast of around $5.0 million.

Our decision on Hunter Water's efficient capital expenditure over the 2016 determination period of $492.5 million is $5.0 million (1.0%) lower than Hunter Water's forecast of its actual capital expenditure over the four years.

Hunter Water has proposed $706.2 million ($2019-20, excluding discretionary expenditure) in capital expenditure over the 2020 determination period.[70] This is 40.3% higher than its capital expenditure over the 2016 determination period.

We have reduced the level of capital expenditure over the 2020 determination period by $53.6 million, which is 7.6% lower than that proposed by Hunter Water.[71]

69 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 41; Hunter Water Annual Information return, September 2019; IPART analysis.

70 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, pp 43, 69, IPART analysis.

71 This excludes Hunter Water's proposed capital expenditure on discretionary projects discussed in Chapter 11.

Our decision on Hunter Water's capital expenditure allowance over the 4-year 2020 determination period of $652.6 million is $155.1 million, or 31.2%, higher than Hunter Water's forecast actual capital expenditure over the four year 2016 determination period.

Our decisions are:

12 To set the efficient level of past capital expenditure since 2015-16 to be included in the Regulatory Asset Base (RAB) as set out in Table 5.1.

13 To set Hunter Water's efficient level of capital expenditure to be included in the Regulatory Asset Base (RAB) for the 2020 determination period at $652.6 million, as set out in Table 5.3.

Historical capital expenditure since 2015-16

Table 5.1 Decision on Hunter Water's efficient capital expenditure between 2015-16 and 2019-20 ($million, nominal)

	2015-16	2016-17	2017-18	2018-19	2019-20[a]
Water	29.9	32.7	49.9	61.4	46.0
Wastewater	56.9	43.9	33.5	36.0	106.2
Stormwater	0.7	0.5	0.5	6.1	1.7
Corporate	12.2	9.7	20.2	15.7	20.3
Total	**99.7**	**86.8**	**104.1**	**119.2**	**174.3**

a Figure for 2019-20 are forecasts.

Note: Excludes capital expenditure on discretionary projects.

Our decision on the efficient level of capital expenditure since 2015-16 reflects our assessment of how much of Hunter Water's actual capital expenditure should be included in the RAB.

We have accepted Aither's recommendation of a $5 million adjustment to capital expenditure in 2019-20.[72] This adjustment reflects our view that, given tendering was not due for completion until January 2020, Hunter Water is unlikely to be able to fully invest the $14 million works planned for 2019-20. As such, we have accepted Aither's recommendation to shift $5 million for this project from 2019-20 into 2020-21. We have also accepted Aither's recommendation that all of Hunter Water's actual capital expenditure between 2015-16 and 2018-19 was efficient.[73] Table 5.2 below shows that when converted in to $2019-20, our decision is to set the efficient level of expenditure between 2015-16 and 2019-20 at $598.9 million.

72 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 50.

73 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p xi. Although 2019-20 is part of the 2016 determination period, capital expenditure in 2019-20 is a forecast.

Table 5.2 Decision compared to Hunter Water's proposed capital expenditure between 2015-16 and 2019-20 ($million, $2019-20)

	2015-16	2016-17	2017-18	2018-19	2019-20	Total
Hunter Water's 1 July proposal	106.4	90.9	106.9	120.4	179.3.	**603.9**
Farley WWTP upgrade					-5.0	**-5.0**
Decision	106.4	90.9	106.9	120.4	174.3	**598.9**
Difference (%)	0.0%	0.0%	0.0%	0.0%	-2.8%	**-0.8%**

Note: Excludes $2.1 million of Hunter Water's forecast expenditure on discretionary projects in 2019-20.

Source: Hunter Water's annual information return, September 2019; IPART analysis.

Forecast capital expenditure over the 2020 determination period

Table 5.3 Decision on Hunter Water's efficient capital expenditure for the 2020 determination period ($million, $2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Water	35.7	51.4	55.1	51.2	193.4
Wastewater	121.1	80.1	76.2	53.6	331.0
Stormwater	3.7	2.7	4.6	5.8	16.7
Corporate	34.1	38.3	18.4	20.6	111.4
Total	**194.6**	**172.6**	**154.3**	**131.1**	**652.6**

Note: Excludes capital expenditure on discretionary projects. Totals may not add due to rounding.

We have accepted most of Aither's recommendations on adjustments to forecast capital expenditure on specific projects and programs.[74]

Our decision is $6.6 million (or 1.0%) higher than our draft decision of $646.0 million. This increase is partly due to our decision to include an additional $7.2 million for Hunter Water's Treatment Plant and Chemical Containment Upgrades Program.

In our Draft Report, we accepted Aither's recommendation to reduce the capital allowance for this program by $7.2 million over the 4-year determination period. We accepted Aither's assessment that while the program was necessary, the proposed level of total expenditure was overly risk averse.[75] In submissions to our Draft Report, both the NSW Environment Protection Authority (EPA)[76] and Flow Systems[77] argued that Hunter Water's proposed expenditure on this program was efficient.

The EPA states in its submission that it "supports HWC's risk averse approach to this issue." It also argues that there have been adverse environmental impacts caused by spills and leaks of chemicals.[78]

74 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, pp xi-xv.
75 IPART, *Review of prices for Hunter Water Corporation from 1 July 2020*, Draft Report, March 2020, p 49.
76 EPA, *Submission to IPART Draft Report,* 17 April 2020, pp 1-2.
77 Flow Systems, *Submission to IPART Draft Report,* 8 April 2020, p 1.
78 EPA, *Submission to IPART Draft Report,* 17 April 2020, p 1.

Similarly, Flow Systems argues that our decision to reduce our allowance for expenditure on this program:

> …does not seem to be in line with good corporate practice when applied to environmental compliance. The board of a private organisation in a similar position to Hunter Water would find it difficult to conclude that containment and safety works, if found wanting by the EPA at one site, should not be reviewed and brought to an acceptable standard at all sites, regardless of whether or not there had been a regulatory edict to do so.[79]

In light of this new information, we consider that the potential environmental and health risks warranted a more risk-averse approach from Hunter Water. Its proposed program scope is justified given the adverse consequences of chemical leaks. As such, we have revised our decision to reduce the expenditure allowance for this program and have reinstated the reduction of $7.2 million we made in the Draft Report.

Another change from the Draft Report is our decision to not apply the 0.8% continuing efficiency factor to capital expenditure in the first year of the determination period.

In our Draft Report, we applied a continuing efficiency factor (0.8% per annum) to Hunter Water's capital program over the 2020 determination period. As set out in Chapter 4 and Appendix E, our decision is to only apply this efficiency factor to years 2 to 4 of the determination period. This increases Hunter Water's capital expenditure allowance by $5.2 million over the four years.

Partially offsetting these increases is a reduction of $5.8 million for our decision to not approve Hunter Water's proposed increase in tankered trade waste charges in 2023-24. This increase was linked to the construction of receiving facilities for tankered trade waste customers at a number of wastewater treatment works, which we expect will not take place until 2024-25. This decision is further set out in Chapter 13.

Our decision on efficient capital expenditure over the 2020 determination period, together with Hunter Water's proposed capital expenditure and our adjustments, is shown in Table 5.4.

79 Flow Systems, *Submission to IPART Draft Report*, 8 April 2020, pp 1-2.

Table 5.4 Decision compared to Hunter Water's proposed capital expenditure for the 2020 determination period ($million, $2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Hunter Water's 1 July proposal[a]	195.9	180.7	170.6	159.1	706.2
Water network Capacity Upgrades	-1.4	-1.4	-1.4	-1.4	-5.4
Minor Asset Renewals Programs – Wastewater	-2.0	-2.3	-2.3	-2.6	-9.2
Farley WWTP upgrade	5.0	0.0	0.0	0.0	5.0
Other Wastewater Treatment Plant Upgrade Program	0.0	0.0	0.0	-16.2	-16.2
Water treatment minor works	-0.3	-0.3	-0.3	-0.3	-1.4
Water network (critical mains)	0.0	0.0	-1.9	-1.9	-3.8
Minor water mechanical and electrical network assets	-0.3	-0.3	-0.3	-0.3	-1.0
Minor water structures	-1.3	-1.3	-1.3	-1.3	-5.4
Mandatory Standards Program	-0.8	-0.8	-0.8	-0.8	-3.2
Tankered trade waste project	-0.2	-0.2	-5.4	0.0	-5.8
Efficiency adjustment (0.8%, annual compounding from 2021-22)	0.0	-1.4	-2.6	-3.2	-7.1
Decision	**194.6**	**172.7**	**154.2**	**131.1**	**652.6**
Difference	***-1.3***	***-8.0***	***-16.3***	***-28.0***	***-53.6***
Difference (%)	***-0.7%***	***-4.4%***	***-9.6%***	***-17.6%***	***-7.6%***

[a] Excludes capital expenditure on discretionary projects.

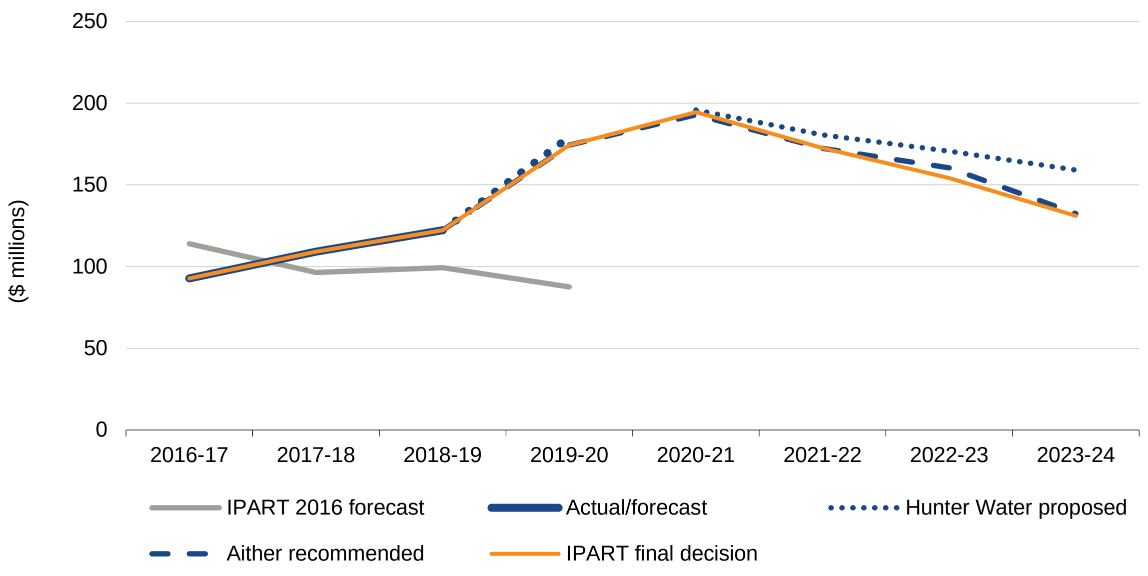
Source: Aither, *Hunter Water expenditure review, Final report*, 14 December 2019; IPART analysis.

Figure 5.1 below shows our decision on Hunter Water's efficient actual and forecast capital expenditure allowances compared to Hunter Water's proposed and Aither's recommended levels of efficient expenditure. This figure shows that our decisions on both the historical and forecast level of efficient capital expenditure are significantly higher than what we used to set prices in 2016.

The allowance for capital expenditure of $652.6 million is $155.1 million (31.2%) higher than Hunter Water's forecast actual expenditure of $497.5 million over the 2016 determination period.

As shown below in Figure 5.1, our decision on efficient capital expenditure of $652.6 million over the 2020 determination period is $5.7 million lower than recommended by Aither. This is a result of our decision to apply a 0.8% continuing efficiency factor to all capital expenditure from 2021-22 onwards, and our decision to exclude Hunter Water's proposed $5.8 million of expenditure on tankered trade waste receiving facilities at some of its wastewater treatment plants.

Figure 5.1 Decision on Hunter Water's efficient capital expenditure compared to historical and proposed/recommended ($million, $2019-20)



Note: Excludes capital expenditure on discretionary projects.

Data source: Hunter Water annual information return, September 2019; Aither, *Hunter Water expenditure review, Final report*, 14 December 2019; IPART analysis.

5.2 Review of historical capital expenditure

Hunter Water's actual capital expenditure was higher than we forecast in 2016

Hunter Water forecasts that its actual/forecast[80] capital expenditure over the 4-year 2016 determination period will be $100.1 million (or 25.2%) higher than we used to set prices in 2016.[81] This is shown in Table 5.5 below.

Table 5.5 Hunter Water's capital expenditure over the 2016 determination period ($million, $2019-20)

	2016-17	2017-18	2018-19	2019-20	Total
Determination	114.0	96.5	99.3	87.6	**397.4**
Actual/forecast[a]	90.9	106.9	120.4	179.3	**497.5**
Difference	*-23.1*	*10.4*	*21.1*	*91.7*	***100.1***
Difference (%)	*-20.3%*	*10.7%*	*21.3%*	104.7%	**25.2%**

a Figure for 2019-20 is a forecast.

b Note: Excludes capital expenditure on discretionary projects. Totals may not add due to rounding.

Source: Hunter Water Annual Information Return update, September 2019; IPART analysis.

80 Capital expenditure for 2019-20 is a forecast.

81 Excluding capital expenditure on discretionary projects.

When we set prices in 2016, we included a review of Hunter Water's proposed capital expenditure to 2020. Whilst our decisions in 2016 provided Hunter Water a capital allowance based on those decisions, our regulatory approach recognises that the projects and programs planned to be undertaken by a utility may need to change with shifting needs and priorities. As such, we do not rigidly hold utilities to their proposed projects or level of capital expenditure.

As set out above, Hunter Water forecasts that its actual capital expenditure over the 2016 determination period would be 25.2% higher than we allowed for when setting prices in 2016.[82]

In its pricing proposal, Hunter Water states that:

> During the current price period we experienced increased risks that materialised through operational incidents and identified deteriorated asset condition. We managed these risks by bringing projects forward, increasing minor asset renewals and undertaking new projects. The increased investment needs were challenged through our structured internal gateway processes, resulting in prudent and efficient budget constraints being systematically imposed upon the business and the capital investment proposal embodied in this price submission.[83]

Aither reviewed Hunter Water's expenditure over the 2016 determination period and found it to be largely efficient. It reviewed projects and programs that were the major contributors to the higher expenditure. It found that increases in expenditure were driven by:

- Increased incidents of asset failure
- An improved asset condition assessment process, which brought forward expenditure on assets identified as in critical condition
- Expanded project scope
- Higher than forecast costs on major projects.[84]

Whilst it found that Hunter Water's historical expenditure was largely efficient, Aither recommended that $5.0 million on the Farley WWTP (wastewater treatment plant) be deferred from 2019-20 to 2020-21. Aither stated:

> The assessment of capital expenditure for 2019-20 determined that it was unlikely that Hunter Water would be able to fully invest the $14 million works planned for the Farley WWTP upgrade in the current period, given that the tender process was only due to be completed in January 2020. The assessment considered that $5 million should be deferred to the forecast period.[85]

We have accepted Aither's recommendations on Hunter Water's historical capital expenditure.

82 Hunter Water Annual Information Return update, September 2019; IPART analysis.
83 Hunter Water, *Pricing Proposal to IPART, Technical Paper 4*, 1 July 2019, p 14.
84 Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, p 48.
85 Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, p 53.

5.3 Review of proposed capital expenditure in the 2020 determination period

Adjustments to Hunter Water's proposed projects and programs

Hunter Water proposed $706.2 million[86] in capital expenditure over the 2020 determination period.[87] This is:

- $208.7 million (or 42.0%) higher than its forecast capital expenditure over the 2016 determination period.
- $308.8 million (or 77.7%) higher than what we used in 2016 to set prices over the 2016 determination period.

Aither reviewed Hunter Water's proposed capital expenditure over the 2020 determination period and recommended a number of adjustments to specific programs and projects. In total, Aither recommended a $47.9 million (or 6.8%) reduction to Hunter Water's proposed expenditure.[88]

Aither made a number of specific recommendations to Hunter Water's proposed capital program, the most significant of which are reductions of:

- $16.2 million to the major wastewater treatment plant upgrade program. Aither found that two of the seven proposed projects in the $108 million program should be deferred to beyond the 2020 determination period.[89]
- $9.2 million in proposed capital expenditure on minor wastewater asset renewals. Aither found that there was insufficient rigorous evidence to justify the proposed increase, and that the scale of the program was overly risk averse.[90]
- $5.4 million for water network capacity upgrades. Aither found that the higher proposed costs of augmenting capacity in existing assets (relative to cost estimates adopted for Greenfield development) were not supported by sufficient evidence.[91]
- $7.2 million for treatment plant chemical containment and safety upgrades. The Environment Protection Authority (EPA) has issued Hunter Water with directives to undertake containment and safety works at some of its sites, including Dungog WWTP. Aither found that Hunter Water's proposal to extend this program for sites that are not covered by EPA directives is overly risk averse.[92]
- $14.8 million on other reductions to projects and programs.

86 Excluding capital expenditure on discretionary projects.
87 Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, pp 81-83.
88 This section does not include discretionary expenditure which is at chapter 11. See Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, pp 81-83.
89 Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, pp 55-57.
90 Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, pp 52-53, 57.
91 Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, pp 51-52, 57.
92 Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, pp 54, 57.

We have accepted most of Aither's recommended adjustments to Hunter Water's proposed capital expenditure program over the 2020 determination period. However, we have not accepted its recommendation to reduce the Treatment Plant Chemical Containment and Safety Upgrades program by $7.2 million. We consider Hunter Water's proposed scope and expenditure on this to be efficient and have included it in our allowance for capital expenditure.

Partially offsetting these reductions, is an increase in capital expenditure in 2020-21 arising from Aither's recommended deferral of $5 million on the Farley WWTP upgrade from 2019-20 to 2020-21.

Aither also reviewed Hunter Water's 'water loss improvement program'. The objective of this program is to ensure that Hunter Water's water losses from leakage are not excessive. We consider it important that Hunter Water's water conservation is aimed at reducing water leakage to its optimal level. If leakage is too high, valuable water is being wasted. On the other hand, as leakage is reduced, it becomes more and more expensive to fix leaks relative to the amount of water saved. We expect Hunter Water to reduce leaks where the costs incurred are less than the value of the water saved.

As part of the requirements of Hunter Water's Operating Licence, IPART has approved Hunter Water's methodology to determine its economic level of water conservation (ELWC).[93] Key elements of the ELWC methodology are shown in Box 5.1 below.

Box 5.1 Hunter Water's ELWC methodology

The methodology requires Hunter Water to complete water conservation activities up until the point that doing so is more expensive than the value of water saved. A project will go ahead so long as the levelised cost of the project is less than the value of water saved by the project.

$$Project\ levelised\ cost = \frac{PV(Project\ delivery\ cost) - PV(Avoided\ costs) - PV(Externalities)}{PV(Water\ saved)}$$

In turn, the value of water is calculated as follows:

$$Value\ of\ water = Direct\ water\ supply\ cost + Drought\ response + Scarcity\ value + Externalities$$

For short-run projects, Hunter Water's ELWC shows the short run values of water in the table below.

Hunter Water's short run value of water used in ELWC calculation

Total water storage level	Social cost ($/kL)
80%-100%	0.46
70%-79%	0.48
60%-69%	3.55
50%-59%	8.37

Source: Hunter Water, *Economic Level of Water Conservation Methodology*, August 2019, pp 6, 8, 17.

93 Hunter Water Operating Licence, 2017-2022.

Hunter Water's leakage has reduced from around 19.6ML/day to 18.5ML/day in 2018-19, which meets its estimate of the economic level of leakage.[94]

Hunter Water has proposed to spend $32.8 million on its water loss improvement program between 2020-21 and 2024-25.[95] Aither reviewed Hunter Water's proposed expenditure on the water loss reduction program and found it to be in line with its ELWC methodology and as such found it to be efficient.[96]

Summary

Overall, Aither found that most of Hunter Water's proposed increase in capital expenditure is justified and efficient. It considered Hunter Water's capital delivery processes including asset management, strategic planning, governance and risk management and found them "robust and conducive to efficient investment decision making".[97] In addition to Hunter Water's decision making processes, Aither also found that its capital project delivery aligns with standard industry practice.

However, it found that Hunter Water's risk assessment approach to some projects led to higher costs for some proposed projects. It found that:

> …in some cases, a risk averse approach to project scoping and decision-making has been adopted that has resulted in a higher-cost option being preferred. This approach may inappropriately shift risk away from Hunter Water and onto its customer base via higher pricing to recover the costs associated with the higher-cost option.[98]

Given the above findings, the project and program adjustments Aither recommended are relatively modest.

Aither's recommended adjustments are explained in further detail in Appendix F.

5.4 Catch-up and continuing efficiency

We have applied a continuing efficiency adjustment of 0.8% per year from 2021-22

As with operating expenditure, we have previously considered applying efficiency factors to utilities' forecast capital expenditure where appropriate. This includes:

- **Catch-up efficiency** - this is the efficiency 'gap' between an individual company within the industry and the efficiency frontier.
- **Continuing efficiency** – this represents the frontier shift, the efficiency savings that even a perfectly efficient firm would make with assumed productivity gains over time.

94 Hunter Water, *Water Conservation Report 2018-19*, September 2019, p 16.
95 Hunter Water, *Pricing Proposal to IPART, Technical Paper 4*, 1 July 2019, p 33.
96 Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, pp 56-57.
97 Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, p x.
98 Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, p x.

Aither did not recommend a continuing efficiency factor for Hunter Water's capital expenditure as it is of the view that:

- For its continuing programs, Hunter Water has undertaken benchmarking exercises to compare its costs with comparable utilities.
- For major projects where benchmarking is not appropriate, Hunter Water consistently applies leading practices to ensure efficiencies, including separating design and construction tenders and packing smaller similar projects into larger tenders to achieve economies of scale.[99]

We note Aither's assessment that Hunter Water's systems and processes place it in the leading group of utilities in Australia.[100] However, we consider that it is appropriate to add a continuing efficiency factor to Hunter Water's proposed capital expenditure.

In our Draft Report, we applied an adjustment of 0.8% per annum for each year of the determination period. This reflected our view that continuing productivity improvements should enable an efficient firm to improve its performance in planning and delivering its capital program over time. In arriving at this figure, we weighed our assessment of short and long-term productivity in Australia, and Aither's assessment that Hunter Water has robust processes.

As discussed in Chapter 4, and in Appendix E, we have maintained a 0.8% efficiency factor for our Final Report, but have not applied it to expenditure in year 1 of the determination period (2020-21). This recognises the challenges and uncertainties that Hunter Water will face from COVID-19.

One of our considerations in deciding on a 0.8% efficiency factor was MFP in the Australian economy. As MFP includes all inputs, including both operating and capital costs, we consider that this factor should apply to capital expenditure, as well as operating expenditure. As such, our decision is to apply a 0.8% per annum efficiency factor to Hunter Water's capital expenditure program from year 2 of the 2020 determination period.

Table 5.6 shows the impact of a 0.8% annual (compounding) efficiency adjustment from year 2 applied to Aither's recommended efficient capital expenditure allowance for Hunter Water, resulting in a total reduction of $7.1 million over the 2020 determination period.

99 Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, pp 70-71.
100 Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, p 71.

Table 5.6 Impact of applying an 0.8% annual efficiency adjustment from 2021-22 ($million, $2019-20)

	2020-21	2021-22	2022-23	2023-24
Hunter Water Proposed	**195.9**	**180.7**	**170.6**	**159.1**
less Project and program adjustments	-1.3	-6.6	-13.8	-24.8
Adjusted expenditure	**194.6**	**174.0**	**156.8**	**134.3**
Percentage efficiency adjustment (compounding)	0.0%	-0.8%	-1.6%	-2.4%
Adjustment for efficiency ($million)	0.0	-1.4	-2.6	-3.2
IPART decision	**194.6**	**172.7**	**154.2**	**131.1**

Note: Excludes capital expenditure on discretionary projects. Totals may not add due to rounding.

We present detailed analysis of productivity factors and the MFP in Appendix E.

6 Notional revenue requirement

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

This chapter presents our approach and decisions on the total NRR, as well as any adjustments we make to account for revenue from sources other than water, wastewater and stormwater customers. We also compare the NRR with that used to set prices in the 2016 Determination and that in Hunter Water's proposal.

6.1 How do we assess the notional revenue requirement?

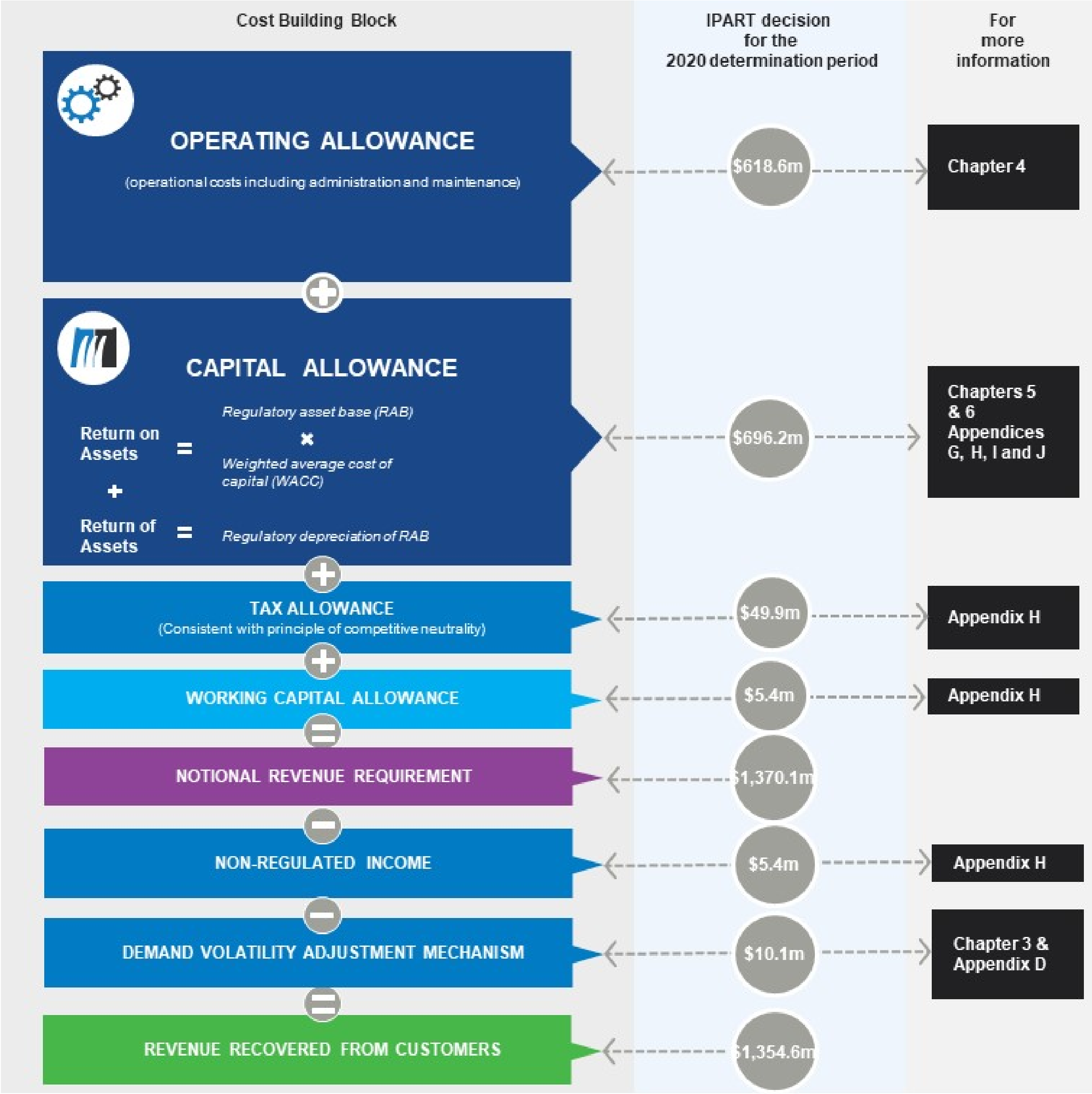
We have continued to use the 'building block' approach to calculate the NRR. In this approach, we break-down Hunter Water's costs into five components (or building blocks), namely:

- Operating cost allowance, to cover costs such as maintenance and administration costs
- Capital cost allowance, comprised of:
  - return on the assets that Hunter Water uses to provide its services
  - regulatory depreciation (or a return of the assets that Hunter 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.

In this review we have also considered and set prices for discretionary expenditure. We have kept this separate to the NRR for water, wastewater and stormwater services and discuss it further in Chapter 11.

A full discussion of our approach to calculating the NRR is set out in Appendix H. Figure 6.1 illustrates our approach to calculating the NRR and how we set prices.

Figure 6.1 The building block model



Note: Totals may not add due to rounding.

Data source: IPART analysis.

6.2 The total NRR is $1,370.1 million over four years

Our decision is:

14 To set the notional revenue requirement (NRR) of $1,370.1 million as set out in Table 6.1.

The total NRR is $1,370.1 million over four years, as set out in Table 6.1. This is around $110 million (7.4%) less than Hunter Water's proposal over the four years of the 2020 determination period. We present our decisions related to each of the building blocks in the table below.

Table 6.1 NRR and comparison to Hunter Water's proposal ($million, $2019-20)

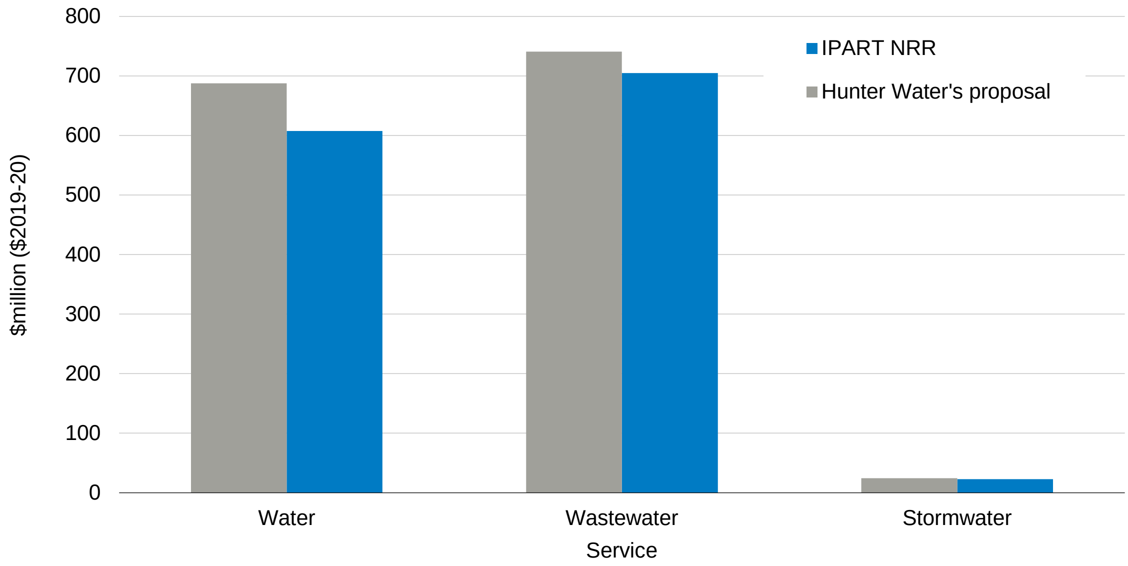
	2020-21	2021-22	2022-23	2023-24	Total	% of total
Operating expenditure	157.0	154.7	154.8	152.1	618.6	45.2%
Depreciation	59.9	68.4	75.3	81.3	285.0	20.8%
Return on assets	97.4	101.6	104.9	107.3	411.2	30.0%
Tax allowance	11.2	11.7	12.6	14.3	49.9	3.6%
Return on working capital	1.0	1.3	1.5	1.6	5.4	0.4%
Total NRR	**326.5**	**337.8**	**349.2**	**356.7**	**1,370.1**	
Hunter Water's proposal	350.4	363.5	377.6	388.3	1,479.8	
Difference ($)	-23.9	-25.7	-28.4	-31.6	-109.7	
Difference (%)	-6.8%	-7.1%	-7.5%	-8.1%	-7.4%	

Note: Totals may not add due to rounding. The notional revenue requirement is our assessment of the efficient economic costs of delivering services. Before setting prices, we make other adjustments such as subtracting a share of non-regulated income.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 8; IPART analysis.

To set prices for each service, we calculate a separate NRR for water, wastewater and stormwater services, to ensure customers who do not have access to one or more of the services do not pay for them.[101] Each of these NRRs is based on the cost build-up for the individual service, with an allocation of corporate costs. The wastewater NRR is the largest at $704.8 million over four years, followed by water ($607.6 million) and stormwater ($23.1 million). These are also smoothed before we set prices. Figure 6.2 compares our NRR for four years with Hunter Water's proposal, by service.

Figure 6.2 NRR compared to Hunter Water's proposal, by service ($million, $2019-20)



Data source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, pp 10-11; IPART analysis.

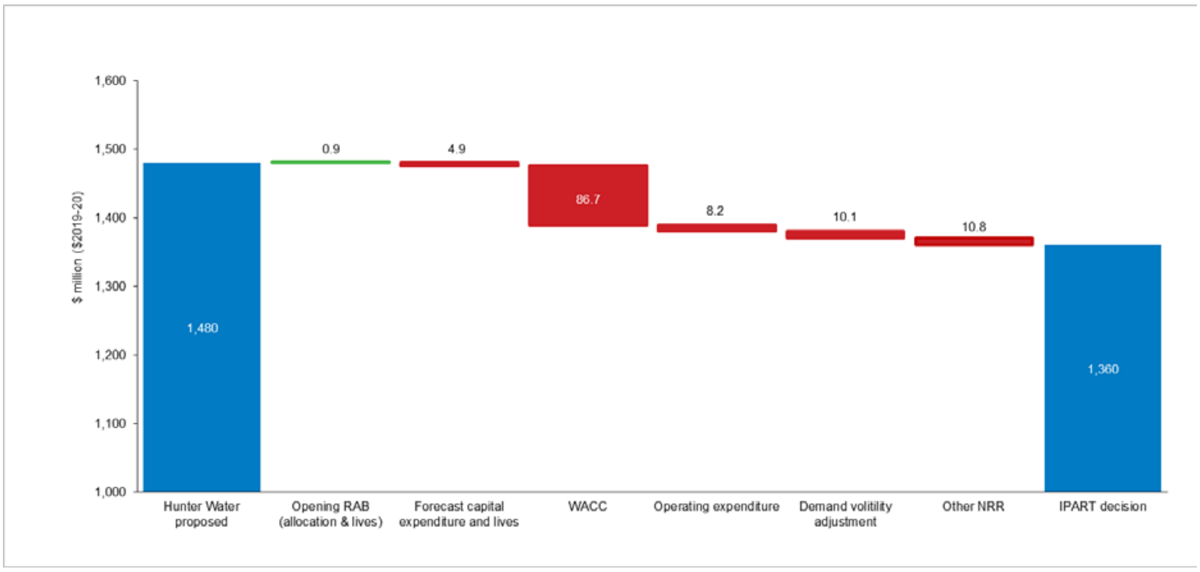
101 The adjustments are allocated depending on the infrastructure that is used to derive the revenue. The DVAM adjustment is taken from the water NRR because the over recovery is from water usage.

6.3 Our NRR is lower than that proposed by Hunter Water

Compared to Hunter Water's proposal, our NRR is $110 million or 7.4% lower over the four years.

Figure 6.3 illustrates how our decisions result in a lower NRR compared to that proposed by Hunter Water. The key differences to Hunter Water's proposal are the return on capital allowance (ie, WACC) and regulatory depreciation, both discussed below. Chapter 4 contains our decision on the operating expenditure allowance. More detail on the remaining building blocks is in Appendix H.

Figure 6.3 The key decisions in changes from Hunter Water's proposed NRR to our NRR



Notes: Though not a NRR cost building-block, we have included the DVAM adjustment to illustrate the impact on revenue required. The block 'Opening RAB' refers to the impact on notional revenue from IPART's decision on past capital expenditure, allocation of existing asset into more RAB categories and lives of existing assets.

Data source: IPART analysis.

6.3.1 Our allowance for return on assets is 19% lower than proposed by Hunter Water

The change in the WACC has had the most significant impact in driving the differences between our NRR and Hunter Water's proposed NRR. Hunter Water's proposal used the same methodology to set the WACC as IPART and the differences are largely a function of timing. Between when Hunter Water submitted its proposal and now, market conditions have changed, lowering the WACC from 4.1% to 3.4%. That is, if Hunter Water submitted its pricing proposal now using the same WACC methodology, its proposed NRR would be significantly closer to our NRR.

In its submission to our Draft Report, Hunter Water argued that the inflation forecast in our WACC calculation was not representative of the likely actual inflation over the next four years, and as such the real rate of return from the WACC was too low. It stated that:

> IPART's current approach to forecasting future inflation produces an estimate close to 2.5% in all market conditions. This is because IPART takes the RBA 1-year inflation forecast and then assumes

> that inflation will be 2.5% in all remaining years of the regulatory period. In some market conditions, this approach will produce a reasonable forecast of future inflation. However, an estimate close to 2.5% is implausibly high in the current market conditions.[102]

In its submission to our Draft Report, Hunter Water argued that in calculating the WACC, we should adopt an inflation forecast of 1.7%, and introduce an end of determination true-up to account for any discrepancy from the actual inflation over the 4-year period.[103]

After consideration, our decision is to maintain our approach to forecasting inflation for the WACC calculation for the 2020 determination period. Our decision on the WACC is set out in Appendix I. Our analysis of, and decision on inflation, is discussed in detail in Appendix J.

6.3.2 Our WACC is currently high compared to other jurisdictions

In Appendix I, we outline how we calculate our real post-tax weighted average cost of capital (WACC) of 3.4% for our Hunter Water, Water NSW Greater Sydney and Sydney Water final reports. While we are confident that our WACC methodology is robust, we note that our WACC is currently above most of the WACCs provided in other comparable jurisdictions (see Table 6.2). The exception is the cost of capital provided by the Essential Services Commission of Victoria (ESC).

IPART's relatively high WACC (compared to most other Australian jurisdictions), along with other elements of our pricing decisions and regulatory framework – including our allowances for capital and operating expenditure, our provision for a trailing average cost of debt, and our decisions on dynamic prices and price structure, which combined significantly mitigate cost and revenue risk - indicate that Hunter Water will be in a relatively stable financial positon over the 2020 determination period. Our financeability analysis is presented in Chapter 14 and Appendix W.

102 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p iii.

103 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p iii-iv.

Table 6.2 Comparison of real post-tax WACCs across Australian jurisdictions

Published by	Calculated for	Date published	Real post-tax WACC (%)
ESCOSA[a]	SA Water	March 2020	2.71
	AER (indicative)	March 2020	2.74
	ERA (indicative)	March 2020	2.74
	QCA (indicative)	March 2020	1.91
	OTTER (indicative)	March 2020	2.80
	ICRC (indicative)	March 2020	2.56
ESC	South Gippsland Water (PREMO)[b]	February 2020	3.68
	Western Water (PREMO)[b]	March 2020	3.36
	Goulburn-Murray Water (WCIR)	June 2020	4.00
AER	Directlink	June 2020	2.21
	Energex	June 2020	2.41
	Ergon Energy	June 2020	2.41
	SA Power Networks	June 2020	2.42
ESCOSA	SA Water[c]	June 2020	2.42 – 2.96
IPART	2020 draft reports	March 2020	3.20
	2020 final reports	**June 2020**	**3.40**

a In its March 2020 Draft Determination – statement of reasons for its review of prices for SA Water, the Essential Services Commission of South Australia (ESCOSA) presented a comparison of its draft WACC for SA Water to a range of indicative WACCs calculated by ESCOSA based on the published methodologies of other regulators in Australia namely the Australian Energy Regulator (AER), the Economic Regulation Agency of Western Australia (ERA), the Queensland Competition Authority (QCA), the Office of the Tasmanian Economic Regulator (OTTER) and the Independent Competition and Regulatory Commission of the ACT (ICRC). We note that in response, Frontier Economics (on behalf of SA Water) criticised ESCOSA's approach for not including ESC and IPART WACCS in the comparison and for calculating indicative WACCs for each jurisdiction rather than reporting WACCs that had been published by the regulators themselves in each of these jurisdictions. Frontier Economics presented an inter-jurisdictional comparison of published WACCs from several jurisdictions over a period from April 2018 to March 2020. Our view is that comparing current WACC estimates to WACC estimates that were published as far back as mid-2018 is not appropriate. To illustrate this point, IPART's current WACC estimate is 3.4% but in mid-2018 it was 4.1% (ie, 0.7% higher). We have therefore chosen to exclude WACC estimates that were published before 2020.

b Under the ESC's PREMO approach, the return on equity is determined by a menu based incentive mechanism rather than reflecting market-based returns. This limits direct comparisons between the ESC's cost of capital allowance and other regulators' WACCs.

c ESCOSA's Final Determination set real post-tax WACCs for each year of the 2020 determination period. That is, 2.96% in 2020-21, 2.75% in 2021-22, 2.59% in 2022-23 and 2.42% in 2023-24.

Note: while we have attempted to include all comparable (ie, real post-tax) cost of capital estimates published in 2020, it is possible we have unintentionally omitted one or more estimates from this comparison that we were unaware of.

Source: ESCOSA, *SA Water Regulatory Determination 2020, Draft Determination: Statement of Reasons*, March 2020, p 305. Frontier Economics, *Assessment of ESCOSA's treatment of inflation when setting SA Water's allowed rate of return*, April 2020, pp 27-34. IPART, *WACC Biannual Update*, August 2018, p 6. ESC, *South Gippsland Water draft decision*, February 2020, pp 23-24. ESC, *Western Water draft decision*, March 2020, pp 29-30. ESC, *Goulburn-Murray Water final decision*, June 2020, p 21. AER, *Final Decision Directlink Transmission Determination 2020 to 2025 – Overview*, June 2020, p 20. AER, *Final Decision Energex Determination 2020 to 2025 – Overview*, June 2020, p 26. AER, *Final Decision Ergon Energy Determination 2020 to 2025 – Overview*, June 2020, p 28. AER, *Final Decision SA Power Networks Distribution Determination 2020 to 2025 – Overview*, June 2020, p 26. ESCOSA, *SA Water Regulatory Determination 2020, Final Determination: Statement of Reasons*, June 2020, p 231. IPART, *Review of Prices for Sydney Water – Draft Report*, March 2020, Appendix H.

Our decision on the real pre-tax WACC is 4.2%.

6.3.3 Our depreciation allowance is close to Hunter Water's proposal

While our decision on the depreciation allowance over the 2020 determination period is close to that proposed by Hunter Water (2.6% lower), we have set different average asset lives in each of the RAB sub-categories. Generally, average asset lives in most RAB subcategories are longer than those proposed by Hunter Water. However, we have set a much shorter average asset life (9 years) for the 'Transition' RAB sub-category[104] compared to Hunter Water's proposal of 50 years. This has the effect of accelerating the rate at which this sub-category depreciates.

In its submission to our Draft Report, Hunter Water argued that the overall regulatory lives of its assets were still too high. It reiterated its view that we should adopt its proposed asset lives set out in its July 2019 pricing proposal.[105]

We engaged an expert asset valuation consultant, Advisian, to further investigate the appropriate economic lives of Hunter Water's regulated assets. Advisian recommended that we use average asset lives generally shorter than those in our Draft Report, but still typically longer than proposed by Hunter Water.[106] For all RAB sub-categories other than the Transition RAB, we have accepted – for this determination period – Advisian's recommendations.

While our final decision on average asset lives leads to a depreciation allowance very close to that proposed by Hunter Water over the 2020 determination period, we consider that the issues raised by Hunter Water warrant a detailed investigation of asset lives for all of the metropolitan utilities we regulate. We aim to undertake this review in 2020-21.

Appendix G contains a complete discussion about our decisions on the RAB disaggregation method and our decision on the appropriate average asset lives.

6.4 We adjusted the NRR to account for revenue from other sources, and then set the target NRR

Before setting prices to recover the NRR, we subtract a share of the revenue Hunter Water is forecast to receive from non-regulated sources, when that revenue is made using regulated assets (ie, the adjusted NRR). This acknowledges that customers have paid for the regulated assets, and should therefore share in some of the gains. It also ensures that the utility does not over-recover its efficient level of expenditure, and that customers do not pay too much. Hunter Water also receives revenue from trade waste and miscellaneous price, and for this review, we have decided to return some revenue to customers through our demand volatility adjustment mechanism (DVAM).

In line with our usual practice, we have decided to set prices to recover the adjusted NRR by the end of the determination period, rather than to recover the adjusted NRR on an annual basis (ie, by the end of each year of the period). This approach smooths the impact of price changes over the period, thus reducing price volatility for customers, and revenue volatility for Hunter Water.

104 The Transition RAB represents the RAB values of old IT and equipment assets that have physically expired, but whose values remain in the RAB.

105 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p ii.

106 Advisian, IPART Hunter Water Economic Life report, May 2020, pp 7-10.

However, this approach also means the target revenue to be recovered in each year of the period will not equal the adjusted NRR in each year. To ensure that Hunter Water and customers do not benefit or lose from this arrangement, we set prices so that the target revenue expected to be received from prices equates to the adjusted NRR over the determination period, in 'present value' terms (ie, the price path is NPV neutral).

Our decisions are:

15 To subtract from the NRR the revenue from our decisions on the demand volatility adjustment mechanism, trade waste services, miscellaneous services, non-regulated assets, and raw water and bulk water services, in accordance with Table 6.3.

16 To set prices to recover the total adjusted NRR over four years, in present value terms.

Table 6.3 presents our decisions on the revenue from other sources.

Table 6.3 Adjustments to the NRR ($million, $2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
IPART decision NRR from building blocks	**326.5**	**337.8**	**349.2**	**356.7**	**1,370.1**
Demand volatility adjustment[a]	10.1	0.0	0.0	0.0	10.1
Trade waste revenue	2.3	2.6	2.6	2.6	9.9
Miscellaneous charges	2.3	2.3	2.3	2.3	9.2
Revenue from raw water and bulk water	3.0	3.3	3.7	4.1	14.1
Non-regulated revenue	1.4	1.4	1.4	1.4	5.4
Total adjustments	**19.0**	**9.5**	**9.9**	**10.3**	**48.7**
Revenue to be recovered by water, wastewater and stormwater prices	**307.3**	**328.3**	**339.3**	**346.3**	**1,321.4**

[a] The DVAM is the only adjustment in the above table which does not represent Hunter Water revenue over the 2020 determination period.

Note: Totals may not add due to rounding.

Table 6.4 below sets out the difference between our decision on the NRR (adjusted by the DVAM), and the target revenue from all regulated sources over the 2020 determination period. This table shows how we have smoothed the target revenue over the 4-year determination period to match the total efficient costs (the NRR adjusted for the DVAM) in present value terms.

Table 6.4 DVAM-adjusted NRR compared to target revenue ($million, $2019-20)

	2020-21	2021-22	2022-23	2023-24	NPV-total
DVAM-adjusted NRR[a]	316.4	337.8	349.2	356.7	1,251.4
Target revenue	327.9	336.5	343.8	350.6	1,251.4
Difference	**-11.5**	**1.2**	**5.4**	**6.0**	**0.0**

a Total NRR less the $10.1 million DVAM adjustment.

Note: The discount rate used in the NPV calculation is the WACC. Totals may not add due to rounding.

For more information on:

- The demand volatility adjustment see Chapters 3 and 7
- Non-regulated revenue, see Chapter 3
- Revenue from trade waste and miscellaneous services, see Chapter 13.

6.5 Summary of our building block decisions

Our decision on the operating allowance is provided and explained in Chapter 4. In relation to the remaining building blocks, our decisions are summarised below and discussed in more detail in Appendix H.

Our decisions are:

17 To calculate the return on assets using:

a. An opening RAB of $2,813.5 million for 2020-21, and the RAB for each year as shown in Table H.2.

b. A WACC of 3.4%.

18 To calculate the depreciation allowance by:

a. Disaggregating the current RAB into 21 categories, accounting for the 'line in the sand' approach when the RAB was first set in 2000.

b. Using the straight-line depreciation method, and

c. Using the asset lives set out in table G.5 for existing assets, and Table G.7 for new assets.

19 To calculate the tax allowance using:

a. A tax rate of 30%

b. Hunter Water's forecast of assets free of charge, and

c. Hunter Water's forecast tax depreciation, adjusted for our decisions on capital expenditure.

20 To calculate the working capital allowance:

a. Accept Hunter Water's proposed parameters that:

– Half of the service charge is billed in advanced and half in arrears

– There is a delay of 25 days before bills need to be paid.

b. Calculate the proportion of revenue derived from service charges separately for each service based on forecast revenue.

c. Adjust Hunter Water's proposal to account for a delay in its move to quarterly billing.

7 Demand and customer numbers

A key step in our price setting process is to decide on Hunter Water's forecasts for water sales, wastewater discharge volumes and billable connections. These forecasts are used to determine the price levels necessary to recover Hunter Water's NRR.

It is important that the forecasts are reasonable. Differences between forecast and actual water sales over the determination period will lead to an over- or under-recovery of revenue. If forecasts are lower than actual sales, customers will pay higher than efficient prices (as the utility will 'over-recover' relative to its efficient costs). If they are higher than actual sales, Hunter Water may not earn sufficient revenue to recover its efficient costs.

In this chapter, we present our decisions on Hunter Water's forecast water sales and customer numbers for the 2020 determination period.

We have made a decision to set an 'uplift' to the water usage charge, which is triggered when water storage levels fall below 60% and remains in place until water storage levels rise above 70% (with a 31-day lag, see Chapter 8). As a result, we have adopted two sets of forecast water sales volumes:

- A non-drought forecast, based on 'average' weather conditions, which we use to set the base level water usage price, and
- A drought forecast, which we use to set the 'uplifted' water usage price, to apply when water storage levels fall below 60% and remain in place until water storage levels reach 70%.

These are presented in Section 7.1 and Section 7.2 respectively.

Impact of the COVID-19 pandemic

Hunter Water acknowledged, in its response to IPART's Draft Report, that the COVID-19 pandemic may affect water sales volumes and new connection numbers in the 2020 determination period. However, it is not possible to accurately forecast the impact of COVID-19 given the level of uncertainty.[107] Hunter Water did not incorporate changes due to COVID-19 in its revised water sales volumes forecast, nor propose any explicit adjustments to forecast customer numbers.

We asked our expenditure consultant, Aither, to consider the impacts of COVID-19 on demand forecasts. Aither did not make any recommendations with regards to the impact of COVID-19 on forecast demand and customer numbers, noting that any opinions would be highly speculative given the inherent uncertainty and lack of precedents for what is being experienced.[108]

107 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p vi.

108 Aither, *Review of Hunter Water forecast responses*, 7 May 2020, p 22.

7.1 Water sales volumes for non-drought periods

Forecast water sales volumes are used to determine the water service charge, wastewater discharge volumes, and the wastewater service charge.

Hunter Water's demand forecasting approach comprises two stages:

1. Top-down climate correction[109] – deriving a weather adjusted level of total demand in the base year. Hunter Water has developed a new climate correction methodology for the 2020 determination period.
2. Bottom-up forecasting – modelling how different types of customers use water in their homes and businesses in the weather adjusted base year, and basing forecasts on how that will change over time, using Hunter Water's Integrated Supply-Demand Planning (iSDP) model. The iSDP model was also used by Hunter Water to produce demand forecasts for the 2013 and 2016 determination periods.

More information on Hunter Water's demand forecasting approach is set out in Appendix K.

7.1.1 Hunter Water has revised its forecast water sales volumes for non-drought periods

The water sales volumes forecast in IPART's Draft Report no longer reflect Hunter Water's best estimates of demand due to material developments since September 2019 – namely the introduction of water restrictions.[110]

Hunter Water provided a revised water sales volumes forecast for non-drought periods in its response to IPART's Draft Decisions (shown in Table 7.1). The revised forecast is 4 to 5% lower than the water sales volumes forecast presented in the Draft Report.

109 References in this chapter to "climate correction" refer to the removal of the influence of short term (day-to-day) changes in weather. This is distinct from issues arising from "climate change".

110 Level 1 water restrictions were implemented on 16 September 2019 for the first time in 25 years, and remain in place at the time of drafting.

Table 7.1 Comparison of Hunter Water's revised water sales volumes and IPART's draft decision (ML)

	2020-21	2021-22	2022-23	2023-24
Hunter Water's revised water sales volumes forecast – April 2020				
Residential	36,700	36,833	36,952	37,097
Non-residential	19,515	19,912	20,032	20,207
Bulk water sales	1,385	1,426	1,518	1,611
Net inter-region transfers with Central Coast Council	0	0	0	0
Total	**57,599**	**58,171**	**58,502**	**58,915**
Water sales volumes forecast in IPART's Draft Report				
Residential	38,439	38,579	38,705	38,859
Non-residential	20,594	20,879	20,887	20,949
Bulk water sales	1,385	1,426	1,518	1,611
Net inter-region transfers with Central Coast Council	0	0	0	0
Total	**60,417**	**60,884**	**61,110**	**61,419**
Variance				
Residential	-1,739	-1,746	-1,754	-1,762
Non-residential	-1,079	-967	-854	-742
Bulk water sales	-	-	-	-
Net inter-region transfers with Central Coast Council	-	-	-	-
Total variance (ML)	**-2,818**	**-2,713**	**-2,608**	**-2,504**
Total variance (%)	**-4.7%**	**-4.5%**	**-4.3%**	**-4.1%**

Source: Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 48.

To derive the revised water sales volumes forecast, Hunter Water assumed that some demand responses to ongoing water restrictions will persist once restrictions are lifted. The reduction in total demand is comprised of:

- An approximate 4 to 5% reduction in non-residential demand due to the implementation of Water Efficiency Management Plans (WEMPs) and leak rectification, which reduces total demand by around 1.5% to 2%, and
- An approximate 4.5% reduction in residential demand due to behavioural changes, which reduces total demand by about 3%.

Hunter Water's proposed reduction in non-residential demand

Hunter Water's proposed reduction in non-residential demand is quantified by measured water savings from WEMPs and fixing leaks on non-residential customers' properties. As at 31 March 2020, Hunter Water had completed 161 WEMPs, and helped over 30 customers find and fix leaks on their properties.[111]

111 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 45.

Water savings from WEMPs include realised savings from implemented WEMPs, as well as scheduled savings from completed WEMPs (not yet implemented). In deriving the reduction in non-residential demand, Hunter Water assumed that only 50% of scheduled savings from completed WEMPs (not yet implemented) will be achieved. This reflects uncertainty relating to the scheduled actions not having been implemented or proven as yet, and the effect of the COVID-19 pandemic on non-residential customers' willingness to pursue water efficiency measures in the months ahead.[112]

Hunter Water's proposed reduction in residential demand

Hunter Water's proposed reduction in residential demand due to behavioural changes is informed, in part, by an apparent short-term reduction in demand prior to the introduction of water restrictions.[113] Hunter Water noted that although it is not possible to determine the statistical significance or separately quantify the drivers for this observed reduction in demand, factors that are likely to have contributed to water savings include the progressive uptake of water efficient devices, Building Sustainability Index (BASIX) initiatives to ensure homes are more water efficient, and the effect of messaging and advertising about water conservation.[114]

Hunter Water argues that data on post-restriction residential demand from other Australian water utilities show evidence of a 'step change' in consumption following a period of water restrictions – that is, residential demand does not return immediately to pre-restriction levels.[115] Hunter Water considers that it will be able to maintain a 3% reduction in demand due to behaviour changes into the future, even when water restrictions are lifted, because it is focussed on maintaining its communication strategy to encourage customers to conserve water.[116]

7.1.2 Our decision on water sales volumes for non-drought periods

Our decision is:

21 To adopt forecast water sales volumes for non-drought periods as shown in Table 7.2.

112 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 45.

113 Hunter Water observed that actual demand was 3% lower than predicted (using Hunter Water's demand forecasting approach) over a 14 months period, prior to the introduction of water restrictions (ie, from July 2018 to September 2019).
Correspondence with Hunter Water (email), 1 May 2020.

114 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 42.

115 Hunter Water observed a 19% reduction in total demand during restrictions. Some of this reduction is due to non-residential water savings (from WEMPs and leak rectification). The residual savings (ie, total *less* non-residential) are assumed to be from the residential sector. Hunter Water assumed that it will be able to maintain some of the residential water savings going forward – estimated at 3% of total demand based on the deviation between observed and predicted demand over the 14 months post-calibration, prior to the introduction of water restrictions.
Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 46 and correspondence with Hunter Water (email), 1 May 2020.

116 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 46.

Table 7.2 Water sales volumes for non-drought periods (ML)

	2020-21	2021-22	2022-23	2023-24
Residential	37,280	37,999	38,705	38,859
Non-residential	19,515	19,912	20,032	20,207
Bulk water sales	1,385	1,426	1,518	1,611
Net inter-regional transfers with Central Coast Council	-	-	-	-
Total	**58,180**	**59,337**	**60,255**	**60,677**

Source: Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 48 and IPART analysis.

The water sales volumes forecast we have adopted for non-drought periods is **2.2% lower** (in aggregate) than the forecast presented in our Draft Report.

7.1.3 Reasons for our decision

We consider Hunter Water's demand forecasting approach is appropriate

Hunter Water used the iSDP model to determine its demand forecasts for the 2013 and 2016 determination periods. We consider the use of the iSDP model (as part of Hunter Water's demand forecasting approach) remains appropriate for the 2020 determination period.

In 2019, the NSW Department of Planning, Industry and Environment (DPIE) engaged Jacobs (a specialist consulting firm) to undertake a review of Hunter Water's demand model. Jacobs reviewed and made recommendations on Hunter Water's new climate correction methodology, its existing iSDP model, and the linking of the new climate correction methodology to the iSDP. Hunter Water has addressed all of Jacobs' high priority recommendations.[117]

We also asked our expenditure consultant, Aither, to review Hunter Water's demand forecasting approach. Aither determined that Hunter Water's new climate correction methodology is a more robust modelling approach compared to Hunter Water's previous method for establishing the demand starting point.[118]

We accepted Hunter Water's proposed reduction in non-residential demand

We have accepted Hunter Water's proposed reduction in non-residential demand quantified by water savings from WEMPs and fixing leaks on non-residential customers' properties, noting that Hunter Water has accounted for uncertainty by assuming that 50% of savings from scheduled WEMPs (not yet implemented) will be realised.

117 Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, p 30.
118 Aither, *Hunter Water expenditure review*, 14 December 2019, p 150.

We assessed Hunter Water's proposed reduction in residential demand

We accept there is evidence from other Australian water utilities of a step change in customer behaviour following a period of water restrictions (ie, a sustained reduction in water consumption), and Aither also noted that it would expect some lag in returning to pre-restriction consumption behaviours.[119]

However, Aither considered Hunter Water's proposed reduction in residential demand is based on observations over a short time period (14 months) – so its persistence and consistency with other weather conditions and seasons into the future is uncertain.[120]

In addition, Aither found that the information presented by Hunter Water to support its step change assumption was based on evidence from other water utilities that had experienced multi-year water restrictions, meaning that customers' behaviour change would be greater/more persistent because of repeated messaging and restrictions over multiple years.[121] In contrast, at the time of drafting, Hunter Water's customers have been under water restrictions for approximately 9-10 months, and this is the first time restrictions have been implemented in the area in 25 years. As a result, the behaviour change for Hunter Water's customers may not be as embedded, and Hunter Water's proposed reduction in residential demand due to behaviour changes may be too ambitious.

We have adopted a more conservative approach than Hunter Water, by phasing out reductions in residential demand due to behaviour changes over a two year period – that is, we assume that residential demand will bounce back to pre-restriction levels after two years. This is in contrast to Hunter Water's assumption, which is that it will be able to maintain a 3% reduction in total demand due to behaviour changes going forward. The rationale for our approach is that it balances the likely step change in customer behaviour post-restrictions with the uncertainty of how long the step change would persist.[122]

Under our decision on residential demand, two-thirds of Hunter Water's expected reduction in residential demand due to behaviour changes will be incorporated in our forecast for 2020-21. We will incorporate one-third of the expected reduction in our forecast for 2021-22, with reductions due to behaviour changes to be fully phased out from 2022-23 onwards. This means that the residential demand forecasts for 2022-23 and 2023-24 shown in Table 7.2 are the same as those presented in our Draft Report.

We have not adjusted for possible impacts of COVID-19

We have not made an adjustment for the possible impacts of the COVID-19 pandemic, given the level of uncertainty. We would expect decreases in non-residential demand due to industries temporarily being closed down and more people working remotely. However, this is likely to be partly offset by increases in residential demand as a result of more time spent at home.

119 Aither, *Review of Hunter Water forecast responses*, 7 May 2020, p 14.
120 Aither, *Review of Hunter Water forecast responses*, 7 May 2020, p 14.
121 Aither, *Review of Hunter Water forecast responses*, 7 May 2020, p 14.
122 The concept of 'bounce back' refers to the deterioration of the step change in customer behaviour over time. Sydney Water reported a 1 to 2% bounce back post-restrictions lifting in 2009. Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 46.

Our DVAM (see Section 3.2) allows for an adjustment to the NRR in the following price period should Hunter Water experience a material under- or over-recovery of revenue as a result of actual water sales being different to forecasts over the 2020 determination period.

7.2 Water sales volumes for drought periods

We have made a decision to introduce an 'uplift' to the base water usage charge. The uplift will apply when water storage levels fall below 60%, and remain in place until water storage levels rise above 70%. This enables the recovery of increases in operating expenditure (see Section 4.4) and foregone water sales during periods of water restrictions.

In this section we present the water sales volumes forecast for drought periods, which we have used to set the 'uplifted' water usage price.

This forecast is based on the forecast for non-drought periods, adjusted for foregone water sales.

7.2.1 Hunter Water's proposed water sales volumes forecast for drought periods

To determine the water sales volumes forecast for drought periods, Hunter Water estimated:

- The reduction in water sales, below average levels, when water restrictions apply
- The likely change in demand in response to a higher usage charge.[123]

Hunter Water's proposed water sales volumes forecast for drought periods (shown in Table 7.3) was 12.2% lower (in aggregate) than its water sales volumes forecast for non-drought periods.

Table 7.3 Hunter Water's water sales volumes forecast for drought periods (ML)

	2020-21	2021-22	2022-23	2023-24
Non-drought forecast[a]	56,214	56,745	56,984	57,304
Less 9.9% reduction from water restrictions	-3,442	-6,717	-6,524	-5,832
Less 2.2% reduction due to the price elasticity response	-1,317	-1,249	-1,259	-1,285
Drought forecast	**51,454**	**48,780**	**49,200**	**50,187**

a Based on Hunter Water's revised residential and non-residential water sales volumes in Table 7.1.

Source: Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 56 and IPART calculations.

123 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p vi.

Reduction in water sales due to water restrictions

Hunter Water presented in its response to IPART's Draft Report two scenarios based on past drought sequences for consideration:

1. A '1 in 100 year' drought sequence, under which potable water consumption would fall by about 9.9% from expected levels
2. A 'repeat of 1980' drought sequence occurring over the next four years, under which potable water consumption would fall by 20.4%.[124]

Hunter Water stated that although a 'repeat of 1980' drought is feasible, it is also very unlikely. It proposed applying the 9.9% reduction modelled using the '1 in 100 year' drought sequence to the water sales volumes forecast for non-drought periods, to derive the water sales volumes forecast for drought periods. However, Hunter Water also stated that given this is a complex and subjective area, it is willing to consider other options.[125]

In further correspondence, Hunter Water presented a third scenario looking at the average change in water demand across the periods of restrictions that would have occurred over the last 120 years. It determined that, on average, water restrictions would have led to an approximate 6.2% reduction to non-drought demand.[126]

Reduction in water sales in response to a higher usage charge

Hunter Water did not estimate the price elasticity of demand for its customer base. Instead, it adopted the same price elasticities for a price increase as those in IPART's Draft Report for the Review of Prices for Sydney Water from 1 July 2020.

Hunter Water applied these elasticities to the '1 in 100 year' drought sequence and determined that it would result in an additional 2.2% reduction to non-drought demand.

Further information on price elasticities is presented in Appendix K.

7.2.2 Our decision on water sales volumes for drought periods

Our decision is:

22 To adopt forecast water sales volumes for drought periods as shown in Table 7.4.

124 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 54.
125 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 56.
126 Hunter Water modelled the average reduction in demand across 51 restricted months based on the current population and storage capacity, and 120 years of historical weather observations (from 1900 to 2019 inclusive).
Correspondence with Hunter Water (email), 12 May 2020.

Table 7.4 Water sales volumes for drought periods (ML)

	2020-21	2021-22	2022-23	2023-24
IPART decision on water sales volumes for non-drought periods[a]	58,180	59,337	60,255	60,677
Less 8.1% reduction from water restrictions	-4,683	-4,777	-4,851	-4,884
Less 1.6% reduction due to the price elasticity response	-945	-964	-979	-986
IPART decision on water sales volumes for drought periods	**52,551**	**53,597**	**54,426**	**54,807**

a Based on total water sales volumes in Table 7.2.

Note: We applied percentage reductions to all demand, including bulk water and raw water.

The drought forecast we have adopted is **9.7% lower** than the non-drought forecast (shown in Table 7.2) in each year of the 2020 determination period.

As noted by Hunter Water, there is inherent uncertainty associated with predicting the probability, timing, severity and duration of future weather conditions.[127] The water sales volumes forecast in Table 7.4 represents our best estimate of the 'most likely' impact of water restrictions if/when water storage levels fall below 60% in the future.

We will maintain the DVAM for the 2020 determination period to protect Hunter Water and customers from a material under- or over-recovery of revenue as a result of variations between forecast and actual water sales (see Section 3.2).

7.2.3 Reasons for our decision

We assessed Hunter Water's proposed reduction due to water restrictions

We have made a decision to apply an 8.1% reduction to non-drought demand due to water restrictions being in place. This represents the mid-point between Hunter Water's proposed reduction modelled using the '1 in 100 year' drought sequence, and the average change in water demand across the periods of restrictions that would have occurred over the last 120 years.

The rationale for this decision is that there are merits and shortcomings associated with each of the scenarios that Hunter Water presented. Hunter Water's proposed reduction modelled using the '1 in 100 year' drought sequence is more conservative than the reduction under the 'repeat of 1980' drought sequence. However, it does not represent the best estimate of the 'most likely' impact of water restrictions if/when water storage levels fall below 60% in the future because it is a low probability event. Although the average change in water demand across the periods of restrictions seems a better estimate, it is based on limited data points, and there is significant variability in these data points.[128]

127 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 54.

128 The average change in water demand across periods of restrictions is based on four periods of water restrictions (or 51 months of restrictions) over 120 years. This does not include the current period of water restrictions (ie, water restrictions from 16 September 2019).
The length of restriction periods range from 2 months of restrictions to 29 months of restrictions.
Correspondence with Hunter Water (email), 12 May 2020.

We also asked Aither to review Hunter Water's proposed water sales volumes forecast for drought periods. Aither found that the '1 in 100 year' drought sequence is a 'severe' scenario that materially exceeds Hunter Water's service standard intent to impose restrictions,[129] and did not recommend adopting this scenario for the drought forecast.

We accepted Hunter Water's price elasticities

In the absence of price elasticity estimates for its own customer base, Hunter Water has applied those used in IPART's Draft Report for the Review of Prices for Sydney Water from 1 July 2020.

We consider this approach is reasonable for the purpose of determining the likely reduction in water sales in response to a higher usage charge.

7.3 Forecast water and wastewater customer numbers

Forecast customer numbers are also used in calculating the water and wastewater service charges.

Generally, increases in water and wastewater connections reflect housing activity and business growth. Hunter Water recorded higher than expected growth in residential water connections in the 2016 determination period due to strong growth in the local housing sector.[130] Hunter Water expects housing activity to moderate over the 2020 determination period. Connections growth is forecast at around 1.2% per year for water connections and 1.3% for wastewater connections - these growth rates are more reflective of historic trends.[131]

Hunter Water's forecast customer numbers do not include the end-use customers of private network operators within its area of operations. Hunter Water estimates that existing private network operators will account for 2,000 to 3,000 connections over the next 10 years, and an additional 500 dwellings will be served by new private schemes by 2024-25.[132]

7.3.1 Our decision on water and wastewater customer numbers

Our decision is:

23 To adopt forecast water and wastewater customer numbers as shown in Table 7.5 and Table 7.6.

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129 Hunter Water's service standard intent is to impose restrictions less than once per 10 years, on average; less than 5% of the time, on average; and aim to allow storage to fall to 10% less than once per 10,000 years, on average.
Aither, *Review of Hunter Water forecast responses*, 7 May 2020, p 18.

130 Hunter Water recorded increases of around 1.7% per year in residential water connections in 2017-18 and 2018-19. This is higher than the forecast annual growth rate of around 1.2% in the 2016 Final Report.
Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 18.

131 Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 15.

132 Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 5.

Table 7.5 Billable water connections

	2020-21	2021-22	2022-23	2023-24
Residential houses (No.)	198,656	200,403	202,149	204,053
Residential multi-premises (No.)	44,480	45,721	46,961	48,064
Non-residential (ME)[a]	29,519	29,792	29,998	30,176

[a] ME is the number of 20mm 'meter equivalents'.

Source: Correspondence with Hunter Water (email), 3 February 2020 and IPART calculations.

Table 7.6 Billable wastewater connections

	2020-21	2021-22	2022-23	2023-24
Residential houses (No.)	187,755	189,536	191,410	193,445
Residential multi-premises (No.)	45,136	46,406	47,677	48,808
Non-residential (ME)[a]	16,484	16,707	16,887	17,047

[a] ME is the number of 20mm 'meter equivalents'.

Source: Correspondence with Hunter Water (email), 3 February 2020 and IPART calculations.

7.3.2 Reasons for our decision

As the provider of almost all water and wastewater services in the Lower Hunter region, Hunter Water's forecast growth in water and wastewater customer numbers should reflect growth in residential dwellings. For the 2020 determination period, residential dwelling growth is expected to return to the historic trend of around 1.2% per year. This is slightly higher than the population growth rate of 1% per year observed in the Lower Hunter region over the last 25 years, and is due to a gradual decline in occupancy (people per household) as the proportion of apartments in Hunter Water's area of operations increases over time.[133]

We asked Aither to review Hunter Water's population projections and forecast customer numbers for the 2020 determination period. Aither determined that Hunter Water's population projections are reasonable in the context of this price review, as they are broadly in line with other publicly available population forecasts released by the Australian Bureau of Statistics and DPIE.[134]

Aither accepted Hunter Water's reasons for assuming a slowdown in housing activity over the 2020 determination period (compared to recent years), given tighter lending standards, a decline in dwelling approvals, increased time on the market for property sales and increased discounting of property prices by vendors.[135]

We have not adjusted for possible impacts of COVID-19

We have not made an adjustment for the possible impacts of the COVID-19 pandemic given the level of uncertainty.

133 Hunter Water, *Pricing Proposal to IPART*, 1 July 2019, p 34.
134 Aither, *Hunter Water expenditure review*, 14 December 2019, pp 161 and 173-174.
135 Aither, *Hunter Water expenditure review*, 14 December 2019, p 174.

Aither found that although Hunter Water expects a reduction in connections in the short-term, it has not considered any make-up of unsatisfied demand for housing in later years. Aither did not recommend making an adjustment to forecast water and wastewater customer numbers as the future impacts are highly uncertain.[136]

7.4 Slight growth in residential stormwater customer numbers is forecast

Hunter Water provides stormwater drainage services to around 30% of its water customers (about 71,000 customers) – 96% residential and 4% non-residential.[137]

To set stormwater charges we forecast billable stormwater properties for each of the four years of the determination period. We use estimates of residential and non-residential properties and set a service charge for:

- Residential customers based on property type (houses and apartments)
- Non-residential customers based on four area-based categories.

Changes in the number of billable stormwater properties generally reflect factors such as subdivision, rezoning and unit development.[138]

Our decisions are:

24 To adopt Hunter Water's forecast number of billable stormwater properties for 2020-21 to 2023-24 for setting stormwater charges for the 2020 determination period presented in Table 7.7.

25 To adopt the forecast proportion of houses and apartments for residential and Small, Medium, Large and Very Large property categories for non-residential presented in Table K.2 in Appendix K.

Table 7.7 IPART decision on billable stormwater properties for 2020-21 to 2023-24

	2018-19[b]	2019-20[c] (Current)	2020-21	2021-22	2022-23	2023-24
Residential[a]	65,090	67,411	67,711	68,010	68,309	68,609
Residential – % change	-	3.6%	0.4%	0.4%	0.4%	0.4%
Non-Residential	2,980	3,057	3,057	3,057	3,057	3,057
Non-residential – % change	-	2.6%	0.0%	0.0%	0.0%	0.0%

a Includes "vacant land".

b Reported 1 July 2019, Hunter Water, *Pricing Proposal to IPART, Technical Paper 7,* 1 July 2019, p 24.

c Includes Hunter Water's data revisions received in January 2020.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 7,* 1 July 2019, p 24, correspondence with Hunter Water (email), 13 January and 3 February 2020 and IPART analysis.

136 Aither, *Review of Hunter Water forecast responses*, 7 May 2020, p 22.
137 Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 22-24.
138 Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 22.

7.4.1 Reasons for our decision

Hunter Water has not revised its forecast in response to our Draft Report

In its submission to our Draft Report, Hunter Water did not propose revisions to its forecast stormwater customer numbers.

Our consultants, Aither, did not make any recommendations with regards to the impact of COVID-19 on forecast stormwater customer numbers.

Other stakeholders did not specifically comment on Hunter Water's forecast stormwater customer numbers in their submissions.

Hunter Water identified errors in its previously used stormwater customer numbers

In its 1 July 2019 Pricing Proposal, Hunter Water reported that over the 2016 determination period, the number of residential customers increased by a total of 5.7% and non-residential customers increased by 3.1%. In comparison, forecast growth for the 2016 determination period was 1.2% and 0.0% respectively.[139]

In its 1 July 2019 Pricing Proposal, Hunter Water also forecast annual growth in the number of billable stormwater residential properties for the 2020 determination period at 0.4% per year, with no growth expected in billable stormwater non-residential properties (Table K.3 in Appendix K). Hunter Water made a nominal allowance for growth in respect to residential development based on historic experiences and having regards to in-fill development. It made no allowance for growth in non-residential connections, due to the low probability and high uncertainty of growth. This is consistent with previous years' forecasts. According to Hunter Water, the main driver for minor historical fluctuations in non-residential property numbers has been the re-development of non-residential properties to residential properties.[140]

Hunter Water also noted a one-off increase of 2,048 in the number of stormwater properties from 1 July 2019 as a result of the identification and correction of data entry errors originating in its billing system in 2006.[141] These errors have created charging issues (discussed below) and a pricing issue (discussed in Chapter 10).

Hunter Water will refund customers erroneously charged

The errors incorrectly designated some properties eligible for a charge, whilst also classifying eligible properties with incorrect characteristics (land area). This resulted in previous determination charges being applied incorrectly to some customers. The errors resulted in:

- 422 properties not eligible for stormwater charges being erroneously charged ($0.49 million in total)
- 31 customers being overcharged due to the incorrect charge being applied ($0.05 million in total)

139 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 7*, 1 July 2019, p 24.
140 Correspondence with Hunter Water (email), 13 February 2020, and Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 7*, 1 July 2019, p 24.
141 Correspondence with Hunter Water (email), 14 January 2020, and Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 7*, 1 July 2019, pp 22-23.

- 2,155 customers being undercharged due to the incorrect charge being applied ($2.01 million in total) (Table K.5 in Appendix K).[142]

Hunter Water has advised that for the customers that were erroneously charged/overcharged (by a total of $0.54 million since 2006), it will refund those that are still customers by issuing credits to their bills, and those that are no longer customers will be able to claim back monies overpaid through its website. It has also indicated it will not seek to recover the $2.01 million (in total) it undercharged the 2,155 customers relative to previous determinations.

We note that the charging errors were also considered as part of IPART's 2019 audit of Hunter Water's operating licence. In our report to the Minister, IPART recommended that by 3 June 2020, Hunter Water must report to IPART on the further progress made since the non-compliance was reported to IPART in the 2018-19 Statement of Compliance.[143]

Hunter Water has corrected the errors to set charges and expects 0.4% growth annually

In addition to some customers being over or undercharged compared to previous determinations, the count of stormwater customers provided to us for the 2016 determination period understated the number of stormwater customers by 2,048 (discussed further in Section 10.2.6).

In January 2020, Hunter Water revised its forecast for billable stormwater properties (Hunter Water has corrected the data entry errors from July 2019 onwards). The revision results in a 3.6% increase in the number of residential properties and a 2.6% increase in the number of non-residential properties between 2018-19 and 2019-20.

Growth over the 2020 determination period is forecast at 0.4% annually for residential properties, with no growth forecast for non-residential properties.

We have included Hunter Water's correction of the errors in our forecasts of billable stormwater properties for 2020-21 to 2024-25, to set stormwater charges for the 2020 determination period.

We have also accepted Hunter Water's proposal to charge houses in community title developments as houses (ie, according to their property type, rather than based on meter connection type) instead of as apartments as they are currently charged. This has resulted in a shift of 185 dwellings from the "apartments" category to the "houses" category.[144]

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142 IPART, *Review of prices for Hunter Water Corporation From 1 July 2020 – Issues Paper*, September 2019, p 72, and correspondence with Hunter Water (email), 22 January 2020.
143 IPART, *Hunter Water Operational Audit 2019 – Report to the Minister*, March 2020, p 3.
144 Correspondence with Hunter Water (email), 3 February 2020.

7.5 Forecast wastewater discharge volumes

Hunter Water calculates its forecast total non-residential discharge volumes by analysing past trends of non-residential wastewater discharge as a proportion of non-residential water sales, and applying this trend to its forecast water sales volumes.[145] It has provided a revised non-residential wastewater discharge volumes forecast with its response to IPART's Draft Report based on the revised non-drought water sales volumes forecast.

We have made the decision to adopt Hunter Water's revised forecast for wastewater discharge volumes. This is consistent with our decision in Section 7.1 to adopt Hunter Water's revised forecast for non-drought non-residential water sales volumes.

Our decision is:

26 To adopt forecast wastewater discharge volumes as shown in Table 7.8.

Table 7.8 Non-residential wastewater discharge volumes (ML)

	2020-21	2021-22	2022-23	2023-24
Hunter Water's revised water sales volumes forecast – April 2020[a]				
Wastewater discharge volumes	6,710	6,848	6,980	7,120
IPART decision				
Wastewater discharge volumes	6,710	6,848	6,980	7,120

Source: Correspondence with Hunter Water (email), 28 April 2020.

Currently, Hunter Water's non-residential customers are liable for a volumetric wastewater usage charge if their deemed wastewater discharge is above the discharge allowance of 120 kL per annum.[146] Residential and non-residential customers pay for discharges equal to the discharge allowance through the wastewater service charge.

We have made a decision to remove the discharge allowance for non-residential customers, so that each non-residential customer pays for usage based on estimates of their actual wastewater discharges. Hunter Water analysed its non-residential wastewater customer base and found that almost half of its customers discharge less than the 120 kL per year discharge allowance. Our decision will improve cost-reflectivity and reduce wastewater charges for this subset of customers. Our decision on the discharge allowance for non-residential customers is discussed in further detail in Section 9.1.

145 Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 14.
146 Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 14.

8 Prices – Water

Most customers currently pay a variable water usage charge that relates to the volume of water that they use, and a fixed service charge for their water service.

We have made a key change to the current price structure – to introduce a drought[147] usage price, that is, an 'uplift' to the water usage charge that applies when water storage levels fall below 60%, and remains in place until water storage levels next rise to 70% (with a 31-day lag). This is to satisfy the dual purpose of:

- Recovering revenue for Hunter Water for the additional expenditure it incurs for drought-related activities, and the lost water sales if water restrictions are in place, and
- Providing a price signal to customers about the value of water when water is scarce.

In this chapter, we discuss four types of water usage charge:

1. A 'base' non-drought charge, which applies to all potable water customers (however, for certain customers this only applies for the first 50,000 kL of water used per annum).
2. The new drought 'uplift' that applies when water storages are low.
3. 'Location-based' prices that include a discount for water use and are available to certain customers for usage exceeding the first 50,000 kL of water used per annum.
4. Charges for raw water.

We also discuss the fixed service charge for all potable water customers. In Chapter 13 we discuss the charge for bulk water transfers to the Central Coast Council, which falls under a separate Determination.

8.1 Water usage prices

Our decisions are:

27 To set 'dynamic' usage prices for potable and raw water, based on:

   a. Non-drought water storage conditions (the base scenario), and

   b. A 'drought scenario' of low water storage levels.

28 That the usage price uplift, or drought price, would commence 31 days after water storage levels fall below 60% and remain in place until 31 days after storage levels reach 70%.

[147] In this report, we may use 'drought' as shorthand for when water storage levels reach 60% and below, and therefore trigger actions such as restrictions and the need for additional water supply augmentation and conservation measures; this does not necessarily mean there is technically a drought.

29 To set the 'base' water usage charges as shown in Table 8.1:

a. For potable water, at $2.46 per kL in 2020-21 and increase the price by around 1% each year (in real terms).

b. For raw water, at $0.38/kL for each year in real terms.

c. To phase-out discounts currently given for usage exceeding 50,000 kL per annum, with the phase-out to start in 2021-22 and take four years, as shown in Table 8.1.

30 That the applicable 'base' water usage prices for potable and raw water in Table 8.1 increase by a price uplift of $0.44/kL when the drought price applies.

31 To set Hunter Water's maximum water service charges as shown in Table 8.2.

Table 8.1 below provides the water usage prices for various customer types, and under the different water storage conditions. They are in $2020-21, so will be increased by inflation from 2021-22 onwards.

Table 8.1 Water usage prices ($/kL)

	2019-20	2020-21	2021-22	2022-23	2023-24	Change, 2019-24 [a]
	($2019-20)	($2020-21)				
Base usage prices						
Potable water (up to 50,000 for some users)	2.37	2.46	2.49	2.51	2.54	7.2%
Potable water, exceeding 50,000 kL per annum						
Dungog	1.91	1.98	2.13	2.27	2.42	26.7%
Kurri Kurri	2.35	2.44	2.47	2.50	2.53	7.7%
Lookout	2.22	2.30	2.37	2.43	2.50	12.6%
Newcastle	2.16	2.24	2.32	2.40	2.48	14.8%
Seaham-Hexham	1.96	2.03	2.17	2.29	2.43	24.0%
South Wallsend	2.26	2.35	2.40	2.45	2.51	11.1%
Tomago-Kooragang	1.91	1.98	2.13	2.27	2.42	26.7%
Raw water	2.17	0.38	0.38	0.38	0.38	-82.5%
Price uplift (water storage level dependent)	**n/a**	**0.44**	**0.44**	**0.44**	**0.44**	**n/a**

[a] The percentage change includes inflation to $2020-21.

Source IPART analysis.

Table 8.2 below provides the water service charges that apply to residential and non-residential potable water customers.

Table 8.2 Water service charges ($/year)

	2019-20	2020-21	2021-22	2022-23	2023-24	Change, 2019-24 [a]
	($2019-20)	($2020-21)				
Residential[b]	100.40	24.26	24.26	24.26	24.26	-75.8%
Non-residential[c]						
20mm meter	100.40	24.26	24.26	24.26	24.26	-75.8%
25mm meter	156.89	37.91	37.91	37.91	37.91	-75.8%
40mm meter	401.63	97.04	97.04	97.04	97.04	-75.8%
100mm meter	2,510.14	606.50	606.50	606.50	606.50	-75.8%

a The percentage change includes inflation to $2020-21.

b Includes residential properties in multi-premises and non-residential properties in mixed multi-premises served by a common meter.

c We present a selection of meter sizes in this table. Other meter sizes pay a multiple of the 20mm meter charge depending on the size of the meter.

8.1.1 We have largely adopted Hunter Water's proposal

In its 1 July submission, Hunter Water proposed:

- Annual increases to the water usage charge, amounting to a 5.9% increase over five years[148]
- Phasing out the location-based discounts provided to large users
- A different method to calculate the raw water price.

Then, in response to our Draft Report, Hunter Water also proposed a drought price uplift to the water usage price to apply if water storage levels fall below 60%. This reflected a draft decision we made in the review of Sydney Water's prices (running concurrent to the review of Hunter Water's prices).

The key changes we have made compared to Hunter Water's proposal are:

- To reduce the quantum of the drought price uplift
- To change the phase-out of the location-based prices
- To lower the service charge
- A minor change to Hunter Water's method to calculate the raw water charge.

We have adopted Hunter Water's proposed non-drought water usage price, and reclassification of the former 'unfiltered water' service to be a 'raw water' service.

148 Note that our calculation includes the actual price charged in 2019-20 of $2.37/kL. Hunter Water's proposal included a usage charge of $2.39/kL which was calculated using assumed inflation based on the timing of drafting.

8.2 Non-drought water usage prices will increase slightly each year

We have accepted Hunter Water's proposal to increase the water usage price each year (before inflation), which brings it more in line with the estimated long run marginal costs of supply and gives customers greater bill control (a usage price increase results in a fall in the fixed service price, increasing the proportion of a customer's bill that is variable). Hunter Water has identified that this aligns with customer preferences, and it is supported by the feedback we have received during this review.

Setting a higher water usage price means that Hunter Water may bear higher revenue risk. This is because it will recover a higher proportion of its costs (mostly fixed) through variable charges, and the amount of revenue depends on the amount of water sold. However, the risk is symmetric, and we have measures in place to manage this risk, including the higher drought price should water sales fall when storage levels are low, and the end-of-period DVAM discussed in Chapter 3 which addresses over and under recovery.

8.2.1 Hunter Water's LRMC of water supply

We generally set the water usage charge with reference to the LRMC of water supply, to promote efficient water usage and investment decisions. The LRMC includes the costs of the next supply augmentation measures and therefore signals the costs of supplying water to meet demand over the long-term.

Hunter Water does not have an identified next supply augmentation.[149] For the purpose of setting the water usage price, Hunter Water estimated the LRMC based on two hypothetical options for desalination plants, which results in an LRMC between $2.50 and $4.00.[150]

We have reviewed Hunter Water's estimates and consider they are reasonable. However, we also note that the next iteration of the LHWP is under development[151], and this includes consideration of a range of options to meet future storage needs, including new dams. At the next price review we may have a more robust estimate of the LRMC of water supply in the Lower Hunter region.

8.2.2 Understanding customer preferences

Hunter Water sought to understand customer preferences when developing its proposal. A survey it conducted found that 60 percent of customers preferred a usage price to remain above $2.00/kL, and around 60 percent of this group preferred an increase in the current price up to or above $2.60/kL.[152]

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149 That is, the current (2014) Lower Hunter Water Plan does not identify one.

150 Hunter Water, *Pricing Proposal*, 1 July 2019, p 40; and Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, pp 10-13.

151 The NSW Government is scheduled to consider it in 2021; Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 10.

152 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 9.

A number of submissions to this review also advocated for a greater proportion of the bill to be a usage charge rather than a fixed charge, including some advocating for a 100% water usage charge.[153] For some, this appears to be to meet their preference of greater bill control, whilst others explicitly sought to incentivise less usage.[154] PIAC prefers an inclining block tariff model (containing different prices for different levels of usage), which we address later in this chapter.

We consider Hunter Water's proposal is broadly consistent with the preferences of many customers and we have accepted its proposal. We note that further increases in the usage price (without an underlying change in expenditure or demand) will result in a very low or negative water service charge.

8.3 Drought price to apply if water storage falls below 60%

If water storage levels fall below 60% during the determination period, we have decided that prices for potable water and raw water will increase by $0.44/kL ($2020-21) to reflect the additional costs to Hunter Water of managing the drought, and to signal the cost and increased scarcity of water to customers when water storage levels are low. This increase will remain in place until water storages again reach 70%.[155]

This is a significant change from the price structure in the 2016 Determination and the price structure presented in our Draft Report. We did not take this decision lightly. In making this decision, we have considered the price impact to customers, as well as the operational changes that occur when water storage levels fall, and feedback received from customers during this review, including feedback on the mechanism presented in the Sydney Water Draft Report. We find that this approach balances these factors and recognises that costs increase when water storage levels are low, without adding burden when water is more plentiful.

8.3.1 The dynamic price will ensure sufficient revenue during drought and signals the costs to users

We have decided to include the price uplift for Hunter Water to manage revenue and cost increases during periods of drought. Based on our assessment of expenditure and reduced water sales, we have decided on an uplift of $0.44/kL ($2020-21).

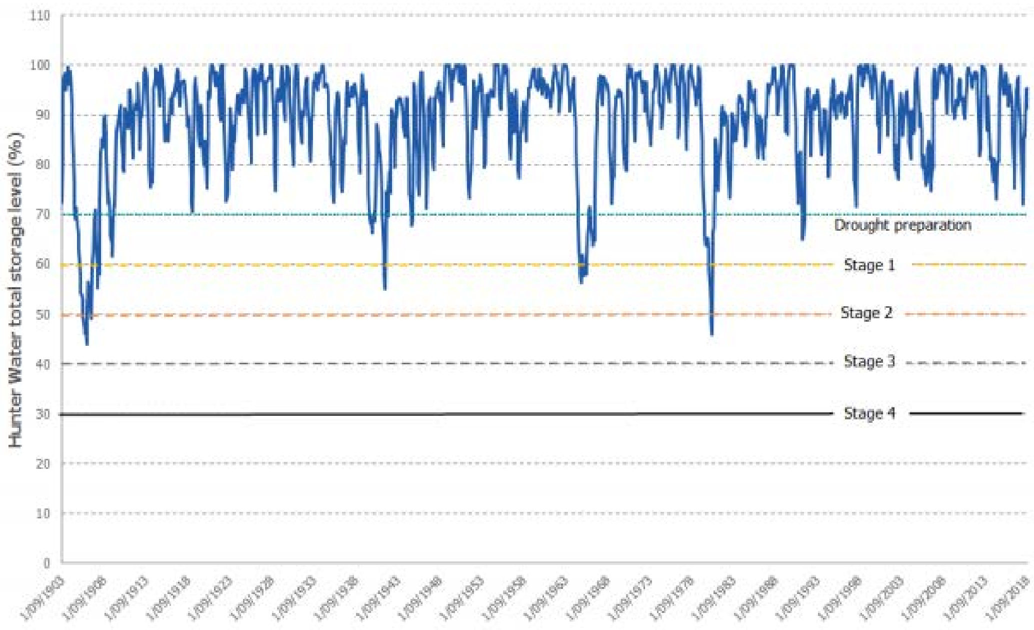
153 Submissions to IPART's Issues Paper – *Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019; from PIAC, p 4; F. Rizk, p 1; Anonymous (W19/2265), p 2; Anonymous (W19/2275), p 1; and Kingspan Water and Energy, Submission to IPART's Draft Report – *Review of prices for Hunter Water Corporation from 1 July 2020*, March 2020; p1. Also supported by Western Sydney Leadership Dialogue, Submission to IPART's Draft Report – *Review of prices for Sydney Water Corporation from 1 July 2020*, March 2020, p 2.

154 At least one stakeholder also advocates for 100% usage charge so that less of the bill is borne by a landlord and more can be passed through to tenants (as well as noting price signalling effects). R. Banyard, Submission to IPART's Issues Paper, pp 2-4, and comments at the public hearing, see IPART, *Hunter Water Public Hearing, Transcript*, 19 November 2019, p 43.

155 For the avoidance of doubt, if water storage levels are between 60% and 70% on 1 July 2020, the price uplift will not automatically apply. It will only begin when storage levels first fall below 60% and any subsequent time thereafter.

We consider this is the most efficient way to manage the costs of drought. It is clear that the utility's expenditure increases and sales fall in times of drought. This approach also acknowledges the low historical likelihood of water storage levels falling below 60% in a four-year period. If the costs of drought were averaged across the 4-year determination period instead, it is possible that people would pay too much.

Figure 8.1 Historical storage levels for Hunter Water (using past rainfall and current infrastructure)



Source: Hunter Water analysis, Hunter Water proposal Technical Paper 3, p A-12.

A price uplift was proposed, and has now been adopted, in our concurrent review of Sydney Water's prices

In our Draft Report for the review of Sydney Water's prices, we introduced a 'drought price uplift' to the water usage price. This was to reflect the additional costs Sydney Water incurs as water storages diminish, to ensure it recovers its efficient costs, and to signal to customers the increased scarcity of water in times of drought. We have maintained this price uplift in our Final Determination of Sydney Water's prices, also to apply from 1 July 2020.

We designed this as a practical approach to encompass a number of incremental price increases that either already existed or Sydney Water had proposed to occur at various triggers.

Having one uplift balances our preference for prices to be cost reflective with the competing need for prices to be easily understandable. One larger price increase has the benefit of sending a stronger price signal to customers (as opposed to many smaller ones).

Hunter Water did not have a cost pass-through, but requested a similar drought-uplift mechanism

Hunter Water does not currently have a cost-pass through mechanism, and did not propose one in its 1 July proposal. In its proposal and again in response to our Issues Paper, it considered the potential cost increases to its operations of water restrictions being in place. Its area of operations had entered water restrictions for the first time in 25 years, and given the uncertainty around expenditure and the duration of restrictions, it did not propose a cost pass-through, noting that it could not meet our principles for the cost pass-through to apply. Instead, it proposed an annual demand volatility adjustment mechanism (DVAM) which would have recovered extra revenue in response to materially reduced demand when water restrictions are in place through an annual true-up to service prices.[156]

In response to our Draft Report, however, Hunter Water requested a similar dynamic price to that designed for Sydney Water. It requested this to protect its credit rating in the face of a severe drought and in response to our draft decision to not accept Hunter Water's proposed annual DVAM. It was also in the context of having experienced the impact of water restrictions (having entered them for the first time in 25 years), and Hunter Water provided an estimate of increased operational expenditure based on recent experience, and potential water sales in the case of restrictions based on rainfall probabilities.[157] We address these two items separately in Chapters 4 and 7 respectively.

8.3.2 How the dynamic pricing mechanism will work

Our dynamic pricing mechanism changes the maximum water usage price Hunter Water is allowed to charge, between the base non-drought prices shown in Table 8.1, and charging an additional $0.44/kL, based on certain water storage level triggers being met.

The triggers for the price uplift to apply are:

- The drought price will start 31 days after water storage levels fall below 60% (the 'on' trigger)
- Once drought prices have started they will remain in place until 31 days after water storage levels reach 70% (the 'off' trigger).

This is summarised in Figure 8.2.

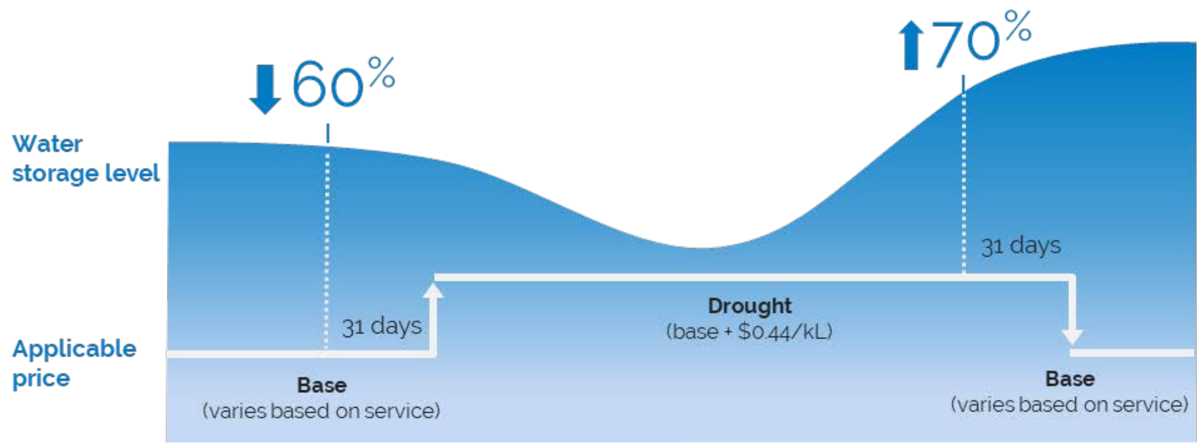
For the avoidance of doubt, if the storage levels on 1 July 2020 (when our Determination should come into force) are between 60% and 70%, the price uplift will not apply. It will only apply when the storage levels first fall below 60%. After that, the price will change in accordance with the relevant triggers.

156 Hunter Water, *Pricing Proposal to IPART, Technical Paper 3*, 1 July 2019, pp A11-A20; Hunter Water, *Supplementary Response to IPART Issues Paper*, 6 November 2019, pp 5-6, 8-14.

157 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, pp 50-58.

This approach provides time to inform customers about the new dynamic pricing approach and, should they choose, gives customers time to prepare to adjust their water usage behaviour if they expect the price uplift to apply in the future, as (if) storage levels fall. Even though Hunter Water may be incurring additional expenditure and lower water sales from 1 July 2020 as water restrictions may still be in place, it has indicated this is how it expected its proposed mechanism to work.

Figure 8.2 Representation of the dynamic price



Why asymmetric triggers?

Hunter Water proposed using the trigger points of 60% and 70% that we used in the Sydney Water Draft Report[158], and we find this is a reasonable approach based on the information below.

The 'on' and 'off' triggers are asymmetric, so only a significant increase in water storage levels will turn off the drought price. This will minimise price volatility due to small fluctuations in storage levels (for instance, levels moving from 59% to 61% and back down to 59%) and ensure that Hunter Water has greater certainty of its funding for drought management projects. These triggers align with expected expenditure and reductions in water sales:

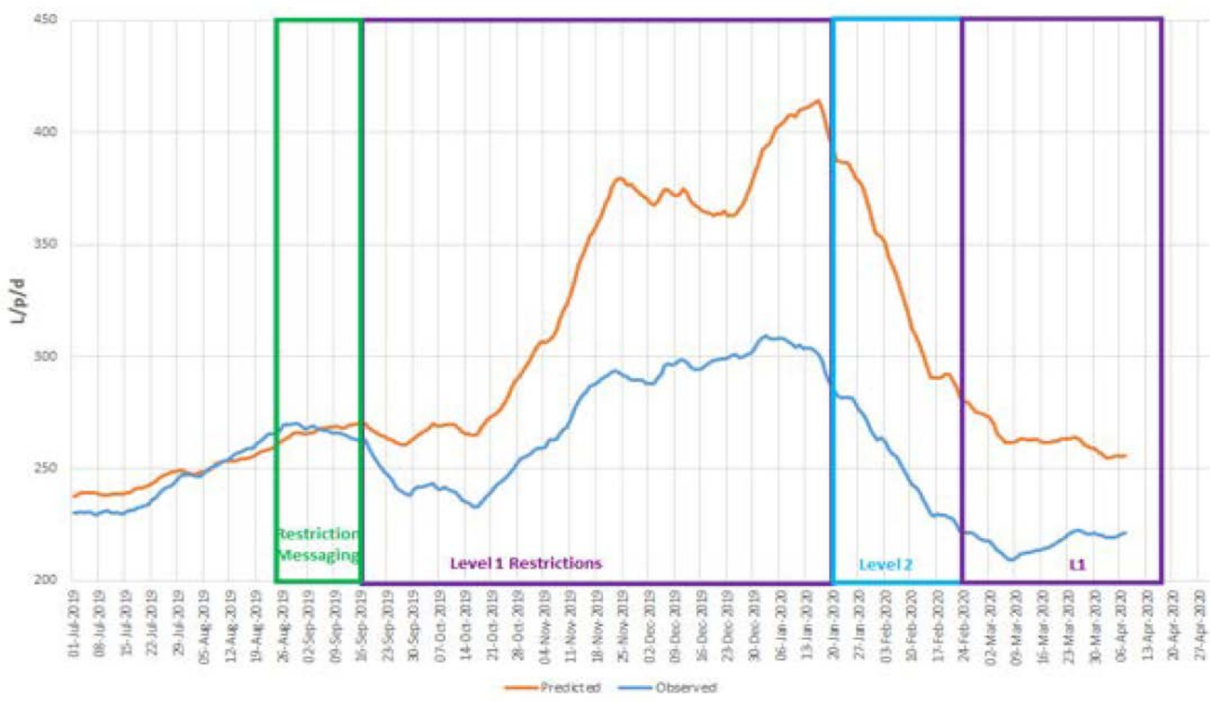
- The Lower Hunter Water Plan requires Hunter Water to begin communications and work with large water users when water storage levels reach 70%. The largest expenditure item in the expenditure increase (detailed planning for the temporary desalination plant) is due to begin when water storage levels reach 60%.[159]

158 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 56.

159 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 53; NSW Department of Finance and Services, Metropolitan Water Directorate, *Lower Hunter Water Plan*, January 2014, p 34. Note that Hunter Water has already undertaken some preliminary planning work for the temporary desalination plant (eg environmental assessments) that were triggered when storage levels reached 65% in 2019.

- Level 1 water restrictions are due to begin with water storage levels at 60%, with restrictions and Hunter Water's pro-active water conservation operations increasing as levels reach 50%, 40% and 30%.[160] In the current drought:
  - Restrictions were announced and began when water storage levels were around 63%[161], and level 1 restrictions remain in place whilst water storage levels are at 68% at the time of drafting.
  - Demand began to reduce slightly when water storage levels were at around 70%, with a sharper decline and divergence from forecast demand when restrictions were enacted (Figure 8.3).

Figure 8.3 Predicted demand compared with actual demand and timing of restrictions



Note: Predicted demand is based on a demand model calibrated to consumer behaviour in 2016-18. Hunter Water attributes the actual demand variation from the prediction to the imposition of water restrictions.

Source: Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 43.

We included a one month lag

This part of the implementation design has changed since the Sydney Water Draft Report, which had the price increase/decrease for an entire quarter depending on the dams' levels one week before the quarter began.

Moving to a rolling one-month trigger has the benefit of:

- The drought price more closely aligning with the water storage levels.

160 NSW Department of Finance and Services, Metropolitan Water Directorate, *Lower Hunter Water Plan*, January 2014, p 40.

161 Hunter Water, Media Release *Water restrictions apply across the Lower Hunter*, 16 September 2019, and Hunter Water water storage levels, available here.

- Providing a month to inform customers about the price changes, so customers can be aware and take steps to adjust their behaviour accordingly.
- Simplicity – it is easy to communicate to customers.

The one month lag is symmetrical, so the number of days that the price increase applies will equal the number of days between the 60/70 triggers.

The price uplift applies to various customer types equally

Hunter Water has a number of service and pricing arrangement for different customer types including potable water, with discounts provided to some users, bulk water sales, and raw water.

When it proposed the dynamic usage price, Hunter Water had[162]:

- Excluded raw water customers. This was in part for simplicity, but it also considers these customers receive a different service, and there was too little data on their demand reactions to restrictions.
- Excluded the discount applied to some usage over 50,000 kL. That is, these customers would pay the standard water usage price with the drought uplift for all water usage. We understand it did this for simplicity (noting that Hunter Water had little time to prepare its submission).

We have decided that this price uplift should apply to all water sales equally. The only exception is the bulk water transfers to the Central Coast Council, as the price for these has been set in a separate Determination, which we have not re-opened during this review.

We have decided this because, regardless of pricing arrangement:

- All water is drawn from the same sources, and
- The inputs to the price uplift are for activities specifically undertaken to manage those storages when rainfall is low.

Therefore, all users are both 'impactors' (ie, contributing to the draw-down of storages, and hence the need for Hunter Water to incur costs in responding to lower storage levels), and 'beneficiaries' (ie, benefitting from the water security measures) in relation to the price uplift, and should contribute to the cost of managing storage levels.

8.3.3 We considered stakeholder feedback from various sources

We have considered stakeholder feedback received on the dynamic price mechanism that we consulted on through our Draft Report on Sydney Water prices, and have drawn on other stakeholder feedback received in the course of this review, and consultation undertaken by Hunter Water. We address the key concerns below.

162 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 56; Correspondence with Hunter Water (emails), 16 April and 14 May 2020.

There were mixed views about the mechanism signalling the cost of drought

Two stakeholders (from P. Coombes and Kingspan Water and Energy P/L, and the City of Sydney Council) support dynamic pricing because it signals water scarcity to consumers.[163]

Conversely, the Western Sydney Leadership Dialogue found that water restrictions in conjunction with consumer information campaigns appeared to function very effectively during the recent supply squeeze.[164]

Whilst not responding directly to this mechanism, we also note that in response to our Issues Paper:

- There was some support for a higher (non-drought) usage charge, to encourage people to save water, or that the mix of fixed/usage charges should be changed to benefit low usage households.[165]
- One submission queried why only the lower bound of the LRMC has been used to set water prices, noting that this may be adding risk to future water security costs (eg, contingency planning and prevention works that could be critical to minimising the impacts of droughts).[166]
- Two stakeholders indicated they (and others) were already reducing their usage as much as possible.[167]

Also, in a deliberative forum (held in the context of the Lower Hunter Water Plan review), Hunter Water customers did not favour 'scarcity pricing': 58% considered it was "never an option", but the remaining 42% found it could be appropriate at different stages of drought. Hunter Water reflected that it is unsurprising that the majority were against a price increase and that these results are consistent with other consultation.[168]

In terms of signalling to users, we consider that the price uplift would be one tool in a comprehensive response to manage demand in times of low storage levels, which includes water restrictions, conservation promotion, and taking water from other sources such as recycling, desalination or accessing sand-beds. It will encourage extra savings, including in ways that are difficult to mandate through water restrictions.

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163 Submissions to IPART's Draft Report– *Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, from Professor Peter J Coombes (UWCS) and Kingspan Water and Energy P/L, p 1; and City of Sydney Council, p 1.

164 Western Sydney Leadership Dialogue, *submission to IPART's Draft Report– Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, p 2.

165 Submissions to IPART's Issues Paper – *Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019; from F. Rizk, p 1; Anonymous (W19/2265), p 2; Anonymous (W19/2275), p 1; and Kingspan Water and Energy, Submission to IPART's Draft Report – *Review of prices for Hunter Water Corporation from 1 July 2020*, March 2020; p1.

166 Flow, Submission to IPART's Issues Paper – *Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019, p 2.

167 Submissions to IPART's Issues Paper – *Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019 from Anonymous (W19/2176); p1; Anonymous (W19/2252) p 1.

168 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 57.

There were concerns about the impact on vulnerable customers

In response to the dynamic price mechanism in our Draft Report on Sydney Water prices, a number of stakeholders expressed concern that it leads to a disproportionate impact on vulnerable customers.[169],[170]

- EWON highlighted three main customer groups – pensioners, large families, and renters, noting that large families and renters do not receive rebates, and renters will not typically benefit from the corresponding fall in the service charge.[171]
- EWON queried the ability of some households to reduce their usage in response to the price increase, and one individual noted that where there is a common meter, the customer does not necessarily reduce their bill by reducing usage.[172]
- The Western Sydney Leadership Dialogue finds the dynamic pricing is regressive in both socio-economic and regional terms, impacting most on those customers with less budget head-room; in locations where higher water usage is required to maintain equivalent amenity (such as western Sydney); and businesses with higher water use.[173]

We respond to these comments below in section 8.3.3 where we assess the impacts on customers.

Some stakeholders strongly prefer an inclining block tariff

In response to the Sydney Water Draft Report, a number of stakeholders indicated a preference for an inclining block tariff (IBT) to replace the current water price model.[174] Under an IBT, the marginal water usage price a customer pays increases as they use more water, and this would apply at all times, not just in drought.[175] An IBT is designed to provide customers with an 'essential' amount of water at a lower price, while penalising higher water users with an increased marginal rate for what is assumed to be discretionary expenditure. This would apply in both drought and non-drought periods.

We did not agree with stakeholders that an IBT would be more equitable and efficient than our proposed dynamic pricing approach. We have a number of concerns with the IBT model, which penalises higher water use regardless of water storage levels. These concerns include:

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169 Submissions to IPART's Draft Report – *Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, from the Department of Planning, Industry and Environment, p 2; Energy and Water Ombudsman NSW pp 2-4; Western Sydney Leadership Dialogue, pp 2-4, PIAC, p 3.

170 Some of these comments were specific to pensioners that are Sydney Water customers. The impact on pensioners that are Hunter Water customers is different than for Sydney Water customers due to the different pensioner rebate scheme. The proportional increase to Hunter Water bills is less because pensioners serviced by Hunter Water have a higher bill to begin with (ie, they receive less rebate than pensioners serviced by Sydney Water).

171 EWON, Submission to IPART's Draft Report – *Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, p 2.

172 EWON, Submission to IPART Draft Report – *Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, p 2; Anonymous (W20/589), Submission to IPART's Draft Report – *Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, p 1.

173 Western Sydney Leadership Dialogue, Submission to IPART's Draft Report – *Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, pp 2-3,

174 Submissions to IPART Draft Report – *Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, from PIAC, pp 5-10; Cate Faehrmann MLC Greens NSW, pp 3-4.

175 For example a customer would pay a lower per kilolitre price for the first 50 kilolitres per quarter, and then a higher per kilolitre price above that level.

- Household size, not income, has the largest impact on water use. Large low income families would therefore be disadvantaged by an inclining block tariff.
- What is essential and non-essential water use is not clear and people have very different views. We received a submission representing Western Sydney who argued that watering green space and gardens, and even swimming pools, are important to managing heat and maintaining health in Western Sydney and the people living there also tend to have lower incomes.
- Defining 'essential' or base level consumption is even more challenging for non-residential customers, given the wide range of business types and sizes, which means it is not feasible to set an IBT for non-residential customers.
- At any point in time, one of the price tiers within an IBT is either too low or too high – ie, above or below the actual marginal cost of supplying water – which can distort consumption and investment decisions, and be inequitable (as outlined above).

Our approach increases the usage price for water and substantially reduces the fixed charge. It recognises that all water is valuable and it encourages conservation by everyone, residential and non-residential customers and big and small households. It rewards people for saving water all the time but also indicates that extra effort and care is needed when water storage levels start to drop and water becomes scarce.

We also respond to the specific arguments stakeholders have raised in favour of an IBT in Appendix L.

8.3.4 Impacts on customer bills of the price uplift

The price uplift will have a moderate impact on most customers. Using 2020-21 prices, if the uplift is in place for an entire year and there is no change in water usage:

- A typical household's bill will increase by 6.5% compared to base prices, or 8.4% for a high-usage household. As typical customers in apartments and pensioners use less water, the increase would be less in dollar terms and slightly less in percentage terms.
- For a sample of non-residential customer types, the impacts vary from 2.3% to 20.8%.

However, we expect the actual impact would be lower, as our analysis does not account for any reductions in usage that we would expect in response to water conservation measures including abiding with water restrictions. Using 2020-21 prices, a 15.2% reduction in usage would fully offset the bill impact of the dynamic price, and a lesser reduction would reduce bills to 2019-20 levels (varied by customer type, and some bills will still be lower than in 2019-20 with the drought price in place). Table 8.3 shows data for various typical residential and non-residential customers, with more data provided in Appendix V.

We acknowledge that some customers – those with higher water use and less ability to reduce their usage - will be more highly impacted than others. However, we maintain that this dynamic pricing approach, as discussed earlier, finds the best balance to price signalling and recovering the additional costs of managing water scarcity in the short term.

Table 8.3 Additional bill impact if the price uplift applies for a full year compared to non-drought prices

Customer type	Assumed water use	Impact of drought price in 2020-21		Water reduction needed to offset the drought increase	
		($2020-21)	(%)	Compared to 2019-20 bill	Compared to 2020-21 bill
Sample of residential customers					
Typical house	189 kL	83	6.5%	6.5%	15.2%
High-use house	289 kL	127	8.4%	10.6%	15.2%
Apartment	115 kL	51	5.4%	0.7%	15.2%
Pensioner (House)	100 kL	44	6.0%	11.3%	15.2%
Sample of non-residential customer types					
Small shop – 20mm	100 kL	44	4.3%	n/a[d]	15.2%
Large licensed club	14,000 kL	6,160	11.6%	17.3%	15.2%
Regional shopping centre	102,000 kL	44,880	13.6%	18.5%	15.2%
Small industrial firm	50 kL	22	2.3%	n/a[d]	15.2%
Large industrial firm with location-based charge and no sewer	190,000 kL	83,600	20.8%	16.9%	15.2%
Large nursery low discharge factor	5,600 kL	2,464	15.8%	16.6%	15.2%

[a] For demonstrative purposes, we have only shown the impact compared to bills in the first year of the determination. As typical bills increase slightly in each year due to the increasing water usage price, the percentage impact of the drought price increase compared to the base price would fall slightly. See Appendix V for more information about bill impacts.

[b] Our calculations include the pensioner rebate applied as though the non-drought usage price applies. Hunter Water has indicated it will increase the pensioner rebate to reflect the dynamic usage price being in place for the entire year regardless of whether it is or not. This would decrease pensioner's bills when the base price applies, and they would pay the full uplift when it applies. The percentage increase to the bill would therefore be greater due to the base bill being smaller.

[c] This table presents the range of impacts on non-residential customers. Appendix V contains a broader sample of customer types and the indicative bill impacts.

[d] For these customer types, with drought pricing in place the bill would remain lower than 2019-20 bills.

Increase to the pensioner rebate

Pensioners typically have less disposable income and therefore can be more severely impacted by price changes. Hunter Water has indicated it will adjust the pensioner rebate to reflect the dynamic price being in place.[176] Due to the method through which the pensioner rebate is calculated and applied,[177] pensioners would in effect receive a higher rebate even when the drought price is not in place ($23 annually in 2020-21). If drought pricing applies, this additional rebate would represent 52% of the bill impact for the typical pensioner using 100 kL per year.

Renters bills will have a higher proportional increase, but they don't pay fixed charges

Under drought pricing, renters will be subject to the same dollar amount increase for the same water usage as homeowners. However, this is a larger proportional bill increase for renters than homeowners, due to the relatively low water bill that renters are subject to – they at most only pay for water usage. For comparative purposes, a typical homeowner using 189kL per

176 Correspondence with Hunter Water (email), 1 May 2020. The pensioner rebate is a separate process to the IPART price review process.

177 The pensioner rebate is a fixed amount, calculated annually as 26% of a bill with 200kL annual water usage. Hunter Water has indicated that it will calculate the rebate, for all years, as though the price uplift is in place.

annum will face an annual bill of $1,184 in 2020-21 for water and wastewater with no drought, whilst a renter in the property would pay $276 for the water usage component. Under drought pricing, both would pay an additional $83 per year for the same usage.

We note that a renter's total water bill would typically be a small portion of household expenditure. Whilst renters do not benefit immediately from an overall fall in fixed charges, this should work to reduce upward pressure on rental prices. We further explore affordability compared to incomes in Chapter 14 and Appendix V.

Other vulnerable customers

As noted, we consider that the price uplift is moderate. Nonetheless, we acknowledge that some customers (across various customer types) may be in financial hardship and may find this a significant financial burden to the degree that they cannot reduce their usage. We also note the economic uncertainty due to the impacts of COVID-19 at the time we made our decisions. Hunter Water has programs in place to assist those customers.

We also considered whether the increased costs due to drought should be recovered through the fixed service charge rather than the usage charge, as has been the case previously for some cost-pass throughs. However, there was no clear advantage for customers to this approach. This would cause the fixed charge to increase by $83.48 (per annum), from $24.11 to $107.59. This would mean no impact in drought on renters, but some customers (low water users) would be faced with a greater bill increase and not have the flexibility to reduce it. Further, this would not signal the increased cost of supply and scarcity of water in times of drought.

8.4 Phasing-out location-based usage price discounts

Hunter Water currently provides discounts to a small number of large water users in seven specific geographic zones.[178] The discount varies at each location (from 1% in Kurri Kurri to 25% in Dungog), depending on the capital related costs in each operational zone.[179]

Hunter Water proposed phasing out the location-based discount over five years so that a common usage price would apply for all water usage in 2024-25. It considered this would be more cost reflective charging, and encourage efficient investment and consumption decisions from large users.[180]

178 Hunter Water has around 43 'large' users, and 28 of these have the discount available if their demand exceeds the threshold of 50,000 kL per annum. In 2018-19, 19 customers received a discount for consumption exceeding 50,000 kL of water per annum. Correspondence with Hunter Water (email), 4 July 2019; Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 18.

179 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 18.

180 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, pp 18-20.

We received mixed feedback to our Issues Paper and at our Public Hearing. Some respondents supported the removal of the discounts,[181] and whilst one considered it would be inequitable to remove the discounts.[182] Others supported a common usage price, but noted that a more consultative process should be undertaken with relevant customer groups.[183] There was no feedback in response to our Draft Report, except from Hunter Water who accepted our draft decision.

We agree that the discount should be phased out to align with the principle of cost reflective pricing, but have decided to defer the commencement of the phase-out by one year, for two key reasons:

1. We consider that Hunter Water's consultation with large users was not timely or adequate
2. Some large users would see significant bill impacts from removal of the discount.

8.4.1 We aim for prices set on a cost-reflective basis

We generally aim for prices to be set to reflect the efficient cost of service provision, to promote efficient investment and consumption decisions, and for equity reasons.

The discounted prices do not align with these principles. In particular, we note that this discount is not available to all customers based on their location, and is dependent on a certain amount of usage. Also, there is not a convincing case that it reflects the different costs of supplying different locations, and there is no information to suggest that the cost of supplying water to a customer declines with higher levels of consumption. There is also a risk that the discount sends distortive signals to those customers receiving it.

The discounts currently shift costs to other customers, and removing the discounts would increase equity in water pricing. Hunter Water estimated that the discounts reduce water sales revenue from large users by around $2.3 million per year. Hunter Water estimated that this translates to about a $10 increase in the water service charge for each residential customer if the discount remains in place.[184] We estimate that, compared to our final decision, to maintain the discount would increase the water service charge (20mm equivalent) by around $3.12 per annum during the 2020 determination period.

181 Save the Williams River Coalition, Submission to IPART's Issues Paper – *Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019; p 1.
182 Orica, Submission to IPART's Issues Paper – *Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019, p 2.
183 See for example, Submissions to IPART's Issues Paper – *Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019 from Orica, Port Waratah Coal, PIAC and Hunter Business Chamber.
184 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 18.

8.4.2 Delaying the phase-out allows time to consult and manage bill shock

We have decided to phase-out the discounts starting from the second year of the determination period. This is because we found that the removal of discounts could result in substantial bill impacts, and that Hunter Water had not adequately consulted on these changes with these affected customers.

Appendix M provides our assessment of Hunter Water's consultation and bill impacts from removing the discounts.

Deferring the phase-out gives those customers currently receiving the discount an extra year to prepare for higher prices, and gives Hunter Water an opportunity to work further with its large users to explore avenues to manage water demand. PIAC responded to this decision, supporting the delay to remove the discount to allow the changes to be implemented fairly.[185]

8.5 Water service charges will be lower than in 2019-20 and only increase with inflation

In determining prices, we first decide on the water usage price, and then calculate the revenue generated from water usage prices, based on our forecast water sales. We then set water service prices to recover the remainder of Hunter Water's efficient costs of providing water services (ie, the NRR for water).

We have continued with this approach. The increasing water usage price, along with some reductions to the NRR, mean the remaining revenue to be recovered from service prices has reduced. Consequently, our water service price for the 2020 determination period is about 76% lower than the 2019-20 water service price (see Table 8.2).

8.5.1 We have made minor changes to how some metering arrangements are charged

Our approach to setting service charges differs for residential and non-residential customers.

We generally set fixed charges based on the size of water meters (or a deemed water meter), which we use as a proxy to reflect a customer's potential draw on the system. This aligns with our principle to set cost-reflective prices and remains unchanged since 2016. For some customer types, we outline specific treatment based on the metering arrangements.

We have maintained the method of charging most customers

We deem all residential customers to have a 20mm meter, and therefore they pay the same service charge, regardless of whether they have an individual meter or share a meter as is the case in some apartment blocks. This is because we find most residential customers are fairly congruous in their usage habits.

185 PIAC, *Submission to IPART's Draft Report – Review of prices for Hunter Water Corporation from 1 July 2020*, March 2020, p 5.

Comparatively, most non-residential customers are charged based on their actual meter size.[186] Meter sizes for non-residential customers vary considerably. Where they are not individually metered, they share in the charge levied on a common meter. However, non-residential customers in a mixed-use multi-premises are treated the same as the residential customers, for ease of charging in the billing system. That is, they are deemed to have a 20mm meter, unless they actually have an individual meter.

In Appendix N, we present the various multi-premise arrangements and how they are charged.

We made minor changes to some pricing arrangements

Hunter Water proposed some changes to the way charges are levied on customers in specific multi-premise arrangements:

- Joint service arrangements, and
- Community title arrangements.

Our decision is:

32 To charge houses in community title developments the same as standalone houses, and apartments in community title developments the same as other apartments. This applies to water, wastewater and stormwater services.

Currently, some houses in community title arrangements are treated as apartments due to the shared metering arrangements, and are therefore subject to a lower wastewater service charges than other standalone houses. We have accepted Hunter Water's proposal that these stand-alone houses should be charged in line with other stand-alone houses, because it aligns with our pricing principle that customers imposing similar costs on the system should pay similar charges, and it will reduce billing complexity.

We decided not to accept Hunter Water's proposed changes to joint service arrangements. We note that the current arrangement is not ideal, but changing it could also result in some undesirable consequences, such as overcharging for a common meter.

We provide further discussion on both of these items in Appendix N.

Charges for unmetered customers

Some properties do not have water meters for either historical or access reasons.[187] Hunter Water has advised it has around 33 unmetered properties - around half are residential, and half are small commercial properties.[188] These properties can still access and use water (as distinct from an unconnected property).

186 In some cases this will be a share of the meter size serving their complex.

187 Unmetered are properties where Hunter Water is unable to locate the meter or has not been able to install water meters due to access problems at the connection points.

188 Hunter Water also informs us it is working to reduce this customer group, where possible, by either metering the property or confirming if there has been a disconnection. Correspondence with Hunter Water (email), 3 December 2019.

Our decisions are:

33 That an unmetered property (residential or non-residential) is charged:

a. For water, based on a 20mm meter, and a deemed water usage of 180 kL per year.

b. For wastewater, the same as a residential customer with a 20mm meter.

34 Where a property is temporarily unmetered, the usage charge is based on a property's average daily consumption from the corresponding billing period in the most recent year that data is available.

For permanently unmetered customers, this decision accords with the current approach to charging unmetered customers and Hunter Water's proposal (Chapter 9 contains more discussion on the wastewater charge). For temporarily unmetered customers, this decision accords with Hunter Water's current practice.

We have deemed a usage amount to ensure that customers pay for the service they receive.[189] As there is no meter to record usage, the deemed amount is based on the usage of a typical household. We set this approach in previous Determinations, and we still consider this is appropriate for the 2020 Determination.

Sometimes, properties are unmetered temporarily as a result of redevelopment or the meter may be temporarily unable to be read. Hunter Water's customer contract (s15.3.3) provides that: [190]

> If a meter is stopped or damaged, an estimated usage will be calculated on a basis that is representative of your usage pattern.

Hunter Water has informed us that when a meter is temporarily unavailable, it estimates usage based on the daily average usage for that property from the corresponding billing period in the previous year, or the last year for which data is available. It applies the daily average to the number of days the meter was unavailable.

We consider that this is a reasonable approach with the benefit that it is seasonally adjusted.

We note that Hunter Water intends to move from a 4-monthly billing cycle to a 3-monthly billing cycle in 2021, which will misalign the annual billing periods. However, we will provide Hunter Water with the discretion to manage this change.

189 This is not an explicit amount, but is added to their fixed water service charge.
190 Hunter Water, *Great Services Customer Contract 2017-2022*, p 23.

8.6 Raw water (unfiltered water charges)

Around 70 customers (a mix of residential and non-residential) have long-standing arrangements with Hunter Water to draw water from the Chichester Trunk Gravity Main (CTGM).[191] This water is not treated and, although intermittently chlorinated[192], is not considered safe for drinking without additional measures being taken by customers.[193]

Our decision is:

35 To redefine the unfiltered water service as a raw water service, and set the raw water charges on a cost-plus basis as set out in Table 8.1.

8.6.1 Redefining the water as raw water

This water has previously been charged as 'unfiltered water'.[194] In its pricing proposal, Hunter Water reasoned that the service is in fact 'raw water', rather than unfiltered water. It stated that: [195]

> Hunter Water chlorinates the CTGM water at Chichester Dam, but we cannot rely on this barrier alone without other processes, including filtration, to provide sufficient disinfection to make the water safe for human consumption. The water can vary markedly in quality, particularly turbidity levels, after heavy rain and runoff into Chichester Dam.

We agree with Hunter Water that the water extracted directly from the CTGM by customers is more appropriately classified as raw water. Unfiltered water would, at a minimum, more typically be systemically chlorinated as a primary disinfection barrier. The chlorination undertaken at Chichester Dam is not dosed to target drinking water standards; but rather to assist in treatment at Dungog WTP.

Hunter Water is working with raw water customers on the CTGM to minimise the risks associated with raw water use.

8.6.2 We used a 'cost-plus' approach to set the raw water price

Hunter Water proposed the price for raw water be based on a bottom up or 'cost-plus' approach. It used the building block approach to calculate total bulk (or raw) water costs, and divided this by total consumption, to generate a cost per kilolitre of collecting and storing raw water.[196]

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191 The CTGM transfers bulk water from Chichester Dam to Dungog water treatment plant (WTP). Hunter Water, *Pricing Proposal to IPART*, Technical Paper 8, 1 July 2019, p 20.

192 The primary purpose of the chlorine dosing at the dam is to oxidise iron and manganese into colloidal particles so that they can be removed at Dungog WTP. (The length of the CTGM pipeline between the dam and WTP provide sufficient oxidation time).

193 Hunter Water, *Pricing Proposal to IPART*, Technical Paper 8, 1 July 2019, p 21.

194 We introduced unfiltered water usage charges in 2000.

195 Hunter Water, *Pricing Proposal to IPART*, Technical Paper 8, 1 July 2019, p 21.

196 Hunter Water, *Pricing Proposal to IPART*, Technical Paper 8, 1 July 2019, p 21.

We decided to adopt the cost-plus approach to calculating raw water charges, as it better reflects the costs incurred by Hunter Water in delivering raw water to these customers. Comparatively, in 2016, we set the unfiltered water price using a top down or 'retail-minus' approach by subtracting Hunter Water's average per kilolitre treatment cost from the water usage charge for potable water. Whilst this excluded treatment costs, it included significant operating and capital costs associated with Hunter Water's distribution system – which raw (or previously unfiltered) water customers do not use.

We have, however, used a different method than Hunter Water. To derive the average cost per kilolitre we have used Hunter Water's total water production rather than total water consumption. This means that raw water customers do not pay for water losses, most of which is leakage from Hunter Water's distribution system not used by these customers. Hunter Water accepted our draft decision.[197]

The final raw water usage price of $0.38/kL is slightly lower than Hunter Water's proposed price of $0.53 per kilolitre, in part driven by the reduced WACC between Hunter Water's proposal and our Final Report.[198]

8.6.3 One stakeholder made a submission on the Draft Report in relation to raw water

One submission to our Draft Report commented on the raw water service and price.

The submission argued that our changed approach to setting the price indicates they have been overcharged in the past and requested compensation for previous periods in which the price we set was higher.[199] We note that there are reasons or arguments for maintaining the current top down or 'retail minus' approach to determining the raw water price, but on balance we decided to accept Hunter Water's proposal to move to a 'bottom up' method of deriving the price. This decision will lead to a lower price for the raw water service provided to customers in the 2020 determination period.

It also argued Hunter Water has, and always had, a responsibility to provide the current raw water customers with drinking water under various legal obligations, and that Hunter Water coerced CTGM customers into signing non-standard customer contracts, and accepting alternate water solutions. It suggests Hunter Water did this to remove a responsibility to supply drinking water and avoid upgrades and maintenance. It notes that the CTGM has been chlorinated for decades since before the Dungog WTP was commissioned and argues that when the Australian Drinking Water Guidelines were updated in 2011, Hunter Water should have upgraded the system to accommodate the changes.[200]

We investigated these claims in 2018-19. In our view, Hunter Water is not obligated to supply CTGM customers with potable water under the Operating Licence, Customer Contract or Hunter Water Act. Hunter Water also notes that these properties were connected to the CTGM

197 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 71.

198 Hunter Water, *Pricing Proposal to IPART*, Technical Paper 8, 1 July 2019, p 23.

199 J Denniss and P Denniss, *Submission to IPART's Draft Report – Review of prices for Hunter Water Corporation from 1 July 2020*, March 2020, p 1-2.

200 J Denniss and P Denniss, *Submission to IPART's Draft Report – Review of prices for Hunter Water Corporation from 1 July 2020*, March 2020, p 1-2.

before becoming part of Hunter Water's Area of Operations on 1 July 2008, prior to which the customers were notified that the water service was of "non-standard" nature.[201] NSW Health has also commented that the risks associated with non-potable water are best managed through clear and concise information and agreement with customers.[202]

8.6.4 New raw water schemes

The raw water usage price of $0.38/kL only applies to those customers who draw water from the CTGM. At the time of publication, these are the only customers of Hunter Water that receive a raw water service. We have set the maximum price with these customers in mind.

Should a large customer receive a new raw water service over the 2020 determination period, it and Hunter Water can enter into an unregulated pricing agreement (UPA). A UPA can take into account the specific levels of service and costs associated with one-off raw water supply solutions to customers. A UPA may better reflect the site and customer-specific issues that may be relevant including:

- The quality of the water delivered
- The volume and flow rates of water provided and any requirements around continuity of service
- Water sources accessed, and its potential impact on Hunter Water's system yield
- The capital and operating costs associated with the service.

Each of these factors may vary substantially from those we used to set the raw water price for the CTGM raw water customers. As such, we consider a UPA negotiated between Hunter Water and the customer, likely a large non-residential customer, is the most appropriate way to proceed for raw water services to any customers other than those who draw water from the CTGM. If a smaller customer becomes a new raw water customer, we may include them under our maximum prices at a future price review.

As per all UPAs, we would expect all costs incurred in providing the service would be clearly ring-fenced from Hunter Water's regulated cost base.

Appendix B contains more information about UPAs.

201 Correspondence with Hunter Water (email), 25 May 2020.

202 NSW Health, Submission to IPART's *Hunter Water Corporation Draft Operating Licence 2017-2022*, Draft operating Licence, December 2016, p 1. Available online, here.

9 Prices – Wastewater

This chapter sets out our decisions on wastewater prices. Currently, Hunter Water's customers pay the following charges for wastewater services:

- Residential customers pay a standard (fixed) service charge, which includes an amount for a deemed volume of wastewater discharge (discharge allowance). Transitional arrangements apply that will eventually align house and apartment service charges. There is no explicit usage charge for residential customers.
- Non-residential customers pay a fixed service charge based on the size of their water meter and a deemed discharge allowance (similar to residential customers). As well, an explicit per kL usage charge applies to the volume of wastewater discharge that is above the discharge allowance.

We have maintained the current price structure for residential customers, but removed the deemed discharge allowance for non-residential customers and changed the way for determining when the minimum charge applies.

This chapter explains these changes, as well as our view of the importance of gaining a greater understanding of the Long Run Marginal Cost (LRMC) of providing wastewater services, to inform future pricing and investment decisions.

9.1 Wastewater charges

Our decisions are:

36 To set the maximum usage price for wastewater services in 2020-21 at $0.68 ($2020-21) and hold it constant in real terms in each year of the determination period as shown in Table 9.1.

37 To set the maximum wastewater service charges for residential customers as shown in Table 9.2.

38 To continue the transition of wastewater service charges for apartments to align with wastewater service charges for houses at the rate of 2.5% per year.

39 To set the maximum wastewater service charges for non-residential customers as shown in Table 9.3.

40 To set the non-residential wastewater usage charge by applying the wastewater usage price to all estimated wastewater discharged (ie, water usage × appropriate discharge factor).

41 To set a minimum non-residential service charge equal to 75% of the 20mm service charge.

42 To set the maximum wastewater service charge for multi-premises residential properties with a common meter in a community title development the house charge (if it is a house), or the apartment charge (if it is an apartment).

9.1.1 Wastewater usage charge

We calculate wastewater charges in a similar way to charges for water services, in that we first set wastewater usage prices, then forecast revenue from wastewater usage charges, and set the fixed charges to recover the balance of the wastewater NRR.

Currently, most residential customers pay a deemed usage charge based on the cost of 120 kL of wastewater discharged per year. This is incorporated into the fixed service charge, which is the same for all residential customers. An explicit wastewater usage charge is paid only by non-residential customers that discharge above the deemed discharge amount for residential customers, applied as a per kilolitre charge for estimated volumes of domestic strength waste[203] discharged into the wastewater system.[204]

Hunter Water proposed that the wastewater usage charge remain constant in nominal terms at $0.67, consistent with the 2013 and 2016 Determinations.[205] We have made a decision to hold it constant at $0.68 ($2020-21) in real terms (see Table 9.1). This is in keeping with our view that wastewater usage prices could be increased in the future, if more refined estimates of LRMC are formulated (see further discussion on LRMC in section 9.1.4.)

As discussed in section 9.1.3, we are removing the non-residential deemed discharge allowance and instead charging non-residential customers usage based on their estimated discharge. This will provide some bill relief for approximately half of Hunter Water's non-residential customers (ie, those that discharge at levels below the discharge allowance), and ensure their wastewater usage bill better reflects their actual discharges to the network.

Table 9.1 Wastewater usage price – non-residential customers ($/kL)

	2019-20	2020-21	2021-22	2022-23	2023-24	% change
	($2019-20)	($2020-21)				2019-20 to 2023-24
Hunter Water proposed	0.67	0.67	0.65	0.63	0.62	-7.5%
IPART decision	**0.67**	0.68	0.68	0.68	0.68	1.5%

Note: The percentage change includes inflation to 2020-21.
Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, Hunter Water, *Response to IPART Issues Paper*, 21 October 2019 and IPART analysis.

203 The costs of higher strength discharges are recovered through liquid trade waste prices, which are levied on non-residential customers on top of standard wastewater charges.
204 Except for the very largest dischargers, volumes of discharge are not directly metered. They are estimated based on a sewerage discharge factor (SDF) multiplied by a customer's metered water consumption. A customer's SDF represents the proportion of water usage that is discharged back into the wastewater system.
205 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 30.

9.1.2 Wastewater service charge

Residential customers will continue to pay a wastewater service charge based on a 20mm meter, multiplied by a 75% discharge factor, plus a charge for a deemed wastewater discharge of 120 kL per year (discharge allowance).

We will continue transitioning apartment wastewater service charges

We have made a decision to continue transitioning the apartment wastewater service charge to align with the house service charge at the rate of 2.5% per year. This means the two prices will align in 2026-27, as first envisaged in the 2013 Determination.[206]

Table 9.2 shows our residential wastewater service charges for houses and apartments.

Table 9.2 Residential wastewater service charge ($/year)

	2019-20	2020-21	2021-22	2022-23	2023-24	% change 2019-20 to 2023-24
	($2019-20)	($2020-21)				
Hunter Water proposed						
Houses	649.28	690.46	715.18	740.83	767.10	18.1%
Apartments	535.66	586.89	625.78	666.75	709.56	32.5%
IPART decision						
Houses	649.28	694.43	694.43	694.43	694.43	7.0%
Apartments[a]	535.66	590.26	607.62	624.98	642.34	19.9%

a The annual percentage calculations may not align to 2.5% due to rounding. However, the ratio of apartment to house prices are maintained at 85%, 87.5%, 90% and 92.5% over the determination period.
Note: The percentage change includes inflation to 2020-21.
Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, Hunter Water, *Response to IPART Issues Paper*, 21 October 2019 and IPART analysis.

We have removed the deemed discharge allowance for non-residential customers

We have decided to change the methodology for calculating non-residential wastewater service charges by removing the deemed discharge allowance so that for this determination period customers will pay a service charge based on their water meter size, multiplied by their appropriate discharge factor (non-residential wastewater service charge) only.

Non-residential customers will then continue to pay a wastewater usage price, but this will be explicitly applied to the customer's total estimated volume of discharges to the network rather than to estimated discharge volumes above the discharge allowance (which is currently the case).

206 IPART, *Hunter Water Corporation's water, sewerage, stormwater drainage and other services, Review of prices from 1 July 2013 to 30 June 2017*, Final Report, June 2013, p 12.

The non-residential service charges will continue to apply on a per meter basis except for mixed multi-premises, so that:

- Where one meter services multiple non-residential customers, those customers will pay a share of the service charge, based on the size of the meter
- Where one meter services a mixture of residential and non-residential customers (mixed multi-premises), all customers within this premise (residential and non-residential) will pay the standard residential apartment service charge (transition charge).

We have also changed how Hunter Water determines when the minimum service charge applies, so that:

- Where the non-residential wastewater service charge (defined above) is less than the residential service charge (excluding the amount for the discharge allowance), the residential service charge (excluding the deemed discharge amount) will apply as a minimum service charge.

The minimum service charge will continue to apply to non-residential customers on a meter basis except for those non-residential customers in mixed multi-premises (as outlined above).

Table 9.3 Non-residential wastewater service charge ($/year)

	2019-20	2020-21	2021-22	2022-23	2023-24	% change 2019-20 to 2023-24
	($2019-20)	($2020-21)				
Hunter Water proposed						
-20mm meter	758.51	814.32	848.91	886.39	923.05	21.7%
-25mm meter	1,185.17	1,272.37	1,326.42	1,384.98	1,442.27	21.7%
-40mm meter	3,034.04	3,257.26	3,395.65	3,545.55	3,692.20	21.7%
-100mm meter[a]	18,962.75	20,357.88	21,222.80	22,159.70	23,076.23	21.7%
IPART decision						
-20mm meter	758.51	817.10	817.10	817.10	817.10	7.7%
-25mm meter	1,185.18	1,276.72	1,276.72	1,276.72	1,276.72	7.7%
-40mm meter	3,034.04	3,268.40	3,268.40	3,268.40	3,268.40	7.7%
-100mm meter[a]	18,962.75	20,427.50	20,427.50	20,427.50	20,427.50	7.7%

a Larger meters pay a multiple of the 20 mm meter charge depending on the size of the meter.
Note: The percentage change includes inflation to 2020-21.
Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, Hunter Water, *Response to IPART Issues Paper*, 21 October 2019 and IPART analysis.

9.1.3 Reasons for our decision

Removing the deemed discharge allowance for calculating wastewater usage and service charges for non-residential customers

We have maintained our draft decision to remove the deemed discharge allowance from the wastewater service charge for non-residential customers, and to apply a usage price to the estimated volume of wastewater discharged (calculated on the basis of metered water usage multiplied by the relevant discharge factor).

To date, all non-residential customers have paid for a deemed discharge (or discharge allowance) of 120 kL per annum, and then also paid the wastewater usage price for every kL of wastewater estimated to be discharged to the wastewater network above the discharge allowance (with these volumes calculated as metered water consumption multiplied by the customer's discharge factor).

By removing the discharge allowance and applying the wastewater usage price to all estimated volumes of wastewater discharges, non-residential customers' bills will be more transparent and more cost-reflective for those who discharge below the discharge allowance.[207] Hunter Water estimates around 48% of its non-residential customers discharge less than the discharge allowance (ie, 120 kL) per year.[208] Our decision will therefore provide bill relief, particularly beneficial to those businesses currently impacted by COVID-19.

Removing the deemed discharge allowance is also a step towards basing charges more on usage, which is consistent with our intention to move toward LRMC-based usage pricing for wastewater.

In its submission to our Draft Report, Hunter Water did not have concerns with this decision, albeit it expressed concerns with how the minimum service charge would be applied[209] (this is discussed in the section below). It noted, however, that this decision will result in a small decrease in revenue recovered from non-residential customers, which will be recovered through marginally higher meter connection (service) charges, mostly from residential customers.[210]

Minimum service charge for non-residential customers

Our draft decision retained a minimum charge for non-residential customers, which we set at 75% of the 20mm service charge only. We considered that without a minimum charge, non-residential customers with a 20mm meter and a low discharge factor would pay significantly less than residential customers, because the service charge for non-residential customers is set by multiplying the connection charge by the relevant discharge factor for the customer. This recognises that the costs of a wastewater system are largely fixed, at least in the short to medium term.[211] A minimum charge shares these fixed costs between customers equitably.

Under our draft decision, the minimum non-residential service charge would apply when:

> The non-residential meter connection charge for the customer x the appropriate discharge factor for the customer + the actual usage charge
>
> *is less than*
>
> The residential service charge excluding the deemed discharge allowance

207 Assuming that discharge factors multiplied by water usage is a reasonable indication of sewerage discharges.
208 Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, pp 45 and 47.
209 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 61.
210 Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, p 46.
211 Stormwater and groundwater infiltration/inflows into the system mean that regardless of direct volumetric discharges by customers, the collection, and transportation and treatment assets need to be sized for peak wet weather flows.

In its response to our Draft Report, Hunter Water stated that there were a number of billing system complexities with our proposed change to include the actual usage charge when testing whether the minimum service charge should apply for non-residential customers.[212]

Hunter Water submitted that fixed service charges apply in advance for the full bill cycle, whereas usage charges are applied after a meter reading, which varies from property to property and is dependent on uncontrollable factors such as the meter reading schedules, the weather and property site conditions. These factors would affect the calculation of the minimum charge, which could then vary significantly from bill cycle to bill cycle, particularly if adjustments need to be made if re-calculations are needed.[213]

Given these difficulties in bill implementation, we have decided to remove the actual usage charge from the test for when a minimum service charge should apply. This change, as proposed by Hunter Water,[214] will make it administratively simpler for implementation of the minimum charge. The minimum non-residential service charge will now apply when:

> The non-residential meter connection charge for the customer x the appropriate discharge factor for the customer
>
> *is less than*
>
> The residential service charge excluding the deemed discharge allowance

The minimum service charge is essentially the service charge paid by residential customers excluding the deemed discharge allowance (ie, 75% of the 20mm service charge).

As outlined above, the minimum service charge (like service charges in general) applies to non-residential customers on a per meter basis, except for customers in mixed multi-premises with a common meter, where these charges apply on a per customer basis.

9.1.4 Using the LRMC as a basis for setting wastewater usage prices

Our Draft Report canvassed feedback on whether Hunter Water's wastewater usage charge should be set with reference to the LRMC of supply.

In our 2016 final reports for Hunter Water and Sydney Water's prices, we indicated that there were various arguments for and against SRMC versus LRMC pricing. More recently, as part of the 2019 Central Coast price review, we indicated that the LRMC of supplying wastewater services is a more appropriate basis for setting wastewater usage prices.[215]

Setting wastewater usage prices with reference to LRMC would signal the full cost of an additional unit of discharge (including both the operating and capital costs over the longer term). This could improve price signals (and potentially encourage competition) and provide greater transparency around the avoided costs of recycled water schemes, especially if

212 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 62.

213 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 62.

214 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 62.

215 See, for example, IPART, *Review of Central Coast Council's water, sewerage and stormwater prices*, Final Report, May 2019, p 105.

separate LRMCs could be estimated for each catchment. This is a point recognised by Frontier Economics, in its recent review of impediments to the uptake of cost-effective water recycling, for Infrastructure NSW and the NSW Government.[216]

Hunter Water has concerns with using LRMC to set wastewater usage prices

Hunter Water considers that it is premature to form a preference for LRMC prior to a review of LRMC methodologies and consideration of potential unintended consequences of adopting this preference.[217] It argues that calculation of the LRMC of providing wastewater services is more nuanced than the calculation of the LRMC of water supply. It acknowledges that signalling the cost of service could influence efficient discharge volumes for existing customers, but noted that:[218]

- Much of the investment made in wastewater infrastructure is due to the need to meet environmental standards rather than to increase capacity and is therefore not influenced significantly by changes in flows
- The wastewater system is not interconnected so changes in demand in one wastewater system do not free up capacity in another system, unlike the water system which is largely interconnected
- Applying the LRMC of one catchment across the whole network would be distortionary
- Residential customer discharges are likely to be inelastic
- The range of LRMC estimates and system-wide weighted average have not yet been calculated, suggesting a lack of evidence of the efficiency benefits of having a single, LRMC-based, usage price.

Hunter Water considers that our decision to maintain the wastewater usage charge in real terms for the 2020 determination period is a practical approach, whilst the relationship between wastewater usage charges, SRMC and LRMC are further considered and addressed between price reviews.

As noted in our Draft Repot, Hunter Water has not collected and collated the data to estimate the LRMCs in its 19 wastewater catchments. Our estimates of LRMC for 18 of Sydney Water's wastewater catchments varied from $0.77/kL to $14.76/kL, with a weighted average of $3.29/kL across all catchments.[219] As the LRMCs for Sydney Water would be reasonably representative of Hunter Water's range, this would indicate that the LRMC for wastewater is higher than Hunter Water's usage prices.

At a minimum, we see merit in Hunter Water and us gaining a better understanding of its LRMC of wastewater supply.[220] This could inform future decisions on wastewater usage prices and decisions by public and privately owned water utilities to invest in wastewater

216 Frontier Economics, *Economic regulatory barriers to cost-effective water recycling – A report prepared for Infrastructure NSW*, July 2018, p 27, can be accessed at https://www.planning.nsw.gov.au/-/media/Files/DPE/Reports/economic-barriers-to-cost-effective-water-recycling-report-2019-01-15.pdf

217 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 49.

218 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 60.

219 IPART analysis.

220 IPART, *Review of prices for Hunter Water Corporation from 1 July 2020, Issues Paper*, September 2019, p 89.

collection, treatment and disposal servicing solutions (including recycled water and integrated water cycle management schemes).

We will therefore work with Hunter Water and other water utilities to review the methods of estimating the LRMC of wastewater supply and the potential application of these estimates between now and the next review of Hunter Water's prices.

9.2 Environmental Improvement Charge (EIC)

Our decision is:

43 To discontinue the Environmental Improvement Charge (EIC) from 1 July 2020.

Hunter Water has proposed to set the Environmental Improvement Charge (EIC) to zero from the beginning of the 2020 Determination. It is currently $41.01 per wastewater customer per year.[221] We have accepted Hunter Water's proposal to discontinue the EIC for the 2020 determination period.

9.2.1 Reasons for our decision

Hunter Water has provided backlog sewerage services since the 1980s, generally following Ministerial Directions to complete such works. Hunter Water has proposed setting the EIC to zero from 1 July 2020, as it has no NSW Government direction to undertake further backlog sewerage works and to fund such works via prices to the general customer base. In the past, backlog sewerage services have been funded by a combination of NSW Government social program funding and the EIC levy.

Hunter Water also noted that IPART has established an approach and formula to determine who pays for backlog services in the recent Developer Charges Determination.[222] In broad terms, the approach is based on the 'impactor pays' principle, where owners are responsible for the costs of the service (as they create the need to incur the cost), unless there are identifiable broader benefits to the community (eg, health and environmental benefits), in which case costs could be shared with the wider customer base.[223]

Cessnock City Council and the City of Newcastle have raised concerns about the discontinuation of the EIC and stated that the cost to residents to pay for backlog services to their homes in certain townships in their area, was too high.[224] Both councils strongly support the current EIC model.

We consider that in the absence of Government direction for Hunter Water to deliver further backlog sewerage services and for these to be funded via prices to the broader customer base, there is no strong case for the broader customer base to continue funding these services.

221 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 41.
222 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 41.
223 IPART, *Maximum prices to connect, extend or upgrade a service for metropolitan water agencies,* Final Report, October 2018.
224 Cessnock City Council, *Submission to IPART Issues Paper,* 2019, p 2, Public Hearing Transcript, *Review of prices for Hunter Water to apply from 1 July 2020*, November 2019, pp 11 and 66- 67 and City of Newcastle submission to IPART Draft Report, - *Review of prices for Hunter Water Corporation from 1 July 2020,* March 2020, p 9.

In Appendix O, we set out alternative options for funding such schemes.

9.3 Properties within multi-premises

We have maintained the current wastewater price structure for customers in multi-premises, except as it relates to community development properties.

Customers in multi-premises pay wastewater charges in the same way that they pay water charges (see Table N.1 in Appendix N). Within multi-premises, Hunter Water currently charges houses with individual meters the higher standalone house charge, and houses that share a common meter the lower multi-premises (apartment) charge, as presented in Table N.2 in Appendix N.

We have made a decision to charge:

- Houses in community developments the same as standalone houses (standard 20mm charge)
- Apartments in community developments the same as apartments in other arrangements, such as strata title developments (transition charge).

Appendix N provides more detail on the current pricing arrangements and the changes to arrangements applicable to community title developments for the 2020 determination period.

9.4 Unmetered properties

As noted in Chapter 8, unmetered properties are charged a water service charge similar to residential properties, which implicitly includes two components - a service charge that is equivalent to a 20 mm meter residential service charge and a deemed water usage component, set at 180 kL per year x the usage price.

Unmetered properties also currently pay wastewater charges.

We have maintained the current wastewater price structure for unmetered properties - ie, these properties pay a wastewater service charge equal to the wastewater service charge applicable to residential properties as shown in Table 9.2. Consequently, similar to residential customers there is no explicit wastewater usage charge for these customers.

10 Prices – Stormwater

Hunter Water provides stormwater drainage services to around 30% of its customers (about 71,000 customers – 96% residential and 4% non-residential).[225] Hunter Water charges its customers whose properties are in areas serviced by the stormwater channels it owns and operates. Stormwater services to other customers are provided by local councils and are funded through council rates.

We have decided to (largely) maintain the current pricing approach for Hunter Water's stormwater charges which comprise:

- For residential customers – a service charge based on property type (ie, houses or multi-premises, eg, apartments)
- For non-residential customers – a service charge levied on four area-based categories.

To calculate stormwater charges we establish the appropriate price structure, set an appropriate share of costs for the provision of stormwater services for each category of property, and then allocate the relevant share to the number of properties in each category.

10.1 Stormwater charges will increase across the determination period

Our decisions are:

44 To use the property charging ratios presented in Table 10.1 to set stormwater charges.

45 To set stormwater charges as presented in Table 10.1.

Table 10.1 presents our decision on prices for stormwater services for residential and non-residential customers. It also includes current prices for comparison, and the comparative charging ratios for different property types under our decision. Stormwater charges for the 2020 determination period are presented in $2020-21 in this report (ie, they exclude the effects of inflation beyond 2020-21).

225 Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 22.

Table 10.1 IPART decision on stormwater charges for 2020 determination period

	2019-20	2020-21	2021-22)	2022-23	2023-24	Change 2019-24[a]	Charging ratio
	($2019-20)	($2020-21)					
Residential							
Houses (standalone)[b]	79.63	85.35	85.35	85.35	85.35	7.2%	1.0
Apartments (multi-premises)[c]	29.47	31.58	31.58	31.58	31.58	7.2%	0.4
Non-residential							
Small (≤ 1,000 m^2) or low impact	79.63	85.35	85.35	85.35	85.35	7.2%	1.0
Medium (1,000 m^2 to 10,000 m^2)	260.08	278.75	278.75	278.75	278.75	7.2%	3.3
Large (10,001 m^2 to 45,000 m^2)	1,654.10	1,772.82	1,772.82	1,772.82	1,772.82	7.2%	20.8
Very large (> 45,000 m^2)	5,255.48	5,632.68	5,632.68	5,632.68	5,632.68	7.2%	66.0

a The percentage change includes inflation to $2020-21.

b Includes 'vacant land'.

c Includes 'low impact residential properties'.

Source: IPART analysis.

Stormwater charges will be 7.2% higher in 2020-21 than in 2019-20 (including inflation), for all property categories. From 2020-21, charges increase with inflation only. The charges are lower than those proposed by Hunter Water – it proposed a 28.7% increase over the 2020 determination period due to proposed increases in its NRR for stormwater services (see Appendix P). Our final decision on the NRR for stormwater is lower than Hunter Water's proposal, as a result of:

- Minor reductions to expenditure following our expenditure review (by $0.1 million for operating expenditure and $0.2 million for capital expenditure)
- A lower WACC – ie, 3.4% compared to 4.1% at the time of Hunter Water's proposal.

As discussed in Chapter 7, compared to the 2016 Determination, Hunter Water has also corrected errors in its stormwater customer numbers, resulting in target revenue now being spread across a larger customer base.

Box 10.1 Hunter Water's current stormwater price structure

Hunter Water's stormwater price structure applies a constrained area-based approach, which comprises:

- For residential customers – a service charge based on property type (ie, houses or multi-premises, eg, apartments)
- For non-residential customers – a service charge levied on four area-based categories (to reflect a relationship between land area and stormwater runoff – and hence the positive relationship between a property's land area and its contribution to the need for Hunter Water to incur stormwater management costs).

Non-residential area-based charges are set as a multiple of the 'base' charge for a house, calculated using property charging ratios. We set these ratios relative to the average land area for each property category, adjusted to reflect other cost drivers and consideration of impact analysis. These ratios represent the price relativities between the different property categories and are used to allocate the relevant share of target revenue for stormwater services to each property category.

We assume that each category is equivalent to a number of 'base' units. For example, currently apartments are considered to be 0.4 of a base unit (or house) and the very large non-residential category is assumed to have the same impact as 66.0 houses.

Where a property has a low run-off, such as farmland, it can be eligible for a low-impact rate, set equal to the:

- Residential house rate for non-residential low impact properties
- Residential apartment rate for low impact houses (and low impact vacant land).

10.2 We have largely maintained the current pricing approach for stormwater charges

10.2.1 We have maintained a constrained area-based approach for setting stormwater charges

We have maintained the area-based charging approach for non-residential customers, which was first introduced in 2005.

We refer to this approach as a 'constrained' area-based price structure. This is because, while there is a positive relationship between charges and the area of a customer's property, this relationship is not purely linear as stormwater charges increase at a declining rate as land area increases. Larger properties pay higher stormwater charges overall, but the charge per square metre is scaled relative to property area so that smaller properties pay proportionally more per square metre than larger properties (see Appendix P).

We have decided to maintain the current approach and general price structure for setting Hunter Water's stormwater charges, as:

- We consider that charges should be cost-reflective and reflect an impactor pays approach (whereby the party that created the need to incur the cost pays for that cost). A property's land area is a reasonable and readily available proxy for the costs that each property imposes on the stormwater system.

- It recognises that land area is a key cost driver, but not the only cost driver, of stormwater costs. A variety of factors determine each property's contribution to the stormwater system, such as land size and slope, vegetation or proportion of impervious area, land use, soil type, on-site retention and reuse and property management.[226]
- We consider that continuing to charge on a constrained area-basis mitigates potential bill impacts on any one customer group (in this case, larger properties) associated with transitioning to or adopting linear land area-based charges (see Appendix P).
- It is consistent with the existing stormwater pricing approach for Sydney Water and the Central Coast Council.[227]

A response to our Issues Paper suggested an impervious area tariff

Professor Peter Coombes (Urban Water Cycle Solutions) proposed that an impervious area tariff, levied by local governments, would be a more appropriate and cost-effective approach to charging for stormwater services.[228] We note that implementing this would likely require legislative framework changes and further analysis to ensure that the benefits of this approach would exceed its costs. This could be considered ahead of the next Hunter Water pricing review as part of a wider review of the basis of charging for stormwater services. It may also be appropriate to consider whether charges for each non-residential land area category should be set on a $/m^2 basis to more evenly distribute costs within the category.

10.2.2 We have maintained low impact customer categories

While we consider land area to be the best available proxy for determining and allocating stormwater costs, there are instances where the contribution to costs of each property could be quite different. Some large undeveloped properties, such as parks, sports fields and golf courses, have greater ability to absorb stormwater flows than developed properties with hard surfaces. To reflect this, a low impact customer category for non-residential properties was introduced as part of the 2005 Determination.[229] This allows non-residential customers to apply for a lower charge by demonstrating to Hunter Water that their property makes a relatively small contribution to stormwater load. In 2016 a similar low impact category was introduced for the owners of houses for which only a small proportion of stormwater leaves the property, as we consider the impactor pays principle also applies to residential customers.[230]

We have decided to maintain a low-impact charge to continue protecting properties that genuinely have a low impact on the stormwater system.

226 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 44.
227 IPART, *Review of prices for Sydney Water Corporation From 1 July 2016 to 30 June 2020 – Final Report*, June 2016, p 180, *Review of Central Coast Council's water, sewerage and stormwater prices To apply from 1 July 2019 – Final Report*, May 2019, p 109.
228 Coombes, P.J., *Submission to IPART's Issues Paper – Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019, p 10.
229 IPART, *Sydney Water Corporation, Hunter Water Corporation, Sydney Catchment Authority, Prices of water supply, wastewater and stormwater services, Final Determination and Report*, June 2005, p22.
230 IPART, *Review of prices for Hunter Water Corporation From 1 July 2016 to 30 June 2020 – Final Report*, June 2016, pp 126-127.

10.2.3 We have maintained charges for vacant land and dual occupancies

Stormwater charges for vacant land are currently the same as for a house. Hunter Water reports that 616 properties are classified as "vacant land" in 2018-19, all of which are non-residential.[231] In line with the impactor pays principle, we have decided to maintain charges for vacant land as these properties contribute to the need for the stormwater system, albeit the impact is likely to be lower than if the land was not vacant.

In 2016 we decided to apply an approach to stormwater charges for dual occupancies that is broadly consistent with how dual occupancies are charged for water and wastewater services.[232] That is:

- If each dual occupancy property is serviced by one individual meter only, they are treated as a residential multi-premises, and they are each charged as one apartment
- If the dual occupancy properties are serviced by one common meter only, they are together charged as one house
- If the dual occupancy properties are serviced by more than one common meter, each property is charged as a separate apartment.

We have decided to maintain the current approach as, whilst we don't consider meters an indicator of cost, they help identify dual occupancies for the purpose of charging for stormwater services, which would otherwise be difficult.

10.2.4 Houses in a community title development have been reclassified

We have decided that residential houses in a community title development are to be charged the same stormwater charge as an ordinary (Torrens title) residential house. We have reclassified 185 houses in community title developments, previously classified and charged as "apartments", as "houses". See Appendix N for further detail on multi-premises, including community title developments.

10.2.5 We have maintained current property charging ratios to set charges

For the 2020 Determination, we have decided to use the current ratios presented in Table 10.1 to set stormwater charges. This prevents substantial bill impacts to non-residential customers associated with adopting charges based purely on land area. These ratios currently represent the price relativities between the different property categories and are used to allocate the relevant share of target revenue for stormwater services to each property category. Using the current ratios, residential customers contribute 87.5% of the target revenue, and represent 85.9% of land area serviced by Hunter Water (see Appendix P).

231 Hunter Water Annual Information Return, July 2019.

232 IPART, *Review of prices for Hunter Water Corporation From 1 July 2016 to 30 June 2020 – Final Report*, June 2016, pp 127-128

10.2.6 We have not adjusted charges to reflect historical differences in demand forecasts

In addition to some customers being over or undercharged compared to previous determinations, the count of stormwater customers provided to us for the 2016 determination period understated the number of stormwater customers by 2,048.[233] This means that some charges in the 2016 Determination were possibly set higher than they would have been had the correct number of customers been identified, as the allocation of target revenue across the different categories would have been different. As a result of the errors and underestimated number of properties, we allocated the stormwater revenue requirement across 2,048 fewer customers. This resulted in some stormwater customers paying more and some paying less throughout the 2016 determination period than was intended (see Appendix P). However, the impacts are not straightforward given the process for allocating share of target revenue to different categories.

The scope and scale of the impacts do not appear to be substantial for residential and small non-residential customers (these customers may have underpaid by less than about $1.10 per year). For larger non-residential customers, the dollar impact is greater (these customers may have overpaid by up to about $370 per year (ie, by about 9% on average) for very large customers, or $242 per year (ie, by about 18% on average) for large customers).

We have not made adjustments to stormwater charges for the 2020 determination period to account for these impacts given that:

- Hunter Water has advised it will refund customers that were erroneously charged or overcharged (and will not seek to recover the monies it undercharged customers).
- The scope and scale of overcharging does not appear to be material in terms of bill impacts.
- It would not necessarily result in cost-reflective and equitable pricing as current/future customers would be paying less than the efficient charges.
- Charges for the 2016 determination period were set on the best available information at the time.

10.2.7 Hunter Water supports our decisions on stormwater charges

In its submission to our Draft Report, Hunter Water stated that it supports our draft decisions on stormwater charges and did not propose any changes.[234] Other stakeholders did not specifically comment on Hunter Water's stormwater charges in their submissions.

233 Correspondence with Hunter Water, received 14 January 2020.

234 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 49.

11 Discretionary expenditure

Discretionary expenditure is incurred when a utility invests in projects that provide services or achieve outcomes that go beyond service standards or environmental obligations specified in the utility's operating licence or other regulatory requirements.

Hunter Water has included two discretionary expenditure projects in its pricing proposal.

This is the first time we have explicitly set prices to recover the costs of discretionary projects. We have adopted this approach to allow and encourage utilities to be responsive to their customers. Demonstrating customer support and ensuring accountability are the underpinning principles of our approach to discretionary expenditure.

We have developed a framework to guide our assessment of discretionary expenditure, and to ensure the delivery of the commitments made by utilities to their customers is subject to appropriate oversight (see Appendix Q). In submissions to our Draft Report, Hunter Water and PIAC asked us to conduct a separate public review of our discretionary framework,[235] to ensure the robustness of the framework and allow input from a wide range of stakeholders. We agree that this would be a positive step, and we will review and refine elements of our discretionary expenditure framework. We intend for the framework presented in this report to remain in place until our review of the framework is completed.

We have also made decisions on Hunter Water's proposed discretionary expenditure, and on how the costs of this discretionary expenditure should be recovered from customers. Finally, we outline a number of output measures that will enable the delivery of the discretionary expenditure to be tracked, and ensure customers are informed of the outcomes and bill impacts of this discretionary expenditure.

11.1 Customer engagement is a key element of a utility's pricing proposal

As outlined in our Guidelines for Water Agency Pricing Submissions, a utility should have a strong and up to date understanding of its customers' preferences, and this should inform a utility's decision-making and pricing submission.[236]

In our 2016 Sydney Water pricing review we noted that we would consider, and could allow, discretionary expenditure to be recovered via regulated prices, but that we would require clear evidence that the utility's customers have the capacity and willingness to pay for the discretionary expenditure.[237] Our recycled water framework also allows for the costs of recycled water schemes to be recovered from the broader customer base to the extent that there is sufficient evidence that the broader customer base is willing to pay for the external benefits of the recycled water scheme.

235 Hunter Water, *Submission to IPART Draft Report,* April 2020, p 65; Public Interest Advocacy Centre, *Submission to IPART Draft Report,* April 2020, p 5.

236 IPART, *Guidelines for Water Agency Pricing Submissions*, November 2018, pp 20-21.

237 IPART, *Review of prices for Sydney Water Corporation from 1 July 2016 to 30 June 2020 - Final Report*, June 2016, p 37.

It is our view that significant or material changes to a utility's service standards, environmental obligations or other regulatory outcomes should be addressed by appropriately consulting with customers and the entity which enforces the regulation, so that any update to standards or regulations reflects community preferences.

However, where the cost to achieve a discretionary outcome is relatively small, utilities can propose recovering expenditure through prices from either part of, or its entire, broader customer base.

11.2 We have developed a framework for discretionary expenditure

Our decision is:

46 To establish a discretionary expenditure framework.

We have developed a framework for discretionary expenditure, which provides a structure to articulate our principles for consideration of proposals, including (1) the application of relevant assessment criteria, (2) setting appropriate pricing structures and prices, and (3) stipulating on-going requirements as discretionary projects are implemented (see Appendix Q).

Our framework provides guidance to the utilities and establishes processes and checks to ensure that the prices paid by customers are no more than they are willing to pay for the discretionary projects, and that the characteristics of the projects are aligned with those described to customers. A summary of our framework can be found in Table 11.1.

Our framework has two stages.

- Stage 1 – **Assessment** - Phases 1 to 3 of our framework outline the steps we will take to assess a utility's proposed discretionary expenditure, including whether it is a discretionary project, has customer support and the expenditure is efficient.
- Stage 2 – **Delivery and Oversight** - Phases 4 and 5 of our framework focus on implementation, and measures to ensure delivery of the projects in line with customers' expectations.

Table 11.1 Overview of our discretionary expenditure framework

Phase	Description
Phase 1: Project definition	▼ The project or outcome is adequately described and defined. At a minimum, the project or outcome specification must include the following characteristics and conditions: – Location, customers/users benefiting from (or creating the need for) the project, delivery timeframes, whether it will be replacing another service and outcomes expected. ▼ The project or outcome fits within the utility's responsibilities and is related to its monopoly services. ▼ The project is discretionary.
Phase 2: Willingness to pay	▼ Survey participants are given sufficient context and information on the proposed project or outcome. This should align with the characteristics and conditions of the project definition identified in Phase 1. ▼ The survey identifies customers' maximum willingness to pay dollar amounts. These will be the upper limit to the customer share of the cost of the project/outcome estimated in Phase 3. ▼ The survey used to elicit customer willingness to pay is well designed and the results are statistically valid. ▼ Bill impacts should be shown in the context of the broader bill impact.
Phase 3: Efficiency test	▼ The project/s is prioritised and optimised within the utilities' broader responsibilities. ▼ The project/s is the most efficient way of achieving the outcome. ▼ Total efficient cost estimates should transparently net off any avoided costs and/or grants.
Phase 4: Recovery & delivery incentives	▼ The proposed prices to customers recover only the efficient cost of the outcome or project determined in phase 3. ▼ Bill impact per household is equal to or less than willingness to pay from phase 2. ▼ Charges are recovered from customer categories whose willingness to pay was assessed in phase 2. ▼ Separate RAB with appropriate asset lives to enable discretionary expenditure to be tracked. ▼ Transparent and accountable – utility to develop and propose approaches to ensure accountability. ▼ Next period adjustment will consider whether any underspend is returned to customers or retained by the utility for other projects or as an efficiency gain.
Phase 5: Implementation & performance commitments	▼ Capture the program as an output measure to ensure sufficient reporting on what is achieved. ▼ Ex-post adjustment mechanism to ensure only investments in line with project definition in willingness to pay survey are added to the RAB. ▼ Where proposed expenditure is not carried out or outcomes are not delivered, funds collected through the discretionary charge may be returned to customers in the subsequent determination period. ▼ Outline expectation that the charge remains equal to or below demonstrated willingness to pay amount over the long term.

11.2.1 Assessment of a utility's proposed discretionary expenditure

We first consider whether a proposed project is sufficiently related to a utility's monopoly service provision, and then whether it is necessary to meet a utility's mandatory obligations or if it is discretionary.

What is discretionary expenditure?

A utility's proposal can include two categories of costs. These are the costs to:

- Comply with its mandatory obligations. For example, service levels under its operating licence and environmental licence obligations set by the Environment Protection Authority (EPA).
  - We set prices to recover the efficient level of these costs that enables a monopoly service provider to deliver its services in compliance with its other regulatory obligations.
- Undertake discretionary projects. These are projects which are not driven or required by an external regulator or body.

The framework aims to enable ongoing customer-driven investment

Our framework emphasises the importance of demonstrating customer willingness to pay for discretionary projects. Utilities should aim to conduct robust and well-designed willingness to pay surveys which produce statistically significant results. This would ensure that any expenditure proposals put forward by a utility will be sufficiently supported and, therefore, would likely be approved. The application of this framework is new, and we acknowledge that utilities are still developing their approaches to discretionary expenditure proposals. Therefore, we expect them to recognise and adopt potential improvements during the next four years.

We engaged a consultant, Gillespie Economics, to provide guidance on demonstrating willingness to pay, and to review the willingness to pay survey conducted by Hunter Water.[238] As willingness to pay acts not only as an important gauge of customer support, but also as a cap on the contribution we allow a utility to recover from customers, it is important that these studies have integrity and are based on the appropriate principles. In our view, it is also important that these studies can be used when assessing the costs and benefits of significant projects.

Gillespie Economics also provided comments in relation to our best practice principles for demonstrating willingness to pay, which currently focus on contingent valuation approaches, including a recommendation that we develop best practice principles that also apply to choice modelling approaches. We will consider this recommendation, along with our current best practice principles, as part of our separate review of the framework. Our best practice principles for demonstrating willingness to pay are included in Appendix Q.

The required evidence of willingness to pay should be proportional to the proposed expenditure

We note that it is important that the extent of the willingness to pay surveys conducted by the utility are proportionate to the relative quantum of the discretionary expenditure proposed compared to its overall expenditure proposal.

238 Gillespie Economics, *Assessment of Hunter Water's and Sydney Water's Customer Willingness to Pay Surveys, Report for IPART*, January 2020.

Two approaches to willingness to pay studies were identified from utilities' pricing proposals:

- **Economic willingness to pay studies,** which elicit the maximum willingness to pay across the population of customers for defined environmental, social or cultural outcomes.
- **Market research based willingness to pay studies,** which estimate the proportion of customers who would be willing to pay a price that would cover the costs of different levels of a proposed investment.

The first type of study provides an estimate of the indirect and non-use benefits that a project may provide to the customer base. This value may be higher if people outside the customer base also value an outcome.

We recognise that there should be a proportional sliding scale relative to the size of the proposed discretionary expenditure which dictates the level of resources and evidence required to demonstrate that each element of the framework has been met. For example, a small-scale capital project should not necessitate the same extensive customer engagement and gateway processes, including a cost-benefit analysis and economic willingness to pay study, as a larger project.

A market research approach may be appropriate for smaller proposed discretionary investments, and for selecting projects to engage further with customers on from a menu of possible projects, without requiring the same level of detail as an economic measure of willingness to pay.

Economic willingness to pay studies, however, should be conducted in conjunction with a market research approach, cost-benefit analysis, and business case for larger projects, to ensure that thorough and robust processes are in place to support greater amounts of proposed expenditure.

Costs should only be recovered from categories of customers with demonstrated willingness to pay

We consider that there should be alignment between the categories of customers surveyed to demonstrate willingness to pay, and the categories of customers that bear the cost of discretionary expenditure.

Utilities should only recover the efficient level of expenditure

As part of our framework, we apply our usual efficiency test to discretionary capital expenditure to ensure customers are only charged the efficient cost of delivering the project or outcome. Where the proposal is for a specific project, it can be included in the expenditure review with other capital expenditure, including ex-post capital expenditure reviews.

Where the proposal is for a funding envelope to deliver an outcome over the determination period, we would expect to see accurate estimates of likely outcomes and that any efficiencies that materialise through the implementation of a program could result in the delivery of 'more' of the outcome, to the extent this is consistent with customers' willingness to pay.

11.2.2 Implementation of a utility's discretionary expenditure proposal

Ensuring a utility is accountable for the delivery of the project

We need to hold utilities accountable for any proposed discretionary expenditure. The delivery of the utility's proposal should match the customers' understanding of what they are paying for, and the outcome should be delivered over the specified timeframe at an efficient cost. This is particularly important given the absence of any additional regulatory processes such as obligatory service standards or environmental standards that a utility must uphold in relation to this type of expenditure.

Delivery incentives

We have established delivery incentives to ensure that utilities are accountable to customers, and that they appropriately gauge project risks prior to making commitments to customers.

Our delivery incentives include:

- Our standard approach to ex-post adjustments to capital expenditure during the next review, coupled with
- A next period adjustment to assess whether any underspend is returned to customers, used to provide similar outcomes or retained by the utility as an efficiency gain. This is a slightly different approach to our standard approach, as we are focussed on discrete discretionary proposals which may not be 'part' of a much wider expenditure profile where it is expected that proposed expenditure would be subject to on-going review and re-prioritisation as part of normal business.

The utility should be aware of the financial implications if it cannot meet its stated outcomes on which it has gained community support. We realise that this assessment may not be purely objective, however, many of the projects that would be classed as discretionary would be discrete in nature and amenable to defining a clear set of outcomes.

This approach will achieve outcomes based regulation for program expenditure which is closely aligned with customer preferences.

Transparency is important to ensure that the utility's activities and prices are well understood by stakeholders and its customers. Achieving discretionary outcomes are at a cost to the utility, and are outside of the mandated requirements on utilities in delivering their monopoly services to their customers. It is important that customers fully understand the implications of these outcomes on prices.

Ensuring transparency and accountability to customers

To enhance transparency and accountability around discretionary expenditure to customers, we consider that utilities must take steps to inform customers about the discretionary charges they will incur, and the outcomes these charges will deliver. Examples of this could include presenting the discretionary expenditure charge as a separate line item on customer bills; distributing information pamphlets to customers; or directing bill payers to the utility's website for further information on discretionary expenditure including charges and expected outcomes.

11.3 We will conduct a review of our framework

Our decision is:

47 To conduct a review of our discretionary expenditure framework after the completion of this pricing review.

In its submission to our Draft Report, Hunter Water expressed a preference for reviews that relate to the 'form of regulation' to occur outside of the price review process, as this provides a better opportunity for stakeholders to provide constructive input. It requested that we defer finalisation of our discretionary expenditure framework, and instead conduct a separate review of our framework following the completion of this price review.[239] Hunter Water suggested that this occur between June 2020 and December 2022, and involve all price regulated water utilities plus other stakeholders.[240]

Similarly, PIAC stated in its submission to our Draft Report:

> "we strongly recommend that IPART initiate a review of the framework and guidelines for discretionary expenditure at the completion of this determination process, to ensure that the process is robust and able to address the needs and concerns of the community and businesses".[241]

We agree that reviewing and refining elements of our discretionary expenditure framework would be a positive step, and we recognise the value in obtaining views from a broader range of stakeholders outside the current pricing review process. We intend for the framework presented in this report to remain in place until a review of the framework is completed.

11.4 Our decisions on Hunter Water's proposed discretionary expenditure

After a substantial customer engagement program, Hunter Water proposed two projects as discretionary expenditure for the 2020 determination period. We discussed Hunter Water's proposed discretionary projects in our Issues Paper, noting that we intended to apply our best practice principles for demonstrating willingness to pay to assess whether the expenditure should be approved for this review. Using these principles as a basis, we have applied the newly developed framework for assessing discretionary expenditure on the two proposed projects.

Our decisions are:

48 To allow Hunter Water to recover the costs of the following projects from its broader customer base:

a. For the recycled water for irrigation of public spaces project, $6.0 million recovered from residential customers on a per property basis

b. For the stormwater amenity improvement project, $11.3 million recovered from residential customers on a per property basis.

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239 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 65.

240 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 69.

241 PIAC, *Submission to IPART Draft Report*, April 2020, p 5.

49 To allow the costs of the discretionary projects to be recovered from residential customers through an annual $1.70 per property charge.

50 To exclude from the discretionary charge:

a. Residential customers in mixed-multi premises, and

b. Vacant land.

11.4.1 We have decided to allow Hunter Water to recover the costs of its proposed discretionary projects from residential customers

In developing our framework, we acknowledge that since it is the first time we have assessed proposed discretionary expenditure, we should exercise a level of discretion in allowing discretionary prices to be charged by Hunter Water. There are a number of requirements within our framework that aim to ensure transparency and accountability for utilities, which we have developed after receiving Hunter Water's proposal. We consider that these should be applicable to future proposals.

Recycled water for irrigation of public spaces

Hunter Water has identified several parks and sporting fields that could use recycled water for irrigation. This would save drinking water supplies and reduce the amount of effluent discharged to waterways. Hunter Water indicates this would cost $6 million over the 2020 determination period.[242]

Our assessment

We have assessed this project against our framework in more detail in Appendix R.

Overall, we consider that while the willingness to pay survey conducted by Hunter Water had some shortcomings, consulting with customers on potential projects is a positive step, and going forward, the process around this engagement can be refined. However, we note that this willingness to pay survey was limited to residential customers, and therefore we have decided to allow recovery of the costs of the project only from residential customers.

Stormwater amenity improvement

Hunter Water is proposing to improve the amenity of its stormwater channels by planting vegetation around the stormwater channels to screen them from view, and by replacing concrete with more natural materials. It has undertaken to improve the amenity on at least one kilometre of stormwater channel, at a cost of $11.3 million over the determination period.[243]

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242 Hunter Water, *Supplementary Response to IPART Issues Paper*, 6 November 2019, p 17.
243 Hunter Water, *Pricing Proposal to IPART, Technical Paper 4*, 1 July 2019, p 42.

Our assessment

We have assessed this project against our framework in more detail in Appendix R.

Overall, we consider that the willingness to pay survey conducted by Hunter Water is appropriate, given the scale of the proposed project, and that the project has sufficient customer support. However, we note that this willingness to pay survey was limited to residential customers[244], and therefore we have decided to allow recovery of the costs of the project only from residential customers.

11.4.2 We have decided how much customers can be charged to recover the costs of discretionary expenditure

The discretionary expenditure proposals submitted by Hunter Water are shown in Table 11.2.

Table 11.2 Hunter Water's proposed discretionary expenditure

Project	Capital Cost ($2019-20)	Customers cost recovered from	Discretionary charge per year ($2020-21)	Basis of charge
Recycled water for irrigation	$6.0 million	All customers	Around $2.00	Not specified
Stormwater amenity improvement	$11.3 million	All customers	$2.74	Not specified
Total	**$17.3 million**		**Around $4.74**	

Note: Hunter Water initially proposed $11.5 million for recycled water for irrigation, but revised this to $6 million in its November response to our Issues Paper.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 4*, 1 July 2019, p 42; Hunter Water *Supplementary Response to IPART Issues Paper*, 6 November 2019, p 17; Hunter Water, *Pricing Proposal to IPART, Technical Paper 2, 1 July 2019, pp 66-67;* IPART analysis.

The discretionary expenditure we have decided to allow for each project, and the resultant discretionary charge, is shown in Table 11.3. The discretionary charge is set in 2020-21 dollars, and will increase with inflation throughout the determination period. The fall in the cost of capital (the WACC) has contributed to prices that are lower than those proposed by Hunter Water, however it will still collect sufficient revenue to fund the proposed programs and achieve the outcomes consistent with its proposal.

Table 11.3 Our decision on discretionary expenditure

Project	Capital Cost ($2019-20)	Customers cost recovered from	Discretionary charge per year ($2020-21)	Basis of charge
Recycled water for irrigation	$6.0 million	All residential customers	$0.73	Per dwelling
Stormwater amenity improvement	$11.3 million	All residential customers	$0.97	Per dwelling
Total	**$17.3 million**		**$1.70**	Per dwelling

244 Hunter Water, *Pricing Proposal to IPART, Technical Paper 1*, 1 July 2019.

To calculate the discretionary expenditure amounts to be recovered from each customer, we followed a number of steps:

- Where appropriate, we applied our efficiency test to the projects to determine the efficient capital expenditure to be recovered
- We established a regulatory asset base for discretionary expenditure
- We determined which customers the discretionary costs should be recovered from, to ensure alignment with demonstrated willingness to pay.

We have considered the cost of the projects

Recycled water for irrigation of public spaces

Hunter Water has proposed spending $6 million to irrigate open spaces with recycled water. This amount is a 'funding envelope' rather than the anticipated cost for a specific project. Hunter Water has a number of projects it is considering, and will proceed with some of these projects to the value of $6 million, with the aim of delivering the outcome of at least 20 ML of additional wastewater recycling for irrigation per year by the end of the determination period. We have not applied an efficiency factor as we did for Hunter Water's other proposed expenditure, rather we will conduct an ex-post assessment of the efficiency of the capital expenditure as part of the next review.

Stormwater amenity improvement

Hunter Water has proposed spending $11.3 million to naturalise stormwater channels. This amount is a 'funding envelope' rather than the anticipated cost for a specific project. Hunter Water has a number of projects it is considering, and will proceed with some of these projects to the value of $11.3 million, with the aim of delivering the outcome of naturalising at least 1 km of stormwater channel over the determination period. We have not applied an efficiency factor to this proposed amount, rather we will conduct an ex-post assessment of the efficiency of the capital expenditure as part of the next review.

Costs should only be recovered from customers with demonstrated willingness to pay

We consider that there should be alignment between the customers surveyed to demonstrate willingness to pay, and the customers that pay the discretionary charge.

Hunter Water received sufficient responses from its residential customers when calculating average willingness to pay, citing difficulties engaging with non-residential customers.[245] Accordingly, we have decided the discretionary charge is to apply to its residential customers in the 2020 determination period.

245 Emma Turner, Hunter Water, Hunter Water Public hearing, Transcript, 19 November 2019, pp 57-61.

Demonstrating willingness to pay for non-residential customers

In its submission to our Draft Report, Hunter Water stated, "we think IPART's draft framework locks us out of ever being able to seek funding from non-residential customers towards future discretionary projects due to the difficulties we face in achieving representative samples of an appropriate size"[246]. PIAC proposed that the costs of discretionary expenditure should also be recovered from non-residential customers, and that a representative and statistically significant group of residential consumers should serve as a reasonable proxy for Hunter Water's customer base.[247]

We consider it a reasonable expectation that Hunter Water should have an understanding of the service needs and preferences of all its customer types, including its non-residential customers. In particular, Hunter Water should have a reasonable understanding of its non-residential customers' willingness to pay for discretionary projects or outcomes if it proposes to levy a charge on these customers for discretionary expenditure, and we consider the challenges of gaining this understanding are not insurmountable. We will consider the difficulties utilities face in consulting with non-residential customers further in our separate review of the discretionary expenditure framework.

Definition of residential customers

Hunter Water has sought clarification on the definition of residential customer for the purposes of the application of the discretionary charge. We consider the discretionary charge should apply to all residential customers liable for the water service charge. We note that for vacant land where there is no connection, the water service charge is not levied. We have amended our decision so that the discretionary charge does not apply to vacant land. We also recognise Hunter Water's concern that it can be difficult to identify residential customers within mixed multi-premises. Therefore, we consider that where such ambiguity exists, the discretionary charge need not be applied. We note that despite this modification to the definition of residential customers, Hunter Water will still recover sufficient revenue from the discretionary charge levied on other customers to fund its discretionary expenditure projects as proposed.

11.5 We have decided to apply output measures for Hunter Water's discretionary expenditure

Setting outcomes-focused output measures for Hunter Water's discretionary expenditure will help ensure it is accountable to its customers. The proposed measures will hold Hunter Water to account for what it has committed to by requiring it to publicly report on the progress of its discretionary projects in its next proposal.

Our decision is:

51 To apply the output measures in Table 11.4 in relation to Hunter Water's discretionary expenditure.

246 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 69.

247 PIAC, *Submission to IPART Draft Report*, April 2020, p 4.

Table 11.4 Output measures relating to Hunter Water's discretionary expenditure

No.	Project description	Measure	Target
1	A discretionary project to improve the amenity of stormwater channels.	The length of stormwater assets that have undergone 'naturalisation' in accordance with the willingness to pay study.	Minimum 1 km.
2	A discretionary project to provide more recycled water for the irrigation of public open spaces.	The additional volume of recycled water being used to irrigate public open spaces by the end of the determination period.	Minimum of 20 ML pa.
3	Informing customers of its delivery of discretionary expenditure, and the bill impact of discretionary expenditure	Evidence of how Hunter Water has provided this information to its customers.	Hunter Water to provide updates through its biannual newsletter, The Fountain, supplemented by media, social media and website content, and adapt this approach in response to customer feedback.

The output measures outline the relevant information we would need to inform our next review. We have decided to set:

- One measure for each discretionary project, to track the progress made against delivering the proposed outcomes.
- One measure to ensure Hunter Water informs its customers of the discretionary expenditure.

We consider that end of period reporting is appropriate for these output measures.

11.5.1 We asked Hunter Water to propose how it would communicate with its customers

In our Draft Report, we included an output measure relating to communication about discretionary expenditure with customers. We asked Hunter Water to consider how it would inform its customers of its delivery of discretionary expenditure, and the bill impact of discretionary expenditure, and include this in its response to our Draft Report. We agreed to consider what Hunter Water proposed before defining this measure.

In its submission to our Draft Report, Hunter Water outlined that it proposes an approach that balances customer communication channel preferences with the cost of implementation, and being flexible to adapt this approach in response to feedback.[248] Specifically, it proposes using its biannual newsletter, The Fountain[249], as the primary means of communication, supplemented by media, social media and website content as appropriate. We consider that this communication strategy is appropriate, as is Hunter Water's commitment to adapting its approach after taking into account customer feedback, and have included this in the relevant output measure.

[248] Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 70.

[249] This newsletter is distributed to all Lower Hunter households.

Hunter Water noted it is in the process of transitioning to a new billing system. It intends to reassess the merits of separately listing the discretionary expenditure charge on bills after receiving feedback on the communication it undertakes using the channels identified above.

12 Recycled water prices

Recycled water is wastewater or stormwater that has been collected and treated so that it can be reused for urban irrigation, industrial processes, environmental flows, and residential uses such as garden watering and toilet flushing.

In July 2019, we finalised a review of the pricing arrangements for the public water utilities' recycled water schemes, which:

- Considered how to fund recycling schemes
- Considered how to set prices to customers of recycled water schemes
- Set a methodology to calculate developer charges for recycled water schemes.[250]

The revised approach reduces regulatory barriers to cost effective water recycling and seeks to ensure that recycled water is assessed in the same way as other options for delivering water and wastewater services. We provide an overview of the key elements of our framework in section 12.1 below.

In sections 12.2 and 12.3 of this chapter, we first discuss the prices for recycled water that Hunter Water provides, and then the treatment of revenue from recycled water schemes.

Our decisions outlined in this chapter align with the approach we established in our 2019 recycled water review and result in minimal changes to Hunter Water's proposal regarding recycled water prices and revenue.

12.1 Our recycled water framework

For funding purposes, we distinguish between 'least-cost' or 'higher-cost' recycled water schemes:

- A 'least-cost' scheme is the most efficient way of supplying water, wastewater and/or stormwater services.
- A 'higher-cost' scheme is one which is not least-cost.

Under our framework, least-cost schemes are funded by developer charges where they apply, and the broader customer base. For example, if a recycled water scheme is the least-cost way of providing sewerage services (ie, the collection, treatment and disposal of wastewater), then the utility can recover its costs from the broader customer base via wastewater prices.[251] Hunter Water has a number of such 'least-cost' recycled water schemes (see Table 12.2 later in this chapter).

250 IPART, *Review of pricing arrangements for recycled water and related services*, 1 July 2019.
251 IPART, *Review of pricing arrangements for recycled water and related services*, 1 July 2019, p 21.

Higher-cost schemes can also be funded by the broader customer base via water and/or wastewater prices, to the extent the scheme results in any[252]:

- Avoided water and/or wastewater costs (net of any foregone revenue to the utility) to the broader customer base
- External benefits, as shown by the broader customer base's willingness to pay.

Any residual costs of the higher-cost recycled water scheme (ie, the scheme's costs less the value of avoided costs + external benefits recovered from the broader customer base), should be ring-fenced and be recovered from:

- Any external funding sources, including any government or third party contributions
- Customers of the recycled water scheme
- Recycled water developer charges.

For this price review, Hunter Water has not made a claim for any deferred or avoided costs to be recovered from its broader customer base. Hunter Water has, however, sought to recover the costs of new recycled water schemes to irrigate public open spaces from its broader customer base, based on the broader customer base's 'willingness to pay'. This is considered in Chapter 11 of this report.

In response to our Draft Report, Flow Systems submitted that Hunter Water's ability to claim the value of net avoided costs or external benefits from its broader customer base was fundamentally anti-competitive, as this is not available to community-level water service providers (ie, private water utilities licensed under the WIC Act).[253] In response, we acknowledge that privately owned water utilities currently have smaller customer bases than Hunter Water's, but we note the these private utilities could still choose to price their services to reflect their customers' willingness to pay for their recycled water and other water and wastewater services. They could also seek other sources of funding, including from Government and third party contributions, to reflect the value of any external benefits or net avoided costs that their schemes may provide to other parties. Further, IPART's wholesale pricing framework recognises that the prices privately owned utilities pay for wholesale water and wastewater services provided by Hunter Water should reflect the value of any net avoided costs to Hunter Water as a result of the private operator's recycled water scheme, and be discounted accordingly. Finally, we note that the overarching aim of our funding framework for public water utilities is to support the efficient development of recycled water schemes.

For price regulation purposes, we also distinguish between recycled water schemes on the basis of customer choice[254]:

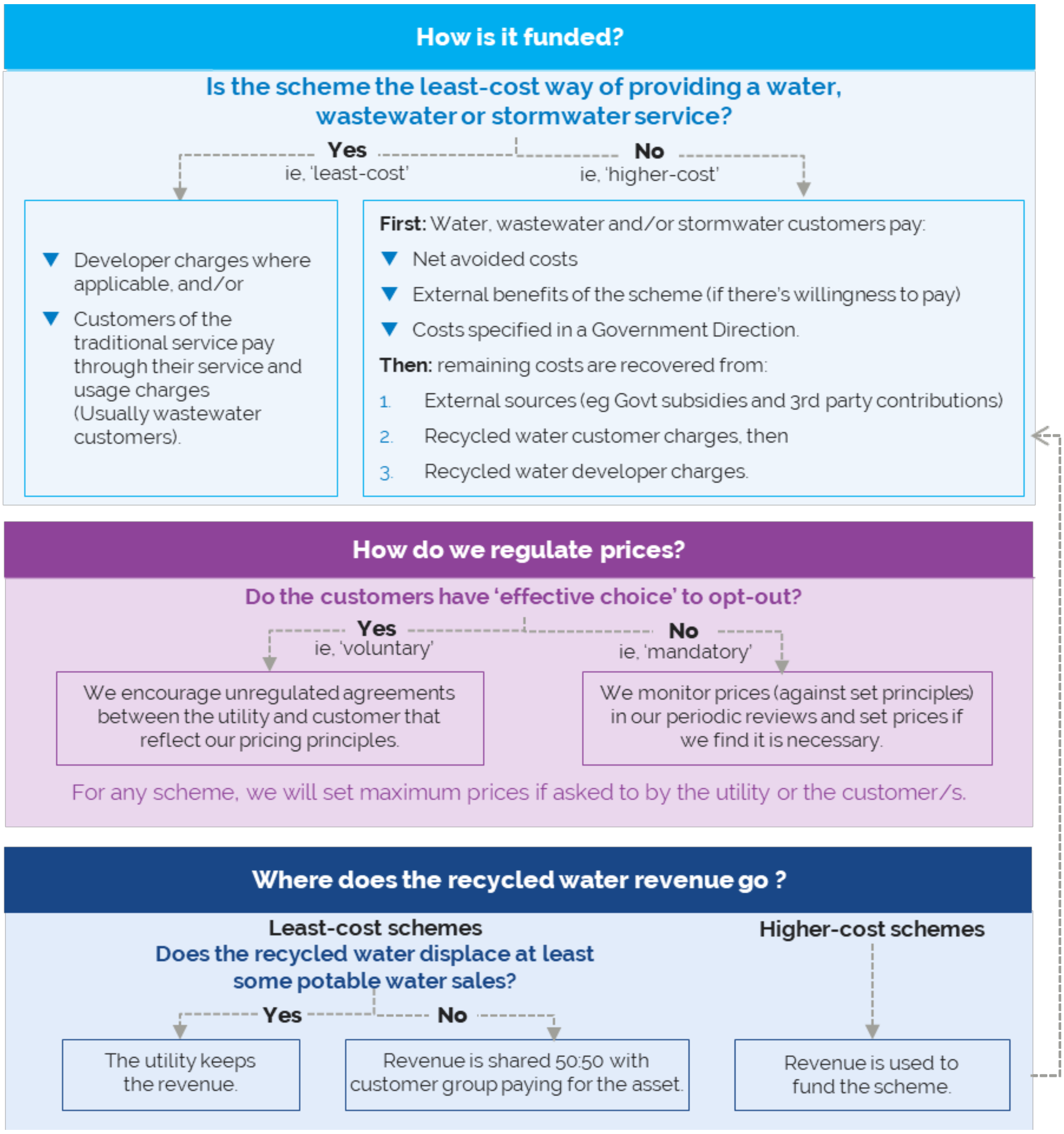
- A scheme is considered mandatory if customers have no effective choice but to be supplied by the recycled water scheme. For these, we monitor prices against our pricing principles and may step in to set prices where we deem there is cause, including if requested to.

252 IPART, *Review of pricing arrangements for recycled water and related services*, 1 July 2019, pp 24-25.
253 Flow, Submission to IPART's Draft Report – *Review of prices for Hunter Water Corporation from 1 July 2020*, March 2020, p 2.
254 IPART, *Review of pricing arrangements for recycled water and related services*, 1 July 2019, p 65.

- A scheme is considered voluntary if customers have effective choice about whether to be supplied by the recycled water scheme. For these, we encourage unregulated pricing agreements and would set prices under a scheme-specific review if requested to do so by customers or the public water utility.

Figure 12.1 below provides an overview of our approach.

Figure 12.1 Key elements of IPART pricing arrangements for recycled water



Source: Based on IPART, *Review of pricing arrangements for recycled water and related services*, 1 July 2019.

12.2 Proposed prices for mandatory schemes meet our pricing principles

Hunter Water has two mandatory schemes. As outlined above, we monitor Hunter Water's proposed prices for these recycled water schemes, and we will only step in and determine maximum prices for these schemes when we identify a need to do so, or if we are asked to.

Our decision is:

52 To continue to defer setting prices for Hunter Water's recycled water schemes.

We assessed Hunter Water's proposed prices for its mandatory recycled water schemes against our pricing principles (Box 12.1). We found Hunter Water's proposed prices are reasonable and do not provide cause for us to step in and determine prices.

Box 12.1 Pricing principles for mandatory recycled water services

The structure and level of recycled water prices:

1. Should ensure that appropriate price signals are sent to recycled water users with the aim of balancing supply and demand, and should entail an appropriate allocation of risk.
2. Should include a usage charge, which must have regard to the price of substitutes (such as potable water and raw water). Where the usage charge exceeds the substitute price, water utilities must demonstrate willingness to pay by the recycled water customer.
3. May include a fixed service charge, which should have regard to customer impacts, willingness to pay and not act as a material incentive for customers to disconnect from the recycled water scheme.
4. Should have regard to an efficient distribution of costs between recycled water customers and developers, in line with our funding framework for mandatory recycled water services.
5. Should be simple and understandable.

Source: IPART, Review of pricing arrangements for recycled water and related services, 1 July 2019, p 68.

12.2.1 Hunter Water's prices for two mandatory schemes

Hunter Water's two mandatory schemes were commissioned in 2018-19 and service recent residential developments in Gillieston Heights and Chisholm.[255] We agree with Hunter Water that these two schemes should be considered mandatory schemes as the costs for residential customers to disconnect from these systems serves as an effective barrier to disconnection.

These two schemes are also 'higher-cost', and hence their costs are ring-fenced from the broader customer base. Our expenditure consultant, Aither, reviewed the ring-fencing arrangements and found them to be reasonable and consistent with IPART's requirements.[256]

255 Hunter Water, *Pricing Proposal to IPART, Technical Paper 9*, 1 July 2019, p 19. Prior to commissioning, potable water was being supplied through the recycled water system whilst the recycled water was infrastructure was being completed. See IPART, *Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020, Final Report*, June 2016, p 148.

256 Aither, *Hunter Water expenditure review*, 14 December 2019, pp 145-146.

Hunter Water proposed to[257]:

- Set the usage price at 90% of the base potable water usage price that applies on 1 July 2020 (which increases from $2.21/kL to $2.29/kL ($2020-21) over four years under our final decisions).
- Not set a service charge, ie, remove the current $20 per annum fixed service charge.

Hunter Water's proposal is a departure from its current charging practice. It has adopted a new approach in response to feedback from some customers.[258]

Table 12.1 Our assessment of Hunter Water's proposed prices against our pricing principles

Principle	Our assessment
1	The price is likely to support a balance of supply and demand. Currently, Hunter Water has forecast that it would be able to match the supply and demand of recycled water, and not require potable top-up. The impact that price can have on demand is limited because: ▼ These schemes are residential, so the recycled water is connected to particular uses on each property. ▼ Hunter Water does not foresee further properties connecting to recycled water.[a] Based on our final prices, a customer with average annual usage of 77 kL will save $18.94 to $19.56 ($2020-21) annually compared to what they would pay if that recycled water were potable water.
2	The usage charge is set lower than the base potable water usage price, which is the alternative for these customers.
3	Hunter Water proposed no fixed charge. This is consistent with guidance in our 2019 framework that "utilities should be cautious in adding new fixed charges to customer bills".
4	We did not assess the allocation of costs between developers and customers. This is because Hunter Water considers that all funds from development have been received at this stage. In 2015, the state Treasurer granted Hunter Water approval to set developer charges at 2012-13 levels, and effectively under-recover costs, in response to the number of connections being lower than anticipated. In our 2019 Review of recycled water pricing arrangements, we stated that this is effectively a Direction from the Treasurer to set lower prices. We also note that Hunter Water expects that only 20% of the scheme costs will be recovered through prices and developer charges.
5	The overall structure is very straightforward and easy to understand.

[a] Whilst increased demand for recycled water reduces demand for potable water, there is also a point when demand for recycled water would exceed the volume that can be produced at the plant. This would lead to an inefficient volume of potable water top-up.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 9*, 1 July 2019, p 19 – 22; IPART, *Review of pricing arrangements for recycled water and related services*, 1 July 2019, pp 28-29; IPART analysis.

257 Hunter Water, *Pricing Proposal to IPART, Technical Paper 9*, 1 July 2019, p 22.

258 Hunter Water has previously applied a 'fairness test' to determine the recycled water price. It set the recycled water prices so that the average customer bill on a dual reticulated system (assuming 40% of usage was recycled water) equalled the average bill of a customer on potable water only. This method disadvantages recycled water customers with lower overall usage, and Hunter Water has received complaints to this effect. Hunter Water, *Pricing Proposal to IPART, Technical Paper 9*, 1 July 2019, p 22.

12.2.2 Stakeholders generally support recycled water

Submissions to our Issues Paper and Draft Report (five and two, respectively) expressed a view that the use of recycled water should be increased and/or incentivised to address the issue of increasing water scarcity.[259] Most referred to increasing the amount of recycled water being used, and three advocated compelling industry to use recycled water.[260] One noted environmental benefits of less effluent discharge.[261]

One individual stakeholder commented that "Customers should not have to pay more for water that is recycled simply because of pricing structures that make it so".[262] Hunter Water's revised approach to set prices less than the base potable water usage price, and without the service charge, aligns with this stakeholder's view.

However, in response to our Draft Report, another stakeholder[263] commented that setting recycled water prices at less than potable water prices creates the wrong incentives, as Hunter Water loses money in producing the recycled water. We agree that this could be the case with the current schemes - whilst the prices for Hunter Water's recycled water are much less than cost reflective, the State Government (as shareholder) has agreed to cover this cost. However, our 2019 recycled water framework allows for the broader customer base to cover this difference in certain circumstances (ie, where there are net avoided costs or external benefits to the broader customer base), and for recycled water prices to exceed potable water prices if there is evidence that recycled water customers are willing to pay.

We also note that the use of recycled water is currently limited, and it is separated from the drinking water supply and distribution system. As such, to supply recycled water currently requires additional infrastructure distribution costs that may otherwise be avoided if it could be used directly as drinking water. That is, the relative competitiveness of recycled water against alternatives could be enhanced if purified recycled water was able to be supplied through the drinking water distribution system and used as drinking water.

259 Submissions to IPART's Issues Paper – Review of prices for Hunter Water Corporation from 1 July 2020, October 2019, From PIAC, R. Banyard; S. Corbett; Save the Williams River Coalition; Anonymous (W19/2265). Submissions to IPART's Draft Report – *Review of prices for Hunter Water Corporation from 1 July 2020*, March 2020, From Save the Williams River Coalition pp 1-3; R. Banyard, p 2.

260 Anonymous (W19/2265), *Submission to IPART's Issues Paper – Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019, p 1; Save the Williams River Coalition, submission to IPART Draft Report - *Review of prices for Hunter Water Corporation from 1 July 2020*, March 2020, p 1; R. Banyard, Save the Williams River Coalition, submission to IPART Draft Report - *Review of prices for Hunter Water Corporation from 1 July 2020*, March 2020, p 2.

261 Save the Williams River Coalition, submission to IPART Draft Report - *Review of prices for Hunter Water Corporation from 1 July 2020*, March 2020, p 2.

262 S.Corbett, *Submission to IPART's Issues Paper – Review of prices for Hunter Water Corporation from 1 July 2020*, October 2019, p 1.

263 Save the Williams River Coalition, submission to IPART Draft Report, April 2020, p 2.

When we review prices for water, wastewater and stormwater services, we allow expenditure for the most cost effective way to provide each of those services. If recycled water is the most efficient way to provide one of these services, the expenditure is used to set prices. Where it is not the most cost effective option, our regulatory framework does still allow for the costs of providing recycled water to be funded from the broader customer base (ie, not just direct customers of the recycled water scheme) where:

- there are external benefits, as evidenced by customer willingness to pay,
- there are net avoided water, wastewater and/or stormwater costs, as a result of the recycled water scheme, or
- the Government has directed the costs be passed through to customers, under section 16A of the IPART Act.

Hunter Water is also required to consider and report against its optimal level of investment in recycled water (as well as demand management and leakage management), as part of its operating licence requirements related to its Economic Level of Water Conservation (ELWC) methodology. Box 5.1 in Chapter 5 provides more information on the ELWC.

12.2.3 We are satisfied that the remaining schemes are not mandatory

Hunter Water's remaining recycled water schemes are 'voluntary', as the recycled water customers, who are non-residential, would have lower barriers to leave the scheme (see Table 12.2). For these schemes, we encourage unregulated pricing agreements and would only step in and determine prices if requested to by either Hunter Water or the recycled water customers – which has not occurred.

Table 12.2 Summary of Hunter Water's voluntary recycled water schemes

Customers of higher-cost schemes	Customers of least-cost schemes	
▼ Kurri Kurri TAFE ▼ The Vintage Golf Course	▼ Branxton Golf Club ▼ Clarence Town Irrigation scheme ▼ East's Golf Course ▼ Eraring Power Station ▼ Farmers (four customers)	▼ Karuah Irrigation scheme ▼ Kurri Kurri Golf Club ▼ Oceanic Coal ▼ Paxton Woodlot ▼ Stonebridge Golf Club ▼ Waratah Golf Club

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 9*, 1 July 2019, p 18.

12.3 We reviewed the share of revenue from least-cost recycled water schemes

In our 2019 review of recycled water pricing, we decided that where there is a least-cost recycled water scheme, the public water utility should retain all of the revenue earned from recycled water sales, as compensation for displaced potable water sales.[264]

264 IPART, *Review of pricing arrangements for recycled water and related services*, 1 July 2019, p 21.

For this review, we have distinguished between recycled water sales that do, and those that don't displace potable water, and decided that where recycled water does not displace potable water sales, revenue is to be shared in a 50:50 ratio with the broader customer base. In most cases, we would expect recycled water use to displace potable water sales. Where recycled water does displaces potable water sales, the utility retains the revenue.

12.3.1 Not all recycled water displaces potable water

Hunter Water identified that four of its 11 least-cost schemes do not result in potable water savings. That is, according to Hunter Water, the recycled water is used for irrigation purposes that would not otherwise occur with potable water.[265]

We have decided to share revenue from recycled water sales from these schemes with the broader customer base, because customers have paid for the asset (essentially on the basis that it is providing a wastewater service) and they should share in a return on the additional revenue, in line with our approach to other sources of non-regulated revenue. The share of revenue to the water utility still provides an incentive to find more least-cost schemes, albeit less than if the utility retained the revenue in full.

We note that in its response to our Draft Report, Hunter Water supported this position. However, in response to us proposing the same approach in our Draft Report on Sydney Water's prices, Sydney Water argued that a 50:50 revenue sharing ratio would in fact result in the utility receiving only 20% of the revenue, as it would have to pay tax on all the revenue received (at a rate of 30%). We disagree. Under our price setting methodology, the revenue allowance includes tax on non-regulated revenue shared with customers.

For simplicity, our default approach allows the utilities to retain 100% of the revenue if at least **some** potable water sales are displaced by the recycled water scheme. We will share the revenue on an exception basis, ie, where it is clear that the scheme is not displacing potable water sales. Otherwise, Hunter Water should keep the recycled water revenue from least-cost schemes.

12.3.2 The revenue to be shared with customers is minimal

The revenue to be shared with customers has a minor impact on wastewater prices, as it is subtracted from the wastewater NRR before wastewater prices for the broader customer base are set (see Chapter 6 for more information).

Hunter Water identified four least-cost schemes that did not replace potable water sales. It receives revenue from one of these schemes,[266] a $560 ($2020-21) fixed charge per year, indexed annually.[267] For the remaining least-cost schemes (ie, those where recycled water does replace potable water) Hunter Water can retain all of the forecast revenue.

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265 Correspondence with Hunter Water (email), 22 January 2020.
266 The remaining schemes are on Hunter Water land.
267 Correspondence with Hunter Water (email), 22 January 2020.

13 Other prices

Hunter Water provides a range of services other than water, wastewater and stormwater. This chapter sets out our final decisions on the prices that Hunter Water may charge for the following services:

- Non-residential trade waste services
- Miscellaneous and ancillary services
- Dishonoured and declined payment fees.

Subject to operational needs, Hunter Water also transfers bulk water to the Central Coast Council (and vice-versa). In 2019, concurrent with our determination of the Central Coast Council's water and sewerage prices, we also determined the prices for these bulk water transfers.[268]

13.1 Trade waste prices

Trade waste charges are levied on industrial and commercial customers whose discharge to the wastewater system is more contaminated than regular domestic wastewater. Hunter Water forecasts it will have trade waste agreements with approximately 2,300 sewered and 30 tankered customers in 2020-21.[269]

Hunter Water's trade waste revenue comprises a small proportion (0.7%) of its total NRR. Our decision will result in an increase in annual average trade waste revenue of around $0.1 million ($2021) over the 4-year determination period, compared to the previous period.

Hunter Water's pricing structure for trade waste includes:[270]

- A fixed component – ie, agreement, administration and inspection fees, that are charged on an annual basis, based on the type of trade waste customer
- A variable component – ie, high strength/pollutant charges, either based on the contaminant load (per kg) or discharge volume (per kL), to recover the costs of the transport, treatment and disposal of trade waste.

Hunter Water proposed a significant restructure of its trade waste prices in its July 2019 submission. We have accepted most of its proposed trade waste charges for sewered and tankered customers, as we consider they will result in more cost reflective prices.

However, we have deferred implementation of the new trade waste prices for one year.

268 IPART, *Bulk water transfers between Hunter Water Corporation and Central Coast Council, Maximum prices from 1 July 2019*, May 2019.
269 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 3.
270 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, pp 8-9.

In its response to our Draft Report, Hunter Water noted that:[271]

> …deferring the start date to 1 July 2021…will allow more time for mitigation measures to reduce bills and allow businesses the time to adjust and improve on-site practices.

We have accepted Hunter Water's request for deferral due to the potential impacts the new price structure may have on some customers. A deferral will also assist some businesses in managing the financial impacts of COVID-19. As such, for 2020-21 we have decided to keep trade waste prices the same as those in 2019-20, and only increase them in line with inflation. The new price structure will take effect in 2021-22.

Our decisions are:

53 To set the maximum trade waste prices by maintaining the current price structure in 2020-21 and implementing the new price structure from 2021-22, with these charges to be indexed annually in line with changes in the CPI, as presented in Appendix S, Table S.1, Table S.2 and Table S.3.

54 To deduct the trade waste revenue of $2.5 million per annum from the notional revenue requirement.

13.1.1 Reasons for our decision

In 2018-19, Hunter Water undertook a comprehensive review of its trade waste charges, ie, its administrative and high strength charges for both sewered and tankered customers. As part of the review, it engaged consulting engineers GHD to provide technical expertise for updating its high strength charges.

Its proposed changes for its sewered and tankered trade waste customers include:[272]

- Increasing annual agreement fees to better reflect the costs of managing customers, particularly customers in higher risk categories[273]
- Separating charges for biochemical oxygen demand (BOD) and total suspended solids (TSS) at each wastewater treatment plant, rather than using the higher of the two contaminants as the basis for charging
- Reducing the domestic-strength equivalent concentration threshold for BOD and TSS, above which high-strength charges apply
- Introducing high-strength charges for moderate customers based on the actual strength of their discharge, rather than the 'average' strength charge currently incorporated in their annual agreement fee
- Resetting the catchment-specific high-strength charges (BOD and TSS) to reflect the costs to transport and treat wastewater at each of Hunter Water's 19 treatment plants

271 Hunter Water, *Response to IPART Draft Determination*, 9 April 2020, p vi.

272 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, pp 8, 12,14-15 and *Response to IPART Draft Determination*, 9 April 2020, p 74.

273 Hunter Water considers 'major' and 'tankered' customers to be high risk, while it considers 'moderate' customers to be 'medium' risk.

- Introducing a single volumetric fee for all types of tankered wastewater. Hunter Water's 1 July 2019 proposal included an increase to this charge in 2023-24 to recover the capital costs of modifying five receiving stations.

Hunter Water also proposed removing charges for heavy metals, phosphorous and sulphate for both sewered and tankered customers as these were not considered to be significant cost drivers. Hunter Water argued that administering these charges is inefficient as the costs of analysis often exceeds the revenue generated.[274]

We consider that Hunter Water's proposed changes, while significant, are reasonable, as they are generally more cost reflective and consistent with IPART's pricing principles (see Box 13.1). However, we maintain our draft decision not to accept an uplift in the volumetric fee for tankered customers to recover the costs of proposed modifications to receiving stations, for the reasons outlined below.

13.1.2 No uplift in volumetric fee for tankered customers to recover upgrade costs

Hunter Water sought to recover the costs of a $5.7 million ($2019-20) capital project directly from tankered customers through an uplift in the volumetric charge from $6.08/kL in 2020-21 to $9.40/kL ($2020-21) in 2023-24.[275]

It proposed upgrades to five receiving stations at the wastewater treatment plants in 2022-23[276] to address exposure to risks in its current system for collecting charges, such as:[277]

- Fraud (relating to volume and discharge type)
- Potential breach of environmental licences and obligations from non-compliant pollutant load
- Treatment plant process issues from the effects of non-compliant pollutant loads.

The proposed capital expenditure would allow driver identification and meters and screening units for each station. Hunter Water also considered the results of a 2018 survey of (23) tankered customers which identified the need for extended access and timelier billing.[278]

We recognise Hunter Water's need to improve controls and facilities at receiving stations. However, after reviewing the information provided to us by Hunter Water, we have concerns around timing of the project, in particular as:

- The project is at early stages and while Hunter Water has explored some options, a robust business case for the preferred option has not yet been developed.
- Hunter Water proposed a high price increase in 2023-24 for tankered customers, ie, an uplift from $6.08 to $9.40 (per kL of discharge volume). At this point in time there is a degree of uncertainty that the project will go ahead in 2022-23.

274 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 10.
275 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 15 and *Response to IPART Issues Paper*, 21 October 2019, p 60. Hunter Water's Annual Information Return reports this as $5.8 million.
276 Of Hunter Water's 19 wastewater treatment plants, five are permitted to receive tankered discharges, ie, at Burwood Beach (portable toilet waste only), Dora Creek, Kurri Kurri, Morpeth and Raymond Terrace.
277 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 14.
278 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 13.

- Hunter Water's consultation with tankered customers (the 2018 survey) explored issues around satisfaction with the service, but not costs of the service.

We have maintained our draft decision not to allow an uplift to the volumetric charge for tankered customers from $6.08 to $9.40 (per kL of discharge volume) during the determination period.

In its response to our Draft Report, Hunter Water accepted that given the expenditure is proposed to be recovered entirely from a small number of customers (around 30 tankered customers), there is a higher requirement for project certainty than when assessing other capital expenditure recovered via tariffs from the broader customer base.[279]

Hunter Water noted its eagerness to address the risks posed by receiving tankered wastewater. It intends to progress the business case for the capital works and commission the project in 2023-24 and seek cost recovery from tankered customer charges from 1 July 2024 (ie, the next determination period).[280] We will assess any expenditures included in the next price determination for efficiency as part of that review.

13.1.3 Implementation of Hunter Water's new charges should be deferred

We have decided to defer implementation of new trade waste charges for one year as requested by Hunter Water on the basis that this will:[281]

- Allow more time for mitigation measures for customers most impacted by the new price structure. Customers will have more time to adjust their practices in response to the price increases.
- Avoid exacerbating the uncertainty of the COVID-19 pandemic on some businesses.

PIAC also supported transitioning trade waste prices where necessary to mitigate the negative impacts of price increases.[282]

Hunter Water has committed to working with its customers to understand their operations and provide recommendations on reducing volume and strength of their trade waste discharge.[283] Some of these measures include: water efficiency improvements; third-party alternatives (such as discharging trade waste to a party who may be able to reuse it onsite or perform further pre-treatment prior to discharging to the wastewater network); undertaking housekeeping activities (eg, reviews and cleaning/maintenance); and changes to production methods and processes (eg, onsite pre-treatment of trade waste which would likely require an upfront capital investment, and installing grease traps in the production process).

279 Hunter Water *Response to IPART Draft Determination*, April 2020, p 73.
280 Hunter Water *Response to IPART Draft Determination*, April 2020, p 74.
281 Hunter Water *Response to IPART Draft Determination*, April 2020, p 76.
282 PIAC submission to IPART's Draft Report, p 6.
283 Hunter Water, *Response to IPART Draft Determination*, April 2020, p 75.

13.1.4 Pricing principles should be reviewed to consider inclusion of capital costs and LRMC methodology

Our Draft Report invited feedback on two broader issues relevant to the methodology for setting trade waste prices going forward:

1. Whether a share of wastewater capital costs should be included in trade waste prices
2. Whether differential prices at wastewater catchments for high-strength charges should be based on the LRMC of supply.

We are aware that Hunter Water's practice is to include only its variable operating costs and an allocation of corporate overheads in its high strength charges, and not reflect capital costs or the Long Run Marginal Cost (LRMC) of different treatment plants (see Appendix S for the types of costs Hunter Water recovers in high strength charges).[284]

Hunter Water submitted that it was open to further considering these issues over the next price period, but noted:[285]

- Concerns with accurately and reliably quantifying any relationship between trade wastewater flows and capital expenditure
- That it expects the Short Run Marginal Cost (SRMC) and LRMC to converge as its wastewater facilities are not specifically designed to accept trade waste. It argued the need to balance the investment required and the risk of customers ceasing operations or initiating onsite treatment. Also for tankered customers, it only accepts trade waste discharge where there is spare capacity at receiving stations, thus not requiring specific augmentation for trade waste.

Hunter Water also suggested that trade waste customers may already be contributing to wastewater capital costs through paying wastewater charges (this applies to sewered customers only).

In its submission, PIAC supported trade waste customers contributing to wastewater capital costs in proportion to their impact on the wastewater system.[286]

We consider that Hunter Water's high strength charges could be more cost-reflective in coming years if they reflected the LRMC of supplying trade waste services at each wastewater treatment plant. This would include the long-term capital costs that Hunter Water will need to incur to meet any increase in demand, and it would ensure that the impactor pays principle is more fully reflected through trade waste prices. We do not agree that the LRMC of trade waste discharge necessarily converges to the SRMC. Where additional capacity is needed at treatment plants to treat and dispose of trade waste pollutants, there is an associated future capital cost and as such a LRMC for pollutants can be derived.

We consider there is merit in considering these issues as part of a wider review of trade waste pricing principles before the next pricing review, and in any investigation of wastewater charges being set with reference to the LRMC of supply.

284 Hunter Water, *Pricing Proposal to IPART, Technical Paper 9*, 1 July 2019, p 10.
285 Hunter Water *Response to IPART Draft Determination*, April 2020, p 72.
286 PIAC submission to Draft Report, 15 April 2020, p 5.

Box 13.1 IPART's trade waste pricing principles

The application of appropriate pricing principles to trade waste requires that:

- Standards for acceptance should be set on the basis of the capacity of current systems to transport, treat and dispose of the wastes, having regard to the health and safety of wastewater workers.
- Trade waste charges should cover the efficient costs to the water supplier of handling these wastes, including an allocation of corporate overheads.
- Charges should vary to reflect differences in the cost of treating waste to the required standards at particular locations.
- Water suppliers should set charges and standards in a manner that is transparent and accurate. The method of measurement should be reliable and the basis for setting charges should reflect costs incurred as far as possible.

Where environmental reasons are made for variations from the pricing principles detailed above, then sufficient evidence needs to be available to justify these variations. The basis for calculating greater than cost charges where environmental justifications exist should also be justified.

13.1.5 Trade waste revenue

Table 13.1 shows our forecast total trade waste revenue of $10.2 million ($2020-21) over the determination period, which is lower than Hunter Water's original forecast of $10.9 million. The difference is explained by our decisions to postpone the commencement of the new price path for customers to 2021-22, (around $0.3 million) and to not accept the price uplift for tankered customers from 2023-24 (around $0.5 million).

As trade waste revenue is subtracted from the NRR for wastewater, any shortfall in revenue from trade waste customers would be recovered from the wider wastewater customer base. We estimate that wastewater bills will increase by around $0.31 per customer per year as a result.

Under our decision, we expect that the average trade waste revenue would comprise around 0.7% or around 1.4% of Hunter Water's total average NRR or average wastewater NRR respectively. Further detail on the break-down of Hunter Water's trade waste revenue by customer type is provided in Appendix S.

Table 13.1 Trade waste revenue proposed and decision ($ million, $2020-21)

	2020-21	2021-22	2022-23	2023-24	Total
Hunter Water proposed (July 2019)	2.6	2.6	2.6	3.1	10.9
Hunter Water response to Draft Report (April 2020)	2.3	2.6	2.6	2.6	10.2
IPART decision	2.3	2.6	2.6	2.6	10.2

Note: Totals may not add due to rounding.

Source: Hunter Water, *Pricing Proposal to IPART*, 1 July 2019, Hunter Water, *Response to IPART Draft Determination*, 9 April 2020 and IPART analysis.

13.1.6 Some 'moderate' and 'major' customers will face higher bills

Table 13.2 provides indicative bill impacts of our decision to implement the new trade waste price structure in 2021-22. Bill impacts are relatively low for some customers, eg, service stations and medium licensed hotels (3% increase).

However, the impact will be significant for some 'moderate' and 'major' customers, where the trade waste component of their bill will increase under our determination by around $2,789 (or 101%) for some large licensed clubs; $10,777 (or 239%) for some large industrial firms with high strength trade waste; and around $7,790 (or 890%) for some shopping centres with high strength trade waste. Bill increases for these categories of customers are largely driven by:

- For some 'moderate' customers, (eg, the shopping centre with high strength trade waste and large licensed clubs) – the application of the new BOD/TSS charges based on the actual strength of discharges, where previously only administration charges were levied.
- For some 'major' customers, (eg, large industrial firm with high strength trade waste), the reduction of the high strength threshold for BOD from 350mg/L to 240mg/L, and, the increase in price per kg of BOD for its catchment, due to higher treatment costs. We note that other 'major' customers may not be impacted to the same degree if prices for their catchment remain more stable.

We consider that the new charges are more reflective of the costs of treating trade waste, however the bill increase for some customers is significant. We have therefore deferred commencement of the new price structure to 2021-22 in order to provide additional time for customers to implement mitigation measures for reducing bills wherever possible.

Table 13.2 Indicative bill impacts from changes in trade waste prices – various customer groups ($nominal)

Customer type	Expected total water and wastewater bill, 2019-20	Annual trade waste charge		
		2019-20	2020-21 [b]	Increase
Service stations, medium licensed hotels, small industrial firms, large office.	Varies 1,190 to 20,930	120	124	3%
Fast food outlet	3,566	876	997	14%
Shopping centre with low strength trade waste	24,453	876	1,116	27%
Regional shopping centres	349,720	27,556	36,859	34%
Large licensed clubs	55,383	2,748	5,537	101%
Large industrial firm with high strength trade waste (13,000 kL usage)[a]	48,456	4,514	15,291	239%
Shopping centres with high strength trade waste	33,729	876	8,666	890%

a Hunter Water analysed two configurations of 'Large industrial firms with high strength trade waste'. The one presented here has the higher impact.

b The prices shown here will not apply in 2020-21 as we have deferred the new pricing framework to commence in 2021-22. However, they are included here for 2020-21 to illustrate the bill impacts from the new trade waste pricing regime.

Note: The bill impacts are indicative only and may not apply to all customers or customer groups.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, pp 53-71 and IPART analysis.

13.2 Miscellaneous and ancillary charges

Miscellaneous and ancillary charges are levied on customers on a fee for service basis. These are generally one-off activities, such as connections, inspections, and testing.

Miscellaneous charges fall into two broad categories:

- Development fees, for the administrative processes for new developments (eg, a stormwater channel connection)
- Customer service fees related to individual properties (eg, a conveyancing certificate).

Hunter Water calculates these charges in accordance with our miscellaneous charges methodology, which requires that the charges recover:[287]

- Direct labour costs (hourly), including on-costs
- Business unit overheads
- Material costs, where incurred.

There are currently 55 miscellaneous and ancillary charges[288] contributing to less than 1% of Hunter Water's total regulated revenue.[289] Under Hunter Water's proposed changes, revenue from its miscellaneous and ancillary service charges will continue to comprise less than 1% of its total regulated revenue.

Our decisions are:

55 To adopt Hunter Water's proposed miscellaneous and ancillary charges as presented in Appendix T, and for these charges to be indexed annually in line with changes in the CPI.

56 To defer setting maximum prices for the 'Reservoir construction inspection and WAE fee', which Hunter Water Corporation will charge by quote.

57 To deduct the miscellaneous and ancillary services revenue as set out in Table 13.3 from the notional revenue requirement, for the purpose of setting other water and wastewater prices.

13.2.1 Reasons for our decision

We have decided to accept Hunter Water's proposed changes to its miscellaneous and ancillary charges as we consider they are reasonable. In the lead up to the 2020 determination period, Hunter Water undertook a comprehensive review of its miscellaneous and ancillary charges; in particular, its business processes and labour inputs, with a view to aligning costs with service delivery. It stated that it examined all processes and recalculated the cost-basis for all charges. Its review involved assessing whether:[290]

- Existing charges are still required based on current service practices and the materiality of revenue received from the charge
- Existing charges can be restructured for simplification and administrative efficiency

287 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 23.
288 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 24.
289 Hunter Water, Miscellaneous and Ancillary model; and IPART calculations.
290 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 23.

- New charges could be introduced to recover the costs of miscellaneous services that it provides
- Existing charges reflect the cost of service delivery.

Hunter Water commented that the review process demonstrated it has achieved significant efficiencies during the current price period, allowing it to propose lower charges for most miscellaneous and ancillary services.[291] Hunter Water's proposed changes would also reduce the overall number of miscellaneous and ancillary charges from 55 to 45.[292]

In our 2016 Final Report for Hunter Water, we flagged that there were disparities between Hunter Water's and Sydney Water's miscellaneous and ancillary charges. We proposed a targeted review of these charges as part of the next price review (ie, the 2020 review). We also stated that the review would be conducted in a manner proportionate to the size of revenue from miscellaneous and ancillary services. [293] We did not engage a consultant for this pricing determination, given Hunter Water's own comprehensive review and its efficiency improvements.

We have deferred setting prices for the reservoir construction inspection and WAE fee

We deferred setting a price for the miscellaneous service 'reservoir construction inspection and work-as-completed (WAE)'. We have insufficient information at this time to fix a maximum price for this service, in part because Hunter Water provides these services infrequently and the costs vary on a job-by job basis.[294]

Our decision to defer setting a maximum price for the service does not affect Hunter Water's power to charge for the service.

13.2.2 Miscellaneous and ancillary charges revenue

Our decision is to accept Hunter Water's forecast annual revenue from miscellaneous and ancillary charges, as presented in Table 13.3.

Under our decision, the miscellaneous and ancillary charges revenue will comprise around 0.7% of Hunter Water's NRR for the 2020 determination period.

As seen in Table 13.3, we forecast a total miscellaneous and ancillary services revenue for the 2020 determination of $9.4 million. We deduct this revenue from the notional revenue requirement before setting prices for water, wastewater and stormwater services.

291 Hunter Water, *Pricing Proposal to IPART*, *Technical* Paper 9, 1 July 2019, p 24.
292 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 24.
293 IPART, *Review of prices for Hunter Water Corporation, from 1 July 2016 to 30 June 2020*, Final Report, p 136.
294 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 90.

Table 13.3 Annual revenue forecast - miscellaneous and ancillary services ($million, $2020-21)

	2020-21	2021-22	2022-23	2023-24	Total
Hunter Water proposed	2.3	2.4	2.4	2.4	**9.4**
IPART decision	2.3	2.4	2.4	2.4	**9.4**

Note: Our decision deducts the revenue from the standpipe charge bond as typically these bonds are returned to customers and not counted as revenue per se.

Source: Hunter Water, Miscellaneous and Ancillary model and IPART calculations.

13.3 Dishonoured and declined payment fees - section 12A review

Dishonoured and declined payment fees are not fees for the provision of a monopoly service. We are not able to determine these fees under Section 11 of the IPART Act (unlike all other prices in this Report) as Section 11 only enables us to determine maximum prices for 'government monopoly services'.

However, we received a referral from the NSW Premier on 7 December 2015 under Section 12A of the IPART Act to review Hunter Water's dishonoured and declined payment fees. A copy of the referral and the terms of reference for review is at Appendix U.

Hunter Water uses a single fee for all dishonoured or declined payments (also referred to as irregular and dishonoured payments). This includes:

- Irregular or dishonoured cheques
- Credit card payment declines
- Direct debit payment declines.

Hunter Water proposes to reduce this dishonoured and declined payment fee, commencing 1 July 2020, from $30.15 to $27.85 ($2019-20),[295] a decrease of $2.30 or 7.6%.

Hunter Water has indicated that this change reflects savings in the labour costs component of the fee, while the third-party fees (eg, the fees imposed by banks and Australia Post) remain the same. [296]

Our decision for the section 12A review is:

58 To specify a maximum dishonoured and declined payment fee of $28.46 ($2020-21) to apply from 1 July 2020, annually adjusted for inflation as presented in Table 13.4.

295 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 98.
296 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 98.

13.3.1 Reasons for our decision

Hunter Water's proposed fee of $28.46 (Table 13.4) is composed of an administrative fee (labour cost) and a third-party fee: [297]

- The administrative labour cost component is based on the time spent to handle a dishonoured or declined payment
- The third-party fee is imposed by the service provider (ie, $2.56 for a direct debit dishonour fee, a $10.00 bank fee for a dishonoured cheque and $29.60 for an Australia Post dishonour fee). In 2016, Hunter Water decided to use the lowest fee, ie $2.56 for all transaction types. It proposes to continue this approach.

Table 13.4 Maximum dishonoured and declined payment fee ($2020-21)

Cost component	2020-21
Hunter Water administrative labour costs	25.84
Third party contractor costs	2.62
Proposed fee	**28.46**

Source: Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 98 and IPART calculations.

We received a submission to our Issues Paper on dishonoured and declined fees from PIAC supporting the reduction in fees. However, PIAC questioned if the fee is warranted at all and whether the fee component derived from Hunter Water's administrative costs is already included in customers' bills as part of general operating costs.[298]

At the Public Hearing, Hunter Water explained that it already does not pass on the higher third party charges to customers. It also pointed to its hardship policy, whereby customers in financial hardship are able to have their fee waived or use a payment plan on application.[299]

In response to PIAC, we note that utilities are required to recover labour, business unit overheads and materials costs as part of the methodology for setting miscellaneous and ancillary charges (see Section 13.2). Also, the miscellaneous and ancillary charges revenue (which includes dishonoured and declined payment fees revenue) is deducted from the NRR before we set prices for water, wastewater and stormwater. This means that the administration fee component included in dishonoured and declined payment fees has not already been recovered from customers, and is not double counted as suggested by PIAC in its submission.

297 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 9*, 1 July 2019, p 98.
298 Public Interest Advocacy Centre, Submission to IPART's Issues Paper – *Review of prices for Hunter Water Corporation from 1 July 2020*, 23 October 2019, p 7.
299 Transcript of Public Hearing, 19 November 2019, *Review of prices for Hunter Water to apply from 1 July 2020*, p 63.

13.3.2 Dishonoured and declined payment fees revenue

Hunter Water's forecast assumes a two per cent increase per year for the quantity and revenue of dishonoured and declined payment fees based on the trend of historical volumes. The forecast quantity and revenue for dishonoured and declined payment fees is presented in Table 13.5.

We have accepted Hunter Water's forecast dishonoured and declined payment fee revenue which is incorporated in the overall miscellaneous and ancillary charges revenue.

Table 13.5 Forecast quantity and revenue for dishonoured and declined payment fees ($2020-21)

Annual forecast	2020-21	2021-22	2022-23	2023-24	Total
Quantity	946	965	984	1,004	**3,899**
Revenue	$26,926	$27,467	$28,007	$28,577	**$110,976**

Note: Forecast revenue from dishonoured and declined payment fees is included in the total miscellaneous and ancillary charges revenue as presented in Table 13.3.

Source: Hunter Water, Miscellaneous and Ancillary model and IPART calculations.

14 Impacts of our decisions on Hunter Water's prices

This chapter outlines the impacts of our pricing decisions on Hunter Water's customers and Hunter Water. We have considered the impacts of these decisions on:

- The affordability of water, wastewater and stormwater services for various residential customer groups including pensioners, and a sample of non-residential customer types and sizes (we have assessed the impact of our decisions on trade waste prices in Chapter 13)
- Hunter Water's financial viability and shareholders
- General inflation
- Hunter Water's service standards
- The environment.

Appendix A further discusses the implications of our pricing decisions on other matters we must consider under Section 15 of the IPART Act. We are satisfied that the 2020 Determination achieves an appropriate balance between these matters. Figure 14.1 summarises the impact of our review across these matters, which we discuss in more detail in the sections below.

Figure 14.1 Summary of impacts of IPART pricing decisions

Whilst our Draft Report presented our findings on bill impacts in terms of nominal dollar impacts (ie, bill impacts including the impact of forecast inflation), this report presents bill impacts in $2020-21 for the 2020 determination period (ie, bills from 2020-21 to 2023-24). This is to show the immediate impact of our decisions on prices and customer bills in the first year of the 2020 determination period compared to current (2019-20) prices and bills.[300]

This means that the $ and % changes in prices and bills in this chapter include the impacts of inflation from 2019-20 to 2020-21, but not from 2021-22 onwards. IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to increase these prices by changes in CPI from 2021-22 onwards.

Further detail on the impacts of our pricing decisions can be found in Appendix V.

14.1 Bill impacts on Hunter Water's customers will be mixed

We have assessed bills arising from our pricing decisions against current (2019-20) price structures, and as a share of average household income. We have considered the impacts for residential customers by usage level, household size and income, and for a sample of non-residential customers. We compare bills under non-drought and drought prices, given our decision to have a higher water usage price in drought periods.

We consider the impacts reasonable and affordable for customers, even under drought prices. The impacts are summarised in Table 14.1. Customers are also able to estimate what their bill would be with our interactive bill calculator, which is available on our website.

From 2020-21, water usage charges will make up a larger share of bills, particularly in the event that water storage levels fall below 60%, which provides customers with more control over their bills. That is, customers can reduce what they pay by conserving water.

300 That is, bills presented in this report exclude the effects of inflation beyond 2020-21. We use an inflation assumption of 2.2% between 2019-20 and 2020-21. We note that prices and bills will increase by actual inflation for each of the subsequent years in the determination period.

Table 14.1 Summary of bill impacts under IPART's pricing decisions compared to 2019-20 prices

	Residential customers	Non-residential customers
Non-drought prices	Bills will generally be lower for all customers except for apartments, which will increase over the determination period by about: ▼ 1% for non-pensioners ▼ 6% for pensioners. Bills for all customers will be higher than those in our Draft Report, but lower than those proposed by Hunter Water.	Bills will be lower for some small customers with lower water usage, but would be higher for most customers, particularly larger customers with higher water usage. Bills for all customers will be higher than those in our Draft Report, but lower than those proposed by Hunter Water.
Drought prices (ie, with water usage price uplift in the event that dam levels fall below 60%)	For customers in houses, bills will generally be lower for lower users of water, such as small households, and will be higher for medium and large users of water, such as larger households. Bills will be higher for apartments and pensioners with a larger bill increase experienced with the water usage price uplift applied. Bills for all customers will be higher than those in our Draft Report, but lower than those proposed by Hunter Water.	Bills will be lower for some small customers with lower water usage, but higher for larger customers with higher water usage will experience increases in their bills. Bills for all customers will be higher than those in our Draft Report, but lower than those proposed by Hunter Water for small customers with lower water usage. Bills will be higher for larger customers with higher water usage than proposed.

From 2020-21, water usage charges will make up a larger share of bills, particularly in the event that drought prices apply. This provides customers with more control over their bills, to reduce what they pay by conserving water.

Currently, water storage levels are above 60% and the non-drought water usage price would apply from 1 July 2020. This provides households and businesses an opportunity to prepare for the impact of future drought conditions, before they arrive.

Further, the bill impacts we present under drought prices assume that households and businesses make no changes to their level of water consumption. Given that drought prices will most likely complement water restrictions, most households and businesses complying with water restrictions would see a reduction in their usage in periods of drought, offsetting the impact of the higher drought prices on their water bills. For all customers, using 2020-21 prices, a 15.2% reduction in usage would fully offset the bill impact of drought pricing.

14.1.1 Bill impacts largely depend on water usage levels

A Hunter Water customer bill generally comprises:

- Fixed charges for water and wastewater, and
- Usage charges for water and wastewater (the wastewater usage charge is only applicable to non-residential customers).

In addition, about 30% of customers pay a stormwater drainage charge.[301]

Changes in customer bills (compared to 2019-20 bills) will not be uniform. This is largely because we have increased the water usage price. Accordingly, bill impacts will vary with the level of usage, with customers with high water usage facing larger increases than those with low water usage. Some large non-residential customers will see greater impacts as we also phase-out location-based discounts on their water usage prices.

In addition, the water service charge will fall, whilst the wastewater service charge and stormwater service charge will increase. The Environmental Improvement Charge (EIC) that was paid by wastewater customers (other than pensioners) and the Clarence Town Levy will no longer be charged as they have expired.

For residential customers, we have also included the costs of discretionary projects in bill impacts, which accounts for about 0.1% to 0.3% of their bills.

Compared to typical bills (including stormwater charges) for 2019-20:

- Bills for typical residential customers:
  - Under non-drought prices, decrease by 3.6% for houses and 4.9% for apartments in 2020-21, then increase by 0.3% to 0.4% per year for houses and 2.1% to 2.2% per year for apartments, plus the effects of inflation.
  - Under drought prices, are 5.1% to 6.5% per year higher under non-drought prices. They increase by 2.7% for houses and 0.2% for apartments in 2020-21, then increase by 0.3% to 0.4% per year for houses and 2.0% to 2.1% per year for apartments, plus the effects of inflation.
- Bills for pensioners move in line with those for other residential customers, and:
  - Under non-drought prices, decrease by 1.5% for houses and 1.3% for apartments in 2020-21, then increase by 0.1% to 0.2% per year for houses and 2.2% to 2.4% per year for apartments, plus the effects of inflation.
  - Under drought prices, are 5.9% to 7.3% per year higher under non-drought prices. They increase by 4.4% for houses and 5.9% for apartments in 2020-21, then increase by 0.1% to 0.2% per year for houses and 2.1% to 2.2% per year for apartments, plus the effects of inflation.
- Bill impacts for non-residential customers are mixed:
  - Under non-drought prices, bills for some customers decrease for water and wastewater services in 2020-21 whilst others increase, with most increasing in the following three years.
  - Under drought prices, bills are 2.3% to 20.8% per year higher under non-drought prices, depending on the type of customer (with higher water usage customers paying more).

301 A fixed charge paid by customers if they are located in one of Hunter Water's stormwater drainage areas.

14.1.2 Residential bills are lower than those proposed by Hunter Water

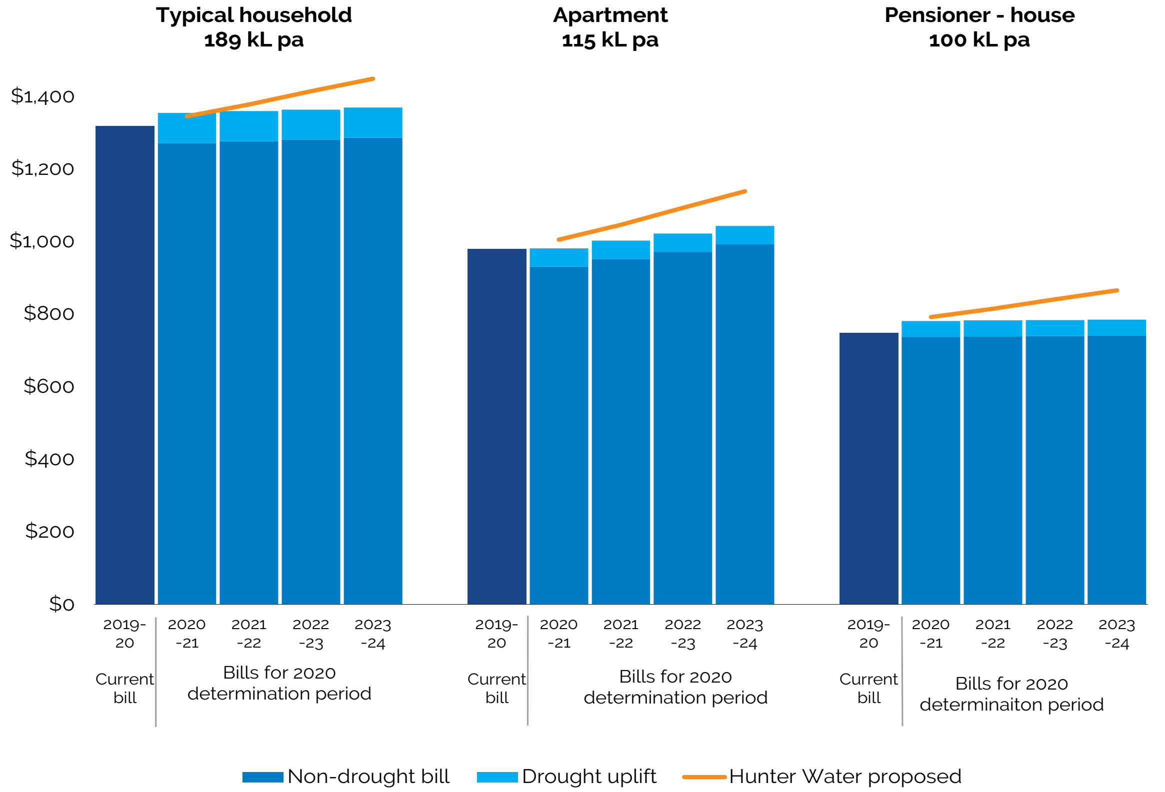
Bills for residential customers differ slightly depending on whether they are for houses or apartments, and pensioners receive an additional discount. Box 14.1 explains what is included in a customer's bill.

Compared to current bills, residential bills will be lower for many customers for the first year of the 2020 Determination under non-drought prices. Bills will then change by 0.1% to 2.4% per year plus inflation, with increases due to an increasing usage price (Figure 14.2). Table 14.2 provides bills for various typical customer groups:

- Under non-drought prices only.
- If the drought price is in place for the entire period. For comparative purposes, we have assumed no change in usage under the drought price, however in reality, we would expect that most customers would reduce their usage somewhat in response to water restrictions, at least for their outdoor usage which is usually targeted first by water restrictions. This would reduce the impact of higher usage charges on households' bills.

The prices are also lower than Hunter Water proposed, with the decrease mainly due to a lower WACC now compared to when Hunter Water submitted its pricing proposal (but higher compared to our Draft Report). Whilst prices seem to be falling for 2020-21, we note that prices and bills may increase in future determination periods if the WACC increases.

Figure 14.2 Indicative bills for a typical house, apartment and pensioner



Notes: Includes water, wastewater, stormwater and discretionary expenditure charges. Does not include the effects of inflation from 2021-22 onwards.

Data source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 46, and IPART analysis.

Table 14.2 Indicative bills for a typical house, apartment and pensioner

Customer (usage)	2019-20 ($2019-20)	2020-21 ($2020-21)	2021-22	2022-23	2023-24	% change 2019-20 to 2023-24[a]
House (189 kL)						
Non-drought	1,318	1,271	1,276	1,280	1,286	
Annual change	-	*-3.6%*	*0.4%*	*0.3%*	*0.4%*	*-2.5%*
Drought	1,318	1,354	1,360	1,363	1,369	
Annual change	-	*2.7%*	*0.4%*	*0.3%*	*0.4%*	*3.8%*
Apartment (115 kL)						
Non-drought	979	931	952	971	992	
Annual change	-	*-4.9%*	*2.2%*	*2.1%*	*2.1%*	*1.3%*
Drought	979	981	1,002	1,022	1,043	
Annual change	-	*0.2%*	*2.1%*	*2.0%*	*2.0%*	*6.5%*
Pensioner (House – 100 kL)						
Non-drought	748	737	738	739	741	
Annual change	-	*-1.5%*	*0.2%*	*0.1%*	*0.2%*	*-1.0%*
Drought	748	781	782	783	785	
Annual change	-	*4.4%*	*0.2%*	*0.1%*	*0.2%*	*4.9%*

a The percentage change includes inflation to $2020-21. From 2021-22 onwards, typical bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to increase these prices by changes in CPI from 2021-22 onwards.

Note: Includes water, wastewater, stormwater and discretionary expenditure charges.

Source: IPART analysis.

Box 14.1 What is included on a residential customer's bill?

A residential customer's bill generally includes a:

- Water charge comprised of a usage charge ($/kL) and an annual service charge ($/year)
- Wastewater service charge comprised of a usage charge based on a deemed usage allowance ($/year) and an annual service charge ($/year)
- Stormwater drainage charge which is an annual service charge ($/year) for stormwater services for properties located within a stormwater drainage area (ie, not all customers).

Previously, bills have also included the Environmental Improvement Charge (for wastewater customers other than pensioners) and the Clarence Town Levy.

As the water usage charge component of a customer's bill relates directly to the amount of water used by a household, customers can, to a degree, minimise their bills by using less water. However, a large portion of a customer's bill is fixed given wastewater charges and stormwater charges are fixed (based on fixed costs).

Under our decisions, from 2020-21, a residential customer's bill will also:

- Include a ($/year) charge to allow Hunter Water to recover the costs of discretionary projects
- Be subject to a water usage price uplift ($/kL) in the event that dam levels fall below 60% during the determination period (which would remain in place until dam levels reach 70%).

Bills for small households fall by more than for large households under non-drought prices

Smaller households tend to use less water, so given that a component of the bill is based on a variable (per kL) water usage charge, larger households (which tend to use more water in total) tend to have larger bills than smaller households (see Figure 14.3). Under our pricing decisions the per kL water charge, wastewater service charge and stormwater charge increase for all residential customers, whilst the water service charge decreases.[302]

This results in lower bills compared to current bills for all houses under non-drought prices. However, in the event that drought prices are applied, bills would be higher than current bills for most houses, by up to 7.2% for a large household using 289 kL per year.

For houses, the change in residential bills from 2019-20 to 2023-24 is a:

- Decrease of around 5% for a typical small household (by $49) compared to about a 1% decrease for a large household (by $15) under non-drought prices
- Decrease of around 1% for a typical small household (by $10) compared to about a 7% increase for a large household (by $112) under drought prices.

During periods of drought, larger households using more water than smaller households will experience larger bill increases. We consider this appropriate as a higher water usage price in drought reflects the costs and value of water, which acts as a signal to promote water conservation. Furthermore, we would expect that most customers would reduce their usage in response to water restrictions, and the impact of drought prices would be lower than indicated above. A 15.2% reduction in water usage, will offset the increase in bills under drought pricing.

302 We have also removed the Environmental Improvement Charge and Clarence Town Levy.

Bills for apartments will increase compared to current bills due to alignment with houses

The wastewater service charge increase is higher for apartments than houses as the charge for apartments transitions to that of standalone houses, resulting in higher bills for apartments compared to current bills.

The change in residential bills for an apartment from 2019-20 to 2023-24 is an:

- Increase of around 1% (by $13) under non-drought prices
- Increase of around 6% (by $63) under drought prices.

Pensioner bills will fall for houses under non-drought prices, but rise for apartments

Bills for pensioners in apartments will also be more than current bills due to the transition of charges for apartments to those of houses, for the wastewater service charge.

The change in residential bills for a pensioner from 2019-20 to 2023-24 is a:

- Decrease of around 1% (by $7) for a house under non-drought prices
- Increase of around 6% (by $35) for an apartment under non-drought prices
- Increase of around 5% (by $37) for a house under drought prices
- Increase of around 13% (by $79) for an apartment under drought prices.

Whilst bill increases for pensioners are generally in line with other residential customers, bill increases for non-pensioner customers are somewhat offset by the removal of the EIC (which is no longer included in their bills). However, this is not the case for pensioners as the EIC was not previously included in pensioners' bills.

Rebates could be restructured to further manage bill impacts for pensioners, for example, to increase the share of water usage charges that are rebated. As noted in section 8.3.4, Hunter Water has indicated that it intends to adjust the pensioner rebate to reflect the drought pricing being in place to ensure pensioners are not disproportionately disadvantaged.

Bills for low income households will typically fall by more than higher income households

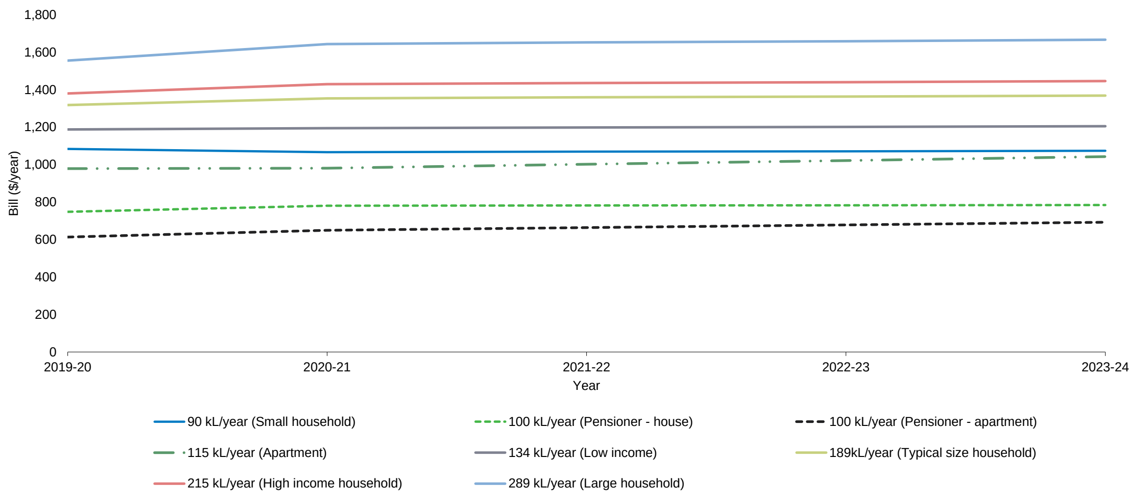
Within Hunter Water's area of operations, our 2015 household survey data indicates that (on average) lower income households use less water and so may have lower bills than higher income households.[303] Under our pricing decisions, the annual residential bill for a low income household (including stormwater) using 134 kL of water per year[304] reduces by about $42 under non-drought prices and increases by $17 under drought prices (from 2019-20 to 2023-24). Over the same period, the bill for a high income household using 215 kL of water per year[305] reduces by about $28 and increases by $67 with the water usage price uplift.

303 Including because low income households tend to have fewer occupants.

304 IPART, *Residential water usage in Sydney, Hunter and Gosford – Results for the 2015 household survey*, September 2016, p 7.

305 IPART, *Residential water usage in Sydney, Hunter and Gosford – Results for the 2015 household survey*, September 2016, p 7.

Figure 14.3 Indicative bills under non-drought prices by level of water usage and customer type



Notes: Includes water, wastewater, stormwater and discretionary expenditure charges. Does not include the effects of inflation from 2021-22 onwards.

Data source: IPART analysis.

Renters' water bills will increase under drought prices

A typical household that is renting their premises, responsible for paying water usage charges[306] and consuming 189 kL of water per year, would receive a bill of:

- $465 in 2020-21 under non-drought prices, 3.8% higher than in 2019-20, which will then increase by about 1% per year (equating to a 7.2% increase over the 2020 determination period)
- $548 in 2020-21 under drought prices, 22.4% higher than in 2019-20, which will then increase by about 1% per year (equating to a 25.7% increase over the 2020 determination period).

We acknowledge that this is an increase from what renters currently pay. However, the increase in the water usage charges reflects the value of the water that is being consumed. The higher price during drought reflects that the costs of producing water are higher in these periods, and our view that it is more equitable and provides a stronger signal to conserve water by reflecting these costs in a higher water usage charge, rather than an increase in the fixed charge. Reflecting the costs of drought in a higher fixed charge would place upwards pressure on rents, as landlords seek to recover these costs from tenants.

Furthermore, we compared bills for renters that are Hunter Water customers to what they would pay in other parts of Australia and found that Hunter Water's charges are consistent with the water usage charges of other major Australian water utilities.

306 Renters who live in a property with a standalone meter (generally, a freestanding house or a newer apartment) and, if the property meets water efficiency standards, may be asked by their landlord to pay for the water that they consume. For more information, please see: https://www.fairtrading.nsw.gov.au/housing-and-property/renting/during-a-tenancy/Water,-electricity-and-gas-in-rental-properties.

Although renters' bills will increase under drought prices and pensioners that rent do not receive a rebate, they will continue to pay less than half the bill of typical homeowner households under non-drought and drought pricing. Renters, who only pay for water usage, are also protected from direct price increases – eg, to wastewater and stormwater fixed charges. As landlords will pay a lower service charge, upward pressure on rents will also be reduced.

Affordability is a concern for many Hunter Water stakeholders

Stakeholder responses to our Issues Paper raised affordability as a key issue in the context of general increases in the costs of living, including other essential services; wage stagnation; pension growth and low interest rates; and limited ability to reduce bills given usage makes up a small component. Cessnock City Council also commented that its constituents are of lower socio-economic standing, whilst some submissions queried why Hunter Water's bills appear higher than in other areas of the state (eg, Sydney and Central Coast).[307]

There are a range of different factors that may impact a customer's bill, in particular household size and, to a lesser degree, property type (ie, house or apartment), household income and whether a pensioner rebate is received.[308]

2015 household survey results indicated that the Hunter region has a higher level of low income households (35%) compared to Eastern Sydney (22%) and Western Sydney (27%), but a similar level compared to Gosford (35%). Using ABS data, we estimate that a typical Hunter Water customer's bill represented about 1.5% to 2.3% of household income in 2019-20 (depending on location), compared to 1.3% for a Sydney Water customer or 1.4% or 1.5% for a Central Coast Council customer in Gosford or Wyong (respectively). Under our pricing decisions, for a typical Hunter Water customer in 2020-21, this:

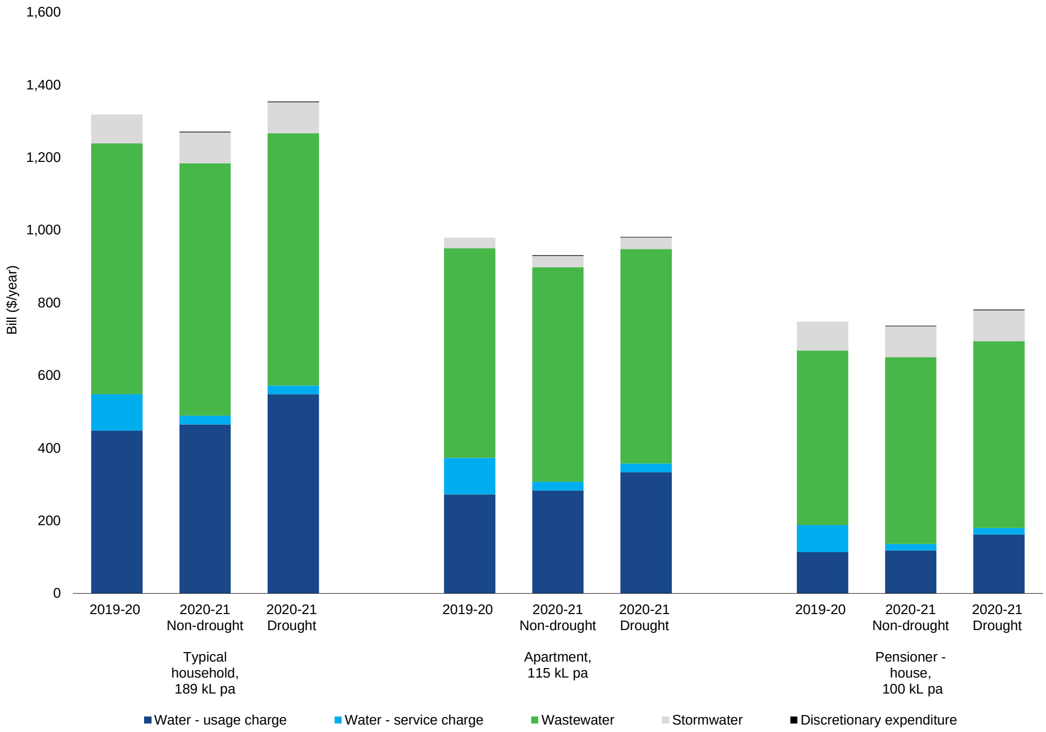
- Reduces slightly to about 1.4% to 2.2% under non-drought prices
- Is similar to 2019-20 bills at about 1.5% to 2.3% under drought prices (see Appendix V).

Figure 14.4 presents bill impacts by component, ie, the water usage charge, water service charge, wastewater charge and stormwater charge for typical residential customers. Under our pricing decisions, about 37% of a typical customer's bill (for a house) will correspond to the water usage charge under non-drought prices, compared to 40% under drought prices and 34% under current prices. The remaining 63% will correspond to the fixed water, wastewater and stormwater charges (including the charge for discretionary or customer supported programs) under non-drought prices, compared to 60% under drought prices. This means that under the 2020 Determination prices, customers will have an increased ability to reduce their bills by reducing their water consumption, particularly in the event that dam levels fall below 60% and drought prices are applied.

307 Cessnock City Council, *Submission to Issues Paper*, 8 April 2020, p 2.

308 Hunter Water provides rebates to pensioners, calculated annually as 26% of a bill with 200 kL annual water usage. In 2019-20, this rebate was about $318 for a typical pensioner in a house.

Figure 14.4 Indicative bills for typical house, pensioner and apartment by component



Data source: IPART analysis.

The COVID-19 pandemic may affect affordability for some customers

In its submission to our Draft Report, Hunter Water comments that it expects the COVID-19 pandemic to adversely impact economic activity, employment and household disposable income in the Lower Hunter, and likely result in an increase in the number of customers experiencing financial hardship. Hunter Water is currently providing customers who are experiencing financial hardship an extension of 90 days to pay their bills. Section 5.3 of Hunter Water's Operating Licence (2017-2022) requires Hunter Water to assist customers in financial difficulty and provide payment plans and other assistance schemes. Chapter 10 of Hunter Water's Customer Contract provides details of hardship provisions and assistance options. Hunter Water has stopped proactive bill collection work at this time and customers with outstanding account balances will not accrue interest or late payment fees.[309]

14.1.3 Bill impacts for non-residential customers are mixed

Non-residential customers' bills depend on their meter configuration and discharge factors, as well as their water and wastewater usage, which can vary significantly depending on the size and nature of the customer.

309 H Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, pp vi, 41.

In general:

- Under non-drought prices, some small customers with low water usage will see their bills fall, while larger customers and high water users will see increases in their bills, with the largest increases being experienced by the most intensive users.
- Under drought prices, most customers will see some increase in their bills, with, again, the largest increases being experienced by the most intensive users.

Bill decreases for customers that use less water, for example small shops and small industrial firms, are due to our decisions to reduce the water service charge, and charge for estimated wastewater discharges rather than for a minimum amount of discharge. Bill increases for customers that use more water, for example large licensed clubs, reflect our decision to increase the water usage price over the next four years, and increases to wastewater charges to allow Hunter Water to undertake additional expenditure on its wastewater system.

Across a representative sample of non-residential customers, our pricing decisions result in average annual bill changes between 2019-20 and 2023-24 ranging from -10% to 19% under non-drought prices and -8% to 41% under drought prices (see Appendix V, Table V.16 and Table V.17). Our decisions generally result in bills for non-residential customers that are higher than those presented in our Draft Report, and lower than those under Hunter Water's proposed prices. This is mainly as a result of a lower WACC now compared to when Hunter Water submitted its pricing proposal (but higher compared to our Draft Report).

Bills for some non-residential customers will also change as a result of implementing a new price structure for trade waste prices from 2021-22 (see Chapter 13) and our decision to phase-out location-based water usage charge discounts for large water customers. These changes have been phased over the determination period to mitigate the impacts on customer bills.

In drought, large consumers of water will experience a large increase in bills if they do not conserve water. We consider this increase is appropriate. Firstly, it only applies when water is relatively scarce, and reflects the increased costs of providing water. Secondly, we would expect businesses that are large consumers of water to do what they can to curb their consumption in drought, or face higher bills. The higher water usage price also provides a stronger incentive for these customers to seek out opportunities to use recycled water, where feasible. It should also be noted that any shift to drought pricing will not be sudden, but will become increasingly likely over time as water storage levels fall towards 60%. This will provide intensive users of water time to make the changes needed to economise on their water usage.

We present the annual bill impacts for a sample of non-residential customers, excluding trade waste charges, in Appendix V.

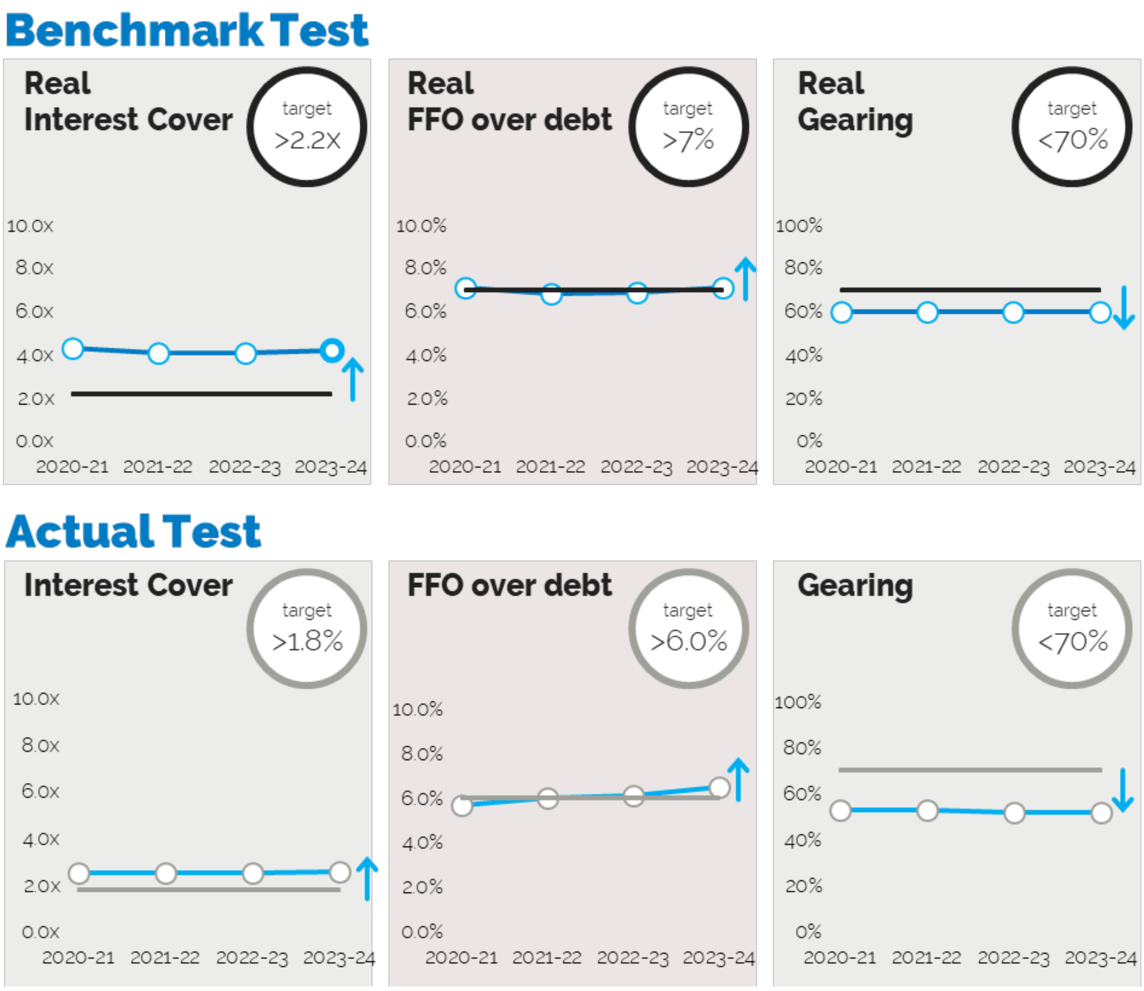
14.2 We consider that Hunter Water will remain financially sustainable

When setting prices, we consider the financial sustainability of the business resulting from our pricing decisions. To do this, 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. The financeability test is based on the approach outlined in IPART's 2018 *Review of financeability test* (2018 Financeability Review).

We assess Hunter Water's financeability over the 2020 Determination by analysing its forecast financial performance, financial position and cash flows for both the benchmark and actual business. We then forecast financial ratios for both tests and assessed Hunter Water's financial ratios compared to our target ratios.

We have calculated the indicators based on the NRR and prices we have decided on, using a WACC of 3.4%. These are shown in Figure 14.5 and Table 14.3.

Figure 14.5 Financeability test results based on our pricing decisions



Data source: IPART analysis.

Table 14.3 Financeability test results based on our pricing decisions

	Target ratios	2020-21	2021-22	2022-23	2023-24
Interest cover					
Benchmark test	>2.2x	4.3	4.1	4.1	4.2
- Does it meet the target?		✓	✓	✓	✓
Actual test	>1.8x	2.5	2.5	2.5	2.6
- Does it meet the target?		✓	✓	✓	✓
FFO over debt					
Benchmark test	>7.0%	7.1%	6.8%	6.9%	7.1%
- Does it meet the target?		✓	✗	✗	✓
Actual test	>6.0%	5.7%	6.0%	6.1%	6.5%
- Does it meet the target?		✗	✓	✓	✓
Gearing					
Benchmark test	<70%	60%	60%	60%	60%
- Does it meet the target?		✓	✓	✓	✓
Actual test	<60%	53%	53%	52%	52%
- Does it meet the target?		✓	✓	✓	✓

Source: IPART analysis.

Under the prices we have decided on for Hunter Water, it meets two of the three ratios for the actual and benchmark tests (interest cover and gearing) in all years of the determination period. It achieves the target funds from operations (FFO) over debt ratio on average over the determination period for both tests, and this ratio is trending upwards over the determination for the actual test, and for 2021-22 to 2023-24 for the benchmark test. The Real FFO over debt is forecast to meet the target during the regulatory period. Therefore, we did not identify a financeability concern for Hunter Water that needs to be addressed in this review. It is our view that Hunter Water can remain financially sustainable and continue to provide its services over the determination period.

The following sections outline our key findings. Refer to Appendix W for full details.

There is significant headroom in interest coverage ratios

Under the benchmark test, Hunter Water is forecast to have real interest coverage ratios (ICR) well above target, ie an average of 4.2x compared to a target of 2.2x over the 2020 determination period. This indicates that Hunter Water could still comfortably meet its interest payments, even if interest rates increase significantly over the determination period, under our benchmark assumptions.

FFO over debt meets the target on average over the determination period

FFO over debt measures how much free cash a business generates (ie, after covering its operating costs, interest expense and tax) relative to the size of its total borrowings. For the benchmark test, the target of real FFO over debt ratio is 7% (less than 7% is considered below target). Hunter Water is forecast to have an average FFO over debt of 7.0% over the determination period, which meets the benchmark target. For the actual test, the target of real FFO over debt ratio is 6% (less than 6% is considered below target). Hunter Water is forecast to have an average FFO over debt of 6.0% over the determination period, which meets the actual target.

FFO over debt measures a business's ability to generate cash flows to repay the principal of its debt. The relatively low FFO over debt ratio is explained by the combined effects of the current low interest rate environment and the fact Hunter Water has a growing 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). The FFO over debt is lower in the first year and then increases over the determination period as the gearing ratio decreases over the period as the RAB is increasing faster than debt.

We also note that the application of the DVAM which returns around $10 million to customers has a dampening effect on Hunter Water's FFO over debt ratio for the actual test.

We do not consider that Hunter Water's FFO over debt ratios represent a financeability concern for the 2020 determination period, for a combination of reasons:

- The ICR ratios indicate that it will have cash flows that very comfortably cover its interest payments.
- We have approved high capital expenditure allowances over the 2020 determination period. In a competitive market, it would not be unreasonable for a business to inject additional equity (or to reduce dividends and increase retained earnings) to ease debt funding pressures as it embarks on a large investment program to increase the size of its asset base.
- Since we established these target ratios in our 2018 Financeability Review, we have introduced regulatory mechanisms that help Hunter Water and other water utilities further manage/mitigate their cost and revenue risks (discussed below).

Our regulatory framework provides revenue stability

We have followed the well-established principles of the building block framework when reviewing and setting Hunter Water's prices and revenue allowances over the 2020 determination period. The transparency of the regulatory framework and the revenue stability and predictability it provides supports Hunter Water's long term financial sustainability.

In particular, we have put in place a number of regulatory mechanisms that reduce financial risks to Hunter Water. These include:

- Introducing dynamic water usage pricing, which reduces both cost and revenue risks related to drought conditions. Importantly, this is a new pricing mechanism that addresses the risks of future climate conditions, and is not considered within the standard financeability ratios developed by the credit ratings agencies.
- A demand volatility adjustment mechanism, which we applied in the current review. This mitigates the risk of errors in water sales forecasts (which firms operating in a competitive market would not enjoy).
- The trailing average cost of debt approach, which addresses refinancing risk.

Implications for 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 equivalent and dividends paid to the Consolidated Fund would fall. The extent of this fall would depend on 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. 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.

14.3 Implications for general inflation are negligible

Under section 15 of the IPART Act, we are required to consider the effect of our determinations on general price inflation. The Australian Bureau of Statistics (ABS) does not collect data on Hunter Water's water and wastewater prices. The national consumer price index (CPI) is based only on capital city prices, hence the change in Hunter Water's prices are unlikely to have a measurable effect on the national CPI.

However, within its area of operations, we expect that changes in Hunter Water's prices would have a similar effect on inflation as that of changes to Sydney Water's prices in Sydney.

Currently, water and wastewater costs in Sydney contribute 0.7% towards Sydney's consumer price index (All groups, Sydney).[310] Assuming a similar contribution in the Lower Hunter region, the average annual decrease in cost of about 1% under non-drought prices, and increase of about 1% under drought prices, for the typical household would not have a material impact on inflation.[311]

14.4 Hunter Water will be able to maintain its service standards

Under our Determination, we expect Hunter Water to achieve both operating and capital efficiency savings. We are satisfied that Hunter Water can achieve these savings, and thus generate sufficient revenue to achieve service standards at or above those expected by customers and required under its operating licence.

Hunter Water is licensed under the *Hunter Water Act 1991* (NSW). The Act requires Hunter Water to hold an operating licence that is issued by the Minister and reviewed annually by IPART. This licence contains a number of standards that Hunter Water must meet, or risk facing penalties associated with a breach of licence conditions. Hunter Water's pricing proposal identified the expenditure required for it to meet its regulatory obligations,

310 Australian Bureau of Statistics, *Information Paper: Introduction of the Consumer Price Index Weight Update, 2019 (cat. no.6470.0.55.002)*.

311 The average annual decrease in bills of 0.6% for the typical household using non-drought prices would contribute -0.0042 percentage points ($0.7\% \times -0.6\% = -0.0042\%$) to inflation. The average annual increase in bills of 0.9% for the typical household using drought prices would contribute 0.0063 percentage points ($0.7\% \times 0.9\% = 0.0063\%$) to inflation.

including under both its operating and environmental licences.[312] The operating licence also includes performance indicators against which Hunter Water's performance is reviewed as part of the annual audit of its compliance with the licence. During 2016-17, IPART reviewed Hunter Water's operating licence. The new licence commenced on 1 July 2017, and applies to 30 June 2022.

In its review of Hunter Water's operating and capital expenditure for the 2020 Determination, Aither noted that Hunter Water's asset performance generally met required service standards during the 2016 determination period.[313]

Our decisions reflect our view that Hunter Water's operating and capital expenditure need to increase to ensure that the level of service to customers does not deteriorate. While our decision on the efficient level of expenditure over the 2020 determination period is lower than proposed by Hunter Water, it is still considerably higher than we used to set prices in 2016. This will help maintain assets and the services they deliver, avoid service interruptions or future higher costs from asset failure, and enable Hunter Water to deliver better environmental outcomes for its customers and the community.

14.5 Hunter Water will be able to meet its environmental standards

Hunter Water's environmental impacts are regulated by relevant Commonwealth, NSW and local environmental legislation, regulation and regulatory bodies.

For example, DPIE Water regulates Hunter Water's extraction of water from the natural environment, and the Environment Protection Authority (EPA) regulates Hunter Water's discharges from its wastewater treatment plants, recycling plants and reticulation systems.

In its review of Hunter Water's operating and capital expenditure for the 2020 Determination, Aither noted that increased concern from the EPA about the compliance of a range of assets with environmental requirements has exemplified the risks arising from insufficient past expenditure to maintain asset condition and performance. Almost half of the capital expenditure in the current period has been in response to existing mandatory standards (including environmental standards).[314]

This includes an additional $7.2 million relative to our Draft Report (see Chapter 5). In their submissions to our Draft Report, the EPA and Flow Systems argued that the expenditure was efficient and that they support a risk averse approach to prevent adverse environmental impacts caused by spills and leaks of chemicals.[315] We consider Hunter Water's proposed scope and expenditure on this program to be efficient and have included it in Hunter Water's allowance for capital expenditure.

312 Hunter Water, *Pricing Proposal to IPART, Technical Paper 4*, 1 July 2019, p 5.
313 Aither, *Hunter Water expenditure review*, 14 December 2019, p 48.
314 Aither, *Hunter Water expenditure review*, 14 December 2019, pp 42-43.
315 EPA, submission to IPART Draft Report, pp 1-2 and Flow Systems, submission to IPART Draft Report, pp 1-2.

As also discussed in Chapter 5, Hunter Water has proposed expenditure for wastewater compliance improvement upgrades and renewals for the 2020 determination period, which Aither considers is efficient.[316]

Based on the advice of our consultants, we consider that the operating and capital expenditure allowances we have provided Hunter Water for the 2020 determination period through prices will allow it to recover its efficient costs of meeting environmental standards over the 2020 determination period.

316 Aither, *Hunter Water expenditure review*, 14 December 2019, pp 61-62.

Appendices

A Requirements under the IPART Act

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

A.1 Matters under section 15 of the IPART Act

IPART is required under section 15 of the IPART Act to have regard to the following matters:

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.

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

Section 15(1)		Report reference
a)	Cost of providing the services	Chapter 6 sets out Hunter Water's total efficient costs to deliver its regulated services over the determination period. Further detail is provided in Chapters 4 and 5, and appendices E, F, G and H on efficient historical and forecast expenditure.
b)	Protection of consumers from abuses of monopoly power	We consider our decisions would protect consumers from abuses of monopoly power, as they reflect the efficient costs Hunter Water requires to deliver its regulated services and meet mandated requirements. This is addressed throughout the report, particularly in Chapters 4 and 5 (where we establish the efficient historical and forecast expenditure) and Chapters 8, 9, 10, 11, 12 and 13 (where we set out our pricing decisions).
c)	Appropriate rate of return and dividends	Chapter 6 outlines that we have allowed a market-based rate of return on debt and equity which would enable a benchmark business to return an efficient level of dividends. Appendix I provides full details.
d)	Effect on general price inflation	Chapter 14 outlines our estimate that the impact of our prices on general inflation is negligible.
e)	Need for greater efficiency in the supply of services	Chapters 4 and 5 set out our decisions on Hunter Water's efficient historical and forecast expenditure. These decisions would promote greater efficiency in the supply of Hunter Water's regulated services.
f)	Ecologically sustainable development	Chapters 4 and 5 set out efficient historical and 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 6 and 14 explain how we have provided Hunter Water with an allowance for a return on and of capital; and our assessment of its 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 4 and 5 determine the prudent and efficient cost of construction and operational contracts that Hunter Water has entered into and costs associated with these over the next period.
i)	Need to promote competition	In determining efficient costs, we have been mindful of relevant principles such as competitive neutrality (eg, we have included a tax allowance for Hunter Water as set out in Chapter 6).
j)	Considerations of demand management and least cost planning	Chapters 4 and 5 outline how we have assessed Hunter Water's efficient historical and forecast expenditure required to deliver its regulated services at least cost. Chapters 8, 9 and 10 outline how we have set prices to reflect efficient costs, including the usage price to reflect the approximate estimate of marginal cost of supply – such cost-reflective prices promote the efficient use and distribution of resources (all else being equal).
k)	Social impact	Chapter 14 considers the potential impact of our pricing decisions on Hunter Water, its customers and the NSW Government (on behalf of the broader community).
l)	Standards of quality, reliability and safety	Chapters 4 and 5 detail our consideration of Hunter Water's efficient historical and forecast expenditure so that it can meet the required standards of quality, reliability and safety in delivering its services.

A.2 Matters under section 14A of the IPART Act

IPART is required under section 14A of the IPART Act to have regard to the following matters:

a) The government agency's economic cost of production

b) Past, current or future expenditures in relation to the government monopoly service

c) Charges for other monopoly services provided by the government agency

d) Economic parameters, such as discount rates, or movements in a general price index (such as CPI), whether past or forecast

e) A rate of return on the assets of the government agency

f) A valuation of the assets of the government agency

g) 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

h) The need to promote competition in the supply of the service concerned

i) Considerations of demand management (including levels of demand) and least cost planning.

Table A.2 outlines the sections of the report that address each matter.

Table A.2 Consideration of section 14A(2) matters by IPART

Section 14A(2)	Report reference
a) Government agency's economic cost of production	Chapter 6 sets out Hunter Water's total efficient costs to deliver its regulated services over the determination period. Further detail is provided in Chapters 4 and 5 on efficient historical and forecast expenditure.
b) Expenditures in relation to the government monopoly service	Chapters 4 and 5 set out our decisions on Hunter Water's efficient historical and forecast expenditure.
c) Charges for other monopoly services	Chapter 13 sets out our decisions on Hunter Water's prices for other monopoly services.
d) Economic parameters, such as discount rates, or movements in CPI	Chapter 6 and Appendix I set out how we have indexed Hunter Water's regulatory asset base to account for inflation. Chapters 8, 9, 10 and 13 explain how we have set prices to raise revenue that recovers efficient costs over the determination period in net present value terms.
e) Rate of return on the assets of the government agency	Chapter 6 and Appendix I outline that we have allowed a market-based rate of return on debt and equity which would enable a benchmark business to return an efficient level of dividends.
f) Valuation of the assets	Chapter 6 and appendices G and H set out the value of Hunter Water's assets on which we consider it should earn a return on capital and an allowance for regulatory depreciation.
g) Ecologically sustainable development	Chapters 4 and 5 set out Hunter Water's efficient historical and forecast expenditure that allows it to meet all of its regulatory requirements, including its environmental obligations.
h) Need to promote competition	In determining efficient costs, we have been mindful of relevant principles such as competitive neutrality (eg, we have included a tax allowance for Hunter Water as set out in Chapter 6).
i) Considerations of demand management and least cost planning	Chapters 4 and 5 outline how we have assessed Hunter Water's efficient historical and forecast expenditure required to deliver its regulated services at least cost. Chapters 8, 9, 10 and 13 outline how we have set prices to reflect efficient costs, including the usage price to reflect the approximate estimate of marginal cost of supply – such cost-reflective prices promote the efficient use and distribution of resources (all else being equal).

A.3 Matters under section 16 of the IPART Act

The Determination which accompanies this report increases a maximum price for a government monopoly service, or determines a methodology which would or might increase such a price.

If the prices were not increased to the maximum we set, this could impact on Treasury's consolidated fund to the degree that it would result in a reduced shareholder dividend. Chapter 14 provides further information.

B How we set prices

We set the maximum prices Hunter Water can charge its customers for its monopoly services, to recover the efficient costs needed to deliver its water, wastewater and stormwater services. We also consider the structure of the prices we set and how to encourage efficient consumption and investment decisions.

The sections below briefly explain how we approach the two major elements of the review. That is:

1. Estimating Hunter Water's efficient costs and notional revenue requirement (NRR),
2. Adjusting the NRR for any other revenue and costs
3. Determining the forecast water sales and customer numbers
4. Setting prices to recover the adjusted NRR.

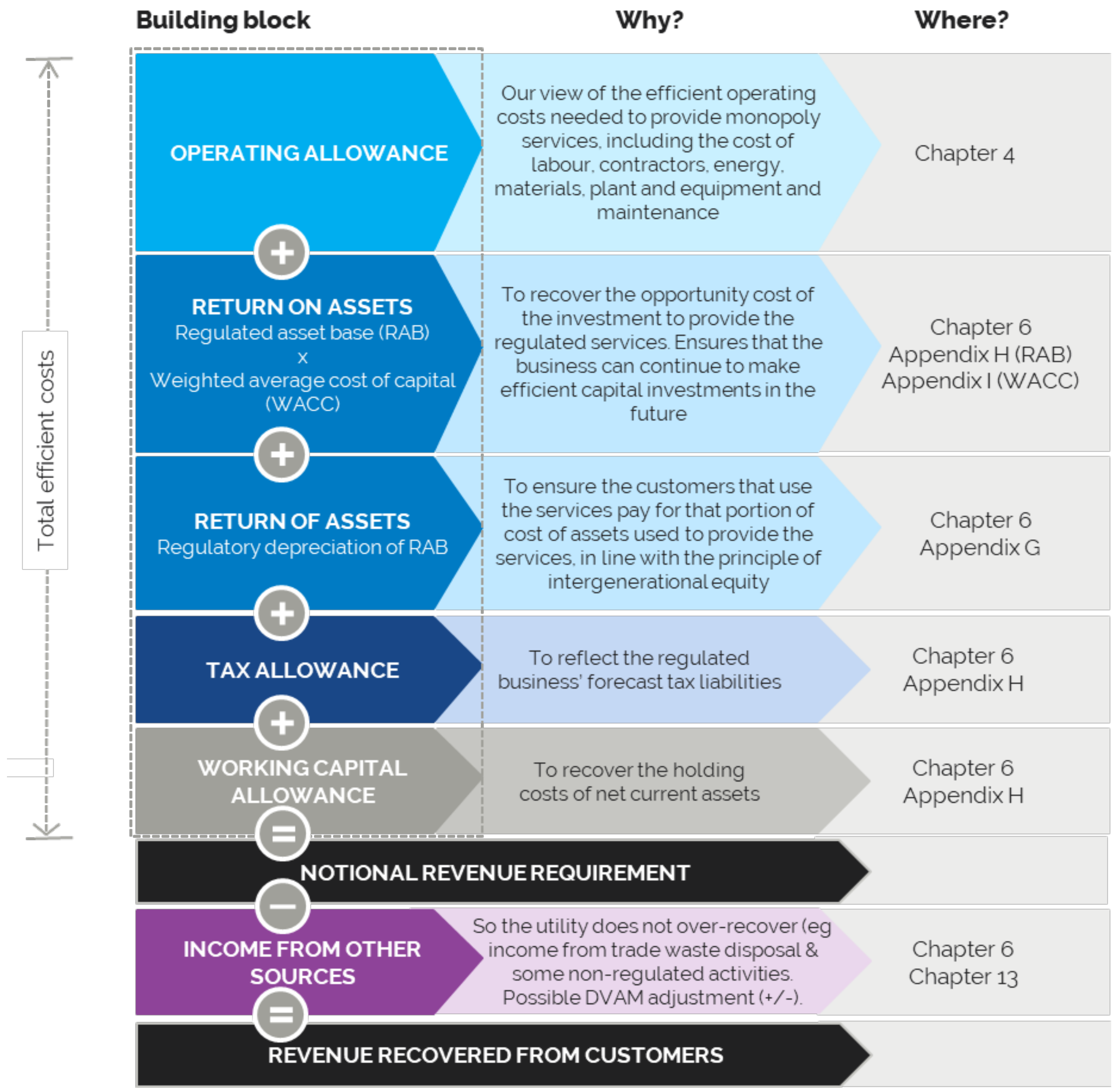
B.1 Estimating the efficient costs

Our first step in determining prices is to calculate the NRR, which represents our view of the total efficient costs for Hunter Water to provide regulated services in each year of the determination period.

As in previous reviews, we have used a 'building block' method to calculate the NRR, which represents our view of the efficient costs for Hunter Water to deliver its regulated services. Figure B.1 provides a brief explanation of each building block allowance within the NRR. We generally set prices to recover the utility's NRR.

The sections below provide more detail on how we calculated each component of the building block, and where in the report you can find more detail regarding our assessment for this review of Hunter Water's prices.

Figure B.1 Building block approach to calculating the NRR



Note: The building block components of NRR in the figure above are not to scale and are for illustrative purposes only. The DVAM adjustment can be an addition or subtraction. For this review, we subtracted the DVAM adjustment from the NRR.

B.1.1 Operating expenditure

The allowance for operating expenditure in the building block approach reflects our view of the efficient level of operating costs required to deliver Hunter Water's services to its customers over the determination period. These costs include the costs of labour, service contractors, energy, materials, and plant and equipment.

We engage expert consultants to assess the efficiency of the utility's proposed operating expenditure, to examine whether the expenditure represents the best and most cost effective way of delivering regulated services. Our efficiency test is presented in Box B.1, and our assessment of operating expenditure is provided in Chapter 4.

Box B.1 Our efficiency test

The efficiency test examines whether a utility's operating and capital expenditure represents the best and most cost-effective way of delivering monopoly services to customers.

Broadly, the efficiency test considers both how the investment decision is made, and how the investment is executed, having regard to, amongst other matters, the following:

- Customer needs, subject to the utility's regulatory requirements
- Customer preferences for service levels, including customers' willingness to pay
- Trade-offs between operating and capital expenditure, where relevant
- The utility's capacity to deliver planned expenditure
- The utility's expenditure planning and decision-making processes.

The efficiency test is applied to:

- Historical capital expenditure, and
- Forecast capital and operating expenditure

that is included in the utility's revenue requirement, for the purposes of setting regulated prices.

The efficiency test is based on the information available to the utility at the relevant point in time. That is:

- For forecast operating and capital expenditure, we assess whether the proposed expenditure is efficient given currently available information.
- For historical capital expenditure, we assess whether the actual expenditure was efficient based on the information available to the utility at the time it incurred the expenditure (ie, whether the utility acted prudently in the circumstances prevailing at the time it incurred the expenditure).

B.1.2 Capital allowance - Return on assets and regulatory depreciation

After operating expenditure, the two largest allowances in the NRR are for a **return on assets** and **regulatory depreciation**, both of which are related to Hunter Water's existing assets and capital expenditure.

The capital expenditure is also subject to the same efficiency test as operating expenditure. As explained in Box B.1, we apply our efficiency test to **actual** capital expenditure incurred over the current period (2016 determination period), and the proposed expenditure for the upcoming determination period (ie, 2020 determination period), to determine how much efficient capital expenditure should be added to the value of the RAB. We then use the updated value of the RAB to calculate the allowances for a return on assets and regulatory depreciation.

Box B.2 explains how capital expenditure affects prices, and the return on assets and regulatory depreciation are both explained further below.

Box B.2 How capital expenditure is an input into prices

Under our building block model, we do not include the up-front capital costs in prices, but instead, we add their value to the RAB to calculate capital-related allowances to be included in the NRR and recovered via prices:

1. **Allowance for a return on assets**. This is the RAB value multiplied by the weighted average cost of capital (WACC). We have a standard methodology to calculate the return on assets (WACC methodology) and we do not propose any changes (see Chapter 6, section 6.3.1, and Appendix I).
2. **Allowance for regulatory depreciation**, whereby the total cost of an asset is recovered over its life. Importantly, in this review we have used different asset lives to those used in previous determinations. (see Chapter 6, section 6.3.3 and Appendix G).

Return on assets

The return on assets allowance represents our assessment of the opportunity cost of the capital invested to provide the regulated services. Our approach ensures that the business can continue to make efficient capital investments in the future.

To calculate this allowance, we multiply the value of the RAB in each year of the determination period by an appropriate rate of return, which we calculate as the WACC. In 2018, we revised our standard methodology to calculate the WACC (available on our website). We discuss our decisions on the return on assets in Chapter 6 on NRR. Further detail on how we calculate the value of the RAB and the WACC is set out in Appendices H and I.

Regulatory depreciation

The building block model includes an allowance for a return **of** assets (regulatory depreciation). We typically use straight line depreciation to calculate this allowance, which means that the value of the asset is returned to the utility evenly over the asset's economic life. That is, the value of an asset is divided by its assumed life in years to determine the annual allowance for depreciation for that asset.

It is important that the asset lives we use in calculating Hunter Water's depreciation allowance are accurate – ie, they reasonably reflect the consumption of its assets. If they are too short, today's customers would over-pay (ie, pay for future customers' consumption of the assets). If they are too long, today's customers would pay less but future customers may pay for assets that they don't use, and the utility may also face financeability concerns for a period of time.

In practice, we do not divide every asset's value by its specific life. Some form of aggregation is required – eg, dividing the RAB by the weighted average life of assets in the RAB, or dividing parts of the RAB by the weighted average life of assets in each part. For this review, we have disaggregated Hunter Water's RAB from 4 to 21 categories. We discuss our decisions on regulatory depreciation in Chapter 6 with technical details in Appendix G.

B.1.3 Allowance for tax

We include an explicit allowance for tax, because we use a post-tax WACC to estimate the return on assets in the NRR.[317] This allowance reflects what Hunter Water's tax liabilities would be under our regulatory settings.

Our tax allowance is not intended to recover Hunter 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 full efficient costs a utility would incur if it were operating in a competitive market (including if it were privately owned). 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.

We calculate the tax allowance for each year by applying the relevant tax rate, adjusted for the value of imputation credits (the 'gamma')[318], to the business's taxable income. For this purpose:

- Taxable income is the NRR (excluding tax allowance) less operating cost allowances, tax depreciation, and interest expenses.
- We require the business to provide forecast tax depreciation, which we may adjust to reflect the Tribunal's decisions on capital expenditure and AFOC.
- Other items such as interest expenses are based on the parameters used for the WACC, and the value of the RAB[319] and working capital.

B.1.4 Return on working capital

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 (ie, when bills are paid).

In 2018, we developed a standard approach to calculate the working capital allowance, which can be found on our website.[320] In summary, we:

1. Calculate the net amount of working capital the utility requires, using the formula:

   working capital = receivables - payables + inventory + prepayments

2. Calculate the return on this amount by multiplying it by the nominal post-tax WACC.

317 Hunter Water pays tax equivalents to NSW Treasury under the National Tax Equivalents Regime (NTER). The regulatory tax allowance we set is not intended to match Hunter Water's actual tax equivalent payments. It is derived using our assessment of efficient expenditure, the regulatory gearing ratio (ie, debt to equity ratio) and our decision on the WACC and cost of debt.

318 Under a post-tax framework, the value of franking credits (gamma) enters the regulatory decision only through the estimate of the tax liability.

319 The nominal cost of debt is the sum of the nominal risk-free rate and nominal debt margin.

320 IPART, *Working Capital Allowance Policy Paper*, November 2018.

B.2 Adjusting the NRR

After we have estimated the efficient costs, we need to determine whether we should make any reductions to the NRR, before using the NRR to set water, wastewater and stormwater prices. For Hunter Water, the NRR reductions relate to revenue that should be shared between its water customers and its shareholders. We discuss our decisions on revenue that should be adjusted for non-regulated income in Chapters 6, and Appendix H.

B.2.1 Non-regulated income

Non-regulated income is revenue earned from services not subject to IPART's price determination (ie, non-monopoly services) but which are delivered using regulated assets. That is, it is derived from assets in the RAB, which are also used to deliver monopoly services. We generally share a portion of this with customers, and remove that amount from the NRR.

B.2.2 Demand volatility adjustment mechanism (DVAM)

We can adjust the revenue to account for over- or under recovery in the previous period, where the over- or under- recovery is related to material variations between forecast and actual water sales (for instance, exceeding +/-5% over the whole determination period).

If we assess that the utility has over-recovered in the previous period, then this revenue can be returned to customers in the next period by reducing the NRR before setting prices, or vice-versa.

B.2.3 Revenue from other services

Hunter Water also receives revenue from trade waste services and miscellaneous services related to the water, wastewater and stormwater services. These are priced separately, but can share the assets and resources used to provide other services (for instance, trade waste is managed through wastewater treatment plants). To ensure that the utility does not over-recover, we subtract the expected revenue from trade waste and miscellaneous services from the NRR before setting prices.

B.3 Forecasting water sales, wastewater demand and customer numbers

A key step in our price setting process is to decide on Hunter Water's forecasts for water sales and customer numbers. These forecasts are used to determine the price levels necessary to recover its NRR. If the forecasts are too high or too low, it would lead to an under- or over-recovery of the NRR. (If material over- or under- recovery occurs, we can amend revenue in the next period by applying a DVAM, see B.2.2 above).

Our decisions on forecast water sales and customer numbers are discussed in Chapter 7.

B.4 Setting prices to recover the adjusted NRR

We generally set prices to recover the adjusted NRR (ie, the NRR after reductions to account for other sources of revenue and any adjustments to account for over/under recovery in the previous period – as outlined above). In structuring prices, we aim to find a balance between the principle that customers should pay for the costs they create, thus sending appropriate price signals; and having a relatively simple and easy to understand framework.

In assessing Hunter Water's proposed price structures, we considered the appropriate pricing principles that should be applied as well as price stability, affordability and managing revenue risk for the utility. Box B.3 outlines our principles in setting prices.

Box B.3 Our pricing principles

In setting maximum prices for regulated water businesses, our overarching principle is that prices should be cost-reflective. This means that:

- Prices should only recover sufficient revenue to cover the prudent historical and efficient forecast costs of delivering the monopoly services. Prices for individual services should reflect the efficient costs of delivering the specific service.
- Price structures should match cost structures, whereby:
  - Usage charges reference an appropriate estimate of marginal cost (ie, the additional cost of supplying an additional unit of water or sewerage services). We generally favour setting prices with reference to LRMC to send signals to end-use customers that encourage efficient consumption. Exceptions to this include situations where there is less need for strong price signals and situations where LRMC pricing is not practical.
  - Fixed service charges recover the remaining costs.
- Customers imposing similar costs on the system pay similar prices.

Through the signals they send, cost-reflective prices promote the efficient use and allocation of resources, which ultimately benefits the whole community. The sum of the fixed and usage prices customers pay reflects the total cost of the services provided. By reflecting the revenue needed to efficiently provide the services, cost-reflective prices also ensure efficient investment in water infrastructure and service provision.

Other factors we generally consider when deciding on price structures include whether prices are transparent, easy for customers to understand and Hunter Water to administer, and customer preferences.

B.4.1 How we set prices?

We set prices to recover the utility's adjusted NRR in net present value NPV terms over the determination period across its customer base. Before we set prices, we will decide on how long the determination period should be. The factors considered in setting the determination period are discussed at B.5 below, and our decision on the length of the 2020 determination period is in Chapter 3.

For Hunter Water, we generally work within a postage stamp pricing framework, consistent with Government policy.[321] A key consideration for setting prices is how to balance the share of revenue that should be recovered from fixed charges against variable (or usage) charges for water and wastewater services. We often set the usage charge with reference to the marginal cost of supply, with fixed (or service) charges set to recover the remaining revenue requirement.

Chapters 8, 9 and 10 include more information on price structures for water, wastewater and stormwater services, and our prices.

B.4.2 Non-residential large water users have the option to opt-out of our prices

In our 2016 reviews, we decided to allow Hunter Water and Sydney Water to enter into unregulated pricing agreements (UPAs) with large non-residential customers (with annual usage greater than 7.3 ML). Neither utility entered a UPA during the 2016 determination period, but during the course of this review, Hunter Water informed us it has entered such an agreement with the Central Coast Council.[322] We have decided to maintain the option in the 2020 determination period with an adjustment to the definition of large non-residential customers (see Chapter 3).

How does the unregulated pricing agreement work?

We continue to set maximum prices for monopoly services. However, if Hunter Water and a large non-residential customer enter into a pricing agreement, they would opt-out of the regulated prices we set, and be subject to the agreement instead (for water supply and sewerage services only). Key feature of this pricing option are that:

- UPAs are optional and are only entered into voluntarily if the agreement is mutually beneficial to the utility and the large non-residential customer. If the foreseen benefits do not outweigh the costs, then parties should not enter the agreement. The additional, administrative burden to negotiate, manage and ring-fence the agreement should be factored in when considering an agreement.
- The costs and revenues associated with the customer would have to be ring-fenced from the broader cost and revenue base, to ensure that the broader customer base does not subsidise the costs of servicing a large customer.

321 Postage stamp pricing means that customers pay the same for a service regardless of where in the utility's area of operations they are located. That is, we generally cannot set location-based prices.

322 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 7.

- The customer would not be able to opt back in to regulated prices within the determination period unless written into the pricing agreement or both parties agree to terminate the pricing agreement, and this should be factored into considerations.

B.5 How long to set prices for?

For each water pricing review, we decide on the length of the determination period. In general, this can be between one and five years.

We decide on the appropriate determination length on a case-by-case basis, and in doing so, we consider the range of factors outlined in Box B.4.

Box B.4 Factors we consider in deciding the length of a determination

In general, the factors we consider when deciding the length of a determination period are the:

- Confidence we have in the utility's forecasts
- Risk of structural changes in the industry
- Need for price flexibility and incentives to increase efficiency
- Need for regulatory certainty and financial stability
- Timing of other relevant reviews
- Views of stakeholders.

Longer determination periods have several advantages over shorter periods. For example, a longer period:

- Provides greater stability and predictability (which may lower a utility's business risk and assist investment decision making), and
- Creates strong incentives for a utility to increase efficiency; and reduces regulatory costs.

However, longer determination periods also have disadvantages. These include:

- Increased risk associated with using inaccurate data to set prices
- Possible delays in customers benefitting from any efficiency gains
- The risk that changes in the industry would impact the effectiveness of the determination.

B.6 Other IPART reviews

We have identified several previous IPART reviews that are relevant to this 2020 review of prices for Hunter Water. These reviews are listed in Box B.5, along with a weblink to the relevant documents on our website.

Box B.5 Other related IPART reviews we consider when setting prices

During our review for Hunter Water, we concurrently reviewed prices for Sydney Water and Water NSW, which follow a similar framework.

We periodically review parts of our approach to setting water prices. Related reviews include:

- How we calculate the weighted average cost of capital (Review of our WACC method, February 2018)
- How we assess the utility's financeability (Review of our financeability test, November 2018)
- How we calculate the working capital allowance (Working Capital Allowance Policy Paper November 2018)
- How we treat any asset disposals (Asset Disposals Policy Paper, February 2018)
- How developer charges should be priced (Developer charges and backlog sewerage charges for metropolitan water agencies, October 2018)
- The conditions in Hunter Water's operating licence (Review of Hunter Water's operating licence July 2017)
- How recycled water services should be funded and priced, including recycled water developer charges (Review of pricing arrangements for recycled water and related services, July 2019)
- How wholesale customers, ie, *Water Industry Competition Act 2006* (WICA) licensees purchasing water and/or wastewater services from Hunter Water, should be charged (Prices for wholesale water and sewerage services, June 2017)
- Central Coast Council's water prices, including the transfer price between the Central Coast and Hunter Water (Review of Central Coast Council's water, sewerage and stormwater prices, May 2019).

For each of these reviews, relevant documents are available on our website.

C Efficiency carryover mechanism

An Efficiency Carryover Mechanism (ECM) mitigates the incentive for a regulated utility to delay reporting efficiency savings. This is because any permanent cost savings retained by the business for the period would be passed onto customers through lower prices at the next price determination regardless of when these savings are identified within the regulatory period.

For an ECM to apply:

1. The regulated utility will need to include details of efficiency savings in its next pricing submission, and be able to demonstrate these are permanent efficiency improvements.
2. IPART will then assess the efficiency gain and the appropriate level of funds to be carried forward.

In this appendix, we explain why the ECM only applies to operating expenditure and the utilities' views on this. We also explain why an ECM would remove an incentive for the utility to delay efficiency savings it identifies during a regulatory period until the beginning of the following period. It provides worked examples of how the ECM removes this incentive by identifying efficiency savings that are permanent, and allowing the utility to retain permanent efficiencies savings for the same amount of time, regardless of when they are implemented by the utility.

We can set the holding period to be equal to (or different to) the length of determination. Typically, we have set the holding period to equal the length of the determination period so that the strength of the incentive to make efficiency savings that applies in year 1 of the determination period continues to apply for the remainder of the determination period.

Sections C.1 and C.2 below compare the 'profits' that a utility would enjoy if it implemented a permanent efficiency saving under the regulatory framework that does not have ECM, with those available under the ECM. Section C.3 outlines why the ECM only applies to operating expenditure. Section C.4 explains how the ECM is applied and why we implement the ECM with a 1-year lag.

C.1 Regulatory framework without an ECM

The four tables in Figure C.1 show the profits that a regulated utility retains after making an efficiency improvement **decrease** the further into a regulatory period that the efficiency is made. The efficiency is then incorporated into the regulatory allowance – in the form of lower prices to customers – in the next determination period and the utility gains no more profit from that efficiency. This creates the incentive for the utility to delay efficiencies to the first year of a new regulatory period.

Figure C.1 assumes that an efficiency saving implemented by a utility in the final year of a determination would be identified by IPART in the expenditure review process.

Figure C.1 How the current framework incentivises delaying efficiencies

Permanent saving made in year 1

	Regulatory Period 1				Regulatory Period 2			
Year	1	2	3	4	5	6	7	8
	$	$	$	$	$	$	$	$
Allowance	100	100	100	100	80	80	80	80
Actual	80	80	80	80	80	80	80	80
Annual profit	20	20	20	20	-	-	-	-
Total profit in period				**80**				

Permanent saving made in year 2

	Regulatory Period 1				Regulatory Period 2			
Year	1	2	3	4	5	6	7	8
	$	$	$	$	$	$	$	$
Allowance	100	100	100	100	80	80	80	80
Actual	100	80	80	80	80	80	80	80
Annual profit	-	20	20	20	-	-	-	-
Total profit in period				**60**				

Permanent saving made in year 3

	Regulatory Period 1				Regulatory Period 2			
Year	1	2	3	4	5	6	7	8
	$	$	$	$	$	$	$	$
Allowance	100	100	100	100	80	80	80	80
Actual	100	100	80	80	80	80	80	80
Annual profit	-	-	20	20	-	-	-	-
Total profit in period				**40**				

Permanent saving made in year 4

	Regulatory Period 1				Regulatory Period 2			
Year	1	2	3	4	5	6	7	8
	$	$	$	$	$	$	$	$
Allowance	100	100	100	100	80	80	80	80
Actual	100	100	100	80	80	80	80	80
Annual profit	-	-	-	20	-	-	-	-
Total profit in period				**20**				

Note: Regulatory period 2 does not necessarily have to be the same length as previous regulatory period. We have not made a decision on the length of the subsequent regulatory period. The tables in this figure are illustrative only.

C.2 How the ECM removes the incentive to delay savings

The ECM removes the incentive to delay savings by allowing the utility to retain profits for each permanent saving as though the saving were made in year 1 of the determination period in the scenario above. That is, the total profit for the utility is the same regardless of which year the efficiency was made.

The four tables in Figure C.2 demonstrate the ECM for a 4-year determination. Using the same example as in Figure C.1, the utility retains an $80 profit regardless of which determination year it makes the saving in. This is because we calculate a "carryover" into the next determination period.

After four years, the saving is passed onto customers.

Figure C.2 How the ECM removes incentives to delay efficiencies

	Regulatory Period 1				Regulatory Period 2			
Permanent saving made in year 1								
Year	1	2	3	4	5	6	7	8
	$	$	$	$	$	$	$	$
Base allowance	100	100	100	100	80	80	80	80
Actual	80	80	80	80	80	80	80	80
Permanent saving	20	20	20	20	-	-	-	-
Incremental saving	20	20	20	20	-	-	-	-
Carryover calc	N/A	N/A	N/A	N/A				
Net allowance	100	100	100	100	80	80	80	80
Annual profit	20	20	20	20	-	-	-	-
Total profit in period				80				-

Permanent saving made in year 2								
Year	1	2	3	4	5	6	7	8
	$	$	$	$	$	$	$	$
Base allowance	100	100	100	100	80	80	80	80
Actual	100	80	80	80	80	80	80	80
Permanent saving	-	20	20	20	-	-	-	-
Incremental saving	-	20	20	20	-	-	-	-
Carryover calc		20	20	20	20			
Net allowance	100	100	100	100	100	80	80	80
Annual profit	-	20	20	20	20	-	-	-
Total profit in period				60				20

Permanent saving made in year 3								
Year	1	2	3	4	5	6	7	8
	$	$	$	$	$	$	$	$
Base allowance	100	100	100	100	80	80	80	80
Actual	100	100	80	80	80	80	80	80
Permanent saving	-	-	20	20	-	-	-	-
Incremental saving	-	-	20	20	-	-	-	-
Carryover calc			20	20	20	20		
Net allowance	100	100	100	100	100	100	80	80
Annual profit	-	-	20	20	20	20	-	-
Total profit in period				40				40

Permanent saving made in year 4								
Year	1	2	3	4	5	6	7	8
	$	$	$	$	$	$	$	$
Base allowance	100	100	100	100	80	80	80	80
Actual	100	100	100	80	80	80	80	80
Permanent saving	-	-	-	20	-	-	-	-
Incremental saving	-	-	-	20	-	-	-	-
Carryover calc				20	20	20	20	
Net allowance	100	100	100	100	100	100	100	80
Annual profit	-	-	-	20	20	20	20	-
Total profit in period				20				60

Note: Regulatory period 2 does not necessarily have to be the same length as previous regulatory period. We have not made a decision on the length of the subsequent regulatory period. The tables in this figure are illustrative only.

C.3 The ECM only applies to operating expenditure

The ECM applies to operating expenditure only – it does not apply to **capital expenditure**. This is due to the additional complexity of introducing an ECM for capital expenditure, the risk of unintended consequences (ie, incentivising the utility to over-forecast and inefficiently defer capital expenditure). To date, we have not been presented with examples of efficient trade-offs between operating expenditure and capital expenditure over the determination period that might be impeded by the application of an ECM to operating expenditure and not to capital expenditure. This is supported by Water NSW's pricing proposal (see below), where it did not support to have an ECM for capex.

In our 2016 Final Reports, we did acknowledge the potential value in encouraging efficient trade-offs between operating and capital expenditure, and that this issue could be explored further in the future.[323] In the lead up to this review, we asked the utilities whether the ECM should be extended to include capital expenditure.

The utilities expressed mixed views on an ECM for capital expenditure:

- Sydney Water indicated interest in exploring an ECM for capital expenditure and re-iterated its proposal from 2016.[324]
- Hunter Water noted reservations about the effectiveness of the current ECM model because it only applies to operating expenditure and is asymmetric (that is, it only applies to efficiency gains, but not to losses). It proposed IPART undertake a broader review of the framework, including incentivising efficiencies. [325]
- Water NSW considers that a capital incentive scheme (either ECM or another) would not result in improved outcomes for the utility and customers; and that the lumpy nature of capital expenditure can be related to different stages of the asset life-cycle, business decisions and planning, and/or government-directed investment, rather than efficiency.[326]

For reasons outlined above and in Chapter 3, we have decided that the ECM should only apply to operating expenditure. We will be undertaking a broader review of our form of regulation before we next review prices for Hunter Water, and as part of that broader review we will consider incentives for efficiency gains.

323 Further information on the ECM we established is available in Chapter 3 and Appendix E in the 2016 Final Report of our determination of Sydney Water's prices. IPART, *Sydney Water Corporation: Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016*, Final Report, June 2016.

324 Sydney Water, *Price proposal 2020-24*, July 2019, Attachment 7, pp 3-5.

325 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 3*, 1 July 2019, p B-12.

326 WaterNSW, *WaterNSW Pricing Proposal to the Independent Pricing and regulatory Tribunal*, July 2019, p 54.

C.4 Applying the ECM

If the utility decides to apply the ECM, the utility would need to calculate the following values:

- **Under (over):** first the utility identifies the difference between the base allowance set by IPART to its actual expenditure.
- **Outperformance:** second, the utility only reports where it underspends against our allowances (overspends are omitted).
- **Permanent gain:** working backwards from year 4 to year 1, the utility then determines how much of the outperformance in year 4 also occurred in year 3, how much of the outperformance that occurred in both year 4 and 3 occurred in year 2, etc.
- **Incremental gain:** working forwards from year 1 to 4, it then determines the first year that a permanent saving occurred. It is this 'incremental gain' in each year that would be carried forward for four years through the ECM calculation that follows.
- **ECM calculations:** ensures that any incremental gain is carried forward and held for four years.

At the next determination period, we would consider these calculations, and decide whether the savings identified by the utility are permanent.

Why there is a 1-year lag in implementation

In practice, at the time we undertake our review, we only have a forecast of expenditure in the final year of the determination period.

To address this limitation, we make three adjustments.

First, we lag the implementation of the ECM by one year. For example, with a 4-year determination period, we apply the ECM calculation to the first three years of the current determination period (years 1, 2, and 3), and to the final year of the previous regulatory period (ie, year 0). Efficiency savings in the final year of the current period (year 4) would be included in the ECM calculation for the following determination period.

Second, we assume an efficiency saving made in year 3 is permanent. Therefore, the benefit is held in year 3 and year 4, and the ECM allows the benefit to be carried forward in years 5 and 6.

Figure C.3 shows the first two adjustments. In this example, the two regulatory periods are years 1 to 4 (regulatory period 1), and year 5 to 8 (regulatory period 2). The ECM is then applied to operating expenditure in Years 0 to 3 in the first regulatory period, and years 4 to 7 in the second.

Figure C.3 ECM is lagged one year so that it is based on actuals

		Regulatory Period 1			Regulatory Period 2				
	ECM1				ECM2				
Year	**–**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
	$	**$**	**$**	**$**	**$**	**$**	**$**	**$**	**$**
Base allowance	100	100	100	100	100	80	80	80	80
Actual	100	100	100	80	80	80	80	80	80
Under (over)	–	–	–	20	20	–	–	–	–
Outperformance	–	–	–	20	20	–	–	–	–
Performance gain	–	–	–	20					
Incremental gain	–	–	–	20					
ECM1 calc									
▼ year 0	–	–	–	–	–				
▼ year 1		–	–	–	–	–			
▼ year 2			–	–	–	–	–		
▼ year 3				20	20	20	20	–	
ECM benefit						**20**	**20**		
Total allowance		**100**	**100**	**100**	**100**	**100**	**100**	**80**	**80**
Total gain (loss)		**–**	**–**	**20**	**20**	**20**	**20**	**–**	**–**

Data source: The numbers in this figure are illustrative only.

The third adjustment made is to ensure that any efficiency made in the final year of a determination period is only retained for one regulatory period, in present value terms. This is because we review efficiency savings made in the final year of a determination in the following period. For example, with a 4-year determination period, it is five years before we review this expenditure. Therefore, the utility would have retained these cost savings for five years.

Figure C.4 shows that we would calculate a 'year 0 adjustment' to ensure permanent savings made in the last year of a determination are only held for the length of the determination period, in this example for four (and not five) years.

In this example, a permanent efficiency saving of $20 is made in Year 0. Without an adjustment factor, the business would retain this saving for five years. The 'Year 0 adjustment' offsets the fifth year of benefit (received in year 4) with a corresponding negative adjustment to the allowance in the first year of the next regulatory period (ie, year 5). Note that we are inflating this adjustment term by the WACC[327] in order to ensure incentives are fully equalised in present value terms (because the WACC represents our view of the appropriate discount rate).

327 If cash flows are assumed to occur at the end of each year, this should be the WACC used for regulatory period 2.

Figure C.4 ECM adjustment to ensure savings are held for no longer than determination

	Regulatory Period 1				Regulatory Period 2				
	ECM1				ECM2				
Year	**–**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
	$	**$**	**$**	**$**	**$**	**$**	**$**	**$**	**$**
Base allowance	100	100	100	100	100	80	80	80	80
Actual	80	80	80	80	80	80	80	80	80
Under (over)	20	20	20	20	–	–	–	–	–
Outperformance	20	20	20	20	–	–	–	–	–
Performance gain	20	20	20	20					
Incremental gain	20	–	–	–					
ECM1 calc									
▼ year 0	20	20	20	20	20				
▼ year 1		–	–	–	–	–			
▼ year 2			–	–	–	–	–		
▼ year 3				–	–	–	–		
▼ year 0 adjust.						-21			
ECM benefit						**-21**	**–**	**–**	**–**
Total allowance		**100**	**100**	**100**	**100**	**59**	**80**	**80**	**80**
Total gain (loss)	**20**	**20**	**20**	**20**	**20**	**-21**		**–**	**–**

Data source: We have assumed a real WACC of 5% in this example. The numbers in this figure are illustrative only.

Retaining the saving for five years would be inconsistent with the purpose of the ECM of equalising incentives over time. The business may have an incentive to delay savings until the last year of a determination period in order to maximise returns.[328]

The adjustment term only applies to a permanent efficiency saving that is made in the final year of a regulatory period. Because the business receives this benefit for five years initially (years 0, 1, 2, 3, and 4), the adjustment term inflates the fifth year of this benefit (received in year 4) by the WACC and returns it to customers in year 5.

328 This incentive already exists under the current form of regulation.

D Demand volatility adjustment mechanism

As outlined in Chapter 3, we have made a decision to implement a demand volatility adjustment of $10.1 million in the 2020 determination period to address over-recovery in the 2016 determination period.

Our demand volatility adjustment mechanism (DVAM) approach is set out below.

1. Limit the analysis to the three years of actual water sales data available in the 2016 determination period. This is because actual water sales for 2019-20 will not be available until after our 2020 Determination has commenced. This negates the need for an adjustment in the future to account for the difference between forecast and actual water sales for 2019-20.

   We will use a staggered 4-year approach in further determination periods. This means that water sales from 2019-20 to 2022-23 will be used for the DVAM assessment for the 2020 determination period.

2. Calculate the revenue raised from water sales over the three years to 30 June 2019. We have used revenue from water sales, rather than sales volumes because the intended purpose of the DVAM is to address revenue volatility. We have included holding costs in our calculations to account for interest earned or foregone as a result of any over- or under-recovery of revenue.

3. Determine if the variation between forecast and actual revenue from water sales exceeds the 5% (+ or -) materiality threshold, and if so, calculate the amount above the 5% threshold. This is the demand volatility adjustment amount.

4. Implement the demand volatility adjustment amount through the NRR, spread over each year of the 2020 determination period in an NPV-neutral way.

In this appendix, we set out our calculations for the $10.1 million demand volatility adjustment, and discuss alternative options we considered for the DVAM approach.

We also discuss our approach to the DVAM assessment for the 2020 determination period, taking into account our decision to include a dynamic water usage price.

D.1 Hunter Water has triggered the demand volatility adjustment mechanism

Table D.1 compares Hunter Water's actual water sales and revenue from water sales against those set in IPART's 2016 Determination. The total difference between actual water sales and forecast water sales (from 2016-17 to 2018-19) is 15,697 ML (or 9.5%) higher. The annual difference ranges from 4.4% higher (actual compared to forecast) in 2016-17 to 13.3% higher in 2017-18. Hunter Water attributed higher water sales over this period to lower than expected rainfall and population growth in excess of forecasts.[329]

Using the DVAM approach set out above, we determined that Hunter Water over-recovered by $32.5 million ($2019-20) or 7.2% over the 3-year period from 2016-17 to 2018-19. Our adjustment of $10.1 million ($2019-20) represents the incremental 2.2% above the 5% materiality threshold. This is slightly lower than the demand volatility adjustment of $10.3 million presented in our Draft Report as we applied updated inflation figures to our calculations.

Table D.1 Decision on the demand volatility adjustment

	2016-17	2017-18	2018-19	Total
Water sales (ML)				
IPART 2016 Determination	54,779	55,376	55,906	166,061
Hunter Water actual	57,213	62,715	61,830	181,758
Difference (ML)	2,434	7,339	5,924	15,697
Difference (%)	4.4%	13.3%	10.6%	9.5%
Revenue from water sales, including holding costs[a] ($millions, $2019-20)				
IPART 2016 Determination	156.5	149.2	142.1	447.9
Hunter Water actual	158.7	167.3	154.3	480.3
Difference (ML)	2.2	18.1	12.2	32.5
Difference (%)	1.4%	12.1%	8.6%	7.2%

[a] We used the pre-tax WACC of **5.9%** from the 2016 Determination to calculate holding costs.

Note: The difference between the percentage variance in water sales and percentage variance in revenue from water sales is mainly due to location-based pricing ie, some of Hunter Water's industrial and commercial customers that consume in excess of 50,000 kL per year pay a lower water usage price.

Hunter Water provided updated water sales for 2018-19 through email correspondence with IPART. This differs from Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 11 as the updated figure reflects actual water sales. No revisions were made to water sales for 2016-17 and 2017-18.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 11, correspondence with Hunter Water (email), 2 December 2019 and IPART calculations.

329 Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 11 and correspondence with Hunter Water (email), 2 December 2019.

D.2 We decided against using four years of data

While our approach is to use only 3 years of data from the 2016 determination period for the DVAM assessment, we did consider the option of using data for the full 4-year regulatory period (ie, including data from 2016-17 to 2019-20). Actual water sales in 2019-20 are expected to fall below IPART's 2016 allowance due to the introduction of water restrictions in September 2019.[330] Under-recovery in 2019-20 would partly offset over-recovery over the first three years of the 2016 determination period, and impact the magnitude of the demand volatility adjustment.

Our decision is to use three years of data, given that actual water sales for 2019-20 will not be available until after our 2020 Determination has commenced. This negates the need for an adjustment in the future resulting from the use of estimated, rather than actual, data. Hunter Water said in its response to the Issues Paper that it accepts our reasoning for only applying the DVAM to years of actual water sales.[331]

D.3 We decided against adjusting for additional efficient operating costs

We indicated in our Issues Paper that we would consider subtracting the additional costs associated with servicing higher demand from the demand volatility adjustment.

To calculate the additional efficient operating costs, Hunter Water applied its SRMC of $0.11/kL to the volume of water sales above those set in IPART's 2016 Determination. Hunter Water determined that in aggregate, it incurred an additional $1.8 million in operating costs by supplying this water. As the DVAM only applies to over-recovery above the materiality threshold, it then calculated the portion of operating costs related to water sales above the 5% threshold – this resulted in a proposed adjustment of $0.6 million over the three years.[332]

Given that the additional efficient operating costs represent only a small percentage of water usage charges, we consider that adjusting for marginal costs would have little material impact on demand volatility adjustment outcomes.[333] As a result, under our approach to applying the DVAM, we will return all of the revenue above the 5% threshold to customers.

We would apply this symmetrically in the case of under-recovery ie, include a revenue adjustment to provide Hunter Water with all of the revenue below the -5% threshold if it sells less water than forecast, without making an adjustment for the avoided marginal costs resulting from lower demand. We expect that the incurred and avoided marginal costs will offset each other over time.

330 Hunter Water has provided an updated water sales figure for 2019-20 based on actuals up to the end of January 2020, and forecasts for the remaining five months. This updated water sales figure of 56.1 GL for 2019-20 is 0.4% lower than IPART's allowance of 56.3 GL set in the 2016 Final Report. Correspondence with Hunter Water (email), 11 February 2020.

331 Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, p 37.

332 Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, p 36.

333 Hunter Water's SRMC of $0.11/kL is around 5% of its water usage charge of $2.37/kL.

D.4 Application of the demand volatility adjustment mechanism with dynamic pricing

We have made a decision to introduce a dynamic water usage price for Hunter Water for the 2020 determination period to mitigate the impact of drought-related expenditure and lower water sales if restrictions are in place (see Chapter 8). As a result, we have adopted two sets of forecast water sales volumes – a non-drought forecast based on 'average' weather conditions (shown in Table 7.2), and a drought forecast, to apply when water storage levels fall below 60% and remain in place until water storage levels rise above 70% (shown in Table 7.4). This means that for our DVAM assessment for the 2020 determination period, we will need to calculate a composite revenue forecast that represents the weighted average of revenue from water sales across non-drought and drought periods.

Under our staggered 4-year approach, we will use water sales from 2019-20 to 2022-23 for the DVAM assessment for the 2020 determination period. As we did not produce a water sales volumes forecast for drought periods for 2019-20 (ie, the final year of the 2016 determination period), our composite revenue forecast will be based on:

- The annual water sales forecast for 2019-20, and the water usage price for 2019-20 presented in IPART's 2016 Final Report for Hunter Water[334]
- Revenue from water sales across non-drought and drought periods for 2020-21 to 2022-23, based on non-drought and drought forecast water sales volumes and corresponding water usage prices.

We note that this is slightly different to the approach set out in IPART's 2020 Final Report for Sydney Water.[335] We have decided against using seasonally adjusted non-drought and drought forecast water sales volumes for the composite revenue forecast in the case of Hunter Water. This is because we do not have sufficient data for demand under drought conditions to produce robust seasonality factors, and in turn, seasonally adjusted drought forecast water sales volumes.

334 IPART, *Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020, Final Report*, June 2016.

335 IPART, *Review of Prices for Sydney Water from 1 July 2020, Final Report*, June 2020.

E Continuing efficiencies

We have decided to apply a continuing efficiency adjustment to Hunter Water's expenditure. This adjustment reflects that ongoing productivity improvements should reduce costs gradually over time. It represents the scope for a top performing or 'frontier' company to continue to improve efficiency over time as innovation and new technologies enable firms to do more with less inputs.

We found that a sustained average annual MFP improvement[336] of 0.8% per year was achievable in Australia.[337] Therefore, we have decided to apply an annual, cumulative continuing efficiency factor of 0.8% to expenditure in years 2, 3, and 4 of the determination period. We decided not to apply the efficiency factor in year 1 in acknowledgment of the disruption to productivity and supply systems caused by the COVID-19 pandemic. We have applied this to the three price reviews concurrently undertaken – Sydney Water, Hunter Water and Water NSW.

This appendix presents our assessment of the continuing efficiency adjustment and addresses the key matters raised by each of the utilities in their submissions to our Draft Reports. The expenditure chapters in this report, and the Final Reports for the other two reviews also contain more information specific to each utility's expenditure.

E.1 We have decided to not apply a continuing efficiency adjustment in year 1 of the determination period

In response to our Draft Reports, all three utilities noted that economy-wide capital and labour productivity, and investment, were likely to decrease in the short term, especially in response to the COVID-19 pandemic. As such, if a continuing efficiency adjustment was to be applied, it should be materially lower than what was proposed in the Draft Report.[338]

At the time of writing, the impacts of the COVID-19 pandemic world-wide are highly uncertain. We looked at multi-factor productivity (MFP) data from previous economic downturns in Australia to understand the potential effect of COVID-19 on MFP over the next few years. Our analysis indicated that MFP growth could decline during the downturn. However, it could also bounce back quickly in the recovery phase. Further, average MFP growth over the downturn/recovery cycle could be close to long-term averages (see Table E.1).

336 We consider that MFP is a more useful productivity indicator than labour productivity for a public water utility, which must make substantial capital investments efficiently.

337 Productivity Commission (2019) *PC Productivity Bulletin* May 2019.

338 Water NSW, *Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020,* April 2020, p 36; Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 12; Sydney Water, *Submission to IPART's Draft Report – Review of prices for Sydney Water from 1 July 2020,* April 2020, p 10.

Table E.1 Changes in MFP over previous economic downturns in Australia

	Ave MFP growth during downturn	Ave MFP growth during recovery	Ave MFP over the 4 year cycle
1980s recession	-0.5% pa (1981-82 to 1982-83)	2.1% pa (1983-84 to 1984-85)	0.8% pa
1990s recession	0.1% pa (1990-91 to 1991-92)	1.8% pa (1992-93 to 1993-94)	1.0% pa
GFC (no recession)	-0.2% pa (2007-08 to 2008-09)	-0.1% pa (2009-10 to 2010-11)	-0.1% pa

Source: Productivity Commission, *2019 Productivity Bulletin*, May 2019, Figure 1.6; IPART analysis.

We acknowledge that during the first year of the determination period, there will likely be an increase in activity of the utilities in reaction to the changed circumstances arising from COVID-19. This may impact MFP if output does not also increase at the same rate. It is reasonable to assume that after 12 months, the utility would have adjusted to the new operating circumstances and further refined its systems. At that point, the impact of COVID-19 on productivity should be small, as the utilities would have had time to adjust inputs to more efficiently produce the new level of output.

On this basis, we have decided not to apply the efficiency factor in year 1 of the determination period. Given the efficiency adjustment accumulates over time, setting a 0.0% adjustment in the first year reduces the 'weighted-average' adjustment to around 0.5% over the four years.

Previous downturns have been followed by strong productivity growth in the recovery phase. Our estimate of continuing efficiency (0.8% per year) is a long term average of MFP. We will examine how productivity changes over the 2020 determination period, and whether there is any recovery that offsets or exceeds the temporary impacts of COVID-19. This may be reflected in the continuing efficiency adjustment we apply for future price reviews.

E.2 We based our continuing efficiency adjustment on historical productivity improvements in the market sector of the economy

Our objective is to establish a measure of long term average productivity growth for the Australian economy as a proxy measure of the expected efficient frontier shift over the upcoming determination period.

Our decision to apply a 0.8% annual continuing efficiency adjustment is based on MFP data sourced from the Productivity Commission. It represents the average for the market sector of the economy represented by the 12 selected industries identified by the Productivity Commission over 40 years (see Box E.1). The utilities raised a number of issues with our application of this data. We have reviewed these comments and do not consider there to be a case to change our approach. We address these in turn in the sections below.

In the Draft Report, we looked at both economy-wide and market sector data, which indicated a range of 0.6% and 0.8% per year was consistent both with recent and much longer-term productivity averages in these sectors. We have since revised this approach for the Final Report, focusing on the market sector data. The other components of the whole economy are the non-market sector (eg, public administration), which we do not regard as being relevant to a utility that sells private goods such as water and wastewater services.

We note that the Productivity Commission states the most accurate estimates of productivity are for the market sector industry groups — where prices are set and therefore easier to value output. It is more difficult to measure outputs for the industries in the non-market sector.

Box E.1 Industry groupings

Market sector (12 industries)	Market sector (16 industries)
Agriculture, forestry & fishing	Market sector (12 industries) plus
Mining	Rental, hiring & real estate services
Manufacturing	Professional, scientific & technical services
Electricity, gas, water & waste services	Administrative & support services
Construction	Other services
Wholesale trade	
Retail trade	**Non-market sector (4 industries)**
Accommodation & food services	Public administration & safety
Transport, postal & warehousing	Education & training
Information media & telecommunications	Health care & social assistance
Financial & insurance services	Ownership of dwellings
Arts & recreation services	

Source: Productivity Commission, *Productivity Bulletin*, May 2019, Box A.1, p 49.

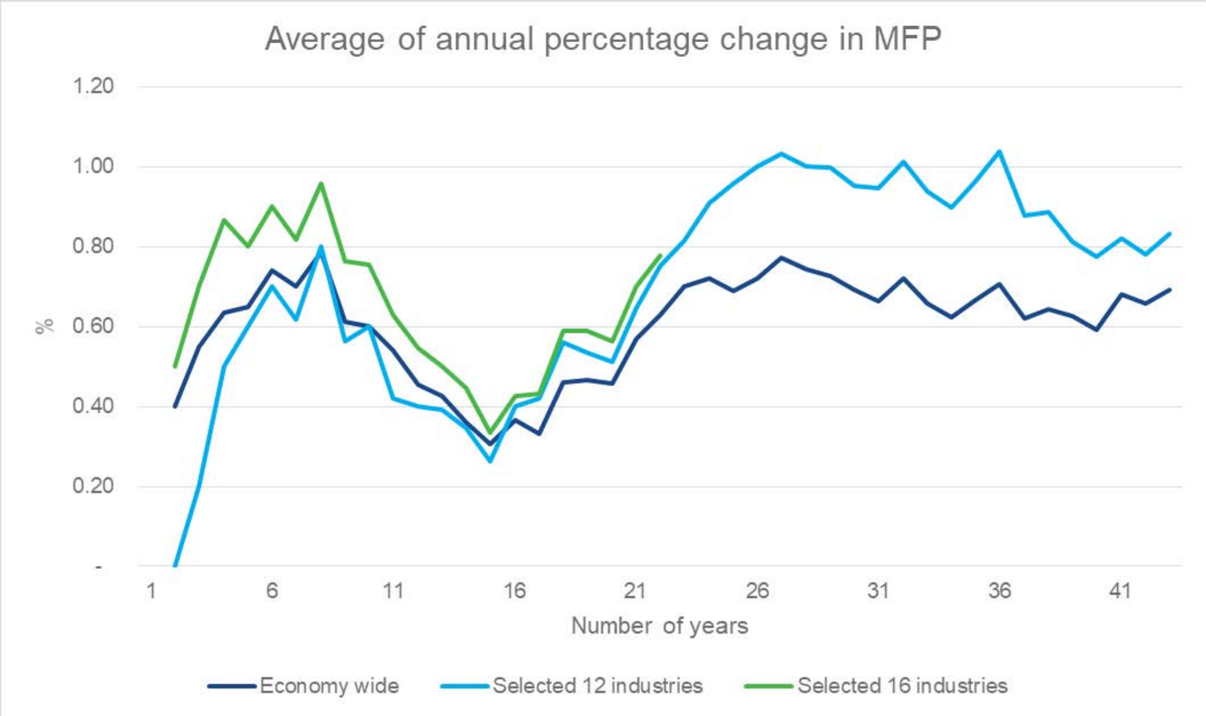
Evidence from the Productivity Commission

The Productivity Commission's 2019 Productivity Bulletin presents MFP estimates for the Australian economy for approximately 40 years, from 1975-76 to 2017-18. We consider that MFP is a more appropriate indicator of the potential productivity improvements for a water utility than labour productivity. MFP captures the effect of capital productivity as well as labour productivity. Both are important to capital intensive businesses like water utilities.

Figure E.1 shows the arithmetic averages of the annual percentage changes in MFP over various time periods ending in 2017-18. That is, one-year, 2-year average, 3-year average, and so on. It shows that the average economy-wide MFP growth rate was between 0.4% and 1.0% per year over the most recent six years. Then that average dropped to around 0.3% per year going back to 2006-07, before returning to the range 0.6% to 1.0% per year when examining averages over 23 years or more.

In the graph below, on the horizontal axis, 1 corresponds to the 2017-18 year only, 11 corresponds to the eleven-year period 2006-07 to 2017-18, and so on.

Figure E.1 Average of annual MFP changes (%)



Data source: Productivity Commission, *PC Productivity Bulletin 2019 – Charts,* May 2019; IPART analysis.

E.2.1 Market sector data is a better reflection of potential efficiency gains than the utilities sector

We consider it is appropriate to base the continuing efficiency factor on market sector data rather than data specific to the utilities sector. Our selected 0.8% annual frontier shift represents the long-term average for the market sector of the economy represented by the 12 industries identified by the Productivity Commission. Broadly, this is because productivity initiatives affect all sectors of the economy, including water utilities and their supply chains.

While the utilities sector seems similar in profile to the water utilities, the negative rates of productivity growth shown in Table E.2 below are probably not reflective of an efficient frontier. Rather, they likely reflect the particular issues that have been experienced in Australia over these time frames, especially in the energy sector, which has seen significant restructuring and is not considered to be performing well.

Table E.2 MFP growth, selected industries, selected time periods (average annual %)

Industry	8 years - 2003-04 to 2011-12	6 years - 2011-12 to 2017-18	2017-18
'Utilities' - Electricity, gas, water and waste services	-3.83	-0.42	-1.74
All industries	0.01	0.7	0.44

Note: The all industries line item is using data from the 16 selected industries in the market sector. Comparable data was not available for the 12 selected industries in the table. However, we have observed similar averages in MFP growth between these industry groupings.
Source: Productivity Commission, *2019 Productivity Bulletin*, May 2019, Figure 1.7; IPART analysis.

Submissions argued that economy-wide data was not a suitable proxy for water utilities' MFP growth

In response to our Draft Report, Sydney Water commented that economy-wide MFP was not a suitable proxy for water utility productivity despite the energy sector depressing the utility-specific estimates.[339] Hunter Water added that the water sector had not seen high levels of productivity growth in the past, and some industries have experienced greater efficiency from technology. It also noted that Productivity Commission suggested caution in using MFP cycles for the aggregate market sector to analyse industry MFP over time.[340]

Our view is that using economy-wide data (and focusing on the market sector of this data set) represents the efficiencies that could be available to utilities, through internal initiatives or incorporated through supply chains. For instance, productivity initiatives like better logistics through operations research, and ICT systems replacing paper-based systems have affected all sectors of the economy, including water utilities. Wastewater and water treatment plant technology can continue to improve the performance on energy, labour, raw material and even land utilisation. New pipe-making technology continues to deliver pipes that are cheaper to buy and that perform better.

We agree with Hunter Water that the economy-wide data may include industries with higher productivity gains than water utilities. However, it could also include some industries with lower productivity, such as labour-intensive services industries.

Finally, we note there may be little competition in the water sector at this stage (ie, large segments are monopolies) – which may be a factor in why productivity gains have not been as great as in other sectors (as observed by Hunter Water). However, our regulation is aimed at replicating the efficiency effects of competitive markets, which is why we are basing the continuing efficiency adjustment on market sector data.

E.2.2 A 40-year time frame is appropriate to analyse MFP growth

Hunter Water submitted that the 40-year the time period we used was too long. MFP data from 40 years ago no longer reflected the current environment for productivity growth.[341]

We maintain that our approach provides the most objective measure of long term average productivity growth in the Australian economy. We consider the sample needs to be sufficiently long to include a full business cycle (and it has been over 25 years since the last recession in Australia). Any decision to truncate the available data would be subjective.

In addition, we consider that 0.8% per year is broadly consistent both with recent averages and much longer-term productivity averages. Table E.3 below presents average annual MFP growth over various time horizons ending with 2017-18.

339 Sydney Water, *Submission to IPART's Draft Report – Review of prices for Sydney Water from 1 July 2020*, April 2020, pp 110-111.

340 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, pp 10, 12.

341 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 10.

Table E.3 Annual MFP growth, economy-wide, selected averaging periods to 2017-18 (%)

	5 years	10 years	20 years	40 years
Selected 12 industries	0.70	0.42	0.65	0.82
Economy wide	0.74	0.54	0.57	0.68

Source: Productivity Commission, *PC Productivity Bulletin 2019 – Charts,* May 2019; IPART analysis.

We observed similar averages for the economy-wide MFP growth, and the MFP growth for the 12 selected industry and 16 selected industry market sector groups presented in the Productivity Commission's bulletin. The 12 industry group has a longer historical data series available than the 16 selected industry group.

This also includes periods of low productivity growth

Submissions to our draft decision commented that our MFP analysis selectively ignored recent trends of low productivity growth, and that it was inappropriate to exclude periods of low productivity from 2003 to 2012.[342]

We did not exclude any years from our assessment. Figure E.1 includes every available year's data. We examined why the 10-year averages shown in Table E.3 are so much lower than averages over shorter and longer periods. The reason is that the 10-year averages give greater weight to the low productivity years in the period before and immediately after the Global Financial Crisis.

Further, Table E.2 indicates that between 2003-04 and 2011-12, average annual MFP growth was only 0.01%. This period of low productivity growth may reflect turmoil in financial markets rather than the productivity that would be expected in more normal circumstances.

E.2.3 Our approach could be conservative for a frontier company

Our decision to use 0.8% per year (ie, the average of the market sector) is conservative when trying to emulate a frontier company. We consider that this data is the best available and use it as a proxy for the potential efficiency gains.

Hunter Water and Sydney Water commented that this MFP data set includes utilities that are not on the 'frontier', so it is not clear why this should reflect potential 'ongoing' efficiency by a frontier company.[343] Sydney Water added that IPART had not demonstrated how utilities could achieve higher productivity growth than the Australian economy as a whole (ie, 0.7%).[344]

342 Sydney Water, *Submission to IPART's Draft Report – Review of prices for Sydney Water from 1 July 2020,* April 2020, p 111; Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, pp 11-12.

343 Sydney Water, *Submission to IPART's Draft Report – Review of prices for Sydney Water from 1 July 2020,* April 2020, p 111; Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 10.

344 Sydney Water, *Submission to IPART's Draft Report – Review of prices for Sydney Water from 1 July 2020,* April 2020, p 10.

Of course, the economy as a whole includes the non-market sector, which we have excluded for the reasons stated above. We are not asking the utilities to achieve higher productivity growth than the 0.8% per year achieved by the market sector.

It is correct that the data includes non-frontier industries, including firms from all market sectors—not just frontier companies. Our productivity target therefore includes some firms which fall behind the efficient frontier. Only focusing on frontier companies would likely result in an even higher continuing efficiency adjustment.

We consider the utilities are best-placed to identify specific productivity measures that they should take. We are identifying a productivity benchmark and requiring utilities that are not otherwise subject to competitive disciplines to meet that benchmark in the longer term. As noted, it is possible that a frontier company could exceed this benchmark and achieve greater efficiency gains.

E.3 A continuing efficiency adjustment should apply to both operating and capital expenditure

The continuing efficiency adjustment is important to ensure that water utilities continue to innovate and deliver efficiency benefits to customers. By putting a quantitative target in place, we establish an expectation of continuous improvement.

For any capital intensive business, some of the most important opportunities for productivity gain are in its capital program. Some of the activities carried out in delivering its services such as project cost estimation, capital program planning, procurement and delivery of capital works are areas where innovation and process improvements provide scope for efficiency gains.

Therefore, we consider an ongoing adjustment for productivity improvements is justified and it should be applied to both operating and capital expenditure.

F Capital expenditure

This appendix provides additional detail on how we made our decisions on the efficient level of Hunter Water's:

- Historical capital expenditure over the 2016 determination period.
- Forecast capital expenditure over the 2020 determination period.

It sets out how we considered Aither's observations and recommendations on Hunter Water's capital expenditure allowance, as well as stakeholder feedback on our draft decisions, and the adjustments we made to specific projects and programs.

Our decision is to accept most of Aither's recommended adjustments to specific projects and programs. The exception is its recommended $7.2 million reduction to Hunter Water's proposed expenditure on the treatment plant chemical containment and safety upgrades program. Our change in view since the draft report is due to additional information and comments received in submissions. We consider this proposed expenditure to be efficient and have included it in Hunter Water's capital expenditure allowance for the 2020 determination period.

We have applied a continuing efficiency factor of 0.8% per annum from 2021-22 onwards, leading to a reduction in efficient capital expenditure of $7.1 million over the determination period.[345] Aither did not recommend a continuing efficiency factor for capital expenditure. We have also deducted $5.8 million for Hunter Water's proposed modifications to receiving stations for tankered trade waste at some of its wastewater treatment works. This decision is discussed further at chapter 13.

F.1 Capital expenditure over the 2016 determination period

Hunter Water's actual/forecast[346] capital expenditure over the 2016 determination period was considerably higher than we allowed for when setting prices in 2016.

In total, Hunter Water forecasts that its actual capital expenditure over the 2016 determination period would be $100.1 million[347] (or 25%) higher than we used to set prices in 2016.[348] This is shown in Figure F.1 below.

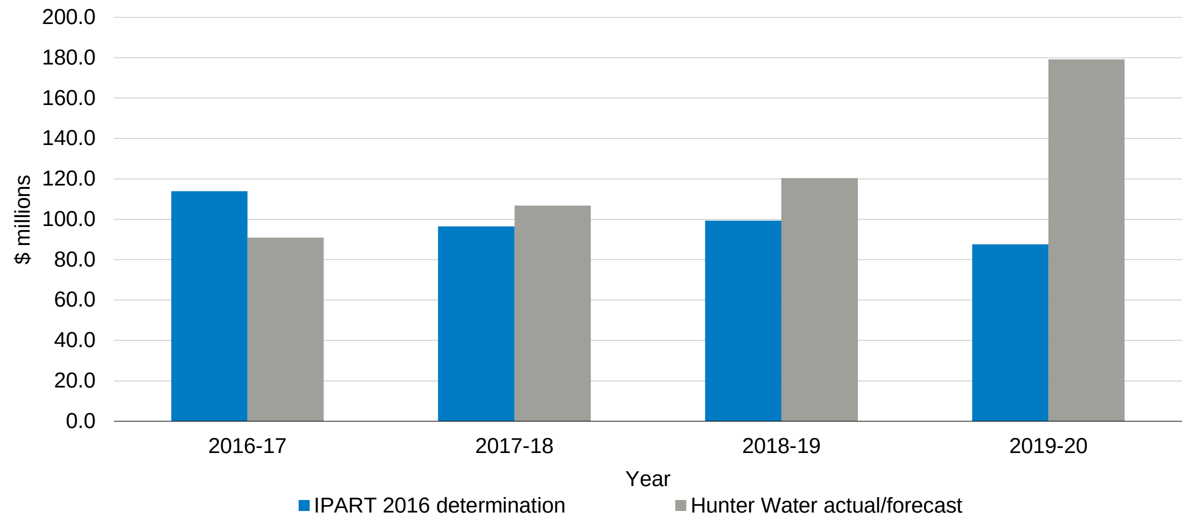
345 We have not applied this efficiency factor in year 1 of the determination period, as we consider the impacts of COVID-19 will inhibit potential productivity growth in 2020-21.

346 The final year of the 2016 determination period (2019-20) is yet to be finalised and as such figures for 2019 - 20 are forecasts.

347 Hunter Water Annual Information Return, September 2019; IPART analysis.

348 Excluding capital expenditure on discretionary projects and before adjustments to shift $5 million for Farley WWTP upgrade to the 2020 determination period.

Figure F.1 **Hunter Water's actual/forecast and IPART's 2016 determined capital expenditure over the 2016 determination period ($millions, $2019-20).**



Note: Excludes capital expenditure on discretionary projects. Figures for 2019-20 are forecasts.

Data source: Hunter Water annual information return, September 2019; IPART analysis.

This figure shows that Hunter Water has spent more than we allowed for when setting prices in 2016 in the final three years of the period.

We have reduced historical capital expenditure by $5 million

In its assessment of Hunter Water's efficient historical expenditure, Aither recommended one adjustment, to the Farley WWTP upgrade project.

Farley WWTP upgrade

The Farley WWTP discharges effluent to Fishery Creek, which the EPA has indicated is unable to receive nutrient loads above Hunter Water's existing licence conditions. An upgrade to the plant is required to address significant growth in the catchment, as well as specific asset reliability and performance concerns.

When we set prices in 2016, we included an allowance of $13 million in the current determination period to increase treatment capacity to ensure mandatory standards continue to be met. Further investigation subsequently identified additional challenges, including a lack of compliance with biosolids management requirements, as well as potential groundwater contamination arising from the condition of some assets on the site. The proposed capital expenditure has increased to $70 million, including $57 million over the 2020 determination period.[349]

[349] Aither, *Hunter Water expenditure review, Final report*, 14 December 2019, p 53.

Aither's assessment

Aither assessed capital expenditure on this project as broadly efficient. This project has expanded in scope to address some significant issues and associated risks at the site. Sustained concern from the EPA is indicative of the project need, while a suitable and broad range of options has been identified and robustly assessed.[350]

While Aither considered the total costs and scope of the project to be efficient, its review found that it was unlikely that Hunter Water would be able to fully invest the $14 million works planned for the Farley WWTP upgrade in the current period, given that the tender process was only due to be completed in January 2020. As such it recommended that $5 million should be deferred to the forecast period, from 2019-20 to 2020-21.[351]

Our decision is to accept Aither's recommended $5 million adjustment to the Farley WWTP upgrade.

F.2 Forecast capital expenditure over the 2020 determination period

Excluding capital expenditure on discretionary projects, Hunter Water has proposed $706.2 million in capital expenditure over the 2020 determination period.[352] This represents an increase of $308.8 million (77.7%) from the IPART allowance of $397.4 million for the 2016 determination period, and an increase of $208.7 million (42.0%) over its actual/forecast expenditure for the same period.

Aither recommended reducing Hunter Water's capital expenditure by $47.9 million to $658.3 million.[353] In making its recommendation, Aither made a number of specific adjustments to Hunter Water's proposed capital projects and programs.

We have accepted Aither's recommended adjustments to Hunter Water's proposed capital expenditure for the 2020 determination period, with the exception of its recommended $7.2 million reduction to Hunter Water's proposed expenditure on the Treatment Plant Chemical Containment and Safety Upgrades Program. We consider this proposed expenditure to be efficient and have included it in Hunter Water's capital expenditure allowance for the 2020 determination period.

Our decisions on specific adjustments are shown below in Table F.1. Our rationale for these adjustments are described in the following sections. Our decision not to accept Hunter Water's proposed increase of $5.8 million to modify five receiving stations for trade waste is discussed at chapter 13.

350 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 53.

351 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 53.

352 Hunter Water Annual Information Return, September 2019; Aither, *Hunter Water expenditure review*, *Final Report,*14 December 2019, pp 43,69; IPART analysis.

353 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, pp 43,69,81-82 and IPART analysis.

Table F.1 Decisions on project and program adjustments to Hunter Water's proposed capital expenditure ($millions, $2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Hunter Water's 1 July proposal[a]	**195.9**	**180.7**	**170.6**	**159.1**	**706.2**
Water network capacity upgrades	-1.4	-1.4	-1.4	-1.4	-5.4
Minor asset renewals programs – wastewater	-2.0	-2.3	-2.3	-2.6	-9.2
Farley WWTP upgrade	5.0	0.0	0.0	0.0	5.0
Other wastewater treatment plant upgrade program	0.0	0.0	0.0	-16.2	-16.2
Water treatment minor works	-0.3	-0.3	-0.3	-0.3	-1.4
Water network (critical mains)	0.0	0.0	-1.9	-1.9	-3.8
Minor water mechanical and electrical network assets	-0.3	-0.3	-0.3	-0.3	-1.0
Minor water structures	-1.3	-1.3	-1.3	-1.3	-5.4
Mandatory standards program	-0.8	-0.8	-0.8	-0.8	-3.2
Tankered trade waste project	-0.2	-0.2	-5.4	0.0	-5.8
Efficiency adjustment (0.8%, annual compounding from 2021-22)	0.0	-1.4	-2.6	-3.2	-7.1
Decision	**194.6**	**172.7**	**154.2**	**131.1**	**652.6**
Difference	***-1.3***	***-8.0***	***-16.3***	***-28.0***	***-53.6***

[a] Excludes capital expenditure on discretionary projects.

Source: Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, and IPART analysis.

We note that should the need for additional capital expenditure arise over the 2020 determination period, Hunter Water has a number of options including:

- Spending more than we have forecast as efficient, and if necessary seeking a (non-binding) letter of comfort from IPART regarding the extra capital expenditure being added to the RAB at the 2024 price determination
- Reprioritising its capital program within the capital allowance.

Where expenditure is exceptionally high and Hunter Water deems it necessary to do so, it can seek to have the next price determination (scheduled for 2024) brought forward.

F.2.1 Reduce other wastewater treatment plant upgrades by 16.2 million

Major WWTP upgrade program

Hunter Water proposes major upgrades at a number of WWTP, comprising asset improvements or capacity enhancements, primarily to address growth and environmental compliance issues.

Major upgrades (exceeding $10 million each) are proposed at seven WWTP sites, in addition to the Farley WWTP upgrade (reviewed separately and summarised in section F.1 above). A total expenditure of $107.9 million is proposed for the forecast period.[354]

[354] Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 55.

Aither's assessment

Aither recommended an adjustment of $16.2 million to Hunter Water's WWTP upgrade program.[355] In general, Aither found that the majority of the proposed expenditure (for five of seven projects) was efficient. It found that it responds to clear drivers and is underpinned by thorough and appropriate planning, design and procurement processes.[356]

However, Aither had three key issues which it considered warranted an adjustment, namely:

- Some proposed costs were to address biosolids management issues, which could be influenced by Hunter Water's broader and ongoing Biosolids Management strategy.
- There is uncertainty about the future discharge licence requirements from the EPA.
- That the timing of some of the growth-driven expenditure is overly conservative, and could be deferred without breaching compliance.[357]

Aither found that:

> While the eventual need for the projects is sound, it is considered that the timing is overly conservative, and the associated expenditure could be deferred without impacting Hunter Water's licence compliance. It is recommended that proposed expenditure of $24 million for these two projects be deferred beyond the forecast period.[358]

We note that Aither's recommendation of a $24 million reduction is based on a five-year forecast (ie, to 2024-25). As the 2020 determination period extends only to 2023-24, we have only included Aither's recommended adjustments for the first four years, or $16.2 million.

We note that in its submission to our Draft Report, the EPA states that:

> …the uncertainty about future licence conditions relates to the complex nature of HWC's Hunter River Model and Masterplan Proposal. It should also be noted that technical, scientific and policy review is ongoing, and a final determine on concentration and load limits or other regulatory approaches cannot be made until this work is completed.[359]

We consider that the complexity and ongoing review of these discharge licence requirements support our decision to defer some expenditure on this program. When the Hunter Water's licence requirements are settled, it will deliver a clearer path to capital expenditure required to meet those standards.

355 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 57.
356 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 55.
357 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 55.
358 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 55.
359 EPA submission to IPART Draft Report, 17 April 2020, p 1.

F.2.2 Reduce minor wastewater asset renewal programs by $9.2 million

Minor wastewater asset renewals

This program involves provision for the condition assessment and renewal of minor assets within the wastewater system.

Aither states that:

> This is a program that supports ongoing delivery of wastewater services to meet service standards. Hunter Water has proposed increases in renewing minor civil and mechanical and electrical assets in the forecast regulatory period to address asset condition and align associated risk with the business' risk appetite.[360]

Aither's assessment

Aither found that the proposed increase in expenditure on the **network** was efficient. It found that the increase in proposed expenditure on these network assets is proportionate to the increase in asset failures.

However, it has recommended a $6.0 million reduction in expenditure on **wastewater structures**. It found that there was "insufficient rigorous evidence…to substantiate the claim that increased expenditure is required on **wastewater structures** to address public safety risks and manage inflow and infiltration."[361]

It also recommended further reductions for **mechanical and electrical network assets, and treatment** assets. It found that the outcomes of the risk assessment approach were too conservative.

F.2.3 Reduce minor water structures by $5.4 million

Minor water network asset renewals

This program renews civil water structure assets in the water supply system (similar to the wastewater network renewals program discussed above).

Aither's assessment

Aither found that the increase in proposed expenditure on civil water structure assets was inefficient.[362] It justified its recommendation on a similar assessment as that for minor wastewater asset renewals shown above.

360 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 52.
361 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 53.
362 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 60.

F.2.4 Reduce water network capacity upgrades by $5.4 million

Water network capacity upgrades

Hunter Water constructs new transfer mains, pump stations and associated facilities to ensure growing demand from new customers across the system can be met. Two ongoing programs address, respectively, capacity upgrades in the existing network, and extension of the network to Greenfield areas.

Aither states that:

> Expenditure for network expansion into new subdivisions is $14.6 million for the forecast regulatory period, compared with $3.9 million in the current period. There is also a significant increase in expenditure forecast for existing network capacity upgrades, with $25.9 million proposed in the forecast period compared with $1.5 million in the current regulatory period. Growth in connections are expected to continue at a similar or slightly reduced rate in this period.[363]

Aither's assessment

Expenditure in the current period was much lower than forecast, arising from two main factors:

- A higher proportion of growth in existing, rather than Greenfield, areas, and
- Changing customer behaviour that no longer aligns with pre-2016 design standards for peak flows, which allowed Hunter Water to make use of spare capacity to cater for growth.

Given that Hunter Water has also advised that customer expectations for flow and pressure are being met expenditure in the current period was assessed as efficient.

Aither states that:

> …the unit rate adopted as the basis for forecast expenditure for general increases in *existing* network capacity upgrades is markedly higher than that used for Greenfield development. Hunter Water acknowledges that the cost per dwelling to service infill development (in established areas with an existing network) should generally be lower. However, this is partially offset by the need to upgrade parts of the existing network to deliver flows to greenfield development areas.[364]

Aither argues that Hunter Water did not provide specific evidence that unit costs are higher for capacity upgrades of existing assets. As such, it recommends that expenditure on this $16.9 million program should be reduced by 40 per cent. This results in a $6.8 million reduction over five years, or $5.4 million over the 4-year 2020 determination period.[365]

F.2.5 Reduce minor water mechanical and electrical network asset renewals by $1.0 million

Minor water mechanical and electrical network asset renewals

This program renews minor mechanical and electrical assets in the water supply system.

363 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 51.
364 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 52.
365 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, pp 52, 57.

Aither's assessment

Aither found that the increase in proposed expenditure on mechanical and electrical assets was not justified.[366] It based its recommendation on a similar assessment as that for minor wastewater asset renewals shown above.

F.2.6 Increase the Treatment Plant Chemical Containment and Safety Upgrades Program by $7.2 million

Treatment Plant Chemical Containment and Safety Upgrades

The Environment Protection Authority (EPA) has issued Hunter Water with directives to undertake containment and safety works at some of its sites, including Dungog WWTP.

Aither states that:

> This program involves a range of works across a number of Hunter Water's operational sites, to address environmental contamination risks and ensure that the facilities meet current health and safety requirements. It continues work commenced in the current period to address EPA directives at Dungog WTP (see related project above) as well as at 23 sites across the water and wastewater distribution network.[367]

The program addresses specific incidents and EPA requirements at certain sites as we as a more general assessment of chemical containment equipment across Hunter Water's network.

Aither's assessment

Aither found that the program as a whole was justified, given the specific directives from the EPA, and Hunter Water's identification of health and safety risks.

However, Aither considered that the scope and scale of Hunter Water's proposed expenditure was disproportionate and overly risk-averse. It states that:

> Specifically, Hunter Water has taken the view that condition assessment and the need for secondary containment installation is undertaken across all facilities, on the basis that the EPA has specified this need for selected facilities where directives are currently in place. However, there is no requirement or basis for this level of containment at facilities that are not the subject of EPA action, reflecting an overly risk averse position that arises because of the recent attention from the EPA. If not for the past poor performance by Hunter Water and related EPA directives, it is unlikely that this position would be taken, and a more risk tolerant approach would be acceptable (which is also consistent with wider industry practice).[368]

As such, Aither recommended a reduction in the program of $9 million over five years, or $7.2 million over the 4-year 2020 determination period. We accepted Aither's recommendation for our Draft Report.

366 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 60.
367 Aither, *Hunter Water expenditure review*, 14 December 2019, p 54.
368 Aither, *Hunter Water expenditure review*, 14 December 2019, pp 54-55.

In response to our Draft Report, both the NSW Environment Protection Authority (EPA)[369] and Flow Systems[370] argued that Hunter Water's proposed expenditure on this program was efficient.

The EPA states that in its submission that it "supports HWC's risk averse approach to this issue." It also argues that there have been adverse environmental impacts caused by spills and leaks of chemicals.[371]

Flow Systems argues that our decision to reduce our allowance for expenditure on this program:

> …does not seem to be in line with good corporate practice when applied to environmental compliance. The board of a private organisation in a similar position to Hunter Water would find it difficult to conclude that containment and safety works, if found wanting by the EPA at one site, should not be reviewed and brought to an acceptable standard at all sites, regardless of whether or not there had been a regulatory edict to do so.

Given these submissions, we have revised our decision to reduce this program, and have reinstated the reduction of $7.2 million we made in the Draft Report.

F.2.7 Reduce water network critical mains program by $3.8 million

Aither states that:

> Hunter Water has documented a strategic approach to the management of critical mains and has invested in a systematic program of condition assessment in the current program. This has helped inform a series of major (greater than $2 million) expenditure proposals in the forecast period:
>
> - Completion of the Balickera Tunnel works ($6.85 million), the commencement of which was supported in the 2016 Determination
> - $5.8 million for remedial works on three sections of the CTGM, which is consistent with the priorities in the detailed asset management plan for that asset
> - $15.8 million for a critical mains safety program.
>
> The critical safety mains program is a new initiative that arose following the failure of the CTGM. It involves risk-based, prioritised replacement or rehabilitation of pipelines and related works to address public safety and customer risks.[372]

Aither's assessment

While Aither considers that the method used to assess the impacts of potential asset failure is sound, it states that there are valid reasons that the project costs could be delayed and potentially higher than the outturn costs.

As such it recommends a reduction in the total project cost from $15.8 million to $12.0 million or $3.8 million over the 4-year determination period.[373]

369 EPA submission to IPART Draft Report, 17 April 2020, pp 1-2.
370 Flow Systems submission to IPART Draft Report, 8 April 2020, p 1.
371 EPA submission to IPART Draft Report, 17 April, 2020, p 1.
372 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 59.
373 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 60.

F.2.8 Reduce mandatory standards program by $3.2 million

Aither considered Hunter Water's broader systems and processes in making recommendations on efficient capital expenditure.

Aither's assessment

Aither found that for project scoping and decision making where there is a material dependency on subjective risk assessment, there are several other projects that Aither did not review that are likely to be overly risk averse.

As such, Aither has recommended a $3.2 million reduction over the 4-year 2020 determination period.[374]

F.2.9 Reduce water treatment minor works by $1.4 million

Hunter Water proposes to spend around $17.4 million over the next five years on minor mechanical and electrical upgrades of its water treatment assets.[375]

Aither's assessment

Aither found that the need for this program is clear, and that it is necessary to maintain service standards. However, it found that the extent of the expenditure proposed is not fully justified, and states that:

> This is on the basis that it is underpinned by a subjective assessment of risk that, in some cases, is unreasonably risk averse.

Aither has recommended a $1.4 million reduction over the 4-year 2020 determination period.[376]

374 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 70 and IPART analysis.
375 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, p 58.
376 Aither, *Hunter Water expenditure review*, *Final Report*, 14 December 2019, pp 58-59.

G Disaggregation of the RAB and asset lives

In its pricing proposal, Hunter Water proposed to disaggregate its existing four regulatory asset bases (RABs) into 21 smaller RABs.

This appendix sets out the method we used to disaggregate Hunter Water's RAB and the RAB values in each of the 21 RAB sub-categories.

It also sets out our decisions on the lives of both new and existing assets in each of those RAB sub-categories in order to calculate our allowance for depreciation.

G.1 Disaggregation of the RAB

Hunter Water's proposal to disaggregate its RAB

Hunter Water currently has four RABs, one for each of Water, Wastewater, Stormwater, and Corporate. In its pricing proposal, Hunter Water proposed to disaggregate each of these RABs into five sub-categories, namely:

- Civil
- Mechanical/Electrical
- Equipment
- Intangibles
- Non-depreciating.[377]

It has also proposed a 6th RAB sub-category in the Corporate RAB - in addition to the 5 corporate sub-categories above - as a Transition RAB. It proposed that the entire 1 July 2020 values of the Equipment and Intangible RAB sub-categories in corporate be transferred to a Transition RAB. It argues that this Transition RAB mitigates the impact on bills following the disaggregation. Hunter Water proposes that this RAB be allocated a long asset life (50 years) and would not be added to through future capex.

We disaggregated Sydney Water's RAB into 20 sub-categories at our 2008 Determination, on the basis that the methodology better reflects the efficient recovery of investment over the life of an asset.

Hunter Water has not proposed any adjustment to the total value of its RAB, only to how many categories that the RAB is split into.

377 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 6*, 1 July 2019, p 21.

We agree that we should disaggregate the RAB

The RAB was set at the 'line in the sand 'at a discount to the value of physical assets. As old assets expire and are renewed, they enter the RAB at full value. As such, eventually the RAB will match the full physical value of efficiently invested assets.

We agree that Hunter Water's historical depreciation allowance has been too low. In our 2016 Determination, we began transitioning asset lives lower, in line with the recommendations of our expenditure consultant, Jacobs.

We consider that disaggregating Hunter Water's RAB would produce a depreciation allowance that better matches the varying rate at which Hunter Water consumes its assets. It allows short lived assets, (such as ICT) to be depreciated quickly and long lived civil assets more slowly. It also helps ensure that the capital renewals enter the RAB at the same time that assets being replaced expire. This also means that through time, the prices customers pay in any given year better reflect the capital costs of the assets used to deliver their services.

We have used a different approach to that proposed by Hunter Water

Hunter Water has proposed that the value of each of the four business RABs be maintained. That is, that the total value of Water, Wastewater, Stormwater and Corporate RABs would not be affected by the disaggregation. We consider this is appropriate, as it helps ensure that capital expenditure for a particular service (eg, water) is recovered by the users of that service.

Hunter Water has proposed that the Water, Wastewater and Stormwater RABs be each broken down into the five sub-categories using the relative depreciated replacement cost (DRC) of the assets in its fixed asset register (FAR). This allows short-lived assets to be depreciated quickly and the full investment returned over the true life of the asset.

However, we consider that a better approach is to account for the impairment on assets when we first set the RAB at the line in the sand (LITS) in 2000. At the LITS, Hunter Water's RAB was 42% of the total DRC of its assets. As such, we have discounted assets that were constructed pre-LITS by 58% when disaggregating the RAB. We consider that this approach:

- Better reflects the type and value of assets that have contributed to the total RAB
- Aligns with our asset disposals policy, where pre-LITS assets are removed from the RAB at 42% of their sales price – to reflect their 'regulatory value'.

We have included a Transition RAB in corporate

Hunter Water has proposed that the Equipment and Intangibles sub-categories in the Corporate RAB be combined into a Transition RAB sub-category. It proposed that this Transition RAB of $129 million would be ring-fenced from future capital expenditure and depreciated over 50 years. Going forward, equipment and intangible capital expenditure would be added to those specific RAB sub-categories.[378]

[378] Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 6*, 1 July 2019, p 27.

It argues that this will moderate the impacts on customer bills arising from the RAB disaggregation and its proposed asset lives.[379]

This issue has arisen as a result of the difference between the asset life we have historical used for new assets (ie, 100 years)[380] and the actual useful life of new corporate equipment and intangible assets (proposed 5 years). This means that while investments in new equipment and intangible assets over the years have in reality expired quickly, the 100-year RAB life has meant that Hunter Water has been recovering the consumption of this capital much more slowly. This has created a situation where historical investments remain in the RAB far beyond their useful physical lives.

We consider that a Transition RAB is necessary to depreciate historical expenditure on corporate intangible and equipment assets. However, we do not consider that a 50 year asset life for this category is appropriate. This is discussed further below in our analysis of asset lives.

Our decision on the disaggregated RAB values together with those using the approach proposed by Hunter Water are shown in Table G.1. It shows that our approach delivers generally higher RAB values in relatively shorter lived asset categories (such as mechanical/electrical) and lower RAB values in longer lived asset categories, in particular non-depreciating.

379 Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 27.

380 Prior to our 2016 Determination we set asset lives for new assets at 100 years. At our 2016 Determination we began transitioning asset lives for new assets down to 84 years by 2019-20 (see IPART, *Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020, Final Report*, June 2016, p 79).

Table G.1 Decision on Hunter Water's opening RAB compared to Hunter Water's proposed disaggregation approach ($million, $2019-20)

Business unit	RAB sub-category	Decision	Hunter Water proposed approach
Corporate	Civil	15	14
	Electrical/Mechanical	6	3
	Equipment[a]	0	0
	Intangibles[a]	0	0
	Corporate Transition[a]	116	127
	Non-depreciating	11	5
	Sub-total	**148**	**148**
Water	Civil	1,027	1,071
	Electrical/Mechanical	150	99
	Equipment	12	9
	Intangibles	0	0
	Non-depreciating	25	35
	Sub-total	**1,214**	**1,214**
Wastewater	Civil	796	725
	Electrical/Mechanical	201	131
	Equipment	12	7
	Intangibles	0	0
	Non-depreciating	396	541
	Sub-total	**1,405**	**1,405**
Stormwater	Civil	45	45
	Electrical/Mechanical	0	0
	Equipment	0	0
	Intangibles	0	0
	Non-depreciating	1	1
	Sub-total	**46**	**46**
Total		***2,813***	**2,813**

[a] The Corporate Transition RAB ($116 million) is the sum of the Equipment ($84 million) and Intangibles ($32 million) RABs derived using our disaggregation method.

Note: Hunter Water's proposed figures show the RAB values produced using its disaggregation approach. Total RAB values have been adjusted for efficiency and inflation and as such differ from those contained in Hunter Water's July 2019 pricing proposal. Further RAB comparisons are shown in Appendix H.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, pp 13, 22-25; Hunter Water's fixed asset register; IPART analysis.

G.2 Asset lives

Hunter Water proposed significantly shorter lives

For the purpose of calculating the depreciation allowance, Hunter Water has previously had four RABs: Water, Wastewater, Stormwater and Corporate; and we applied an asset life for new assets and an asset life for existing assets to each of these RABs. Table G.2 shows the asset lives used in previous Hunter Water price reviews.

Table G.2 Asset lives used in previous Hunter Water Determinations (years)

Year	Pre-2016	2016-17	2017-18	2018-19	2019-20
New assets	100	96	92	88	84
Existing assets	70	69	68	67	66

Note: In our 2016 price review, we commissioned our expenditure consultant, Jacobs, to review Hunter Water's asset lives. Jacobs recommended 67 years for new assets and 62 years for existing assets, which we accepted. However, we decided to transition towards these asset lives to mitigate bill impacts (see IPART, *Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020, Final Report*, June 2016,p 78).

Source: IPART, *Hunter Water Corporation's water, sewerage, stormwater drainage and other services – Review of prices from 1 July 2013 to 30 June 2017, Final Report*, June 2013, p 84; IPART, *Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020, Final Report*, June 2016, p 79.

Hunter Water proposed to apply revised asset lives to each of its new RAB sub-categories as set out in below.

Table G.3 Hunter Water's proposed asset lives for 2020 Determination (years)

	Water		Wastewater		Stormwater		Corporate	
	Existing assets	New assets	Existing assets	New assets	Existing assets	New assets	Existing assets	New assets
Civil	48	90	62	90	47	117	22	42
Electrical/mech.	16	25	16	25	16	25	16	25
Equipment	5	11	5	11	5	11	5	11
Transition	n/a	n/a	n/a	n/a	n/a	n/a	50	n/a
Intangibles	5	5	5	5	5	5	5	5
Non-depreciating	0	0	0	0	0	0	0	0

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 26.

These are significantly shorter than what we have used to previously set prices, with the exception of new assets in the Civil RAB sub-category across all services. Further, the proposed asset lives for its new assets are also shorter than Sydney Water's, on a weighted average basis (see Table G.4).

Table G.4 Comparison of weighted average life of existing and new assets (years)

		Weighted average life
Existing assets at July 2020	HWC proposed[a]	50
	2016 Determination	65
New assets over 2020 Determination	HWC proposed	56
	SWC proposed	71

a Includes non-depreciating assets for comparison. If non-depreciating assets are excluded from the calculation, the weighted average asset life of existing depreciable assets reduces to 38 years.

Source: Hunter Water Annual Information Return, July 2019; Sydney Water Annual Information Return, June 2019; IPART analysis.

Hunter Water states that its proposed asset lives for existing assets are based on regular revaluations undertaken by external independent asset consultants. Each of the five categories has a mix of assets with similar lives, and the weighted average asset life allocated to each category used weightings based on the depreciated value of each asset.[381] Its proposed lives for new assets are in line with the asset lives in the *NSW Reference Rates Manual* published by the NSW Office of Water.[382]

In addition, the 'transition' category is allocated a 50-year life, to manage the bill impacts of shortening corporate asset lives.[383]

We have set longer lives for existing assets than proposed by Hunter Water, but shorter than historical

Hunter Water's proposed lives of its existing assets are significantly shorter than we have used previously to set Hunter Water's prices (see Table G.2 and Table G.4) We asked our expenditure consultant, Aither, to review the proposed asset lives as part of its general expenditure review.

Hunter Water engages Public Works Advisory to review the values and asset lives of assets in its FAR. Aither states:

> As for asset lives, the Public Works Advisory reports adopt lives generally consistent with the range of values Hunter Water uses in its fixed assets register. Public Works Advisory had no condition data for water network assets, while for sewerage assets, Hunter Water's current asset condition assessment is focussed on a small number of high-priority critical assets, consequently no condition-based reassessments of asset lives were undertaken.[384]

Aither had some concerns about the integrity of some of the data in Hunter Water's FAR. Hunter Water used the FAR to derive its proposed asset lives.

In its Final Report to IPART, Aither states:

> …through our review we had some concerns regarding the accuracy of the FAR. Aither considers there are two key aspects to the current and ongoing accuracy of the FAR:
>
> - Initial accuracy for establishing the disaggregated values, and
> - Ongoing accuracy for determining the 'remaining asset lives' for future regulatory periods.[385]
>
> Based on the information provided by Hunter Water, Aither considers that the concerns that we have regarding the integrity of the FAR are not sufficient enough to oppose the proposed disaggregated approach. The transition to a more disaggregated RAB that is proposed by Hunter Water, while not perfect, will result in a more economically efficient recovery of asset values than the current aggregated approach.[386]

In our Draft Report, we expressed some concerns regarding the data in the FAR, particularly on the lives of existing assets. Given our concerns, we set remaining lives of existing assets in each RAB sub-category so that the weighted average asset life of all of Hunter Water's assets

381 Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, pp 21, 26.
382 Department of Primary Industries – Office of Water, NSW Reference Rates Manual: Valuation of water supply, sewerage and stormwater assets, June 2014, p 64.
383 Hunter Water proposes to 'quarantine' the value of corporate equipment and corporate intangibles as at 30 June 2020 ($128.7 million –the Corporate Transition RAB) and depreciate this asset over 50 years instead of five years. This essentially recovers 2% of the total cost each year instead of 20% each year, as would be the case if the new proposed life of five years were applied.
384 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 77.
385 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 78.
386 Aither, *Hunter Water expenditure review*, *Final Report,* 14 December 2019, p 78.

was 62 years. This was in line with the recommendation of the consultant, Jacobs, that reviewed Hunter Water's expenditure and asset lives when we set prices in 2016.[387]

In its submission to our Draft Report, Hunter Water reiterated its position that we should adopt the asset lives in its July 2019 pricing proposal. It stated that:

> Hunter Water does not agree with IPART's draft decision to defer the correction of asset lives for key Hunter Water RAB sub-categories where there is clear evidence to support the adoption of alternative (shorter) asset lives. There are strong efficiency and equity grounds for using accurate economic lives of existing assets and new assets. Furthermore, getting the regulatory depreciation allowance right would substantially improve Hunter Water's financial viability.[388]

Hunter Water also argued that it uses condition assessment information in setting the remaining asset lives of wastewater treatment assets, sewer network assets and major water assets.[389]

To further investigate Hunter Water's asset lives, we engaged an asset advisory consultant, Advisian, to investigate and make recommendations on the appropriate asset lives and the rate at which they are consumed. In particular, we asked Advisian to:

- Review Hunter Water's asset management processes relating to its FAR
- Recommend economic lives of existing and new assets in the 20 RAB sub-categories.

Advisian found that Hunter Water's FAR was appropriate, that the asset management systems and processes were sound and that the FAR was generally updated and maintained in line with good industry practice.

Importantly, it also found that the lives allocated to each *individual* asset (new and existing) generally represented the effective useful (or economic) life of each asset. Advisian states:

> Generally, asset lives nominated by Hunter Water are consistent with other reference standards and our expectations.[390]

We consider that this finding alleviates our concerns around the maintenance of and data in the FAR. As such, the asset life data on individual assets in the FAR can be used to derive weighted average asset lives for each sub-category with some confidence.

However, Advisian found that the approach taken by Hunter Water, when combining these individual assets into RAB sub-categories to derive a weighted average asset life for each of the sub-categories, may be distortionary. It found that:

> In our review of the FAR we did not consider the formulae for weighting the age of new asset[s] was consistent with calculation of regulatory depreciation. The Hunter Water weighting method was based on weighting the rate of depreciation per asset, we consider that weighting should be based on the gross replacement cost (excluding non-depreciable components).[391]

387 IPART, *Review of prices for Hunter Water Corporation from 1 July 2020, Draft Report*, March 2020, p 61.
388 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 27.
389 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, p 36.
390 Advisian, *IPART Hunter Water economic life report*, May 2020, p 14.
391 Advisian, *IPART Hunter Water economic life report*, May 2020, p 7.

When agglomerating individual assets with different asset lives into a single grouping (or RAB sub-category) it is difficult to derive a representative asset life. Different assets have different values and remaining lives and as such all contribute differently to total depreciation.

Using the FAR and the value and asset life data for each individual asset, there are two possible ways of deriving a weighted average asset life for a given RAB category, namely:

1. Weight by value - which derives a weighted average asset life based on the relative values (the recorded depreciated or gross replacement costs) of each of the individual assets within a given RAB sub-category.
2. Weight by depreciation - which derives a weighted average asset life based on the relative depreciation of each of the individual assets.

As long as the data in the FAR is accurate, both of these methods have some merit.

Hunter Water has used method 2 to calculate its proposed depreciation. Our view is that this method does in fact produce the most accurate reflection of aggregate depreciation, at a point in time. As such, it is likely to produce the most accurate reflection of a utility's overall depreciation profile.

However, we have some concerns about its applicability in the long-run. We consider that it is likely to overstate the rate at which a group of assets depreciates, if it is not regularly reset.[392]

Our decision for the 2020 determination period is to accept the asset lives recommended by Advisian, which are based on Hunter Water's FAR, but have been weighted by value rather than depreciation.

We have set the life of the Corporate Transition RAB sub-category to 9 years, compared to 50 years as proposed by Hunter Water. This achieves two outcomes:

- It increases Hunter Water's short-term depreciation allowance for this category, in light of our decision to use longer asset lives than it proposed for the remainder of the RAB.
- It better reflects the timing of the use of the intangible and equipment assets that this Transition RAB represents. We consider that having customers in 50 years' time still paying for assets that were consumed delivering services between 2000 and 2020 is unreasonable and not cost-reflective.

Table G.5 below sets out our decision on the lives of existing assets compared to those proposed by Hunter Water.

392 This may arise due to short-lived (and therefore relatively fast depreciating) assets expiring, and longer lived (or slow depreciating) assets remaining. If the weighted life of the remaining bundle of assets is not regularly reset (or recalculated) it will mean the more slowly depreciating assets continue to depreciate relatively quickly.

Table G.5 Decision on lives of existing assets compared to Hunter Water's proposal (years)

Business unit	RAB sub-category	Decision	HWC proposed	Difference
Corporate	Civil	36	22	14
	Electrical/Mechanical	19	16	3
	Equipment	0	0	0
	Intangibles	0	0	0
	Non-depreciating	0	0	0
	Transition	9	50	-41
Water	Civil	74	48	26
	Electrical/Mechanical	26	16	10
	Equipment	12	5	7
	Intangibles	5	5	0
	Non-depreciating	0	0	0
Wastewater	Civil	86	62	24
	Electrical/Mechanical	19	16	3
	Equipment	9	5	4
	Intangibles	5	5	0
	Non-depreciating	0	0	0
Stormwater	Civil	66	47	19
	Electrical/Mechanical	6	16	-10
	Equipment	5	5	0
	Intangibles	5	5	0
	Non-depreciating	0	0	0

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 26; IPART analysis.

We have set longer lives for new assets than Hunter Water proposed, but shorter than historical

For determinations between 2000 and 2013, we set prices using lives of new assets, or capital expenditure, of 100 years. At our 2016 Determination, we began transitioning new asset lives from 100 years to 67 years. This was in line with Jacobs' recommendations on the lives of new assets.

For the 2020 Determination, Hunter Water has proposed asset lives for capital expenditure in each of its 16 depreciable RAB sub-categories.[393] Its proposed weighted average asset life of new assets is 56 years. This is 15 years (or 21%) lower than the weighted average life of new assets proposed by Sydney Water in its pricing proposal for the 2020 Determination (Table G.6).

A comparison between Hunter Water and Sydney Water's proposed lives of new assets by RAB sub-category for their respective 2020 Determinations is set out below.

393 This excludes the four non-depreciating sub-categories, and the Transition RAB sub-category as it includes existing assets only.

Table G.6 Comparison of Hunter Water and Sydney Water's proposed lives of new depreciable assets (years)

Business unit	RAB sub-category	Hunter Water	Sydney Water	Difference
Corporate	Civil	42	68	-26
	Electrical/Mechanical[a]	25	9	16
	Equipment[b]	11	10	1
	Intangibles[b]	5	10	-5
	Weighted average	**16**		
Water	Civil	90	140	-50
	Electrical/Mechanical[a]	25	35	-10
	Equipment[b]	11	15	-4
	Intangibles[b]	5	15	-10
	Weighted average	**66**		
Wastewater	Civil	90	90	0
	Electrical/Mechanical[a]	25	25	0
	Equipment[b]	11	15	-4
	Intangibles[b]	5	15	-10
	Weighted average	**60**		
Stormwater	Civil	117	150	-33
	Electrical/Mechanical[a]	25	25	0
	Equipment[b]	11	15	-4
	Intangibles[b]	5	15	-10
	Weighted average	**110**		
Total weighted average		**56**	**71**	

a Sydney Water has separate RAB sub-categories for Mechanical and Electrical. Figures shown in Electrical/Mechanical are the averages of the two individual categories (calculated separately for each of Corporate, Water, Wastewater and Stormwater) for Sydney Water.

d Sydney Water has a single Electronic RAB sub-category which covers both Equipment and Intangibles. As such, the life for new electronic assets is shown here under both Equipment and Intangible.

Note: The four non-depreciating RAB sub-categories have no asset lives and as such have been excluded from this table. Hunter Water's proposed Transition RAB sub-category includes existing assets only, and as such no new assets.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 26; Sydney Water Annual Information Return, July 2019.

In our Draft Report, we set Hunter Water's new asset lives to be in line with those of Sydney Water. We consider that in general, similar new assets in Hunter Water should have the same asset lives as those in Sydney Water.

However, the type and value of specific assets created over a four year period can significantly alter the average life of that bundle of new assets.

Advisian also reviewed Hunter Water's proposed lives of new assets, and found that the basis upon which the estimates of individual asset lives were made were generally sound. However, as with existing assets, it recommended using the value approach to deriving a weighted average life for each RAB sub-category.[394]

394 Advisian, *IPART Hunter Water economic life report*, May 2020, p 7.

We have accepted Advisian's recommended asset lives for this determination period. However, we consider that while there are administrative and regulatory complexities to overcome, weighting by depreciation (as proposed by Hunter Water) has considerable merit.

Table G.7 below sets out our decision on the lives of new assets.

Table G.7 Decision on lives of new assets (years)

Sub-category	Corporate	Water	Wastewater	Stormwater
Civil	53	99	102	122
Electrical /Mechanical	26	32	26	25
Equipment	12	22	13	12
Intangibles	4	5	5	5

Source: IPART analysis.

We will review asset lives before the next price review

We agree with Hunter Water that the asset lives we have used previously to set prices have been too long. This has led to an under-recovery of capital and a growth in the RAB from asset renewals.

It has also contributed to lower financial ratios, contributing to Hunter Water's concerns about financeability at times. However, given the scale of Hunter Water's proposed increase in depreciation costs, we will undertake a comprehensive review of new and existing asset lives for:

- Hunter Water
- Sydney Water
- Central Coast Council
- Water NSW-Greater Sydney
- Essential Energy (Broken Hill).

We consider that such a comprehensive review of asset lives, and the wider issue of our regulatory depreciation allowance is due.

H Notional revenue requirement

This appendix outlines how we calculated some key inputs to the NRR. It explains our decisions on:

- The value of the RAB
- The return on capital
- Regulatory depreciation
- The allowance for tax and working capital, and
- Adjustments to the NRR and the revenue to be recovered from customers.

H.1 Value of the regulatory asset base

The RAB represents the value of Hunter Water's assets on which we consider it should earn a return on capital and an allowance for regulatory depreciation.

In calculating the opening RAB, we rolled forward the RAB we set in the last determination period and carried this forward to include our decisions on capital expenditure and depreciation. The steps we took were to:

- Add prudent and efficient capital expenditure (see Chapter 5)
- Deduct cash capital contributions (explained below)
- Deduct the regulatory value of asset disposals (explained below)
- Deduct the regulatory depreciation we allowed at the 2016 Determination and for the next period, and
- Add the annual indexation of the RAB.

Our decisions on the RAB are set out in Table H.1 and Table H.2 below, with a comparison of our decision on the RAB values that Hunter Water proposed.

- For the 2016 period, our decisions have made changes to Hunter Water's proposal, with a 10.4% difference in the RAB increase over the five years.
- For the 2020 period, our decisions have slightly more impact, with the change in RAB over the period being 11.6% lower than that in Hunter Water's proposal.

Table H.3 presents our decisions on the RAB by business area.

We present our analysis and decisions regarding the treatment of historical cash contributions and asset disposals below the tables.

Table H.1 RAB roll-over for 2015-16 and the 2016 determination period ($million, nominal)

	2014 -15	2015 -16	2016 -17	2017 -18	2018 -19	2019 -20	Change over 5 years[a]
Opening RAB		**2,260.6**	**2,340.1**	**2,430.3**	**2,544.5**	**2,660.5**	
Plus: Actual prudent and efficient capex		99.7	86.8	104.1	119.2	174.3	
Less: Cash capital contributions		8.9	5.0	4.2	5.2	6.9	
Less: Asset disposals		0.2	1.6	0.3	0.0	0.0	
Less: Allowed regulatory depreciation		34.1	35.2	37.5	39.7	41.9	
Plus: Indexation		23.1	45.2	52.1	41.6	27.4	
Closing RAB	**2,260.6**	**2,340.1**	**2,430.3**	**2,544.5**	**2,660.5**	**2,813.5**	**552.8**
Hunter Water's proposal (closing)	2,260.6	2,339.7	2,430.2	2,544.2	2,676.7	2,877.3	616.7
Difference ($)		0.40	0.1	0.3	-16.2	-63.8	-63.9
Difference (%)		0.0%	0.0%	0.0%	-0.6%	-2.2%	

[a] This shows the difference between the 2015-16 opening RAB and the 2019-20 closing RAB. The result differs from just comparing the closing RAB which does not account for changes in the other adjustments.

b **Note:** Totals may not add due to rounding. Includes RAB for discretionary expenditure.

c **Source:** Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, pp 12-13; IPART analysis.

Table H.2 RAB for the 2020 determination period ($million, $2019-20)

	2019-20	2020-21	2021-22	2022-23	2023-24	Change over 4 years[a]
Opening RAB		**2,813.5**	**2,951.4**	**3,058.8**	**3,140.8**	
Plus: Actual prudent and efficient capex		198.9	177.0	158.6	135.4	
Less: Cash capital contributions		0.0	0.0	0.0	0.0	
Less: Asset disposals		0.0	0.0	0.0	0.0	
Less: Allowed regulatory depreciation		60.9	69.6	76.6	82.7	
Plus: Indexation		0.0	0.0	0.0	0.0	
Closing RAB	**2,813.5**	**2,951.4**	**3,058.8**	**3,140.8**	**3,193.5**	**380.1**
Hunter Water's proposal (closing RAB)	2,877.3	3,015.9	3,130.8	3,228.2	3,307.3	430.0
Difference ($)		-64.5	-72.0	-87.4	-113.8	-49.9
Difference (%)		-2.1%	-2.3%	-2.7%	-3.4%	

[a] This shows the difference between the 2020-21 opening RAB and the 2023-24 closing RAB. The result differs from just comparing the closing RAB which does not account for changes in the other adjustments.

Note: Totals may not add due to rounding. Includes RAB for discretionary expenditure.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, pp 12-13; IPART analysis.

Table H.3 Our annual RAB decision by business compared to Hunter Water’s proposal ($million, $2019-20)

	2020-21 opening	2020-21 closing	2021-22 closing	2022-23 closing	2023-24 closing
Water	**1,214.3**	**1,230.5**	**1,261.6**	**1,295.3**	**1,324.0**
Hunter Water's proposal	1,241.1	1,248.9	1,271.6	1,298.9	1,320.9
Difference	-2.2%	-1.5%	-0.8%	-0.3%	0.2%
Wastewater	**1,404.9**	**1,503.4**	**1,558.8**	**1,608.4**	**1,633.8**
Hunter Water's proposal	1,435.7	1,531.2	1,589.4	1,647.4	1,691.7
Difference	-2.1%	-1.8%	-1.9%	-2.4%	-3.4%
Stormwater	**46.2**	**51.9**	**56.7**	**63.2**	**70.8**
Hunter Water's proposal	50.0	52.5	54.2	57.7	62.3
Difference	-7.6%	-1.1%	4.6%	9.5%	13.6%
Corporate	**148.0**	**165.6**	**181.8**	**173.9**	**165.0**
Hunter Water's proposal	150.5	183.2	215.6	224.3	232.4
Difference	-1.6%	-9.6%	-15.7%	-22.5%	-29.0%

Note: Totals may not add due to rounding. Includes RAB for discretionary expenditure.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 13; IPART analysis.

H.1.1 Cash capital contributions

Cash capital contributions that a utility receives from third parties towards its capital expenditure, such as government grants, are netted off capital expenditure (ie, they do not enter the RAB). This ensures that customers do not pay a return on assets or regulatory depreciation for capital expenditure that the utility has already had funded from other sources.

However, utilities would normally need to pay tax on capital contributions. Prior to 2016, this tax amount was included in the tax allowance building block. In the 2016 reviews for Sydney Water, Hunter Water and Water NSW, we changed this approach so that we now deduct the cash contributions net of tax from the capital expenditure allowance, effectively capitalising the tax impact on capital contributions into the RAB.

Historical cash capital contributions

Prior to 2008, the main source of cash capital contributions for Hunter Water was from developer charges. However, on 17 December 2008, the NSW Government set water and sewerage developer charges to zero for both these utilities. As a result, the amount to be deducted from capital expenditure due to cash capital contributions is minor.

Hunter Water reported $30.1 million in cash capital contributions[395] comprising:

- Revenue from the Environmental Improvement Charge (EIC) totalling $26.3 million
- A $1.7 million contribution in 2019-20 from the NSW Government for the Wyee backlog sewer scheme
- $2.1 million for contributions from various third parties. These are not developer contributions but rather contributions from various 'non-developer' sources such as from customer projects under the urban infill backlog sewer schemes (not funded through the EIC) or federal Government grants.[396]

We have adjusted the RAB for the cash capital contribution amounts shown in Table H.4.

Table H.4 Historical cash capital contributions deducted from the RAB ($million, nominal)

	2015-16	2016-17	2017-18	2018-19	2019-20	Total
EIC	6.8	5.0	4.2	5.1	5.2	26.3
Government contribution	0	0	0	0	1.7	1.7
Third parties	2.1	0	0	0	0	2.1
Total	**8.9**	**5.0**	**4.2**	**5.1**	**6.9**	**30.1**

Note: The table presents the total cash contributions for water, sewerage and stormwater (net of tax allowance for 2017 to 2019). Totals may not add due to rounding.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 14, and Hunter Water 2018-19 AIR/SIR, 'Capex by RAB', Table 5.1.3.

Future cash contributions

Hunter Water EIC will no longer apply in the 2020 determination period, and Hunter Water stated that it is not aware of any future cash contributions beyond 2019-20.[397] Consequently it has forecast zero cash contributions.

The 4-year historical average of contributions, excluding the EIC, is around $8,000 per year.[398] Given the current policy of the NSW Government to set developer charges to zero, we consider Hunter Water's proposal to be reasonable and have accepted it. At the next review, we will adjust the RAB for actual contributions received.

H.1.2 Adjustments for asset disposals

Asset disposals can include asset sales, write-offs and write-downs. The value of any regulatory assets Hunter Water disposed of during the 2016 determination period, as well as any assets it proposes to dispose of during the 2020 determination period, are deducted from the RAB. This ensures customers are not charged a return on assets or regulatory depreciation for assets that are no longer used to provide regulated services.

395 Net of applicable tax allowance. Correspondence with Hunter Water (email), 29 November 2019.
396 Hunter Water confirmed that these contributions are not developer charges for water and sewerage. Correspondence with Hunter Water (email), 29 November 2019.
397 Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 13.
398 Based on additional data provided by Hunter Water, and IPART analysis. Numbers do not match Table H.4 due to rounding. Correspondence with Hunter Water (email), 29 November 2019.

We applied our 2018 asset disposals policy[399] in this review to deduct asset disposals from the RAB. Under this policy, we regard disposals as significant if they attract capital gains tax or account for more than 0.5% of the opening RAB value of the relevant service in the year in which the disposal occurred. The key principles of our disposal policy are provided in Box H.1.

Box H.1 IPART's asset disposal policy

Under IPART's asset disposal policy, we categorise asset sales and asset write-offs into significant or non-significant disposals. Significant disposals represent more than 0.5% of opening value of the RAB in the year in which the disposal occurs. For example, if a water asset is sold for more than 0.5% of the opening RAB for water assets, it would be considered a significant asset disposal.

- Significant asset write-offs are assessed on a case by case basis.
- The treatment of significant asset sales depends on whether the assets are pre line-in-the sand or post line-in-the-sand.
  - Pre-line-in-the-sand: regulatory values to be deducted from the RAB are estimated by multiplying the sale value by the RAB to depreciated replacement costs (DRC) ratio at the time the initial RAB value is established.
  - Post-line-in-the-sand: we estimate the regulatory value of the assets sold, based on the information available to us. For example, by tracking actual capex.
- For non-significant asset write-offs, we do not deduct any value from the RAB, except as deemed necessary on a case by case basis.
- For non-significant sales, we deduct the sales values from the RAB, net of efficient sales costs.

Our policy on significant pre line-in-the sand disposals also states that, as default position, we would remove the regulatory value of all pre line-in-the-sand assets from the RAB when they are sold. However, if a business can make a convincing case that an asset was clearly non-operational when the line-in-the-sand RAB was established, then, on an exception basis, we would not adjust the RAB for that asset sale.

Hunter Water's proposal included information on the value of assets it had disposed of, or forecast to dispose of from 2015-16 to the end of the 2016 determination period. These asset disposals total $1.8 million (nominal).[400] After reviewing this and some subsequent information, our decision is to deduct $2.1 million from Hunter Water's RAB for historical asset disposals, as shown in Table H.5. Below is our analysis on Hunter Water's asset sales. Hunter Water did not propose any significant write-offs.

Significant historical asset sales

Hunter Water identified six significant asset sales over the 2016 determination period and proposed a total of $1.7 million to be deducted from the RAB. Four of those asset disposals relate to assets that were purchased pre- line-in-the-sand[401] and we accept Hunter Water's approach to deduct 42% of the sale prices of these assets from the RAB, in line with our disposal policy.

399 IPART, *Asset Disposals Policy Paper (for application to water businesses)*, February 2018, available here.
400 Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, pp 14-15; IPART analysis.
401 Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, pp 14-15; IPART analysis.

For the remaining two significant assets, we have adjusted the amount to be deducted from the RAB, to align with our asset disposals policy.

- **Land sale at Bendolba.** Hunter Water identified this land as a 'post line-in-the-sand' asset, for which the RAB value would be deducted. However, Hunter Water had deducted the sales price of $538,000 (in 2016).[402] We calculated the RAB value at the time of disposal as the purchase price ($786,000 in 2007) indexed by inflation to 2016. As a result, we deducted $973,024 from the RAB for this asset disposal.
- **Land sale at Bennetts Green.** Hunter Water also treated this land sale as a 'post line-in-the-sand asset', and deducted the sales price of $339,000 from the RAB as this was the latest known price for the land. However, Hunter Water later confirmed that this asset was in its ownership pre 2000, but had been lost from records, with the earliest recorded value being from 2012.[403] Given that this asset was purchased prior to 2000, we treated it as a pre line-in-the-sand asset. In accordance with our policy, we deducted 42% of the sales price (at $142,000) from the RAB, which is our best estimate of its regulatory value in the RAB.

Non-significant disposals

We accepted Hunter Water's non-significant asset disposals of $0.2 million (nominal) over the period. This is about 0.01% of Hunter Water's opening RAB value of the year in which the assets are disposed of.

Table H.5 IPART's asset disposals to be removed from the RAB for the period 2013 to 2019 ($millions, nominal)

	2015-16	2016-17	2017-18	2018-19	2019-20	Total
Non-significant disposals	0	0.1	0.1	0	0	0.2
Significant sales	0.2	1.5	0.2	0	0	1.9
Total	**0.2**	**1.6**	**0.3**	**0**	**0**	**2.1**
Hunter Water's proposal	0.4	1.1	0.3	0	0	1.8
Difference ($)	-0.2	0.5	0	0	0	0.3

Note: The table presents the total asset sales for water, sewerage and stormwater.

Source: Hunter Water 2018-19 AIR/SIR; IPART analysis.

H.1.3 WACC

For the WACC decision, we applied our published methodology. Appendix I sets out the parameters that we used.

In its submission to our Draft Report, Hunter Water argued that our approach to forecasting future inflation would produce a reasonable estimate in some market conditions, however produces an inflation forecast that is "…implausibly high in the current market conditions."[404] It proposed an inflation forecast of 1.7% for the 2020 determination period,

402 Correspondence with Hunter Water (email), 2 December 2019.
403 Correspondence with Hunter Water (email), 2 December 2019.
404 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, April 2020, p iii.

plus an end of determination true-up on the outturn inflation over the four years to 2023-24.[405] This approach would have resulted in a significantly higher WACC and return on assets than our decision. Our decision on WACC inflation is to maintain our standard approach, which produces a WACC inflation estimate of 2.3% and a WACC of 3.4%. We discuss our decision on WACC inflation in detail in Appendix J.

We also decided to apply a true-up of annual WACC adjustments in the 2020 Determination. In our 2018 WACC methodology, we decided that 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.

Our decision is to use a regulatory true-up approach. In its submission to our Issues Paper, Hunter Water stated that it "…supports an end-of-period true up of debt costs for the 2020 price determination."[406] It also noted considered that the adjustment would be NPV-neutral and would unlikely affect its financeability metrics. It further noted that the end-of-period true up provided price certainty for customers over the determination period.

For these reasons our decision is to use a regulatory true-up to account for the changes in the cost of debt over the course of the determination period.

H.2 Return on capital

Our return on assets allowance is equal to the value of the RAB in each year of the determination period multiplied by an appropriate rate of return. As for previous reviews, we have determined the rate of return using an estimate of the WACC.

Our decisions have resulted in lower return on capital than Hunter Water had proposed (See Table H.6 below). This follows from our decisions that resulted in a lower RAB (see section H.1 above) but mostly, from the lower WACC.

Table H.6 Comparison of our decision on return on assets, and Hunter Water's proposal ($millions, $2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Hunter Water's proposal	119.6	124.9	129.3	133.0	506.8
Our decision	**97.4**	**101.6**	**104.9**	**107.3**	**411.2**
Difference ($)	-22.2	-23.3	-24.4	-25.7	-95.6
Difference (%)	-20.0%	-20.0%	-20.0%	-20.0%	-20.0%

Note: Includes return on assets for discretionary expenditure.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 8, and IPART analysis.

405 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020,* April 2020, April 2020, pp iii-iv.

406 Hunter Water submission to IPART Issues Paper, October 2019, p 19.

Regulatory depreciation

Regulatory depreciation aims to recover the cost of an asset over its useful life to ensure that customers that benefit from the asset, pay for it. To calculate the regulatory depreciation, we typically divide the value of asset by their expected lives.

We discuss in detail our decisions on the RAB disaggregation and asset lives in Appendix G. Table H.7 below sets our decisions on the depreciation allowance compared to Hunter Water's proposal.

Table H.7 Comparison of our decision on depreciation, and Hunter Water's proposal ($millions, $2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Hunter Water's proposal	60.5	68.9	76.2	82.9	288.5
Our decision	**59.9**	**68.4**	**75.3**	**81.3**	**285.0**
Difference ($)	-0.6	-0.5	-0.9	-1.6	-3.5
Difference (%)	-1.0%	-0.7%	-1.1%	-1.9%	-1.2%

Note: Totals may not add due to rounding.

Source: Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 6*, 1 July 2019, p 8; IPART analysis.

H.3 Allowance for tax and working capital

As discussed in Chapter 6, we include an explicit allowance for tax, because we use a post-tax WACC to estimate the allowance for return on assets in the revenue requirement. This allowance reflects an efficient benchmark business's forecast tax liabilities. Our building block methodology also includes a working capital allowance.

H.3.1 The tax allowance

We calculate the tax allowance for each year by applying the relevant tax rate, adjusted for the value of imputation credits (the 'gamma'), to the business's (nominal) taxable income. For this purpose, taxable income is the notional revenue requirement (excluding tax allowance) less operating cost allowances, tax depreciation, and interest expenses. As part of calculating the appropriate tax allowance, the business is required to provide forecast tax depreciation for the determination period. Other items such as interest expenses are based on the parameters used for the WACC, and the value of the RAB.[407]

The tax allowance is one of the last building block items we calculate, due to its dependence on other items such as operating cost allowances and WACC parameters.

To establish the tax allowance, we:

- Adopted a 30% tax rate, because the NRR for Hunter Water is above the small business tax threshold of $50 million per annum.

407 The nominal cost of debt is the sum of the nominal risk free rate and nominal debt margin.

- Accepted Hunter Water's forecast tax depreciation but updated it to reflect our decisions on capital expenditure
- Accepted Hunter Water's forecast non-cash contributions (also known as Assets Free of Charge, or AFOC).

Table H.8 shows our decision on the tax allowance. Our tax allowance is lower than Hunter Water's proposed tax allowance, mainly due to a lower WACC.

Table H.8 Comparison of our decision on tax allowance and Hunter Water's proposal ($millions, $2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Hunter Water's proposal	11.9	12.4	13.3	15.1	52.7
Our decision	**11.2**	**11.7**	**12.6**	**14.3**	**49.9**
Difference ($)	-0.7	-0.7	-0.7	-0.8	-2.8
Difference (%)	-10.0%	-10.0%	0.0%	-10.0%	-10.0%

Note: Includes discretionary expenditure.
Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 29; IPART analysis.

Forecast tax depreciation

Tax depreciation is an input into the tax calculation. IPART's policy for businesses that pay tax or tax equivalents is to use the tax depreciation amounts forecast by the businesses when we calculate the tax allowance.[408] This approach means that our tax depreciation reflects actual business practice (eg, actual tax depreciation rates and depreciation methods).

Hunter Water's forecast tax depreciation amounts incorporate depreciation on:

- Existing assets
- Forecast capital expenditure, and
- Assets free of charge (AFOC).

We have reviewed Hunter Water's and accepted Hunter Water's approach to forecasting tax depreciation with the exception that we have amended the depreciation on forecast capital expenditure to reflect our decision rather than Hunter Water's proposed amount.

Forecast non-cash capital contributions

Non-cash capital contributions (or 'AFOC') are assets that utilities receive for free. Non-cash capital contributions do not affect the RAB, and utilities do not earn a return on or of those assets. Utilities, however, are required to pay tax equivalents on the value of non-cash capital contributions. As such, we need to include forecast AFOC as revenue in the calculation of the regulatory tax allowance building block.

Hunter Water's proposal includes a forecast value for AFOC. To assess the likelihood of Hunter Water's proposal eventuating we have compared proposed values to averages of historical actual AFOC. This shows that Hunter Water's forecasts are for less AFOC than in

408 IPART, *The incorporation of company tax in price determinations, Other Industries – Final Decision*, December 2011, pp 17-18.

recent years, but closer to longer term averages (Table H.9). This indicates that Hunter Water's estimates are reasonable. We have accepted Hunter Water's forecast non-cash capital contributions as set out in Table H.10 below.

Table H.9 Averages of proposed and historical AFOC ($millions, $2019-20)

Proposed AFOC (4 year average)	Historical averages			
	3-year	4-year	5-year	8-year
26.5	33.6	32.3	31.4	29.5

Source: Hunter Water, September AIR/SIR, 'SIR Capex 4', rows 30-33; IPART analysis.

Table H.10 Our decision on assets free of charge ($millions, $2019-20)

Service	2020-21	2021-22	2022-23	2023-24	Total
Water	9.9	9.3	9.0	9.0	37.1
Wastewater	18.3	17.3	16.7	16.7	69.0
Stormwater	0	0	0	0	0
Total	**28.2**	**26.7**	**25.6**	**25.6**	**106.1**

Note: Totals may not add due to rounding.

H.3.2 Allowance for working capital

The working capital allowance ensures Hunter recovers the costs it incurs due to the time delay between providing a service and receiving the money for it (ie, when bills are paid). To calculate this allowance, we applied our standard approach. In summary, this involves:

1. Calculating the net amount of working capital the business requires, using the formula:

   working capital = receivables – payables +inventory +prepayments

2. Calculating the return on this amount by multiplying it by the nominal post-tax WACC.

More information on our standard approach can be found in our Working Capital Allowance Policy Paper on our website.

We have amended our approach to take into account Hunter Water's representations on the potential impacts of COVID-19 on the timing of customer payments of bills. In its submission to our Draft Report it suggested that there may be an additional 4-day delay in the average time that customers take to pay their bills over the 4-year determination period.[409] It has subsequently revised down its estimates based on its recent observations of the time customers are taking to pay their bills on average. [410]

Based on the information provide by Hunter Water, we consider that an additional 2-day delay is appropriate.

Table H.11 below provides a comparison of our decision with Hunter Water's proposal.

409 Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 41.
410 Email from Hunter Water, 14 May 2020.

Table H.11 Comparison of our return on working capital allowance to Water NSW's proposal ($million, $2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Hunter Water's proposal	1.0	1.2	1.3	1.5	5.0
Our decision	**1.0**	**1.3**	**1.5**	**1.6**	**5.4**
Difference ($)	0.0	0.1	0.2	0.1	0.4
Difference (%)	-0.9%	8.2%	12.1%	8.2%	7.4%

Note: Totals may not add due to rounding. Includes discretionary expenditure.

Source: Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 6*, 1 July 2019, p 8; IPART analysis.

H.4 Revenue adjustments for non-regulated revenue

We encourage water utilities to seek ways to generate revenue in ways other than traditional services, for instance, through renting some of their land if there is an interested lessor. Where they do this by using assets that have been paid for by the customers of the traditional services, we typically share this revenue with the customers that have paid for the asset.

Sharing the revenue encourages the utilities to pursue non-regulated revenue while ensuring customers also benefit from the arrangements because they pay for the assets. In the past, we have typically applied a 50:50 sharing ratio of the revenue. For this review we have diverged slightly from past approach for two sources of revenue:

- Revenue from least-cost recycled water schemes where the recycled water displaces potable water (See Chapter 12).
- Revenue from bio-banking credits (explained below).

How we treat revenue from bio-banking credits

Our treatment of revenue from participation in the bio-banking scheme differs from our usual approach to non-regulated revenue. Comparatively, a smaller proportion is shared with customers. This recognises that Hunter Water would bear non-negligible scheme participation costs (such as setup and ongoing costs) and responsibilities of the scheme that create increased revenue risk. Scheme participation requires set up costs, as well as enters the business into perpetual agreements with ongoing costs and responsibilities. A biodiversity Conservation trust is established and funded through the first sales of biodiversity credits.

Our decision is that when a piece of land is entered into the scheme, it should be treated as follows:

- **Treatment of the land in the RAB**: If the land was operational at the RAB creation in 2000, but had since become non-operational, then its value should be removed from the RAB. Alternatively, if the land either is still operational, or if was non-operational in 2000, then there would be no change to the RAB.

- **Costs recovered through the scheme, or avoided because of participation in the scheme**: Operational costs, common corporate overheads, or land tax associated with managing the land should not be recovered from customers, as these should be recovered from annual repayments through the Biodiversity Conservation Trust, or are avoided by entering the Scheme (eg, land tax). We would remove these costs from the regulated cost base where identification is simple, and the utilities provide an estimate of these costs.
- **Revenue from selling credits**: The utility could retain 90% of the revenue from credit sales due to the additional costs from participating in the scheme, such as setup and ongoing costs and responsibilities that create increased risk for the utility. 10% should be shared with customers, by removing it from the NRR when setting prices.

In its proposal, Hunter Water's forecast revenue from bio-banking credits was zero. It stated that it had entered one piece of land into the scheme and intended to sell the credits in the current period, ie, 2019-20. It did not progress any further sites to enter the scheme.[411]

However, during the course of our review, Hunter Water informed us that it had not yet sold the credits, and revised its forecast revenue from the credits to be about $2.1 million over the next few years.[412] It also provided that:

- The land is operational land (so no adjustment to the RAB).
- It has not undertaken maintenance is recent years, so is unable to quantify avoided costs and has no basis to quantify corporate overhead costs. We consider this is reasonable. If no maintenance budget has be allocated to this site then this is likely to continue going forward, and a share of corporate overheads is likely to be minor.
- The land was already exempt from land tax as it was categorised as a 'public garden'.[413]

As such, we have decided to share 10% of the revenue with customers. Given uncertainty around the selling of credits, we have assumed Hunter Water would receive this revenue evenly over the four years of the determination, at $541,500 a year.

Table H.12 Expected revenue from biodiversity bio-banking offsets, and amount to be shared with customers ($2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Revenue from bio-banking scheme	541,500	541,500	541,500	541,500	2,166,000
Share for customers	**54,150**	**54,150**	**54,150**	**54,150**	**216,600**

Note: Totals may not add due to rounding.

Source: Correspondence with Hunter Water (email), 10 December 2019; IPART analysis.

411 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 6*, 1 July 2019, p 33. Our approach to non-regulated revenue does not include an ex-post adjustment to account for actual non-regulated revenue.

412 Correspondence with Hunter Water (email), 10 December 2019.

413 Hunter Water, *Pricing Proposal to IPART*, *Technical Paper 6*, 1 July 2019, p 33.

H.5 Revenue to be recovered from water, wastewater and stormwater prices

The tables below show our decision on the amount of revenue (the adjusted NRR) to be recovered from prices for each service. The wastewater adjusted NRR is the largest, averaging $176.2 million per year over four years, followed by water ($151.9 million) and stormwater ($5.7 million annual average).

Table H.13 Notional revenue requirement for water prices ($millions, $2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Operating expenditure	73.3	70.4	69.5	68.2	281.5
Depreciation	28.0	31.2	34.1	36.6	129.9
Return on assets	43.7	44.8	46.0	46.9	181.4
Return on working capital	1.1	1.1	1.2	1.3	4.7
Tax allowance	6.7	7.0	7.4	8.0	29.0
Adjustments	-12.3	-2.2	-2.2	-2.2	-18.9
Total to be collected from prices	**140.4**	**152.4**	**156.0**	**158.8**	**607.6**
Hunter Water's proposal	167.0	169.2	173.7	177.7	687.6
Difference	-15.9%	-9.9%	-10.2%	-10.6%	-11.6%

Note: Numbers may not add due to rounding. Includes discretionary expenditure.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 10; IPART analysis

Table H.14 Notional revenue requirement for wastewater prices ($millions, $2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Operating expenditure	81.9	82.4	83.5	82.2	330.1
Depreciation	30.7	35.7	39.6	42.8	148.7
Return on assets	51.9	54.8	56.7	57.9	221.3
Return on working capital	0.0	0.2	0.3	0.4	0.8
Tax allowance	4.2	4.5	5.0	6.0	19.7
Adjustments	-3.7	-4.0	-4.0	-4.0	-15.7
Total to be collected from prices	**165.0**	**173.6**	**181.0**	**185.2**	**704.9**
Hunter Water's proposal	171.3	181.8	191.0	197.0	741.1
Difference	-3.7%	-4.5%	-5.2%	-6.0%	-4.9%

Note: Numbers may not add due to rounding. Includes discretionary expenditure.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 10; IPART analysis.

Table H.15 Notional revenue requirement for stormwater prices ($millions, $2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Operating expenditure	1.7	1.8	1.8	1.7	7.0
Depreciation	1.3	1.5	1.7	1.9	6.4
Return on assets	1.8	2.0	2.2	2.5	8.5
Return on working capital	0.0	0.0	0.0	0.0	-0.1
Tax allowance	0.3	0.3	0.3	0.4	1.2
Adjustments	0.0	0.0	0.0	0.0	0.0
Total to be collected from prices	**5.1**	**5.6**	**6.0**	**6.4**	**23.1**
Hunter Water's proposal	5.6	5.9	6.3	6.6	24.4
Difference	-9.3%	-5.3%	-4.9%	-3.0%	-5.5%

Note: Numbers may not add due to rounding. Includes discretionary expenditure.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 6*, 1 July 2019, p 11; IPART analysis.

I Weighted Average Cost of Capital

This appendix shows the parameters we used to calculate the weighted average cost of capital (WACC) for the Final Report, and explains our decision about how to treat annual changes in the WACC with regard to customer prices.

I.1 Our WACC estimate

Our WACC estimate is set out in Table I.1 below. In keeping with our standard WACC method, we adopted current market observations for the cost of debt, inflation and the market risk premium. We adopted the following industry-specific parameters:

- A gearing ratio of 60%, and
- An equity beta of 0.7.

I.2 Change from the Draft Report

In our Draft Report we sampled market observations at end of January 2020 and estimated a post-tax real WACC of 3.2%. Since January 2020 there has been a small decrease in the current observation of the risk free rate (from 1.2% to 0.9%) which was offset by larger increases in the current debt margin (from 1.8% to 2.5%) and in the current MRP (from 8.8% to 9.7%). These changes have increased our post-tax real WACC estimate to 3.4% for our final decision.

Table I.1 Water NSW WACC for final report

	Step 1		Step 2 – Final WACC range		
	Current market data	Long term averages	Lower	Midpoint	Upper
Nominal risk free rate	0.90%	3.10%			
Inflation	2.30%	2.30%			
Implied Debt Margin	2.50%	2.60%			
Market Risk premium	9.7%	6.0%			
Debt funding	60%	60%			
Equity funding	40%	40%			
Total funding (debt + equity)	100%	100%			
Gamma	9.7%	6.0%			
Corporate tax rate	30.0%	30.0%			
Effective tax rate for equity	30.0%	30.0%			
Effective tax rate for debt	30.0%	30.0%			
Equity beta	0.70	0.70			
Cost of equity (nominal post-tax)	7.7%	7.3%			
Cost of equity (real-post tax)	5.3%	4.9%			
Cost of debt (nominal pre-tax)	3.4%	5.7%			
Cost of debt (real pre-tax)	1.1%	3.3%			
Nominal Vanilla (post-tax nominal) WACC	5.1%	6.3%	5.1%	5.7%	6.3%
Post-tax real WACC	**2.8%**	**3.9%**	**2.8%**	**3.4%**	**3.9%**
Pre-tax nominal WACC	6.0%	7.2%	6.0%	6.6%	7.2%
Pre-tax real WACC point estimate	3.6%	4.8%	3.6%	4.2%	4.8%

I.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, then we would consider which other industries exhibit returns that are comparably sensitive to market returns.

We propose to adopt 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.

I.4 Sampling dates for market observations

We sampled market observations for the current year to the end of March 2020, which is the last available whole month. For earlier years in the trailing average calculation of the historic cost of debt we also sampled to the end of March in each year.

I.5 Tax rate

We assume that the Benchmark Equivalent Entity is a large public water utility. The scale economies that are important to firms of this type suggest that the Benchmark Equivalent Entity would be likely to be well above the turnover threshold at which a firm becomes eligible for a reduced corporate income tax rate. Therefore, we use a tax rate of 30%.

I.6 Regulatory period

We adopt a standard four year regulatory period for Water NSW.

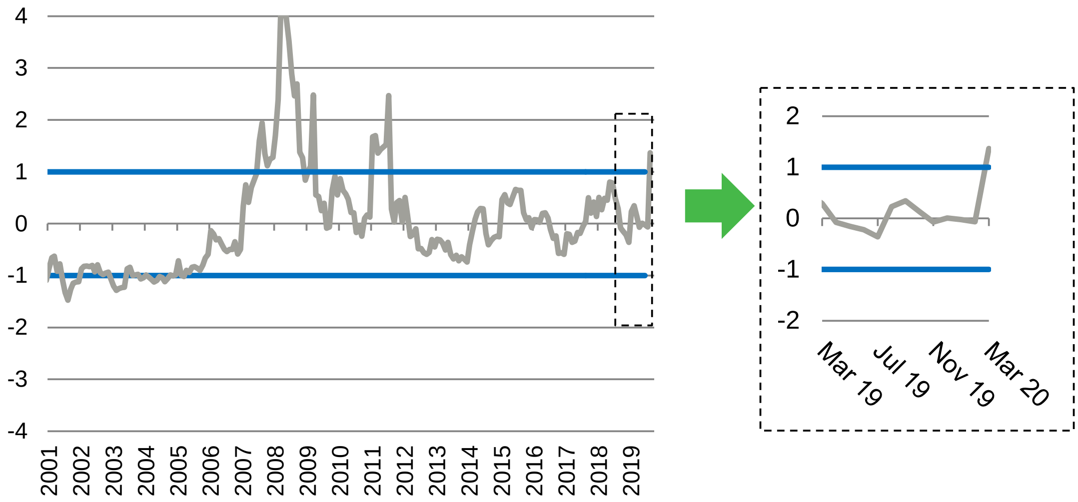
I.7 Application of trailing average method

Our 2017 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 2017 review of the WACC method, we employ a transition to trailing average in the calculations presented above.

I.8 Uncertainty index

We tested the uncertainty index for market observations to the end of March 2020. The uncertainty index was outside of the bounds of plus and minus one standard deviation of the long term mean value of zero. The uncertainty index is shown in Figure I.1.

Figure I.1 IPART's uncertainty index



Data source: Thompson Reuters, Bloomberg and IPART calculations.

If the uncertainty index was within the bounds of plus and minus one standard deviation of the long term mean value of zero we would maintain the default 50% – 50% weighting between current and historic market estimates of the cost of debt and the cost of equity.

However, if the uncertainty index is more than one standard deviation from its historic average, our current approach is to exercise our discretion about whether to move from the midpoint. In exercising that discretion, we consider the value of the uncertainty index and financial market information.

We consulted stakeholders on the weighting that should apply, given the uncertainty index result from March. We summarise that consultation below. In short, stakeholders did not support departing from 50% – 50% weights for the cost of debt. While some stakeholders recommended placing higher weight on current measures of the cost of equity, we did not find their arguments convincing, as noted below. Therefore our final decision is to maintain the 50% - 50% weighting between current and historic market estimates of the cost of debt and the cost of equity.

I.8.1 Stakeholders supported our maintaining a 50-50 weighting for the cost of debt

Sydney Water Corporation (SWC) and Sydney Desalination Plant (SDP) submitted that the 50 – 50 weight should be retained for the cost of debt. Citing that IPART's standard approach reflects the prudent and efficient approach to debt management that could be implemented by a regulated business.[414] This is the prudent and efficient approach outlines in our 2018 WACC method.

Neither Hunter Water nor Water NSW commented specifically on the temporal weights that the Tribunal should use.

We agree with SWC and SDP that firms would likely have based their borrowing strategies on the 2018 IPART WACC method. By following the trailing average approaches for current and long-term debt set out in that final report, a firm can actually borrow money at the average interest rate allowed by IPART, even when market conditions are volatile.

Thus, even when the uncertainty index is out of range, there is no need to modify the 50 – 50 weights for the cost of debt.[415] Moreover, any departure from the 50 – 50 weights for the debt portfolio would probably create problems for the firms that have borrowed on the assumption that those weights will continue.

414 SDP submission to IPART consultation on debt margins, April 2020, pp 2-3 and Sydney Water, *Keeping Sydney liveable, productive and thriving for a sustainable future – response to IPART's Draft Report and Determination*, April 2020, p 127.

415 Our uncertainty index policy was introduced in our 2013 WACC review. At that time we did not have a trailing average cost of debt. Since the 2018 introduction of the trailing average, firms have been substantially protected from any refinancing risks, even in times of market uncertainty. This development has reduced the importance of adjusting temporal weights to deal with abnormal market conditions. At the same time, it has increased risks to the firms from any change to the temporal weights for debt, as noted by SDP and Sydney Water's submissions.

I.8.2 Stakeholders proposed that we give greater weight to the current cost of equity

SWC and SDP submitted that the Tribunal should consider giving greater weight to the current market cost of equity, but did not suggest particular weights.[416] Neither Hunter Water nor Water NSW commented specifically on the temporal weights that the Tribunal should use.

Both Sydney Water and SDP argued that the temporal weights should be adjusted for the cost of equity only, and that the reweighting should give more weight to current observations and less to long-term observations.

Both these stakeholders made the argument that the current cost of equity is responding as expected to the COVID-19 pandemic, but our estimate of the long-term cost of equity is responding in a perverse and implausible way to this crisis. They say that the crisis is making the risk-free rate fall, and adding a constant long-term MRP to that results in a falling cost of equity at a time when they say it should be rising.

Their arguments misunderstand the role of long-term market observations in the WACC and misstate the impact of COVID-19 on our estimation of the long-term cost of equity. There is no doubt that the current financial crisis is having significant short-term effects. These are captured in the current cost of equity. The purpose of the long-term cost of equity is to provide stability in times of what may turn out to be temporary uncertainty. Thus, the long-term cost of equity would not serve its purpose if it was highly reactive to short-term events. The fact that it is not highly reactive does not mean, as they assert, that the method is flawed. It means that the method is working as intended.

Both submitters are incorrect in asserting that current financial conditions are driving the long-term cost of equity lower. We calculate the long-term cost of equity by adding the long-term MRP to a ten-year trailing average of the risk-free rate. Whatever movements there have been in the spot risk-free rate since this crisis began only receive 10% weight in the long-term risk-free rate. That means that our estimate of the long-term cost of equity has been quite stable.

It is true that the long-term cost of equity has been falling for many years as interest rates have declined, but that has nothing to do with COVID-19. All the observed changes to the long-term cost of equity are driven by events and processes that were well in train and widely observed at the time we conducted our 2018 WACC review. At that time, SDP, Sydney Water and all other stakeholders were supportive of our approach. Nothing relevant to the long-term cost of equity has changed since then.

For these reasons, we do not agree with the suggestions from Sydney Water and SDP to depart from 50 – 50 weight for the cost of equity. We consider that 50 – 50 weights appropriately balance short-term and long-term equity market dynamics. Despite the current COVID-19 pandemic, equity investors would still be considering both the current and longer term returns.

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416 SDP submission to IPART consultation on debt margins, April 2020, pp 3-4 and Sydney Water, *Keeping Sydney liveable, productive and thriving for a sustainable future – response to IPART's Draft Report and Determination*, April 2020, pp 125-127.

I.9 Annual WACC adjustments

Our 2017 review of the WACC method introduced a trailing average cost of debt. 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.

We considered two options to adjust price to account for annual WACC changes:

1. To store the present value of the revenue adjustments caused by the changing WACC and apply a true-up at the next regulatory period.
2. Annual real price changes to reflect the changing WACC.

Our decision is to use an end of period true-up approach. This is consistent with our Draft decision and was supported by Hunter Water.[417]

[417] Hunter Water, *Pricing Proposal to IPART, Technical Paper 3*, 1 July 2019, p A-10; and Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, p 19.

J Inflation and the WACC

Expected inflation is a key component of the Weighted Average Cost of Capital (WACC) methodology we use when setting prices for regulated utilities in NSW. Our decisions on the WACC need to be as accurate as practicably possible to facilitate efficient levels of investment. If the WACC is too high, the regulated business could be encouraged to over-invest in assets and customers will over-pay for the services they receive. If the WACC is too low, the regulated business' financial viability could be affected meaning that it could under-invest in assets which could negatively impact the level and quality of services provided to customers. Neither of these situations are in the long-term interests of customers.

Broadly speaking, inflation has three impacts in our building block model:

1. An estimate of expected inflation is used to convert the nominal WACC to a real WACC to set prices (in real terms) over the regulatory period.
2. Prices are indexed by actual inflation throughout the determination period.
3. The business' Regulated Asset Base (RAB) is indexed by actual inflation at the end of the determination period. Indexing the RAB in line with actual inflation provides a consistent real price for capital assets over their economic lives.

The real WACC is derived from the Fisher equation, as follows:

$$1 + Nominal\ WACC_t = (1 + Real\ WACC_t) \times (1 + expected\ inflation_t)$$

$$Real\ WACC_t = \frac{1 + Nominal\ WACC_t}{1 + expected\ inflation_t} - 1$$

The best estimate of inflation expectations

When setting the real WACC, our aim is to derive the best estimate of the market's inflation expectations, as opposed to strictly replicating actual inflation. That is, we are setting a real WACC by subtracting our best estimate of inflation *expectations* (at the point in time that we calculate the nominal WACC) from the nominal WACC. Our consultants, the Centre for International Economics (CIE), agreed with this logic:[418]

> IPART is attempting to measure the inflation expectation held by agents at the time of WACC sampling and that this expectation cannot be observed historically…
>
> The other point to note about measuring inflation expectations is that the uncertainty about future inflation is not of relevance. It is the accuracy with which IPART can measure inflation expectations that is at issue, not whether this is an accurate measure of actual inflation

418 Centre for International Economics, *Peer Review – Inflation and WACC*, May 2020, p 9.

J.1 Our review process

In 2018 we completed a full review of our WACC method.[419] We undertook extensive public consultation and analysis, including releasing an Issues Paper and a Draft Report, holding a public hearing and hosting workshops with stakeholders. The businesses we regulate were closely involved in this process. For instance, Sydney Water commented that:

> IPART's existing WACC methodology works well, incentivising improved financial efficiency and stability. These sentiments have been echoed by our external rating agency, which have maintained our generally stable credit rating.[420]

We stated in our Issues Paper for the current price reviews that we intended to apply the method we established in the 2018 WACC review. In our Draft Report we determined the real post-tax WACC to be 3.2%. Hunter Water, Sydney Water and Water NSW responded that this WACC is too low and threatens their financeability.

In response, we have considered the utilities' concerns and proposed alternative approaches and we have engaged a consultant, the Centre for International Economics (CIE), to peer review how we estimate expected inflation when setting the real WACC.

J.2 Our approach to estimating expected inflation

In our 2018 WACC review, we decided to calculate the expected rate of inflation by calculating a geometric average of:

- the Reserve Bank of Australia's (RBA) 1-year ahead forecast from its Statement of Monetary Policy (SMP) to represent inflation expectations for the first year of the determination, and
- 2.5%, the midpoint of the RBA's target band for inflation, in all subsequent years of the determination.

We also synchronised the sampling dates, so that we would sample the required data for debt, equity and estimating expected inflation at the same time (ie, two-monthly sampling window). The synchronised method is unbiased because it recognises that movements in debt, equity and inflation are correlated.

Our reasons for adopting a geometric average approach

In our 2018 WACC review, we decided on a 'geometric average' approach because it is more accurate, less complex and more replicable than other approaches such as break-even inflation (BEI). In particular, we said:

> We recognise the in-principle benefits of using the BEI method to calculate inflation. However, on-balance, we have decided to maintain our draft decision to use a geometric average approach as we consider that currently, there is not a sufficient case for change:
>
> 1. While our analysis suggests that liquidity in the inflation-linked bond market is not currently an acute concern, we remain concerned that the market may not remain sufficiently liquid throughout

419 IPART, *Review of our WACC method – Final Report*, February 2020.
420 Sydney Water, *Submission to IPART's Draft Report – Review of our WACC method*, December 2017, p 1.

the business cycle. Therefore, the accuracy of the BEI method may vary at different points in the economic cycle.

2. In part, due to data limitations, the BEI method is a slightly more complex, and less replicable, method compared to a geometric average.

More detail on this decision is provided in our 2018 WACC review Final Report.[421]

The AER has recently amended its approach to estimating expected inflation

The Australian Energy Regulator (AER) amended its approach to estimating inflation expectations in late May, recognising that this is an unprecedented economic environment and noting that "…COVID-19 is having a significant impact on our economy and we are factoring this into our decisions."[422]

For its 2020-2025 network revenue determinations, the AER is implementing a trimmed mean inflation forecast from the RBA for the first two years of its forecast window and an estimate of 2.5% for the remaining eight years. It argues that due to the volatility in the CPI series, a trimmed mean contributes to the best estimate of inflation over the period. This approach results in an estimate of expected inflation over the determination period of 2.27%.

The RBA's trimmed mean inflation forecast for the first year of the determination period is 1.25% which, when combined with three years of 2.5% (RBA midpoint of target inflation) as per IPART's methodology, produces an inflation expectation of 2.2%. This is slightly below the 2.3% we have calculated based on our approach.

The AER notes however, that this change will not necessarily apply in future determinations. Rather, it is an emergency response during these unprecedented economic conditions. The AER has announced a larger review of its inflation methodology, which will determine its approach for future periods.

J.3 Feedback from the regulated businesses

Submissions in response to our draft reports from Sydney Water, Hunter Water, Water NSW and Sydney Desalination Plant Pty Ltd argued that our approach to estimating inflation expectations is flawed. They raised two key issues, explained below.

The utilities argued that our approach does not produce a reasonable estimate of expected inflation in the current market conditions

The utilities argued that our estimate of expected inflation, of 2.3%, is too high when market-based measures of expected inflation have fallen dramatically in recent months. Their concern is that because our inflation expectations are too high, our estimate of the real WACC for the 2020 determination period is too low. In its response to our Draft Report, Sydney Water wrote:

> IPART's measure of inflation (2.3%) is upward biased relative to the majority of alternative inflation expectations for the next four years, as it gives very little weight to market conditions.

421 IPART, *Review of our WACC method – Final Report*, February 2020, p 79.
422 AER, *AER provides update on 2020-25 network revenue determinations*, 22 May 2020.

The utilities are concerned that this 'error' will impact their financeability and a true-up mechanism, to correct for any difference between expected and actual inflation, should be established

The utilities indicated that the inflation 'error' would result in windfall losses/gains. Furthermore, Sydney Water claimed that this is because it would permanently under- or over-recover its nominal WACC.

> "…markets are expecting actual inflation to remain at about 0.65% for 2020-24, well below IPART's forecast inflation of 2.3%. If this expectation proves correct, Sydney Water will suffer a loss of $1.3 billion for 2020-24, a shortfall which equity holders must bear."[423]

The utilities proposed we conduct a comprehensive review of our approach to estimating expected inflation and, as interim measures, adopt a lower inflation expectation of 1.7% for the 2020 determination period and introduce an end of determination true-up for any difference between expected (ie, 1.7%) and actual inflation.[424]

J.4 What questions have we considered in this review?

The utilities' feedback raised two main questions which we have considered:

1. Is our method for estimating expected inflation appropriate?
2. Should we introduce a true-up for the difference between expected and actual inflation?

For each of these questions we undertook analysis, and sought advice from our consultant (the CIE) before coming to a decision.

The CIE has reviewed the reasonableness of our approach and logic in making our decisions, and found that our approach is "…coherent and the underlying logic makes sense."[425] However, the CIE notes that the utilities have valid claims and that the difference in opinion arises because there are two separate issues at play: the first being whether IPART is accurately measuring inflation expectations (ie, whether the estimate of expected inflation is accurate – see question 1 above), and the second being that the utilities borrow in nominal terms and therefore are exposed to inflation risk (ie, whether expected inflation accurately forecasts actual inflation – see question 2 above) over time.

J.5 Is our method for estimating expected inflation appropriate?

We have reviewed our method for estimating expected inflation when setting the real WACC. In doing so, we considered a number of different options, and assessed these against key principles. We then reviewed the information available since the 2018 WACC review - that

423 Sydney Water *Submission to IPART's Draft Report – Review of prices for Sydney Water from 1 July 2020*, April 2020, p 118.

424 Sydney Water, *Submission to IPART's Draft Report – Review of prices for Sydney Water from 1 July 2020*, April 2020, pp 2-3. Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water Corporation from 1 July 2020*, April 2020, pp III-IV. Water NSW, *Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020*, April 2020, p 5. SDP, *Submission to IPART's Draft reports for Sydney Water and Water NSW*, April 2020, pp 5-6.

425 CIE, *Peer Review – Inflation and WACC*, May 2020, p 1.

is, recent inflation outcomes, as well as the recent performance of market-based measures of expected inflation (namely BEIs and inflation swaps). The CIE then reviewed our findings.

Our view is that the evidence is consistent with our estimate of expected inflation

Although recent developments increase uncertainty, a 2.3% estimate is consistent with our view that the best estimate of expected inflation is towards the bottom end of the RBA 2-3% inflation target:

- The RBA's research on long-term inflation expectations – derived from financial market data and surveys of households and businesses – suggests inflation expectations are anchored between 2-2.5%.
- The financial market information, leading into the current crisis, suggested inflation expectations of 1.6-1.7%.
- The RBA's most recent Statement of Monetary Policy – which accounts for recent developments – suggests over the next two years, there are likely to be countervailing impacts on inflation, with the deflationary effects from the spare capacity in the labour market and in the economy expected to be partly offset by the inflationary impact of supply disruptions.

An approach based on RBA forecasts remains appropriate

In our view, the RBA is objective, and best-placed, to analyse what the available information suggests for expected inflation. Given the RBA's status as the inflation-targeting central bank, even though its inflation forecasts do not exactly align with our determination periods, we consider that its forecasts and outlook on inflation would also carry a high weight with agents in the economy (which are a broader set than those who buy and sell inflation indexed bonds, or inflation swaps).

In comparison, recent movements in market-based measures of inflation (break-even inflation (BEI), and inflation swaps) highlight that they do not necessarily perform well in periods of financial market volatility. The RBA's most recent SMP notes:[426]

> Both short- and long-term market-based measures of inflation expectations have declined since the widespread outbreak of COVID-19 in early 2020; however, it is difficult to interpret the magnitude of these declines because functioning in these markets has been significantly impaired recently.

Our consultants did not find a compelling reason to change our approach

The CIE reviewed our approach to estimating expected inflation, and has agreed with our analysis that we should maintain our current approach. In particular, it noted:[427]

> The BEI method and IPART's current method do provide increasingly divergent views of inflation. The volatility in inflation measured using the BEI method is supportive of IPART's previous findings. Given this, there is no particular reason for IPART to change to this method without thorough consideration and consultation, given it has reviewed this in the past at length.

426 RBA, Statement of Monetary Policy – May 2020, Inflation, viewed 5th June 2020, https://www.rba.gov.au/publications/smp/2020/may/inflation.html.
427 CIE, *Peer Review – Inflation and WACC*, May 2020 p 9.

Our analysis of the options

We considered three broad approaches (options) to estimate inflation expectations:

1. **Status quo approach**: maintaining our current approach, which is the geometric average of the RBA's 1-year ahead inflation forecast with a 2.5% estimate in future years.
2. **RBA approach**: refining our current approach to use all available information from the RBA's most recently available SMP forecasts. That is, to use the RBA's 1- and 2-year ahead inflation forecasts, and review the RBA's guidance on medium-term inflation to consider where we set the inflation estimate for years 3 and 4.
3. **Market approach**: to use, or have reference to, the inflation expectations derived from market-based measures of inflation, that is, from BEI and/or inflation swap data, as put forward by Sydney Water.

The RBA approach involved two key changes to the status quo approach:

1. **Timing:** it adopted an inflation expectation from May 2020, combined with financial data from February-March 2020. Given the current uncertainty, this option balanced the increased accuracy from a more contemporaneous inflation forecast against the potential bias introduced from sampling data in different periods.
2. **Method:** it adopted the RBA's 2-year ahead forecast to represent expected inflation for the second year of the determination, and reviewed the RBA's qualitative guidance on medium-term inflation expectations in the May SMP to decide whether to deviate from a 2.5% expectation in subsequent years of the determination.

Table J.1 Comparison of the status quo and RBA approaches

Element	Status quo	RBA approach
Year 1 estimate	1.75% based on the 1-year ahead forecast in the February 2020 SMP that was available during the WACC sampling window	2.75% based on the 1-year ahead forecast from the most recently published May 2020 SMP.
Year 2 estimate	2.5%	1.5% based on the 2-year ahead forecast from the May 2020 SMP.
Future year estimate	2.5%	2.5% as a default. Deviate from 2.5% to the extent there is medium-term inflation guidance in the most recently published SMP. The May 2020 SMP did not provide sufficient guidance to deviate from 2.5%
Average estimate	**2.3%**	**2.3%**

We reviewed the options against four key principles

In assessing the three options, we firstly established four principles that our estimate of expected inflation should meet:

1. **Accurate and unbiased**. The estimate needs to be unbiased, in that over time it reflects an accurate estimate of expected inflation.
2. **Dynamic.** Our estimate should react (but not over-react) to new information.
3. **Sustainable.** The estimate should provide appropriate and stable cashflows to the regulated businesses over time.
4. **Objective and transparent.** We should use objective decisions, rather than judgement, to estimate inflation. Our estimates should be applied using a transparent process accepted by stakeholders, with opportunity for consultation.

Table J.2 compares how each of the options performs on these principles.

Table J.2 Comparison of the three approaches considered in this review

	Status quo	RBA approach	Market approach
1. Is it unbiased?	**Generally yes.** Assumes that economic agents believe the RBA is a credible inflation targeter over the long run.	**Generally yes.** Assumes the RBA's forecasts are unbiased and economic agents believe these forecasts.	**Potentially.** In our view, bond market measures tend to under-forecast inflation expectations in periods of financial market volatility and may be affected by Quantitative Easing policies.
2. Is it dynamic?	**Generally no.** Only one-year out of the four updates due to the geometric average.	**Generally yes.** We could update every year if the RBA provides clear guidance.	**Yes.** As outlined above, it might over-react to changes in market conditions due to illiquidity.
3. Is it sustainable?	**Mixed.** If the inflation forecasts are too static this creates temporary cash flow issues.	**Mixed.** It relies on the quality and detail in the RBA's inflation forecasts.	**Mixed.** Most of the time these measures react appropriately to new information, except in times of financial market volatility.
4. Is it objective/ transparent?	**Yes.** It can be applied objectively, and reflects the outcomes of a public IPART review process.	**Mixed.** This is a departure from our WACC review (albeit a relatively small departure). There may be some judgement in interpreting the RBA's medium-term forecasts.	**No.** This is a large departure from our WACC review. There is a limited pool of inflation linked bonds to estimate expected inflation, and this is a more technical method of calculating inflation expectations. Because of this, there may be disagreement on how we calculate this measure.

Table J.2 shows that none of the three options are unambiguously superior. However, the first two options – the status quo and RBA approaches – both provide an inflation forecast of 2.3%. We re-reviewed the bond market approach, and found that the concerns we had during our 2018 WACC review remain valid. For instance, we found that the market-based forecast of 0.65% was substantially impacted by recent illiquidity in these markets alongside the COVID-19 pandemic. Before the recent pandemic, a more realistic estimate from these measures would have been about 1.6-1.7%, and it was difficult to extract a robust signal from these markets in the recent market volatility.

The CIE found that our approach is reasonable for the current pricing reviews. Looking forwards, the CIE suggested that the next WACC review could further consider some aspects of our method for estimating expected inflation, including:

- the merits of the BEI method, and
- the time period over which we apply an estimate of inflation expectations.

We agree with the findings of the CIE, and intend to review our estimate of inflation expectations in the WACC at the next comprehensive WACC review.

J.6 Should we introduce a true-up for the difference between expected and actual inflation?

The utilities are seeking an ex-post true-up of inflation so that they are not adversely impacted if our estimate of inflation expectations, set at the beginning of the regulatory period, turns out to be different to actual inflation over the period. We considered this proposal, but have decided not to implement such a true-up, because:

- When estimating the real WACC, we are estimating **expected** inflation and not **actual** inflation. Unlike other cost pass-throughs, errors in estimating inflation expectations (as opposed to forecasting actual inflation) are not a directly observable variable.
- An inflation true-up does not offset the impact of actual inflation on a utility's cash flows over the next regulatory period.
- Our cost of debt true-up is the appropriate tool to address the risk of unfunded debt costs over the next regulatory period.

The CIE reviewed this reasoning and agree that:

> We also do not see any possible role for an inflation true up in relation to more accurately measuring inflation expectations.
>
> It is not possible to undertake a true up of inflation expectations, because the 'true' inflation expectation is not observed.[428]

[428] CIE, *Peer Review – Inflation and WACC*, May 2020, p1.

Our view is that the primary financial risk to a utility's cash flows during the regulatory period is an unanticipated increase in borrowing costs (ie, on new debt). This is addressed through the cost of debt true-up we introduced in the 2018 WACC review and we have considered small refinements to the true-up.

Over time, the 'inflation risk' to the utilities that arises from a difference between expected inflation and actual inflation is indexed into the RAB and gradually recovered – in nominal terms, at least – from customers. Consequently, we intend to review how the RAB is indexed by inflation when we next review our WACC method.

K Demand and customer numbers

This appendix corresponds to Chapter 7 Demand and customer numbers.

In this appendix, we present supplementary information on Hunter Water's demand forecasting approach for water sales volumes and stormwater customer numbers.

As set out in Chapter 8, we have introduced an uplift in the water usage charge, which is triggered when water storage levels fall below 60% and remains in place until water storage levels reach 70%. This means we set a water usage charge for non-drought periods, and another higher water usage charge for drought periods. To set these two prices we need two different water sales volumes forecasts, namely of:

- Water sales volumes for non-drought periods – which are the volumes Hunter Water would sell each year under average weather conditions, and
- Water sales volumes for drought periods – or the lower sales volumes resulting from water restrictions and the impact on consumption arising from the higher price itself, based on the price elasticity of demand.

K.1 Hunter Water's demand forecasting approach

Hunter Water used its demand forecasting model to generate the water sales volumes forecast for non-drought periods.

As noted in Chapter 7, Hunter Water's demand forecasting approach comprises two stages:

1. Top-down climate correction to produce a demand starting point
2. Bottom-up forecasting from this demand starting point onwards.

Hunter Water has developed a new climate correction methodology to estimate the weather adjusted demand starting point. The methodology is discussed in further detail below.

We also discuss Hunter Water's assumed return to historical rainfall levels for its non-drought demand forecast.

K.1.1 Hunter Water's non-drought demand forecast represents demand under average weather conditions

Hunter Water's climate correction methodology relies on a regression model – known as a Demand Tracking Model (DTM) – to predict daily demand based on weather variables (ie, temperature, evaporation and soil moisture). The key elements are:

1. **Calibration –** Hunter Water used two years of data (from 1 July 2016 to 25 July 2018) to calibrate the DTM – which calculates how daily water demand responds to different daily weather conditions
2. **Hindcast –** Hunter Water then used the DTM to generate the daily water production that would have occurred in the calibration period under daily weather observations from 1970 to 2019
3. **Climate correction** – the weather adjusted demand starting point (ie, base year for Hunter Water's non-drought demand forecast) represents the average of the hindcast daily water production.[429]

Hunter Water's new climate correction methodology is an improvement on its previous demand starting point process as it removes the influence of short-term weather conditions on demand.[430] The DTM uses 49 years of daily data to generate the demand starting point, compared to the seven data points used by the previous process. Hunter Water considers long-term average climatic conditions the most appropriate approach to forecast water demand so that water usage statistics are not influenced by one or two years of high or low water demand.[431]

DPIE commissioned Jacobs to undertake a peer review of Hunter Water's demand model in 2019 as part of the update to the Lower Hunter Water Plan, and we also asked Aither to review Hunter Water's demand forecast. Jacobs and Aither both concluded that Hunter Water's DTM methodology is a reasonable and robust basis for estimating the weather adjusted demand starting point.[432]

We consider that Hunter Water's climate correction methodology produces the best available estimate of the demand starting point. This is because future weather conditions are uncertain, and the impact of increased climate variability (as a result of climate change) on water sales is difficult to predict over the short-term. Hunter Water used daily weather conditions from 1970 to 2019, which we consider to be sufficiently representative of the range of potential weather conditions likely to be experienced in the Lower Hunter region over the next four years.

We recognise that increased climate variability may impact water sales over the 2020 determination period. However, our DVAM (see Chapter 3) can mitigate the effects of variations between forecast and actual water sales on Hunter Water's revenue. Furthermore, the significance of any emerging long-term trends in climate and the impact of this on water

429 Jacobs, *Peer Review of Hunter Water Demand Model, Phase 1: Demand Tracking Model Review*, 15 July 2019, p 8 and Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, p 31.
430 Hunter Water's previous process used the average of seven years of estimated residential garden demand to produce the demand starting point. Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, p 31.
431 Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 12.
432 Jacobs, *Peer Review of Hunter Water Demand Model, Phase 1: Demand Tracking Model Review*, 15 July 2019, p iii and Aither, *Hunter Water expenditure review*, 14 December 2019, p 150.

sales may be muted, given the relatively short 4-year pricing period. Hunter Water's ability to respond to climate variability and ensure the secure and sustainable supply of water is addressed through the NSW Government's Lower Hunter Water Plan.

K.2 We have also adopted a water sales volumes forecast for drought periods

Hunter Water recorded the lowest water storage levels in decades during the 2016 determination period, prior to rainfall in February 2020.[433]

Hunter Water modelled the potential reduction in water sales at different restriction levels. It determined that if:

- Level 1 water restrictions apply for a full year, water sales would fall by 5.6%
- Level 2 water restrictions apply for a full year, water sales would fall by 14.7%
- Level 3 water restrictions apply for a full year, water sales would fall by 29.8%.[434]

In our Draft Report, we adopted a single water sales volumes forecast based on the assumption of no water restrictions over the 2020 determination period.

We have made a decision (in our Final Report) to introduce an 'uplift' to the base water usage charge. The uplift will apply when water storage levels fall below 60%, and remain in place until water storage levels reach 70%. This enables the recovery of increases in operating expenditure (see Section 4.4) and foregone water sales during periods of water restrictions.

To determine the magnitude of the uplift, we require an estimate of water sales volumes for periods when the uplift would apply ie, a water sales volumes forecast for drought periods. This represents the water sales volumes forecast for non-drought periods, adjusted for the reduction in water sales due to water restrictions and the likely change in demand in response to a higher usage charge.

In Chapter 7 we considered the reduction in water sales due to water restrictions under three scenarios and discussed our decision to apply an 8.1% reduction to non-drought demand due to water restrictions being in place. We also accepted Hunter Water's proposed price elasticities (which reduce demand by a further 1.6 percentage points), which are discussed in further detail below.

433 Hunter Water implemented Level 1 water restrictions on 16 September 2019 for the first time in 25 years, and replaced these with Level 2 water restrictions on 20 January 2020.
Water restrictions returned to Level 1 on 24 February 2020, after rainfall in February 2020 provided a boost to water storage levels. Level 1 water restrictions remain in place at the time of drafting.

434 Percentage decrease represents the change in water sales between a restricted scenario and an unrestricted scenario. Hunter Water, *Supplementary Response to IPART Issues Paper*, 6 November 2019, p 12.

K.2.1 Estimating the likely change in demand in response to a higher usage charge

Water is generally 'price inelastic', as customers do not change their behaviour very much in response to price changes.

Hunter Water has not estimated the price elasticity of demand for its customer base. Instead, it proposed using the same price elasticities for a price increase as those we applied in our Draft Report for the Review of Prices for Sydney Water from 1 July 2020.[435] These elasticities are shown in Table K.1.

Table K.1 Price elasticities for a price increase

	Proportion of water sales (%)[a]	Price elasticity under drought conditions
Houses	65	-0.109
Apartments	5	-0.032
Non-residential	30	-0.132

a Consumption shares reflect the distribution for the 2017-20 price period.

Source: Hunter Water, *Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020*, April 2020, p 55.

We expect that water restrictions would reduce the demand response to a change in price (as restrictions reduce discretionary demand). To account for this effect, we applied a 50% reduction to the price elasticities that would apply under non-drought conditions,[436] to derive the price elasticities under drought conditions.

K.3 Forecast stormwater customer numbers

K.3.1 Our decision on forecast stormwater customer numbers includes corrections for data errors

As discussed in Chapter 7, our decision on forecast of billable stormwater properties (presented in Table K.2 and Figure K.1) is based on Hunter Water's revised forecasts, which correct for data errors from July 2019 onwards. The number of houses also increased by 185, and the number of apartments decreased by 185 as houses in community title developments have been reclassified as "houses" instead of as "apartments" as they are currently charged.

As a result, the number of residential properties increases by 3.6% and the number of non-residential properties increases by 2.6% between 2018-19 and 2019-20. Hunter Water forecasts growth over the 2020 determination period at 0.4% annually for residential properties, with no growth forecast for non-residential properties. We have accepted Hunter Water's forecasts.

435 IPART, *Review of Prices for Sydney Water from 1 July 2020 – Draft Report*, March 2020.

436 We used the residential (houses and apartments) price elasticities in Sydney Water's 1 July 2019 Pricing Proposal, and the non-residential price elasticity in IPART's 2016 Final Report for Sydney Water. Sydney Water, *Pricing Proposal to IPART, Appendix 8A: Water demand forecasting model*, 1 July 2019, p 8. IPART, *Review of prices for Sydney Water Corporation from 1 July 2016 to 30 June 2020 – Final Report*, June 2016, p 138.

Table K.2 IPART decision on billable stormwater properties, 2020-21 to 2023-24

	2018-19[c]	2019-20[d] (Current)	2020-21	2021-22	2022-23	2023-24
Residential						
Houses (standalone)[a]	49,075	51,142	51,322	51,502	51,683	51,864
Apartments (multi-premises)[b]	16,015	16,270	16,389	16,508	16,626	16,745
Residential – % change	-	3.6%	0.4%	0.4%	0.4%	0.4%
Non-residential						
Small (≤1,000 m^2) or low impact	1,945	1,968	1,968	1,968	1,968	1,968
Medium (1,001 m^2 to 10,000 m^2)	935	973	973	973	973	973
Large (10,001 m^2 to 45,000 m^2)	86	101	101	101	101	101
Very large (>45,000 m^2)	14	15	15	15	15	15
Non-residential – % change	-	2.6%	0.0%	0.0%	0.0%	0.0%

a Includes "vacant land".

b Includes "low impact residential properties".

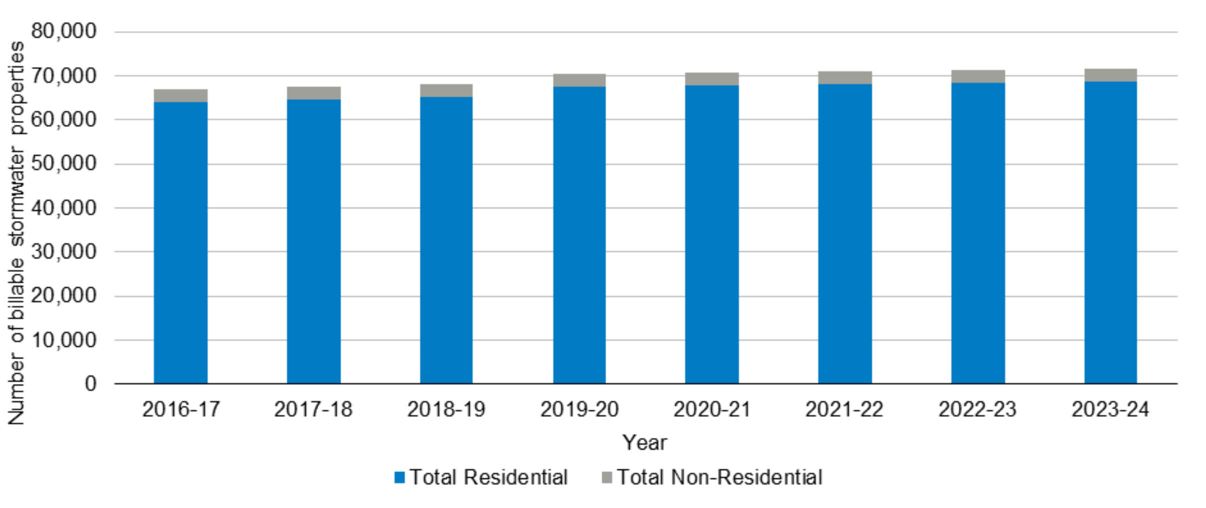
c Reported 1 July 2019, Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 24.

d Includes Hunter Water's data revisions received in January 2020.

Note: Includes redistribution of residential properties due to reclassification of 185 properties as houses.

Source: Correspondence with Hunter Water (email), 13 January and 3 February 2020, Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 24, and IPART analysis.

Figure K.1 Actual and forecast billable stormwater properties, 2016-17 to 2023-24



Data source: Correspondence with Hunter Water (email), 13 January 2020, and Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 24, and IPART analysis.

K.3.2 Hunter Water's proposed forecast indicated 0.4% growth annually

In its 1 July 2019 Proposal, Hunter Water forecast annual growth in the number of billable stormwater residential properties at 0.4% per year, with no growth expected in billable stormwater non-residential properties.

Table K.3 Hunter Water's proposed forecast billable stormwater properties, 2019-20 to 2023-24 (1 July 2019 proposal)

	2019-20[c] (Current)	2020-21	2021-22	2022-23	2023-24
Residential					
Houses (standalone)[a]	51,064	51,244	51,424	51,604	51,784
Apartments (multi-premises)[b]	16,477	16,597	16,717	16,837	16,957
Residential – % change	-	0.4%	0.4%	0.4%	0.4%
Non-residential					
Small (≤1,000 m^2) or low impact	1,958	1,958	1,958	1,958	1,958
Medium (1,001 m^2 to 10,000 m^2)	968	968	968	968	968
Large (10,001 m^2 to 45,000 m^2)	101	101	101	101	101
Very large (>45,000 m^2)	15	15	15	15	15
Non-residential – % change	-	0.0%	0.0%	0.0%	0.0%

a Includes "vacant land".

e Includes "low impact residential properties".

f Does not include redistribution of residential properties due to reclassification of 185 properties as houses, or revision of data errors.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 7*, 1 July 2019, p 24.

K.3.3 Hunter Water identified errors in its previously used customer numbers

As discussed in Chapter 7, the number of billable stormwater properties increased by 2,048 between 2018-19 and 2019-20. This was as a result of the identification and correction of errors in how stormwater property data had been recorded in Hunter Water's billing system. The errors resulted in 453 customers being overcharged by a total of $0.54 million and 2,155 customers being undercharged by a total of $2.01 million.

Table K.4 Increase in property numbers from 2018-19 to 2019-20 following data review

	Increase following data review	Percentage of total (%)
Residential		
Houses (standalone)[a]	1,756	85.7
Apartments (multi-premises)[b]	127	6.2
Non-residential		
Small (≤1,000 m^2) or low impact	54	2.6
Medium (1,001 m^2 to 10,000 m^2)	84	4.1
Large (10,001 m^2 to 45,000 m^2)	25	1.2
Very large (>45,000 m^2)	2	0.1
Total	**2,048**	**100.0**

a Includes "vacant land".

g Includes "low impact residential properties".

Source: Correspondence with Hunter Water (email), 14 January 2020.

Table K.5 Hunter Water customers over/undercharged from 1 July 2006 to 30 June 2019 due to data errors

Issue	Overcharged		Undercharged	
	Number	Total overcharged ($2019-20)	Number	Total undercharged ($2019-20)
Eligible but incorrect charge applied	31	$46,096	2,155	$2,010,854
Not eligible for charge	422	$489,724	0	$0
Total	**453**	**$535,820**	**2,155**	**$2,010,854**

Source: Correspondence with Hunter Water (email), 22 January 2020.

L Response to stakeholder views on water usage prices

We received several submissions about water usage prices in response to our Draft Report, some of which expressed concerns about our drought pricing or dynamic usage pricing mechanism. In this appendix we summarise and address some of these concerns.

While there is strong agreement that the current pricing method needs updating, some submissions supported an Inclining Block Tariff (IBT) over our dynamic water usage price. The Public Interest Advocacy Centre (PIAC), and Cate Faehrmann, a NSW Greens MP, preferred an IBT over a dynamic price.[437] Although stakeholders support IBT for a number of reasons, broadly speaking this is because IBT sends a permanent signal, not just during drought, about the cost of water and the benefits of water saving. We have looked at this issue very carefully and have responded to the specific concerns of each stakeholder's submission below.

Our view remains that our dynamic pricing approach is preferable. This is because it doesn't penalise large users of water who may be low income earners yet it still sends price signals when water is scarce. Customers who wish to conserve water at all times (even when dams are full) can still do so and will save more money than before. Even outside of drought, the water usage price remains higher than before while the fixed charge (water service charge) has been reduced.

L.1 PIAC argues that an IBT is more equitable than dynamic pricing

PIAC argues that an IBT is more appropriate for a number of reasons (Table L.1).

437 These submissions are available on the IPART website: https://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Metro-Pricing/Prices-for-Sydney-Water-Corporation-from-1-July-2020?qDh=2

Table L.1 IPART response to PIAC's arguments for an IBT

PIAC argument for IBT[438]	IPART response
More clearly aligns water pricing structures with business and community expectations that there be price signals related to higher water use that encourage and support conservation expectations.	We have not seen evidence that a dynamic price is any less aligned with community expectations.
It responds to customer preferences that pricing be weighted towards volumetric usage charges and improves a household's ability to reduce its bills by managing flexible or discretionary, rather than essential usage.	Our dynamic pricing approach increases the water usage price relative to the fixed service charge and so achieves this objective. .
It recognises that at higher levels of usage, units of water: ▼ have a higher cost to the community, related to the increasing impact of usage on finite water resources particularly during periods of scarcity, and ▼ contribute disproportionately to the need for expansion and operation of desalination, which is a higher cost means of providing water.	We agree that water becomes more valuable during times of scarcity, hence the dynamic price tied to water supply levels. However, at any given dam level, a single water usage price provides the appropriate opportunity cost of consuming an extra unit of water (including the extent to which additional water consumption imposes a cost on society by 'bringing forward' the need for capital investment). We set prices with reference to the system cost of delivering water, as opposed to assigning water an intrinsic value that changes with availability.
It creates a simple, transparent framework that can incorporate long and short-term cost and supply signals into a signal that households can understand. This flexibility is crucial given the uncertainty of climate change impacts combined with population growth.	We do not agree that an IBT is simpler than the dynamic price we have designed. In each case there are two possible prices for water, and circumstances determine which price is appropriate. The problem with an IBT is that we cannot set two prices for water at the same time without making at least one of those prices inefficient. We also cannot simply design an IBT for non-residential users without opening up opportunities for arbitrage.
It recognises scarcity is a long-term issue that needs to be signalled on a permanent basis not just during the incidence of extreme conditions. Short term scarcity pricing is considered punitive by water users, and has limited impact as it provides signals at a time when there is little scope for reduced demand to have a material impact. Once storages are depleted, only expensive 'supply augmentations' can be employed, at a time where implementation is at its most expensive.	We set the water usage price with reference to the long run marginal cost of water supply (LRMC). If calculated correctly, the LRMC will signal the costs of supply meeting demand over the long-term. We recognise, however, that estimating LRMC is inherently uncertain and imperfect – which is one of the reasons we are erring on the 'higher usage price side' and adding costs incurred during drought to the water usage price. We can see merit in the suggestion that 'drought' costs could be averaged and recovered in all periods. Overall, we consider an uplift that is only recovered during drought has the key advantages:

438 Public Interest Advocacy Centre, *Submission to IPART Draft Report – Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, pp 6-7.

PIAC argument for IBT[438]	IPART response
	▼ It is more responsive to climate change. If climate is drier and dam levels fall, the true long-run cost of water is closer to the drought price as more investments will be needed to secure future water supply. ▼ It openly acknowledges that we cannot predict how often we will be in drought, and avoids the risk of structurally over- or under- pricing water if these costs are averaged based on historical information. ▼ It promotes efficient revenue recovery. Our drought price recovers efficient costs from customers as they are incurred. ▼ It provides a more targeted signal to customers. Sending a stronger price signal to customers, in periods of relative scarcity, is appropriate.
It can be better integrated with waste and recycled water services pricing so as to better enable their efficient implementation. This is crucial as currently wastewater re-use and recycled water schemes are often not able to demonstrate an economic case.	PIAC has not made clear how this would work, but as outlined below, we believe our dynamic price promotes, and can be easily integrated with, recycled water.
It better allocates the burden of risks and costs among parties.	PIAC argues a dynamic price results in households carrying most of the risks and costs of scarcity, rather than the utility, but does not explain how. We do not agree that risks have been unfairly allocated, as explained below.
It creates less bill volatility for households.	An IBT would provide more bill certainty in that households know their allocated water allowance, and the point that prices jump. However, our modelling shows that there will not be much volatility in bills because we will not often flip between drought and non-drought periods. Further, any drought significant enough to warrant the change in price would have been well advertised, and households would be unlikely to be taken by surprise.
It provides an incentive to conserve water in the long term.	Our dynamic price provides a more appropriate incentive to conserve water when in drought. It doesn't apply when dams are full and water is plentiful. However, the design of our dynamic pricing means customers which save water even outside of drought receive a reduction in their bill. This is because we have increased the base usage price that applies outside of drought and decreased the fixed charge or service charge.
It is more equitable than a dynamic price which operates regressively. An IBT ensures that discretionary use is priced higher than essential use.	Our evidence shows that the number of people in a household is the main driver of water use, as opposed to household wealth or anything else. An IBT would penalise larger households which may in fact have lower incomes.. Further, we do not think it is appropriate that we make value judgements on what water is 'essential' and what is 'discretionary' when the product (water) and cost to the system is identical regardless of the end use.

Source: Public Interest Advocacy Centre, *Submission to IPART Draft Report – Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, IPART analysis.

L.2 EWON is more concerned with the bill impacts of the new regime for vulnerable customers

EWON identified that pensioners, renters, and large households could be disadvantaged and rebates are only available to pensioners. For instance, some renters will see an increase in their bills given the reweighting from fixed to variable charges.[439] That is, renters who are individually metered, and where the landlord is allowed to pass these costs to the tenant (eg, if the property has dual flush toilets). Theoretically, this should correct itself in the long term as the rental market adjusts to changes in costs. Regardless, we consider that the change will not make bills unaffordable, given that water bills make up a very small portion of household expenditure.

EWON notes that when an IBT was in place in 2004, a rebate was available to large families and considers that this rebate should be brought back, given that large families have higher non-discretionary water use, and are less able to cut down when prices are high.[440] Further, it argues that the pensioner rebate should be extended to Health Care Card holders (as is currently the case in the energy space).[441] We can see merit in these proposal, however, this is ultimate a decision for Government.

The Greens consider an IBT encourages water conservation

Ms Faehrmann does not mention equity, but rather favours an IBT because of the longer term price signal it sends to conserve water in all circumstances.[442] We note this, but we are providing a stronger incentive to conserve water when it is most needed, and setting a price based on the long-run cost of providing water in non-drought periods. However, the design of our dynamic pricing means customers who conserve water at all times (even outside of drought) will receive a reduction in their bill. It provides a stronger incentive for all users all of the time, with an additional incentive during drought. This is because we have increased the base usage price that applies outside of drought and decreased the fixed charge or service charge.

The NSW Government is concerned about the impacts of dynamic prices

The NSW Government did not discuss implementing an IBT, however it raised some concerns with our proposed dynamic pricing approach.

Firstly, it considered increases in water bills under drought prices (compared to average weather prices) will represent a higher proportion of the income of low-income households compared with higher income households.[443]

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439 Energy & Water Ombudsman NSW, *Submission to IPART's Draft report – Review of prices for Sydney Water – March 2020,* p 2.

440 Energy & Water Ombudsman NSW, *Submission to IPART's Draft report – Review of prices for Sydney Water – March 2020* p 3.

441 Energy & Water Ombudsman NSW, *Submission to IPART's Draft report – Review of prices for Sydney Water – March 2020* p 4.

442 Cate Faehrman MLC, Greens NSW, *Submission to IPART Draft Report – Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, 5 May 2020, pp 3-4.

443 NSW Government, *Submission to IPART Draft Report – Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, p 4.

This may be true, however, it overlooks the need to recover a utility's additional drought costs. Also, when assessing the impact on bills, we expect that customers would lower their consumption in response to restrictions. The alternative to higher usage prices (which somewhat skew costs towards larger and higher income households) is to increase fixed service charges, which would also be regressive and would not provide a reward to customers who reduce their water usage in drought.

Secondly, the Government argues increasing prices during drought may not have the intended outcome when combined with restrictions and conservation programs. Customers will not see a proportionate decrease in bills compared to their reduction in water use under restrictions. Customers are likely to expect a benefit proportional to the cost imposed.[444]

We have in part already addressed this concern by assuming a lower price elasticity of demand when determining the impact of drought prices on already restricted demand. We argue the increased price also provides a stronger incentive to save water, and that customers can understand the increased scarcity value of water during drought periods.

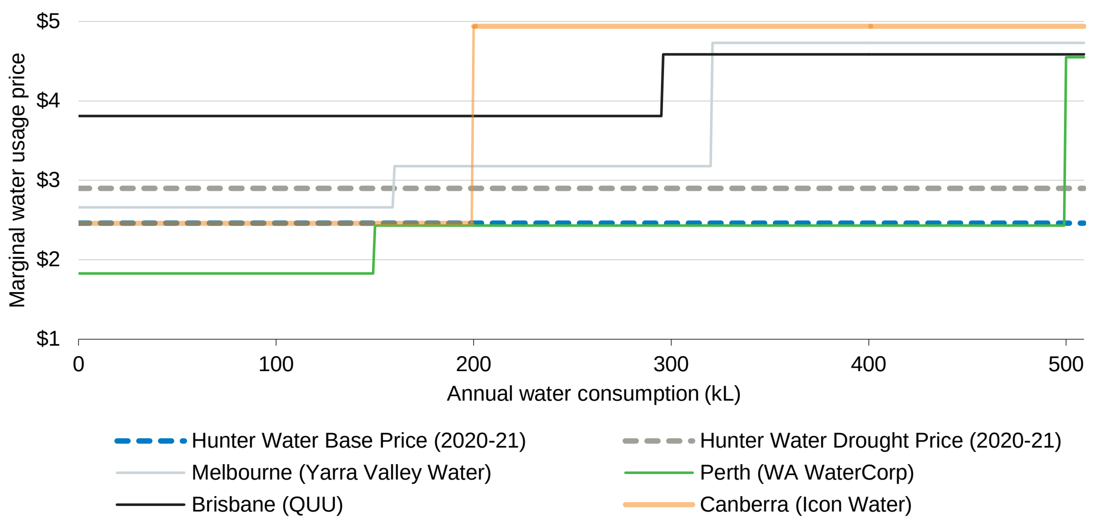
Overall, we consider our dynamic pricing complements water restrictions and water conservation program and aids the compliance message especially when conservation methods cannot easily be enforced.

L.3 We still consider our dynamic pricing is a better approach

As outlined in Chapter 8, the impact of the drought price is moderate.

Figure L.1 below shows that Hunter Water prices – even in drought – benchmark favourably to other water utilities across Australia.

Figure L.1 Comparison of Hunter Water prices (for 2020-21) compared to other utilities that use an IBT



444 NSW Government, *Submission to IPART Draft Report – Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, p 4.

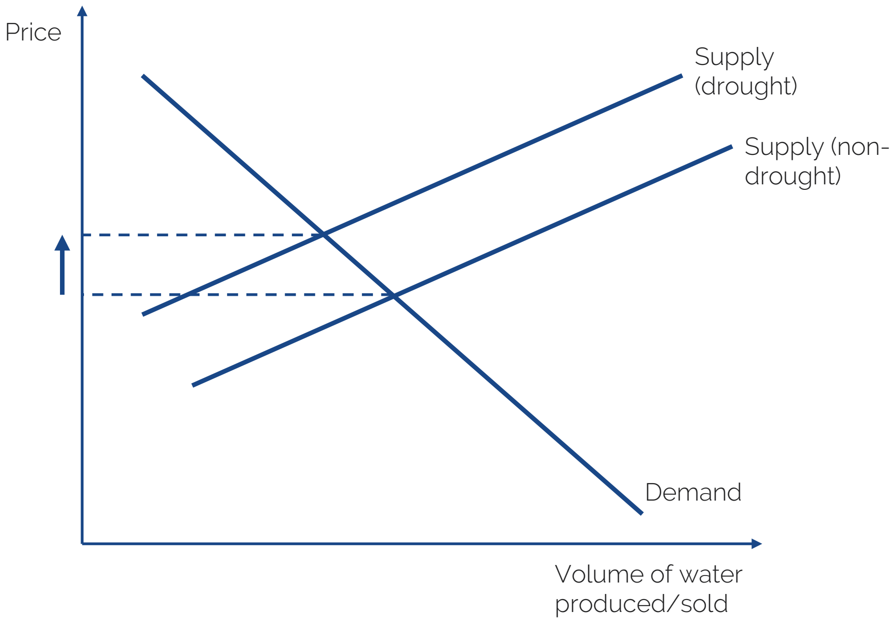
For a typical household consuming 200 kL/year, the $0.44/kL uplift in the water usage price would add $88 per year to a water bill compared to non-drought periods – assuming that this household makes no reduction to their water consumption.

Even for the subset of renters who pay for water usage – compared to the value of rent – this price increase is not large.

A drier climate would mean higher costs of providing water in the short- and long-term

Our approach acknowledges that the costs of providing water is asymmetric – that is, the cost of supplying water is structurally higher in periods of drought, than it is in other periods. And that if the Greater Sydney and Lower Hunter regions are moving towards a more variable and/or drier climate, these costs will persist over the long-term.

Figure L.2



However, this does not mean a utility does not bear risk. Instead, within periods of 'drought' and 'non-drought' the utility – rather than the customer – is bearing cost risk. For example, in a severe drought, the costs of maintenance, particularly for the wastewater system, could be higher than under our drought pricing.

We consider that a utility is best placed to manage drought within its system, and plan for the future, and in our framework it is still encouraged to do so. Under Sydney Water's proposal, too many of the drought costs were directly passed-through to customers, reducing the incentive for to manage these costs. Our dynamic pricing approach provides a broad envelope of funding within drought, and provides a better incentive for the utility to operate efficiently within drought to the long-term benefit of consumers.

However, we consider it appropriate – and efficient – for customers to face a signal that reflects the fact that costs are structurally different in drought and non-drought, and the difference in climate conditions cannot be managed away by the utilities.

Our pricing balances risks between all customers and the utilities

PIAC has argued that "[i]n not providing enduring signals, but simply passing through costs of scarcity unmitigated, it leaves all of the risk with consumers who have limited ability to manage the scarcity risks."[445]

Firstly, as shown above, our framework encourages utilities to pursue efficiencies in responding to drought, when compared to a simple cost pass-through framework.

Secondly, and importantly, all customers and businesses have an important role to play in managing scarcity risks. A dynamic price encourages customers to respond more in the short-run, while supporting long-term decisions in the face of an uncertain climate:

- Many water consumption decisions can be made in the short-run, and can result in non-trivial changes in water consumption. For example, the crops or plants that a family decides to plant in a garden can be made at a 3-6 month horizon, and decisions to conserve additional water in periods of scarcity such as taking shorter showers or re-using greywater in the garden can be made dynamically.
- Provided it is understood by customers, a dynamic water usage price encourages efficient long-term pricing decisions in the face of uncertainty. Consumers can weigh up the risk of higher prices and reduced supply certainty in drought when comparing different investments (eg, comparing a simple garden hose to a smart irrigation system). There is an important role for utilities and IPART to play in communicating this price structure change to customers.
- It is difficult to develop an appropriate IBT for non-residential customers given the variability in water usage and needs. If not applying the IBT to non-residential customers, the signalling effect therefore doesn't apply to some of the biggest water users. Comparatively, the dynamic price applies to all customers and all usage.

LRMC signals the opportunity cost that 'discretionary' water usage imposes on 'essential' water usage

PIAC has argued that the underlying 'value' of water is not priced within our framework[446], and implied more broadly that the marginal social cost of providing water is higher than a simple LRMC calculation.

We do not debate these points, rather, we emphasise that they do not support an IBT.

445 Public Interest Advocacy Centre, *Submission to IPART's Draft Report – Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, p 4.

446 Public Interest Advocacy Centre, *Submission to IPART's Draft Report – Review of prices for Sydney Water Corporation from 1 July 2020*, April 2020, p 4.

To the extent there are marginal social costs – or benefits – that are quantifiable, we will strive to incorporate them into an efficient water usage price (for potable water, or for alternatives like recycled water).

However – if estimated accurately – LRMC-based prices combined with the building block approach:

- Provide the correct signal to customers and businesses about the cost their additional usage places on society.
- Ensure that these costs are allocated equitably among customers.

The PIAC submission implies that if everyone consumes less water, then water will be cheaper for everyone, and therefore that larger users of water are imposing a cost on lower consumers of water.

However, the water usage price recovers the additional short-run operating costs, and long-term capital costs to expand supply, generated by an additional unit of water. And therefore, the water usage price provides the appropriate 'penalty' – or opportunity cost – imposed on society of an additional unit of water consumption.

The building block framework then ensures that customers only pay for the total efficient costs of supplying water at a point in time. Large consumers of water pay more than small users of water, by virtue of the water usage price, with the water usage charge reflecting the additional long-term cost pressures they place on the supply system.

The remaining costs of providing water – which are currently quite small – are recovered through fixed charges based loosely on the 'size' of the property.

Our pricing promotes, and would respond to, future recycled water schemes

PIAC has suggested that an IBT is better suited to encouraging recycled water. We disagree.

Sending the right signals for recycled water is important, but we should consider all the potential uses of recycled water. Other countries such as the USA and Singapore safely recycle and treat water so that it can be put back into the dams and storages and then further treated, so it is of equal or better quality to traditional water supply. Exploring these options makes sense going forward. It will give us more options for increasing water supply, and saves us the cost of running two sets of pipes to every house. An IBT, where essential use is priced very low, would discourage exploring recycled water as a potential alternative.

If recycled water is used as a substitute for potable water, then dynamic pricing can provide a stronger incentive to adopt water recycling. To the extent that the cost of providing recycled water is more stable in periods of drought – and is a more stable source of supply – compared to potable water, our dynamic pricing encourages risk-averse households and businesses to adopt recycling. The incentive to take up recycling becomes stronger in prolonged periods of drought.

If recycled water is integrated into the drinking water system, then its impacts on the cost of supplying water in drought would be captured by our drought usage price – as it would influence the likelihood of the drought price being applied, and the extent of additional costs for the utility to respond to drought as we respond to updated information.

M Location-based prices

Location-based discounts were first introduced in IPART's 2000 Determination.[447] In 2018-19 they applied to 19 'large' water customers consuming more than 50,000 kL of water. Hunter Water has around 43 'large' users, however not all receive a discount. The discounts apply differentially at seven specific zones, varying from 1% to 25%, depending on the capital related costs in each operational zone.[448]

M.1 History

In its proposal Hunter Water submitted that it:

> …first proposed the location-based charges as a quasi-form of access pricing. In the late 1990s, we observed new competition regimes developing in other utility sectors and the potential for similar mechanisms in the water industry. Competition in other sectors led to significant price restructuring, with prices for large customers better reflecting actual cost of supply.
>
> Since then, the NSW water sector has seen a number of major regulatory changes; namely, the introduction of an access regime under the *Water Industry Competition Act 2006* and IPART taking on the role of setting wholesale prices for the supply of wholesale services to WIC utilities. Hunter Water is the only major water utility in Australia to offer a declining block tariff for large water users.
>
> The location-based water usage charge reduces the usage revenue from larger users by around $2.3 million per year relative to a case where all water users pay the standard usage price. The lower usage revenue increases the water service charge for all water customers – an increase of about $10 per year for each residential customer. The five biggest recipients account for about 80 per cent of the total discount.[449]

In our 2016 price review, we recommended that in advance of the next price review, Hunter Water consider the merits of location-based prices and its pricing approach to large non-residential customers. We asked Hunter Water to consider the impacts on all customers (ie, those that pay location-based prices and the broader customer base) of all alternative pricing approaches. We noted that consultation with customers should be a key part of this review, including the provision of information on the varying costs of supply to different customers.[450]

In its July 2019 pricing proposal, Hunter Water proposed phasing out the location-based discount over five years commencing 2020-21 so that all customers would face the same usage price in 2024-25.[451]

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447 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 4.
448 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 18.
449 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 18.
450 IPART, *Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020*, Final Report, June 2016, p 105.
451 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 20.

M.2 Impact of location-based price discounts

We consider all customers should ideally face cost-reflective prices, and unless there is information to suggest the cost of serving these large customers is lower, we consider they should face the same water usage price as all other customers.

As noted above, in its July 2019 proposal, Hunter Water estimated that if the discounts are maintained, the usage revenue from large users would be reduced by around $2.3 million in 2020-21. This revenue would need to be recovered from the broader customer base. We estimate that under our decision, maintaining the location-based discounts would increase the water service charge by around $3.12 ($2020-21) per year, during the 2020 determination period.

M.3 Hunter Water's consultation with large users

While we consider the discounts should be phased out, Hunter Water did not consult with the affected large users until September 2019 – following the release of our Issues Paper. A longer consultation period would have given customers time to adjust.

Hunter Water did not specifically survey its large users in the lead up to submitting its pricing proposal (on 1 July 2019), although it included a question/s on phasing out the location-based pricing in its general residential/non-residential (limited numbers) survey. Respondents were marginally in favour of phasing out the location-based discount.

Hunter Water noted at the Public Hearing on 19 November 2019, that it did not include these large users receiving location-based discounts in its survey, as it understood that they would all want to minimise their bill and it did not want to bias the sample.[452]

Hunter Water informed us that it met with all major customers face-to-face between 4 and 20 September 2019 and followed this up with letters to large users, to explain its proposed phased removal of the discount. It informed us that it indicated the estimated impact of the proposed price change for each customer and invited customer feedback. It maintains that it has not received any direct feedback from this customer consultation with large users.

We consider that Hunter Water's consultation with these customers was not adequate or timely, as it did not directly consult the relevant customers prior to submitting its phase out proposal to IPART.

M.4 Largest water users will face higher bills

Table M.1 provides an indication of the impact of phasing out location-based discounts on large users' usage component, based on our decision on water usage prices and modelling of the phase-out of location-based discounts, and forecast demand for these users.

We estimate that there would be real increases in the usage component of large users' bills, in the range of $0 (or a negligible amount) to around $530,000 or up to 23%.

452 Transcript of Public Hearing, 19 November 2019, p 34.

Given the scale of some of the increases we have decided to defer the phase-out by one year, ie, to commence in 2021-22 (the second year of the 2020 determination period, see Chapter 8). This will give customers time to adjust to any potential bill shocks.

Table M.1 Impacts on bills for large users from phase-out of location-based discounts ($'000)

Customer	2019-20 bill	Bill 2023-24				Change 2019-20 2023-24 under our decision[a]
		Discount retained	Discount removed	Difference ($)	Difference (%)	
	($2019-20)	($2020-21)				
Customer 1	2,309	2,394	2,926	532	22.2%	26.7%
Customer 2	2,193	1,900	2,264	364	19.2%	3.2%
Customer 3	1,192	1,075	1,314	239	22.2%	10.2%
Customer 4	1,030	1,068	1,305	237	22.2%	26.7%
Customer 5	683	733	896	163	22.2%	31.2%
Customer 6	686	721	781	60	8.3%	13.8%
Customer 7	523	554	554	46	8.3%	14.7%
Customer 8	407	443	480	37	8.4%	17.9%
Customer 9	387	433	469	36	8.3%	21.2%
Customer 10	266	244	261	17	7%	-1.9%
Customer 11	160	48	59	11	22.9%	-63.1%
Customer 12	0	139	169	30	21.6%	na%
Customer 13	119	122	131	9	7.4%	10.1%
Customer 14	73	85	92	7	8.2%	26.0%
Customer 15	55	81	85	4	4.9%	54.5%
Customer 16	46	52	57	5	9.6%	23.9%
Customer 17	5	5	5	0	0%	0%
Total	**10,135**	**10,097**	**11,892**	**1,795**	**17.8%**	**17.3%**

a The percentage change includes inflation to 2020-21. Also, bills are calculated using forecast water sames for each customer. In some cases the forecast sales volumes are significantly different from 2019-20 sales volumes which also impacts on the bill difference.

Note: Hunter Water forecasts there would be 17 large users eligible for a discount in the 2020 determination period.

Source: IPART analysis.

N Multi-premises and joint service arrangements

A multi-premises is a premises that has two or more properties. A typical example of a multi-premises is a residential or commercial strata complex in which there are several apartments or shops (properties) at the one premises. However, a multi-premises may take other forms such as a community title development or a joint service arrangement.

There are different rules for charging properties within a multi-premises. To determine the appropriate prices, we first assess the development composition, and then consider customer types and the metering arrangements. We aim to balance cost reflective pricing against administrative costs.

Table N.1 outlines the various combinations of development composition, property type and metering arrangements, and the appropriate charge under the 2016 and 2020 Determinations. Below that, we address Hunter Water's proposal to change the charging approach for two specific arrangements (community title and joint service arrangements) and explain where we have decided to make some changes, and where we have decided against changes.

Table N.1 Charges for properties within a multi-premises

Metering arrangement	Water service charge		Wastewater service charge	
	2016	2020	2016	2020
Apartments in a residential only development				
Common meter or Individual meter	Low charge - Table 1 of the 2016 Determination Harmonised to standard 20mm charge by 1 July 2019	Standard 20mm charge – Table 1.1 of the 2020 Determination	Low 'apartment' charge - Table 7 of the 2016 Determination (Being harmonised to the standard 20mm charge over 15 years)	Low 'apartment' charge – Table 2.2 of the 2020 Determination Continuing the transition to the standard 20mm charge
Houses in a residential only development				
Common meter or Individual meter	Low charge -Table 1 of the 2016 Determination Harmonised to standard 20mm charge by 1 July 2019	Standard 20mm charge – Table 1.1 of the 2020 Determination	Low 'apartment' charge -Table 7 of the 2016 Determination Being harmonised to the standard 20mm charge over 15 years	Low 'apartment' charge – Table 2.2 of the 2020 Determination Continuing the transition to the standard 20mm charge **Except** Community Development Standalone Houses which are charged the standard 20mm charge

Metering arrangement	Water service charge		Wastewater service charge	
	2016	2020	2016	2020
Customers in a non-residential only development				
Common meter	Meter-based charge - Table 2 of the 2016 Determination - less the meter-based charge for any downstream individual meters (priced at the multi-premises level)	A portion of the meter-based charge less the meter-based charge for any downstream individual meters. – Table 1.1 of the 2020 Determination	Meter-based charge - Table 9 of the 2016 Determination - less the meter-based charge for any downstream individual meters (priced at the multi-premises level and subject to a minimum charge)	A portion of the meter-based charges less the meter-based charge for any downstream individual meters (subject to a minimum charge) – Table 2.1 of the 2020 Determination
Individual meter	Low charge - Table 1 of the 2016 Determination Harmonised to standard 20mm charge by 1 July 2019 if serviced by a single 20mm Meter Otherwise, the meter-based charge - Table 2 of the 2016 Determination	Meter-based charge – Table 1.1 of the 2020 Determination	If serviced by a single 20mm Meter - the 'house' charge - Table 8 of the 2016 Determination Harmonised to a standard 20mm charge by 1 July 2019 Otherwise, the meter-based charge - Table 9 of the 2016 Determination (subject to a minimum charge)	Meter-based charge – Table 2.1 of the 2020 Determination
Residential properties in a mixed development (ie, with residential and non-residential)				
Common meter or Individual meter	Low charge - Table 1 of the 2016 Determination Harmonised to standard 20mm charge by 1 July 2019	Standard 20mm charge – Table 1.1 of the 2020 Determination	Low 'apartment' charge - Table 7 of the 2016 Determination Being harmonised to the standard 20mm charge over 15 years)	Low 'apartment' charge – Table 2.1 of the 2020 Determination Continuing the transition to the standard 20mm charge)
Non-residential properties in a mixed development (ie, with residential and non-residential)				
Common meter	Low charge - Table 1 of the 2016 Determination Harmonised to standard 20mm charge by 1 July 2019	Standard 20mm charge – Table 1.1 of the 2020 Determination	Low 'apartment' charge - Table 7 of the 2016 Determination Being harmonised to the standard 20mm charge over 15 years	Low 'apartment' charge – Table 2.1 of the 2020 Determination Continuing the transition to the standard 20mm charge

Metering arrangement	Water service charge		Wastewater service charge	
	2016	2020	2016	2020
Individual meter	If serviced by a single 20mm Meter - Low charge - Table 1 of the 2016 Determination Otherwise - the meter-based charge - Table 2 of the 2016 Determination	Meter-based charge – Table 1.1 of the 2020 Determination	If serviced by a single 20mm Meter - the 'house' charge - Table 8 of the 2016 Determination Harmonised to a standard 20mm charge by 1 July 2019 Otherwise - the meter-based charge - Table 9 of the 2016 Determination (subject to a minimum charge)	Meter-based charge – Table 2.1 of the 2020 Determination

Note: The references in this table to the wastewater charges in the 2016 and 2020 Determinations refer to the unadjusted service charges, which will have discharge factors applied to provide the total service charge for wastewater connection. Discharge factors can be either a deemed discharge factor of 75 per cent for residential properties, or be based on a discharge amount determined by Hunter Water.

Source: IPART, *Hunter Water Corporation Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2016*, June 2016; and IPART, *Hunter Water Corporation Maximum prices for water, sewerage, stormwater drainage and other services from 1 July 2020*, March 2020.

N.1 Properties in community title developments

Properties in community title developments have two servicing options. Either:[453]

1. All lots have direct connections to water (individually metered) and wastewater. These are the same as a Torrens title developments - the most common type of subdivision. They are usually residential (typically houses) or non-residential (typically commercial) but may be mixed; or
2. One connection to water and wastewater for the multi-premise (ie, a common meter), and there may also be individual (sub) meters connected to each lot.

Under the 2016 Determination, standalone houses in community title developments were charged differently to houses in Torrens title developments for their water, wastewater, and stormwater connections (ie, service charges) depending on their metering arrangements.

- Houses with individual meters paid the standalone house charge
- Houses that share a common meter paid the multi-premises (apartment) charge.

The latter has a lower wastewater service charge, as presented in Table N.2.

453 Correspondence with Hunter Water (email), 2 December 2019.

Table N.2 Comparison of house and apartment service charges in 2019-20 ($2019-20)

Charge type	House charge ($)	Apartment charge ($)
Water Service	100.40	100.40
Wastewater Service	649.28	535.66
Stormwater (if applicable)	79.63	29.47
Total	**829.31**	**665.53**

Source: Hunter Water, *Pricing Proposal to IPART*, Technical Paper 8, 1 July 2019, pp. 15, 41, 45; and IPART analysis.

We have accepted Hunter Water's proposal to:

- Charge all houses in community title developments the same as a standalone house (standard 20mm meter charge), and
- Charge all apartments in community title developments the same as apartments in other arrangements, such as strata title developments (for wastewater, a lower 'transition' charge).

This will primarily impact houses in community title developments with a common meter, which will now face the same charges as the vast majority of other houses.

N.1.1 Reasons for our decision

Hunter Water argues that the use of metering arrangements to define charges rather than pricing class (e.g. house, unit, etc.) does not align well with all scenarios, and has added complexity to the billing system.[454] It has stated that it is confident that it can categorise properties as houses or apartments without the need to use the metering arrangement to define charges.[455]

We have accepted this proposal as it:

- Aligns with our pricing principle that customers imposing similar costs on the system should pay similar charges, and
- Will reduce complexity in Hunter Water's billing system, both for customers and for Hunter Water.

Hunter Water has indicated that this will affect 77 community title developments.[456] All other things being equal, this does not lead to an increase in revenue for Hunter Water, but to marginally lower prices for all other customers.

454 Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, pp 60-61.
455 Correspondence with Hunter Water (email), 2 December 2019.
456 Correspondence with Hunter Water (email), 14 January 2020.

N.2 Properties in joint service arrangements

A joint service arrangement is a legacy arrangement where services are supplied to multiple separately titled properties but only one property (the 'parent') is connected to the water supply system. The other ('child') properties receive services through private infrastructure connected to the parent property. This applies to a small number of properties and the cost and difficulty of installing a separate meter is not justified.

Under the 2016 Determination, properties in joint service arrangements serviced by a common meter were treated as properties within a multi-premises serviced by a common meter. As with other multi-premises, non-residential properties in a mixed-use joint service arrangement are charged as a residential multi-premise, ie an apartment. This is in accordance with our approach to all mixed-use multi-premises, developed based on data (from Sydney Water in 2012) indicating that strata-titled mixed multi-premises have, on average, six residential dwellings for every one non-residential occupancy.[457]

Hunter Water submitted that it is inequitable in mixed joint service arrangements for residential service charges to be applied to large non-residential customers. Hunter Water provided the example of a mine,[458] which has a common meter with six downstream houses.

The mine has three water supply connections; 25mm, 80mm and 100mm meter (no wastewater). The 80mm meter is also the common meter to the six houses. Hunter Water has noted that in this scenario, based on 2019-20 prices, the equivalent water service charge for a single non-residential customer is $3,598.79 p.a. ($2019-20) compared to the residential charge of $100.40 per year ($2019-20).

Table N.3 Service charge in 2019-20 for the mine if considered residential ($2019-20)

Charges – residential	Amount ($)
House (20 mm equivalent)	100.40

Table N.4 Service charge in 2019-20 for the mine if considered non-residential ($2019-20)

Charges – if considered non-residential	Amount ($)
Water service charge 25 mm	156.89
Water service charge 80 mm	931.76
Water service charge 100 mm	2,510.14
Total	**3,598.79**

Source: Correspondence with Hunter Water (email), 2 December 2019.

457 IPART, *Review of prices for Sydney Water Corporation from 1 July 2012 to 30 June 2016 – Final Report, June 2012*, p 154

458 Correspondence with Hunter Water (email), 2 December 2019.

Hunter Water has proposed treating each joint service arrangement property as a standalone property based on its pricing class (e.g. house, shop, mine, etc) instead of as a multi-premises.[459] Hunter Water indicated that this would affect 27 non-residential properties within mixed joint services arrangements.[460]

Hunter Water considers that it is able to classify properties as residential or non-residential. All properties in joint service arrangements are currently classified as residential or non-residential in Hunter Water's billing system, and the majority of these properties were assigned historically. Hunter Water periodically reviews classifications as required using methods such as Google maps and nearmaps overlaid on its internal GIS system. It is uncommon for historical properties to change use.[461]

N.2.1 Our assessment of Hunter Water's proposal

We have decided not to accept Hunter Water's proposal, and to maintain the 2016 pricing arrangement. This is because Hunter Water's proposal may lead to scenarios where the parent property is charged for a larger meter than it would otherwise require, as the meter must also service all downstream properties. There is a risk that some parent properties would be overcharged under Hunter Water's proposed pricing structure. Hunter Water suggested that to mitigate the issue of overcharging the parent property, the parent property should be charged the meter charge for the common meter **minus** the individual charges levied for all downstream properties.[462]

Our approach to setting service charges results in some differences between some non-residential customers, and between non-residential and residential customers. Non-residential customers within non-residential joint service arrangements serviced by a common meter pay a proportion of that meter charge, which may be less than the 20mm standalone charge.[463]

We agree that the current price structure for mixed development joint service arrangements is not ideal. However, on balance, our decision is to maintain current pricing arrangements for these properties for Hunter Water. In relation to Hunter Water's example of a mine with downstream houses, we note that if those houses are not individually rateable properties, the mine and houses would be treated together as a single non-residential property.

459 Hunter Water, *Response to IPART Issues Paper*, 21 October 2019, pp 60 and 61; and Correspondence with Hunter Water (email), 23 January 2020.
460 Correspondence with Hunter Water (email), 13 January 2020.
461 Correspondence with Hunter Water (email), 2 December 2019.
462 Correspondence with Hunter Water (email), 23 January 2020.
463 This is because the minimum charge for non-residential customers applies at the meter, while these properties are sharing a portion of the meter charge.

O Environmental Improvement Charge

O.1 Background

The Environmental Improvement Charge (EIC) is a pricing mechanism to fund the construction of wastewater systems and services for townships without a reticulated wastewater service ('sewerage backlog areas') within Hunter Water's area of operations. The charge has been levied on properties[464] connected to, and properties for which a connection was available to, the wastewater system.[465]

History

Hunter Water has provided backlog sewerage services since the 1980s. It has funded backlog schemes through a combination of NSW Government program funding and the EIC levy paid by the broader customer base.[466] The EIC in its current form was originally set to run until 2009. It was extended until 30 June 2019 to fund five further projects in the Lower Hunter. In May 2017, Hunter Water received a Ministerial Direction to complete the Wyee backlog sewerage scheme with additional funding from the Government.[467]

In 2016, IPART accepted Hunter Water's request to extend the EIC beyond its sunset date of 30 June 2019, to 30 June 2020 to cover the costs of providing backlog services to Wyee.[468]

For 2019-20, the EIC is set at $41.01 per customer. Over the 2016 determination period, Hunter Water raised around $28.8 million from the EIC.[469]

In its July 2019 pricing proposal, Hunter Water proposed discontinuing the EIC from 1 July 2020 with the completion of the Wyee works.[470] It also noted the new approach in our 2018 Developer Charges and Backlog Sewerage Charges review[471], where the existing property owner contributes towards the capital costs of Hunter Water's assets that provide services to the property.

464 Properties owned by eligible pensioners were exempt from paying the EIC.
465 IPART, *Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020, Final Report*, June 2016, p 119.
466 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 41.
467 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 41.
468 The Government announced that the sewerage services would be provided to the township of Wyee, and that it would be funded through the EIC. It did not, however, issue IPART with a direction under section 16A of the IPART Act.
469 Hunter Water Annual Information Return, September 2019, and IPART analysis.
470 Hunter Water, *Pricing Proposal to IPART, Technical Paper 8*, 1 July 2019, p 41.
471 IPART, *Maximum prices to connect, extend or upgrade a service for metropolitan water agencies, Final Report*, October 2018.

O.2 Some stakeholders oppose discontinuing the EIC

In response to our Issues Paper, we received three stakeholder submissions opposing Hunter Water's proposal to discontinue the EIC. In particular, Cessnock City Council strongly opposed discontinuation of the EIC if there is no alternative equitably funded mechanism(s) for sewerage connection to backlog areas. The Council states that sewerage connection would cost affected households $55,000/lot.[472]

At the IPART Public Hearing held in November 2019, Cessnock City Council and the City of Newcastle noted areas within their boundaries that needed sewering (North Rothbury and Hexham respectively) and queried if alternative funding models existed for backlog sewerage services if the EIC was removed.[473]

We note that in the past IPART has set the EIC when there is a Ministerial Direction for works to be carried out. The decision to nominate an area for a backlog program is not within the scope of a pricing review.

From a pricing perspective there are a range of options for funding backlog sewerage services as set out in the section below.

We also note that while cost-reflective capital charges can be significant, there are direct benefits to households connecting to a reticulated wastewater system. These include:

- Improved levels of service
- An increase in the property's value
- Off-setting savings arising from no longer needing to maintain and operate an on-site (or septic) system.

O.3 Options for funding backlog sewerage services

It is the community, together with government and Hunter Water that decide whether it is optimal for particular areas to be sewered. If they are to be sewered, it is IPART's role to determine the maximum prices that both the existing and the new customers should pay.[474]

Our Developer Charges Determination sets out a formula to determine how much properties would have to pay to receive backlog sewerage services.[475] Our Determination also includes an annuity payment option for customers in these backlog properties. The annuity payment option allows customers in existing properties to pay a fixed annual amount over a period of up to 20 years, rather than a lump sum payment at the time of connection. This periodic payment may reduce the potential short-term impact on customers and allows the connection charge to be paid over a longer period.[476]

472 Cessnock City Council, *Submission to Issues Paper*, 17 October 2019, p 2.

473 Public Hearing Transcript, *Review of prices for Hunter Water to apply from 1 July 2020*, November 2019, pp 11 and 66- 67.

474 That is, how much the broader customer base should pay for sewering these areas.

475 IPART, *Maximum prices for connecting or upgrading a connection, to a water supply system, sewerage, or drainage system, Final Determination*, October 2018.

476 IPART, *Maximum prices to connect, extend or upgrade a service for metropolitan water agencies*, *Final Report*, October 2018, p 9.

Our preferred funding approach for backlog sewerage charges is based on the following cost allocation hierarchy:

- In the first instance, we prefer that the impactor pay (ie, the party that created the need to incur the cost should pay). Hunter Water could charge property owners who wish to connect to the wastewater network, as the impactor, to recover the efficient cost of building the extension.
- If that is not possible (eg, because of affordability or a social policy objective), the beneficiary should pay. If Hunter Water's broader customer base benefits from extending the connection, there may be a case to include the relevant costs in retail prices, to be funded by the broader customer base.

We note that our approach does not prevent Hunter Water from developing a new funding arrangement, or pursuing other options to meet the capital costs. Hunter Water can still connect backlog customers to new or existing systems, and there are a number of options for funding such schemes, including:

- Charging cost-reflective capital charges as per our 2018 Developer Charges Determination.
- Obtaining a direction from the Government, including a direction that part or all of the costs of the scheme be recovered from the whole customer base via general prices.
- Requesting a scheme-specific review by IPART and making the case that the costs should be funded from the broader customer base to the extent that there were broader benefits to the customer base (eg, environmental or health benefits).
- Receiving a subsidy or grant from the Government.

As a last resort, taxpayers should pay. If the benefits are realised by the broader community or environment, there may be a case for the NSW Government to fund these costs (or a share of these costs) on behalf of the broader community through a grant or subsidy.

P Stormwater charges

P.1 Stormwater charges are lower than Hunter Water's proposed charges

As discussed in Chapter 10, our decisions result in charges that are lower than Hunter Water's proposed stormwater charges. Under Hunter Water's proposal, stormwater charges would increase by around 6.5% per year (around 28.7% over the determination period, excluding the effects of inflation from 2021-22 onwards).

Table P.1 Hunter Water's proposed stormwater charges – 1 July 2019 ($2020-21)

	2019-20	2020-21	2021-22	2022-23	2023-24	Change between 2019-20 and 2023-24[c]
	($2019-20)	($2020-21)				
Residential						
Houses (standalone)[a]	79.63	86.49	91.53	96.85	102.50	28.7%
Apartments (multi-premises)[b]	29.47	32.01	33.87	35.84	37.94	28.7%
Non-residential						
Small (≤1,000 m^2) or low impact	79.63	86.49	91.53	96.85	102.50	28.7%
Medium (1,001 m^2 to 10,000 m^2)	260.08	282.47	298.92	316.34	334.77	28.7%
Large (10,001 m^2 to 45,000 m^2)	1,654.10	1,796.53	1,901.20	2,011.94	2,129.12	28.7%
Very large (>45,000 m^2)	5,255.48	5,708.02	6,040.55	6,392.42	6,764.73	28.7%

a Includes "vacant land".
b Includes "low impact residential properties".
c The percentage change includes inflation to $2020-21.
Source: IPART analysis.

Under the current price structure, larger properties pay higher stormwater charges overall, but the charge per m^2 is scaled relative to property area so that smaller properties pay proportionally more per m^2 than larger properties as shown in Table P.2.

Table P.2 Charge per m^2 for non-residential property categories in 2019-20 ($2019-20)

Non-residential category	$ per m^2
Small (≤1,000 m^2) or low impact	≥0.08[a]
Medium (1,001 m^2 to 10,000 m^2)	0.03 to 0.26
Large (10,001 m^2 to 45,000 m^2)	0.04 to 0.17
Very large (>45,000 m^2)	≤0.12

[a] Theoretically this charge could be up to $79.63 if the property is only 1m^2 in area.

Source: IPART analysis.

Table P.3 illustrates how the ratios operate. The 2020 ratios have changed compared to the 2016 ratios as relative charges have changed with inflation. The revenue allocation columns for the 2020 period are the outcome of our approach to setting charges with the different ratios and it is an indicator of the degree of cost reflectivity if land area was a 100% driver of stormwater costs.

Table P.3 shows the ratios used to set charges for the 2016 Determination, the ratios used to calculate the 2020 Determination charges and the corresponding share of target revenue these represent. Under these charges, residential customers (houses and apartments) move from a 90.6% contribution to target revenue to an 87.5% contribution, noting that these customers represent 85.9% of land area serviced by Hunter Water (for stormwater services).

Table P.3 Hunter Water property charging ratios and corresponding revenue allocation

	Ratio – 2016-17[c]	Revenue allocation for 2020 period using 2016-17 ratios	Ratio – 2020-21[d]	Revenue allocation for 2020 period using 2020-21 ratios	Percentage of land area – 2020 period	Ratios required for linear land area-based charging – 2020 period
Residential						
Houses (standalone)[a]	1.0	81.0%	1.0	78.2%	78.8%	1.0
Apartments (multi-premises)[b]	0.4	9.6%	0.4	9.3%	7.1%	0.3
Non-residential						
Small (≤1,000 m^2) or low impact	1.0	3.1%	1.0	3.0%	1.9%	0.6
Medium (1,001 m^2 to 10,000 m^2)	2.1	3.2%	3.3	4.8%	5.4%	3.6
Large (10,001 m^2 to 45,000 m^2)	13.3	2.1%	20.8	3.2%	4.2%	26.9
Very large (>45,000 m^2)	42.3	1.0%	66.0	1.5%	2.6%	113.8
Total		100.0%		100.0%	100.0%	

a Includes "vacant land".

b Includes "low impact residential properties".

c Price relativities between 2016 charges in $2016-17.

d Price relativities between 2016 charges in $2019-20.

Source: IPART analysis.

P.2 Modelling suggests potential bill increases for larger customers

We have undertaken scenario modelling to calculate what Hunter Water's stormwater charges would be under alternative ratio scenarios.

We have considered the degree of cost-reflectivity of the current pricing structure and whether there is scope for future costs to be recovered on a more cost-reflective basis. Comparison of the percentage of revenue each customer category currently contributes to Hunter Water's stormwater costs to the percentage of the total billable property area it represents suggests that:

- Apartments and small non-residential customers may be paying more than their share if these costs are based on land area
- Non-residential customers with a large or very large area base may be paying less than their share of these costs if they are driven solely by land area.

Adopting a linear land area-based charging approach would recover less revenue from residential and small non-residential customers and more revenue from large and very large non-residential customers. This would result in substantial bill increases for these larger customers (see Table P.4). From 2019-20 to 2020-21, charges for large customers would increase by 39.8% ($658.53) including inflation and for very large customers would increase by 86.2% ($4,528.19) including inflation, following an 87.3% increase over the 2016 determination period.[477]

Table P.4 Charges if target revenue allocated based on linear land area

	2019-20	2020-21	2021-22	2022-23	2023-24	Change from 2019-20 to 2023-24[c]	Property charging ratio
	($2019-20)	($2020-21)					
Residential							
Houses (standalone)[a]	79.63	85.95	85.95	85.95	85.95	7.9%	1.00
Apartments (multi-premises)[b]	29.47	24.41	24.41	24.41	24.41	-17.2%	0.3
Non-residential							
Small (≤1,000 m^2) or low impact	79.63	54.92	54.92	54.92	54.92	-31.0%	0.6
Medium (1,001 m^2 to 10,000 m^2)	260.08	310.40	310.40	310.40	310.40	19.3%	3.6
Large (10,001 m^2 to 45,000 m^2)	1,654.10	2,312.63	2,312.63	2,312.63	2,312.63	39.8%	26.9
Very large (>45,000 m^2)	5,255.48	9,783.67	9,783.67	9,783.67	9,783.67	86.2%	113.8

a Includes "vacant land".
b Includes "low impact residential properties".
c The percentage change includes inflation to $2020-21.
Source: IPART analysis.

477 IPART, *Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020*, Final Report, June 2016, p 125.

Table P.5 Charges if target revenue allocated based on transitioning further towards linear area-based charges

	2019-20	2020-21	2021-22	2022-23	2023-24	Change from 2019-20 to 2023-24[c]	Property charging ratio
	($2019-20)	($2020-21)					
Residential							
Houses (standalone)[a]	79.63	85.58	85.58	85.58	85.58	7.5%	1.0
Apartments (multi-premises)[b]	29.47	28.24	28.24	28.24	28.24	-4.2%	0.3
Non-residential							
Small (≤1,000 m^2) or low impact	79.63	70.17	70.17	70.17	70.17	-11.9%	0.8
Medium (1,001 m^2 to 10,000 m^2)	260.08	294.39	294.39	294.39	294.39	13.2%	3.4
Large (10,001 m^2 to 45,000 m^2)	1,654.10	2,040.17	2,040.17	2,040.17	2,040.17	23.3%	23.8
Very large (>45,000 m^2)	5,255.48	7,694.29	7,694.29	7,694.29	7,694.29	46.4%	89.9

a Includes "vacant land".

b Includes "low impact residential properties".

c The percentage change includes inflation to $2020-21.

Note: Charges are based on ratios half-way between current charges and linear land area-based charges.

Source: IPART analysis.

We have not adjusted charges to reflect historical differences in demand forecasts

As discussed in Chapter 10, some stormwater charges in the 2016 Determination were possibly set higher than they would have been had the correct number of customers been identified as the allocation of target revenue across the different categories would have been different. Table P.6 shows that about $143,000 of target revenue was allocated across property categories differently to how it may have been allocated if the data errors were accounted for. Our analysis indicates that residential and small non-residential customers may have underpaid by less than about $1.10 per year and larger non-residential customers may have overpaid by up to about $370 per year for very large customers (see Table P.7).

Table P.6 Indicative estimate of target revenue possibly under(-) or over(+) recovered during 2016 period due to impact of errors on how charges were set ($2020-21)

	2016-17	2017-18	2018-19	2019-20	Total over period
Residential					
Houses (standalone)[a]	-19,265	-19,477	-19,724	-19,988	-78,454
Apartments (multi-premises)[b]	-13,347	-13,759	-14,203	-14,669	-55,978
Non-residential					
Small (≤1,000 m^2) or low impact	-2,131	-2,155	-2,182	-2,212	-8,680
Medium (1,001 m^2 to 10,000 m^2)	7,483	7,631	7,795	7,967	30,876
Large (10,001 m^2 to 45,000 m^2)	22,385	22,794	23,248	23,729	92,157
Very large (>45,000 m^2)	4,874	4,965	5,066	5,173	20,079

a Includes "vacant land".
b Includes "low impact residential properties".
Note: These figures are indicative estimates only.
Source: IPART analysis.

Table P.7 Indicative estimate of difference in charges if errors had been accounted for compared to 2016 charges that were charged ($2020-21)

	2016-17	2017-18	2018-19	2019-20	Average % difference over period
Residential					
Houses (standalone)[a]	-0.38	-0.38	-0.39	-0.39	-0.5%
Apartments (multi-premises)[b]	-0.90	-0.92	-0.94	-0.96	-3.1%
Non-residential					
Small (≤1,000 m^2) or low impact	-1.04	-1.05	-1.06	-1.08	-1.3%
Medium (1,001 m^2 to 10,000 m^2)	7.54	7.69	7.86	8.03	3.8%
Large (10,001 m^2 to 45,000 m^2)	228.42	232.59	237.23	242.13	17.8%
Very large (>45,000 m^2)	348.15	354.66	361.88	369.52	8.6%

a Includes "vacant land".
c Includes "low impact residential properties".
Note: These figures are indicative estimates only.
Source: IPART analysis.

Q Discretionary expenditure framework

Q.1 What is discretionary expenditure

We set utilities' prices to recover the efficient costs of supplying its monopoly services to their customers. The prices recover the efficient operating and capital expenditure required for utilities to meet service standards to customers (eg, as specified in the operating licence), and to comply with other regulatory obligations (eg, as specified in Environment Protection Licences, administered by the EPA).

Discretionary expenditure could include:

- Expenditure that is not required to deliver the utility's monopoly services
- Expenditure to provide services or achieve outcomes that are not mandated, or
- Expenditure to provide a level of service that goes beyond service standards stipulated in the utility's operating licence or other regulatory requirements.

In 2016, we noted that we would consider, and could allow, discretionary expenditure to be recovered via regulated prices, but that we would require clear evidence that it would be efficient for customers to pay to exceed mandated standards. For instance, we would consider whether:

- The proposal would best fit with the utility's responsibilities or whether it would best fit with another party's responsibilities
- The utility's customers have the capacity and willingness to pay for the discretionary expenditure (based on information or evidence provided by the utility).[478]

Our recent decisions on recycled water pricing also recognised the importance of customer willingness to pay.[479] We allow for the costs of recycled water schemes to be recovered from general water and/or wastewater prices to the extent there is sufficient evidence that the broader customer base is willing to pay for the external benefits of the recycled water scheme.[480] We have set out a number of best practice principles for demonstrating willingness to pay, and for consulting with customers around discretionary expenditure.[481]

As outlined in our Guidelines for Water Agency Pricing Submissions, utilities should have a strong and up to date understanding of its customer preferences.[482] Further, it is the utility's responsibility for engaging with its customers to understand their views, priorities and needs and that this should inform a utility's decision-making and pricing submission.

478 IPART, *Review of prices for Sydney Water Corporation, Final Report*, June 2016, p 37.
479 IPART, *Review of pricing arrangements for recycled water and related services, Final Report*, July 2019.
480 To qualify for funding from the broader customer base, external benefits must be additional to any outcomes already mandated by Government, specific to the recycled water scheme(s) in question, and supported by customer willingness to pay for them. IPART, *Review of pricing arrangements for recycled water and related services, Final Report*, July 2019, p 2.
481 IPART, *Review of pricing arrangements for recycled water and related services*, *Final Report*, July 2019, p 61.
482 IPART, *Guidelines for Water Agency Pricing Submissions*, November 2018, pp 20-21.

Utilities should engage with their customers on existing business standards and where they proposes to make changes to prices or services which would impact specific customer groups. Utilities should also engage with customers if they include any discretionary expenditure in their pricing proposal.

Significant or material changes to a utility's service standards, environmental obligations or other regulatory outcomes should primarily be addressed by consulting with customers and the entity which enforces the regulation with an aim to update standards or regulations to reflect changing community preferences. However, where customers demonstrate a willingness or demand for a discretionary outcome and the cost to achieve the outcome is relatively small, utilities can propose expenditure allowances to achieve these discretionary outcomes through the IPART pricing process. For any discretionary expenditure to be approved through the IPART pricing process, we:

- Require robust evidence of customer willingness to pay
- Will apply our discretionary expenditure framework (detailed below) to assess any proposal put forward by the utility, and
- Require utilities to annually report on output measures to ensure that they have upheld their agreement with customers.

Q.2 Why have we developed a framework for assessing discretionary expenditure?

As part of the 2020 water pricing reviews, we have developed a framework to guide how we will assess the discretionary expenditure Sydney Water and Hunter Water have included in their pricing proposals. This new framework acknowledges the growing appetite for both IPART and the water businesses to take into account liveability issues (such as environmental protection) when setting prices.

Although the discretionary expenditure proposed by the utilities represents only 1 to 2 % of total proposed capital expenditure over the 2020 determination period, we expect that the quantum of this type of expenditure may increase in the future. Our framework provides guidance to the utilities and establishes robust processes and checks to ensure that the bill impact faced by customers is no more than they are willing to pay for the discretionary projects.

Water utilities have included discretionary expenditure in their pricing proposals in the past and we assessed this expenditure within the broader capital and operating expenditure review process. This ensured that the costs were efficient and that the utility had appropriately prioritised any discretionary expenditure within its total expenditure program. We have accepted discretionary expenditure in the past where we considered that a profit maximising business would have opted to undertake that expenditure. We have taken a different approach to assessing discretionary expenditure in this review, (through the establishment of the discretionary framework) as this will allow the utility a broader range of activities they may conduct in response to consumer preferences.

Q.2.1 Our discretionary expenditure framework must work for a range of different proposed projects

There is a large spectrum of potential discretionary projects with various characteristics and any discretionary expenditure framework we develop will need to apply to all possible projects.

Q.2.2 Mandatory vs discretionary expenditure

A utility's proposal can include two categories of costs. These are the costs to:

- Comply with its **mandatory obligations**. For example, service levels under its operating licence and environmental licence obligations set by the Environment Protection Authority (EPA).
  - We set prices to recover the efficient level of these costs that enables a monopoly service provider to deliver its service in compliance with its other regulatory obligations.
- Undertake **discretionary projects**. These are projects which are not driven or required by an external regulator or body.

Discretionary expenditure is incurred when a utility invests in projects that provide services or achieve outcomes that go beyond services standards/environmental obligations stipulated in the utility's operating licence or other regulatory instruments/requirements.

Q.2.3 The discretionary expenditure component can be the cost difference between achieving the discretionary standard and the mandatory standard

Sydney Water and Hunter Water deliver their monopoly services within the bounds of their regulatory requirements. The cost of complying with these regulatory requirements is recovered from the prices that customers pay to use the service. For example, the EPA requires water utilities to comply with environmental protection licences (EPLs) while delivering wastewater services, and water utilities must also meet conditions imposed by their operating licence. An integral part of our price review process is to ensure that these costs are efficient and that the utility can raise sufficient revenue to recover these efficient costs.

However, a utility may undertake activities which result in outcomes that go beyond its regulatory requirements. For example, Sydney Water's operating licence includes a Water Continuity Standard. The standard requires that 9,800 properties per 10,000 properties do not experience an unplanned water interruption in a given year.[483] The cost to comply with this standard would be a mandatory cost that Sydney Water must incur. However, Sydney Water may obtain evidence to support that its customers prefer that no properties experience an unplanned water interruption in a given year and are willing to pay (through their water service charges) for Sydney Water to deliver this outcome.

483 IPART, *Recommended Sydney Water Operating Licence 2019-2023*, April 2019, p 12.

The cost to Sydney Water to ensure that the extra 200 customers are not affected by an unplanned water interruption is discretionary because it is the cost to Sydney Water to deliver an outcome that is beyond its regulatory requirements. This cost can only be recovered through prices to customers if there is evidence that the customer base is willing to pay for this 'enhanced' service.

Q.2.4 We need to be conscious of the reason a utility may propose to achieve a discretionary outcome

We emphasise that the example above is a simplified scenario. We acknowledge that specialised regulatory bodies set service standards, environmental obligations and drinking water quality standards (amongst other regulator obligations). These standards and obligations are set to achieve outcomes which are supported by strong evidence and cost benefit analysis. Therefore we must also consider the circumstances and context of adopting a discretionary standard that is different to the existing mandatory standard. For example, whether the discretionary standard has been considered by Parliament and/or government when setting the existing mandatory standard and whether the facts around the issue have changed since that time.

Q.3 Our discretionary framework

This section discusses the principles that underpin the framework we have developed to assess both Sydney Water and Hunter Water's proposed discretionary expenditure. We then discuss in detail each phase of the framework. Table Q.1 provides a summary of the framework.

Q.3.1 There are a number of principles we consider key in developing a framework

Our framework is underpinned by a number of key principles.

Efficiency

Our framework encourages both cost efficiencies and efficient levels of service provision. Robust willingness to pay survey results can identify the efficient level of service provision that maximises welfare. Additionally, we also look at efficiency in terms of the least cost solution to meeting customer preferences.

Transparency

Transparency is an important element to ensure that the utility's activities and prices are well understood by stakeholders and its customers. Our discretionary framework endeavours to facilitate this transparency between the utility's activities and its customers.

Achieving discretionary outcomes are at cost to the utility and are outside of the mandated monopoly services that utilities must supply to its customers. It is important that customers fully understand the implications of these outcomes on prices.

Additionally, simplicity of both the framework and the utility's proposal would facilitate transparency.

Accountability

Our framework endeavours to hold utilities accountable for any proposed discretionary expenditure. This ensure that the utility's proposal matches customers' understanding of what they are paying for and that the outcome is delivered over the specified timeframe at an efficient cost. This element of our framework is particularly important in the absence of any additional regulatory process such as obligatory service standards or environmental standards that a utility must uphold. We also need to balance the sharing of risk associated with under or over spending on proposed discretionary projects between the utility and the broader customer base.

Equity

Our framework recognises the benefits that utilities can gain from understanding their customers' preferences, however it emphasises the need for robust evidence of customer willingness to pay. This ensures that the representative customer sample size appropriately reflects the population, especially vulnerable customer groups, small and large businesses and non-English speaking groups.

We outline our framework below and detail each step in the sections that follow.

Table Q.1 Discretionary expenditure framework

Phase	Principle	Description	Existing material
Phase 1: Project definition	▼ Accountability and transparency	▼ The project or outcome is adequately described and defined. At a minimum, the project or outcome specification must include the following characteristics and conditions: – Location, customer/user, delivery timeframes, whether it will be replacing another service and outcomes expected. ▼ The project or outcome fits within the utility's responsibilities and is related to its monopoly services. ▼ The project is discretionary.	
Phase 2: Willingness to pay	▼ Transparency and equity	▼ Survey participants are given sufficient context and information on the proposed project or outcome. This should align with the characteristics and conditions of the project definition identified in Phase 1. ▼ The survey identifies the customers' maximum willingness to pay dollar amounts. These will be the upper limit to the customer share of cost of the project/outcome estimated in Phase 3. ▼ The survey used to elicit customer willingness to pay is well designed and results are statistically valid. ▼ Bill impacts should be shown in the context of the broader bill impact.	Our 'best practice willingness to pay principles' we published in our Recycled Water review.

Phase	Principle	Description	Existing material
Phase 3: Efficiency test	▼ Accountability and efficiency	▼ The project/s is prioritised and optimised within the utilities broader and required responsibilities. ▼ The project/s is the most efficient way of achieving the outcome. ▼ Total efficient cost estimates should transparently net off any avoided costs and/or grants.	Our 'efficiency test'
Phase 4: Recovery & delivery incentives	▼ Transparency and equity	▼ The proposed prices to customers recover only the efficient cost of the outcome or project determined in phase 3. ▼ Bill impact per household is equal to or less than willingness to pay from phase 2. ▼ Charges are recovered from customer categories whose willingness to pay was assessed in phase 2. ▼ Separate RAB with appropriate asset lives to enable discretionary expenditure to be tracked. ▼ Transparent and accountable – utility to develop and propose approaches to ensure accountability. ▼ Next period adjustment will consider whether any underspend is returned to customers or retained by the utility for other projects or as an efficiency gain.	Our 'pricing principles'
Phase 5: Implementation & performance commitments	▼ Accountability	▼ Capture the program as an output measure to ensure sufficient reporting on what is achieved. ▼ Ex-post adjustment mechanism to ensure only investments in line with project definition in willingness to pay survey are added to the RAB. ▼ Where proposed expenditure is not carried out or outcomes are not delivered, funds collected through the discretionary charge may be returned to customers in the subsequent determination period. ▼ Outline expectation that the charge remains equal to or below demonstrated willingness to pay amount over the long term.	

Q.3.2 Phase 1: Project definition

Our framework requires that any discretionary expenditure proposed by the utility is appropriately defined in terms of the outcomes the expenditure will achieve. The project's definition or desired outcome should be adequately scoped before a utility engages with customers on their willingness to pay.

In some cases, a discretionary project may be defined by the characteristics and conditions of the outcome that the utility wants to achieve instead of a specific project. This is because a utility may want to confirm the extent of their customers' willingness to pay for an outcome before allocating funds to scope and plan for a specific project that would achieve that outcome. For example, a utility's preliminary project definition may be to improve the appearance of its stormwater assets in a particular location instead of scoping out the activities that would be required to achieve this.

At a minimum, however, these characteristics and conditions should include the outcome or project:

- location(s)
- customers that would benefit from the discretionary expenditure
- estimated timeframes for delivery
- if the project would be replacing an existing service.

Discretionary expenditure should be related to the utility's monopoly services

The project or outcome that the discretionary expenditure will achieve should be related to the utility's mandatory monopoly services and fit within the utility's responsibilities. For example, the utility should confirm in its proposal:

- That the utility is the most suitable agency to deliver the proposed outcome or project.
- That the proposal best fits within the utility's responsibilities instead of another party or party's responsibilities, such as another arm of government or local government.
- That the proposal is consistent with the *Independent Pricing and Regulatory Tribunal Act 1992* and any other relevant legislation.

The utility's customers should inform the type of discretionary project/outcome proposed by the utility

The identification of any proposed discretionary project or outcome should be customer driven and as part of its proposal, a utility should show evidence of how it consulted with its customers to identify any proposed discretionary projects.

As a first step, utilities should understand its customers' priorities and preferences and this should inform not only its proposal for discretionary expenditure but in general, its overall decision-making process.

Project identification and selection

Ideally the identification of potential projects should be customer driven rather than proposed by the utility and/or its staff, or stakeholders with a vested interest in particular outcomes. The utility could offer a menu of options to customers and ask customers to rank the projects or indicate which projects of those offered they would prefer.

Q.3.3 Phase 2: Are customers willing to pay?

Utilities should regularly engage with customers to understand customer preferences. This should inform which discretionary outcomes a utility includes in its pricing proposal. Additionally, it is essential that utilities show robust evidence of customers' willingness to pay for the proposed discretionary outcome. It is important to highlight that the extent of the willingness to pay surveys conducted by the utility should be proportionate to the relative quantum of the discretionary expenditure proposed compared to its overall expenditure proposal. This section outlines some elements of a robust customer willingness to pay survey. Box Q.1 provides our best practice principles for demonstrating willingness to pay.

Survey participants should be given sufficient context and information on the proposed outcome or project

The utility should ensure that when consulting customers on their willingness to pay for proposed discretionary expenditure, there is sufficient context and supporting information provided in a clear manner to allow respondents to make informed decisions. In particular, the characteristics and conditions of the project or outcome presented in willingness to pay questions must align with the characteristics and conditions of the proposed project or outcome in the utility's pricing proposal.

Survey participants should be consulted on the same outcomes that the utility previously defined and scoped. This includes the characteristics and conditions outlined in Phase 1. The discretionary outcomes or projects should be expressed in terms of benefits that customers directly value.

The dollar amounts presented in the survey correspond with the actual estimated cost of the project or outcomes

When surveying customers on their willingness to pay, the choices presented must be in dollar amounts and require discrete voting. The dollar values that respondents are asked to vote on should correspond with the actual estimated cost of the project or outcomes and should be expressed in terms of the ongoing bill impact for the customer, not the total project cost.

Utilities should use a long-term view of the funding costs when estimating the cost of the project/outcome and presenting it to customers on a bill impact basis. This is to avoid a situation where a future change to the interest rate (or weighted average cost of capital WACC) results in future project costs greater than the originally surveyed customer willingness to pay.

The bill impact of the project should be presented in the context of the respondents' total bill, including any other planned bill increases/decreases occurring as a result of price changes external to the discretionary expenditure. Customers should be made aware of their budget constraint, and that choices could potentially subtract from the amount they can spend on other outcomes.

The surveys used to elicit customers' willingness to pay are well designed and produce statistically significant results

Estimates of willingness to pay can only be accurately drawn from a robust survey that produces valid responses. Key features of a well-designed survey include a sufficient sample size that is representative of all demographics of the broader customer population. Participants should be randomly sourced and screened to ensure all quotas for customer groups are represented and that no participants have a personal interest in the utility or related organisations.

The survey should be carried out in an appropriate format that may include multiple platforms such as online surveys, face-to-face forums and discussion groups. The survey should aim for reliability through repetition. Utilities should ensure that sensitivity to the survey instrument is tested, including whether the structure, wording and order of questions influences responses (eg, respondents 'anchoring' answers to values seen earlier in the survey).

Results of the survey should be analysed, ensuring they are statistically significant. A survey can be deemed invalid if there are high nonresponse rates to certain questions or to the overall survey, and if there is evidence of obvious bias in the survey design or conduct.

Box Q.1 Best practice principles for demonstrating willingness to pay using a contingent valuation approach to stated preference surveys

- Participants are given the impression that their answers are consequential and that they may be compelled to pay any amount they commit to in the survey. The payment mechanism by which people would financially contribute is specific and credible (eg, annual change in water or wastewater bills).
- The non-market outcomes (external benefits) in the survey are expressed in terms of outcomes that people directly value. (eg, people should be asked about willingness to pay for the environmental improvements brought about by increases in water recycling, rather than for increases in water recycling in and of itself).
- There is alignment between the external benefits being valued and the likely investment outcomes. The survey should not reflect an overly optimistic view about what benefits the scheme would achieve, and major uncertainties made clear.
- The information provided to participants is clear, relevant, easy to understand and objective. For example, this can be tested with the use of focus groups and pilot surveys, consultation with stakeholders, and inclusion of appropriate maps and diagrams.
- Participants are encouraged to consider the context of their decisions, including the broader context of expected or proposed changes in prices for other services, as well as alternative approaches to achieving the external benefits.
- The valuation questions require participants to make discrete choices (such as 'yes/no' or selecting options), and include a 'no-answer' option to identify participants that are indifferent.
- Follow-up questions are used to detect potential sources of bias, such as cases where participants did not understand the valuation question(s) or the information provided.
- The sample of people surveyed is representative of the broader customer base and large enough to permit robust data analysis. The study should clearly set out how customers were selected for the survey, the number of participants and the response rate.

- Estimates of average willingness to pay are supplemented with confidence intervals to indicate the precision of the estimates.
- Population-wide estimates of willingness to pay for external benefits are calculated in a transparent and appropriate way. Potential reasons for non-response to the survey should be identified. Sensitivity analysis should be used to demonstrate how aggregate estimates change depending on assumptions about the values held by non-respondents and the extent of the population affected by the investment.
- Survey questions are designed and analysed using appropriate statistical techniques. For example, payment levels need to cover the likely range of amounts that customers might be willing to pay, no option should clearly dominate the others, and participants should not be burdened with too many choices.

Source: Based on Productivity Commission, *Environmental Policy Analysis: A Guide to Non-Market Valuation*, January 2014, pp 44-47.

Q.3.4 Phase 3: Are the costs efficient?

We set prices to recover the efficient cost for the utility to deliver its monopoly services. This principle applies to any discretionary expenditure that the utility proposes. We would assess whether the proposed discretionary expenditure is the most efficient means of achieving the outcome or delivering the 'enhanced' service that the customers are willing to pay for. To do this, we apply our existing efficiency test. This way the priority of the discretionary outcome is assessed along with the mandatory outcomes that the utility is required to achieve. Our efficiency test is described in Box Q.2.

A utility may propose multiple projects to achieve a discretionary outcome

We will assess the efficient costs of delivering a service or achieving an outcome. This could mean that there are multiple projects a utility may undertake to achieve a single outcome. In the case that a utility proposes multiple projects to meet a discretionary outcome, the portfolio of projects together should be the most efficient or optimum mix of projects to meet the outcome.

The efficiency test also applies to historical discretionary expenditure

As part of our efficiency test we also review historical capital expenditure incurred in the previous determination period. This assesses whether the actual expenditure was efficient based on the information available to the utility at the time it incurred the expenditure. This principle applies to discretionary expenditure, and we will do a post-expenditure assessment to ensure that the actual or historical discretionary expenditure was within the bounds of what customers are willing to pay, and the project characteristics and conditions of the project as it was delivered matched those described to willingness to pay survey participants.

Box O.1 Our efficiency test

The efficiency test examines whether a utility's capital and operating expenditure represents the best and most cost effective way of delivering services to customers.

Broadly, the efficiency test considers both how the investment decision is made, and how the investment is executed, having regard to, amongst other matters, the following:

- customer needs, subject to the utility's regulatory requirements
- customer preferences for service levels, including customers' willingness to pay
- trade-offs between operating and capital expenditure, where relevant
- the utility's capacity to deliver planned expenditure
- the utility's expenditure planning and decision-making processes.

The efficiency test is applied to:

- historical capital expenditure, and
- forecast capital and operating expenditure

that is included in the utility's revenue requirement, for the purposes of setting regulated prices.

The efficiency test is based on the information available to the utility at the relevant point in time. That is:

- for forecast operating and capital expenditure, we assess whether the proposed expenditure is efficient given currently available information
- for historical capital expenditure, we assess whether the actual expenditure was efficient based on the information available to the utility at the time it incurred the expenditure (ie, whether the utility acted prudently in the circumstances prevailing at the time it incurred the expenditure).

Source: IPART, *Prices for Sydney Water from 1 July 2020 – Issues Paper*, September 2019, p 48.

The utility should calculate the efficient net discretionary expenditure

Willingness to pay surveys should quantify the benefits that customers would receive from discretionary expenditure. We recognise that there may be third parties who could also benefit from the proposed project or outcome. This provides an opportunity for the utility to access funding from these third parties, or Government, to fund or partially fund discretionary projects.

Should a utility receive any third party funding for a project, our standard approach is to subtract this amount from the utility's total efficient costs, to ensure that it does not over-recover for a project.

Avoided costs should be deducted

Similarly, any avoided costs should be deducted from the total cost, and the willingness to pay survey conducted on the value of external benefits provided to the broader customer base. This is because our recycled water framework already allows any avoided costs net of revenue forgone to be recovered from the broader customer base.

Q.3.5 Phase 4: Recovery from customers and delivery incentives

Phase 4 of our framework considers how the discretionary expenditure we allow should be recovered from customers, and how to hold the utility accountable for delivery of the outcomes in a way that meets customer expectations. Our general pricing principles are presented in Box Q.3.

Box Q.3 Our pricing principles

In setting maximum prices for regulated water businesses our overarching principle is that prices should be cost-reflective. This means that:

- Prices should only recover sufficient revenue to cover the prudent historical and efficient forecast costs of delivering the monopoly services. Prices for individual services should reflect the efficient costs of delivering the specific service.
- Price structures should match cost structures, whereby:
  - Usage charges reference an appropriate estimate of marginal cost (ie, the additional cost of supplying an additional unit of water or wastewater services), and
  - Fixed service charges recover the remaining costs.
- Customers imposing similar costs on the system pay similar prices.

Prices that are cost-reflective promote the efficient allocation and use of resources – such as water, and the capital invested to provide water supply services – by sending accurate signals to customers about the cost of services. For example, they discourage wasteful or unnecessary water usage.

Prices that are cost-reflective also promote efficient investment in water infrastructure and service provision – by ensuring that the regulated business cannot recover capital that is invested inefficiently or unwisely from the prices paid by customers.

However, we also consider other factors when setting prices, including customer impacts. For example, we may assess that customers cannot afford to fund the full efficient costs of delivering water and wastewater services. In other words, sometimes prices may not be fully cost-reflective.

Source: IPART, Prices for Sydney Water from 1 July 2020 – Issues Paper, September 2019, p 24.

How much to recover?

The maximum total cost to be recovered for a specific project is the efficient expenditure identified in Phase 3. When translated to prices on a per customer basis, it must be less than or equal to, the maximum demonstrated willingness to pay from Phase 2.

We have created a separate RAB for discretionary expenditure to calculate the most accurate charge. This would ensure appropriate asset lives are used that match the nature of the proposed projects.

Who should we recover it from?

There is scope for discretionary expenditure to be recovered from the business's entire customer base. However we consider there should be alignment between the sample of customers whose willingness to pay has been assessed and those customers that the costs are shared between. This may limit the recovery of discretionary expenditure costs to, for example, residential customers only, if the willingness to pay of non-residential customers has not been assessed in Phase 2. Whilst we acknowledge that spreading the costs across a larger customer base will likely result in smaller prices for residential customers (or a greater level of additional services), we note there may be a higher degree of difficulty in engaging non-residential customers in willingness to pay surveys.

Discretionary expenditure should be transparent to customers

We consider that utilities must keep customers informed around both the cost and the outcomes of discretionary expenditure. Utilities could communicate this information on customer bills or bill inserts, through their websites, or by displaying the discretionary charge as a separate line item on bills.

Ensuring utilities are accountable for the delivery of the project

We need to hold utilities accountable for any proposed discretionary expenditure. This ensures that the utility's proposal matches the customers' understanding of what they are paying for and that the outcome is delivered over the specified timeframe at an efficient cost. This element is particularly important given the absence of any additional regulatory process such as obligatory service standards or environmental standards that a utility must uphold in relation to this type of expenditure.

To ensure accountability to customers, we have included performance commitments to ensure delivery of discretionary projects and alignment with customer expectations.

Sharing of risk between customers and the utility

We have established delivery incentives to ensure that utilities are accountable to customers, and that they appropriately gauge project risks prior to making commitments to customers.

Our delivery incentives include:

- Our standard approach to ex-post adjustments to capital expenditure during the next review, coupled with
- A next period adjustment to assess whether any underspend is returned to customers, used to provide similar outcomes or retained by the utility as an efficiency gain. This is a slightly different approach to our standard approach, as we are focussed on discrete discretionary proposals which may not be 'part' of a much wider expenditure profile where it is expected that proposed expenditure would be subject to on-going review and re-prioritisation as part of normal business.

The utility should be aware of the financial implications if it cannot meet its stated outcomes on which it has gained community support. We realise that this assessment may not be purely objective, however, many of the projects that would be classed as discretionary would be discrete in nature and amenable to defining a clear set of outcomes.

In some cases, an underspend may be used to increase the level of a particular outcome as some projects have a 'budget envelope', and an improved level of outcome may be an appropriate strategy rather than refunding customers.

This approach will achieve outcomes based regulation for program expenditure which is closely aligned with customer preferences.

Q.3.6 Phase 5: Implementation & performance commitments

Capture the program of discretionary expenditure in output measures

Outcomes associated with the discretionary expenditure, particularly those that were key to the phrasing of the willingness to pay survey, are to be included in the utility's output measures. This will ensure sufficient reporting on what is being achieved as a result of discretionary expenditure and allows comparison with the project definition used as part of the willingness to pay survey. Output measures could include, for example, kilometres of stormwater channel naturalised.

Ex-post adjustment mechanism

We consider that it is essential that any discretionary project aligns with the characteristics and conditions presented as part of the willingness to pay survey. This can be achieved through an ex-post adjustment mechanism that considers whether the specific projects undertaken align with the project definition/s presented to customers as part of the willingness to pay survey. This mechanism should also consider whether the project is still discretionary, or if for example due to changes in licence conditions or mandatory standards it is now part of the utility's monopoly service obligations.

Part of this ex-post adjustment will include a standard review of discretionary expenditure to assess that utilities have not exceeded their initial project cost estimates. This will also ensure that utilities cannot exceed the willingness to pay price cap indicated by customers.

A next period adjustment will ensure any underspend is returned to customers, and any overspend is not recovered from customers. Alternatively, we will consider whether the utility may instead deliver more of the proposed outcome rather than returning any underspend to customers.

What happens if expenditure is no longer discretionary?

It is possible that additional services or outcomes funded through discretionary expenditure subsequently becomes required to meet the utility's monopoly service outcomes. This could occur when licence conditions or mandatory environmental standards are changed such that expenditure initially proposed to exceed standards, is now expenditure to meet the new (higher) standards.

When this occurs, the expenditure becomes part of the cost base required to meet the utility's monopoly service obligations. The project would be transferred from the Discretionary Regulatory Asset Base to the Monopoly Regulatory Asset Base, which would remove the cost of the project from the separate discretionary charge and add it to the relevant monopoly service charge.

R Assessment of Hunter Water's discretionary expenditure proposal

We have applied our discretionary expenditure framework to each of the proposed projects

We have applied the framework to each proposed project, using the information provided to us by Hunter Water in its proposal[484] and its supplementary response to our Issues Paper.[485]

Recycled water for irrigation of public spaces

Our application of the framework to this project is summarised in Table R.1.

Table R.1 Application of the framework to the recycled water for irrigation of public spaces proposal

Phase	Description	Assessment / Approach
Phase 1: Project definition	The proposal is based on an outcome that the utility intends to deliver through a range of possible unidentified projects, rather than a specified and scoped project – that is an increase of 150-200 ML of the amount of wastewater recycled for irrigation over the determination period. Rather than specifying a location, Hunter Water has nominated its area of operations and asked customers agreement for it to decide where within that area to undertake works. Hunter Water has identified the project as discretionary.	This proposal fits within the utility's responsibilities and our recycled water framework, but is not a least-cost solution. The outcome represents a range rather than a fixed deliverable.
Phase 2: Willingness to pay	Average willingness to pay estimated as $2.68 per year per household. Representative sample of residential customers surveyed. Bill impacts shown in the context of the current bill.	Non-residential customers not surveyed so willingness to pay not demonstrated. Bill impacts not shown in the context of Hunter Water's 2020 pricing proposal.
Phase 3: Efficiency test	The proposal represents a 'funding envelope' of $6 million to deliver a range of projects to meet the defined outcome.	We have not applied an efficiency factor, as we expect any efficiencies to be reflected in the delivery of additional recycled water for irrigation.

484 Hunter Water, *Pricing Proposal to IPART, Technical Paper 1,* 1 July.
485 Hunter Water, *Supplementary Response to IPART Issues Paper*, 6 November 2019, pp 15-19.

Phase	Description	Assessment / Approach
Phase 4: **Recovery & delivery incentives**	Proposed recovering around $2 per customer per year from the whole customer base.	Calculated bill impact of $0.73 is within demonstrated willingness to pay. Recovery from only residential customers would align with willingness to pay survey. Separate RAB with appropriate asset lives to enable discretionary expenditure to be tracked. Separate charge in Determination.
Phase 5: **Implementation & performance commitments**		Not assessable at this stage, will be completed ex-post as part of 2024 Review.

Stormwater amenity improvement

Our application of the framework to this project is summarised in Table R.2.

Table R.2 Application of the framework to the stormwater amenity improvement proposal

Phase	Description	Assessment / Approach
Phase 1: Project definition	The proposal is based on an outcome that the utility intends to deliver through a range of possible unidentified projects, rather than a specified and scoped project – that is naturalisation of at least 1 km of stormwater channel over the determination period. Rather than specifying a location, Hunter Water has nominated its area of operations and asked customers' agreement for it to decide where within that area to undertake works. Hunter Water has identified the project as discretionary.	This proposal fits within the utility's responsibilities however there is some overlap with local council stormwater responsibilities. The outcome represents a range rather than a fixed deliverable.
Phase 2: Willingness to pay	Willingness to pay survey indicated 74% of customers willing to pay between $5 and $20 per year per household. Representative sample of residential customers surveyed. Bill impacts shown in the context of the current bill.	Non-residential customers not surveyed so willingness to pay not demonstrated. Bill impacts not shown in the context of Hunter Water's 2020 pricing proposal.
Phase 3: Efficiency test	The proposal represents a 'funding envelope' of $11.3 million to deliver a range of projects to meet the defined outcome.	We have not applied an efficiency factor, as we expect any efficiencies to be reflected in the delivery of additional stormwater amenity improvements.
Phase 4: Recovery & delivery incentives	Proposed recovering around $2 per customer per year from the whole customer base.	Calculated bill impact of $0.97 is within demonstrated willingness to pay. Recovery from only residential customers would align with willingness to pay survey. Separate RAB with appropriate asset lives to enable discretionary expenditure to be tracked. Separate charge in Determination.
Phase 5: Implementation & performance commitments		Not assessable at this stage, will be completed ex-post as part of 2024 Review.

S Trade waste prices

S.1 Our decision on trade waste prices

Our decision is to set the maximum trade waste prices for the 2020 determination period as presented in Table S.1, Table S.2 and Table S.3.

Table S.1 Trade waste administration fees for sewered and tankered customers

Charge	2019-20	2020-21	2021-22 to 2023-24	Price change 2019-20 to 2023-24	% change 2019-20 to 2023-24[a]
	($2019-20)	($2020-21)			
Minor agreement customers					
Agreement establishment fee[b]	145.80	149.01	177.11	31.31	21.5%
Annual agreement fee	119.23	121.85	123.22	3.99	3.3%
Agreement renewal/reissue fee	107.68	110.05	148.82	41.14	38.2%
Variation to agreement fee	114.74	117.26	Charge removed	-114.74	Charge removed-
Inspection fee	126.72	129.51	Charge removed	-126.72	Charge removed--
Moderate agreement customers					
Agreement establishment fee[b]	517.97	529.37	457.78	-60.19	-11.6%
Annual agreement fee	871.57	890.74	708.14	-163.43	-18.8%
Agreement renewal/reissue fee	291.81	298.23	280.74	-11.07	-3.8%
Variation to agreement fee	114.74	117.26	151.90	37.16	32.4%
Inspection fee	126.72	129.51	Charge removed	-126.72	Charge removed--
Major agreement customers					
Agreement establishment fee[b]	586.52	599.42	719.67	133.15	22.7%
Annual agreement fee	485.38	496.06	2422.99	1,937.61	399.2%
Agreement renewal/reissue fee	414.84	423.97	461.97	47.13	11.4%
Variation to agreement fee	114.74	117.26	151.9	37.16	32.4%
Inspection fee	126.72	129.51	236.75	110.03	86.8%
Tankered customers					
Agreement establishment fee[b]	223.83	228.75	579.94	356.11	159.1%
Annual agreement fee	-	0.00	766.81	766.81	New charge
Agreement renewal/reissue fee	142.86	146.00	241.41	98.55	69.0%
Variation to agreement fee	114.74	117.26	153.33	38.59	33.6%
Delivery processing fee (per docket)	4.41	4.51	Charge removed	-4.41	Charge removed-

Charge	2019-20	2020-21	2021-22 to 2023-24	Price change 2019-20 to 2023-24	% change 2019-20 to 2023-24[a]
	($2019-20)	($2020-21)			
Overtime costs for after-hours access to wastewater treatment plant (up to 4 hours)	-	0.00	460.92	460.92	New charge
Hourly rate for after-hours access that is required to extend beyond four hours	-	0.00	86.95	86.95	New charge -

a The percentage change includes inflation to 2020-21.
b New customers only, one-off charge.
Source: IPART analysis.

Table S.2 High strength charges for moderate and major sewered customers ($/kg)

Wastewater treatment plant	Current combined BOD/TSS charge 2019-20	Retain current combined BOD/TSS charge 2020-21	Final BOD charges 2021-22 to 2023-24	Final TSS Charges 2021-22 to 2023-24
	($2019-20)	($2020-21)		
Belmont	1.43	1.46	1.32	0.36
Boulder Bay	1.92	1.96	1.36	0.38
Branxton	5.33	5.45	3.07	2.20
Burwood Beach	0.80	0.82	0.63	0.21
Cessnock	1.79	1.83	1.66	0.27
Clarence Town	15.23	15.57	4.99	4.16
Dora Creek	2.12	2.17	1.98	0.18
Dungog	3.34	3.41	2.15	1.44
Edgeworth	1.40	1.43	1.07	0.37
Farley	1.37	1.40	1.49	0.37
Karuah	15.27	15.61	7.35	1.27
Kearsley	2.87	2.93	2.02	0.86
Kurri Kurri	3.08	3.15	3.16	0.73
Morpeth	1.06	1.08	1.54	0.45
Paxton	8.44	8.63	4.11	2.88
Raymond Terrace	2.10	2.15	2.23	0.69
Shortland	1.61	1.65	3.54	0.68
Tanilba Bay	3.28	3.35	2.49	0.69
Toronto	1.73	1.77	1.67	0.26
Incentive charge [b]		Three times the BOD/TSS charge		

a The current charges apply for concentration strength greater than 350mg/L for BOD/TSS. The restructured charges effective from 1 July 2021 apply new thresholds for concentration strengths greater than 240mg/L for BOD and 290mg/L for TSS.
b An incentive charge for BOD/TSS would continue to apply at the rate of three times the base load charge.
Note: These charges do not apply to 'minor 'customers who currently have an assumed average strength loading component built into their annual agreement fee and are not charged a separate high strength charge.
Source: IPART analysis.

Table S.3 High strength charges for tankered customers

Charge	2019-20	2020-21	2021-22	2022-23	2023-24
	($2019-20)	($2020-21)			
Volumetric charges					
Portable toilet effluent ($/kL)	14.62	14.94	Charge removed	Charge removed	Charge removed
Septic waste ($/kL)	5.76	5.89	Charge removed	Charge removed	Charge removed
High strength waste ($/kL)	3.72	3.80	Charge removed	Charge removed	Charge removed
Heavy metals – Burwood Beach ($/kg)	25.00	25.55	Charge removed	Charge removed	Charge removed
Heavy metals – All other WWTP ($/kg)	41.24	42.15	Charge removed	Charge removed	Charge removed
Phosphorous ($/kg)	2.89	2.95	Charge removed	Charge removed	Charge removed
Sulphate ($/kg)	0.17 x (SO_4/2000)	0.17	Charge removed	Charge removed	Charge removed
Average strength charge ($/kL)	**-**	0.00	6.08	6.08	6.08

Note: We have not accepted the proposed increase in average strength charge from $6.08 to $9.40 in 2023-24.

Source: IPART analysis.

S.2 Revenue by customer type

Table S.4 compares historical and forecast revenue by customer categories as provided by Hunter Water. The comparison is based on indicative revenue changes between current 2019 prices and the new prices that will become effective in 2021-22.

Table S.4 Indicative trade waste revenue by customer type ($2019-20, '000)

Customer category	2019-20	2021-22	$ increase	% increase
Administration charges				
Minor agreement customers	303.94	323.94	20.00	6.6
Moderate agreement customers	138.54	111.27	-27.27	-19.7
Major agreement customers	123.97	416.48	292.51	236.0
Tankered agreement customers	2.57	71.30	68.73	2,674.3
Total administration charges	569.02	922.99	353.97	62.2
High strength/pollutant charges				
Minor agreement customers	00.00	00.00	00.00	00.0
Moderate agreement customers	00.00	137.07	137.07	-
Major agreement customers	722.48	653.58	-68.90	-9.5
Tankered agreement customers[a]	972.18	843.18	-129.00	-13.3
Total high strength/pollutant charges	1,694.66	1,633.83	-60.83	-3.6
Total revenue	2,263.68	2,556.82	293.14	12.9

Source: Hunter Water, email correspondence, 17 January 2020 and IPART analysis.

S.3 Background

Hunter Water categorises trade waste customers based on their risk profile and business activity (see Table S.5). Risk categories define the level of administration and monitoring undertaken by Hunter Water.

Box S.1 shows the typical costs recovered in Hunter Water's high strength charges as well as its rationale for not recovering capital costs in high strength charges.

Table S.5 Classification of customer types

	Minor (Sewered)	Moderate (Sewered)	Major (Sewered)	Tanker
Typical business activity	Small retail eg restaurants, mechanical shops, dentists	Large retail, spray painters, car wash, service stations, large pubs, small shopping centres	Food manufacturing, metal processing, oil refinery, hospitals, laboratories, other industry	Residential septic, commercial wastewater not connected to sewer, portable toilet waste
Description	May require pre-treatment prior to discharge	Needs pre-treatment prior to discharge and may have discharge restrictions	Needs pre-treatment, with discharge restrictions, loads may be significant with restricted substances	Wastewater discharged directly to the wastewater treatment plant via tanker
Risk level	Low	Medium	High	High
Current charges	Admin only	Admin only	Admin/high strength	Admin/high strength
Customer number	2,020	176	100	30

Note: Moderate customers will face a high strength charge in 2021, offset by a reduction in administration fees.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 9*, 1 July 2019, pp 3-4.

Box S.1 Types of costs recovered in high-strength charges

Hunter Water's high strength charges typically recover the following costs:

- Electricity used at waste water treatment plants
- Waste water treatment plant maintenance costs
- Chemicals used in wastewater treatment process
- Waste disposal costs for handling and removing biosolids
- Licence fees for load-based licensing
- Laboratory costs for monitoring and testing waste water quality at treatment plants
- Diving costs for inspecting ocean outfalls
- Other miscellaneous fixed and variable treatment plant operating costs.

Hunter Water did not propose including transportation (network) operating and maintenance costs, or capital expenditure costs in high strength costs as it is not confident about the reliability of cost estimates attributable to wastewater that exceeds domestic strength (high strength waste) or to allocate these costs across the proposed chargeable parameters. It states it investigated options for incorporating a portion of capital costs in high strength charges but decided against it because:

- Its facilities are primarily designed to treat domestic quality wastewater. It considered it was inefficient to design facilities for trade waste loads given the balance between the investment required and the risk of customers ceasing operations or initiating on-site treatment.
- The strength and volume of trade waste discharges are highly variable. Customers may also cease operations or move between wastewater treatment catchments. The inherent uncertainty results in less reliable cost recovery for long lived capital assets.
- It was unable to develop a transparent, accurate and robust methodology to estimate causal relationships between treatment plant capital costs and the strength/volume of trade waste.

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 9*, 1 July 2019, pp 9-10.

T Miscellaneous and ancillary charges

T.1 Hunter Water's miscellaneous and ancillary charges

Table T.1 sets out our decision on miscellaneous and ancillary charges for Hunter Water. Prices are subject to CPI increases over the 2020 determination period.

Table T.1 Miscellaneous and ancillary charges ($2020-21)

Service no.	Function	2020-21
1	Conveyancing certificate	
(a)	over the counter	15.07
(b)	electronic	10.73
2	Property sewerage diagram	13.69
3	Service location diagram	
(a)	over the counter	10.99
(b)	electronic	8.89
4	Building over or adjacent to sewer advice	64.03
5	Water reconnection after restriction	
(a)	restriction	56.36
(b)	during business hours	62.80
(c)	outside business hours	100.10
6	Workshop flow rate test of meter – with strip test	
	20-25mm	259.59
	32mm	303.53
	40mm	304.56
	50mm light	378.14
	50mm heavy	409.82
	65mm	413.91
	80mm	617.29
	100mm	925.93
	150mm	1138.51
7	Application for water disconnection	
(a)	water disconnection (all sizes)	27.44
(b)	recycled water disconnection (all sizes)	41.14
8	Application for water service connection (all sizes)	34.29
9	Application to assess a water main adjustment	298.42
10	Metered standpipe hire security bond	
(a)	20mm metered standpipe	293.31
(b)	32mm high flow metered standpipe	864.61
(c)	50mm metered standpipe	864.61
11	Metered standpipe hire (annual fees)	
(a)	20mm metered standpipe	111.19
(b)	32mm high-flow metered standpipe	225.45
(c)	50mm metered standpipe	225.45
12	Statement of available pressure	98.06

Service no.	Function	2020-21
13	Application to connect or disconnect sewer services or for a special internal inspection permit	43.89
14	Application to connect or disconnect water and sewer services (combined application)	54.83
15	Request for separate metering of units (per plan)	47.98
16	Building plan stamping	20.54
17	Determining requirements for building over/adjacent to sewer or easement	149.21
18	Hiring of a metered standpipe	
(a)	application to hire a metered standpipe	56.41
(a)(i)	breaching of standpipe hire conditions (breach 1)	8.07
(a)(i)	breaching of standpipe hire conditions (breach 2)	8.07
(a)(i)	breaching of standpipe hire conditions (breach 3) - step 1	8.07
(a)(ii)	breaching of standpipe hire conditions (breach 3) – step 2 (customer fails to return standpipe)	29.69
19	Meter affixtures/handling fee	
(a)	20mm, delivery and installation of water meter by Hunter Water	47.78
(b)	25mm, delivery and installation of water meter by Hunter Water	47.42
(c)	32mm, delivery and installation of water meter by Hunter Water	59.17
(d)	40mm, delivery and installation of water meter by Hunter Water	59.17
(e)	50mm light duty, delivery by Hunter Water	110.38
(f)	50mm or larger, to be collected by customer from reception of Hunter Water	16.25
(g)	50mm or larger, delivery and installation of water meter by Hunter Water	221.77
20	Inspection of non-compliant meters	53.96
21	Connect to or building over/adjacent to stormwater channel for a single residence	92.80
22	Stormwater channel connection	248.35
23(a)	Hydraulic design assessment – less than 80mm	195.20
23(b)	Hydraulic design assessment – 80mm or larger	290.25
24	Complex works design review	
(a)	non-linear water asset	4490.67
(b)	non-linear sewer asset	5127.37
(c)	linear water and sewer asset	
24(c)(i)	tier 1 (0-99m)	764.46
24(c)(ii)	tier 2 (>99-1000m)	3217.26
24(c)(iii)	tier 3 (greater than 1000m)	4682.8
25	Application to assess sewer main adjustment	331.13
26	Revision of development assessment	310.69
27	Bond application	2465.06
28	Development assessment application	331.13
29	Application for water or sewer main extensions	332.15
30	Application to connect to/disconnect from water system	179.87
31	Shutdown and charge-up for water connection/disconnection	421.06
32	Application for additional sewer connection point	294.34
33	Complex works inspection fees	
	non-linear water asset	6568.39
	non-linear sewer asset	5975.63
	linear water and sewer asset	
	tier 1 (0-99m)	709.27
	tier 2 (>99-1000m)	995.43

Service no.	Function	2020-21
	tier 3 (greater than 1000m)	1358.24
34	Technical Services hourly rate	123.66
35	Remote application fee	89.83
36	Preliminary servicing advice	505.89
37	Servicing strategy review – water, sewer, recycled water	1522.78
38	Environmental assessment report review	934.11
39	Reservoir construction inspection and WAE fee	By quote
40	Water cart tanker - inspection	46.45
41	Damaged meter replacements – various meter sizes	
	20mm	88.45
	25mm	150.23
	32mm	205.42
	40mm	282.07
	50mm light meter	293.31
	50mm heavy meter	325.00
	65mm	600.94
	80mm	523.26
	100mm	869.72
	150mm	2544.78
	250mm	5053.79
	300mm	6260.77
42	Affix a separate meter to a unit	33.57
43	Recycled water meter affix fee	61.22
44	Application for recycled water service connection – Domestic	
(a)	Pre-laid service	21.67
(b)	Redevelopment – various recycled watermain size drillings	
	80mm meter	201.33
	100mm meter	194.18
	150mm meter	201.33
	200mm meter	282.07
	250mm meter	323.97
	300mm meter	393.47
	375mm meter	663.28
45	Irregular and dishonoured payments[a]	28.46

Source: Hunter Water, *Pricing Proposal to IPART, Technical Paper 9*, 1 July 2019, pp 27-100 and IPART analysis.

[a] The irregular and dishonoured payment fee is also known as the dishonoured and declined payment fee.

U Terms of reference – Dishonoured and declined payment fees

Premier of New South Wales

NSW GOVERNMENT

IPART
Doc No
File No

RECEIVED 10 DEC 2015 INDEPENDENT PRICING & REGULATORY TRIBUNAL

Reference: A1349407

Dr Peter Boxall
Chair
Independent Pricing and Regulatory Tribunal
PO Box K35
HAYMARKET POSTSHOP NSW 1240

Dear Dr ~~Boxall~~ Peter

Pursuant to section 12A of the Independent Pricing and Regulatory Tribunal Act 1992, I am writing to refer a periodic investigation and report on:

- the maximum late payment fee and dishonoured and declined payment fee to be charged by Sydney Water, and
- maximum dishonoured or declined payment fee to be charged by Hunter Water.

Each periodic review is to be conducted in accordance with the attached Terms of Reference. It is intended that, where possible, each review be conducted concurrent to IPART's investigation of Sydney Water's and Hunter Water's maximum prices for its water and sewerage services. Any late maximum payment fee or maximum dishonoured or declined payment fee specified by IPART is to apply from the commencement of the next determination period, anticipated to be commencing 1 July 2016, and for such other periods as determined by IPART.

If you require further information, please contact Laura Eadie, Director, Department of Premier and Cabinet, on 9228 5546.

Thank you for your assistance in this matter.

Yours sincerely

MIKE BAIRD MP
Premier

- 7 DEC 2015

GPO Box 5341, Sydney NSW 2001 ▪ P: (02) 9228 5239 ▪ F: (02) 9228 3935 ▪ www.premier.nsw.gov.au

Periodic review of a maximum late payment fee and dishonoured or declined payment fee for Sydney Water and dishonoured or declined payment fee for Hunter Water

Terms of Reference

I, Mike Baird, Premier of New South Wales, under section 12A of the *Independent Pricing and Regulatory Tribunal Act 1992* (IPART Act), refer the following matter to the Independent Pricing and Regulatory Tribunal (IPART) for investigation and report:

- the maximum late payment and dishonoured or declined payment fee for Sydney Water Corporation (Sydney Water),
- the appropriate terms and conditions under which a late payment fee should apply under Sydney Water's customer contract, and
- the maximum dishonoured or declined payment fee for Hunter Water Corporation (Hunter Water).

In conducting each review under these terms of reference, IPART is to specify:

1. the maximum late payment fee that Sydney Water may charge under its customer contract;
2. the maximum dishonoured or declined payment fee recommended to be charged by Sydney Water;
3. the maximum dishonoured or declined payment fee that Hunter Water may charge under its customer contract; and
4. the terms and conditions to apply to the charging of the late payment fee under Sydney Water's customer contract.

Background

Sydney Water

By clause 4.4.5 of the customer contract contained in Sydney Water's Operating Licence 2015-2020, Sydney Water has the provision to charge:

> "…a late payment fee, but only if a maximum late payment fee amount is specified by *IPART* as part of a review conducted by *IPART* under the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW) ("IPART Act")."

IPART may specify the terms and conditions under which the late payment fee applies as part of the review, noting that Sydney Water cannot charge a late payment fee if:

- it has already agreed to a deferred payment date with a customer, or an arrangement to pay by instalments with respect to the overdue account balance; or
- the customer has entered into a payment arrangement with Sydney Water.

Under clause 4.11.1 of its customer contract, Sydney Water may charge a dishonoured or declined fee in an amount not exceeding the amount specified on its website, as amended from time to time.

Hunter Water

Clause 4.9.1 of the customer contract contained in Hunter Water's Operating Licence 2012-2017, provides that:

"If payment of your account is dishonoured or declined, we will charge you the relevant administrative fee set by IPART."

Matters for consideration

In undertaking an investigation under this referral, IPART should take into account the following considerations:

When reviewing the maximum late payment fee and associated terms and conditions for charging:

1. The maximum late fee should reflect the efficient costs associated with the late payment of bills.
2. The impact on different customer groups of any terms and conditions for the charging of the late payment fee under the customer contract.

In addition, IPART may take into account any other matters it considers relevant.

When reviewing the maximum dishonoured or declined payment fee:

1. The maximum dishonoured or declined fee should reflect the efficient costs incurred by the utility for dishonoured or declined payments.

In addition, IPART may take into account any other matters it considers relevant.

Consultation

In conducting a review under this referral, IPART will invite submissions from stakeholders.

Timing of periodic review

1. IPART is to conduct the investigation and report under this referral either:
   a. concurrently with its investigation of Sydney Water's and Hunter Water's maximum prices for the provision of water, sewerage, stormwater, trade waste (price review); or
   b. separately from a price review.

2. Where an investigation and report under this referral is conducted concurrently with a price review:
   a. the specified maximum fees are to apply from the date the determination commences in respect of that price review; and
   b. IPART must specify the relevant maximum fee(s) in the report prepared for the purposes of the price review (a copy of which is to be provided to the Premier).

3. Where an investigation and report under this referral is conducted separately from a price review, IPART must:
   a. set out the period during which the fees are to apply; and
   b. submit a report to the Premier once the review is completed.

V Impacts of our decisions on Hunter Water's prices

V.1 Impacts on Hunter Water customers

V.1.1 Indicative bill impacts for residential customers

We have undertaken analysis of the customer base to assess affordability and bill impacts at different usage levels. We have estimated bill impacts for water, wastewater and stormwater services for several customer categories including:

- House – small household – water usage 90 kL/year
- House – typical household – water usage 189 kL/year
- House – large household – water usage 289 kL/year
- House – low income household – water usage 134 kL/year
- House – high income household – water usage 215 kL/year
- Apartment – typical apartment – water usage 115 kL/year
- Pensioner – house – water usage 100 kL/year
- Pensioner – apartment – water usage 100 kL/year.[486]

Bill impacts are presented in Table V.1 to Table V.9 under non-drought prices and drought prices (ie, with the water usage price uplift applied).

Table V.8 and Table V.9 show indicative bill impacts including discretionary expenditure charges, which accounts for about 0.1% to 0.3% of customer bills.

We have also undertaken analysis to estimate the impact of a 30% and 15% reduction in water usage on customer bills (see Table V.10).

In section V.1.2, we also estimate the value of a typical household's bill as a proportion of median household income for Hunter Water customers.

This appendix presents bill impacts in $2020-21 for the 2020 determination period (ie, bills from 2020-21 to 2023-24). This is to show the immediate impact of our decisions on prices and customer bills in the first year of the 2020 determination period compared to current (2019-20) prices and bills.[487]

486 IPART, *Residential water usage in Sydney, Hunter and Gosford – Results for the 2015 household survey*, September 2016, pp 28, 39.

487 That is, bills presented in this report exclude the effects of inflation beyond 2020-21. We use an inflation assumption of 2.2% between 2019-20 and 2020-21. We note that prices and bills will increase by actual inflation for each of the subsequent years in the determination period.

This means that the $ and % changes in prices and bills in this appendix include the impacts of inflation from 2019-20 to 2020-21, but not from 2021-22 onwards. IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to increase these prices by changes in CPI from 2021-22 onwards.

Residential customer bills will generally be lower under non-drought prices

For residential customers:

- Under non-drought prices, bills will generally be lower for most households (except for apartments), with customers with low water usage experiencing larger decreases in their bill
- Under drought prices, bills will generally be lower for customers with low water usage, and will be higher for customers with medium and large water usage.

Table V.1 Indicative bills for residential customers under non-drought prices – water only, excluding discretionary expenditure

Customer type	2019-20 ($2019-20)	2020-21 ($2020-21)	2021-22	2022-23	2023-24	Change 2019-20 to 2023-24[a] IPART Decision	Hunter Water's Proposal	Draft Report
House								
▼ 90 kL pa (small household)	314	246	248	250	253	-61	14	-81
– *% change*	-	*-21.7%*	*1.1%*	*0.7%*	*1.1%*	*-19.4%*	*4.5%*	*-25.8%*
▼ 189 kL pa (typical household)	548	489	495	499	504	-44	31	-64
– *% change*	-	*-10.8%*	*1.2%*	*0.8%*	*1.1%*	*-8.0%*	*5.6%*	*-11.7%*
▼ 289 kL pa (large household)	785	735	744	750	758	-27	48	-47
– *% change*	-	*-6.4%*	*1.2%*	*0.8%*	*1.2%*	*-3.4%*	*6.1%*	*-6.0%*
▼ 134 kL pa (low income household)	418	354	358	361	365	-53	22	-73
– *% change*	-	*-15.3%*	*1.1%*	*0.7%*	*1.1%*	*-12.8%*	*5.1%*	*-17.5%*
▼ 215 kL pa (high income household)	610	553	560	564	570	-40	35	-60
– *% change*	-	*-9.3%*	*1.2%*	*0.8%*	*1.1%*	*-6.5%*	*5.8%*	*-9.8%*
Apartment								
▼ 115 kL pa (typical apartment)	373	307	311	313	316	-57	18	-77
– *% change*	-	*-17.6%*	*1.1%*	*0.7%*	*1.1%*	*-15.2%*	*4.9%*	*-20.5%*
Pensioner								
▼ 100 kL pa (house)	188	136	137	138	140	-48	7	-63
– *% change*	-	*-27.7%*	*1.1%*	*0.7%*	*1.0%*	*-25.6%*	*3.8%*	*-33.5%*
▼ 100 kL pa (apartment)	188	136	137	138	140	-48	7	-63
– *% change*	-	*-27.7%*	*1.1%*	*0.7%*	*1.0%*	*-25.6%*	*3.8%*	*-33.5%*

a The percentage change includes inflation to $2020-21. From 2021-22 onwards, typical bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to adjust these prices by changes in CPI from 2021-22 onwards.

Source: IPART analysis.

Table V.2 Indicative bills for residential customers under drought prices – water only, excluding discretionary expenditure

Customer type	2019-20	2020-21	2021-22	2022-23	2023-24	Change 2019-20 to 2023-24[a]		
	($2019-20)	($2020-21)				IPART Decision	Hunter Water's Proposal	Draft Report
House								
90 kL pa (small household)	314	285	288	290	292	-21	14	-81
– *% change*	-	*-9.1%*	*0.9%*	*0.6%*	*0.9%*	*-6.8%*	*4.5%*	*-25.8%*
189 kL pa (typical household)	548	572	578	582	587	39	31	-64
– *% change*	-	*4.4%*	*1.0%*	*0.7%*	*1.0%*	*7.1%*	*5.6%*	*-11.7%*
289 kL pa (large household)	785	862	871	877	885	100	48	-47
– *% change*	-	*9.8%*	*1.0%*	*0.7%*	*1.0%*	*12.8%*	*6.1%*	*-6.0%*
134 kL pa (low income household)	418	413	417	420	424	6	22	-73
– *% change*	-	*-1.2%*	*1.0%*	*0.6%*	*1.0%*	*1.3%*	*5.1%*	*-17.5%*
215 kL pa (high income household)	610	648	654	659	665	55	35	-60
– *% change*	-	*6.2%*	*1.0%*	*0.7%*	*1.0%*	*9.0%*	*5.8%*	*-9.8%*
Apartment								
115 kL pa (typical apartment)	373	358	361	364	367	-6	18	-77
– *% change*	-	*-4.1%*	*1.0%*	*0.6%*	*0.9%*	*-1.6%*	*4.9%*	*-20.5%*
Pensioner								
100 kL pa (house)	188	180	181	182	184	-4	7	-63
– *% change*	-	*-4.3%*	*0.8%*	*0.5%*	*0.8%*	*-2.2%*	*3.8%*	*-33.5%*
100 kL pa (apartment)	188	180	181	182	184	-4	7	-63
– *% change*	-	*-4.3%*	*0.8%*	*0.5%*	*0.8%*	*-2.2%*	*3.8%*	*-33.5%*

[a] The percentage change includes inflation to $2020-21. From 2021-22 onwards, typical bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to adjust these prices by changes in CPI from 2021-22 onwards.

Source: IPART analysis.

Table V.3 Indicative bills for residential customers under non-drought prices – water and wastewater services, excluding discretionary expenditure

Customer type	2019-20	2020-21	2021-22	2022-23	2023-24	Change 2019-20 to 2023-24[a]		
	($2019-20)	($2020-21)				IPART Decision	Hunter Water's Proposal	Draft Report
House								
▼ 90 kL pa (small household)	1,004	940	943	945	947	-57	90	-112
– *% change*	-	*-6.4%*	*0.3%*	*0.2%*	*0.3%*	*-5.6%*	*9.0%*	*-11.1%*
▼ 189 kL pa (typical household)	1,239	1,184	1,189	1,193	1,199	-40	107	-95
– *% change*	-	*-4.4%*	*0.5%*	*0.3%*	*0.5%*	*-3.2%*	*8.7%*	*-7.7%*
▼ 289 kL pa (large household)	1,476	1,430	1,438	1,444	1,453	-23	124	-78
– *% change*	-	*-3.1%*	*0.6%*	*0.4%*	*0.6%*	*-1.5%*	*8.4%*	*-5.3%*
▼ 134 kL pa (low income household)	1,108	1,048	1,052	1,055	1,059	-49	98	-104
– *% change*	-	*-5.4%*	*0.4%*	*0.3%*	*0.4%*	*-4.4%*	*8.8%*	*-9.4%*
▼ 215 kL pa (high income household)	1,300	1,248	1,254	1,258	1,265	-35	112	-91
– *% change*	-	*-4.0%*	*0.5%*	*0.3%*	*0.5%*	*-2.7%*	*8.6%*	*-7.0%*
Apartment								
▼ 115 kL pa (typical apartment)	950	897	918	938	959	9	151	-43
– *% change*	-	*-5.5%*	*2.3%*	*2.1%*	*2.2%*	*1.0%*	*15.9%*	*-4.6%*
Pensioner								
▼ 100 kL pa (house)	669	650	651	652	654	-15	94	-56
– *% change*	-	*-2.8%*	*0.2%*	*0.1%*	*0.2%*	*-2.2%*	*14.1%*	*-8.3%*
▼ 100 kL pa (apartment)	584	573	587	601	615	31	136	-8
– *% change*	-	*-2.0%*	*2.5%*	*2.4%*	*2.4%*	*5.3%*	*23.2%*	*-1.4%*

a The percentage change includes inflation to $2020-21. From 2021-22 onwards, typical bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to adjust these prices by changes in CPI from 2021-22 onwards.

Source: IPART analysis.

Table V.4 Indicative bills for residential customers under drought prices – water and wastewater services, excluding discretionary expenditure

Customer type	2019-20	2020-21	2021-22	2022-23	2023-24	Change 2019-20 to 2023-24[a]		
	($2019-20)	($2020-21)				IPART Decision	Hunter Water's Proposal	Draft Report
House								
▼ 90 kL pa (small household)	1,004	980	982	984	987	-17	90	-112
– *% change*	-	*-2.4%*	*0.3%*	*0.2%*	*0.3%*	*-1.7%*	*9.0%*	*-11.1%*
▼ 189 kL pa (typical household)	1,239	1,267	1,272	1,276	1,282	43	107	-95
– *% change*	-	*2.3%*	*0.4%*	*0.3%*	*0.4%*	*3.5%*	*8.7%*	*-7.7%*
▼ 289 kL pa (large household)	1,476	1,557	1,565	1,571	1,580	104	124	-78
– *% change*	-	*5.5%*	*0.6%*	*0.4%*	*0.6%*	*7.1%*	*8.4%*	*-5.3%*
▼ 134 kL pa (low income household)	1,108	1,107	1,111	1,114	1,118	10	98	-104
– *% change*	-	*-0.1%*	*0.4%*	*0.2%*	*0.4%*	*0.9%*	*8.8%*	*-9.4%*
▼ 215 kL pa (high income household)	1,300	1,342	1,349	1,353	1,359	59	112	-91
– *% change*	-	*3.2%*	*0.5%*	*0.3%*	*0.5%*	*4.5%*	*8.6%*	*-7.0%*
Apartment								
▼ 115 kL pa (typical apartment)	950	948	969	988	1,009	60	151	-43
– *% change*	-	*-0.2%*	*2.2%*	*2.0%*	*2.1%*	*6.3%*	*15.9%*	*-4.6%*
Pensioner								
▼ 100 kL pa (house)	669	694	695	696	698	29	94	-56
– *% change*	-	*3.8%*	*0.2%*	*0.1%*	*0.2%*	*4.4%*	*14.1%*	*-8.3%*
▼ 100 kL pa (apartment)	584	617	631	645	659	75	136	-8
– *% change*	-	*5.5%*	*2.3%*	*2.2%*	*2.2%*	*12.8%*	*23.2%*	*-1.4%*

a The percentage change includes inflation to $2020-21. From 2021-22 onwards, typical bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to adjust these prices by changes in CPI from 2021-22 onwards.

Source: IPART analysis.

Table V.5 Indicative bills for residential customers under non-drought prices – water, wastewater and stormwater services, excluding discretionary expenditure

Customer type	2019-20	2020-21	2021-22	2022-23	2023-24	Change 2019-20 to 2023-24[a]		
	($2019-20)	($2020-21)				IPART Decision	Hunter Water's Proposal	Draft Report
House								
▼ 90 kL pa (small household)	1,084	1,025	1,028	1,030	1,033	-51	113	-112
– *% change*	-	*-5.4%*	*0.3%*	*0.2%*	*0.3%*	*-4.7%*	*10.5%*	*-10.3%*
▼ 189 kL pa (typical household)	1,318	1,269	1,275	1,278	1,284	-34	130	-95
– *% change*	-	*-3.7%*	*0.4%*	*0.3%*	*0.4%*	*-2.6%*	*9.9%*	*-7.2%*
▼ 289 kL pa (large household)	1,555	1,515	1,524	1,529	1,538	-17	147	-78
– *% change*	-	*-2.6%*	*0.6%*	*0.4%*	*0.6%*	*-1.1%*	*9.5%*	*-5.0%*
▼ 134 kL pa (low income household)	1,188	1,134	1,138	1,140	1,144	-44	121	-104
– *% change*	-	*-4.6%*	*0.4%*	*0.2%*	*0.4%*	*-3.7%*	*10.2%*	*-8.8%*
▼ 215 kL pa (high income household)	1,380	1,333	1,339	1,344	1,350	-30	135	-90
– *% change*	-	*-3.4%*	*0.5%*	*0.3%*	*0.5%*	*-2.2%*	*9.8%*	*-6.6%*
Apartment								
▼ 115 kL pa (typical apartment)	979	929	950	969	990	11	159	-43
– *% change*	-	*-5.1%*	*2.2%*	*2.1%*	*2.1%*	*1.1%*	*16.3%*	*-4.4%*
Pensioner								
▼ 100 kL pa (house)	748	735	737	738	739	-9	117	-55
– *% change*	-	*-1.7%*	*0.2%*	*0.1%*	*0.2%*	*-1.2%*	*15.6%*	*-7.4%*
▼ 100 kL pa (apartment)	614	604	619	633	647	33	144	-8
– *% change*	-	*-1.6%*	*2.4%*	*2.2%*	*2.3%*	*5.4%*	*23.5%*	*-1.3%*

[a] The percentage change includes inflation to $2020-21. From 2021-22 onwards, typical bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to adjust these prices by changes in CPI from 2021-22 onwards.

Source: IPART analysis.

Table V.6 Indicative bills for residential customers under drought prices – water, wastewater and stormwater services, excluding discretionary expenditure

Customer type	2019-20	2020-21	2021-22	2022-23	2023-24	Change 2019-20 to 2023-24[a]		
	($2019-20)	($2020-21)				IPART Decision	Hunter Water's Proposal	Draft Report
House								
90 kL pa (small household)	1,084	1,065	1,068	1,070	1,072	-11	113	-112
– *% change*	-	*-1.7%*	*0.3%*	*0.2%*	*0.3%*	*-1.1%*	*10.5%*	*-10.3%*
189 kL pa (typical household)	1,318	1,352	1,358	1,362	1,367	49	130	-95
– *% change*	-	*2.6%*	*0.4%*	*0.3%*	*0.4%*	*3.7%*	*9.9%*	*-7.2%*
289 kL pa (large household)	1,555	1,642	1,651	1,657	1,665	110	147	-78
– *% change*	-	*5.6%*	*0.5%*	*0.4%*	*0.5%*	*7.1%*	*9.5%*	*-5.0%*
134 kL pa (low income household)	1,188	1,193	1,197	1,199	1,203	15	121	-104
– *% change*	-	*0.4%*	*0.3%*	*0.2%*	*0.3%*	*1.3%*	*10.2%*	*-8.8%*
215 kL pa (high income household)	1,380	1,428	1,434	1,438	1,445	65	135	-90
– *% change*	-	*3.5%*	*0.5%*	*0.3%*	*0.4%*	*4.7%*	*9.8%*	*-6.6%*
Apartment								
115 kL pa (typical apartment)	979	980	1,000	1,020	1,041	62	159	-43
– *% change*	-	*0.1%*	*2.1%*	*2.0%*	*2.0%*	*6.3%*	*16.3%*	*-4.4%*
Pensioner								
100 kL pa (house)	748	779	781	782	783	35	117	-55
– *% change*	-	*4.2%*	*0.2%*	*0.1%*	*0.2%*	*4.7%*	*15.6%*	*-7.4%*
100 kL pa (apartment)	614	648	663	677	691	77	144	-8
– *% change*	-	*5.6%*	*2.2%*	*2.1%*	*2.1%*	*12.5%*	*23.5%*	*-1.3%*

a The percentage change includes inflation to $2020-21. From 2021-22 onwards, typical bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to adjust these prices by changes in CPI from 2021-22 onwards.

Source: IPART analysis.

Table V.7 Indicative bill estimate for customer support programs (ie, discretionary expenditure)

Charge	2019-20	2020-21	2021-22	2022-23	2023-24
	($2019-20)	($2020-21)			
Recycled water	-	0.73	0.73	0.73	0.73
Stormwater channel beautification	-	0.97	0.97	0.97	0.97
Total	**-**	**1.70**	**1.70**	**1.70**	**1.70**

Source: IPART analysis.

Table V.8 Indicative bills for residential customers under non-drought prices – water, wastewater and stormwater including discretionary expenditure

Customer type	2019-20	2020-21	2021-22	2022-23	2023-24	Change 2019-20 to 2023-24[a]		
	($2019-20)	($2020-21)				IPART Decision	Hunter Water's Proposal	Draft Report
House								
▼ 90 kL pa (small household)	1,084	1,027	1,030	1,032	1,034	-49	113	-110
– *% change*	-	*-5.2%*	*0.3%*	*0.2%*	*0.3%*	*-4.5%*	*10.5%*	*-10.2%*
▼ 189 kL pa (typical household)	1,318	1,271	1,276	1,280	1,286	-32	130	-93
– *% change*	-	*-3.6%*	*0.4%*	*0.3%*	*0.4%*	*-2.5%*	*9.9%*	*-7.1%*
▼ 289 kL pa (large household)	1,555	1,517	1,525	1,531	1,540	-15	147	-76
– *% change*	-	*-2.5%*	*0.6%*	*0.4%*	*0.6%*	*-1.0%*	*9.5%*	*-4.9%*
▼ 134 kL pa (low income household)	1,188	1,135	1,139	1,142	1,146	-42	121	-103
– *% change*	-	*-4.4%*	*0.4%*	*0.2%*	*0.4%*	*-3.5%*	*10.2%*	*-8.7%*
▼ 215 kL pa (high income household)	1,380	1,335	1,341	1,345	1,352	-28	135	-89
– *% change*	-	*-3.3%*	*0.5%*	*0.3%*	*0.5%*	*-2.0%*	*9.8%*	*-6.5%*
Apartment								
▼ 115 kL pa (typical apartment)	979	931	952	971	992	13	159	-42
– *% change*	-	*-4.9%*	*2.2%*	*2.1%*	*2.1%*	*1.3%*	*16.3%*	*-4.3%*
Pensioner								
▼ 100 kL pa (house)	748	737	738	739	741	-7	117	-54
– *% change*	-	*-1.5%*	*0.2%*	*0.1%*	*0.2%*	*-1.0%*	*15.6%*	*-7.2%*
▼ 100 kL pa (apartment)	614	606	620	634	648	35	144	-7
– *% change*	-	*-1.3%*	*2.4%*	*2.2%*	*2.3%*	*5.6%*	*23.5%*	*-1.1%*

[a] The percentage change includes inflation to $2020-21. From 2021-22 onwards, typical bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to adjust these prices by changes in CPI from 2021-22 onwards.

Source: IPART analysis.

Table V.9 Indicative bills for residential customers under drought prices – water, wastewater and stormwater including discretionary expenditure

Customer type	2019-20	2020-21	2021-22	2022-23	2023-24	Change 2019-20 to 2023-24[a]		
	($2019-20)	($2020-21)				IPART Decision	Hunter Water's Proposal	Draft Report
House								
▼ 90 kL pa (small household)	1,084	1,067	1,069	1,071	1,074	-10	113	-110
– *% change*	-	*-1.6%*	*0.3%*	*0.2%*	*0.3%*	*-0.9%*	*10.5%*	*-10.2%*
▼ 189 kL pa (typical household)	1,318	1,354	1,360	1,363	1,369	51	130	-93
– *% change*	-	*2.7%*	*0.4%*	*0.3%*	*0.4%*	*3.8%*	*9.9%*	*-7.1%*
▼ 289 kL pa (large household)	1,555	1,644	1,653	1,658	1,667	112	147	-76
– *% change*	-	*5.7%*	*0.5%*	*0.3%*	*0.5%*	*7.2%*	*9.5%*	*-4.9%*
▼ 134 kL pa (low income household)	1,188	1,194	1,198	1,201	1,205	17	121	-103
– *% change*	-	*0.5%*	*0.3%*	*0.2%*	*0.3%*	*1.4%*	*10.2%*	*-8.7%*
▼ 215 kL pa (high income household)	1,380	1,429	1,436	1,440	1,446	67	135	-89
– *% change*	-	*3.6%*	*0.5%*	*0.3%*	*0.4%*	*4.8%*	*9.8%*	*-6.5%*
Apartment								
▼ 115 kL pa (typical apartment)	979	981	1,002	1,022	1,043	63	159	-42
– *% change*	-	*0.2%*	*2.1%*	*2.0%*	*2.0%*	*6.5%*	*16.3%*	*-4.3%*
Pensioner								
▼ 100 kL pa (house)	748	781	782	783	785	37	117	-54
– *% change*	-	*4.4%*	*0.2%*	*0.1%*	*0.2%*	*4.9%*	*15.6%*	*-7.2%*
▼ 100 kL pa (apartment)	614	650	664	678	692	79	144	-7
– *% change*	-	*5.9%*	*2.2%*	*2.1%*	*2.1%*	*12.8%*	*23.5%*	*-1.1%*

a The percentage change includes inflation to $2020-21. From 2021-22 onwards, typical bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to adjust these prices by changes in CPI from 2021-22 onwards.

Source: IPART analysis.

Table V.10 Indicative reduction in customer bill following usage reduction for 2020-21 ($2020-21)

Customer type	kL/year	Change (kL/year)	Non-drought prices			Drought prices		
			Bill	Change in bill		Bill	Change in bill	
			($/year)	($/year)	(%)	($/year)	($/year)	(%)
House (typical household)	**189**		1,271			1,354		
▼ 30% usage reduction	132	57	1,131	139	-11.0%	1,189	164	-12.1%
▼ 15% usage reduction	161	28	1,201	70	-5.5%	1,272	82	-6.1%
Apartment (typical)	**115**		931			981		
▼ 30% usage reduction	81	35	846	85	-9.1%	881	100	-10.2%
▼ 15% usage reduction	98	17	888	42	-4.6%	931	50	-5.1%
Pensioner (house)	**100**		737			781		
▼ 30% usage reduction	70	30	663	74	-10.0%	694	87	-11.1%
▼ 15% usage reduction	85	15	700	37	-5.0%	737	44	-5.6%
Pensioner (apartment)	**100**		606			650		
▼ 30% usage reduction	70	30	532	74	-12.2%	563	87	-13.4%
▼ 15% usage reduction	85	15	569	37	-6.1%	607	44	-6.7%

Note: Includes water, wastewater, stormwater and discretionary expenditure charges.

Source: IPART analysis.

V.1.2 Affordability is a concern for many Hunter Water stakeholders

As discussed in section 14.1, we have considered the distribution of income in the Hunter region and undertaken analysis to estimate the proportion of household income that a typical Hunter Water customer's bill represents (see Table V.14 and Table V.15).

Table V.11 2015 household survey results – income level by region

Income level ($2014-15)	Hunter	Eastern Sydney	Western Sydney	Gosford
Low income (up to $41,600)	35%	22%	27%	35%
Lower middle income (>$41,600 - $78,000)	21%	20%	21%	21%
Higher middle income (>$78,000 to $156,000)	25%	32%	30%	26%
High income (>$156,000)	8%	16%	12%	8%

Source: IPART, *Residential water usage in Sydney, Hunter and Gosford – Results for the 2015 household survey*, September 2016, p 13.

Table V.12 ABS data 2016 census population and income data – Hunter region ($2020-21)

	Newcastle	Cessnock	Lake Macquarie	Maitland	Port Stephens	Dungog	Singleton
Number of people	163,884	21,994	197,371	74,162	71,381	8,975	16,089
Average people per household	2.4	2.5	2.5	2.7	2.5	2.5	2.6
Median weekly household income	$1,420	$1,111	$1,399	$1,530	$1,234	$1,306	$1,736
Median monthly mortgage repayments	$1,865	$1,575	$1,847	$1,847	$1,801	$1,771	$1,963
Median weekly rent	$362	$298	$341	$341	$320	$261	$309

Source: ABS, 2016 Census QuickStats – Newcastle (SA3), Cessnock (SA2), Lake Macquarie (LGA), Maitland (SA3), Port Stephens (SA3), Dungog (SA2), Singleton (SA2).

Table V.13 ABS data 2016 census population and income data – Sydney and Central Coast Council regions ($2020-21)

	Sydney	Gosford	Wyong
Number of people	4,321,535	169,053	158,683
Average people per household	2.8	2.5	2.5
Median weekly household income	$1,920	$1,417	$1,268
Median monthly mortgage repayments	$2,309	$2,024	$1,847
Median weekly rent	$479	$384	$362

Source: ABS, 2016 Census QuickStats –Sydney (UCL), Gosford (SA3), Wyong (SA3).

Table V.14 Indicative bill estimates as a proportion of median household income – Hunter region

	Newcastle	Cessnock	Lake Macquarie	Maitland	Port Stephens	Dungog	Singleton
Indicative bill estimate for 2019-20 ($2019-20)	1,318	1,318	1,318	1,318	1,318	1,318	1,318
% of household income	1.8%	2.3%	1.8%	1.7%	2.1%	1.9%	1.5%
Indicative bill estimate for 2020-21 (non-drought prices) ($2020-21)	1,271	1,271	1,271	1,271	1,271	1,271	1,271
% of household income	1.7%	2.2%	1.7%	1.6%	2.0%	1.9%	1.4%
Indicative bill estimate for 2020-21 (drought prices) ($2020-21)	1,354	1,354	1,354	1,354	1,354	1,354	1,354
% of household income	1.8%	2.3%	1.9%	1.7%	2.1%	2.0%	1.5%

Note: Hunter Water customer bill shown for combined water, wastewater and stormwater services for a household using 189 kL of water per year. Also includes discretionary expenditure charges for 2020-21 bills.

Source: ABS, 2016 Census QuickStats – Newcastle (SA3), Cessnock (SA2), Lake Macquarie (LGA), Maitland (SA3), Port Stephens (SA3), Dungog (SA2), Singleton (SA2), IPART analysis.

Table V.15 Indicative bill estimates as a proportion of median household income – Sydney and Central Coast Council regions

	Sydney[a]	Gosford[b]	Wyong[b]
Indicative bill estimate for 2019-20 ($2019-20)	1,212	1,029	997
% of household income	1.3%	1.4%	1.5%
Indicative bill estimate for 2020-21 (non-drought prices) ($2020-21)	1,131	1,051	1,019
% of household income	1.2%	1.4%	1.5%
Indicative bill estimate for 2020-21 (drought prices) ($2020-21)	1,297	N/A	N/A
% of household income	1.4%	-	-

a Sydney Water customer bill for combined water, wastewater and stormwater services for a household using 200 kL of water per year. Also includes discretionary expenditure charges for 2020-21 bills.

b Central Coast Council customer bill for combined water, wastewater and stormwater services for a household using 170 kL of water per year

Source: ABS, 2016 Census QuickStats, Sydney (UCL), Central Coast (SA4), Gosford (SA3), Wyong (SA3), IPART, *Prices for Sydney Water From 1 July 2020 - Draft Report,* March 2020, p 141 and *Review of Central Coast Council's water, sewerage and stormwater prices - Final Report*, May 2019, pp 174 and 177; IPART analysis.

V.1.3 Indicative bill impacts for non-residential customers

We have estimated bill impacts for a sample of non-residential customers presented in Table V.16 under non-drought prices and Table V.17 under drought prices.

Non-residential customer bill impacts will be mixed

For non-residential customers:

- Under non-drought prices, bills will be lower for small customers with low water usage, but will be higher for most customers, particularly larger customers with high water usage
- Under drought prices, bills will be higher for almost all types of customers (except some small customers with low water usage), with customers with high water usage experiencing larger increases in their bills.

Table V.16 Indicative bills for non-residential customers under non-drought prices

Customer type	2019-20	2020-21	2023-24	Average annual % change	Change 2019-20 to 2023-24[a]		
	($2019-20)				IPART Decision	Hunter Water's Proposal	Draft Report
Service station	2,042	2,019	2,051	0%	0%	8%	-3%
Small shop – 20mm	1,104	1023	1,031	-2%	-7%	8%	-12%
Small shop – 25mm	1,961	1,907	1,926	-1%	-2%	12%	-7%
Large licensed club	52,300	53,182	54,302	1%	4%	8%	2%
Medium licensed hotel	5,736	5,764	5,860	1%	2%	9%	-1%
Regional shopping centre	320,028	329,885	338,045	1%	6%	5%	5%
Large office – Newcastle	20,679	21,022	21,462	1%	4%	7%	2%
Regional office – Maitland	6,515	6,508	6,612	0%	1%	9%	-2%
Small industrial firm	1,065	956	960	-3%	-10%	7%	-16%
Medium industrial firm with location-based charge	313,672	323,061	336,661	2%	7%	7%	7%
Large industrial firm with location-based charge and no sewer	391,949	401,662	467,262	5%	19%	21%	19%
Large industrial firm with location-based charge and sewer	539,040	553,327	618,927	4%	15%	15%	14%
Small nursery low discharge factor	2,233	2,215	2,263	0%	1%	8%	-1%
Large nursery low discharge factor	15,411	15,642	16,090	1%	4%	6%	4%
Fast food outlet	2,675	2,642	2,682	0%	0%	9%	-3%
Shopping centre – 4,000 kL p.a.	23,442	23,383	23,703	0%	1%	11%	-3%
Shopping centre – 9,000 kL p.a	32,644	33,272	33,992	1%	4%	7%	3%
Large industrial firm – 45,600 kL p.a./50mm meter	122,858	126,774	130,422	2%	6%	6%	6%
Large industrial firm – 13,000 kL p.a./multiple meters	43,657	44,705	45,745	1%	5%	6%	4%

[a] The percentage change includes inflation to $2020-21. From 2021-22 onwards, typical bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to adjust these prices by changes in CPI from 2021-22 onwards.

Note: Non-residential property type corresponds to those described in Technical Paper 8 of Hunter Water's 1 July 2019 Proposal (pp 53-71). Bill impacts exclude trade waste charges.

Source: IPART analysis.

Table V.17 Indicative bills for non-residential customers under drought prices

Customer type	2019-20	2020-21	2023-24	Average annual % change	Change 2019-20 to 2023-24[a]		
	($2019-20)				IPART Decision	Hunter Water's Proposal	Draft Report
Service station	2,042	2,195	2,227	2%	9%	8%	-3%
Small shop – 20mm	1,104	1067	1,075	-1%	-3%	8%	-12%
Small shop – 25mm	1,961	2,008	2,027	1%	3%	12%	-7%
Large licensed club	52,300	59,342	60,462	4%	16%	8%	2%
Medium licensed hotel	5,736	6,292	6,388	3%	11%	9%	-1%
Regional shopping centre	320,028	374,765	382,925	5%	20%	5%	5%
Large office – Newcastle	20,679	23,442	23,882	4%	15%	7%	2%
Regional office – Maitland	6,515	7,080	7,184	3%	10%	9%	-2%
Small industrial firm	1,065	978	982	-2%	-8%	7%	-16%
Medium industrial firm with location-based charge	313,672	371,461	385,061	5%	23%	7%	7%
Large industrial firm with location-based charge and no sewer	391,949	485,262	550,862	9%	41%	21%	19%
Large industrial firm with location-based charge and sewer	539,040	636,927	702,527	7%	30%	15%	14%
Small nursery low discharge factor	2,233	2,479	2,527	3%	13%	8%	-1%
Large nursery low discharge factor	15,411	18,106	18,554	5%	20%	6%	4%
Fast food outlet	2,675	2,862	2,902	2%	8%	9%	-3%
Shopping centre – 4,000 kL p.a.	23,442	25,143	25,463	2%	9%	11%	-3%
Shopping centre – 9,000 kL p.a	32,644	37,232	37,952	4%	16%	7%	3%
Large industrial firm – 45,600 kL p.a./50mm meter	122,858	146,838	150,486	5%	22%	6%	6%
Large industrial firm – 13,000 kL p.a./multiple meters	43,657	50,425	51,465	4%	18%	6%	4%

a The percentage change includes inflation to $2020-21. From 2021-22 onwards, typical bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in $2020-21 for four years, and then allows Hunter Water to adjust these prices by changes in CPI from 2021-22 onwards.

Note: Non-residential property type corresponds to those described in Technical Paper 8 of Hunter Water's 1 July 2019 Proposal (pp 53-71). Bill impacts exclude trade waste charges.

Source: IPART analysis.

W Financeability test

When setting prices, we consider the financial sustainability of the business resulting from our pricing decisions. To do this, we undertake a financeability test to assess how our price decisions are likely to affect the business's financial sustainability and ability to raise funds to manage its activities, over the upcoming regulatory period.

This appendix summarises our approach and outcomes of our financeability assessment.

W.1 2018 Review of our financeability test

In 2018, we reviewed the financeability test we use as part of our price regulation process (2018 Financeability Review).[488] In this review, we decided to:

- Broaden the test by calculating financeability tests for both the benchmark and actual business
- Adjust the target ratios we use to assess financeability
- Clarify the process to identify any financeability concerns, and
- Tailor the remedy for a financeability concern based on its source.

To assess Hunter Water's financeability over the 2020 Determination, we analysed its forecast financial performance, financial position and cash flows for both the *benchmark*[489] and *actual*[490] business. We then forecast financial ratios for both tests and assessed Hunter Water's financial ratios compared to our target ratios. The three financial ratios we include in our financeability test, and the target ratios, are summarised in Table W.1.

Table W.1 Target ratios for the benchmark and actual test

Ratios	Benchmark test (real cost of debt)	Actual test (actual cost of debt)
Interest cover	>2.2x	>1.8x
Funds from operations (FFO) over debt	>7.0%	>6.0%
Gearing	<70%	<70%

488 IPART, *Review of our financeability test*, November 2018, p 1.

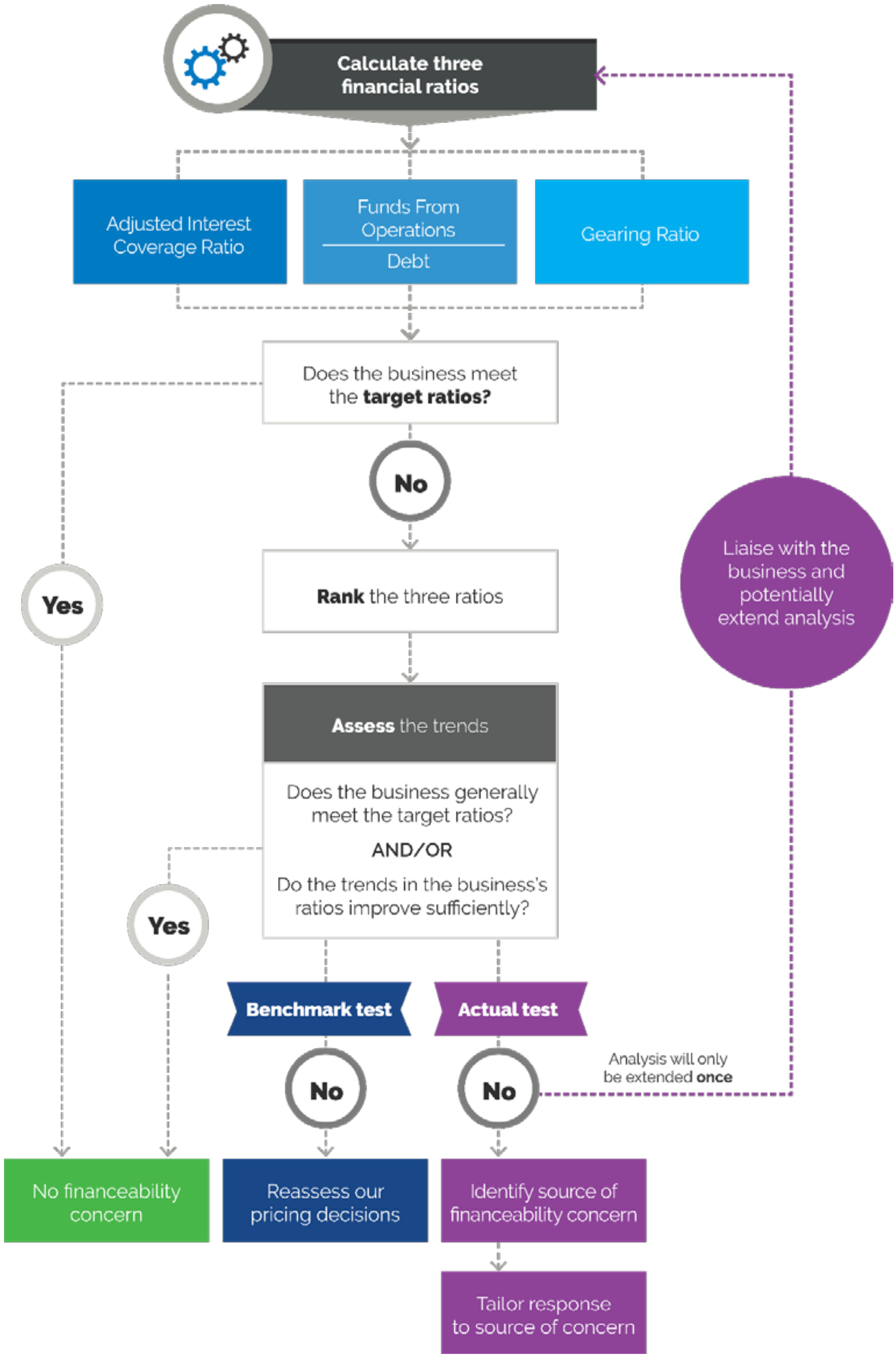
489 The benchmark test ensures our pricing decisions would allow an efficient investment grade rated business to raise finance and remain financeable during the regulatory period. Conducting the benchmark test on the benchmark business would identify any estimation and cash flow impacts arising from our building block approach. When we calculate our financial ratios for the benchmark business, we will use a real cost of debt.

490 The actual test assesses whether the actual business would be financeable during the regulatory period using the business's actual cost of debt. Conducting the test on an actual business would indicate whether the business might face a financeability concern.

W.2 How we assess a utility's financeability

In the 2018 Financeability Review, we also outlined the following process (see Figure U.1) for identifying a financeability concern.

Figure W.1 Our process for identifying a financeability concern



Source: IPART, *Review of our financeability test*, November 2018, p 57.

W.3 Financeability assessment

Step 1: Calculate our standard financial ratios

Table W.2 Financeability test results based on our decision on Hunter Water's prices

	Target ratios	2020-21	2021-22	2022-23	2023-24
Interest cover					
Benchmark test	>2.2x	4.3	4.1	4.1	4.2
- Does it meet the target?		✓	✓	✓	✓
Actual test	>1.8x	2.5	2.5	2.5	2.6
- Does it meet the target?		✓	✓	✓	✓
FFO over debt					
Benchmark test	>7.0%	7.1%	6.8%	6.9%	7.1%
- Does it meet the target?		✓	✗	✗	✓
Actual test	>6.0%	5.7%	6.0%	6.1%	6.5%
- Does it meet the target?		✗	✓	✓	✓
Gearing					
Benchmark test	<70%	60%	60%	60%	60%
- Does it meet the target?		✓	✓	✓	✓
Actual test	<60%	53%	53%	52%	52%
- Does it meet the target?		✓	✓	✓	✓

Source: IPART analysis

The benchmark test results show that, on average, Hunter Water meets the benchmark target for real FFO over debt ratio over the determination period and is on an upward trajectory for most of the period, even though it is slightly below it in 2021-22 and 2022-23.

The actual test results show that, on average, Hunter Water meets the actual target for real FFO over debt ratio over the determination period and is on an upward trajectory over the period.

Given that under the benchmark test Hunter Water is marginally below the FFO over debt target in some years, below we step through Step 2 of the financeability test where we assess these ratios more closely.

Step 2: Analyse the trends in the financial ratios over the 2020 regulatory period

In the 2018 Financeability Review, we indicated that we would rank the three ratios to place more emphasis on the ICR and the FFO over debt ratios, and place less emphasis on the Gearing ratio. These two 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. Placing less emphasis on the Gearing ratio is also consistent with credit rating agencies' methodology to the extent that they place a lower weight on the Gearing ratio than cash flow ratios.[491]

On this basis, our trend analysis for the benchmark test focuses on ICR and FFO over debt ratios as per the following sections.

Benchmark test – Interest cover ratio

Hunter Water is expected to meet the target for real interest cover ratio ICR (ICR) of 2.2x over the 2020 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.

In addition, Hunter Water is forecast to have a minimum headroom of 1.9x from the target real ICR. By having headroom, this indicates that it has relatively strong cash flows that can withstand some financial shocks (eg, increase in borrowing rates) before it is unable to meet its annual interest expense (or default on its debt obligations).

The current low WACC environment primarily contributes to this benchmark result. In our calculations, we use a real cost of debt of 2.2% (real, pre-tax), which is partially derived from current low borrowing interest rates.

Benchmark test – FFO over debt

FFO over debt measures how much free cash a business generates (ie, after covering its operating costs, interest expense and tax) relative to the size of its total borrowings. For the benchmark test, the target of real FFO over debt ratio is 7% (less than 7% is considered below target). FFO over debt measures a business's ability to generate cash flows to repay the principal of its debt.

Hunter Water's FFO over debt ratio is forecast to be 7.0% on average over the 2020 determination period, which meets the target. In terms of trend, this ratio is forecast to increase over years 2 and 3 of the determination period, reaching 7.1% in year 4 (ie, exceeding the target).

491 IPART, *Review of our financeability test*, November 2018, p 49.

The FFO over debt ratio is impacted by a number of factors, including lower returns on assets and that those assets have long asset lives and are mostly funded with debt:

- The increase in capital expenditure that we have recommended places downward pressure on its financeability ratios.
- In addition, Hunter Water is investing in assets with long economic lives, which generally results in a lower depreciation allowance.
- The FFO[492] is primarily affected by the current low WACC rate environment, which results in lower returns on assets. We note that the increase in the real WACC from 3.2% in the Draft Report to 3.4% in the Final Report resulted in some improvement.
- Our decision to disaggregate Hunter Water's RAB and increase asset lives has increased its depreciation allowance compared to that in our Draft Report, which has resulted in improvements in Hunter Water's financeability ratios.

Funding capital projects from debt is generally desirable, particularly when funds are used to construct major assets with long asset lives, as costs associated with these assets are spread across future generations. Debt is desirable because it is cheaper.

We note that the regulatory framework for these utilities allows them to refinance debt over the life of the asset. In particular, the trailing average cost of debt addresses refinancing risk. Therefore, we consider the importance of repaying debt within a timeframe that is generally shorter than the assets is less of a concern for these utilities.

Actual test – ICR

Hunter Water is expected to meet the target for ICR of 1.8x over the 2020 determination period.

In addition, it is forecast to have a minimum headroom of 0.7x from the target over the 2020 determination period. In comparison to the benchmark test results, the headroom for the actual test is smaller because the actual cost of debt is higher than the real cost of debt of 2.2%.

Actual test – FFO over Debt

Hunter Water meet the target on average over the 2020 determination period.

It is forecast to be 6.1% on average and with an upward trend over the 2020 determination period.

Step 3: Conclusion

Overall, we did not identify a financeability concern for Hunter Water that needs to be addressed in this review. It is our view that Hunter Water can remain financially sustainable and continue to provide its services over the determination period.

492 In our 2018 Financeability Review, we defined FFO as:
FFO = NRR – Operating expenditure – Tax – Changes in Working Capital – Return on Debt (ie, RAB x cost of debt)

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 Hunter Water's prices and revenue allowances over the 2020 determination period. We consider the transparency of the regulatory framework and the revenue stability and predictability that is generated by the framework supports Hunter Water's long term financial sustainability.

The visibility of future cash flows that is generated by the regulatory framework provides Hunter 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 and/or dividends to pay down debt. For example, the increase in capital expenditure that we have recommended for the Hunter Water review places downward pressure on its financeability ratios – but it would not be unreasonable that a business in a competitive market would inject additional equity as it embarks on a large investment program to increase the size of its asset base.

Regulatory mechanisms that moderate financial risks to Hunter Water

Since we established the target ratios in our 2018 Financeability Review, we have introduced regulatory mechanisms that help Hunter Water and other water utilities further manage/mitigate their cost and revenue risks. These include:

- Introducing dynamic water usage pricing, which reduces both cost and revenue risks related to drought conditions. Importantly, this is a new pricing mechanism that addresses the risks of future climate conditions, and is not considered within the standard financeability ratios developed by the credit ratings agencies.
- A demand volatility adjustment mechanism, which we applied in the current review. This mitigates the risk of errors in water sales forecasts (which firms operating in a competitive market would not enjoy).
- Introducing a trailing average cost of debt approach, which addresses refinancing risk.

Glossary

2016 Determination	*Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June,* published June 2016.
2016 determination period	The period from 1 July 2016 to 30 June 2020.
2020 Determination	The Determination that we will make as a result of this review. It will set out the maximum prices that Hunter Water can charge for its monopoly services from 1 July 2020.
2020 determination period	The period of four years commencing 1 July 2020.
Annual revenue requirement	The notional revenue requirement in each year of the determination period.
BEI	Break-even inflation.
BOD	Biochemical oxygen demand.
CPI	Consumer Price Index.
current determination period	The period from 1 July 2016 to 30 June 2020, as set in the 2016 Determination.
determination period	Given period over which price limits (maximum prices) set by IPART apply.
DRC	Depreciated Replacement Cost.
DVAM	Demand volatility adjustment mechanism.
ECM	Efficiency carryover mechanism.
EIC	Environmental Improvement Charge.
ELWC	Economic Level of Water Conservation.
EPA	Environment Protection Authority, NSW.
EPL	Environment Protection Licence, issued by the EPA.
FAR	Fixed asset register.

GL	Gigalitre (one billion litres).
Hunter Water	Hunter Water Corporation.
Hunter Water Act	*Hunter Water Act 1991* (NSW).
IPART	Independent Pricing and Regulatory Tribunal of NSW.
IPART Act	*Independent Pricing and Regulatory Tribunal Act 1992* (NSW).
kL	Kilolitre (one thousand litres).
LHWP	Lower Hunter Water Plan.
LRMC	Long Run Marginal Cost (of supply).
ME	Meter Equivalent.
ML	Megalitre (one million litres).
NPV	Net Present Value.
NRR	Notional revenue requirement (the revenue requirement set by IPART that represents the efficient costs of providing Hunter Water's monopoly services).
PIAC	Public Interest Advocacy Centre.
PV	Present Value.
RAB	Regulatory Asset Base.
Section 16A directions	Ministerial directions pursuant to section 16A of the IPART Act.
SMP	The Reserve Bank of Australia's Statement of Monetary Policy.
SOC	State Owned Corporation, as prescribed by Schedule 5 of the SOC Act.
SOC Act	*State Owned Corporations Act 1989* (NSW).
SRMC	Short Run Marginal Cost (of supply).
Sydney Water	Sydney Water Corporation.

target revenue	The smoothed NRR over four years to (in NPV neutral terms) which prices are set to recover, in order to provide Hunter Water with the NRR over the determination period.
TSS	Total suspended solids.
UPA	Unregulated pricing agreement.
upcoming determination period	The period commencing 1 July 2020.
WACC	Weighted Average Cost of Capital.
WWTP	Wastewater treatment plant.