

REVIEW OF PRICES FOR WATER NSW GREATER SYDNEY FROM 1 JULY 2020



Final Report

June 2020

© Independent Pricing and Regulatory Tribunal (2020)

With the exception of any:

- (a) coat of arms, logo, trade mark or other branding;
- (b) third party intellectual property; and
- (c) personal information such as photos of people,

this publication is licensed under the Creative Commons Attribution-NonCommercial-NoDerivs 3.0 Australia Licence.



IPART requires that it be attributed as creator of the licensed material in the following manner: © Independent Pricing and Regulatory Tribunal (2020).

The use of any material from this publication in a way not permitted by the above licence or otherwise allowed under the *Copyright Act 1968* (Cth) may be an infringement of copyright. Where you wish to use the material in a way that is not permitted, you must lodge a request for further authorisation with IPART.

ISBN 978-1-76049-426-1

Disclaimer

This report is published for the purpose of IPART explaining its decisions and/or recommendations for the relevant review. Use of the information in this report for any other purpose is at the user's own risk, and is not endorsed by IPART.

The Independent Pricing and Regulatory Tribunal (IPART)

IPART provides independent regulatory decisions and advice to protect and promote the ongoing interests of the consumers, taxpayers and citizens of NSW. IPART's independence is underpinned by an Act of Parliament. Further information on IPART can be obtained from IPART's website: https://www.ipart.nsw.gov.au/Home.

Tribunal Members

The Tribunal members for this review are: Dr Paul Paterson, Chair Ms Deborah Cope Ms Sandra Gamble

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

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

The team on this review also includes: Shirley Lam, Courtney Booth and Bee Thompson

Contents

Tri	ounal Members	iii
1	 Executive Summary 1.1 Key themes in this price review 1.2 Overview of our main decisions 1.3 Water NSW's prices for bulk water services in Greater Sydney 1.4 Impacts of our decisions 1.5 Our decisions have been informed by extensive consultation with state 1.6 We will conduct a review of our regulatory framework 1.7 List of decisions 	1 2 5 1 1 1 8 8 8
2	Key themes and decisions2.1The key themes in this review2.2Our key decisions	12 12 15
3	 Length of determination and form of regulation 3.1 Summary of our decisions 3.2 We are setting prices for a 4-year determination period 3.3 Our maximum prices provide price stability and certainty 3.4 We are sharing non-regulated revenue with water customers 3.5 We are sharing recreational costs between water customers and use 3.6 We are not introducing the option of unregulated pricing agreements 	17 17 17 19 19 20 22
4	Operating expenditure4.1An explanation of the type of expenditure adjustments we applied4.2Summary of our decisions4.3Operating expenditure over the 2016 determination period4.4Operating expenditure for the 2020 determination period	24 25 26 28 30
5	 Capital expenditure 5.1 Summary of our decisions 5.2 Capital expenditure over the 2016 determination period 5.3 Capital expenditure for the 2020 determination period 5.4 How does our decision differ from Water NSW's proposal? 	36 37 40 41 47
6	 Notional revenue requirement 6.1 How do we assess the notional revenue requirement? 6.2 The total NRR is \$792.6 million over four years 6.3 Our NRR is lower than that proposed by Water NSW 6.4 Inflation expectations in the WACC 6.5 Our WACC is currently high compared to other jurisdictions 6.6 We adjusted the NRR to account for non-regulated revenue 6.7 Summary of our building block decisions 	50 50 51 52 53 54 55 56
7	Forecast water sales and customer numbers 7.1 Summary of our decisions	<mark>58</mark> 58

	7.2 Forecast water sales7.3 Forecast customer numbers	59 61
8	Risk allocation8.1Summary of decisions on cost risks8.2Summary of decisions on revenue risks8.3Summary of decisions on mechanisms to encourage efficiency	62 63 68 71
9	 Prices 9.1 Summary of our decisions on Water NSW's prices 9.2 To introduce dynamic water usage pricing 9.3 Water NSW's prices to Sydney Water 9.4 Water NSW's prices to council customers 9.5 Water NSW's prices to raw water and unfiltered water customers 	74 74 75 78 83 85
10	 Impacts of prices 10.1 Summary of our impact analysis 10.2 Impacts on Water NSW's customers 10.3 Impacts on service standards 10.4 Impacts on Water NSW's financial sustainability 10.5 Implications for the consolidated fund 10.6 Implication for general inflation 10.7 Implications for the environment 	 86 87 89 89 92 92 93
Ар	pendices	94
Α	Matters to be considered by IPART	95
В	Our approach when setting prices	97
С	Context for this review	106
D	Continuing efficiencies	110
Е	Additional information on operating expenditure	117
F	Additional information on capital expenditure	130
G	Output measures	141
Η	Additional information on the notional revenue requirement	145
I	Inflation and the Weighted Average Cost of Capital	161
J	Weighted Average Cost of Capital	169
Κ	Cost pass-through for regulatory change and catastrophic events	175
L	Cost pass-through – Shoalhaven Transfer Scheme	179
Μ	Efficiency carryover mechanism	188
Ν	Additional information on managing contingent project risks	195
0	Financeability test	200
Glo	ossary	206

1 Executive Summary

The Independent Pricing and Regulatory Tribunal of NSW (IPART) has completed its review of the maximum prices Water NSW can charge its customers for its bulk water services in the Greater Sydney area.¹ We have decided to set prices for four years, from 1 July 2020 to 30 June 2024 (the 2020 determination period).



1.1 Key themes in this price review

Several key themes have emerged through the course of this review, including:

1. Moving towards improved water planning will mean that utilities can be better prepared to manage the challenges arising from climate variability and weather events.

Water NSW's proposed expenditure has been influenced by the drought, bushfires and heavy rainfall occurring during this price review. Ensuring that expenditure aligns with long-term, integrated planning across the Greater Sydney region will improve its efficiency. This planning should be comprehensive and rigorous in terms of the options assessed for long-term water supply and drought response, as well as co-ordinated across the relevant agencies (Water NSW, Sydney Water and the NSW Department of Planning, Industry and Environment).

2. Low interest rates are offsetting the price impacts of large capital expenditure increases.

While we provided Water NSW with a large increase in its capital expenditure allowance, it was critical that we ensured this level of expenditure was efficient. This is because, even though the expenditure only had a muted impact on prices in this review, it remains in Water NSW's regulatory asset base (RAB) for a long time. As such, it could have a significant effect on prices in the future (if and when interest rates increase).

¹ Water NSW is the main supplier of bulk water in the Sydney region. It manages and protects Sydney's drinking water catchments and catchment infrastructure. Water NSW supplies wholesale bulk water to Sydney Water and to three councils (Wingecarribee Shire Council, Shoalhaven City Council and Goulburn-Mulwaree Council) and it also supplies retail raw water and unfiltered water to 63 small customers.

3. Risk should be appropriately allocated between Water NSW and its customers.

Water NSW proposed a re-allocation of several risks between it and its customers, primarily through changes to our regulatory framework. Our objective is to achieve a risk allocation that leads to prices reflecting efficient costs, while ensuring that the party best placed to manage the risk has appropriate incentives to manage it efficiently. After reviewing Water NSW's proposal, we consider this objective is best achieved through our existing regulatory framework. Therefore, we have not made substantial changes to it.

4. The economic impact of the COVID-19 pandemic is uncertain.

We consider our regulatory framework is sufficiently flexible to accommodate changes to the economic environment over the next four years, including in response to the COVID-19 pandemic. That said, we have paused the continuing efficiency adjustment by one year as we consider there will be a short-term impact on productivity while businesses implement new work practices due to the COVID-19 pandemic.

We have taken account of these themes when making decisions for this review. We have also had regard to the broad range of matters we must consider under the IPART Act when setting prices (see Appendix A).

1.2 Overview of our main decisions

We have included \$739.4 million of efficient expenditure in Water NSW's operating and capital expenditure allowances

We reviewed Water NSW's expenditure proposal to ensure the prices paid by customers would reflect the efficient cost of these services.

Water NSW proposed substantial capital expenditure on a range of projects, mainly aimed at responding to drought and improving resilience in its system. In response, we have allocated capital expenditure of \$373.0 million to Water NSW for 2020-2024. This is 33.2% or \$93 million higher than Water NSW's efficient capital expenditure over the previous determination period.

We did not find all the proposed expenditure to be efficient and therefore our decision is 16.4% or \$73 million lower than Water NSW's revised pricing proposal.² We consider the relatively large capital expenditure allowance gives Water NSW significant flexibility to choose to fund its highest priority prudent and efficient capital projects over the determination period. It can also change priorities if needed as better information about economic conditions, climatic impacts or long-term water planning becomes known. Finally, if Water NSW exceeds its capital expenditure allowance, there is scope to recover efficient capital over-spends in prices at our next price review.

In March 2020, Water NSW advised us that it no longer intended to pursue a major capital project (Avon Deep Water Access) (Water NSW, Email to IPART, 10 March 2020). This meant its pricing proposal effectively decreased to \$446.3 million (from \$682.4 million).

These decisions are illustrated in Figure 1.1.





Source: IPART analysis; WaterNSW, *Pricing Proposal to IPART*, July 2019; Atkins Cardno, *WaterNSW Greater Sydney* expenditure and demand review, Supplementary Report, June 2020, Table 4-1 and Table 4-2, pp 27-28.

In relation to operating expenditure, our view is that Water NSW could achieve greater efficiencies than it had proposed, particularly for water monitoring. We have allocated \$366.4 million over the 2020 determination period, which is 4.7% lower than Water NSW's pricing proposal.

In determining Water NSW's efficient level of expenditure, we have applied catch-up and continuing efficiency adjustments:

We identified improvements Water NSW could make to its business processes, which would bring it closer to how an efficient utility operates. As a result we applied catch-up efficiency adjustments of 0.9% per year to operating expenditure and between 2.1% to 7.3% to capital expenditure. We also applied a continuing efficiency adjustment of 0.8% per year to operating and capital expenditure. We have paused this adjustment for the first year of the determination period due to COVID-19 impacts (and then apply it for the remaining three years). Achieving 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 Water NSW's operations.

By including these expenditure allowances in our regulatory framework, Water NSW would recover \$792.1 million from its customers over the 2020 determination period. This is 10.9% lower than Water NSW's proposal, largely due to our lower capital expenditure allowance and changes in the Weighted Average Cost of Capital (WACC).

We are providing an appropriate return on capital over the 2020 determination period

We have maintained our WACC methodology, which we consider will promote stability for both Water NSW and its customers in these uncertain times.

We note that the (real post-tax) WACC increased from 3.2% to 3.4% between our draft and final reports and that our WACC is currently above the WACCs provided in other comparable jurisdictions. These points are consistent with our finding (discussed below) that our prices will allow Water NSW to be financially sustainable over the 2020 determination period.

We have introduced dynamic water usage prices

During drought conditions, we expect water sales for Water NSW would decrease in response to water restrictions and price elasticity of demand. We have modelled two forecast sales scenarios for non-drought and drought conditions.³

As Water NSW's efficient costs are expected to remain the same while its water sales are forecast to fall during drought, we have introduced dynamic water usage prices. Our dynamic water usage prices are designed to increase during drought so that Water NSW is able to recover the same total revenue from the reduced level of water sales.

We have decided to implement a '60/70 trigger' for moving between non-drought and drought usage prices, consistent with that applied for the two forecast sales scenarios. That is, drought usage prices will apply 31 days after dam levels fall below 60% and would continue to apply until 31 days after dam levels are above 70%, at which the non-drought usage price would apply. The following figure illustrates how the dynamic usage price will change in response to changing dam levels.

³ We use the term 'drought' as a shorthand for when dam levels fall below 60%.



Figure 1.2 How dynamic usage prices will apply to customers

Note: The term 'dam levels' reflects the average water storage of all dams and reservoirs across Water NSW's Greater Sydney Catchment water system.

We have refined the mechanisms available to Water NSW to manage its risks

We have modified the Sydney Desalination Plant (SDP) charging formula to ensure that it accommodates any future expansion of SDP's capacity. We have also decided to exclude any future 'voluntary' supply of water from SDP to Sydney Water. This means that Water NSW would be exposed to the risk of SDP and Sydney Water entering into a voluntary agreement (if such an agreement is possible in the future). However, we consider that this is reasonable as customers should be able to benefit from this competition for bulk water supply.

We have also improved the Shoalhaven transfer formula to include all the components of energy costs in our benchmark price. Our amended cost pass-through formula will better reflect the underlying efficient costs of the Shoalhaven transfer scheme and provide incentives for Water NSW to efficiently operate the scheme when it is required to transfer water from Shoalhaven to Sydney.

We have set out a package of options for Water NSW to manage contingent project risk while maintaining an incentive for it to engage with Sydney Water and the NSW Government in the development of integrated long-term water plans for Greater Sydney. The package of options are based on our existing regulatory framework.

1.3 Water NSW's prices for bulk water services in Greater Sydney

The following table presents Water NSW's prices for Sydney Water, the three council customers and the 59 raw and unfiltered water customers. The key takeaway for customers is that non-drought prices are set to fall by 8.3% from 1 July 2020 and will then be adjusted by inflation on 1 July of each subsequent year of the 2020 determination period.

These prices reflect our decisions to:

- To set an 80:20 fixed to usage ratio for Water NSW's price structure to Sydney Water.
- To apply the same percentage reduction to prices for Sydney Water, the three council customers and the 59 raw and unfiltered water customers.
- To introduce a dynamic usage price for all customers. The usage price will increase by about 20% during drought.

Table 1.1Summary of prices

		2019-20 (\$2019-20)	2020-21 (\$2020-21)	2021-22 (\$2020-21)	2022-23 (\$2020-21)	2023-24 (\$2020-21)	% change
Sy	/dney Water						
▼	Fixed charge (\$million/year)	173.5	160.6	160.6	160.6	160.6	-7.4%
•	Usage (non-drought) (\$/ML) ^a	78.8	69.7	69.7	69.7	69.7	-11.6%
▼	Usage (drought) (\$/ML) ^{a,b}	na	83.3	83.3	83.4	83.4	na
w	ingecarribee Shire						
▼	Fixed charge (\$/year)	1,104,880	1,013,214	1,013,214	1,013,214	1,013,214	-8.3%
▼	Usage (non-drought) (\$/ML)	57.6	52.8	52.8	52.8	52.8	-8.3%
▼	Usage (drought) (\$/ML) ^b	na	63.2	63.2	63.2	63.2	na
Sł	noalhaven						
▼	Fixed charge (\$/year)	20,716	18,998	18,998	18,998	18,998	-8.3%
▼	Usage (non-drought) (\$/ML)	57.6	52.8	52.8	52.8	52.8	-8.3%
	Usage (drought) (\$/ML) ^b	na	63.2	63.2	63.2	63.2	na
Go	oulburn Mulwaree						
▼	Fixed charge (\$/year)	24,860	22,797	22,797	22,797	22,797	-8.3%
▼	Usage (non-drought) (\$/ML)	57.6	52.8	52.8	52.8	52.8	-8.3%
▼	Usage (drought) (\$/ML) ^b	na	63.2	63.2	63.2	63.2	na
Ra	aw water customers						
▼	Fixed charge (\$/year)	-	-	-	-	-	-
▼	Usage (non-drought) (\$/ML)	730.0	669.4	669.4	669.4	669.4	-8.3%
▼	Usage (drought) (\$/ML) ^b	na	801.3	801.3	801.3	801.3	na
Unfiltered water customers ^c							
▼	Fixed charge (\$/year)	111.14	101.92	101.92	101.92	101.92	-8.3%
▼	Usage (non-drought) (\$/ML)	1,270.00	1,164.64	1,164.64	1,164.64	1,164.64	-8.3%
▼	Usage (drought) (\$/ML) ^b	na	1,393.99	1,393.99	1,393.99	1,393.99	na

a These usage charges to Sydney Water assume SDP and the Shoalhaven Transfer Scheme are not operating.

b Water NSW did not propose drought prices so there is no comparable drought usage charge.

c For unfiltered customers, there are separate fixed charges for 20mm, 25mm, 30mm, 32mm, 40mm, 50mm, 80mm, 100mm, 150mm and 200mm meter connections. We only present the fixed charges for 20mm connections in this table.

Note: The percentage change is a comparison between prices in 2019-20 and 2020-21. Prices will increase by the actual inflation for each of year from 2021-22 to 2023-24.

Source: IPART calculations.

1.4 Impacts of our decisions

Overall, we consider that our 2020 Price Determination for Water NSW Greater Sydney provides balanced outcomes for Water NSW, its customers and the broader community.

While our decisions on the efficient level of capital expenditure over the 2020 determination period result in lower allowances than proposed by Water NSW, they still represent a significant increase compared to what we allowed to be recovered through prices over the 2016 determination period. These efficient cost increases will help Water NSW maintain assets and the services they deliver and avoid service interruptions or future higher costs from asset failure. These increases will also help Water NSW meet its environmental obligations.

It is our view that Water NSW can remain financially sustainable and continue to provide sustainable services over the 2020 determination period. Under our pricing decisions, Water NSW is expected to generate cash flows that will comfortably cover its interest payments. Our existing and new regulatory mechanisms limit the risks faced by Water NSW. Our 80% fixed and 20% variable price structure, insulation from the impact of water sales from SDP to Sydney Water and dynamic usage price provide a high level of revenue stability. In addition, our trailing average cost of debt approach mitigates Water NSW's refinancing risk. Lastly, we consider the transparency of the regulatory framework and the revenue stability and predictability that is generated by the framework supports Water NSW's long term financial sustainability.

1.5 Our decisions have been informed by extensive consultation with stakeholders

This review commenced on 1 July 2019 when Water NSW submitted its pricing proposal to IPART. We conducted extensive consultation with Water NSW and other stakeholders, including releasing an Issues Paper and a Draft Report, to which we invited written submissions and online feedback. In November 2019 we also held a public hearing and afterhours drop-in session in Sydney. We took all stakeholder views into account in making our final decisions. Water NSW's pricing proposal, our Issues Paper, stakeholder submissions and the public hearing transcript are available on our website.⁴

Figure 1.2 sets out the review timeline.





⁴ https://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Metro-Pricing/Prices-for-WaterNSW-Greater-Sydney-from-1-July-2020

1.6 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 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.

1.7 List of decisions

Form of regulation

1	To adopt a 4-year determination period, from 1 July 2020 to 30 June 2024	17
2	To set maximum prices for Water NSW GS services in each year of the determination period (a price cap)	n 19
3	To share with customers 50% of rental non-regulated revenue and 100% of revenue from post mining rectification works	19
4	To apportion 50% of the costs of providing recreational facilities to water customers, with the remaining 50% to be recovered from either direct users of recreational facilitie (ie, user fees) or the NSW Government (on behalf of the broader community).	ies 20
5	To not have the option of Water NSW entering unregulated pricing agreements with large customers for regulated services.	22
Effici	ent operating expenditure	
6	To set Water NSW's operating expenditure allowance at \$366.4 million as shown in Table 4.1	26
7	Not to include Water NSW's proposed defined benefit superannuation contributions relating to COVID-19 related losses (proposed \$1.2m per year) in Water NSW's operating expenditure allowance for the 2020 determination period.	32
Effici	ent capital expenditure	
8	To set the efficient level of past capital expenditure to be included in the Regulatory Asset Base for the 2016 determination period as set out in Table 5.1.	37
9	To set Water NSW's efficient level of capital expenditure to be included in the Regulatory Asset Base for the 2020 determination period as set out in Table 5.2.	37
10	To set output measures as set out in Table 5.3.	37
Notio	nal revenue requirement	

11 To set the notional revenue requirement of \$792.6 million as shown in Table 6.1. 51

12	To subtract from the NRR the revenue from our decisions on non-regulated revenue accordance with Table 6.3.	in 55
13	To set prices to recover the total adjusted NRR over four years, in present value terms.	55
14	To share with customers 100% of the revenue from post-mining rectification works.	56
15	To share with customers 50% of other non-regulated revenue, including from rentals.	56
16	To calculate the return on assets using:	57
	 An opening RAB of \$1,739.8 million for 2020-21, and the RAB for each year as shown in Table H.3 of Appendix H. 	57
	 Our standard WACC methodology which produces a real post-tax WACC of 3.4% outlined in Appendix J 	as 57
17	To apply a true-up of annual WACC adjustments in the next Determination.	57
18	To calculate the regulatory depreciation using:	57
	 The asset lives set out in Table H.5 of Appendix H for new and existing assets 	57
	 The capital expenditure by asset category set out in Table H.5 of Appendix H 	57
	 The straight-line depreciation method. 	57
19	To calculate the tax allowance using:	57
	 A tax rate of 30% 	57
	 IPART's standard methodology. 	57
20	To calculate the working capital allowance using Water NSW's proposed parameters	: 57
	 quarterly billing cycle 	57
	 30 days of delay between reading the meter and receiving payment 	57
	 30 days payable cycle, and 	57
	 zero inventory. 	57
	In addition, to have zero prepayments in each year of the determination period.	57
Fored	cast water sales and customer numbers	
21	To adopt the forecast water sales volumes as outlined in Table 7.1.	59
22	To adopt Water NSW forecast customer numbers as shown in Table 7.2.	61
Risk	allocation	
^ 2	To not accept Mater NOM's prepared to have post page through prochasisms for	

23To not accept Water NSW's proposal to have cost pass-through mechanisms for
regulatory change and catastrophic events.63

24	For the Shoalhaven Transfer scheme:	63
	 To continue to have a cost pass-through mechanism to Sydney Water 	63
	 To update the formula for the cost pass-through formula as defined in Box L.1 in Appendix L. 	63
25	To manage the risk of contingent projects commencing during the determination period through a package of options as outlined in Figure 8.1, with further details in Append N.	od ix 63
26	To maintain the mechanism to adjust Water NSW's usage price to Sydney Water so that Water NSW recovers the same amount of revenue irrespective of whether SDP also supplying water Sydney Water.	is 68
27	To modify the SDP charging formula (as defined in Box 8.1) to:	68
	 Ensure that the formula is sufficiently flexible so that it applies in the event that SDP's capacity is expanded, and 	68
	 Exclude any future voluntary supply from SDP to Sydney Water. 	68
28	To not introduce a demand volatility mechanism for the 2020 determination period.	68
29	For efficiency carryover mechanism (ECM):	71
	 To maintain having an ECM for operating expenditure only. 	71
	 To not introduce an ECM for capital expenditure. 	71
30	To defer regulating prices for incentive payment mechanisms between Water NSW a Sydney Water for the 2020 determination period:	nd 71
	 This will allow Water NSW and Sydney Water to implement incentive payment mechanisms during the 2020 determination period, if agreed to by both parties 	. 71
Price	structures and levels	
31	To set two usage prices for all customers based on two water sales scenarios:	75
	 Non-drought water sales, and 	75
	 Drought water sales. 	75
32	The drought usage prices would commence when dam levels fall below 60% and remain in place until dam levels reach 70%. Otherwise, non-drought prices would apply.	76
	 The trigger for drought usage prices is determined on a rolling daily basis, lagged one month. That is, drought usage prices would begin 31 days after dam level fall below 60% and remain in place until 31 days after dam levels are above 70%. 	by s 76
33	To maintain the price structure of 80:20 fixed to usage ratio for Sydney Water.	79

34	To adopt a formula based approach to calculate the usage charge to Sydney Water (defined in Box 9.1) to reflect either non-drought or drought water sales scenarios, all possible operational modes of the SDP, and additional costs that could be incurred do to the transfer of water from the Shoalhaven system to Sydney.	as ue 79
35	To set Water NSW's maximum fixed charge to Sydney Water over the 2020 determination period as outlined in Table 9.3.	79
36	To apply a uniform percentage decrease to prices for councils and its other customer based on the price decrease determined for Sydney Water.	s 83
37	To set Water NSW's maximum bulk water prices to councils over the 2020 determination period as outlined in Table 9.4.	83
38	To set Water NSW's maximum prices to raw and unfiltered water customers over the 2020 determination period as outlined in Table 9.5.	85

2 Key themes and decisions

This chapter outlines the key themes influencing this review and how they have affected our decision-making process, as well as outlining the key decisions we made for this review.

2.1 The key themes in this review

The key themes that emerged through the course of this review are the:

- 1. Need to improve planning processes and challenges arising due to climate variability and weather events.
- 2. Low interest rates offsetting the price impacts of expenditure increases.
- 3. Appropriate allocation of risks between Water NSW and its customers.
- 4. Economic impact of the COVID-19 pandemic.

We have taken account of these themes when making decisions for this review. We have also had regard to the broad range of matters we must consider under the IPART Act when setting prices (see Appendix A).

The need to improve planning processes and challenges arising due to climate variability and weather events

Since the start of the 2020 price review process, there have been extreme weather events in the Greater Sydney region, including:

- severe drought resulting in dam levels falling to 42% by early 2020
- major bushfires in December 2019 and January 2020, which affected large parts of Greater Sydney's water catchments, and
- heavy rainfall in February 2020⁵ that replenished dam levels to above 80% (see Figure 2.1).

Climate variability makes it challenging when planning for the long-term interests of customers in the Greater Sydney region. Water NSW proposed a 169% increase in its capital expenditure from the amount allowed in IPART's 2016 determination period.⁶ Drought related projects were a key driver of this expenditure increase. However, the recent rainfall has brought into question the prudency of this type of expenditure at this stage (ie, now that we are out of emergency low levels of water storage, alternative options can be considered).

⁵ In February 2020, Water NSW was working to maintain water quality in Sydney's largest catchment after rain washed significant amounts of ash and debris into Warragamba Dam. During December and January, more than 320,000 hectares of the Warragamba Catchment was impacted by fire. Water NSW has been working to understand the potential consequences of the significant fire damage on water quality. More information can be found on Water NSW's website <www.waternsw.com.au>.

⁶ Water NSW, *Pricing Proposal to IPART*, July 2019, Tables 5.1 and 5.2, pp 56 and 59. That is, Water NSW proposed \$682 million total capital expenditure over the 2020 determination, while the allowed capital expenditure included in the 2016 determination was \$254 million. See Chapter 5 for further discussion.



Figure 2.1 Greater Sydney dam levels over the 2016 determination period

Source: Water NSW weekly dam storage data for Greater Sydney (which is no longer archived on Water NSW's website).

It is important that drought response and long-term water supply plans are developed in a co-ordinated and timely way. This means utilities will be better prepared to manage water resources – and plan their expenditure – in response to a range of climatic conditions. We considered climate variability and recent weather events in our decisions on Water NSW's operating and capital expenditure for the 2020 determination period (see chapters 4 and 5).

We also took account of climate variability when assessing forecast water sales over the determination period and our decision on dynamic usage pricing (see chapters 7 and 9). In addition, we have taken steps to incentivise Water NSW to better plan in order to ensure secure, reliable and efficient water supply, which is resilient to climate variability (see Chapter 8).

Low interest rates offset the price impacts of expenditure increases

The current low interest rate environment has the effect of offsetting the price impact of increases in capital expenditure over the 2020 determination period.

However, we note that our capital expenditure decisions have long lasting effects on prices, because capital expenditure remains in the Regulatory Asset Base (RAB) for the life of the asset (this is around 50 years for Water NSW's assets in the Greater Sydney region). This means that while a large increase in capital expenditure now would have a muted impact on prices, it could have a significant impact on prices in the future if and when interest rates increase.

We therefore consider it continues to be critically important to only include efficient capital expenditure in regulated prices. We present our decisions on efficient capital expenditure in Chapter 5, and our prices and impacts of prices in chapters 9 and 10.

The appropriate allocation of risk between Water NSW and its customers

A key theme of Water NSW's pricing proposal is the re-allocation of risk between Water NSW and its customers. Water NSW proposed a range of mechanisms to decrease its share and increase customers' share of demand risk, regulatory change risk, catastrophic event risk and contingent project risk.

In Chapter 8, we discuss our decisions on the appropriate allocation of risk between Water NSW and its customers. Our objective is to achieve an allocation that leads to prices reflecting efficient costs, while ensuring that the party best placed to manage the risk has appropriate incentives to manage it efficiently. For example, we look at contingent project risk and consider ways to incentivise the utilities to achieve more coordinated long-term water supply planning in the region.

Economic impact of the COVID-19 pandemic

In February/March 2020, the COVID-19 pandemic emerged. The COVID-19 pandemic has had a significant impact on economic conditions and markets worldwide. The full impact of this pandemic on Water NSW's operations is unknown at this stage, however, we have addressed this in our decisions where considered appropriate.

- We have worked with Water NSW to understand how the COVID-19 pandemic and the changed economic conditions could affect it in terms of cost pressures, productivity and forecast water sales (see chapters 4, 5 and 7).
- We also considered the price impacts on customers, bearing in mind the uncertainty of the unprecedented economic conditions (see chapters 9 and 10).

In light of the expected impact of the COVID-19 pandemic, we have paused the continuing efficiency adjustment by one year as we consider there will be a short-term impact on productivity while businesses implement new work practices. We have also considered the expected economic impact of the COVID-19 pandemic on predicted demand over the 2020 determination period (see Chapter 7) and inflation (see Appendix I).

In most cases, 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 economic 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. We have also minimised Water NSW's revenue risks by our decision to closely align the pricing structure with its cost structure.

2.2 Our key decisions

Key decisions we have made in this price review are as follows:

- Adopt a 4-year determination period, which we consider strikes a balance between providing Water NSW with certainty and financial stability in the medium-term and acknowleding the current level of uncertainty with regard to operating conditions and long-term infrastructure planning.
- Maintain the use of a price cap as the form of price control as it provides certainty and stability for both customers and Water NSW.
- Set the total notional revenue requirement of \$792.6 million over four years based on our decisions of efficient costs during this period.
- Have two sets of water sales forecasts for Water NSW's customers over the 2020 determination period. These water sales forecasts are based on two scenarios: unrestricted and drought conditions.
- Decide that the allocation of risks between Water NSW and its customers should lead to prices reflecting efficient costs, while ensuring that the party best placed to manage the risk has appropriate incentives to manage it efficiently.
- Set Water NSW's price structure to closely match its cost structure. We also introduced dynamic usage pricing to allow the water usage price to increase during drought to allow Water NSW to recover its efficient costs from the reduced water sales volumes we forecast to occur during drought.

Figure 2.2 shows where in the Final Report you can find more information on each of these key decisions.





3 Length of determination and form of regulation

Before setting prices, we need to make several preliminary decisions, including how long to set prices for and decisions related to the 'form of regulation', which is the framework we use to regulate prices.

The sections below summarise our decisions, then discuss the reasons for our decisions in more detail.

3.1 Summary of our decisions

For this review, we made the following decisions:

- Adopt a 4-year determination period (as proposed by Water NSW), which would result in alignment of the timing of the next Water NSW Greater Sydney (GS) and Sydney Water price reviews.
- Maintain the use of a price cap as the form of price control.
- Share Water NSW's non-regulated revenue⁷ with its customers. This includes sharing 50% of rental non-regulated revenue and 100% of revenue from post mining rectification works with customers.
- Share 50% of Water NSW's costs of managing recreational facilities within its Greater Sydney catchment between water customers and direct users of these facilities (or the NSW Government on behalf of the broader community) based on our impactor pays principle.
- To not provide Water NSW with the option of entering unregulated pricing agreements (UPAs) with large customers for regulated services. We consider there could be too much risk and no clear benefits if we allow Water NSW to enter into UPAs with its large customers for these services.

3.2 We are setting prices for a 4-year determination period

Our decision is:

1 To adopt a 4-year determination period, from 1 July 2020 to 30 June 2024

For each water pricing review, we decide how long to set prices for (the length of the determination period). In general, this length can be between one and five years. In deciding on the appropriate length, we considered a range of factors that are outlined in Box 3.1.

⁷ Non-regulated revenue refers to income derived from a utility providing non-regulated services or from a utility's assets that do not form part of its regulatory asset base.

Box 3.1 Factors we consider in deciding the length of a determination

In general, the factors we consider when deciding the length of a determination period include 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.

Water NSW proposed a 4-year determination period from 1 July 2020 to 30 June 2024. It stated:

...the benefits of a 4-year determination period in providing certainty and minimising both regulatory burden and administrative costs outweigh the costs and benefits of moving to a period shorter or longer than four years.⁸

In addition, Water NSW originally proposed to have a shorter determination period as an option to address its risk exposure to contingent projects (further discussed in Chapter 8).⁹ However, in its submission to our Issues Paper, Water NSW clarified that it would prefer to use other options (eg, seek an early determination) than to set a shorter determination period to address contingent project risk.¹⁰

For this review, we agree with Water NSW that a 4-year determination period is appropriate. While our updated WACC methodology would assist in providing certainty and financial stability over a longer determination period (eg, 5 years), this is offset by the current level of uncertainty on long-term infrastructure planning.

In addition, we note that a 4-year determination period for the Water NSW GS price review would result in continued alignment between the Water NSW GS and Sydney Water price reviews. In its submission to our Draft Report, Water NSW was concerned that aligning the two price reviews implies that an early determination for Water NSW as a result of changed circumstances will trigger the need for an early determination for Sydney Water.¹¹ While there are benefits of running these two reviews concurrently, we do not consider that an early review for one utility would necessitate an early review for the other utility. To the extent that there are links between the costs and revenue of the two utilities, we consider that our regulatory framework is flexible enough to take this into account at the next price re-set for each utility. For example, our framework currently accommodates SDP and Sydney Water reviews running out of sequence from each other.

⁸ Water NSW, *Pricing Proposal to IPART*, July 2019, p 37.

⁹ Water NSW, *Pricing Proposal to IPART*, July 2019, p 37.

¹⁰ Water NSW, Submission to the IPART's Issues Paper – Review of prices for WaterNSW Greater Sydney services from 1 July 2020, October 2019, p 5.

¹¹ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 8.

We also received feedback from two customers (Sydney Water and Goulburn-Mulwaree Council) who supported: ¹²,¹³

- a 4-year determination period, and
- continued alignment between Water NSW Greater Sydney and Sydney Water price reviews and determinations.

3.3 Our maximum prices provide price stability and certainty

Our decision is:

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

Water NSW proposed to maintain the use of a price cap as the form of price control. It considered the price cap, combined with the introduction of new mechanisms to give it the ability to adjust prices in response to changes in its costs (see Chapter 8 for its proposals and our decisions) to be "fit-for-purpose as it promotes pricing stability and is well understood by customers". ¹⁴

We agree that a price cap is appropriate for the Water NSW GS price review. In principle, we consider a price cap approach provides certainty and stability for both customers and Water NSW.

3.4 We are sharing non-regulated revenue with water customers

Our decision is:

3 To share with customers 50% of rental non-regulated revenue and 100% of revenue from post mining rectification works

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 doesn't compromise the delivery of their core services. For instance, this could include renting the utility's land or facilities. Where a utility does this by using assets that have been paid for by the customers of the regulated services, we typically share this revenue with the customers that have paid for the asset. We do this by reducing the Notional Revenue Requirement (NRR), to be recovered from regulated prices, by a share of the non-regulated revenue.

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. However, we may depart from this 50:50 revenue sharing ratio where we consider that the circumstances justify adopting a different ratio.

¹² Sydney Water, Submission to IPART's Issues Paper – Review of prices for WaterNSW Greater Sydney services from 1 July 2020, October 2019, p 4.

¹³ Goulburn Mulwaree Council, Submission to IPART's Issues Paper – Review of prices for WaterNSW Greater Sydney services from 1 July 2020, October 2019, p 1.

¹⁴ Water NSW, *Pricing Proposal to IPART*, July 2019, p 36.

During the review process, Water NSW clarified that it has intended to share 50% of its nonregulated revenue from rental income with customers. In addition, it is also intending to share 100% of its revenue from post mining rectification works with customers. This revenue represents external funding from Subsidence Advisory NSW for specific mining rectification works. Hence, this revenue offsets the cost of this work.

We agree with Water NSW's proposals on sharing its non-regulated revenue. In Chapter 6, we discuss the adjustments we made to the notional revenue requirements to recognise the benefits that customers should enjoy from additional income derived using regulated assets.

3.5 We are sharing recreational costs between water customers and users

Our decision is:

4 To apportion 50% of the costs of providing recreational facilities to water customers, with the remaining 50% to be recovered from either direct users of recreational facilities (ie, user fees) or the NSW Government (on behalf of the broader community).

In its pricing proposal, Water NSW proposed \$1.5 million of operating expenditure for managing recreational facilities over the 2020 determination period (or less than 1% of NRR over the determination period).¹⁵

We consider it is reasonable that Water NSW provides access to recreational facilities on the basis that the benefits (from reduced risks and costs of unauthorised entry to other parts of the catchment area) exceed the costs (from providing and maintaining recreational facilities). Therefore, we consider providing recreational facilities, which are targeted at reducing overall catchment management costs, can be considered part of Water NSW's regulated monopoly water supply service.

However, in providing these recreational facilities, it appears that Water NSW promotes these facilities as attractions. This includes offering overnight camping and school excursion programs at certain locations free of charge. We consider these services appear to go above and beyond the general scope of catchment management. We are not suggesting Water NSW should not provide these additional services. Rather, our assessment involves considering who is causing the need for these costs to be incurred and therefore who should pay for these costs.

By applying our impactor pays principle, we consider that:

Water customers should contribute to the efficient costs required to set up and provide basic recreational facilities so as to effectively control access and reduce unauthorised entry into other parts of the catchment. This is because without the consumptive use of water there would be no need for Water NSW to undertake catchment management activities, which include the targeted provision of recreational facilities on the basis that this forms part of a cost-effective catchment management program.

¹⁵ Water NSW, *Pricing Proposal to IPART*, July 2019, p 122.

The direct users of recreational facilities should contribute to the efficient costs of providing expanded recreational services, which are beyond what is required for catchment management. We consider the direct users as the impactor of these expanded services and should pay user fees to use these services (eg, camping grounds). If these options are not feasible, we consider these costs should be allocated to the NSW Government (on behalf of the broader community).

Stakeholders had mixed views on who should pay for the provision and management of these recreational facilities. Water NSW stated that providing and maintaining recreational facilities is part of its catchment management activities and is a more cost effective option than the alternative (ie, attempting to restrict access and managing the risks of unauthorised access into catchment areas).¹⁶ Therefore, Water NSW proposed that water customers pay for these recreational facilities and it has included 100% of the costs as part of its proposed operating expenditure allowance.

In its submission to our Draft Report, Water NSW indicated that it does not currently charge direct users when using these recreational facilities and that it has not been approached by the community to change the current approach to how it funds the costs of managing recreational facilities.¹⁷

PIAC did not support the sharing of these costs between water customers and direct users of these facilities. Rather, it suggested that the costs of providing these recreational facilities should be shared between the NSW Government and direct users of these facilities (ie, that Water NSW's prices for bulk water services in Greater Sydney should not include any of these costs).¹⁸

Given stakeholder feedback and our preference to allocate costs based on the impactors pays principle, on balance we have decided to maintain our draft decision, that is we found a 50/50 sharing of efficient costs is reasonable between water customers and direct users (or the NSW Government on behalf of the broader community), instead of fully recovering these costs through Water NSW's prices for bulk water services in Greater Sydney.

In Appendix E, we discuss the adjustments we make in operating expenditure to ensure that water customers only pay for 50% of costs associated with recreational facilities. Of the \$1.5 million of operating expenditure that Water NSW's incurs for recreational facilities over the 2020 determination period, we have made a decision to include \$750,000 (50% of Water NSW's proposed expenditure for recreational areas) as part of their operating allowance. This represents about 0.1% of the total NRR over the 2020 determination period.

¹⁶ Water NSW, Submission to the IPART's Issues Paper – Review of prices for WaterNSW Greater Sydney services from 1 July 2020, October 2019, p 7, IPART, Sydney Water and WaterNSW Public Hearings, Transcript, 26 November 2019, p 11, and Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 73.

¹⁷ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 73.

¹⁸ Public Interest Advocacy Centre, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 1-2.

3.6 We are not introducing the option of 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 reviews, we decided to allow Hunter Water and Sydney Water to enter into UPAs with large non-residential customers.^{19,20} Neither utility entered a UPA during the 2016 determination period. We have maintained the option to enter into UPAs in our 2020 Hunter Water and Sydney Water reviews.

Our decision is:

5 To not have the option of Water NSW entering unregulated pricing agreements with large customers for regulated services.

Generally, UPAs are optional and are only entered into voluntarily if the agreement is mutually beneficial to the utility and the large non-residential (end-use) customer. If the foreseen benefits do not outweigh the costs, then parties would not enter the agreement. The additional, administrative burden to negotiate, manage and ring-fence the agreement should be factored in when considering an agreement.

In its pricing proposal, Water NSW did not propose having the flexibility to enter into UPAs with its customers.

We did not discuss the option of Water NSW entering into UPAs in our Issues Paper. However, we consulted with stakeholders on this matter in our Draft Report. We received mixed feedback. Water NSW stated that having the ability to enter into UPAs would be a 'no regrets' option because UPAs are voluntary and would only be entered into if it is mutually beneficial to it and its customers.²¹ PIAC did not support extending the option of UPAs to Water NSW. This was on the basis that Water NSW's eligible customers, ie Sydney Water and the three councils, are not end-use customers (ie, the impacts of a UPA between, for example, Water NSW and a council customer may not be limited to the parties entering the agreement and may ultimately impact end use consumers who did not agree to the UPA).²²

Given stakeholder feedback, we maintain our view that the potential benefits of allowing Water NSW to enter into UPAs with its large customers do not appear to outweigh the potential risks. This is because:

 Sydney Water and the three councils are not end-use water customers, rather they sell water to their respective end-use customers. It is important to make the distinction as the option to enter into UPAs is designed for end-use customers.

¹⁹ Large non-residential customers are defined as those with annual water consumption greater than 7.3 ML.

²⁰ See IPART, Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020, Final Report, June 2016, pp 23-28 and IPART, Review of prices for Sydney Water Corporation from 1 July 2016 to 30 June 2020, Final Report, June 2016, pp 44-48.

Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 75.

²² Public Interest Advocacy Centre, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 2.

- Between Water NSW and Sydney Water, we consider there is no clear benefit that can be derived from these parties entering into a UPA. We ultimately set maximum prices for Sydney Water's (end-use) water customers. We would still review the prudency and efficiency of Water NSW's cost as part of our role in setting prudent and efficient prices for Sydney Water to its customers.
- Between Water NSW and councils, we consider it could be risky if these parties enter into a UPA because there is no countercheck if end-use water customers would be worse off if councils and Water NSW enter into a UPA.
- Between Water NSW and the 59 raw and unfiltered customers, we have excluded these customers because the estimated annual demand per customer is below the threshold we have set for large customers (ie, customers that have annual water consumption greater than 7.3 ML) for Greater Sydney.

4 Operating expenditure

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

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

To inform our decision on operating expenditure, we engaged Atkins to review Water NSW's historical and forecast operating expenditure and recommend the efficient amount to include in Water NSW's operating expenditure allowance for the 2020 determination period. We considered the advice of our consultant Atkins, as well as relevant stakeholder submissions.

We have taken into account Water NSW's submission to our Draft Report proposing operational programs in response to recent bushfires and weather events. The key issues raised in Water NSW's submissions and our response to those issues are set out below.



- Water NSW indicated COVID-19 could have a widespread impact on its operations. We consider this
 impact is highly uncertain. Therefore, we have not recommended any resulting changes to its
 expenditure allowance, apart from in relation to continuing efficiency. A 1-year pause on applying this
 adjustment is appropriate.
- Water NSW submitted that the bushfires of summer 2019-20 indicated an increased need for fire management activities. We considered the additional information provided by Water NSW and have adjusted the operating expenditure allowance to include expenditure for Water NSW's proposed internal fire planning and management activities and post-bushfire catchment rehabilitation.
- Water NSW submitted that the heavy rainfall in February 2020 increased the need for additional monitoring activities in its catchment. We considered the additional information provided by Water NSW and allowed expenditure for its inflow response program and its additional monitoring activities in response to the draft March 2020 Catchment Audit recommendations.

4.1 An explanation of the type of expenditure adjustments we applied

We have considered Water NSW's comments about the potential for double-counting when applying efficiency adjustments²³ and confirm that our and our consultant's three-step approach to the expenditure review does not double-count efficiencies. Our consultant divides up the 'catch-up' adjustments that would reflect the efficient level of expenditure for a 'frontier' company at the beginning of the regulatory period into two separate categories, detailed in steps 1 and 2 below. The third step is to then apply a continuing efficiency factor to recognise that a frontier company would continue to innovate and improve over time, as detailed in step 3 below.

Therefore, there is no double-counting of efficiency adjustments.

An overview of the process we, along with our consultant, applied to establish efficient expenditure is as follows:

- 1. **Review of changes in activities and costs –** This step involves identifying inefficiencies within proposed changes to a utility's specific programs and does not apply to base expenditure to avoid double counting with step 2. These adjustments are clearly distinct from the types of efficiencies identified in step 2 in that they correct for an imprudent or inefficient proposed change to a utility's activities (and associated costs) rather than the business processes employed by the utility to deliver the utility's services. If the utility's proposed changes in activities (and associated costs) are not efficient, a **scope adjustment** is made.
- 2. **Review of business processes relative to the frontier –** This step identified the effectiveness of business processes (eg, decision making and procurement processes) relative to a benchmark frontier company²⁴. Where we identify improvements that can be made relative to the benchmark, a catch-up adjustment is made. This encourages the utility to move to the efficiency frontier.

We then recommend a level of catch-up we consider the utility will be able to make in the 2020 determination period.

3. **Review available data on frontier shift –** We consider a number of data points such as the efficiency gains of well-performing utilities and broader productivity trends (eg, multi-factor productivity 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 multifactor productivity trends. Our methodology and rationale for applying a continuing efficiency factor to Water NSW's expenditure is covered in detail at Appendix D.

We compare the total efficiency challenge we derive from steps 2 and 3 with the efficiencies applied by the utility in its own submission. We then apply the net difference as an adjustment to the utility's submission.

²³ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 5-6, 36-37 and 40-41.

²⁴ We detail our approach to the frontier company and shift in the frontier curve at Appendix D.





Source: Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, p 5.

4.2 Summary of our decisions

Our decision is:

6 To set Water NSW's operating expenditure allowance at \$366.4 million as shown in Table 4.1

\$366.4m

Operating expenditure for the 2020 determination period This is 4.7% lower than Water NSW's forecast expenditure Our decision on 2020-2024 operating expenditure reflects our view of the efficient level of costs Water NSW will incur in providing its services over the period (with a number of adjustments to specific programs, as well as catch up and continuing efficiencies)

Our decision is to set Water NSW's allowance for operating expenditure at \$366.4 million over the 2020 determination period. This is \$18.1 million (or 4.7%) lower than Water NSW proposed in its July 2019 pricing proposal (see Table 4.1).

Table 4.1Decision on Water NSW's efficient operating expenditure for the 2020
determination (\$millions, \$2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Water NSW's proposal (including its proposed 1% efficiency adjustment)	96.5	96.4	97.8	93.7	384.4
Water NSW's proposal ^a (excluding its proposed 1% efficiency adjustment)	97.5	97.4	98.8	94.7	388.3
Total efficient operating expenditureb	94.5	92.7	92.4	86.9	366.4
\$ Difference between IPART's efficient expenditure and Water NSW's proposal (including its proposed efficiency adjustment)	-2.0	-3.7	-5.4	-6.9	-18.1
% Difference between IPART's efficient expenditure and Water NSW's proposal (including its proposed efficiency adjustment)	-2.1%	-3.9%	-5.5%	-7.3%	-4.7%

a Calculations are based on Water NSW's proposed operating expenditure before its proposed 1% efficiency adjustment.
 b Includes adjustments to specific programs such as water quality science and monitoring and additional monitoring for Sydney Water, as well as catch-up and continuing efficiencies.

Source: IPART analysis and Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 21.

Note: Totals may not add due to rounding. To avoid double counting, we have applied our efficiency adjustments to Water NSW's proposed pre-efficiency operating expenditure (ie, excluding the 1% efficiency adjustment proposed by Water NSW).

In the Draft Report, our draft decision was to reduce the operating expenditure allowance by \$24.9 million (or 6.5%). The small increase in operating expending between our Draft Report and Final Report is partly due to the 1-year pause to the continuing efficiency adjustment in response to COVID-19. It also reflects the additional expenditure allowance for Water NSW's proposed:

- Land management activities (in particular, its internal fire-related capacity)
- Bushfire rehabilitation as part of its catchment management
- Monitoring program in response to the draft March 2020 Catchment Audit recommendations, and its inflow response monitoring program agreed with NSW Health
- Drought planning activities continuing into 2022-23 and 2023-24.25

Figure 4.2 below shows our decision on Water NSW's operating expenditure compared to its historical expenditure over the 2016 determination period and proposed expenditure for the 2020 determination period.

²⁵ IPART analysis and Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, pp 17-21.



Figure 4.2 Our decision and Water NSW's past and proposed operating expenditure (\$millions, \$2019-20)

Source: IPART analysis; Water NSW Annual Information Return 2019-20; Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report*, March 2020, Table 5-2, p 71; Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 21.

The sections below outline our findings in relation to Water NSW's current and proposed operating expenditure. See Appendix E for more information on these items (including our detailed response to Water NSW's submission to the Draft Report).

4.3 Operating expenditure over the 2016 determination period

Over the 2016 determination period, Water NSW's total actual operating expenditure was \$361.6 million. This represents an underspend, relative to the allowance we used to set prices, of \$45.8 million (or 11.2%).²⁶

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

Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, Table 5-2, March 2020, p 71. In its submission to the Draft Report, Water NSW stated that its underspend was \$46.5 million (Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 25). Atkins indicated that it based its assessment of a \$45.8 million underspend on information provided by Water NSW in its Special Information Return (Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, p 7).

Water NSW attributed some of the underspend to restructuring of its business during the first part of the determination period (2016-17 and 2017-18), which resulted in a lower headcount.²⁷

However, Atkins found that it was largely due to Water NSW:

- Changing its capitalisation rules during the period. This change in rules accounts for \$16.1 million of the total underspend.
- Changing the method of apportioning its corporate overheads to Greater Sydney, Rural Valleys and WAMC business segments. The net impact of the change in cost allocation and restructuring was \$6.8 million.²⁸

By reversing the impact of these changes, Water NSW's operating expenditure would be \$22.9 million below its allowance for operating expenditure in the current determination period (instead of \$45.8 million).²⁹

In relation to this lower level of actual expenditure, in the Draft Report we noted that Atkins found it was mainly due to Water NSW reducing its activities for maintenance, catchment management and water operations.³⁰ That is, Water NSW's actual underspend resulted from lower activity levels rather than it achieving efficiencies. Atkins did not see evidence that efficiencies had been encouraged across the business.³¹

Water NSW disagreed with Atkins' assessment about the impact of its changed capitalisation policy and the extent of its efficiency savings. Water NSW stated that it had achieved cost savings of \$46.5 million over the 2016 determination period. These savings were the result of Water NSW's continuous focus on driving efficiencies and inclusion of a 'top down' efficiency dividend.³²

Previously, Atkins considered the change in capitalisation policy accounted for \$25.9 million of the operating expenditure allowance underspend,³³ and we accepted that for our Draft Report. In its Supplementary Report, Atkins reviewed additional information provided by Water NSW and concluded that \$16.1 million could be attributed to the capitalisation policy change. It also confirmed that \$6.8 million of Water NSW's underspend was due its change to apportioning its corporate overheads,³⁴ which was consistent with our position in the Draft Report.

Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, Table 5-2, March 2020, p 65.

²⁸ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, p 7.

²⁹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, p 7.

³⁰ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report,* March 2020, pp 12, 66.

³¹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report,* March 2020, p 82.

³² Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 25, 37.

³³ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report*, March 2020, p 65.

³⁴ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, p 7.

Atkins noted that data limitations meant it was unable to conduct a variance analysis and confirm whether Water NSW's remaining underspend of \$22.9 million was due to it realising efficiencies. However, based on its interviews with managers and review of the available data, Atkins concluded the predominant part of Water NSW's underspend was due to a reduction in activity levels early in the 2016 determination period.³⁵

4.4 Operating expenditure for the 2020 determination period

In its July 2019 pricing proposal, Water NSW proposed operating expenditure of \$384.4 million over the four years to 2023-24. This includes an efficiency adjustment of 1% per annum, which equates to \$3.9 million over the determination period.³⁶ Water NSW's proposed operating expenditure is an average of \$96.1 million per year, which is \$5.85 million (6.5%) per year higher than its actual average operating expenditure over the 2016 determination period.³⁷

Specific adjustments

Atkins recommended \$8.9 million in specific adjustments to Water NSW's proposed operational programs.³⁸ Atkins' recommended adjustments are based on its findings that:

- Some increase in water quality science and monitoring costs above 2016 levels is justified, but not to the extent requested by Water NSW (\$4.9 million saving).³⁹
 - For water quality science (\$2 million saving), this is because the program included a wide range of activities which were not clearly defined or prioritised, not costed in detail or achieved internal approvals.⁴⁰
 - For monitoring (\$2.9 million saving), this is because Atkins did not accept Water NSW's proposed allowance for the current wetter weather cycle.
- Additional monitoring for Sydney Water should be resourced by streamlining duplicate monitoring activities currently undertaken by both utilities, instead of including additional funding in the allowance (\$4.0 million saving).⁴¹ In addition, to the extent that Water NSW's monitoring costs will be offset by efficiencies in Sydney Water's filtration plant processing, this is a matter for Water NSW and Sydney Water to resolve within the existing water supply agreement.⁴²

³⁵ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, p 8.

³⁶ Water NSW, *Pricing Proposal to IPART*, July 2019, p 108.

³⁷ Water NSW, *Pricing Proposal to IPART*, July 2019, Table 6.4, p 109.

³⁸ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, Table 3-3, p 21.

³⁹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, pp 17-18, 21.

⁴⁰ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, pp 18, p 21.

⁴¹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, pp 19-20.

⁴² Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, pp 19-20.
In our Draft Report, we made \$12.9 million in specific adjustments to Water NSW's operational programs.⁴³ The Public Interest Advocacy Centre supported our allowance for operating expenditure. It noted this allowance was likely to be efficient and facilitate responsible investment over the determination period.⁴⁴ However, Water NSW did not agree with most of our draft adjustments.

The \$4.0 million difference in the specific adjustments between our Draft and Final Reports is mainly due to Atkins no longer recommending reductions for expenditure on land management and water planning and drought studies. In its submission to the Draft Report, Water NSW provided additional information to justify its increased expenditure for these activities.⁴⁵



Water NSW's proposed expenditure to supplement its defined benefit superannuation fund

In response to our Draft Report, Water NSW noted it would need an additional \$1.2 million per year (or \$4.8 million over four years) to supplement its defined benefit superannuation fund due to the recent COVID-19 related market downturn.⁴⁶ The amount proposed (\$4.8 million over four years) is relatively small compared to Water NSW's Greater Sydney total revenue requirement (\$792.6 million over four years⁴⁷).

⁴³ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report,* Table 5-22, March 2020, p 102.

⁴⁴ Public Interest Advocacy Centre, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 1.

⁴⁵ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, pp 17, 20.

⁴⁶ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 40.

⁴⁷ See Table 6.1 of this Report.

Our decision is:

7 Not to include Water NSW's proposed defined benefit superannuation contributions relating to COVID-19 related losses (proposed \$1.2m per year) in Water NSW's operating expenditure allowance for the 2020 determination period.

We consider that Water NSW's current customers should not be exposed to the risk of Water NSW's defined benefit superannuation liabilities during market fluctuations. Water NSW is better placed than its customers to manage this risk. Further, it is not clear that Water NSW's proposal is symmetric (ie, it would return these amounts to its customers when markets recover).

Water NSW's operating expenditure for recreational areas

We have separately analysed Water NSW's operating expenditure for recreational areas. In its submission to our Draft Report, Water NSW stated that providing and maintaining recreational areas was part of its catchment management activities and is a more cost effective option than the alternative (ie, attempting to restrict access and managing the risks of unauthorised access into catchment areas).⁴⁸ We have decided that some expenditure for recreational areas should be included in Water NSW's operating expenditure allowance. However, we consider only half of Water NSW's proposed expenditure should be included (ie, \$750,000), because not all of Water NSW's activities in managing these areas are required for catchment management. We consider that direct users should contribute to the efficient costs of providing expanded recreational areas which is beyond what is required for catchment management.

Catch-up and continuing efficiency adjustments

Consistent with our approach for capital expenditure, we have applied catch-up and continuing efficiency adjustments to Water NSW's forecast operating expenditure. Atkins recommended \$13.0 million in savings from catch-up and continuing efficiencies.⁴⁹ This includes:

Catch-up efficiency adjustments of 0.9% per year, totalling \$8.5 million in efficiency savings over the 2020 determination period.⁵⁰

These are the specific areas where we consider the utility can make improvements to catchup with an efficient utility (ie, a frontier company).

 Continuing efficiency adjustments of 0.8% per year, with the adjustment applying from 2021-22, totalling \$4.5 million in efficiency savings over the 2020 determination period.⁵¹

⁴⁸ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 73.

⁴⁹ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, p 21.

⁵⁰ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review*, *Supplementary Report*, June 2020, pp 8-10.

⁵¹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review*, *Supplementary Report*, June 2020, pp 10-11.

This accounts for the productivity improvements that efficient businesses should reasonably be able to achieve over the next determination period.

Water NSW did not agree with our continuing and catch-up efficiency adjustments in the Draft Report. It considered they led to double counting with the bottom-up, specific adjustments.⁵² As outlined at the start of the chapter, there is a three-step approach involved in reviewing the efficiency and prudency of Water NSW's expenditure. We agree with Atkins' view that the difference between the steps is clear and consistent.

- The first step involves Atkins recommending adjustments to the scope and/or timing of specific programs.
- Atkins then identified a number of areas of improvement in Water NSW's business processes that it could make to catch-up to a frontier company, and recommended phasing these improvements in over time. This relates to the second step.
- Finally, for the third step, Atkins recommend applying a continuous efficiency adjustment to take account of the ongoing improvements that even efficient utilities should be able to make over time, as better, more productive, ways of working emerge.⁵³

In addition, Water NSW questioned whether the continuing efficiency adjustment remained valid considering the economic slowdown caused by COVID-19.⁵⁴ In response, we have paused this adjustment for one year due to COVID-19 impacts. 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 Water NSW's operations.

⁵² Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 36-37.

⁵³ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review*, *Supplementary Report*, June 2020, p 6.

⁵⁴ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 36.



Further information about our continuing efficiency adjustment is set out in Appendix D.

Uncontrollable costs

In its submission on our Draft Report, Water NSW stated that we should remove uncontrollable operating costs of \$42.3 million before applying the catch-up and continuing efficiency adjustments. It considered these costs – such as insurance contributions and land tax – were outside Water NSW's control and/or required by law. Therefore, they should not be subject to an efficiency.⁵⁵

As outlined below, we consider that all of Water NSW's operating costs are controllable to some extent. Further, the catch-up and continuing efficiency adjustments are intended to be applied to a utility's total costs, given that they are an overall assessment of:

• **Catch-up** – the gap between a utility and a frontier company. The catch-up efficiency adjustment is based on an assessment of the entire business, not parts of the business.

⁵⁵ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 40.

 Continuing – the productivity improvements efficient businesses should reasonably be able to achieve over the next determination period. The continuing efficiency adjustment is estimated based on long term productivity growth of businesses (ie, not parts of businesses) operating in the Australian market sector.

Therefore, we have applied the catch-up and continuing efficiency adjustments to all of Water NSW's operating expenditure.



5 Capital expenditure

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

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

Under the building block method, capital costs are not immediately recovered as they are spent. Instead, efficient capital expenditure is added to the RAB and recovered over time through allowances for a return on assets and regulatory depreciation (discussed in Chapter 6 and Appendix H).

As with operating expenditure, we engaged Atkins to review Water NSW's historical and forecast capital expenditure and recommended the efficient amount to include in the RAB. As part of its review, Atkins also reviewed Water NSW's performance against output measures over the 2016 determination period, and made recommendations about Water NSW's proposed output measures.



- We are providing Water NSW with a substantially higher level of capital expenditure for the 2020 determination period compared with previous price reviews. This gives it significant flexibility to choose to fund its highest priority projects. It can also change priorities if needed as better information about economic conditions, climatic impacts or long-term water planning becomes known. Finally, if Water NSW exceeds its capital allowance, there is scope to recover it by including efficient expenditure in prices at our next price review.
- Water NSW indicated COVID-19 could have a widespread impact on its operations. We consider this
 impact is highly uncertain. Therefore, we have not recommended any resulting changes to its
 expenditure allowance, apart from in relation to continuing efficiency. A 1-year pause on applying this
 adjustment is appropriate.
- We have included expenditure on preliminary planning for drought response projects in Water NSW's capital allowance for the 2020 determination period. However, Water NSW has not demonstrated the prudency of progressing beyond this stage to advanced planning. The outcomes of preliminary planning need be assessed before they can be used to determine the scope of more extensive planning (and associated expenditure).
- Extreme weather events mean some of Water NSW's projects are no longer prudent (Avon Deep Water Access) or should be re-profiled (Warragamba E-flows). This does not mean investment in drought response projects is not warranted, but rather it is not prudent at this stage for some projects.

5.1 Summary of our decisions

Our decisions are:

- 8 To set the efficient level of past capital expenditure to be included in the Regulatory Asset Base for the 2016 determination period as set out in Table 5.1.
- 9 To set Water NSW's efficient level of capital expenditure to be included in the Regulatory Asset Base for the 2020 determination period as set out in Table 5.2.
- 10 To set output measures as set out in Table 5.3.



Our decision is to set Water NSW's efficient capital expenditure over the 2016 determination period at \$280.1 million. This is \$45.5 million (or 14.0%) lower than Water NSW's actual capital expenditure over the period (see Table 5.1).⁵⁶

Table 5.1Our decision on the efficient capital expenditure for the 2016 determination
(\$millions, \$2019-20)

		2016-17	2017-18	2018-19	2019-20	Total
Water NSW's proposal		29.8	43.2	87.0	165.6	325.6
Sp	ecific adjustments					
▼	Preliminary planning for drought response projects	-	-	0.3	-20.2	-19.9
▼	Capitalisation policy	-	-	-5.8	-10.3	-16.1
▼	Other minor cost adjustments			-2.7	-6.8	-9.5
То	tal efficient capex					
Tot	al	29.8	43.2	78.9	128.2	280.1
Dif	ference (\$)	0.0	0.0	-8.1	-37.4	-45.5
Dif	ference (%)	0.0%	0.0%	-9.3%	-22.6%	-14.0%

Source: IPART analysis; Water NSW, Submission to IPART's Issues Paper - *Review of Prices for WaterNSW Greater Sydney services from 1 July 2020*, October 2019, Table 5.2, p 59; Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, Table 4-1, p 27. **Note:** Numbers may not add due to rounding.

⁵⁶ Our decision on the efficient level of capital expenditure over the 2016 determination period reflects our assessment of how much of Water NSW's actual capital expenditure should be included in the RAB.

In the Draft Report, our draft decision was to reduce historical capital expenditure by \$46.3 million (or 14.2%). We revised this decision after receiving updated preliminary planning costs for drought response projects from Water NSW, as well as additional information about the impact of Water NSW changing its capitalisation policy during the 2016 determination period.

Our decision is to set Water NSW's allowance for capital expenditure at \$373.0 million over the 2020 determination period. This is \$309.4 million (or 45.3%) lower than Water NSW proposed in its July 2019 pricing proposal. Excluding the Avon Deep Water Access project – which Water NSW has indicated it no longer intends to pursue⁵⁷ – it is \$73.3 million, or 16.4% less (see Table 5.2).

		2020-21	2021-22	2022-23	2023-24	Total
Water NSW's proposal		147.2	216.9	216.9	101.5	682.4
Sp	ecific adjustments					
▼	Avon Deep Water Access	-18.8	-98.2	-108.5	-10.5	-236.1
▼	Warragamba E-flows ^a	-11.6	-28.2	7.2	6.9	-25.8
▼	Greater Sydney Resilience project	-1.9	-5.7	-5.5	-3.9	-17.0
•	Drought response projects (includes preliminary planning)	-10.8	-	-	-	-10.8
▼	Other minor cost adjustments	1.9	2.5	-	0.3	4.7
То	tal before efficiency targets	105.9	87.2	110.0	94.3	397.4
Eff	ficiency adjustments					
Ca	tch-up efficiency	-2.2	-3.6	-7.4	-6.8	-20.0
Сс	ntinuing efficiency (1-year pause)	0.0	-0.7	-1.6	-2.1	-4.4
То	tal efficient capex					
То	tal	103.6	83.0	101.0	85.4	373.0
Dit	ference (\$) – excluding Avon Deep Water Access	-24.7	-35.7	-7.4	-5.6	-73.3
Dit	ference (%) – excluding Avon Deep Water Access	-19.2%	-30.1%	-6.8%	-6.1%	-16.4%
Dit	ference (\$)	-43.5	-133.9	-115.9	-16.1	-309.4
Dit	fference (%)	-29.6%	-61.7%	-53.4%	-15.9%	-45.3%

Table 5.2Our decision on Water NSW's efficient capital expenditure for the 2020
determination period (\$millions, \$2019-20)

Source: IPART analysis; Water NSW, Submission to IPART Review of Prices for WaterNSW Greater Sydney, July 2019, p 56; Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, Table 4-2, p 28.

a: We have made our expenditure decision based on Atkins' recommendation to defer the Warragamba E-flows project by one year. This results in re-profiling of capital expenditure for this project (ie, reductions in both 2020-21 and 2021-22). **Note:** Numbers may not add due to rounding. Atkins has separately reported the efficiency adjustments for some the drought response projects in its recommended expenditure table, whereas for presentation purposes in our table we have included them in the catch-up and continuing efficiency line items.

⁵⁷ Water NSW, Email to IPART, 10 March 2020.

In the Draft Report, our draft decision was to reduce forecast capital expenditure by \$308.5 million (or 45.2%), which is very similar to our final decision. While we have applied a 1-year pause to the continuing efficiency adjustment in response to COVID-19 in the Final Report, as well as a lower catch-up efficiency challenge, the resulting expenditure increase is effectively offset by Water NSW revising downwards its preliminary planning costs for drought response projects.

We have made a decision to set Water NSW's output measures over the 2020 determination period as set out in Table 5.3. Our output measures track Water NSW's progress on capital programs that we have assessed as efficient to be undertaken during the 2020 determination period and, as such, have included in Water NSW's capital allowance. See Appendix G for further details.

Project	Output measure	Completion date
Fitzroy Falls Dam Safety Upgrade	Completion of Stage 1 works, internal erosion interception trench.	June 2022
Cataract Dam Safety Upgrade	Completion of Stage 1 works, installation of foundation relief drains and access ramp.	June 2024
Cordeaux Dam Safety Upgrade	Completion of Stage 1 works, completion of foundation relief drain expansion and upgrade.	June 2024
Warragamba Pipelines valves and controls upgrade	All valves in program installed and commissioned.	June 2023
Dam Safety Telemetry	Automation and telemetry of relevant instrumentation for selected metropolitan sites listed under project.	June 2024
Warragamba E-flows	Commissioning and proving period commenced for Warragamba E-flows to provide capability to release increased environmental flows from Warragamba Dam.	December 2025 - outside Determination period

Table 5.3 Output measures for the 2020 Determination

Source: Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report,* March 2020, p 148; Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Addendum to Final Report,* March 2020, p 6.

In making our decisions, we considered Water NSW's historical capital expenditure and the savings it achieved over the 2016 determination period. We then considered the capital programs Water NSW proposed, including, whether the proposed expenditure was fully justified, and whether any potential further savings could be achieved through greater efficiencies in delivering its capital program.

We asked Atkins to review Water NSW's historical and forecast capital expenditure in its expenditure review. Atkins also undertook a strategic review of Water NSW's long-term investment planning and asset management systems, processes and demand forecasts. Our decisions on Water NSW's capital expenditure reflect Atkins' recommendations.

The sections below outline our findings in relation to Water NSW's current and proposed capital expenditure. See Appendix F for more information on these items (including our detailed response to Water NSW's submission to the Draft Report).

5.2 Capital expenditure over the 2016 determination period

We have accepted Atkins' recommendation to set Water NSW's efficient level of capital expenditure over the 2016 determination period at \$280.1 million.

Overall, Atkins found that compared to the allowance set by IPART, there was systemic capital underspending on many of Water NSW's projects. It noted that this was often the result of issues with Water NSW's cost estimation processes, and indicates that Water NSW's projects would benefit from a top-down efficiency challenge.⁵⁸

Atkins, in arriving at its recommended efficient level of capital expenditure over the 2016 determination period, made several adjustments including:

- \$19.9 million reduction to align preliminary planning costs for drought response projects with the most recent forecast expenditure provided by Water NSW.⁵⁹ Atkins considered it was prudent for preliminary planning to proceed on the proposed projects.⁶⁰ However, an adjustment is required to take account of the updated planning costs.
- \$16.1 million reduction to reverse the impact of Water NSW's change in its capitalisation policy. Water NSW changed its capitalisation rules during the period, which resulted in some operating expenditure being converted to capital expenditure. Atkins reversed an equivalent amount from the RAB to avoid double counting.⁶¹ This prevents customers paying twice for the expenditure (ie, through its inclusion in the 2016 operating expenditure allowance and then the RAB).

Previously, Atkins recommended a \$25.9 million reduction due to the capitalisation policy change,⁶² and we accepted this for our Draft Report. In its submission to our Draft Report, Water NSW provided analysis indicating that it would have been allowed to capitalise some of these overheads under its previous policy, and so was not double counting.⁶³ Atkins considered this additional information and revised its recommended reduction to \$16.1 million.⁶⁴

⁵⁸ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report*, March 2020, pp 106.

⁵⁹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 23.

⁶⁰ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 14.

⁶¹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, pp 25-26.

⁶² Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report*, March 2020, pp 105, 131.

⁶³ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 21.

⁶⁴ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, pp 25-26.

5.3 Capital expenditure for the 2020 determination period

We have accepted Atkins' recommended adjustments to Water NSW's proposed capital expenditure over the 2020 determination period and to set the allowance at \$373.0 million.

Drought and climate variability are key themes of this review and they have implications for Water NSW's capital expenditure program over the 2020 determination period. Our assessment of the need for Water NSW's proposed capital projects in light of drought and climate variability is discussed below.



Source: Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Addendum to Final Report, March 2020, p 4-11; Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, pp 22-23.

Specific adjustments

Atkins made a number of specific adjustments to Water NSW's proposed capital program. The most significant are:

- Removing \$236.1 million in costs for the Avon Deep Water Access project the largest individual project proposed by Water NSW. Atkins does not recommend including expenditure for this project during the 2020 determination period in light of storage levels increasing well above the trigger level for construction.⁶⁵ This provides the benefit of more consideration of all reasonable options for future drought resilience, now that the immediate impact of drought has passed.
- Reducing \$25.8 million in costs by deferring the Warragamba E-flows project to commence in 2022-23. This represents a one year deferral from that proposed by Water NSW. Atkins considers its recommended deferral represents prudent timing as it allows Water NSW time to decouple the E-flows project from the Warragamba Dam wall project.⁶⁶
- Reducing \$17.0 million in costs for the Greater Sydney Resilience provision. Atkins considers Water NSW's expenditure for this project does not appear to be prudent based on the resilience that already exists within the system.⁶⁷
- Reducing \$10.8 million in costs for drought response projects. This is a result of Water NSW putting a drought response project on hold, as well as providing us with revised preliminary planning costs.⁶⁸

In its submission to our Draft Report, the Public Interest Advocacy Centre supported our allowance for capital expenditure. It noted this allowance was likely to be efficient and facilitate responsible investment over the determination period.⁶⁹

However, Water NSW did not agree with our adjustments in relation to Warragamba E-flows and the Greater Sydney Resilience provision. In its submission to the Draft Report, it considered decoupling Warragamba E-flows from the Warragamba Dam wall project should not delay its commencement. Further, the Greater Sydney Provision was still required to promote system resilience.⁷⁰ We asked Atkins to review these adjustments and it recommended maintaining them. After reviewing Water NSW's submission, Atkins considers it will still take an additional year to decouple the Warragamba E-flows project from the Warragamba Dam wall project, and there is still sufficient resilience in the existing system

⁶⁵ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Addendum to Final Report,* March 2020, p 5.

⁶⁶ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Addendum to Final Report, March 2020, pp 5-6; Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, pp 23-24.

⁶⁷ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 107; Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, p 24.

⁶⁸ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 120; Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, pp 22-23.

⁶⁹ Public Interest Advocacy Centre, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 1.

⁷⁰ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 41-43, 47.

with respect to the Greater Sydney Provision.⁷¹ We have accepted this recommendation, and therefore not included the entire amount Water NSW requested for these projects in its capital allowance for the 2020 determination period.

We note that Water NSW has the flexibility to reprioritise its expenditure within its capital allowance if circumstances change during the determination period (eg, the timing for commencing Warragamba E-flows or the need to pursue the Greater Sydney Resilience provision). If Water NSW exceeds its capital allowance, there is scope in our regulatory framework to recover it by including efficient expenditure in prices at our next price review.

Planning for drought response projects

It is prudent for Water NSW to proceed with preliminary planning for the drought response projects.⁷² However, following release of the Draft Report, Water NSW proposed significant additional expenditure on more advanced planning for one of these projects. We do not consider it has demonstrated this additional expenditure is prudent or efficient.



⁷¹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, pp 23-24.

⁷² Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 120.



Source: Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, pp 22-23.

In its submission to the Draft Report, Water NSW stated it was already engaging in effective planning with various agencies.⁷³ Further, the NSW Department of Planning, Industry and Environment indicated the NSW Government was in the process of developing the Greater Sydney Water Strategy to replace the current Metropolitan Water Plan and make certain Sydney's future water needs for growth and drought are met.⁷⁴ We continue to maintain the importance of ensuring this planning is comprehensive and rigorous in terms of the options assessed for long term water supply and drought response, as well as co-ordinated across the relevant agencies.

Allocating corporate capital expenditure

Water NSW proposed changing the way it allocates corporate capital expenditure⁷⁵ across its business segments, including Greater Sydney (the subject of this price review), Rural Valleys and part of the Water Administration Ministerial Corporation (WAMC).

⁷³ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 72.

⁷⁴ NSW Department of Planning, Industry and Environment, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, May 2020, p 6.

⁷⁵ Capital expenditure for its corporation-wide projects (eg, ICT, property and fleet).

- In its July 2019 pricing proposal, Water NSW proposed allocating corporate capital expenditure using the proportional value of direct salaries in each business segment. It preferred this method due to the close correlation between the expenditure and the number of employees working on each project. We accepted this method in the Draft Report. This would result in 37% of Water NSW's corporate capital expenditure being allocated to its Greater Sydney business.⁷⁶
- In its submission to our Draft Report, Water NSW proposed amending its method and using total expenditure ('totex') as the allocator for corporate capital expenditure. This would allocate a greater share of corporate capital expenditure from WAMC activities and Rural Valleys to Greater Sydney, resulting in a similar proportion of costs being allocated to Greater Sydney in the 2016 and 2020 determination periods (67% and 63%, respectively).⁷⁷
- Atkins has recommended retaining the allocator proposed by Water NSW in its pricing proposal (direct salaries). This allocator appears to best reflect the driver of corporate costs and represents the most transparent approach to cost allocation.⁷⁸

We have accepted Atkins' recommendation. We propose to review corporate capital expenditure across all of Water NSW's business units (including Greater Sydney) as part of our 2021 price reviews of Water NSW Rural Valleys and WAMC.

Catch-up and continuing efficiency adjustments

Consistent with our approach for operating expenditure, we have applied catch-up and continuing efficiency adjustments to Water NSW's forecast capital expenditure.⁷⁹ Atkins recommended \$24.4 million in savings from catch-up and continuing efficiencies. This includes:

- Catch-up efficiency adjustments of between 2.1% and 7.3% per year, totalling \$20.0 million in efficiency savings over the 2020 determination period.⁸⁰
- Continuing efficiency adjustments of 0.8% per year, totalling \$4.4 million in efficiency savings over the 2020 determination period. The continuing efficiency adjustment would be paused for the first year of the determination period due to COVID-19 impacts, and then apply for the remaining three years.⁸¹

⁷⁶ Water NSW, Update to Pricing Proposal - Allocating corporate capital expenditures to the Greater Sydney Determination, March 2020, p 1.

⁷⁷ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 54-57.

⁷⁸ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, pp 33-34.

⁷⁹ Chapter 4 provides an overview of these types of efficiency adjustments, as well as discussing the efficiency adjustments we have applied to Water NSW's operating expenditure program. Appendix F provides further information on the specific efficiency adjustments we have applied to Water NSW's capital program, and Appendix D provides additional information on IPART's approach to applying continuing efficiencies.

⁸⁰ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, p 15.

⁸¹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, pp 9-10, 15-16.

Water NSW did not agree with our continuing and catch-up efficiency adjustments in the Draft Report. It considered they led to double counting with the bottom-up, specific adjustments.⁸² We have addressed this concern in Chapter 4.

Water NSW also considered the catch-up efficiency adjustment was excessive.⁸³ Atkins reviewed new information provided by Water NSW about its capital and asset management processes. It recommended a lower catch-up efficiency challenge from what we included in our Draft Report⁸⁴ and we have accepted this recommendation.

Finally, Water NSW questioned whether the continuing efficiency adjustment remained valid considering the economic slowdown caused by COVID-19.85 In response, we have paused this adjustment for one year due to COVID-19 impacts. 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 Water NSW's operations.

⁸² Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 36.

⁸³ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 45-47.

⁸⁴ In the Draft Report, we included catch-up efficiency adjustments of between 2.1% and 9.3% per year (Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, p 12).

⁸⁵ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 36.



5.4 How does our decision differ from Water NSW's proposal?

Water NSW's capital expenditure for the 2016 determination period was \$325.6 million, which exceeded the IPART allowance of \$254.2 million by \$71.4 million (28.1%). Atkins considers Water NSW's efficient level of capital expenditure for this period is \$280.1 million.

Water NSW's proposed capital expenditure for the 2020 determination period is \$682.4 million. This represents an increase of:

- \$428.2 million (168.6%) from the IPART allowance for the 2016 determination period.
- \$356.8 million (109.6%) over its actual/forecast expenditure for the same period.

Atkins has recommended reducing it by \$309.4 million (or 45.3%). Excluding Avon Deep Water Access project⁸⁶ – which Water NSW has indicated it no longer intends to pursue⁸⁷ – the recommended reduction is \$73.3 million, or 16.4% less that Water NSW's pricing proposal.

Our decisions on Water NSW's capital expenditure reflects our assessment of the level of efficient capital expenditure that should be recovered through Water NSW's prices. Figure 5.1

⁸⁶ We have made a decision to remove \$236.1 million in costs for the Avon Deep Water Access project in light of storage levels increasing well above the trigger level for construction (see section 5.3).

⁸⁷ Water NSW, Email to IPART, 10 March 2020.

shows our decisions in comparison to Water NSW's historical expenditure and proposed expenditure.





As shown in Figure 5.2 below, our decision on Water NSW's efficient capital expenditure for the 2020 determination period represents a \$92.9 million, or 33.2% increase from our decision on Water NSW's efficient capital expenditure over the 2016 determination period.

Source: IPART analysis; Water NSW Annual Information Return 2019-20; Water NSW, *Pricing Proposal to IPART*, July 2019; Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, Table 4-1 and Table 4-2, pp 27-28.





Source: IPART analysis; Water NSW, *Pricing Proposal to IPART,* July 2019; Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, Table 4-1 and Table 4-2, pp 27-28.

6 Notional revenue requirement

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

This chapter presents our approach and decisions on the total NRR, including any adjustments we make to account for revenue from sources other than water customers. We also compare the NRR with that used to set prices in the 2016 determination and that in Water NSW'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. Under this approach, we break down Water NSW's costs into five components (or building blocks), namely:

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

More information on the five building blocks is in Appendix H.

Figure 6.1 illustrates our approach to calculating the NRR and how we set prices.





Note: Numbers may not add due to rounding. IPART analysis.

6.2 The total NRR is \$792.6 million over four years

Our final decision is:

11 To set the notional revenue requirement of \$792.6 million as shown in Table 6.1.

The total NRR is \$792.6 million over four years, as set out in Table 6.1. This is \$97.0 million (10.9%) less than Water NSW'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. Further information is presented in Appendix H.

·			•		
	2020-21	2021-22	2022-23	2023-24	Total
Water NSW's proposal					
Total NRR	208.6	217.3	229.6	234.1	889.6
IPART decision					
Operating allowance	94.5	92.7	92.4	86.9	366.4
Regulatory depreciation	33.3	37.6	41.3	45.0	157.2
Return on assets	59.9	61.9	63.7	65.3	250.8
Working capital allowance	1.3	1.5	1.4	1.5	5.8
Tax allowance	3.2	2.9	3.0	3.4	12.5
Total NRR	192.2	196.5	201.7	202.1	792.6
Difference (\$)	-16.4	-20.8	-27.9	-31.9	-97.0
Difference (%)	-7.8%	-9.6%	-12.1%	-13.6%	-10.9%

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

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:** Water NSW, *Pricing Proposal to IPART*, July 2019, Table 11.1, p 163, IPART calculations.

6.3 Our NRR is lower than that proposed by Water NSW

Compared to Water NSW's proposal, our NRR is \$97.0 million or 10.9% lower over the four years of the 2020 determination period. Figure 6.2 illustrates the impacts of our various decisions on this difference.

Figure 6.2 Key differences between Water NSW's proposed NRR and our decision NRR (\$2019-20, \$million)



Source: Water NSW, Pricing Proposal to IPART, July 2019, Table 11.1, p 163 and IPART calculations.

The changes in the weighted average cost of capital (WACC) and capital expenditure have had the most significant impact in driving the differences between our NRR and Water NSW's proposed NRR. Changes in the WACC are largely a function of timing: Water NSW's proposal used the same methodology to set the WACC as IPART. However between when Water NSW submitted its proposal and now, market conditions have changed, lowering the WACC from 4.1% to 3.4%. That is, if Water NSW submitted its pricing proposal now, its proposed NRR would be significantly closer to our NRR. Reasons for changes in capital expenditure are discussed in Chapter 5 and Appendix F.

6.4 Inflation expectations in the WACC

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

In its submission to our Draft Report, Water NSW argued that our estimate of inflation expectations was not representative of the likely actual inflation over the next four years. Specifically, that IPART's estimate of inflation expectations was too high and, consequently, our real WACC was too low. It stated that:

Market based measures of expected inflation have fallen dramatically over the last month and the breakeven inflation series suggests that bond market participants are pricing in close to zero inflation on average over the next four years. Maintaining IPART's current forecast for inflation of 2.3% is simply not sustainable and puts WaterNSW at significant financial risk when considering the current low inflation forecasts arising from COVID 19 impacts.⁸⁸

In its submission to our Draft Report, Water NSW proposed introducing a true-up mechanism to eliminate the impact of inflation forecasting error and lowering the inflation forecast to 1.7% (ie, increasing the real WACC by 0.6%). Water NSW submitted that if we do not adopt these proposals, an uplift to the equity beta, with the effect of increasing the real WACC by 0.6%, would be required to address the increased risk for Water NSW equity investors.⁸⁹

We undertook a comprehensive review of this issue (as set out in Appendix I) and our decision is to maintain our approach to estimating inflation expectations for the purpose of calculating the real WACC for the 2020 determination period. We do not consider the alternative approaches proposed by Water NSW and the other water businesses represent a clear improvement over the current approach and we consider that maintaining our approach will promote stability for both Water NSW and its customers in these uncertain times.

We would need strong and compelling evidence to change how we estimate a single WACC parameter in isolation as the financial market data underlying many elements of the WACC are interrelated. We consider it is more appropriate to consider the WACC methodology in a holistic and internally consistent way as part of our periodic WACC reviews.

⁸⁸ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 5.

⁸⁹ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 5 and p 63.

6.5 Our WACC is currently high compared to other jurisdictions

In Appendix J, we outlined how we calculate our real post-tax WACC of 3.4% for our Water NSW Greater Sydney, Sydney Water and Hunter 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 - indicates that Water NSW will be in a relatively stable financial positon over the 2020 determination period. Our financeability analysis is presented in Chapter 10 and Appendix O.

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

Table C O		mant tow MACCo company	
Table 6.2	Comparison of real	post-tax wacts across	Australian jurisdictions

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 Energy 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.

6.6 We adjusted the NRR to account for non-regulated revenue

Before setting prices to recover the NRR, we subtract a share of the revenue Water NSW 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 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.

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 annual NRR 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 Water NSW.

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 (see Table 6.3). To ensure that Water NSW and customers do not benefit or lose from this arrangement, we set prices so that the target revenue expected to be recovered from prices equates to the adjusted NRR over the determination period, in 'present value' terms. That is, prices are set over the 4-year determination period so that the present value of the target revenue equals the present value of the NRR (ie, the price path is NPV neutral).

Our final decision are:

- 12 To subtract from the NRR the revenue from our decisions on non-regulated revenue in accordance with Table 6.3.
- 13 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 that Water NSW would receive from other sources.

	-	-		-	
	2020-21	2021-22	2022-23	2023-24	Total (NPV) ^b
IPART decision NRR from building blocks	192.2	196.5	201.7	202.1	730.1
Non-regulated revenue ^a	0.2	0.1	0.1	0.1	0.4
Adjusted NRR (revenue to be recovered by prices)	192.0	196.4	201.7	202.1	729.7
Target revenue from prices	197.2	197.6	198.1	198.6	729.7
Difference	5.1	1.2	-3.6	-3.4	0.0

Table 6.3 Adjusted NRR and smoothed target revenue (\$2019-20, \$million)

a This includes 50% of rental income and 100% of expected revenue from post mining rectification works to be shared with customers.

b 4 year NPV

Note: Totals may not add due to rounding.

Source: IPART calculations.

6.6.1 Non-regulated revenue

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.

Our decision is to apply a 50:50 sharing ratio, except in relation to post mining rectification works. This is because Water NSW is intending to share 100% of its revenue from post mining rectification works with customers. We accept Water NSW's approach to sharing 100% of the revenue from post-mining rectification works with its customers.

See Appendix H for more information on our approach to non-regulated revenue.

Our decision is:

- 14 To share with customers 100% of the revenue from post-mining rectification works.
- 15 To share with customers 50% of other non-regulated revenue, including from rentals.

6.7 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 and J.

Our decision are:

- 16 To calculate the return on assets using:
 - An opening RAB of \$1,739.8 million for 2020-21, and the RAB for each year as shown in Table H.3 of Appendix H.
 - Our standard WACC methodology which produces a real post-tax WACC of 3.4% as outlined in Appendix J
- 17 To apply a true-up of annual WACC adjustments in the next Determination.
- 18 To calculate the regulatory depreciation using:
 - The asset lives set out in Table H.5 of Appendix H for new and existing assets
 - The capital expenditure by asset category set out in Table H.5 of Appendix H
 - The straight-line depreciation method.
- 19 To calculate the tax allowance using:
 - A tax rate of 30%
 - IPART's standard methodology.
- 20 To calculate the working capital allowance using Water NSW's proposed parameters:
 - quarterly billing cycle
 - 30 days of delay between reading the meter and receiving payment
 - 30 days payable cycle, and
 - zero inventory.

In addition, to have zero prepayments in each year of the determination period.

7 Forecast water sales and customer numbers

A key step in our price setting process is to decide on Water NSW's forecasts for water sales and customer numbers for the Water NSW Greater Sydney business. These forecasts are used to determine the price levels necessary to recover Water NSW'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, Water NSW may not earn sufficient revenue to recover its efficient costs.

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

7.1 Summary of our decisions

We decided to have two sets of water sales forecasts for Water NSW's customers over the 2020 determination period. This is based on Atkins recommended forecasts which took into account changes in water demand during times of drought and water restrictions. These water sales forecasts are based on two scenarios: non-drought and drought conditions.

We use the term 'drought' as a shorthand for when dam levels⁹⁰ fall below 60% and will trigger the need for customers to support the system-wide water supply in times of low rainfall by reducing their usage. This may include additional water conservation measures such as water restrictions.

When dam levels are above 60%, the non-drought forecast will apply and this forecast is used to set the non-drought usage prices. When dam levels fall below 60%, the drought forecast will apply and this is used to set the drought usage price. The drought forecast will continue to be used until dam levels go above 70%.

- ▼ For the non-drought forecast, we have adopted Water NSW's proposed forecast water sales as the base, then made adjustments for Atkins' recommendations where relevant.
- For the drought forecast, we have accepted Atkins' recommendations to reduce the forecast water sales to reflect the impact of water restrictions and the price elasticity of demand on water sales.

We have also decided to accept Water NSW's forecast customer numbers for the 2020 determination period, which are the same numbers we used in the 2016 Determination.

⁹⁰ The term 'dam levels' reflects the average water storage of all dams and reservoirs across Water NSW's Greater Sydney Catchment water system.

7.2 Forecast water sales

Bulk water sales to Sydney Water make up around 99% of Water NSW's total bulk water sales. The remaining 1% of bulk water sales come from Water NSW's three council customers and its 59 raw and unfiltered customers.

We asked our consultants, Atkins, to review and advise us on Water NSW's water sales forecasts. Atkins recommended some adjustments to Water NSW's forecast sales to Sydney Water. It also recommended introducing drought forecasts (which takes into account the effects of water restrictions and price elasticity on demand) for all customers.

We used these forecasts to develop two water sales scenarios:

- 1. An 'non-drought' forecast (ie, no water restrictions) for when dam levels are above 60%
- 2. A lower 'drought' forecast for when dam levels fall below 60%, and until they go above 70%.

Our decision is:

21 To adopt the forecast water sales volumes as outlined in Table 7.1.

	2020-21	2021-22	2022-23	2023-24
Non-drought				
Sydney Water	564,558	571,070	577,503	585,545
Wingecarribee Shire Council	6,219	6,343	6,470	6,600
Shoalhaven City Council	108	110	112	114
Goulburn Mulwaree Council	50	50	50	50
Raw and Unfiltered	152	152	152	152
Total	571,086	577,725	584,287	592,461
Drought				
Sydney Water	471,823	477,196	482,503	489,139
Wingecarribee Shire Council	5,196	5,299	5,405	5,514
Shoalhaven City Council	90	92	94	95
Goulburn Mulwaree Council	42	42	42	42
Raw and Unfiltered	127	127	127	127
Total	477,278	482,756	488,171	494,917

Table 7.1 IPART's decision on water sales volumes 2021 to 2024 (ML/year)

Note: Sydney Water drought water sales include 91,250 ML of water supplied by SDP in each year.

Source: Water NSW, Pricing Proposal to IPART, July 2019; Atkins Cardno, Water NSW expenditure and demand forecast review, Final Report for IPART, March 2020; IPART calculations.

7.2.1 Forecast water sales to Sydney Water

We have developed non-drought and drought sales forecasts to Sydney Water. The nondrought sales forecasts are based on forecasts provided by Water NSW and factor in the recommendations from Atkins.

Atkins recommended minor adjustments to the non-drought sales forecasts to Sydney Water for process losses from Sydney Water's network and a more ambitious water leakage reduction target.

In its submission to our Draft Report, Water NSW generally agreed with our adjustments to its forecast water sales to Sydney Water but disagreed with how the adjustments for process losses should be applied. That is, it suggested that process loss adjustment should be applied to the demand and not the capacity of the filtration plants.⁹¹ In its Supplementary Report, Atkins considered this but did not recommend adjusting Water NSW's forecast sales to Sydney Water to take into account Water NSW's suggestion or the impact of COVID-19.⁹²

The drought sales forecasts is about 17% lower than the non-drought sales forecast. It takes into account the effects of water restrictions and price elasticity on demand from Water NSW's customers.

- Atkins recommended using a 15% reduction in demand in response to water restrictions.⁹³
- We then made a price elasticity adjustment of about 2% to the forecasts. This applies the same elasticity assumption used to revise Sydney Water's water sales forecasts for its end-use customers.⁹⁴

7.2.2 Forecast water sales to councils and its other customers

Atkins considered but did not recommend any adjustments to Water NSW's proposed sales forecast to its councils and other customers. We have accepted Water NSW's proposed forecast sales as its non-drought sales forecasts for these customers.

Atkins recommended applying a consistent reduction (based on the drought forecast reduction for Sydney Water) for its drought forecast for Water NSW's councils and other customers.⁹⁵ Since all customers contribute to the draw-down of dam levels and should support the system-wide supply of water in times of low rainfall by reducing their usage, we consider that a similar reduction in sales for drought should be applied to all customers.

⁹¹ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 68.

⁹² Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, p 35.

⁹³ Atkins Cardno, Water NSW expenditure and demand forecast review, Final Report, March 2020, p 59.

⁹⁴ IPART, *Review of prices for Sydney Water Corporation – Draft report*, March 2020, Appendix J.

⁹⁵ Atkins Cardno, Water NSW expenditure and demand forecast review, Final Report, March 2020, p 64.

7.3 Forecast customer numbers

Forecast customer numbers are used in calculating fixed service charges. Given Sydney Water accounts for approximately 99% of Water NSW's total water sales, the effect of customer numbers is not as important in setting prices as forecast bulk water sales.

Water NSW has forecast no change in its customer numbers over the 2020 determination period compared to 2019-20 levels, which have been constant since 2017-18. We consider Water NSW's forecast is reasonable.

Our decision is:

22 To adopt Water NSW forecast customer numbers as shown in Table 7.2.

Table 7.2 Water NSW customer numbers

	2020-21	2021-22	2022-23	2023-24
Wholesale customers	4	4	4	4
Raw water (ie, unfiltered and untreated)	6	6	6	6
Unfiltered water (ie, chemically treated)	53	53	53	53
Total customers	63	63	63	63

Source: Water NSW, Pricing Proposal to IPART, July 2019, Table 10.2, p 159.

8 Risk allocation

One of the key themes we considered in this price review is the allocation of risks between Water NSW (including its shareholder, the NSW Government) and its customers. Water NSW proposed to decrease its share of cost and revenue risks associated with our price determination and increase its customers' share of these risks.⁹⁶ In this chapter, we discuss our decisions on three key elements: allocating cost risks, allocating revenue risks and having mechanisms to encourage efficiency.

Cost risk is the risk that new and unforeseen costs may arise that are not reflected in prices. In this review, we specifically considered the cost risk associated with regulatory change and catastrophic events, the operation of the Shoalhaven Transfer Scheme, and managing contingent projects. We also considered the impact of planning issues on costs and considered how our regulatory framework can incentivise the regulated business to ensure efficient water supply planning is undertaken for the region. It is important that we achieve an appropriate allocation or sharing of cost risk between the business and customers to promote prudent and efficient supply outcomes.

Revenue risk is the risk that the business would face revenue volatility because of fluctuations in water sales. It exists because of the potential for an unforeseen event or condition to occur during the determination period that negatively affects Water NSW's ability to meet the forecast water sales (used to set prices) and not be able to generate revenue equivalent to the NRR. We specifically looked at risks that may arise due to lower water sales because of another bulk water supplier in the region (ie, Sydney Desalination Plant) or a material change in water demand during the determination period.

Another issue we considered is how to encourage Water NSW to pursue efficiencies throughout the determination period. This includes our decisions on the efficiency carryover mechanism and the incentive payment mechanism Water NSW has with Sydney Water.

The sections below summarise our decisions on these three elements for Water NSW.

⁹⁶ For example, in section 8.1, we discuss Water NSW's proposal to introduce a general cost pass-through mechanism for regulatory change and catastrophic events and also to introduce mechanisms to address the risk of contingent projects (see section 8.1).

8.1 Summary of decisions on cost risks

Our decisions are

- 23 To not accept Water NSW's proposal to have cost pass-through mechanisms for regulatory change and catastrophic events.
- 24 For the Shoalhaven Transfer scheme:
 - To continue to have a cost pass-through mechanism to Sydney Water
 - To update the formula for the cost pass-through formula as defined in Box L.1 in Appendix L.
- 25 To manage the risk of contingent projects commencing during the determination period through a package of options as outlined in Figure 8.1, with further details in Appendix N.

When allocating risks between a regulated business and its customers, our main objective is to achieve an allocation that leads to prices reflecting efficient costs, while ensuring that the party best placed to manage the risk has appropriate incentives to manage it efficiently. This means that we first assess the nature of the unforeseen costs the business is at risk of incurring during the determination period and the ability of the business to influence the outcome:

Where a cost is efficient and material, and the business has no meaningful influence over whether it incurs the cost or the size of the cost, there may be a case to provide a new mechanism that enables the business to pass through this cost in prices as it is incurred.

Our cost pass-through framework is designed to ensure that the use of cost pass-through mechanisms is limited to situations where it is more efficient to pass the risk onto customers, and where prices become more cost-reflective to provide better signal to customers. The criteria we use to assess proposed cost pass-through mechanism are outlined in Box K.1 in Appendix K.

Where a cost is not material, or the business can influence whether it incurs the cost or manage the size of the cost, there may be a case for the business to retain some of the risk so it has an incentive to do so and advocate for the most efficient solution.

Regulatory change and catastrophic events cost pass-throughs

We assessed Water NSW's proposed cost pass-through for regulatory change and catastrophic events against our criteria, which are outlined in Box K.1 in Appendix K.

In summary, we decided that the proposed regulatory change and catastrophic events did not justify a cost pass-through mechanism. We consider that:

The risk of regulatory change events is not new. This risk applies to all regulated utilities, and we take it into account in deciding on the length of the determination. We would only consider using a cost pass-through mechanism if there was a clearly defined risk that could result in the business incurring a material cost that was clearly beyond its control (eg, a potential change in tax rates or a proposed price on carbon). However, this is not the case for Water NSW. We do not support introducing a general cost pass-through for regulatory change events because this would remove the utility's incentive

to engage in regulatory decision making processes and may lead to unintended outcomes.

The risk of catastrophic events is also not a new risk. Similarly, we consider a general cost pass-through would remove the utility's incentive to insure against (insurable) risks, and/or take actions to limit the impact of events if and when they occur (eg, preparing for and responding to a flood or cyclone) and may ultimately lead to inefficient costs being passed through to customers.

Further, we consider that if an event does have a materially adverse impact on Water NSW's financial position, it can seek to bring forward the next price review and determination. Our full assessment is also presented in Appendix K.

We received one submission on this issue in our Draft Report from Water NSW. In its submission, Water NSW maintained its position on having general cost pass-throughs for regulatory change and catastrophic events,⁹⁷ but did not provide new evidence to persuade us to change our decision.

Cost pass-through for the Shoalhaven Transfer Scheme

We accepted Water NSW's proposal to continue to have a cost pass-through mechanism for the Shoalhaven Transfer Scheme (Scheme) and agreed with it that the cost pass-through formula requires review. This is because the formula in the 2016 Determination (2016 Scheme formula) did not include some of the components of the total energy cost of pumping water.

We have decided to maintain our approach of passing through our best estimate of the benchmark efficient cost of operating the Scheme and have not accepted Water NSW's proposal to pass-through actual costs of Shoalhaven transfers. We consider this:

- Results in more cost-reflective prices, by including components of the energy cost that were previously omitted from the formula.
- Maintains appropriate incentives for Water NSW to enter into efficient energy contracts.
- Reflects the prioritisation of off-peak energy over peak energy to incentivise Water NSW to operate the Scheme efficiently and ensure that customers only pay efficient costs.

The cost pass-through will apply to Water NSW's usage prices to Sydney Water only. That is, prices to the three council customers, and raw and unfiltered customers will not change due to the Scheme.

We have updated our formula to take into account all components of electricity costs to pump water from the Scheme. This is based on benchmark energy prices developed from our consultant, Frontier Economics.

⁹⁷ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 12-15.

However, we have decided to not accept Water NSW's proposal to recover a revenue shortfall of \$1.7 million⁹⁸ (incurred over the 2016 determination period) from prices over the 2020 determination period. (This shortfall was revised down from Water NSW's original estimate of \$4.4 million).⁹⁹ In its submission to our Draft Report, Water NSW stated that the shortfall was driven by errors in the 2016 Scheme formula, which meant that it was unable to recover its efficient costs.¹⁰⁰ We considered Water NSW's comments, but maintain our decision to not make retrospective adjustments is a fair sharing of risk between Water NSW and its customers. We would be concerned that such a specific retrospective adjustment could be asymmetric (in favour of Water NSW and against its customers), and note that in aggregate Water NSW's capital and operating expenditure allowances under the 2016 determination exceeded its actual expenditure over the 2016 determination period.¹⁰¹

Our updated formula for determining the costs of the Scheme is defined in Box L.1 in Appendix L. Our full analysis on the Scheme is also presented in Appendix L.

Managing contingent project risks

Contingent projects are new projects that have not been considered in our capital expenditure review (see Chapter 5). In its pricing proposal, Water NSW indicated it is investigating several major projects as part of the NSW Government's planning for the Greater Sydney region.¹⁰² The Government may direct Water NSW to commence some of these projects during the 2020 determination period (eg, do more detailed planning or start construction).¹⁰³

Because of this uncertainty, Water NSW considers that if one or more contingent projects were to commence during the 2020 determination period, it may face a material risk if its NRR and prices are not adjusted during the determination period to reflect the costs of these projects (ie, contingent project risk). To address this risk, it proposed a mechanism that would allow prices to change during the determination period.¹⁰⁴

⁹⁸ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 16.

⁹⁹ Water NSW, *Pricing Proposal to IPART*, July 2019, Appendix D, p 190.

¹⁰⁰ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 16.

¹⁰¹ In Appendix L, we noted that in the 2016 price review Water NSW did not propose to return the under spending to customers that occurred during the 2012 determination period. However, Water NSW proposed in its pricing proposal that it would pass on losses it incurred over the 2016 determination period to customers to future prices.

We also note that during the 2016 determination period Water NSW over-recovered (profits) by around \$42 million as a result of higher water sales and lower costs in this period (compared to forecast used to set prices in the 2016 price review and after reversing capitalised costs discussed in Chapter 4 and Appendix F).

¹⁰² We received a submission from the NSW Government, which confirmed that it is developing a Greater Sydney Water Strategy (GSWS) to replace the Metropolitan Water Plan during the 2020 determination period. Refer to NSW Government, NSW Government Submission IPART Draft Reports on Sydney Water, Hunter Water and WaterNSW Prices 2020, 11 May 2020, p 6.

¹⁰³ Water NSW, *Pricing Proposal to IPART*, July 2019, p 44.

¹⁰⁴ For further details, refer to Appendix N.

We agree with Water NSW's approach to exclude any contingent projects from its capital expenditure program for the 2020 determination period. This is because:

- The scope, timing and costs of contingent projects are uncertain and cannot be reasonably assessed for the 2020 Determination.
- If cost estimates for these projects were included in prices, prices would not reflect efficient costs.

We also recognise that Water NSW can be exposed to project risks if new projects are approved and commence during the determination period.

However, we decided to not accept its proposed mechanism for addressing this risk. Instead, we decided to provide Water NSW with a range of options it may take if it is required to take on a new project during the determination, outline in Figure 8.1 (see Appendix N for detailed information). We consider this decision provides Water NSW with options to manage potential adverse impacts should a new project arises during the determination period, while maintaining appropriate incentives for Water NSW and the Government to undertake proactive, co-ordinated and robust planning across the sector.

We have decided not to adopt the measures proposed by Water NSW because we consider its proposal does not provide the right incentives for the utility to plan and may result in inefficiently allocating contingent project risk to customers.

This decision reflects our view that:

- The materiality of the project(s) being considered is important in deciding how to manage the risk. This means a 'one size fits all' solution is inappropriate to deal with different materiality of project risk. We are open to engaging with the utility during the determination period to discuss specific contingent projects and how they may be assessed at the next price review.
- Some of the risk should be borne by Water NSW. The high level of uncertainty around these contingent projects is at least partially the result of planning gaps across the water sector. By allocating some of the risk to Water NSW (and the NSW Government), this gives it the incentive to adequately plan for at least the next four to five years (ie, determination period).
- Although the need to have an immediate drought response solution has lessened due to the recent rainfall, the recent experience has highlighted how variable our climate is and the critical need for better planning.
- The likelihood of contingent projects materialising in the early years of the determination is low. The likelihood potentially increases towards the end of the determination, so it might be only a year or two before prices can adjust (which is small relative to bulk water infrastructure, with asset lives of 100 years).

Further details are outlined in Appendix N.
Figure 8.1 Options to manage contingent project risks





We received one submission on this issue in response to our Draft Report from Water NSW. In its submission, Water NSW:¹⁰⁵

- reiterated its reasons for why it should have a mechanism that allows for prices to change during the determination period, and
- proposed a new price adjustment mechanism in the form of a 'Letter of Approval'. This proposal would allow for Water NSW's prices to Sydney Water to be adjusted during the determination period. The adjustment would occur when a direction is given by the NSW Government to Water NSW in regards to a specific contingent project. The price adjustment would also be based on a 'pre-determined uplift factor'. Refer to Appendix N for full details.

We have concerns with Water NSW's proposed 'Letter of Approval' approach, which include that it would:

- allow costs to be passed through to Sydney Water (and Sydney Water's customers) before they have been subject to efficiency review
- involve price uncertainty and could lead to price volatility
- potentially weaken incentives for integrated long term planning, and
- apply only to Sydney Water (and its end-use customers). Water NSW's proposal did not consider how costs might be allocated across the other customer groups (ie, councils and raw and unfiltered water customers).

¹⁰⁵ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp10-12 and Appendix 1.

8.2 Summary of decisions on revenue risks

Our decisions are

- 26 To maintain the mechanism to adjust Water NSW's usage price to Sydney Water so that Water NSW recovers the same amount of revenue irrespective of whether SDP is also supplying water Sydney Water.
- 27 To modify the SDP charging formula (as defined in Box 8.1) to:
 - Ensure that the formula is sufficiently flexible so that it applies in the event that SDP's capacity is expanded, and
 - Exclude any future voluntary supply from SDP to Sydney Water.
- 28 To not introduce a demand volatility mechanism for the 2020 determination period.

In allocating revenue risks, we adopted the same approach outlined at the start of Section 8.1.

SDP charging mechanism

We accepted Water NSW's proposal to maintain the existing approach to exclude water supply from SDP to Sydney Water from the sales forecasts used to set Water NSW's usage prices to Sydney Water.

We maintain the view we took in the 2012 and 2016 determinations that it would not be appropriate for Water NSW to be exposed to the risk of reduced sales resulting from supply from SDP because Sydney Water is compelled to accept water supplied by SDP. We note that if Water NSW's price structure (currently 80:20 fixed to variable) matched its cost structure (ie, greater fixed and smaller variable shares), then Water NSW would not be exposed to demand risk in any form and would be financially indifferent as to whether SDP supply displaced some of its own sales to Sydney Water.

However, we have decided to update the formula, as defined in Box 8.1, in order to:

- Accommodate future expansion of the SDP, contingent on commencement of the supply of drinking water from the expanded desalination plant. The future expansion of the SDP (also referred to as SDP Stage 2) could entail almost doubling the capacity of the current desalination plant, ie from the current daily output of 250 ML¹⁰⁶ to having (at least) an additional daily output of 250 ML.¹⁰⁷
- Exclude any 'voluntary' supply of water from SDP to Sydney Water. Although it may be highly unlikely based on SDP's current operating arrangements, there may be situations in the future where SDP and Sydney Water are able to enter into a voluntary bulk water supply agreement. In this case, the voluntary supply from SDP would be equivalent to voluntary supply from any other potential bulk water supplier.

¹⁰⁶ The nameplate capacity of the existing SDP is 250 ML per day. However, we understand that the existing plant can produce up to 260 ML of water per day. IPART, Sydney Desalination Plant Pty Ltd Review of prices from 1 July 2017 to 30 June 2022, Final Report,

June 2017, p 23.
 ¹⁰⁷ IPART, Sydney Desalination Plant Expansion – Terms of Reference, 8 January 2020. As at 7 May 2020, we note that planning for SDP Stage 2 has been deferred given the heavy rainfall in January 2020 that resulted in dam levels reaching more than 80%.

In the Draft Report, we sought stakeholder feedback on potentially excluding any voluntary supply of water from SDP to Sydney Water in the SDP charging mechanism.

We received mixed views from stakeholders. Water NSW did not support the exclusion of voluntary supply as this would increase its revenue risk. It considered that all SDP water sales (ie mandatory and any future voluntary supply) from SDP to Sydney Water should be included in the charging mechanism.¹⁰⁸ PIAC supported the exclusion of voluntary supply in the charging mechanism and suggested that there should be an appropriate process in place to ensure that customers do not pay any more than necessary.¹⁰⁹

On balance, we consider there is merit in excluding voluntary supply in the SDP charging mechanism. This means that Water NSW would be exposed to the risk of SDP and Sydney Water entering into a voluntary agreement (if such an agreement is possible in the future). However, we consider that this is reasonable as customers should be able to benefit from this competition for bulk water supply.

Box 8.1 Updated SDP charging formula for large customers (\$/ML)

$$Volumetric \ price \ = \frac{20\% \times TR}{(FS - Q_{SDP})}$$

Where:

- TR is the target revenue requirement from prices to be recovered from all large customers^a for the relevant month (as listed in the determination)
- ▼ *FS* is forecast water sales (ML) to all large customers for the relevant month (as listed in the determination). There are two forecast water sales (as discussed in Chapter 7):
 - Non-drought water sales, and
 - Drought water sales
- Q_{SDP} is the lesser of:
 - a) The SDP Total Monthly Plant Capacity; or
 - b) The total volume of water supplied by SDP pursuant to an SDP Operation Requirement to all large customers in the relevant month

[Note: for the avoidance of doubt, (b) is intended to capture only volumes of water supplied by SDP to Large Customers that SDP is required to supply under an SDP Operation Requirement. It does not capture volumes of water supplied by SDP to Large Customers on any other basis, including water that SDP is permitted, but not required, to supply under its Network Operator's Licence.] a Currently Sydney Water is Water NSW's only large customer.

¹⁰⁸ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 76.

¹⁰⁹ Public Interest Advocacy Centre, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 2.

Demand volatility adjustment mechanism

When determining prices, we forecast the volumes of water we expect the utility to sell over the determination period. If actual sales differ from our forecasts, then the utility's revenues will be impacted (ie, they may be less or greater than the revenue needed to recover efficient costs). One way to mitigate this risk is to adjust the utility's prices at the next price reset to account for any under or over-recovery of revenue.

In its pricing proposal, Water NSW proposed to introduce a demand volatility adjustment mechanism (DVAM) for the 2020 determination period.¹¹⁰ Water NSW indicated that, if any part of its price structure is variable, it needs a DVAM.

We did not accept this proposal. We consider that the residual risk to Water NSW is small because of our decisions to:

- Set an 80:20 price structure would result in a relatively small amount of revenue risk that could be effectively managed by Water NSW.¹¹¹ That is, the 80:20 price structure significantly reduces the need for a DVAM to manage the impact of not accurately forecasting demand on revenue given that 80% of Water NSW's revenue from fixed charges is not impacted by changes in demand. Water NSW also has reasonable certainty around customer numbers, which further reduces the risk from fixed charges.
- Use two sets of water sales forecasts (based on non-drought and drought conditions discuss in Chapter 7) and having dynamic water usage pricing (discuss in Chapter 9). This allows Water NSW to recover its efficient costs by having the flexibility to increase its usage price when dam storage levels hit the 60% threshold.
- Maintain the SDP charging formula (discuss in section 8.3). This protects Water NSW's revenue from the effects of lower bulk water sales to Sydney Water when the SDP is in operation, and allows it to recover its efficient costs.

In its submission to our Draft Report, Water NSW did not provide new evidence to persuade us to change our decision.¹¹²

Further, Water NSW's largest customers (Sydney Water) provided a submission to our Issues Paper indicating its view that a DVAM for Water NSW is not appropriate and not in the interest of end-use customers. Sydney Water expressed its view that Water NSW does not face the same revenue risk nor does it need an incentive to efficiently forecast demand.¹¹³

¹¹⁰ Water NSW, *Pricing Proposal to IPART*, July 2019, p 51.

¹¹¹ The price structure is further discussed in Chapter 9.

¹¹² Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 6, 22-23.

¹¹³ Sydney Water, Submission to IPART's Issues Paper – Review of prices for Water NSW Greater Sydney services from 1 July 2020, October 2019, p 12.

8.3 Summary of decisions on mechanisms to encourage efficiency

Our decisions are

- 29 For efficiency carryover mechanism (ECM):
 - To maintain having an ECM for operating expenditure only.
 - To not introduce an ECM for capital expenditure.
- 30 To defer regulating prices for incentive payment mechanisms between Water NSW and Sydney Water for the 2020 determination period:
 - This will allow Water NSW and Sydney Water to implement incentive payment mechanisms during the 2020 determination period, if agreed to by both parties.

When creating incentives for a business to deliver efficiency savings, we set maximum prices that reflect our best estimate of the efficient costs required to deliver regulated services over the determination period. That is, if the business makes cost savings during the determination period and these savings are not permanent, our standard approach would allow the business to keep these profits from cost savings. However, if these cost savings are permanent, we would allow the business to keep the savings during the determination period but pass these savings to customers through lower prices (reflecting lower costs) at the subsequent price review, when we re-set the business's efficient expenditure allowances and prices.

Efficiency carryover mechanism

In 2016, we introduced an efficiency carryover mechanism (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. This mechanism aims to remove Water NSW's incentive to delay efficiency savings from the end of one determination period to the beginning of the next.¹¹⁴ Appendix M provides a detailed explanation of how the ECM works.

To date, we have not applied the mechanism in practice – it was available for Water NSW, Hunter Water and Sydney Water¹¹⁵ but none of the utilities made a claim under the mechanism for this price review.

¹¹⁴ 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 utility's efficient costs, and if the utility 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.

¹¹⁵ IPART, Review of prices for Water NSW Greater Sydney services from 1 July 2016 to 30 June 2020 – Final Report, June 2016, p 62; IPART, Review of prices for Hunter Water Corporation from 1 July 2016 to 30 June 2020, Final Report, June 2016, p 29; IPART, Review of prices for Sydney Water Corporation from 1 July 2016 to 30 June 2020 – Final Report, June 2016, p 53.

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

- To limit the ECM on operating costs only because:
 - The risks of unintended consequences from 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.
- 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.

We note that we received a submission from Water NSW that supported our draft decision to have an ECM for operating expenditure only.¹¹⁶

Incentive payment mechanisms with Sydney Water

In the context of this review, an incentive payment mechanism between Water NSW and Sydney Water involves Sydney Water agreeing to pay Water NSW an incentive payment if Water NSW is able to deliver bulk water in a way (or to a quality) that is expected to generate an overall cost saving for Sydney Water. For example, if Water NSW is able to deliver higher quality bulk water to Sydney Water, this could result in lower water treatment costs for Sydney Water. If the benefit to Sydney Water (of lower treatment costs) is greater than the cost to Water NSW (of delivering higher quality water), there is potential for an incentive payment mechanism between the two parties to deliver this saving.

In its pricing proposal, Water NSW reported that it was working with Sydney Water to agree the terms of a new Raw Water Supply Agreement (RWSA) that will include a performance payment mechanism focused on Water NSW's asset availability and configuration activities. Water NSW also reported that it is collaborating with Sydney Water to establish appropriate baseline metrics for the future incorporation of water quality based performance mechanisms and/or payments. Water NSW expects to finalise and notify IPART of the outcomes of the new RWSA in 2019-20.¹¹⁷

¹¹⁶ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 15-16.

¹¹⁷ Water NSW, *Pricing Proposal to IPART*, July 2019, p 54.

In our 2016 Water NSW Greater Sydney price review, we decided to defer regulating prices for the Annual Water Quality Incentive Payment (AWQIP) scheme¹¹⁸ in order to allow Water NSW and Sydney Water to implement the scheme and investigate the potential for the scheme to deliver cost savings during the 2016 determination period.¹¹⁹ We understand that the AWQIP scheme was not implemented over the 2016 determination period and is now subject to negotiations between Water NSW and Sydney Water as part of the new RWSA.

We support the rationale for incentive payment mechanisms between Water NSW and Sydney Water on the basis that they have the potential to unlock and deliver efficiency savings while not exposing Sydney Water's customers (or Water NSW's other customers) to downside risk (ie, there is no risk of these mechanisms leading to higher prices).

This decision allows Water NSW and Sydney Water to negotiate and implement payments associated with these mechanisms during the 2020 determination period. We strongly encourage Water NSW and Sydney Water to work together to investigate whether these mechanisms can deliver net cost savings which could ultimately benefit Sydney Water's customers through lower prices in future determination periods. We will monitor how these mechanisms are applied in practice over the 2020 determination period and may review them in more detail at the 2024 price review when more information is available. In its submission to the Draft Report, Water NSW indicated that the RWSA is still being negotiated. Water NSW also indicated its support to defer price regulating the incentive payment scheme.¹²⁰

¹¹⁸ Included in the current RWSA between Water NSW and Sydney Water.

¹¹⁹ IPART, Review of prices for Water NSW Greater Sydney, Final Report, June 2016, p 60.

¹²⁰ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 72.

9 Prices

Our pricing decisions are based on our decisions on the notional revenue requirement (NRR), price structures and forecast water sales for the 2020 determination period. We set prices to recover Water NSW's NRR by allocating the NRR between its customers (ie, Sydney Water, the three councils and its 59 raw and unfiltered customers).

The sections below summarise our decisions and prices for water services provided by Water NSW to its key customer groups. We then discuss the reasons for our decisions in more detail.

9.1 Summary of our decisions on Water NSW's prices

We have decided to introduce a dynamic water usage price, which means that usage prices for all Water NSW customers in Greater Sydney will change depending on whether Water NSW is operating under non-drought or drought conditions.

We use the term 'drought' as a shorthand for when dam levels fall below 60% and will trigger the need for customers to support the system-wide water supply in times of low rainfall by reducing their usage. This may include additional water conservation measures such as water restrictions.

This means, that when dam levels are above 60%, the non-drought forecast will apply and this forecast is used to set the non-drought usage prices. When dam levels fall below 60%, the drought forecast will apply and this is used to set the drought usage price. Drought usage prices will continue to apply until dam levels go above 70%.

- ▼ For Sydney Water, we decided to accept Water NSW's proposal to maintain its current 80:20 fixed to usage price structure (ie, 80% of Water NSW's target revenue is recovered from its fixed charges and 20% from its usage charges). We then applied this price structure to set Water NSW's maximum bulk prices to Sydney Water over the 2020 determination period.
- For councils, raw and unfiltered water customers, we decided to decrease these customers' prices by the same percentage reduction as Sydney Water's prices.

In summary, our water prices for all customers fall by around 8.3% (including the effects of inflation) from 1 July 2020 compared to current prices (ie, 2019-20). These prices will be adjusted by inflation on 1 July of each subsequent year of the 2020 determination period. These prices are about 10.4% lower than the prices proposed by Water NSW for all customers. A summary of our prices are outlined in Table 9.1.

Table 9.1 Summary of prices

		2019-20 (\$2019-20)	2020-21 (\$2020-21)	2021-22 (\$2020-21)	2022-23 (\$2020-21)	2023-24 (\$2020-21)	% change
Sy	/dney Water						
▼	Fixed charge (\$million/year)	173.5	160.6	160.6	160.6	160.6	-7.4%
•	Usage (non-drought) (\$/ML) ^a	78.8	69.7	69.7	69.7	69.7	-11.6%
▼	Usage (drought) (\$/ML) a,b	na	83.3	83.3	83.4	83.4	na
w	ingecarribee Shire						
▼	Fixed charge (\$/year)	1,104,880	1,013,214	1,013,214	1,013,214	1,013,214	-8.3%
▼	Usage (non-drought) (\$/ML)	57.6	52.8	52.8	52.8	52.8	-8.3%
▼	Usage (drought) (\$/ML) ^b	na	63.2	63.2	63.2	63.2	na
Sł	noalhaven						
▼	Fixed charge (\$/year)	20,716	18,998	18,998	18,998	18,998	-8.3%
▼	Usage (non-drought) (\$/ML)	57.6	52.8	52.8	52.8	52.8	-8.3%
▼	Usage (drought) (\$/ML) ^b	na	63.2	63.2	63.2	63.2	na
Go	oulburn Mulwaree						
▼	Fixed charge (\$/year)	24,860	22,797	22,797	22,797	22,797	-8.3%
▼	Usage (non-drought) (\$/ML)	57.6	52.8	52.8	52.8	52.8	-8.3%
▼	Usage (drought) (\$/ML) ^b	na	63.2	63.2	63.2	63.2	na
Ra	aw water customers						
▼	Fixed charge (\$/year)	-	-	-	-	-	-
▼	Usage (non-drought) (\$/ML)	730.0	669.4	669.4	669.4	669.4	-8.3%
▼	Usage (drought) (\$/ML) ^b	na	801.3	801.3	801.3	801.3	na
Ur	nfiltered water customers ^c						
▼	Fixed charge (\$/year)	111.14	101.92	101.92	101.92	101.92	-8.3%
▼	Usage (non-drought) (\$/ML)	1,270.00	1,164.64	1,164.64	1,164.64	1,164.64	-8.3%
▼	Usage (drought) (\$/ML) ^b	na	1,393.99	1,393.99	1,393.99	1,393.99	na

a These usage charges to Sydney Water assume SDP and the Shoalhaven Transfer Scheme are not operating.

b Water NSW did not propose drought prices so there is no comparable drought usage charge.

c For unfiltered customers, there are separate fixed charges for 20mm, 25mm, 30mm, 32mm, 40mm, 50mm, 80mm, 100mm, 150mm and 200mm meter connections. We only present the fixed charges for 20mm connections in this table.

Note: The percentage change is a comparison between prices in 2019-20 and 2020-21. Prices will increase by the actual inflation for each of year from 2021-22 to 2023-24.

Source: IPART calculations.

9.2 To introduce dynamic water usage pricing

We have decided to introduce dynamic water usage pricing (ie, a standard water usage price during non-drought conditions and a higher usage price if and when drought occurs) over the 2020 determination period for all of Water NSW's customers in Greater Sydney (ie, Sydney Water, the three councils, and raw and unfiltered water customers).

Our decisions are:

- 31 To set two usage prices for all customers based on two water sales scenarios:
 - Non-drought water sales, and
 - Drought water sales.

- 32 The drought usage prices would commence when dam levels fall below 60% and remain in place until dam levels reach 70%. Otherwise, non-drought prices would apply.
 - The trigger for drought usage prices is determined on a rolling daily basis, lagged by one month. That is, drought usage prices would begin 31 days after dam levels fall below 60% and remain in place until 31 days after dam levels are above 70%.

9.2.1 Reasons for our decisions

The purpose of having dynamic water usage prices is to recognise that during drought water sales are expected to fall and Water NSW's bulk water price will need to increase in order for it to recover its efficient cost.

During drought conditions, we expect water sales for Water NSW would decrease in response to water restrictions and price elasticity of demand. In Chapter 7, we have modelled two forecast sales scenarios for non-drought and drought conditions. Our drought sales forecast accounts for an approximate demand reduction of about 17% and this forecast applies when dam levels are below 60% and remains until dam levels go above 70%.

Our decisions to have different usage prices for all customers in non-drought and drought conditions is designed to allow Water NSW to recover its efficient costs in both non-drought and drought conditions. Water NSW's costs are predominantly fixed. This means that a reduction in water sales during drought will result in lower revenues that are not offset by lower costs. Therefore, in order to achieve full efficient cost recovery, the usage price must increase in drought to allow Water NSW to continue to recover its efficient costs from the lower volume of water sales. Consequently, the usage price will increase by about 19.7% during drought.

Stakeholders generally supported our draft decision to introduce dynamic usage prices.¹²¹ However, we note that Flow Systems considers that flexible usage prices do not incentivise optimal infrastructure and capital decisions if the cost of drought response measures are not included in the base (non-drought) prices.¹²² We note that we have set the dynamic usage prices for Water NSW Greater Sydney to recover the same efficient costs under both non-drought and drought conditions (ie, Water NSW's efficient costs are assumed to be the same under both non-drought and drought conditions).

If Water NSW's efficient costs were expected to increase during drought, there would be a strong case to reflect these higher drought related costs in the drought usage price (rather than the non-drought price), as we have done in the concurrent 2020 Sydney Water and Hunter Water reviews. This is because we consider cost reflective pricing promotes efficient usage and investment decisions. This will also ensure that the utility recovers its efficient costs during drought, and send a price signal to customers during times of relative water scarcity.

¹²¹ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 70-71. Public Interest Advocacy Centre, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 3. Flow Systems Pty Ltd, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 2.

¹²² Flow Systems Pty Ltd, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 2.

Our dynamic usage water prices for Water NSW have been designed to operate in a consistent way to Sydney Water's dynamic usage prices to its customers.

For Water NSW's council customers, we note that it would be up to councils to determine if, and how, they factor this into their prices to their end-use customers. For raw and unfiltered water customers (which are end-use customers), having higher usage prices during drought will provide a direct price signal of water scarcity.

9.2.2 A '60/70% trigger' for moving between non-drought and drought prices

We have decided to implement a '60/70 trigger' for moving between the non-drought and drought usage prices, consistent with that applied for drought forecast sales (see Chapter 7).

In our Draft Report, we proposed to implement the trigger for dynamic usage prices based on the dam levels for the Greater Sydney catchment¹²³ on the last week of the previous billing quarter. That is, if dam levels fall below 60% in the last week of the previous quarter, drought usage prices will apply for the next quarter. Drought usage prices would continue to apply until dam levels are above 70% in the last week of the quarter. Therefore, the minimum length of drought pricing period would be three months, and drought usage prices could remain in place for a maximum of three months after dams returned to above 70%.

In its submission to our Draft Report, Water NSW suggested including water restrictions as an additional trigger for moving between non-drought and drought usage prices.¹²⁴ We considered Water NSW's suggestion but decided to have a single trigger for dynamic usage pricing. We consider having triggers for both water restrictions and dam levels increases the complexity for customers. This is because the timing and level of water restrictions may vary between different customers (ie, water restrictions for Sydney Water and its end-use customers may be in place but these restrictions might not apply to councils and its raw and unfiltered customers).

However, we have amended the approach for how the trigger for dynamic usage prices would apply. We have decided to have a rolling daily pricing trigger, lagged by one month:

Drought usage prices will be in place 31 days after dam levels fall below 60%. The drought usage price would continue to apply until 31 days after dam levels are above 70%, at which the non-drought usage price would apply.

We consider our revised approach is simple to understand, more precise and reduces the risk that drought usage prices apply for longer than the drought period. It also provides Water NSW with sufficient time to notify customers of the change in prices and implement the change in its billing system.

¹²³ The term 'dam levels' reflects the average water storage of all dams and reservoirs across Water NSW's Greater Sydney Catchment water system.

¹²⁴ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 70-71.

Figure 9.1 illustrates how the dynamic usage prices will change in response to changing dam levels.





9.3 Water NSW's prices to Sydney Water

Sydney Water accounts for about 99% of Water NSW's bulk water sales and revenue. Water NSW's prices to Sydney Water includes:

- A fixed charge component (\$ per annum), and
- A usage charge (\$ per ML of water supplied).

There are three key factors that affect the value of the usage charge component:

- 1. Two water sales scenarios (as discussed in Chapter 7):
 - a) Non-drought water sales scenario
 - b) Drought water sales scenario
- 2. The supply of water from SDP to Sydney Water as per the Metropolitan Water Plan (as discussed in Chapter 8)
- 3. The transfer of water from the Shoalhaven system by Water NSW to supplement water supply in Sydney as per the Metropolitan Water Plan (as discussed in Chapter 8).

Figure 9.2 outlines the two key components of Water NSW's prices to Sydney Water and key factors affecting usage prices. The following sections step-through our decisions for each of the components and factors.



Figure 9.2 Components and factors that affects Water NSW's prices to Sydney Water

Our decisions are:

- 33 To maintain the price structure of 80:20 fixed to usage ratio for Sydney Water.
- 34 To adopt a formula based approach to calculate the usage charge to Sydney Water (as defined in Box 9.1) to reflect either non-drought or drought water sales scenarios, all possible operational modes of the SDP, and additional costs that could be incurred due to the transfer of water from the Shoalhaven system to Sydney.
- 35 To set Water NSW's maximum fixed charge to Sydney Water over the 2020 determination period as outlined in Table 9.3.

The rationale for our decisions is explained in the sections below.

9.3.1 Maintain the 80:20 fixed to usage price structure

We have decided to accept Water NSW's proposal to maintain an 80:20 fixed to usage ratio for its bulk water prices to Sydney Water. This price structure broadly reflects Water NSW's underlying cost structure, although it's likely that a higher proportion of its costs (than 80%) are fixed.

As its underlying cost structure is predominantly fixed, we initially considered moving to a higher fixed to usage ratio. In our Issues Paper, we asked for stakeholder comments on potentially moving to a higher fixed and lower usage price structure. Stakeholders had mixed views on this issue: some preferred we maintain the current structure; some supported moving to a 90:10 price structure; and some supported a lower fixed and higher usage structure.¹²⁵ Water NSW's response to our Issues Paper noted that while moving towards a

¹²⁵ Water NSW, Submission to the IPART's Issues Paper – Review of prices for Water NSW Greater Sydney services from 1 July 2020, October 2019, p 22. Sydney Water, Submission to the IPART's Issues Paper – Review of prices for Water NSW Greater Sydney services from 1 July 2020, October 2019, p 6. Goulburn-Mulwaree Council, Submission to the IPART's Issues Paper – Review of prices for Water NSW Greater Sydney services from 1 July 2020, October 2019, p 1.

higher fixed to usage ratio would provide greater revenue certainty, it did not propose changing its existing price structure. ¹²⁶

In its submission to our Draft Report, Water NSW agreed with the 80:20 price structure if we accepted its recommendation to introduce a demand volatility adjustment mechanism (DVAM). If we did not accept its recommendation to have a DVAM, it proposed moving to a 90:10 price structure.¹²⁷

We consider that 90:10 fixed to usage pricing structure is more reflective of Water NSW's underlying cost structure. However, given stakeholder feedback, which generally does not support moving to a higher fixed to usage ratio, we have decided to maintain the existing 80:20 fixed to usage price structure. We have also maintained our draft decision not to introduce a DVAM (as discussed in Chapter 8).

9.3.2 Approach to calculating usage prices

We have modelled prices to recover the NRR across Water NSW's customer base. After we have determined the relevant share of revenue to be recovered from Sydney Water's prices, we applied the 80:20 fixed to usage ratio to determine how much will be recovered through the fixed water charge and how much will be recovered through the usage charges.

For usage prices, we adopted a usage pricing formula that will apply over the 2020 determination period as defined in Box 9.1

¹²⁶ Water NSW, Submission to the IPART's Issues Paper – Review of prices for Water NSW Greater Sydney services from 1 July 2020, October 2019, p 22.

¹²⁷ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 68-69.

Box 9.1 Usage price for Sydney Water (\$/ML)

$$\frac{20\% \times TR}{FS - Q_{SDP}} + \frac{CST}{AS}$$

Where:

- ▼ **TR** is the target revenue requirement from prices to be recovered from all large customers ^a for the relevant month (as listed in the determination)
- ▼ **FS** is forecast water sales (ML) to all large customers for the relevant month (as listed in the determination). There are two forecast water sales (as discussed in Chapter 7):
 - Non-drought water sales as set out in Table 7.1 in Chapter 7, and
 - Drought water sales as set out in Table 7.1 in Chapter 7
- ▼ **Q**_{SDP} is the lesser of:
 - The SDP Total Monthly Plant Capacity; or
 - The total volume of water supplied by SDP to all large customers in the relevant month
- AS is the actual water sales (ML) to all Large Customers by Water NSW in the month, to the nearest whole ML; and
- CST (cost of Shoalhaven transfer for the month) is the amount calculated as per Box L.1 in Appendix L.
- a Currently Sydney Water is Water NSW's only large customer.

Our decision aims at ensuring Water NSW's receives sufficient revenue from its usage charges to recover its efficient costs. We have done this by:

- Using dynamic usage pricing to consider two water sales scenarios (as defined by FS in Box 9.1). This is to recognise the impact of reduced water supply in Water NSW's dams (ie, dam levels) on water restrictions, demand and sales.
- Having an SDP adjustment to recognise the reduction in water sales from Sydney Water when SDP is turned on (as defined by Q_{SDP} in Box 9.1). This adjustment includes all mandatory supply of water from SDP to Sydney Water.
- Having a cost pass-through for the Shoalhaven Transfer Scheme (as defined by the second part of the formula in Box 9.1) to recover the efficient cost of this scheme under the requirements of the Metropolitan Water Plan.

Under our decision, usage charges will increase under drought conditions and when SDP is in operation. However, the total bill that Sydney Water pays to Water NSW would be the same regardless, because:

- The fixed component of the bill would be the same under all scenarios
- The usage component of the bill would be the same (to the extent that forecast water sales are the same as actual water sales). This is because lower water sales volumes would offset the higher usage charges so the revenue generated from the usage charge would be the same (ie, 20% of the revenue requirement for a relevant period would be recovered from usage charges).

However, under our decision, the total bill that Sydney Water pays to Water NSW would increase if the Shoalhaven Transfer Scheme is in operation (because these are additional costs that would be passed thought to Sydney Water via the usage charge). For more details on the bill impacts of prices refer to Section 10.2.

To apply the usage price formula to Sydney Water, we have established the Target Revenue (TR) from prices to be recovered from Sydney Water, as shown in Table 9.2.

Table 9.2Target revenue to be recovered from Sydney Water (\$millions, nominal in
2019-20 then \$2020-21)

	2019-20	2020-21	2021-22	2022-23	2023-24
Water NSW's TR from prices	219.6	201.5	202.0	202.4	203.0
% of TR to be recovered from Sydney Water prices	99.5%	99.2%	99.2%	99.2%	99.2%
TR to be recovered from Sydney Water	218.5	199.9	200.4	200.8	201.4

a Note: TR is the same as the notional revenue requirement. **Source:** IPART calculations.

Adjusting usage prices when SDP is in operation

The SDP charging formula allows Water NSW to recover the approved notional revenue requirement by adjusting the forecast volume of water by the amount of water supplied by SDP in the month. If SDP is operating at capacity, the usage charge will increase up to \$13.4 per ML for non-drought conditions and \$19.9 per ML for drought conditions. For more details on our decision on the SDP charging mechanism refer to Section 8.2.

Adjusting usage prices when the Shoalhaven transfer scheme is in operation

The cost pass-through mechanism allows Water NSW to recover costs (ie, in addition to the approved notional revenue requirement) incurred when transferring water from Shoalhaven to Sydney. The usage charge increase will depend on how much water is transferred through this scheme. For more details on our decision on the Shoalhaven cost pass-through mechanism refer to section 8.1.

9.3.3 Our maximum prices for Sydney Water

Table 9.3 presents our prices for Sydney Water and includes scenarios when SDP and the Shoalhaven Transfer Scheme are in operation. Overall, our prices for Sydney Water are around 8.3% lower than current prices (ie, in 2019-20).

- For fixed charges, our prices are approximately 7.4% lower than current prices.
- For non-drought usage charges, our prices are approximately 11.6% lower than current prices.
- For drought usage charges, Water NSW did not propose drought pricing and therefore there is no directly comparable price. However, we note that our drought usage charges are approximately 5.7% higher than current prices.

 The drought usage price is approximately 19.7% higher than the non-drought usage price for Sydney Water. This higher usage price is expected to recover the same amount of revenue from the forecast lower volume of water sales.

	2019-20	2020-21	2021-22	2022-23	2023-24	% change
Fixed charge (\$million/year)	173.5	160.6	160.6	160.6	160.6	-7.4%
 Non-drought usage charge (\$/ML) assuming: SDP is not operational Shoalhaven Transfer Scheme is not operational 	78.8	69.7	69.7	69.7	69.7	-11.6%
 Non-drought usage charge (\$/ML) assuming: SDP is operational^a Shoalhaven Transfer Scheme is not operational 	na	83.1	82.9	82.7	82.6	na
 Drought usage charge (\$/ML) SDP is not operational Shoalhaven Transfer Scheme is not operational 	na	83.3	83.3	83.4	83.4	na
 Drought usage charge (\$/ML) SDP is operational^a Shoalhaven Transfer Scheme is not operational 	na	103.3	103.0	102.8	102.6	na
 Drought usage charge (\$/ML) SDP is operational^a Shoalhaven Transfer Scheme is operational^b 	na	140.9	140.1	139.4	138.6	na

Table 9.3 Maximum prices for Sydney Water (\$, nominal in 2019-20 then \$2020-21)

a The daily plant capacity of SDP is 250ML. This usage charge does not take into account the potential expansion of SDP.

When the Shoalhaven Transfer Scheme is turned on, the usage charge will increase by the efficient cost of the Shoalhaven transfers divided by the actual sales for that month. This is an indicative estimate based on an energy price of \$100/MWh, an energy requirement of 2MWh/ML and an assumed 70,000 ML transferred through the Shoalhaven scheme per year.
 Note: The percentage change is a comparison between prices in 2019-20 and 2020-21. Prices will increase by the actual inflation for each of year from 2021-22 to 2023-24.

Source: IPART calculations.

9.4 Water NSW's prices to council customers

Water NSW has three council customers (ie, Wingecarribee Shire Council, Shoalhaven City Council and Goulburn Mulwaree Council) which account for most of the remaining 1% of its bulk water sales and revenue.

Our decisions are:

- 36 To apply a uniform percentage decrease to prices for councils and its other customers based on the price decrease determined for Sydney Water.
- 37 To set Water NSW's maximum bulk water prices to councils over the 2020 determination period as outlined in Table 9.4.

9.4.1 To apply a uniform percentage decrease to prices

We have accepted Water NSW's proposal to apply a uniform percentage change to prices for council customers based on the price reduction determined for Sydney Water. This means that the councils' maximum fixed and usage prices will decrease (by around 8.3% compared to current prices) in line with the overall decrease for bulk water prices to Sydney Water.

We recognise that accepting Water NSW's proposed approach means that the council prices are not derived from cost allocations based on each council's respective water sales and assets that supply water to it.

We have compared the forecast sales used in the 2016 Determination to the forecast sales volumes for the 2020 determination period. We found that for Wingecarribee Shire and Shoalhaven City councils, the sales forecasts for the 2020 determination period were significantly higher and for Goulburn Mulwaree Council the sales forecasts for the 2020 determination period were significantly lower than those forecast in the 2016 determination period. Based on the three councils' respective forecasts, it is likely that if we were to recalculate councils' prices, prices may vary significantly resulting in price instability.

Other than updated sales forecasts, we do not have robust cost information to determine the cost of the assets supplying water to the councils in order for us to recalculate council prices for the 2020 determination period. In the absence of robust cost information to recalculate councils prices, we consider Water NSW's proposed approach to apply a uniform percentage to councils' prices is appropriate. However, we intend to review the cost allocation and sales volumes for each council and the impact on council prices at the next determination period.

Water NSW proposed a uniform reduction in both service charges and usage charges for Councils. This proposal has the effect of moving away from the existing 80:20 fixed to variable price structure. Since our decision is to accept Water NSW's proposal to apply a uniform reduction to council prices in line with the decrease for bulk water prices to Sydney Water, this will result in a slight movement away from the 80:20 fixed to usage pricing structure for councils.

9.4.2 Our maximum prices for council customers

Table 9.4 presents our prices for Water NSW's council customers.

- Since we are applying a uniform price reduction, fixed and non-drought usage charges are around 8.3% lower than current prices.
- Water NSW did not propose drought pricing and therefore there is no directly comparable price. We note that our drought usage prices are approximately 9.8% higher than current prices.
- The drought usage price is approximately 19.7% higher than the non-drought usage price for councils. This higher usage price is expected to recover the same amount of revenue from the forecast lower volume of water sales.

Table 9.4	Maximum	prices	for	council	customers
-----------	---------	--------	-----	---------	-----------

		2019-20	2020-21 to 2023-24	
	Council	(\$2019-20)	(\$2020-21)	% change
Our decision				
Fixed charge (\$/year)	Wingecarribee Shire	1,104,880	1,013,214	-8.3%
Fixed charge (\$/year)	Shoalhaven City	20,716	18,998	-8.3%
Fixed charge (\$/year)	Goulburn-Mulwaree	24,860	22,797	-8.3%
Non-drought usage charge (\$/ML) All councils	57.6	52.8	-8.3%
Drought usage charge (\$/ML) ^a	All councils	na	63.2	na

a Water NSW did not propose drought prices so there is no comparable drought usage charge. **Source:** IPART calculations.

9.5 Water NSW's prices to raw water and unfiltered water customers

Our decision is

38 To set Water NSW's maximum prices to raw and unfiltered water customers over the 2020 determination period as outlined in Table 9.5.

Our decision is to decrease prices for raw and unfiltered water customers to align with the overall reduction in prices for Sydney Water. This means that prices for raw and unfiltered water customers are around 8.3% lower than current prices. Revenue from raw and unfiltered water customers accounts for 0.1% of Water NSW's target revenue.

Similar to Water NSW's council customers, the drought usage price is approximately 19.7% higher than the non-drought usage price for raw and unfiltered customers and is approximately 9.8% higher than current prices. This higher usage price is expected to recover the same amount of revenue from the forecast lower volume of water sales.

	2019-20 (\$2019-20)	2020-21 to 2023-24 (\$2020-21)	% change
Raw water customers			
Fixed charge (\$/year)	-	-	-
Non-drought usage charge (\$/ML)	730.0	669.4	-8.3%
Drought usage charge (\$/ML) ^a	na	801.3	na
Unfiltered water customers ^b			
Fixed charge (\$/year)	111.14	101.92	-8.3%
Non-drought usage charge (\$/ML)	1,270.00	1,164.64	-8.3%
Drought usage charge (\$/ML) ^a	na	1,393.99	na

 Table 9.5
 Maximum prices for raw and unfiltered water customers

a Water NSW did not propose drought prices so there is no comparable drought usage charge.

b This charge is for customers with 20mm meters, customers with larger meters will face proportionately higher charges based on the relative size of their meter.

Source: IPART calculations.

10 Impacts of prices

This chapter outlines the impact of our pricing decisions on Water NSW's customers. It also discusses the implications of our pricing decisions on other matters we must consider under section 15 of the IPART Act (see Appendix A), which include impact on:

- Water NSW's service standards
- Water NSW's financial viability
- NSW Government's Consolidated Fund
- general inflation, and
- the environment.

This chapter presents our findings on bill impacts in \$2020-21. 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 prices and customer bills in the current 2019-20 period. 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, from 1 July 2020, and then allows Water NSW to adjust these prices by changes in consumer price index (CPI) from 2021-22 onwards.

10.1 Summary of our impact analysis

Overall, we consider that our 2020 Price Determination for Water NSW Greater Sydney provides balanced outcomes for Water NSW, its customers and the broader community. Figure 10.1 summarises the impact of our review across a broad range of factors, which we discuss in more detail in the sections below.





10.2 Impacts on Water NSW's customers

In reaching our pricing decisions, we consider the impacts of our prices on Sydney Water (and its end-use customers), the three councils and raw water and unfiltered water customers.

In summary, we expect the following customer impacts of our pricing decisions:

- Under our prices and assuming forecast water sales are constant based on 2019-20 water sales volumes (see Table 10.1),¹²⁸ bills fall by 8.3% from 1 July 2020 for all customers. The decline in bills is mostly driven by falls in interest rates since the 2016 price review.
- If we calculate bills using non-drought forecast water sales over the 2020 determination period (see Table 10.2), bills fall within a range of 6.5% to 13.6% from 2019-20 to 2023-24 for all customers. This bill impact analysis takes into account the increasing trend in forecast water sales over the determination period (see Chapter 7).
- Sydney Water is Water NSW's largest customer, accounting for about 99% of Water NSW's NRR. The prices that Water NSW charges Sydney Water will have a small impact on the bills of Sydney Water's customers. Under our prices, the cost of Sydney Water's bulk water purchases from Water NSW account for about 7% of Sydney Water's total revenue requirement¹²⁹ over the 2020 determination period (see Table 10.3).
- Our prices for Water NSW's bulk water supply to Sydney Water will help reduce the bills of Sydney Water's customers (ie, end-use customers). Table 10.3 shows how our pricing decisions for Water NSW Greater Sydney will contribute to a reduction in end-use customer bills of around \$9 per year in 2020-21 (ie, the Water NSW component of a typical end-use residential customer's bill is expected to decrease from around \$88 in 2019-20 to around \$79 in 2020-21).

	Current bills 2019-20	Bills from 1 July 2020	Change ^a
Customers	\$2019-20	\$2020-21	%
Sydney Water (\$)	218,453,443	200,340,163	-8.3%
Wingecarribee Council (\$)	1,455,762	1,334,986	-8.3%
Shoalhaven City Council (\$)	26,817	24,592	-8.3%
Goulburn-Mulwaree Council (\$)	29,447	27,004	-8.3%
Raw water customers ^b (\$)	579	531	-8.3%
Unfiltered water customers ^c (\$)	3,636	3,334	-8.3%

Table 10.1 Bill impacts of prices for Water NSW's customers (assuming forecast water sales are constant based on 2019-20 water sales volumes)

^a The percentage change includes actual inflation from 2019-20 to 2020-21. From 2021-22 onwards, bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in real \$2020-21 for four years, from 1 July 2020, and then allows Water NSW to adjust these prices by changes in CPI from 2021-22 onwards.

b Bills for raw water customers are based on average consumption.

c Bills for unfiltered water customers are based on average consumption and a 20mm meter connection.

¹²⁸ We have assumed forecast water sales over the determination period are held constant based on 2019-20 water sales volumes. This is to estimate the bill impact based on change in prices only.

¹²⁹ This is based on non-drought water sales and pricing.

Source: IPART analysis using our prices for the 2020 determination period and assuming forecast water sales are constant based on 2019-20 water sales volumes to calculate bills.

	Current bills 2019-20 (a)	2020-21	2021-22	2022-23	2023-24 (b)	Change ^a from (a)
Customers	\$2019-20	\$2020-21	\$2020-21	\$2020-21	\$2020-21	to (b)
Sydney Water (\$)	218,453,443	199,939,850	200,393,510	200,841,627	201,401,870	-7.8%
Wingecarribee Council (\$)	1,455,762	1,341,424	1,347,969	1,354,671	1,361,532	-6.5%
Shoalhaven City Council (\$)	26,817	24,697	24,803	24,909	25,014	-6.7%
Goulburn- Mulwaree Council (\$)	29,447	25,436	25,436	25,436	25,436	-13.6%
Raw water customers ^b (\$)	579	531	531	531	531	-8.3%
Unfiltered water customers ^c (\$)	3,636	3,334	3,334	3,334	3,334	-8.3%

Table 10.2	Bill impacts	of prices	for Water	NSW's d	customers	(using f	orecast	non-drou	ght
	water sales)								

a The percentage change includes actual inflation from 2019-20 to 2020-21. From 2021-22 onwards, bills will increase by the rates listed in this table plus the effects of inflation. This is because IPART's determination sets prices in real \$2020-21 for four years, from 1 July 2020, and then allows Water NSW to adjust these prices by changes in CPI from 2021-22 onwards.

b Bills for raw water customers are based on average consumption.

^c Bills for unfiltered water customers are based on average consumption and a 20mm meter connection. **Source:** IPART analysis using our prices for the 2020 determination period and using non-drought forecast water sales to calculate bills.

Table 10.3 Impact of bulk water costs on a typical Sydney Water customer bill (nondrought demand and pricing scenario)

	2019-20	2020-21	2021-22	2022-23	2023-24
	\$2019-20	\$2020-21	\$2020-21	\$2020-21	\$2020-21
Residential: 20mm meter and 200kL pa					
Water and sewerage bill, SWC customer (\$)	1,133.54	1,053.78	1,053.78	1,053.78	1,053.78
Water NSW component of total bill (\$)	87.98	79.41	78.58	77.78	76.83
Water NSW component of total bill (%)	7.8%	7.5%	7.5%	7.4%	7.3%
Non-residential: 40mm meter and 5800kL pa					
Water and sewerage bill, SWC customer (\$)	19,654.24	20,626.74	20,626.74	20,626.74	20,626.74
Water NSW component of total bill (\$)	2,131.11	2,138.53	2,115.28	2,092.91	2,067.26
Water NSW component of total bill (%)	10.8%	10.4%	10.3%	10.1%	10.0%

Notes: Totals may not add due to rounding. Bills are calculated based on 'non-drought' water demand scenario and pricing. In addition, under our determination prices, Sydney Water would recover about 4% of its water service costs from the fixed charge and 96% from the usage charge. We have assumed that it would recover bulk water costs in the same proportions, ie, 4% from the fixed charge and 96% from the usage change. This means that, for a given meter size, larger users would pay a higher proportion of the bulk water costs than smaller users.

Source: IPART analysis using our prices for the 2020 determination period.

10.3 Impacts on service standards

Under our 2020 Determination, we consider that the prices we have determined will allow Water NSW to continue to meet its obligations in relation to service standards.

Water NSW is licensed under the *Water NSW Act 2014* (the Water NSW Act). The Water NSW Act requires Water NSW to hold an operating licence that is issued by the Minister and reviewed annually by IPART. This licence contains a number of standards that Water NSW must meet, or risk facing penalties associated with a breach of licence conditions. Water NSW is also required to establish arrangements with Sydney Water under the Water NSW Act, which include the standard of quality of the water supplied, the continuity of water supply and the maintenance of adequate reserves of water by Water NSW. These arrangements are included in a Raw Water Supply Agreement (RWSA) with Sydney Water.¹³⁰

Water NSW's pricing submission identified the expenditure required for it to meet its service standard obligations. In its review of Water NSW's operating and capital expenditure, Atkins noted that Water NSW's performance generally met its required service standards during the 2016 determination period.¹³¹

Atkins has recommended an efficient level of expenditure for the 2020 determination period, which facilitates Water NSW continuing to meet its service standards. For example, Atkins supports a modest increase in Water NSW's water quality science expenditure, enabling it to comply with its new operating licence requirement.¹³² We have accepted Atkins' recommendations, and discuss them further in Chapters 4 and 5.

10.4 Impacts on Water NSW's financial sustainability

When setting prices, we consider the financial sustainability (or 'financeability') 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. The financeability test is based on the approach outlined in the 2018 Review of financeability test (2018 Financeability Review).¹³³

We assessed Water NSW'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 Water NSW's financial ratios compared to our target ratios.

Figure 10.2 provides the financeability test results for this price review. Our financeability analysis is only for the benchmark test. Water NSW did not present financeability analysis in

¹³⁰ The agreement covers raw water quality management as well as flow measurement, information management, operational changes, system configuration, strategic planning and maintenance planning. The maximum values of colour and turbidity are defined in the RWSA. These are important to define treatment requirements and drive costs to Sydney Water. There is then an obligation that Water NSW and Sydney Water work together to manage operating costs efficiently.

¹³¹ Atkins Cardno, *Water NSW expenditure and demand forecast review, Final Report*, March 2020, p 7.

¹³² Atkins Cardno, Water NSW expenditure and demand forecast review, Final Report, March 2020, p 90.

¹³³ IPART, *Review of our financeability test*, November 2018.

its pricing proposal and we do not have sufficient information on Water NSW's actual cost of capital to undertake the actual test in a meaningful way.





Note: The black lines on the above figure refer to benchmark targets for each ratios. The blue lines refer to our benchmark test results.

Source: IPART analysis.

Overall, we did not identify a financeability concern for Water NSW that needs to be addressed in this review. It is our view that Water NSW can remain financially sustainable and continue to provide sustainable services over the determination period.

The following sections outlines our key findings. Refer to Appendix O for full details.

There is significant headroom in ICR

Under the benchmark test, Water NSW is forecast to have real interest coverage ratios (ICR) well above target, ie an average of 4.0x compared to a target of 2.2x over the 2020 determination period. This indicates that Water NSW could still comfortably meet its interest payments, even if interest rates increase significantly over the determination period, under our benchmark assumptions.

Funds From Operations (FFO) over Debt is slightly below the target level

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). Water NSW is forecast to have an average FFO over Debt of 6.7%, which is slightly below the 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 Water NSW 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). In particular, we have

allowed a higher level of capital expenditure in this price review than in the 2016 price review for Water NSW Greater Sydney. In Chapter 5, we explained our decision to allow \$373 million of capital expenditure over the 2020 determination period, which is \$93 million higher than the ex-post efficient level allowed over the 2016 determination period.

We do not consider that Water NSW's FFO over Debt ratios represent a financeability concern for the 2020 determination period, for a combination of reasons:

- The ICR ratios indicate that Water NSW is expected to generate cash flows that will 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 Water NSW and other water utilities further manage/mitigate their cost and revenue risks (discussed below).

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 Water NSW'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 its long term financial sustainability.

The visibility of future cash flows that is generated by the regulatory framework provides Water NSW 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 Water NSW 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 Water NSW

We have put in place a number of regulatory mechanisms that reduce financial risks to Water NSW. These include:

- Setting a price structure that closely matches the utility's cost structure, which reduces revenue risk.
- Introducing dynamic water usage pricing, which reduces 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.

- Maintaining the SDP charging mechanism, which addresses revenue risks due to reduced water sales as a result of water supply from SDP to Sydney Water during drought.
- Introducing a trailing average cost of debt approach, which addresses refinancing risk.
- Maintaining the Shoalhaven Transfer Scheme cost pass-through, which reduces cost risks as it allows efficient costs of the scheme to be passed through to customers when the scheme is in operation.

10.5 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 will fall. The extent of this fall will 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.

10.6 Implication for general inflation

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

To generate the national CPI, the Australian Bureau of Statistics (ABS) collects data on the capital-city prices of various items of household expenditure, including 'water and sewerage'. The weighting given to water and sewerage in the CPI for Sydney is 0.69 out of 100, meaning that a 1% change in the price of water and sewerage services in Sydney would result in a 0.0069% change in the CPI for Sydney, which is not large.¹³⁴

Further, the water and sewerage measure for the Sydney CPI contributes 22.0% to the national measure of water and sewerage¹³⁵, which has a weighting in the national measure of 1.03 out of 100¹³⁶. This means that a 1% change in the price of water and sewerage services in Sydney would result in a 0.0023% change in the national CPI, which is negligible.

¹³⁴ Australian Bureau of Statistics, *Information Paper: Introduction of the Consumer Price Index Weight Update,* 2019 (cat. no. 6470.0.55.002), 18 December 2019; Table 2, CPI weights, September quarter 2019; Utilities, Water and sewerage.

¹³⁵ Australian Bureau of Statistics, Information Paper: Introduction of the Consumer Price Index Weight Update, 2019 (cat. no. 6470.0.55.002), 18 December 2019; Table 3, Capital city percentage contribution to the Weighted average of eight capital cities, September quarter 2019; Utilities, Water and sewerage.

¹³⁶ Australian Bureau of Statistics, Information Paper: Introduction of the Consumer Price Index Weight Update, 2019 (cat. no. 6470.0.55.002), 18 December 2019; Table 1, CPI weights, September quarter 2019; Utilities, Water and sewerage.

With these weightings in the CPI, it would require an increase in the prices of water and sewerage services in Sydney that is much larger than under our decisions to have significant impact on either the Sydney CPI or the national CPI.

Further, considering that the cost of bulk water from Water NSW to Sydney Water is about 7% of Sydney Water's NRR, the impact of Water NSW's services on general inflation is negligible.

10.7 Implications for the environment

Under section 15 of the IPART Act, we are required to have regard to the need to maintain ecologically sustainable development by taking account of all feasible options to protect the environment.

Water NSW' environmental obligations are regulated by different environmental legislation, regulation, agreements and regulatory bodies. For example:

- Environmental management report (EMR) under its Operating Licence¹³⁷
- Water quality is regulated under its Operating Licence and RWSA
- Portfolio Risk Assessment as part of its dam safety requirements
- Catchment management as required under the Water NSW Act.

Water NSW's environmental obligations and water quality requirements require a large portion of its budget. In determining Water NSW's revenue requirement, we have ensured Water NSW can fully recover all efficient costs it incurs in meeting its environmental obligations through prices.

As an example, Atkins found that Water NSW's proposed capital expenditure for the Warragamba Dam Environmental Flows was generally prudent, and we have included this expenditure in Water NSW's revenue requirement. The purpose of this project is to improve the health of the Hawkesbury-Nepean River, by introducing a variable environmental flow regime through releases of water from Warragamba Dam.¹³⁸ See Chapter 5 and Appendix F for further details.

¹³⁷ Water NSW is required to provide IPART with an EMR annually that details its environmental objectives and targets, and programs to achieve these environmental objectives and targets.

¹³⁸ Atkins Cardno, *WaterNSW expenditure and demand forecast review, Final Report*, March 2020, pp 118-119; Atkins Cardno, *WaterNSW expenditure review – Addendum to Final Report*, February 2020, pp 5-6.

APPENDICES

A Matters to be considered by IPART

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
- 1) 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.

Section 15(1)	Report reference
a) Cost of providing the services	Chapter 6 sets out Water NSW'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, and G 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 Water NSW requires to deliver its regulated services. This is addressed throughout the report, particularly in Chapters 4 and 5
	(where we establish the efficient historical and forecast expenditure) and Chapters 9 and 10 (where we set out our pricing decisions and impacts).
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.
d) Effect on general price inflation	Chapter 10 outlines that we estimate 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 Water NSW's efficient historical and forecast expenditure. These decisions would promote greater efficiency in the supply of Water NSW's regulated services.
 f) Ecologically sustainable development 	Chapters 4 and 5 set out Water NSW's 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 10 explain how we have provided Water NSW with an allowance for a return on and of capital; and our assessment of its financeability.
 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 which Water NSW 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 Water NSW as set out in Chapter 6).
 j) Considerations of demand management and least cost planning 	Chapters 4 and 5 outline how we have assessed Water NSW's efficient historical and forecast expenditure required to deliver its regulated services at least cost. Chapter 9 outlines 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 10 considers the potential impact of our pricing decisions on Water NSW, its customers and the NSW Government (on behalf of the broader community).
 Standards of quality, reliability and safety 	Chapters 4, 5 and 10, and Appendices E, F and G detail our consideration of Water NSW's efficient historical and forecast expenditure so that it can meet the required standards of quality, reliability and safety in delivering its services.

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

B Our approach when setting prices

We set the maximum bulk water prices to recover the efficient costs that Water NSW will incur in delivering services to its customers in the Greater Sydney area. When setting prices, we balance our prices to be cost reflective (ie, customers should pay for the costs they create) to send the appropriate price signals against other factors, including customer affordability and government funding commitments.

The sections below briefly explain our review process, as well as how we approach the major elements of the price review. The key steps include:

- 1. Estimating Water NSW'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

We also provide a short summary of other recent IPART reviews that are relevant to this price review.

B.1 Comprehensive review process 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 prices stuctures, and the impacts of our decisions.

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

Our price review begins with Water NSW's pricing proposal, which it submitted to us on 1 July 2019. This review is our response to Water NSW's proposal. Water NSW proposed operating and capital expenditure, prices, and a preferred regulatory framework for the four years from 1 July 2020. This is available on our website.

Figure B.1 outlines the process undertaken by Water NSW and by us during this review. While our price setting process involves a detailed assessment of Water NSW's proposed operating expenditure and capital expenditure program, IPART does not require Water NSW to undertake certain projects during the determination period. Water NSW has flexibility to prioritise and undertake its capital expenditure program accordingly. However, we have set output measures as a starting point for measuring the efficiency of Water NSW's expenditure and it will be required to provide reasons for departing from these output measures.



Figure B.1 Our process to setting prices under a propose-respond regulatory model

B.2 Estimating efficient costs and the NRR

Our first step in determining prices is to calculate the NRR, which represents our view of the total efficient costs of providing regulated services in the GS area in each year of the determination period.

We have used a 'building-block' approach to calculate Water NSW's NRR for the GS area, which represents our view of the efficient costs for Water NSW to deliver its regulated service. Figure B.2 provides a brief explanation of each cost 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 Water NSW's prices.



Figure B.2 Building block approach to calculate the notional revenue requirement (NRR)

Note: The building block components of NRR in the figure above are not to scale and are for illustrative purposes only.

B.2.1 Operating expenditure

The allowance for operating expenditure in the building block reflects our view of the efficient level of operating costs required to deliver Water NSW'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 and 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.2.2 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 Water NSW's existing assets and capital expenditure.

Similar to operating expenditure, we have applied an efficiency test (see Box B.1) to test the 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 Regulatory Asset Base (RAB) to calculate capital-related allowances to be included in the Notional Revenue Requirement (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.
- 2. Allowance for regulatory depreciation, whereby the total cost of an asset is recovered over its life.

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 over the determination period by an efficient rate of return, which we calculate as the weighted average cost of capital (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 J.

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 Water NSW's depreciation allowance are accurate – ie, they reasonably reflect the consumption of its assets. If they are too short, today's customers will over-pay (ie, pay for future customers' consumption of the assets). If they are too long, today's customers will 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.

We discuss our decisions on regulatory depreciation in Chapter 6 with technical details in Appendix H.

B.2.3 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. This allowance reflects what Water NSW's tax liabilities would be under our regulatory settings.

Our tax allowance is not intended to recover Water NSW'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 rate¹³⁹, adjusted for the value of imputation credits (the 'gamma')¹⁴⁰, to the business's taxable income. For this purpose:

- Taxable income is the notional revenue requirement (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 assets free of charge.
- Other items such as interest expenses are based on the parameters used for the WACC, and the value of the RAB¹⁴¹ and working capital.

B.2.4 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.¹⁴² 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.

¹³⁹ We have a 30% statutory corporate tax rate.

¹⁴⁰ Under a post-tax framework, the value of franking credits (gamma) enters the regulatory decision only through the estimate of the tax liability.

¹⁴¹ The nominal cost of debt is the sum of the nominal risk-free rate and nominal debt margin.

¹⁴² IPART, *Working Capital Allowance Policy Paper*, November 2018.
B.3 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 prices. For Water NSW, the NRR reductions relate to revenue that should be shared between water customers and its shareholders.

B.3.1 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 income with customers by removing an equivalent amount from the NRR.

We discuss our decisions on revenue that should be adjusted for non-regulated income in Chapters 6, and Appendix H.

B.4 Forecasting water sales and customer numbers

A key step in our price setting process is to decide on Water NSW's forecasts for water sales and customer numbers. These forecasts are used to determine the price levels necessary to recover Water NSW's NRR. If the forecasts are too high or too low, it would lead to an underor over-recovery of the NRR.

Our decisions on forecast water sales and customer numbers are discussed in Chapter 7.

B.5 Setting prices to recover the NRR

We generally set prices to recover the utility's NRR.¹⁴³ In setting 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 Water NSW's proposed price structures, demand and price levels, 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.

¹⁴³ Before setting prices, we subtract 50% of any non-regulated revenue that Water NSW may generate, and then set prices to recover the remaining NRR. Non-regulated revenue is generally very small compared to regulated revenue.

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 Water NSW to administer, and customer preferences.

B.5.1 How we set prices?

We set prices to recover the utility's adjusted NRR in NPV terms over the determination period across its customer base. Before we set prices, we will make decisions on how long the determination period should be. Our decision on the determination period is discussed in Chapter 3.

For Water NSW, we will recover the adjusted NRR between Sydney Water, three council customers and its raw and unfiltered water customer. For each customer, we will make decisions on its price structures and price levels.

Price structures determine how the customers' share of the total efficient cost of delivering the service is split between its different price components (ie, fixed service charges that are applied regardless of water supplied and volumetric charges that are levied per megalitre (ML) of water delivered). Price levels are the actual prices that will be paid by customers to recover the NRR based on forecast demand models. Our decisions on prices are discussed in Chapter 9.

B.6 Other IPART reviews

We have identified several previous IPART reviews that are relevant to this 2020 review of prices for Water NSW Greater Sydney. These reviews are listed in Box B.4, along with a weblink to the relevant documents on our website.

Box B.4 Other related IPART reviews we consider when setting prices

We concurrently reviewed the prices for Sydney Water and Hunter Water, which follow a similar framework.

We periodically review parts of our approach to setting water prices. Related reviews include:

- Prices for WaterNSW's other regulated bulk water services:
 - Review of prices for the Water Administration Ministerial Corporation (WAMC), prices have been set until 30 June 2020 (*WAMC price review*, June 2016)
 - Review of prices for rural bulk water services, prices have been set until 30 June 2021 (*Rural bulk water services price review*, June 2017)
 - Review of Murray River to Broken Hill Pipeline Review prices, prices have been set until
 30 June 2022 (*Murray River to Broken Hill Pipeline*)
- ▼ 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 we share Rural Water Cost Shares (*Rural Water Cost Shares,* February 2019)
- The conditions in WaterNSW's operating licence (*Water NSW operating licences review* May 2017)

For each of these reviews, relevant documents are available on our website.

C Context for this review

Water NSW is the main supplier of bulk water in the Greater Sydney (GS) region. It manages and protects Sydney's drinking water catchments and catchment infrastructure. Its services are prescribed by the *Water NSW Act 2014* and its operating licence.

IPART sets the maximum prices for services that Water NSW supplies in the GS region in accordance with the matters under section 15 of the *Independent Pricing and Regulatory Tribunal Act 1992* (see Appendix A). 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. We also administer Water NSW's operating licence, which includes service standards.

This appendix provides additional information on Water NSW's regulatory framework, the services it provides and cost drivers.

C.1 Water NSW's regulatory framework

The roles and responsibilities of Water NSW are prescribed by the *Water NSW Act 2014*, and its operating licence. Under Section 6 of the *Water NSW Act 2014*, Water NSW is required to meet the following primary objectives:

- Capture, store and release water in an efficient, effective, safe and financially responsible manner
- Supply water in compliance with appropriate standards of quality
- Ensure that declared catchment areas and water management works in such areas are managed and protected so as to promote water quality, the protection of public health and public safety, and the protection of the environment
- Provide for the planning, design, modelling and construction of water storages and other water management works, and
- Maintain and operate the works of Water NSW efficiently and economically and in accordance with sound commercial principles.

It also has other objectives, including: to be a successful business; exhibit social responsibility towards the community and regional development; and conduct its operations in compliance with the principles of ecologically sustainable development.¹⁴⁴

¹⁴⁴ Water NSW, *Pricing Proposal to IPART*, July 2019, p 23.

C.2 What services does Water NSW provide?

Water NSW is the main supplier of bulk water in the NSW. This review sets the maximum bulk water prices Water NSW can charge its customers in the GS area by providing the following monopoly services:

- Bulk water supply to urban water utilities for treatment and then consumption by Sydney, Illawarra, Blue Mountains, Southern Highlands and Shoalhaven communities. Water NSW has four wholesale customers (Sydney Water, Wingecarribee Shire Council, Shoalhaven City Council and Goulburn-Mulwaree Council).
- Raw and unfiltered water supply to 63 other smaller customers.¹⁴⁵

It also provides non-monopoly services within the GS region, such as leasing some of its facilities and certain commercial hydrometrics services.

C.3 What drives Water NSW's costs in the GS area?

Water NSW's costs can be allocated into broad categories. These categories are the costs:

- ▼ To address any key issues or recent developments that impact its operating environment. Our analysis on these issues are discussed in Chapter 2.
- To meet its existing service standards and regulatory obligations, including any new or amended requirements under its operating licence and dam safety legislation, and
- To implement any long-term plans under the 2017 Metropolitan Water Plan.

C.3.1 Regulatory licencing requirements and obligations

Water NSW's operations are governed by a number of regulatory and licensing requirements, and supply arrangements, including:

- IPART (pricing): We are responsible for setting the maximum prices that Water NSW can charge to customers for its monopoly services.
- IPART (licensing): We are also responsible for monitoring and reporting on Water NSW's compliance with its operating licence, including its obligations in relation to customer service, water quality, and system performance. Water NSW's operating licence (licence) is granted under section 11 of the Water NSW Act. The term of the current licence is 1 July 2017 to 30 June 2022.
- NSW Dam Safety Committee: The Committee is responsible for prescribing dam safety requirements and monitoring compliance of Water NSW's prescribed dams with those requirements.
- NSW Health: NSW Health provides advice to Water NSW on public health issues in regard to drinking water. The Memorandum of Understanding (MoU) between NSW Health and Water NSW sets out the role of each agency in relation to water quality standards and public health.

¹⁴⁵ Water NSW, *Pricing Proposal to IPART*, July 2019, p 22.

- Water Administration Ministerial Corporation (WAMC) and Natural Resources Access Regulator (NRAR): WAMC, NRAR and Water NSW share responsibility for licensing and monitoring the extractions of water from the natural environment and regulating its releases of water to the environment.
- Environment Protection Authority (EPA): The EPA is responsible for monitoring Water NSW's compliance with the EPA's regulatory instruments relating to environment protection. The MoU between the two agencies recognises their role in protecting the environment of NSW.
- Catchment Audits: Under the Water NSW Act, Water NSW is required to conduct catchment audits every three years, and asses the state of the catchments having regard to catchment health indicators and document its findings in its annual Catchment Activities report.
- Water supply agreements: The agreements outline the arrangements between Water NSW and its customers for the supply of water.

C.3.2 2017 Metropolitan Water Plan

The Government's plan to ensure sufficient water to meet the needs of the people and environment within the GS area is outlined in the 2017 Metropolitan plan. The plan sets out a mix of supply and demand measures to:¹⁴⁶

- Ensure water supply is secure and reliable to meet growing water demand due to a growing population and increased business and industry activity
- Ensure water supply is resilient to stresses and shocks
- Contribute to more liveable and resilient urban communities
- Help protect the health of rivers impacted by dams
- Maximise net benefits to the community.

Figure C.1 summarises the series of water supply and drought response measures for the region including the trigger levels for these measures.

The Government is in the process of developing the Greater Sydney Water Strategy (GSWS) to replace the Metropolitan Water Plan. The GSWS will explore an integrated water cycle approach for managing water, wastewater and stormwater in Sydney and how we can improve the integration of water and land use planning to ensure that Sydney's future water needs for growth and drought can be met over the long term. Although details of the GSWS are not yet available, this strategy is expected to be developed during the current determination period (ie, from 2020-21 to 2023-24) and will be an important component of the Government's strategic vision for a productive, sustainable and liveable Sydney.¹⁴⁷

¹⁴⁶ Metropolitan Water, 2017 Metropolitan Water Plan Water for a Liveable, Growing and Resilient Greater Sydney, March 2017, pp 7-10.

¹⁴⁷ NSW Department of Planning, Industry and Environment, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, May 2020, p 6.

Total dam storage	Measures commence	
100%		
95%		
90%		
85%		
80%		<u> </u>
75%	Shoalhaven transfers start-up*	e e e e e e e e e e e e e e e e e e e
70%		
65%		
60%	Sydney Desalination Plant start-up® Drought supply options study	
55%		
50%	Sydney Desalination Plant Stage 2 preliminary planning	Level 1
45%	Sydney Desalination Plant Stage 2 detailed planning	restrictions
40%		Level 2 water
35%	Sydney Desalination Plant Stage 2 construction	restrictions
30%	Reduce environmental flows® Additional Shoalhaven transfers*	Level 3
25%	Drought supply construction [†]	restrictions

2017 Metropolitan Water Plan portfolio of measures

* Shoalhaven transfers turned off when dam storage levels reach 80%.

- Sydney Desalination Plant operates in a certain way in its drought response role: when total dam storage levels fall below 60% ('on' trigger) Sydney Desalination Plant Pty Ltd must operate to maximise its supply of drinking water to Sydney Water's area of operations. Outside the 'minimum run time', these arrangements will continue to apply until total dam storages reach 70% ('off' trigger).
- Water restrictions eased as dam levels rise, based on circumstances at the time.
- Off trigger linked to the easing of Level 3 water restrictions.
- [†] Dependent on the outcomes of the drought supply options study, some drought supply options may need to be introduced earlier.

Source: Metropolitan Water, 2017 Metropolitan Water Plan Water for a Liveable, Growing and Resilient Greater Sydney, March 2017, Figure 5, p 28.

D Continuing efficiencies

We have decided to apply a continuing efficiency adjustment to Water NSW'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 improvement¹⁴⁸ of 0.8% per year was achievable in Australia.¹⁴⁹ 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.

D.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.¹⁵⁰

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 D.1).

¹⁴⁸ 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.

¹⁴⁹ Productivity Commission, *PC Productivity Bulletin*, May 2019.

¹⁵⁰ 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.

	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

Table D.1 Changes in MFP over previous economic downturns in Australia

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.

D.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 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 D.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 D.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 services	Professional, scientific & technical
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 D.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 D.1 Average of annual MFP changes (%)



Source: Productivity Commission, PC Productivity Bulletin 2019 - Charts, May 2019; IPART analysis.

D.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 D.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.

..	· · · · · · , · · · · · ·	· · · ·	J · · · · · · · · · · · · · · · · · · ·
Industry	8 years -	6 years -	2017-18
	2003-04 to 2011-12	2011-12 to 2017-18	
'Utilities' - Electricity, gas, water and waste services	-3.83	-0.42	-1.74
All industries	0.01	0.7	0.44

Table D.2	MFP growth, selected industries	s, selected time per	riods (average annual %)
	min growth, sciected industries	, selected time per	lious (uverage annual 70)

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 utilityspecific estimates.¹⁵¹ 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 the Productivity Commission suggested caution in using MFP cycles for the aggregate market sector to analyse industry MFP over time.¹⁵²

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.

D.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.¹⁵³

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 D.3 below presents average annual MFP growth over various time horizons ending with 2017-18.

¹⁵¹ Sydney Water, *Submission to IPART's Draft Report – Review of prices for Sydney Water from 1 July 2020,* April 2020, pp 110-111.

¹⁵² Hunter Water, Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020, April 2020, pp 10, 12.

¹⁵³ Hunter Water, Submission to IPART's Draft Report – Review of prices for Hunter Water from 1 July 2020, April 2020, p 10.

	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

Table D.3 Annual MFP growth, economy-wide, selected averaging periods to 2017-18 (%)

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 2012.¹⁵⁴

We did not exclude any years from our assessment. Figure D.1 includes every available year's data. We examined why the 10-year averages shown in Table D.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 D.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.

D.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.¹⁵⁵ 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%).¹⁵⁶

¹⁵⁴ 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.

¹⁵⁵ 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.

¹⁵⁶ 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.

D.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.

E Additional information on operating expenditure

In response to our decisions and findings on Water NSW's operating expenditure in the Draft Report, we received submissions from Water NSW, the Public Interest Advocacy Centre and the NSW Department of Planning, Industry and Environment:

- Water NSW disagreed with our draft decisions on its operating expenditure allowance. In particular, it disagreed with our specific adjustments to its proposed operational program expenditure (discussed in more detail in section E.2.1 below) and our catch up and continuing efficiency adjustments (discussed in more detail in section E.2.4 below).¹⁵⁷
- The Public Interest Advocacy Centre supported our draft decisions on Water NSW's operating expenditure for the 2020 determination period.¹⁵⁸
- The NSW Department of Planning, Industry and Environment questioned the appropriateness of reducing Water NSW's proposed operating expenditure allowance.¹⁵⁹

We have had regard to these submissions in reaching our final decisions, as discussed below.

E.1 Operating expenditure over the 2016 determination period

Atkins, in its review of Water NSW's operating expenditure over the 2016 determination period, found:

- Water NSW changed its capitalisation policy during the period. In order to compare Water NSW's performance against its regulatory allowance, Atkins reversed the \$16.1 million that had been capitalised into the RAB due to the policy change and allocated these costs into operating expenditure (Atkins allocated \$5.8 million in 2018-19 and \$10.3 million in 2019-20).¹⁶⁰
- Water NSW changed the method of apportioning its corporate and support costs across its businesses (ie, Greater Sydney, Rural Valleys and WAMC businesses). The impact of this change reduced the allocation of costs to the Greater Sydney business (the subject of this review) by \$6.8 million.¹⁶¹

¹⁵⁷ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020.

¹⁵⁸ Public Interest Advocacy Centre, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 1.

¹⁵⁹ NSW Department of Planning, Industry and Environment, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, May 2020, p 5.

¹⁶⁰ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, p 7.

¹⁶¹ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, Table 5-4, p 73; Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, p 7.

- There was a significant increase in expenditure in 2019, and expenditure for 2020 was forecast to exceed the allowance for that year. This led Atkins to question the extent to which merger efficiencies (from the merger of the former Sydney Catchment Authority and State Water) had been maintained.¹⁶²
- The level of disaggregation of financial data has improved overall. However, some issues remained meaning that Atkins were unable to do a full variance analysis. Operating expenditure is reported by activity, such as water operations, maintenance and catchment management. However, the 2016 Determination and supporting reports did not disaggregate expenditures by these activities so variances with actual expenditure was not possible. In addition, the financial management system has changed during the period, which makes variance analysis difficult.¹⁶³

Atkins also noted some areas of the business where Water NSW could be more efficient, including:

- Maintenance: there is a backlog in preventative maintenance work, which the business has recognised and is seeking to resolve. The impact of the backlog is to defer some maintenance into the 2020 determination period.
- **Site security**: Atkins questioned whether a more cost-effective solution could be used by applying existing and new technology.
- Catchment management: these activities relate to regulatory requirements to protect the catchment, and reduce pollution risk and other impacts on water quality in the catchment. Atkins considered that catchment management activities should be subject to risk assessment to determine what benefits are delivered in terms of risk reduction using a sliding scale. These risks should then be compared against the business risk thresholds.
- Water operations: these costs are directly related to the supply function. Because of the nature of the supply arrangements, these costs are not sensitive to changes in the volume of raw water delivered. In average years, operations are straightforward. In a period of drought and reducing reservoir levels, operational monitoring is important to manage flows and assess water quality.¹⁶⁴

E.1.1 Changes since the Draft Report

Previously, Atkins considered the change in capitalisation policy accounted for \$25.9 million of the operating expenditure allowance underspend,¹⁶⁵ and we accepted that for our Draft Report. In its Supplementary Report, Atkins reviewed additional information provided by Water NSW and concluded that \$16.1 million could be attributed to the capitalisation policy change.

¹⁶² Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 65.

Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 81.
 Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, pp 8, 36 and 81.

¹⁶⁵ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 65.

E.2 Operating expenditure over the 2020 determination period

Water NSW proposed \$384.4 million (including a 1% efficiency adjustment) in operating expenditure for the 2020 determination period.¹⁶⁶ This represents a decrease of \$23 million (5.6%) from the IPART allowance of \$407.4 million in the 2016 determination period.¹⁶⁷ and an increase of \$23.4 million (6.5%) over its actual/forecast expenditure for the same period.¹⁶⁸

Atkins recommended reducing Water NSW's operating expenditure (from the level proposed by Water NSW) by \$18.1 million (4.7%) to \$366.4 million.¹⁶⁹ In making its recommendation, Atkins made a number of recommended adjustments to Water NSW specific programs as well as catch-up and ongoing efficiency adjustments.

We have accepted Atkins' recommended adjustments to Water NSW's proposed operating expenditure for the 2020 determination period. Our recommended adjustments are shown in Table E.1. Our rationale for these adjustments is described in the following sections.

	-	•	-	•	
	2020-21	2021-22	2022-23	2023-24	Total
Water NSW's proposed expenditure ^a (before its proposed efficiency adjustments)	97.5	97.4	98.8	94.7	388.3
Water NSW's proposed efficiency adjustment	-1.0	-1.0	-1.0	-0.9	-3.9
Water NSW's proposal	96.5	96.4	97.8	93.7	384.4
Specific adjustments to pre-efficiency proposal					
 Land management 	0.0	0.0	0.0	0.0	0.0
 Water quality science 	-0.5	-0.5	-0.5	-0.5	-2.0
 Water monitoring 	-0.6	-0.7	-0.8	-0.8	-2.9
 Additional monitoring for Sydney Water 	-1.0	-1.0	-1.0	-1.0	-4.0
 Drought studies for the Metropolitan Water Plan 	0.0	0.0	0.0	0.0	0.0
Total before efficiency adjustments	95.3	95.1	96.5	92.4	379.4
Efficiency adjustments					
Catch-up efficiency	-0.9	-1.7	-2.6	-3.3	-8.5
Continuing efficiency	0.0	-0.8	-1.5	-2.2	-4.5
Efficient operating expenditure					
Total	94.5	92.7	92.4	86.9	366.4
\$ Difference	-2.0	-3.7	-5.4	-6.9	-18.1
% Difference	-2.1%	-3.9%	-5.5%	-7.3%	-4.7%

Table E.1 Decision on efficient operating expenditure (\$2019-20, \$million)

¹⁶⁶ Water NSW, *Pricing Proposal to IPART*, July 2019, p 96.

¹⁶⁷ For presentation purposes in the Final Report, we have converted expenditure for the 2016 determination period from \$2015-16 to \$2019-20 using forecast inflation of 2.2% and 2.5% for the final two years of this period (2018-19 and 2019-20 respectively). This approach is consistent with how this expenditure was inflated in Water NSW's pricing proposal and the Atkins Cardno expenditure reports, and assists when comparing figures used in these documents with the Final Report. In the model for the Final Report, we convert \$2015-16 to \$2019-20 using updated inflation of 1.6% and 1.0% for 2018-19 and 2019-20 respectively.

¹⁶⁸ IPART, Review of prices for Water NSW Greater Sydney services from 1 July 2020 – Issues Paper, September 2019, p 29.

¹⁶⁹ Atkins have calculated its recommended adjustments to Water NSW's operating expenditure before its proposed efficiency adjustment. This is to avoid double counting of Water NSW's proposed efficiencies and Atkins' recommended efficiencies.

a: Calculations are based on Water NSW's proposal before its proposed 1% efficiency adjustment to avoid double counting. **Source:** IPART analysis and Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 21.

Note: Totals may not add due to rounding.

E.2.1 Specific adjustments to Water NSW's proposed operating expenditure

Reduce water quality science expenditure by \$2.0 million

Water NSW proposed \$10 million expenditure on its water quality science program over the 2020 determination period.¹⁷⁰ This is almost double the actual expenditure in the 2016 period.¹⁷¹

Atkins, in its Final Report, recommended reducing expenditure for water quality science by a total of \$2.0 million. Atkins supports an increase in water quality expenditure above the 2016 determination period level, but not to the extent proposed by Water NSW.

In its submission to our Draft Report, Water NSW:

- submitted that its science program expenditure should be approved in full
- explained some of the science program activities in terms of the risks of bushfire impacts, significant climatic events in close succession and contaminants of concern, and
- noted that its science prioritisation program is currently going through the business approval processes.¹⁷²

In its Supplementary Report, Atkins found that the program of work included a wide range of activities which were not clearly defined or prioritised, not costed in detail or achieved internal approvals.¹⁷³ While it accepted that the 2016 period was under-resourced, it questioned the achievability of the program.¹⁷⁴ Atkins maintains its recommendation reducing expenditure for water quality science by a total of \$2 million.¹⁷⁵ Atkins' recommended reductions reflect its assessment of an efficient and achievable level of expenditure, reflecting the need to meet new Operating Licence requirements.^{176, 177}

¹⁷⁰ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 35.

¹⁷¹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 18 and IPART analysis.

¹⁷² Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 35-36.

¹⁷³ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 18.

¹⁷⁴ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 18.

¹⁷⁵ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 18.

¹⁷⁶ Water NSW's Operating Licence 2017-2022 came into effect during the 2016 determination period. Clause 2.8 of Water NSW's Operating Licence contains provisions for research on its catchment areas.

¹⁷⁷ Atkins Cardno, Water NSW expenditure and demand forecast review, Final Report, March 2020, p 90.

We accept Atkins recommended reductions to Water NSW's proposed water science program expenditure. For the Final Report, we have decided to reduce Water NSW's proposed expenditure program for water quality science by \$2 million to \$8 million over the 2020 determination period.¹⁷⁸ This is an increase of nearly 50% on Water NSW's expenditure on water quality science programs over the 2020 determination period.¹⁷⁹

Reduce water monitoring expenditure by \$2.9 million

Water NSW proposed \$56.4 million in expenditure on its water monitoring program over the 2020 determination period.¹⁸⁰ In our Draft Report, our draft decision was to reduce Water NSW's operating expenditure for water monitoring by \$3.6 million to a total of \$52.9 million over the 2020 determination period, consistent with Atkins' advice.¹⁸¹

In its submission on our Draft Report, Water NSW noted the increased need for monitoring due to the drought, bushfires over summer 2019-20 then the significant rain event in February 2020.¹⁸² It gave additional information to support its proposed inflow response program, post-bushfire catchment rehabilitation program, and its proposed response to the findings of the March 2020 draft catchment audit report.¹⁸³ It also was in favour of an allowance for current wetter weather cycle – that is, that conditions during the next determination period are not likely to represent an 'average' year.¹⁸⁴

In its Supplementary Report, Atkins recommended reducing Water NSW's proposed operating allowance for water monitoring by \$2.9 million and recommended an efficient level of water monitoring over the determination period of \$53.4 million. It accepted the additional expenditure proposed by Water NSW for:

- its proposed inflow response program, as it is a specific program agreed with NSW Health and Sydney Water,
- post-bushfire catchment rehabilitation program, as it is a specific program that is underway in response to the 2019-20 bushfires, and
- its proposed response to the findings of the March 2020 draft catchment audit report.^{185,186}

¹⁷⁸ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review - Supplementary Report*, June 2020, p 21 and IPART analysis.

¹⁷⁹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review - Supplementary Report*, June 2020, p 18.

¹⁸⁰ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review - Supplementary Report, June 2020, pp 18-19.

¹⁸¹ IPART, *Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020*, March 2020, p 109.

¹⁸² Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 31.

¹⁸³ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 31-33.

¹⁸⁴ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 31-32.

¹⁸⁵ Water NSW is required, under legislation, to incorporate the findings of a catchment audit into its programs and activities: Water NSW Act 2014, s 43

¹⁸⁶ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, pp 18-19.

However, Atkins did not accept Water NSW's proposed allowance for the current wetter weather cycle. It did not consider that was sufficient evidence to suggest that in the medium term that rainfall will be above average in the 2020 determination period.¹⁸⁷

In deriving its recommended efficient level of expenditure, Atkins:

- Considered the ongoing level of monitoring costs in an average year.
- Considered the impact of the drought on expenditure during the current period, and
- Allowed for the under-reporting of some monitoring expenditure.

Atkins' recommended expenditure recognises an increase in monitoring expenditure above the 2016 determination period level.

We accept Atkins' recommendations and make a final decision to reduce water monitoring expenditure by \$2.9 million for the 2020 determination period, in particular that there is no strong reason to provide an allowance for a wetter weather cycle over the 2020 determination period. We agree with Atkins' considered approach in establishing the efficient expenditure level, which takes into consideration the impacts of climate variability, ongoing costs in an average year, and the requirement to catch-up on any under-reporting to meet Water NSW's water monitoring requirements.

Reduce additional water monitoring for Sydney Water by \$4.0 million

Water NSW proposed \$7.2 million expenditure in the 2020 determination period for additional sampling and testing costs at the request of Sydney Water.¹⁸⁸ Water NSW submitted that Sydney Water has requested that Water NSW undertake additional water monitoring under the Raw Bulk Water Supply Agreement.

Atkins reviewed the existing sampling program and noted that at some sites, sampling and testing of particular parameters is carried out by both Sydney Water and Water NSW. Atkins considers that the additional monitoring requested by Sydney Water is reasonable. However, it considers that instead of including expenditure to conduct this additional monitoring, it would be more efficient to have one utility carry out the existing sampling and testing (where this is currently being duplicated by both utilities) and use the cost savings to undertake the additional sampling requested by Sydney Water.¹⁸⁹

¹⁸⁷ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, pp 18-19.

¹⁸⁸ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 19.

¹⁸⁹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report,* March 2020, p 92.

For the Draft Report, Atkins recommended setting the efficient expenditure level for water monitoring at \$2.2 million, which results in a reduction of \$4 million from Water NSW's proposal¹⁹⁰. Atkins, in deriving its recommended expenditure considered:

- That it would be more efficient to have one utility sample and test at locations where monitoring activities are currently being duplicated by both utilities.
- That the level of savings by having one utility conduct these monitoring activities would mostly cover the additional monitoring requested by Sydney Water.

In the Draft Report, we made a draft decision to accept Atkins' recommendations to reduce monitoring expenditure by a total of \$4 million over the determination period.¹⁹¹ We agreed with Atkins' view that one utility should do the sampling and testing rather than both unless there is a strong case for it.

In its submission on our Draft Report, Water NSW requested that the proposed expenditure of \$4 million be reinstated into the operating allowance for 2020 determination period.¹⁹² Water NSW noted that the duplication of sampling and monitoring is only an issue downstream of the dams.¹⁹³

In its Supplementary Report, Atkins maintained its recommendation to reduce monitoring expenditure by a total of \$4 million over the determination period on the basis that:

- the main driver for this additional monitoring is a request from Sydney Water where Water NSW understands the monitoring costs will be offset by efficiencies in filtration plant processing. The recouping of costs is a matter for Water NSW and Sydney Water to resolve within the existing water supply agreement, and
- there is some double counting of sampling at some of the proposed sites and there is potential to make savings for these activities.¹⁹⁴

We have decided to accept Atkins recommendations on the reductions for additional monitoring requested by Sydney Water. We therefore have decided to make an adjustment of \$4 million over the 2020 determination period to Water NSW's proposed expenditure on additional monitoring for Sydney Water.

E.2.2 Water NSW's proposed expenditure to supplement its defined benefit superannuation fund

In response to our Draft Report, Water NSW noted it would need an additional \$1.2 million per year (or \$4.8 million over four years) to supplement its defined benefit superannuation fund due to the recent COVID-19 related market downturn.¹⁹⁵ The amount proposed

¹⁹⁰ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report,* Table 5-22 March 2020, p 102.

¹⁹¹ IPART, Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, March 2020, p 110

Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 33-35.

¹⁹³ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 33-35.

¹⁹⁴ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, pp 19-20.

¹⁹⁵ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 40.

(\$4.8 million over four years) is relatively small compared to Water NSW's total revenue requirement (around \$792 million over four years).

We consider that Water NSW's current customers should not be exposed to the risk of Water NSW's defined benefit superannuation liabilities. Water NSW is better placed than customers to manage the risk of its defined benefits liability during market fluctuations. Further, it is not clear that WNSW's proposal is symmetric (that is, whether Water NSW would return these amounts to its customers if and when markets recover). We have therefore decided not to include this amount in prices.

E.2.3 Water NSW's operating expenditure for recreational areas

In its Final Report, Atkins found that Water NSW's proposed \$1.5 million for the management of recreational areas, as part of its catchment management activities, is efficient.

In our Draft Report, we made a draft decision to allow half of the costs for the management of recreational areas to be included in regulated prices (ie, \$750,000). This is because we considered some of Water NSW's management activities for recreational lands benefits the health of the catchment, and therefore its customers, while other activities go beyond what is required for catchment management (eg, Water NSW currently provides camping grounds at some recreational areas and school excursions at Warragamba Dam free of charge). We considered it is reasonable that Water NSW provide access to recreational areas in the catchment on the basis that the benefits exceed the costs. The remaining 50% of these costs (i.e. \$750,000) could be recovered from user fees or funded by the NSW Government on behalf of the broader community.

In its submission on our Draft Report, Water NSW stated that water customers should pay for the management of recreational areas as providing and maintaining recreational areas is part of its catchment management activities and is a more cost effective option than the alternative (ie, attempting to restrict access and managing the risks of unauthorised access into catchment areas).¹⁹⁶

In its submission on our Draft Report, the Public Interest Advocacy Centre (PIAC) considered that direct users should pay for the management of recreational areas and the indirect nature of community benefit means recovery of some costs in support of the general availability of the recreational services should be borne by the NSW Government.¹⁹⁷

We have decided that some expenditure for recreational areas should be included in Water NSW's operational allowance. However, we consider only half of Water NSW's proposed expenditure should be included (ie, \$750,000), because not all of Water NSW's activities in managing these areas are required for catchment management. We consider that water users should contribute to the efficient costs for Water NSW's catchment management program and direct users should contribute to the efficient costs of providing expanded recreational areas which is beyond what is required for catchment management.

¹⁹⁶ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 33-35.

¹⁹⁷ Public Interest Advocacy Centre, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 1-2.

E.2.4 Catch- up and continuing efficiency adjustments

Apply a catch up efficiency adjustment of 0.9% per year cumulative (\$8.5 million)

In its Final Report, Atkins recommended catch-up efficiencies of 0.9% per year, applied cumulatively to Water NSW's proposed pre-efficiency expenditure.¹⁹⁸ Atkins' recommendation was based on the following key findings:

- There is scope to reduce the efficient level of Corporate and Support expenditure allocated to Greater Sydney given that:
 - The proportion of Corporate and Support expenditure to total operating expenditure for Greater Sydney is an average of 32%, which is relatively high when compared to comparable utilities such as Central Coast (20%) and Sydney Water (25%).¹⁹⁹
 - Customer service costs are included in the Corporate and Support expenditure. Atkins considers this is unusual as other utilities have these costs under their own categories. If these costs are separated and apportioned between the Greater Sydney and Rural Valleys businesses based on customer numbers, Atkins considers that Corporate and Support expenditure can be reduced by a total of \$4.9 million. Currently, the allocation of costs to Greater Sydney is around 63% on average and if the allocation is based on customer numbers this would be reduced to 30%.²⁰⁰
- There is scope to reduce the efficient level of business systems and information (ICT) expenditure. The benchmarking of ICT expenditure shows that Water NSW's ICT cost to total operating expenditure is 7.9%, which is high when compared with 6.6% for other utilities.²⁰¹
- The structure of the business and the technology put in place during the 2016 determination period can drive further efficiencies in the business.²⁰²
- While Atkins has not identified specific reductions for business activities such as, catchment management, water operations and security, it concluded that there is scope for efficiencies for these activities to catch-up to a Frontier Company.²⁰³

In our Draft Report, we made a draft decision to accept Atkins' recommendation to have a 0.9% per year catch-up efficiency adjustment, which is equivalent to a total reduction of \$8.4 million across Water NSW's operating expenditure over the determination period.

In its submission on our Draft Report, Water NSW disagreed with our draft decision on the catch up efficiency adjustment. In particular, it thought that the benchmarking analysis was flawed and there were issues concerning double counting – that is, making 'scope

¹⁹⁸ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 67.*

¹⁹⁹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report*, March 2020, p 85.

Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 85.

²⁰¹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report,* March 2020, p 89.

Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 99.

²⁰³ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report,* March 2020, p 99.

adjustments' as well as catch up efficiency adjustments involved double counting.²⁰⁴ We do not agree with these views and we address them in Chapter 4.

In its Supplementary Report, Atkins maintained its recommendations in relation to the catchup efficiency adjustment.²⁰⁵ We accept Atkins' recommendations and have decided to apply a catch-up efficiency adjustment of 0.9% per year cumulative over the 2020 determination period.

Apply a continuing efficiency adjustment of 0.8% per year, with a pause for the first year of the determinaton period due to COVID-19 (\$4.5 million)

Atkins recommended an annual adjustment of 0.8% per year, cumulative, to reflect the scope for ongoing efficiency. It also considered the continuing efficiency adjustment would be paused for the first year of the determination period due to COVID-19 impacts, and then apply for the remaining three years.²⁰⁶

We compared this recommendation with the long-term multi-factor productivity (MFP) in the Australian economy, which is an appropriate indicator of a water utility's future productivity growth. Our analysis of historical data published by the Productivity Commission²⁰⁷ suggests that 0.8% per year is an approriate estimate of ongoing productivity (see Appendix D for further details of this analysis).

In its submission on our Draft Report, Water NSW disagreed with our draft decision on the continuing efficiency adjustment. In its view, using a continuing efficiency adjustment as well as making scope efficiency adjustments created a risk of double counting.²⁰⁸ We do not agree with this argument and respond to it in detail in Chapter 4. Water NSW also questioned whether the continuing efficiency adjustment should be maintained in light of the economic slowdown associated with the COVID-19 pandemic.²⁰⁹

In its Supplementary Report, Atkins agreed that during the first year of the 2020 determination period, there would be an impact on productivity with new working practices arising from COVID-19.²¹⁰ However, it considered that after twelve months a utility should have developed and implemented new work processes and systems.²¹¹ At that point the impact of COVID-19 on productivity would probably be small.²¹²

²⁰⁴ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 36.

²⁰⁵ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, p 10.

²⁰⁶ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, Table 6-13 p 134; Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Addendum to Final Report, March 2020, Table 3-1, p 7; Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, pp 10-11.

²⁰⁷ Productivity Commission, *PC Productivity Bulletin* May 2019, p 3.

²⁰⁸ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 36.

²⁰⁹ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 36.

²¹⁰ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, p 10.

²¹¹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 10.

²¹² Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, p 10.

We accept Atkins' recommendations and have decided to apply a continuing efficiency adjustment of 0.8% per year cumulative over the 2020 determination period, with a pause in year one due to the impact of the COVID-19 pandemic.

Table E.2 shows Atkins' recommended level of continuing and catch-up efficiencies in operating expenditure it considers is achievable for Water NSW in the 2020 determination period.

	2020-21	2021-22	2022-23	2023-24
Continuing efficiency	0.00%	0.80%	1.59%	2.38%
Catch-up efficiency	0.90%	1.80%	2.70%	3.60%
Total efficiency	0.90%	2.60%	4.29%	5.98%

Table E.2 Catch-up and continuing efficiencies for the 2020 determination period

Note: Atkins has changed the way it calculates the continuing efficiency adjustment. In the Final Report, the adjustment of 0.8% per annum (cumulative) is calculated using a geometric progression (not an arithmetic progression, as in the Draft Report). We agree with this modification as we consider it is mathematically accurate.

Source: IPART analysis; Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, pp 9-10.

We have made a decision to accept Atkins' recommended catch-up and continuing efficiency adjustments.

Uncontrollable costs and efficiency adjustments

Water NSW stated in its submission on our Draft Report that certain costs were 'uncontrollable', in that they were outside its control and/or required by law.²¹³ It noted the following as examples of its uncontrollable costs:

- WAMC licensing fees
- Treasury Managed Fund Insurance contributions
- Land tax
- Bulk water purchases
- Defined Benefits Superannuation Liability.²¹⁴

We do not agree with this position. We consider that all costs put forward by Water NSW should be subject to catch up and continuing efficiency adjustments. In our view:

- Some elements of its WAMC licensing fees are controllable as it has some control over its licence holdings. We also note that the fees included in Water NSW's proposal are not subject to an efficiency adjustment over time.
- Treasury Managed Fund contributions are controllable to some extent by the insured party.²¹⁵

²¹³ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 40.

²¹⁴ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 40.

²¹⁵ Source: https://www.icare.nsw.gov.au/government-agencies/our-funds-and-schemes/treasury-managedfund/

- Water NSW has some control over certain elements that impact on its land tax costs through the acquisition and sale of land.
- Water NSW's Fish River Water Supply Scheme bulk water purchases are a controllable cost, as it could find savings within these costs. We also note these purchases are not currently subject to an efficiency adjustment.
- There is scope for Water NSW to manage the risks of its Defined Benefits Superannuation Liability.

The catch-up efficiency relates to Water NSW Greater Sydney as an entire business unit. The continuing efficiency is based on measured productivity improvements of whole businesses across the Australian economy. It is therefore appropriate to apply these adjustments to all of Water NSW's costs. If we were to apply efficiency adjustments to a sub-set of Water NSW's costs, there could be a case to apply a larger percentage adjustment than we are already applying in this review.

E.2.5 Changes from the Draft Report

In the Draft Report, our draft decision was to reduce Water NSW's proposed operating expenditure allowance by \$24.9 million (or 6.5% less than Water NSW proposed). Following further consultation on our Draft Report, we are reducing Water NSW's proposed operating expenditure allowance by \$18.1 million (or 4.7% less than Water NSW proposed). This change is mainly due to us accepting Atkins' recommendations to no longer reduce expenditure for land management, water planning and drought studies (discussed below). The other contributing factor is our decision to pause the continuing efficiency adjustment for one year.

Land management

In our Draft Report, consistent with Atkins' advice, we made specific reductions to expenditure for land management by a total of \$1.5 million. These reductions related to Water NSW potentially realising savings in its in-house costs after outsourcing some of its fire management activities to the Rural Fire Services (RFS), as well as savings due to a high estimate on contingencies in the RFS contract. Atkins found that Water NSW should look to absorb a portion of the fire-fighting activities through a reduction of in-house activities and lower the level of contingencies applied.²¹⁶

In its submission on the Draft Report, Water NSW noted that:

- Despite outsourcing on-the-ground firefighting activities to the RFS, there remains a need for in-house resources for fire planning and management
- The contingency in the RFS contract includes the pass through of costs from the RFS for the hire of helicopters for a range of firefighting activities which Water NSW considers is essential for responding to bush fires.²¹⁷

[&]quot;The value of the deposit contributions made by each member agency are assessed by actuaries using a combination of industry benchmarks, agencies' risk exposure measures and claims history. This ensures that individual large claims do not distort the individual agencies contribution. Agencies are able to directly influence their contribution through effective risk management."

²¹⁶ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report,* March 2020, p 90.

²¹⁷ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 25-28.

In its Supplementary Report, Atkins accepted the additional explanations provided by Water NSW and recommended making no scope adjustments to the proposed land management expenditure for the 2020 determination period.²¹⁸

We have decided to accept Atkins' recommendation and make no specific adjustment to Water NSW's proposed land management expenditure for the 2020 determination period.

Water planning and drought studies

For the Draft Report, Atkins recommended reducing the level of expenditure for drought studies in the last half of the determination period, by a total of \$1.8 million.²¹⁹ While Atkins accepted that expenditure was required for activities related to the support of the Metropolitan Water Plan and drought planning studies, it questioned whether the level of activity would continue through the whole of the 2020 determination period. In other words, these planning documents were likely to be completed in the early years of the 2020 determination period. On that basis, Atkins recommended adjustments to reduce the level of expenditure for this program in years 2023 and 2024.²²⁰

In the Draft Report, we made a draft decision to accept Atkins' recommendation to reduce expenditure for drought planning by \$1.8 million in the last two years of the 2020 determination period (ie, years 2022-23 and 2023-24).

In its submission on the Draft Report, Water NSW provided new information to support its planning activities continuing into 2023 and 2024. In particular, the Greater Sydney Supply Augmentation project will need to be revised once the Greater Sydney Water Strategy is finalised (expected late 2021).²²¹

In its Supplementary Report, Atkins accepted that Water NSW's water planning activities would continue into the final two years of the 2020 determination period and recommended making no scope adjustments to the proposed water planning and drought studies expenditure.²²²

We have decided to accept Atkins' recommendation and make no specific adjustment to Water NSW's proposed water planning and drought studies expenditure for the 2020 determination period.

Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, p 17.

²¹⁹ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 102.

Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, pp 82 & 93.

²²¹ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 29-30.

²²² Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 20.

F Additional information on capital expenditure

This Appendix describes how we made our decisions on Water NSW's past capital expenditure for the 2016 determination period and for the upcoming 2020 determination period.

F.1 Capital expenditure over the 2016 determination period

Water NSW's capital expenditure for the 2016 determination period was \$325.6 million, which exceeded the IPART allowance of \$254.2 million by \$71.4 million (28.1%).²²³

Despite exceeding the capital allowance, Atkins found there was systemic capital underspending on many of Water NSW's projects. This often resulted from issues with Water NSW's cost estimation processes, and indicates that its projects would benefit from a formal top-down efficiency challenge.²²⁴

As shown in Table F. 1 below, Water NSW underspent relative to its allowance in the first two years of the 2016 determination. However, its total capital expenditure is masked by increased expenditure on drought response schemes and a change to its capitalisation policy in the final two years of the determination period.²²⁵

· · ·			•	•	
	2016-17	2017-18	2018-19	2019-20	Total
Allowance	67.0	80.3	58.2	48.6	254.2
Actual / Forecast	29.8	43.2	87.0	165.6	325.6
Difference (\$)	37.2	37.1	-28.8	-116.9	-71.4
Difference (%)	-55.5%	-46.2%	49.5%	240.6%	28.1%

Table F.1 Capital expenditure over the 2016 determination period (\$millions, \$2019-20)

Note: Totals may not add due to rounding.

Source: Water NSW, *Pricing Proposal to IPART*, July 2019, Table 5.2, p 59; Water NSW Annual Information Return 2019-20, and IPART calculations.

For presentation purposes in the Final Report, we have converted expenditure for the 2016 determination period from \$2015-16 to \$2019-20 using forecast inflation of 2.2% and 2.5% for the final two years of this period (2018-19 and 2019-20 respectively). This approach is consistent with how this expenditure was inflated in Water NSW's pricing proposal and the Atkins Cardno expenditure reports, and assists when comparing figures used in these documents with the Final Report. In the model for the Final Report, we convert \$2015-16 to \$2019-20 using updated inflation of 1.6% and 1.0% for 2018-19 and 2019-20 respectively.

²²⁴ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review*, *Final Report*, March 2020, pp 106 & 132.

²²⁵ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 106.

Atkins considers Water NSW's efficient level of capital expenditure is \$280.1 million for the 2016 determination period. This is \$45.5 million (or 14.0%) lower than Water NSW's actual capital expenditure over the period. Atkins has recommend two main adjustments, reducing Water NSW's expenditure by:

- \$19.9 million to align planning costs for several drought response projects with the most recent forecast expenditure provided by Water NSW.²²⁶
- \$16.1 million to reverse the impact of Water NSW changing its capitalisation policy, in order to avoid double counting amounts already included in Water NSW's operating expenditure allowance.²²⁷

These two main adjustments are explained in the following sections.

F.1.1 Reduce \$19.9 million from historical expenditure due to updated planning costs for drought response projects

Atkins considered it was prudent for planning to proceed on several drought response projects. However, it recommended a \$19.9 million reduction to align these planning costs with the most recent forecast expenditure provided by Water NSW in its submission to our Draft Report.²²⁸ We have therefore made a decision to allow expenditure for the drought response projects, with an adjustment to take account of these updated planning costs

F.1.2 Reverse the impact of Water NSW changing its capitalisation policy by removing \$16.1 million from its historical expenditure

Water NSW changed its capitalisation rules in 2019, resulting in \$16.1 million of corporate overheads in operating expenditure being converted to capital expenditure. Atkins noted that, although there may be sound accounting reasons for the policy change, it represents a change in assumption made in the 2016 Determination when this amount was allocated as operating expenditure.²²⁹ Atkins therefore recommended \$16.1 million be reduced from Water NSW's capital expenditure over the 2016 determination period.²³⁰

Previously, Atkins recommended a \$25.9 million reduction due to the capitalisation policy change,²³¹ and we accepted this for our Draft Report. In its submission to the Draft Report, Water NSW indicated that not all of the increase in capitalised overheads was due to the policy change and it provided a breakdown of these costs.²³² Atkins considered this additional

²²⁶ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 23.

²²⁷ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, p 23.

²²⁸ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, pp 22-23.

²²⁹ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 11.

²³⁰ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, pp 25-26.

²³¹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report*, March 2020, pp 105, 131.

²³² Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 17-21.

information in its Supplementary Report, and concluded that \$16.1 million should be removed from the RAB.

Water NSW's analysis showed that, in total, it capitalised \$26.9 million in corporate overheads due to the policy change. Further, it allocated around 60% of these capitalised overheads Greater Sydney (the subject of this price review).²³³ Therefore, Atkins recommended 60% of \$26.9 million (ie, \$16.1 million) be removed from the RAB.

Atkins acknowledged there were different views as to how the capitalised expenditure had been accounted for. However, it noted the high-level principle guiding its recommendation was that costs for this expenditure had already been recovered through operating expenditure in the current period. Therefore, customers would be paying twice for it (both in the short term and longer term if this expenditure was included in the RAB).²³⁴

We agree with Atkins' approach to reverse Water NSW's capital expenditure by the same amount converted from operating expenditure due to the capitalisation policy change (\$16.1 million). This avoids double counting in the 2016 operating expenditure allowance and the RAB. We note that going forward into the 2020 determination period, Water NSW's new capitalisation rules apply to the allocation of capital expenditure versus operating expenditure.

F.1.3 Changes from the Draft Report

In the Draft Report, our draft decision was to reduce historical capital expenditure by \$46.3 million (or 14.2%). We are now reducing it by \$45.5 million (or 14.0%). We revised this decision after receiving updated preliminary planning costs for drought response projects from Water NSW, as well as additional information about the impact of Water NSW changing its capitalisation policy during the 2016 determination period.

F.2 Proposed capital expenditure over the 2020 determination period

Water NSW proposed \$682.4 million in capital expenditure for the 2020 determination period. This represents an increase of \$428.2 million (168.5%) from the IPART allowance of \$254.2 million for the 2016 determination period, and an increase of \$356.8 million (109.6%) over its actual/forecast expenditure for the same period.

Atkins recommended reducing Water NSW's proposed capital expenditure by 45.3% to \$373.0 million. Excluding the Avon Deep Water Access project – which Water NSW has indicated it no longer intends to pursue²³⁵ – the reduction is 16.4%.

²³³ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 21.

²³⁴ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report*, June 2020, pp 25-26.

²³⁵ Water NSW, Email to IPART, 10 March 2020.

In making its recommendation, Atkins made a number of adjustments including:

- Specific adjustments to Water NSW's proposed capital programs.
- Minor adjustments to Water NSW's property program, supply augmentation and fleet.
- Adjustments to reflect catch-up and continuing efficiency.

We have made a decision to accept Atkins' recommended adjustments to Water NSW's proposed capital expenditure for the 2020 determination period. These adjustments are shown in Table F.2. Our rationale for these adjustments are described in the following sections.

	2020-21	2021-22	2022-23	2023-24	Total
Water NSW's proposal	147.2	216.9	216.9	101.5	682.4
Specific adjustments					
 Avon Deep Water Access 	-18.8	-98.2	-108.5	-10.5	-236.1
▼ Warragamba E-flows ^a	-11.6	-28.2	7.2	6.9	-25.8
 Greater Sydney Resilience project 	-1.9	-5.7	-5.5	-3.9	-17.0
 Drought response projects (includes preliminary planning) 	-10.8	-	-	-	-10.8
 Other minor cost adjustments 	1.9	2.5	-	0.3	4.7
Total before efficiency targets	105.9	87.2	110.0	94.3	397.4
Efficiency adjustments					
Catch-up efficiency	-2.2	-3.6	-7.4	-6.8	-20.0
Continuing efficiency (1-year pause)	0.0	-0.7	-1.6	-2.1	-4.4
Total efficient capex					
Total	103.6	83.0	101.0	85.4	373.0
Difference (\$) – excluding Avon Deep Water Access	-24.7	-35.7	-7.4	-5.6	-73.3
Difference (%) – excluding Avon Deep Water Access	-19.2%	-30.1%	-6.8%	-6.1%	-16.4%
Difference (\$)	-43.5	-133.9	-115.9	-16.1	-309.4
Difference (%)	-29.6%	-61.7%	-53.4%	-15.9%	-45.3%

Table F.2Our decision on Water NSW's efficient capital expenditure for the 2020
determination period (\$millions, \$2019-20)

Source: IPART analysis; Water NSW, Submission to IPART Review of Prices for WaterNSW Greater Sydney, July 2019, p 56; Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, Table 4-2, p 28.

a: We have made our expenditure decision based on Atkins' recommendation to defer the Warragamba E-flows project by one year. This results in re-profiling of capital expenditure for this project (ie, reductions in both 2020-21 and 2021-22).
 Note: Numbers may not add due to rounding. Atkins has separately reported the efficiency adjustments for some the drought response projects in its recommended expenditure table, whereas for presentation purposes in our table we have included them in the catch-up and continuing efficiency line items.

In its submission to our Draft Report, the Public Interest Advocacy Centre supported our allowance for capital expenditure. It noted this allowance was likely to be efficient and

facilitate responsible investment over the determination period.²³⁶ However, Water NSW raised several concerns in its submission, which are discussed below.

F.2.1 Exclude \$236.1 million for the proposed Avon Deep Water Access project

Water NSW originally proposed \$236.1 million for the Avon Deep Water Access project as a drought response measure for the Illawarra supply node.²³⁷

Atkins, in its Final Report, recommended accepting Water NSW's updated proposal for this project, which Water NSW had revised to \$245.2 million, of which \$9.1 million occurred within the 2016 determination period.²³⁸ Atkins acknowledged that Water NSW had conducted an options study, which concluded that the higher-cost option was preferable, given the technical risks associated with the identified lower-cost option.

In the Final Report, Atkins stated that, if the drought continued, expenditure for the Avon Deep Water Access project would likely be prudent. Atkins considered the project would reduce the risk of water deficits for a number of years and may help to defer or reduce the scale of major investments (eg, new drought response projects). However, Atkins also noted that the trigger point for commencing construction would require significant consideration, and contracts would need to allow for the potential for the decision (to commence construction) to be revered if the drought breaks.²³⁹

Prior to the release of our Draft Report, the Greater Sydney area experienced significant rainfall, which increased total storage levels in Sydney to just over 80%, and storage levels in Avon Dam to 87.9% (as of 18 February 2020).²⁴⁰

In response to the increase in storage levels, Atkins provided IPART with an addendum to its Final Report with an adjustment to its recommendation for the Avon Deep Water Access project (as well as the Warragamba E-flows project – discussed below). Atkins stated that when Avon Dam was at low levels (Avon was at 44% capacity in January 2020²⁴¹) and declining at a rate of approximately 1.5% per month, it considered it prudent to assume that the scheme would be required during the 2020 determination period.²⁴² With Avon Dam at 87.9% capacity in February 2020, Atkins no longer considers it prudent to assume the scheme would be required during the 2020 determination.²⁴³ Atkins' reasons for deferring project are:

²³⁶ Public Interest Advocacy Centre, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 1.

²³⁷ Water NSW, *Pricing Proposal to IPART*, July 2019, pp 73 & 78.

²³⁸ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report,* March 2020, p 116.

²³⁹ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 116.

²⁴⁰ Water NSW website at: https://www.waternsw.com.au/supply/Greater-Sydney/greater-sydneys-dam-levels, accessed 18 February 2020.

²⁴¹ Water NSW website at: https://www.waternsw.com.au/supply/Greater-Sydney/greater-sydneys-dam-levels, accessed 20 February 2020.

²⁴² Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Addendum to Final Report, March 2020, p 5.

²⁴³ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Addendum to Final Report, March 2020, p 5.

- Avon Dam storage levels are now significantly in excess of the trigger for construction of the Avon Deep Water Access project.²⁴⁴
- Deferring the project allows time a more sophisticated drought response and long term supply-demand plan to be developed, which may identify more costs effective or robust solutions.
- There are benefits to customer bills by deferring construction of the project closer to when it is likely to be required.

We have made a decision to accept Atkins' recommendation as per its addendum to not include \$236.1 million for the Avon Deep Water Access project. As noted above, Water NSW has indicated it no longer intends to pursue this project.²⁴⁵

F.2.2 Reduce allowance by \$25.8 million by deferring the Warragamba Environmental Flows project

Atkins, in its Final Report, recommended an adjustment of \$89.3 million by deferring significant expenditure (for construction) on the Warragamba E-flows project until towards the end of the next determination period (2023-24). It stated that this would allow sufficient time to resolve the uncertainly around the potential raising of the Warragamba Dam wall, which is closely linked to the E-flows project and to focus corporate attention on drought-related projects.²⁴⁶

Atkins, in its addendum to its Final Report, adjusted its recommendation by bringing forward expenditure for construction of the E-flow project by one year (relative to its recommendation in its Final Report), to commence from 2022-23. This represents a one year deferral from that proposed by Water NSW.²⁴⁷

Atkins stated that the scaling back of the drought response schemes should mean that Water NSW now has the corporate capacity to proceed with the E-flows project during the 2020 determination period.²⁴⁸

In its submission to the Draft Report, Water NSW noted that the phasing for this project in its pricing proposal aligned with its current understanding of when the E-flows work was likely to proceed. Therefore, re-phasing the project (ie, the one year deferral) could result in a shortfall in capital funding for the project over the determination period.²⁴⁹

We asked Atkins to review Water NSW's submission. It found the delays around approvals for the Warragamba Dam wall project had lengthened since it prepared its Final Report and addendum. Atkins considered that these delays, in addition to the time it will take to decouple the E-flows and Warragamba Dam wall projects, continue to be relevant. As a result,

²⁴⁴ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Addendum to Final Report, March 2020, p 5.

²⁴⁵ Water NSW, Email to IPART, 10 March 2020.

²⁴⁶ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review*, *Final Report*, March 2020, p 17.

²⁴⁷ Water NSW, Pricing Proposal to IPART, July 2019.

²⁴⁸ Atkins Cardno, Water NSW expenditure review – Addendum to Final Report, March 2020, p 5.

²⁴⁹ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 47.

it has maintained its recommendation to defer the timing of expenditure for the Warragamba E-flows project by one year.²⁵⁰

We accept Atkins' recommendation as per its addendum and Supplementary Report to reduce expenditure for the Warragamba E-flows project by deferring it for one year from Water NSW's proposal.

F.2.3 Reduce allowance by \$17.0 million as the Greater Sydney Resilience Provision is not prudent

Atkins recommended a \$17.0 million adjustment to reflect its findings that the Greater Sydney Resilience Provision project does not appear to be prudent based on the resilience that already exists in the system.²⁵¹

Water NSW proposed \$17.0 million for the Greater Sydney Resilience Provision, with the aim of improving the operational resilience of its water supply network under varied conditions including, demand growth, changing quality requirements and climate change.²⁵²

Atkins noted that Water NSW undertook a study to identify areas of vulnerability within its water supply network. Under this study, a project was identified which would address a high-risk failure scenario involving both existing Warragamba pipelines failing upstream of the Orchard Hills offtake.²⁵³

Atkins considered that this project appeared to be 'gold-plating' and recommended not including any expenditure for it. Atkins considered this project to be imprudent because there are two existing pipelines (which run in parallel to each other) with interconnectors already in existence. Further, Atkins stated that it considers Water NSW did not provide robust evidence to support the proposed expenditure for this project.

In its submission to the Draft Report, Water NSW reiterated the need for this project. It stated that the project is required to mitigate the risk of a pipeline failing to the water filtration plant, which would prevent supply to the Greater Penrith region. This could potentially affect approximately 200,000 residents and 12, 400 businesses.²⁵⁴

Atkins further considered the Greater Sydney Resilience Provision in its Supplementary Report. In its view, increasing resilience within this particular area of the system, which appears to have sufficient resilience already, does not appear to be an efficient use of expenditure at the current time. Therefore, Atkins maintained its recommendation that expenditure for this project would not be prudent.²⁵⁵

²⁵⁰ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, pp 23-24.

²⁵¹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review*, *Final Report*, March 2020, p 114.

²⁵² WaterNSW, Pricing Proposal to IPART, July 2019 AIR/SIR and WaterNSW, Submission to IPART's Issues Paper – Review of prices for WaterNSW Greater Sydney services from 1 July 2020, October 2019, p 10 & 11.

Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p
 114.

²⁵⁴ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 41-43.

²⁵⁵ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, p 24.

We accept Atkins' recommendation that there is already sufficient infrastructure in place to provide operational resilience and have reduced Water NSW's allowance by \$17.0 million. We also note Atkins' comment that Water NSW may wish to revisit this project at the next price review if and when growth and development in the Orchard Hills area are further progressed and the need for this project may be greater.²⁵⁶

F.2.4 Reduce allowance by \$10.8 million for drought response projects

Water NSW initially proposed \$70.6 million for planning on four drought response projects in 2020 and 2021. In its Final Report, Atkins considered the proposed expenditure on planning for these projects was prudent. However, it recommended an adjustment for the 2020 determination period, to take into account that one of the projects had been put on hold (adjustment of \$1.9 million).²⁵⁷

After the Draft Report, Water NSW provided us with revised planning costs for two of the drought response projects.

- Lower expenditure for preliminary planning (\$8.9 million decrease in costs).
- New expenditure for advanced planning (\$50.2 million increase in costs).²⁵⁸

Consistent with its position in the Final Report, Atkins found the preliminary planning costs were prudent and recommended accepting the lower costs forecast by Water NSW. However, it found that the advanced planning costs were not prudent or efficient. In particular:

- Water NSW had not demonstrated the scope of works (and associated significant expenditure was appropriate)
- There were concerns around the efficiency of the proposed costs
- It was unclear whether the proposed timing of expenditure (nearly all carried out by the end of 2021-22 was feasible.²⁵⁹

We have made a decision to accept Atkins' recommendation to reduce Water NSW's expenditure for planning for drought response projects. This takes account of Water NSW putting a drought response project on hold, as well as providing us with revised, lower preliminary planning costs.

We also agree with Atkins' recommendation that expenditure for advanced planning on drought response projects is not prudent at this stage. The outcomes of the preliminary planning need to be assessed before they can be used to determine the scope of more extensive planning (and associated expenditure).

²⁵⁶ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, p 24.

Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p
 120.

²⁵⁸ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, pp 22-23.

²⁵⁹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, pp 22-23.

F.2.5 Catch-up and continuing efficiency adjustments

Atkins recommended applying catch-up and continuing efficiency adjustments to Water NSW's capital program.²⁶⁰ Atkins' recommended adjustments are described below.

Apply a catch-up efficiency adjustment of between 2.1% to 7.3% per year (\$20.0 million)

Atkins considered Water NSW had scope to deliver efficiency savings. It found:

- There was little evidence of Water NSW undertaking internal top-down efficiency challenges across its capital expenditure proposals.
- Water NSW's capital processes such as program development and prioritisation, cost estimating and procurement – were at an early stage of maturity.
- While Water NSW's asset management processes were improving, gaps still existed.²⁶¹

As a result, Atkins identified catch-up efficiencies to apply to Water NSW's capital expenditure. In particular, there were four areas where it considered Water NSW should be able to improve its processes to move towards the efficiency of a frontier utility over time and deliver material efficiencies over the next determination period:

- 1. Improvements to capital program development, optimisation and prioritisation
- 2. Improvements to value engineering
- 3. Improvements in cost estimating and the management of contingencies
- 4. Impact of new procurement processes and the likely savings from more effective program management.²⁶²

In its Final Report, Atkins therefore recommended catch-up efficiencies of between 2.1% to 9.3% per year, to move Water NSW towards the efficiency frontier over the 2020 determination period.²⁶³

Water NSW disagreed with these catch-up efficiencies in its submission to our Draft Report. It noted that it was a relatively young organisation, and so its capital and asset management processes were at an early stage of maturity. Further, it questioned whether the catch-up efficiencies proposed by Atkins were achievable.²⁶⁴

In its Supplementary Report, Atkins reviewed new information provided by Water NSW about its use of its management reserve on projects. As a result, Atkins reduced the efficiency challenge in relation to cost estimating and management of contingencies. Instead, it recommended catch-up efficiencies of between 2.1% and 7.3% per year.²⁶⁵

²⁶⁰ Chapter 4 and Appendix D provide additional information on catch-up and continuing efficiencies.

Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p 7.
 Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, pp 132-133.

²⁶³ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, p 12.

²⁶⁴ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 45-47.

²⁶⁵ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, p 15.
Apply a continuing efficiency adjustment of 0.8% per year, with a pause for the first year of the determinaton period due to COVID-19 (\$4.4 million)

Atkins recommended an annual adjustment of 0.8% per year, cumulative, to reflect the scope for ongoing efficiency. It also considered the continuing efficiency adjustment would be paused for the first year of the determination period due to COVID-19 impacts, and then apply for the remaining three years.²⁶⁶

We compared this recommendation with the long-term multi-factor productivity (MFP) in the Australian economy, which is an appropriate indicator of a water utility's future productivity growth. Our analysis of historical data published by the Productivity Commission²⁶⁷ suggests that 0.8% per year is an approriate estimate of ongoing productivity (see Appendix D for further details of this analysis).

Water NSW did not agree with the continuing efficiency adjustment in the Draft Report. It considered it led to double counting with the bottom-up, specific adjustments outlined above.²⁶⁸ We have addressed this concern in Chapter 4.

In addition, Water NSW questioned whether the continuing efficiency adjustment remained valid considering the economic slowdown caused by COVID-19.²⁶⁹ In response, we have paused this adjustment for one year due to COVID-19 impacts.

Table F.3 shows Atkins' recommended level of continuing and catch-up efficiencies in capital expenditure it considers is achievable for Water NSW in the 2020 determination period.

Table F.3	Catch-up and continuing	efficiencies for the	2020 determination period
-----------	-------------------------	----------------------	---------------------------

	2020-21	2021-22	2022-23	2023-24
Continuing efficiency	0.00%	0.80%	1.59%	2.38%
Catch-up: capital program development, optimisation and prioritisation	0.07%	0.13%	0.20%	0.26%
Catch-up: value engineering	0.50%	1.00%	1.50%	2.00%
Catch-up: cost estimating	0.50%	1.00%	1.50%	2.00%
Catch-up: procurement	1.00%	2.00%	3.00%	3.00%
Catch-up efficiency	2.07%	4.13%	6.70%	7.26%
Total efficiency	2.07%	4.93%	8.29%	9.64%

Note: Atkins has changed the way it calculates the continuing efficiency adjustment. In the Final Report, the adjustment of 0.8% per annum (cumulative) is calculated using a geometric progression (not an arithmetic progression, as in the Draft Report). We agree with this modification as we consider it is mathematically accurate.

Source: IPART analysis; Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, pp 10-11, 15-16.

²⁶⁶ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, Table 6-13 p 134; Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Addendum to Final Report, March 2020, Table 3-1, p 7; Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, pp 10-11.

²⁶⁷ Productivity Commission, *PC Productivity Bulletin*, May 2019, p 3.

²⁶⁸ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 36.

²⁶⁹ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 36.

We have made a decision to accept Atkins' recommended catch-up and continuing efficiency adjustments.

F.2.6 Changes from the Draft Report

In the Draft Report, our draft decision was to reduce forecast capital expenditure by \$308.5 million (or 45.2%), which is very similar to our final decision (\$309.4 million reduction, or 45.3%). We have applied a 1-year pause to the continuing efficiency adjustment in response to COVID-19 in the Final Report, as well as a lower catch-up efficiency challenge. The resulting expenditure increase is effectively offset by Water NSW revising downwards its preliminary planning costs for drought response projects.

G Output measures

This Appendix describes how we made our decisions on Water NSW's output measure for the 2020 determination period.

Since the 2005 Determination, we have set output measures for Water NSW as a starting point for measuring the efficiency of capital and operating expenditure in our price reviews. In the sections that follow, we examine Water NSW's performance against the 2016 Determination output measures and outline our decisions on output measures for the 2020 Determination.

G.1 Water NSW's performance against its output measures over the 2016 determination period

At the 2016 pricing review, we set 10 output measures for Water NSW to measure the delivery of its capital expenditure program and report annually on its progress to IPART.²⁷⁰ As shown in Table G.1, Water NSW has completed or is on track to complete several of its output measures on time, with the exception of ongoing delays with the Warragamba pipelines, valves and controls upgrade and the deferral of the Tallowa Dam Preliminary Risk Assessment and Design project.

Project	Capital expenditure (\$2019-20)	Output measure	Expected completion	Activity to end 2018-19
Tallowa Dam Preliminary Risk Assessment and Design (WEM009)	\$2.6m approved \$0 actual	Completion of the project meeting budget and outcomes	N/A	The Greater Sydney Dam Safety Portfolio Risk Assessment resulted in the proposed works being deferred pending further investigation. Other dam safety works have been prioritised in their place.
Upper Canal Interim Works Phase 2	\$63m approved \$43.1m actual/forecast	Completion of the project meeting budget and outcomes	May 2019	The current packages of works are complete, and Water NSW is transitioning to a 'monitor and respond' phase which will include some minor further works on drainage.
Metropolitan Dams Electrical system (Stage 3) (WEM028)	\$29.4m approved \$21.2m actual/forecast	Completion of the project meeting budget and outcomes	Dec 2019	Following a strategic review of the scope of works in line with current organisational priorities in 2016, the scope was refined to provide a more targeted response to Water NSW risks. The rationalised scope of works will be delivered by December 2019.

Table G.1 Activity against output measures to the end of 2018-19

²⁷⁰ IPART, Review of prices for WaterNSW Greater Sydney services from 1 July 2016 to 30 June 2020 – Final Report, June 2016, p 39.

Project	Capital expenditure (\$2019-20)	Output measure	Expected completion	Activity to end 2018-19
Warragamba Pipelines valves and controls upgrade	\$10.5m approved \$15.6m actual/forecast	20% of total planned valve upgrades completed per year	June 2023	Some delays have resulted from the main contractor on these works going into receivership. There are ongoing delays associated with constraints on shutdowns arising from ongoing drought conditions and shutdown constraints arising from Sydney Water treatment works upgrades.
Motor vehicle fleet – procurement	\$9.6m approved \$2.6m actual/forecast	Achieve a reduction in vehicle changeovers of at least 4 vehicles on average per year until 2020-21	Ongoing	On target. 24 disposals and 15 additions in FY17.
Hydrometric Renewals Program (WEM001)	\$3.8m approved \$4.5m actual/forecast	Detailed asset management plan in place for the program	31 Dec 2016	Completed.
Blue Mountains Electrical Monitoring and Control	\$3.7m approved \$5.6m actual/forecast	Project completion	31 Dec 2019	Works are underway with completion expected prior to the end of 2019.
Warragamba Embankment Upgrade	\$7.5m approved \$6.4m actual/forecast	Progress towards project completion	June 2020	Completion of works to address highest priority issues is underway, with completion expected prior to the end of June 2020.
Burrawang Pumping Station Elect System Stage 3	\$3.3m approved \$16.3m actual/forecast	Project completion	June 2019	The project has completed physical construction and is undergoing performance testing with final handover following completion of site works (due for final handover prior to the end of June 2019).
Future augmentation of Sydney's water supply	\$21.0m approved \$19.1m actual/forecast	Substantial progress required in identifying and planning the next augmentation for Sydney's water supply	Planning phase completed by the end of June 2021.	Planning phase activities for the identified next investment tranche are now underway on the preferred option (a Burrawang to Avon Tunnel), with construction phase to follow based upon the outcomes of the upcoming NSW Government Greater Sydney Water Strategy 2020.

Source: Water NSW, Pricing Proposal to IPART, July 2019, Table 5.3, pp 62-64.

G.2 Output measures for the 2020 determination period

For the 2020 determination period, Water NSW proposed seven output measures.²⁷¹ The proposed output measures represent the major projects that Water NSW proposed to undertake during the 2020 determination period. Atkins, in its Final Report did not suggest changes to the projects and output measures, but recommended an amendment to the completion dates for the Warragamba E-flows project to reflect its recommendation that this project be deferred.²⁷²

In its addendum, Atkins adjusted its recommendation for Water NSW's output measures as follows:

- Remove the drought output to reflect that it does not recommend including expenditure for the Avon Deep Water Access project.
- Amend the recommended date for completion of the Warragamba E-flows project to December 2025.²⁷³

We have made a decision to accept Atkins' recommended output measures for Water NSW over the 2020 determination period. Atkin's recommended output measures in comparison to Water NSW's proposed output measures are shown in Table G.2 below.

Project	Output measure	Water NSW proposed completion date	Atkins recommended completion date
Fitzroy Falls Dam Safety Upgrade	Completion of Stage 1 works, internal erosion interception trench	June 2022	June 2022
Cataract Dam Safety Upgrade	Completion of Stage 1 works, installation of foundation relief drains and access ramp	June 2024	June 2024
Cordeaux Dam Safety Upgrade	Completion of Stage 1 works, completion of foundation relief drain expansion and upgrade	June 2024	June 2024
Warragamba Pipelines valves and controls upgrade	All valves in program installed and commissioned	June 2023	June 2023

Table G.2 Recommended output measures compared to Water NSW's proposed output measures for the 2020 determination period

²⁷¹ Water NSW, *Pricing Proposal to IPART*, July 2019, Table 13.1, p 172.

Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p
 148.

²⁷³ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Addendum to Final Report, March 2020, p 6.

Project	Output measure	Water NSW proposed completion date	Atkins recommended completion date
Avon Deep Water Storage	Practical completion of infrastructure that enables access to 'dead storage' of Avon Dam to the Illawarra Water Filtration Plant	June 2024	Atkins have recommended removing this project
Dam Safety Telemetry	Automation and telemetry of relevant instrumentation for selected metropolitan sites listed under project	June 2024	June 2024
Warragamba E-flows	Commissioning and proving period commenced for Warragamba E-flows to provide capability to release increased environmental flows from Warragamba Dam	December 2024	December 2025 (Outside of determination period)

Source: Water NSW, *Pricing Proposal to IPART*, July 2019, Table 13.1, p 172; Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Final Report*, March 2020, p 148; Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Addendum to Final Report*, March 2020, p 6.

H Additional information on the notional revenue requirement

This appendix outlines how we calculated some of the building blocks used to derive the NRR. It explains our decisions on the:

- Capital cost allowance (ie, the return on assets and regulatory depreciation)
- Working capital allowance
- Tax allowance.

This appendix also explains our key adjustments to the NRR.

Our decision on the other key NRR input – the operating expenditure allowance – is explained in Chapter 4.

H.1 How do we assess the notional revenue requirement?

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

- **Operating allowance**, to cover costs such as maintenance and administration costs
- **Capital allowance**, comprised of:
 - **Return on assets** that Water NSW uses to provide its services
 - **Regulatory depreciation** (or a return of the assets that Water NSW uses to provide its services), which involves deciding on the appropriate asset lives and depreciation method
- **Tax allowance**, which approximates the tax liability for a comparable commercial business
- Working capital allowance, which represents the holding cost of net current assets.

The annual sum of these five building blocks is the NRR, and represents our assessment of the total efficient costs Water NSW should incur in delivering its services. Once we calculated Water NSW's NRR, we took account of any adjustments to accommodate revenue that Water NSW will receive from other sources.

We then decided on the approach we would use to convert this amount into prices. This involved setting the target NRR for each year – that is, the actual revenue we expect Water NSW to generate from prices and charges for that year. In making this decision on target revenue, we consider a range of factors, including implications on price levels, the rate they would change, and any impacts on Water NSW and its customers.

An illustration of our approach to calculating the NRR and how we set prices is shown in Chapter 6.

H.2 Capital cost allowance

The two biggest building blocks after operating expenditure are based on the value of the total stock of Water NSW's assets. Our decision on the efficient level of capital expenditure contributes to this (see Chapter 5). These are the allowances for:

- A return on assets, which provides a return on the capital invested in Water NSW's assets used to provide its services that is, its regulatory asset base (RAB) and aims to ensure that it can continue to make efficient capital investments in the future.
- A return of these assets (or regulatory depreciation). This allowance recognises that by providing services to customers, a utility's assets will wear out over time, and therefore aims to ensure that the costs of the assets are recovered from users over the useful life of the assets.

H.3 Return on assets

Broadly, we calculate the return on assets by multiplying the value of the RAB over the determination period by an efficient 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 assets than Water NSW had proposed. This follows from our decisions that resulted in a lower RAB, and from the lower WACC.

(\$1111110115, \$2019-20)							
	2020-21	2021-22	2022-23	2023-24	Total		
Water NSW's proposal	76.1	82.1	89.4	94.3	341.9		
Our decision	59.9	61.9	63.7	65.3	250.8		
Difference (\$)	-16.2	-20.2	-25.8	-28.9	-91.1		
Difference (%)	-21.3%	-24.7%	-28.8%	-30.7%	-26.7%		

Table H.1Comparison of our decision on return on assets, and Water NSW's proposal
(\$millions, \$2019-20)

Note: Totals may not add due to rounding.

Source: Water NSW, Pricing Proposal to IPART, July 2019, Table 11.1, p 163, IPART calculations.

H.3.1 Value of the RAB

In calculating the opening RAB for the 2020 determination period, 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
- Added the annual indexation of the RAB.

Our decisions on the RAB are set out in Table H.2 and Table H.3 below, with a comparison of our decision on the RAB values that Water NSW proposed.

For the 2016 determination period, our decisions and updated inflation²⁷⁴ result in a 23.4% difference in the RAB increase over the four years. Our decisions have a relatively small impact on Water NSW's proposal (13.4%) and updated inflation accounts for the rest (10%). The RAB would increase by \$263.5 million, which is \$80.4 million less than under Water NSW's proposal.²⁷⁵

Table H.2	RAB roll-over for 2015-16 and the 2016 determination period (\$ million,
	nominal)

	2015-16	2016-17	2017-18	2018-19	2019-20	Change over 4 years ^a
Opening RAB	1,471.3	1,476.3	1,506.6	1,552.3	1,625.3	
<i>Plus:</i> Actual prudent and efficient capex	18.4	27.9	41.2	77.0	128.2	
<i>Less:</i> Cash capital contributions	0.0	0.0	0.0	0.0	0.0	
Less: Asset disposals	1.3	0.2	0.2	0.5	0.5	
<i>Less:</i> Allowed regulatory depreciation	26.9	25.7	27.4	28.9	30.1	
Plus: Indexation	14.8	28.3	32.1	25.4	16.9	
Closing RAB	1,476.3	1,506.6	1,552.3	1,625.3	1,739.8	263.5
Water NSW's proposal (closing)	1,476.3	1,506.6	1,552.3	1,642.7	1,820.2	343.9
Difference (\$)	0.0	0.0	0.0	-17.4	-80.4	-80.4
Difference (%)	0.0%	0.0%	0.0%	-1.1%	-4.4%	-23.4%

^a This column shows the difference between the opening RAB on 1 July 2016 and the closing RAB on 30 June 2020. The result differs from just comparing the closing RAB which does not account for changes between 1 July 2016 and 30 June 2017. **Note:** Totals may not add due to rounding.

Source: Water NSW, Pricing Proposal to IPART, July 2019, Table 7.2, p 126 and IPART calculations.

For the 2020 determination period, our decisions have a large impact, with growth in the RAB over the period being 60.5% lower than Water NSW proposed. The RAB would increase by \$211.3 million, which is \$324.0 million less than Water NSW proposed.²⁷⁶

²⁷⁴ WaterNSW's proposal and our draft decision used inflation of 2.2% in 2018-19 and 2.5% in 2019-20. Our final decision uses the actual inflation rate 1.6% in 2018-19, and a forecast of 1.0% in 2019-20 which is the Bloomberg mean consensus for forecast to June 2020, extracted 1 May 2020.

²⁷⁵ The RAB tends to increase over time as capital expenditure exceeds depreciation.

²⁷⁶ The RAB tends to increase over time as capital expenditure exceeds depreciation.

	2019-20	2020-21	2021-22	2022-23	2023-24	Change over 4 years
Opening RAB		1,739.8	1,809.1	1,853.3	1,911.9	181.1
<i>Plus:</i> Actual prudent and efficient capex		103.6	83.0	101.0	85.4	
<i>Less:</i> Cash capital contributions		0.0	0.0	0.0	0.0	
Less: Asset disposals		0.5	0.5	0.5	0.5	
<i>Less:</i> Allowed regulatory depreciation		33.9	38.2	42.0	45.8	
Plus: Indexation		0.0	0.0	0.0	0.0	
Closing RAB	1,739.8	1,809.1	1,853.3	1,911.9	1,951.1	211.3
Water NSW's proposal (closing RAB)	1,820.2	1,935.3	2,117.1	2,295.4	2,355.5	535.3
Difference (\$)	-80.4	-126.2	-263.8	-383.4	-404.5	-324.0
Difference (%)	-4.4%	-6.5%	-12.5%	-16.7%	-17.2%	-60.5%

Table H.3 RAB values going forward (as at 1 July; \$2019-20, \$million)

Note: Totals may not add due to rounding.

Source: Water NSW, Pricing Proposal to IPART, July 2019, Table 7.5, p 130 and IPART calculations.

Deductions for 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.

Water NSW did not have any cash capital contributions during the 2016 determination period, and does not forecast any for the 2020 determination period.

Deductions for asset disposals

Asset disposals can include asset sales, write-offs and write-downs. The value of any regulatory assets Water NSW 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.

We applied our 2018 asset disposals policy²⁷⁷ 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.1.²⁷⁸

²⁷⁷ IPART, Asset Disposals Policy Paper (for application to water businesses), Final Report, February 2018.

²⁷⁸ Pre-line-in-the-sand assets are assets that the business purchased or acquired before we established the initial RAB for Water NSW in 2000. Post-line-in-the-sand assets are all assets purchased or acquired since then.

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 DRC (depreciated replacement costs) 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.

Water NSW'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 \$1.3 million of which there were no significant asset disposals.²⁷⁹ This value is lower than the \$5.6 million Water NSW had forecast during its 2016 determination period pricing proposal. We have incorporated the \$1.3 million in asset disposals during the 2016 determination period into our roll forward of Water NSW's historical RAB.

We accepted Water NSW's non-significant asset disposals of \$0.5 million (\$2019-20) per year over the period. This is about 0.03% of Water NSW's opening RAB value in each year in which the assets are disposed of.

Deductions for Braidwood land sales beyond the 2020 determination period

In its pricing proposal, Water NSW indicated that it intends to dispose of land parcels at Braidwood which it has identified as being potentially surplus to requirements. The Braidwood land parcels consist of about 28,050 ha of land that had been acquired by the then Sydney Water Board prior to 1990 in anticipation of building the Welcome Reef Dam.²⁸⁰

Water NSW sought a decision or advice on whether we would deduct from its RAB a share of the proceeds of Braidwood lands, based on our approach to significant pre line-in-the-sand asset disposals (see Box H.1). It proposed that its RAB should not be adjusted, on the grounds

Water NSW, *Pricing Proposal to IPART*, July 2019, Table 7.1, p 125. The numbers presented on Water NSW's proposal were in nominal dollars.

²⁸⁰ Water NSW, *Pricing Proposal to IPART*, July 2019, p 127.

that the land was non-operational when the RAB was established (2000). As a precedent, it cited our 2016 decision not to deduct from Sydney Water's RAB a share of the proceeds of the sale of its Central Workshops site, on the grounds that the site was non-operational in 2000. Box H.1 outlines our asset disposals policy on non-operational land.

The Tribunal's preliminary view is that we would remove a share of the proceeds of Braidwood land sales from the RAB. The reasons for our decision are:

- Unlike Sydney Water's Central Workshop site, the Braidwood land was not 'surplus to requirements' when the Water NSW RAB was established. In the case of Sydney Water's Central Workshops site, the workshop had been dismantled in 1995 and the site had been vacant since then. In the case of the Braidwood land parcels, the then Sydney Catchment Authority (SCA) expected to build the Welcome Reef dam at some time in the future. It was only in 2002 that the NSW Government decided not to proceed with the dam²⁸¹ and in 2004 that the NSW Government announced through its 2004 Metropolitan Water Plan that the construction of the Welcome Reef Dam was not necessary.²⁸²
- Including assets in the RAB before they become operational is standard regulatory practice, subject to prudency and efficiency. For example,
 - We would include in the RAB land (prudently and efficiently) purchased in anticipation of a new storage reservoir. Then, if the reservoir was not built and the land was sold, we would remove the regulatory value of the land from the RAB at the time it was sold.
 - We have included in the RAB planning costs for two new drought response projects as it occurs, rather than only when, and if, the projects become operational. Clearly, these 'assets' will be non-operational until (and if) the projects become operational.

H.3.2 WACC

Our decision is to use a WACC of 3.4%. Appendix I sets out the parameters that we used.

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 proposal Sydney Water stated that a regulatory true-up provides price stability that is preferable to its customers.²⁸³ Water NSW, in its proposal, stated that annual updates are better for customers, however it was referring to the end use customers -that is, Sydney Water's customers. We agree with Sydney

²⁸¹ https://www.canberratimes.com.au/story/6200329/dams-are-key-to-water-management-in-australia/

²⁸² WaterNSW, WaterNSW Pricing Proposal to the Independent Pricing and Regulatory Tribunal. Regulated prices for Greater Sydney 2020-2024, p127.

²⁸³ Sydney Water, *Pricing Proposal to IPART*, July 2019, Attachment 6, p 13.

Water's position. Further, we consider that Sydney Water is better placed to understand its customers than Water NSW is.

There are also benefits to alignment of the annual update/true-up approach between Sydney Water and Water NSW as these two entities are part of the same integrated system. These include a lower administrative burden and less shifting of risk from one entity onto the other.

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.4 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. For simplicity, in previous reviews we did this at an aggregated level for both existing assets and capital expenditure.

However, we can more accurately calculate depreciation on capital expenditure by using the individual asset life for each asset category. While using an average asset life means that Water NSW will recover the full cost of the capital expenditure over the (weighted) average life of that capital expenditure, using disaggregated asset lives provides a more accurate year-by-year depreciation profile.

On 10 March 2020, Water NSW submitted a proposal to disaggregate capital expenditure into a number of asset categories. In its response to our Draft Report, Water NSW re-iterated its view that a disaggregated approach better reflected its actual year-by-year depreciation profile. Water NSW also indicated its intention to disaggregate its existing RAB for the next determination period (2024).²⁸⁴

In this review we have decided to disaggregate capital expenditure into a number of asset categories to calculate depreciation.

H.4.1 Regulatory asset lives

In the 2016 determination, we used a remaining life of 60 years for existing assets and a useful life of 60 years for new assets. In its proposal, Water NSW considered that an average remaining life of assets of 60 years remains appropriate as a proxy for the value-weighted average of the remaining lives of assets obtained prior to the start of the 2020 determination period.²⁸⁵ For new assets over the 2020-24 determination period, Water NSW proposes a weighted average standard asset life of 60 years.²⁸⁶

²⁸⁴ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 53.

²⁸⁵ Water NSW, *Pricing Proposal to IPART*, July 2019, p 128.

²⁸⁶ Water NSW calculated an average expected life of 61.2 years, but proposed an average life of 60 years as a reasonable proxy. Water NSW, *Pricing Proposal to IPART*, July 2019, p 128.

We use a standard method to calculate the remaining lives of existing assets at the start of a new determination period. Consistent with our standard approach, our decision is to set the remaining asset lives at 55.5 years (rather than Water NSW's proposed remaining life of 60 years).

Table H.4 shows Water NSW's proposed and Atkins' recommended asset lives by asset category for new assets (ie, capital expenditure). We have made a decision to accept Atkins' proposed asset lives.

	Water NSW proposed asset life	Atkins recommended asset life
Dams	100	200
Other storages	80	80
Meters	15	15
ICT systems	6	7
Vehicles	5	5
Buildings	40	40
Plant and Machinery	12	12
Pipelines	80	120
Major mechanical	30	30
System controls	10	10
Roads/ minor civil	30	30
5-year inspections	5	5
Major Facilities	30	30

Table H.4 Water NSW's proposed and Atkins' recommended expected asset lives

Source: Water NSW, Pricing Proposal to IPART, July 2019, Table 7.3, p 128; Atkins Cardno, WaterNSW expenditure review – Supplementary Report, June 2020, p 29.

Atkins recommended longer asset lives compared to Water NSW's proposal for three asset categories. In their submissions to the Draft Report, Water NSW and the NSW Department of Planning, Industry and Environment both disagreed with this recommendation.²⁸⁷

Dams

In its Final Report, Atkins recommended a useful life of 200 years rather than 100 years based on its experience, a previous technical consultant's report and noting that Water NSW uses an asset life of 200 years for accounting purposes.²⁸⁸

Water NSW considered the change in asset lives from 100 years to 200 was based on incorrect reasoning. In its submission to our Draft Report, it noted that the technical consultant's report had ultimately recommended a 100 year asset life. Water NSW only used 200 years for accounting purposes because it was carried over from the former Sydney Catchment

²⁸⁷ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 47-52; NSW Department of Planning, Industry and Environment, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, May 2020, p 5.

²⁸⁸ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review*, *Final Report*, March 2020, p 137.

Authority (SCA). In addition, Water NSW indicated it was common industry practice in tendering for construction to assume 100 years for dams.²⁸⁹

Atkins retained its 200 year asset life recommendation in its Supplementary Report. It noted that the technical consultant's report commented that 200 years could also be an appropriate asset life for dams. It also found that Water NSW accepted that components of dams could be very long lived in a technical sense. However, Water NSW was concerned that assigning a very long economic life to these assets could lead to uncertainty about their value over that long period.²⁹⁰

In its Supplementary Report, Atkins noted that that similar uncertainties exist for other asset types. Further, the value of Water NSW's dams had been scrutinised through recent drought planning. In any case, based on new information provided by Water NSW, Atkins recommended that some projects (such as Warragamba E-flows) should be reallocated from the dam category to pipelines and the major mechanical category.²⁹¹

Pipelines

Atkins recommended a useful life of 120 years for pipelines in its Final Report, rather than 80 years proposed by Water NSW. It noted that Sydney Water used a useful life of 140 years.²⁹²

Water NSW disagreed with this change in the asset life of its pipelines. In its submission to our Draft Report, it contended there was an important distinction between Water NSW's and Sydney Water's asset lives for pipelines. Water NSW's pipeline classification included both pipelines and pump stations, whereas Sydney Water applied separate asset lives for pipelines and pump stations. In addition, Water NSW's pipelines contained associated electrical and mechanical infrastructure, which had a much shorter asset life than the pipelines itself. Finally, it considered that 80 years was in line with common industry practice.²⁹³

In its Supplementary Report, Atkins considered increased disaggregation would provide a better outcome than changing asset lives. Therefore, it maintained its recommendation for an asset life of 120 years for pipelines. Atkins also commented that Water NSW should identify the expenditure components for its projects currently classified as pipelines that are more appropriately considered pump stations, and assign a shorter asset life to them.²⁹⁴. Atkins did not identify any assets that should be reallocated from the pipelines to the pump stations category over the 2020 determination period.

²⁸⁹ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 47-49.

²⁹⁰ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, pp 30-31.

²⁹¹ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, pp 30-31.

²⁹² Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review*, *Final Report*, March 2020, p 137.

²⁹³ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 49-50.

²⁹⁴ Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review, Supplementary Report,* June 2020, p 31.

ICT

In its Final Report, Atkins recommended a 10 year asset life for ICT systems, rather than 6 years proposed by Water NSW, based on "the scope of IT assets being procured.... and a comparison with the assumptions made by Sydney Water in the 2016 review".²⁹⁵

In its submission to our Draft Report, Water NSW maintained the ICT asset life should be 6 years. It was not reasonable to apply a single life value to all categories of ICT assets. Further, its ICT projects had software lives of 7 years and hardware lives of 4 to 5 years. Extending IT asset lives could lead to assets being disposed of before they were fully written down. This could lead to stranding of assets.²⁹⁶

Atkins carried out an analysis to derive the weighted average asset life for the ICT expenditure proposed for the 2020 determination period. As a result of this analysis, Atkins changed its recommendation from its Final Report and instead recommended an asset life of 7 years be used for ICT assets.²⁹⁷

H.4.2 Disaggregated regulatory depreciation for capital expenditure

In its July 2019 proposal, Water NSW provided capital expenditure for the 13 different asset categories shown in Table H.4. Our draft decision reduced Water NSW's proposed expenditure in each of these asset categories in proportion to Atkins' recommended overall reduction in capital expenditure. In their response to our Draft Report, Water NSW proposed that we fully reflect adjustments to specific projects in the capital expenditure for each asset category.²⁹⁸ We accepted their proposal.

We reduced the number of categories from 13 to 10, by combining categories with the same or very similar recommended asset lives, as shown in Table H.5 (shaded rows).²⁹⁹ We then calculate depreciation on capital expenditure using Atkins':

- recommended asset lives for each capital expenditure category, as approved by the Tribunal, and
- recommended capital expenditure by asset category, which reflects their (Atkins') adjustments to specific projects, re-allocation of some projects from dams to the pipeline asset category, and efficiency adjustments.

Table H.5 shows our asset lives and capital expenditure by asset category.

 ²⁹⁵ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Final Report, March 2020, p
 137.

²⁹⁶ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 50-52.

²⁹⁷ Atkins Cardno, WaterNSW Greater Sydney expenditure and demand review, Supplementary Report, June 2020, p 32.

²⁹⁸ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 53-54

²⁹⁹ For practical reasons, it is standard regulatory practice to combine assets with similar lives into asset categories.

Asset category	Asset life	Ca	Capital expenditure (\$million, \$2019-20)						
	(years)	2020-21	2021-22	2022-23	2023-24	Total 2021- 2024			
Dams	200.0	5.4	8.6	13.2	5.0	32.1			
Other Storages	80.0	1.4	0.0	0.0	0.0	1.4			
Pipelines	120.0	5.0	2.7	8.7	6.4	22.8			
Buildings	40.0	9.2	4.5	1.4	1.4	16.5			
Major Mechanical & Roads/ Minor Civil ^a	30.0	52.5	53.6	65.6	60.2	231.8			
Meters	15.0	1.2	1.2	1.2	1.1	4.7			
Plant & machinery	12.0	1.4	1.0	1.6	0.6	4.5			
ICT systems & Systems/ Controls	7.6 a	16.3	10.7	8.6	9.5	45.1			
Vehicles & 5 yearly Inspections	5.0	1.7	0.7	0.8	1.2	4.5			
Major facilities ^b	30	9.6	0.0	0.0	0.0	9.6			
Total	na	103.6	83.0	101.0	85.4	373.0			

Table H.5 Capital expenditure and asset lives for depreciating Water NSW's RAB

 ${\bf a}\,$ Weighted average life of ICT systems (7 years) and Systems/Controls (10 years)

b Major facilities refers to planning cost for possible drought response projects.

Note: Totals may not sum due to rounding.

Source: Atkins Cardno, *WaterNSW expenditure and demand forecast review, Final Report for IPART,* February 2020, Table 7-3, p138, Atkins Cardno, *WaterNSW Greater Sydney expenditure and demand review*, Supplementary Report, June 2020, p 32 and IPART calculations.

Our decisions have resulted in higher depreciation allowance than Water NSW had proposed. This follows from our decision to calculate disaggregated depreciation for capital expenditure.

Table H.6	Comparison of our decision depreciation, and Water NSW's proposal
	(\$millions, \$2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Water NSW's proposal	30.9	33.9	37.4	40.0	142.3
Our decision	33.3	37.6	41.3	45.0	157.2
Difference (\$)	2.4	3.7	3.8	5.0	14.9
Difference (%)	7.7%	10.9%	10.3%	12.4%	10.5%

Note: Totals may not add due to rounding.

Source: Water NSW, Pricing Proposal to IPART, July 2019, Table 11.1, p 163, IPART calculations.

H.5 Working capital allowance

The working capital allowance ensures Water NSW 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 Policy Paper on our website.³⁰⁰

Water NSW proposed prepayments of \$0.3 million in each year of the determination. It is our policy to accept prepayments if a business can reasonably demonstrate the amount is prudent and efficient.³⁰¹ Our position is that Water NSW has not done this. We have therefore not included the \$0.3 million of prepayments in Water NSW's allowance for working capital.

Table H.7 below provides a comparison of our decision with Water NSW's proposal. The reduction in working capital is driven by a lower WACC than that proposed by Water NSW.

proposal (\$million, \$2019-20)							
	2020-21	2021-22	2022-23	2023-24	Total		
Water NSW's proposal	1.4	1.2	1.3	2.0	6.0		
Our decision	1.3	1.5	1.4	1.5	5.8		
Difference (\$)	-0.1	0.3	0.1	-0.5	-0.2		
Difference (%)	-6.0%	23.3%	7.7%	-23.7%	-3.1%		

Table H.7Comparison of our return on working capital allowance to Water NSW's
proposal (\$million, \$2019-20)

Note: Totals may not add due to rounding.

Source: Water NSW, Pricing Proposal to IPART, July 2019, Table 9.7, p 154 and IPART calculations.

H.6 Tax allowance

We include an explicit allowance for tax, consistent with our use of a post-tax WACC to estimate the allowance for a return on assets in the revenue requirement.

Our tax allowance is not intended to recover Water NSW'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 is 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.

³⁰⁰ IPART, *Working Capital Allowance – Policy Paper*, November 2018.

³⁰¹ IPART, *Working Capital Allowance – Policy Paper*, November 2018, p 13.

Table H.**8** below provides a comparison of our decision with Water NSW's proposal. Our tax allowance is lower than Water NSW's proposed tax allowance, mainly due to a lower WACC.

Table H.8	Comparison of our decision on tax allowance and Water NSW's proposal
	(\$millions, \$2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Water NSW's proposal	3.6	3.7	3.7	4.0	15.0
Our decision	3.2	2.9	3.0	3.4	12.5
Difference (\$)	-0.4	-0.8	-0.6	-0.6	-2.5
Difference (%)	-11.9%	-21.8%	-17.6%	-15.3%	-16.7%

Note: Totals may not add due to rounding.

Source: Water NSW, Pricing Proposal to IPART, July 2019, Table 9.8, p 157; IPART calculations.

We applied our standard methodology to set 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 NRR (excluding tax allowance), less operating cost allowances, tax depreciation, and interest expenses. When we forecast the tax allowance we also assessed Water NSW's forecasts for assets received free of charge and tax depreciation.

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.³⁰²

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 Water NSW is above the small business tax threshold of \$50 million per annum.
- Accepted Water NSW's forecast tax depreciation, but updated it to reflect our decisions on capital expenditure.

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 deprecation amounts forecast by the business when we calculate the tax allowance.³⁰³ This approach means that our tax depreciation reflects actual business practice (eg, actual tax depreciation rates and depreciation methods).

We have reviewed and accepted Water NSW's approach to forecasting tax depreciation. However, rather than accepting Water NSW's proposed amount we have calculated depreciation by asset type to reflect our decisions on capital expenditure and asset lives.

³⁰² The nominal cost of debt is the sum of the nominal risk free rate and nominal debt margin.

³⁰³ IPART, *The incorporation of company tax in price determinations, Other Industries – Final Decision*, December 2011, pp 17-18.

H.7 Revenue adjustments for non-regulated revenue

We encourage water utilities to generate revenue in ways other than traditional services, for instance, through renting some of its land if there is an interested lessor. Where it does 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 from the past approach for income from post mining rectification work. In Chapter 3, we noted that Water NSW is intending to share 100% of its revenue from post mining rectification works with customers. This revenue represents external funding from Subsidence Advisory NSW for specific mining rectification works. Hence, this revenue offsets the cost of this work (see Table H.9).

	2020 21	2024 22	2022.23	2023 24	Total
	2020-21	2021-22	2022-25	2023-24	TOLAT
Revenue from post mining rectification work	0.12	0.02	0.02	0.02	0.19
Share for customers	0.12	0.02	0.02	0.02	0.19
Forecast revenue from other rental income	0.13	0.13	0.13	0.13	0.53
Share for customers	0.07	0.07	0.07	0.07	0.27
Total recommended deduction from NRR	0.19	0.09	0.09	0.09	0.45

Table H.9Water NSW's proposed non-regulated revenue and our decision on sharing
and NRR adjustment (\$million, \$2019-20)

H.7.1 We adjusted the NRR by \$0.5 million to account for revenue from nonregulated sources

Before setting prices to recover the NRR, we subtract the revenue Water NSW is forecast to receive from non-regulated sources (when that revenue is made using regulated assets). 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.

Table H.10 presents our decisions on the revenue that Water NSW would receive from other sources.

Table H.10 Ac	djustments to	the NRR	(\$2019-20,	\$million)
---------------	---------------	---------	-------------	------------

	2020-21	2021-22	2022-23	2023-24	Total
IPART decision NRR from building blocks	192.2	196.5	201.7	202.1	792.6
Non-regulated revenue ^a	0.2	0.1	0.1	0.1	0.5
Revenue to be recovered by prices	192.0	196.4	201.7	202.1	792.1

a This includes 50% of rental income and 100% of expected revenue from post mining rectification works to be shared with customers.

Note: Totals may not add due to rounding.

Source: IPART calculations.

H.8 We smoothed the revenue requirement before setting prices

We decided to set prices to recover the adjusted NRR by the end of the determination period, rather than to recover the annual NRR by the end of each year of this period. This is in line with our usual practice. This approach smooths the impact of price changes over the period, thus reducing price volatility for customers, and revenue volatility for Water NSW.

In Chapter 6, we discussed that we set prices so that the target revenue expected be received from prices equates to the adjusted NRR over the determination period (in 'present value' terms).

H.9 The total NRR is lower than the NRR in the 2016 price review

Our total NRR (before adjustments) is \$68.1 million (or 7.9%) lower than we used to set prices in 2016 over 4 years. Comparatively, the NRR includes:

- A lower allowance for operating expenditure, reflecting Water NSW's proposed decreases.
- A lower return on assets, driven by the lower WACC.
- A higher allowance for regulatory depreciation, with the RAB disaggregation allowing for shorter asset lives for some new capital expenditure, which in turn brings forward depreciation into this regulatory period.
- A marginally lower tax allowance, driven by the lower WACC and increased tax depreciation.
- A higher working capital allowance, due to a longer accounts receivables cycle in this determination period.

Figure H.1 below compares the annual average NRR under our decision, with the NRR we used to set prices in 2016.





Figure H.2 illustrates the key changes between the total NRR for the 2016 determination period and our decisions for the NRR for the 2020 determination period.



Figure H.2 Key changes from our 2016 NRR and our 2020 NRR (\$2019-20, \$million)

Note: The 'Higher opening RAB' captures the impact of a higher opening RAB on 1 July 2020 compared to 1 July 2016. For this reason alone, the 2020 determination NRR would be higher than 2016 determination NRR even if we use 2016 determination opex, capex, asset lives and WACC. (The change in working capital policy is included in the RAB uplift, but the impact is small). In addition, 'Depreciation' includes the impact of depreciating capex by asset category. **Source:** IPART calculations.

Source: IPART calculations.

I Inflation and the Weighted Average Cost of Capital

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 interest 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 life.

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:³⁰⁴

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

³⁰⁴ Centre for International Economics, *Peer Review – Inflation and WACC,* May 2020, p 9.

I.1 Our review process

In 2018 we completed a full review of our WACC method.³⁰⁵ 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.³⁰⁶

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, CIE, to peer review how we estimate expected inflation when setting the real WACC.

I.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 breakeven inflation (BEI). In particular, we said:

We recognise the in-principle benefits of using the BEI method to calculate inflation. However, onbalance, 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

³⁰⁵ IPART, *Review of our WACC method – Final Report*, February 2020.

³⁰⁶ 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.³⁰⁷

The AER has recently amended its approach to estimating expected inflation

The Australian Energy Regulator (AER) amended its approach to estimating expected inflation 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." ³⁰⁸

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 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.

I.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 marketbased 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.

³⁰⁷ IPART, *Review of our WACC method – Final Report,* February 2020, p 79.

³⁰⁸ 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."³⁰⁹

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.³¹⁰

I.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."³¹¹ 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.

I.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

³⁰⁹ Sydney Water, Submission to IPART's Draft Report – Review of prices for Sydney Water from 1 July 2020, April 2020, p 118.

³¹⁰ 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.

³¹¹ 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 SMP 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:³¹²

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:³¹³

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.

³¹² RBA, Statement of Monetary Policy – May 2020, Inflation, accessed on 5th June 2020, https://www.rba.gov.au/publications/smp/2020/may/inflation.html.

³¹³ 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.

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%

Table I.1 Comparison of the status quo and RBA approaches

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 cash flows 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 I.2 compares how each of the options perform on these principles.

	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 I.2
 Comparison of the three approaches considered in this review

Table I.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.

I.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.³¹⁴

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.

³¹⁴ CIE, *Peer Review – Inflation and WACC,* May 2020, p 1.

J 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.

J.1 Our WACC estimate

Our WACC estimate is set out in Table J.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.

J.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.

	Step	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%

Table J.1 Water NSW Greater Sydney WACC for final report

J.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.

J.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.

J.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%.

J.6 Regulatory period

We adopt a standard four year regulatory period for Water NSW.

J.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.

J.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 J.1.

Figure J.1 IPART's uncertainty index



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.

J.8.1 Stakeholders supported our maintaining a 50-50 weighting for the cost of debt

Sydney Water 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.³¹⁵ This is the prudent and efficient approach outlined in our 2018 WACC method.

Neither Hunter Water nor Water NSW commented specifically on the temporal weights that the Tribunal should use.

³¹⁵ SDP submission to IPART consultation on debt margins, April 2020, pp 2-3 and Sydney Water, *Response to IPART's Draft Report and Determination*, April 2020, p 127.

We agree with Sydney Water 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.³¹⁶ 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.

J.8.2 Stakeholders proposed that we give greater weight to the current cost of equity

Sydney Water and SDP submitted that the Tribunal should consider giving greater weight to the current market cost of equity, but did not suggest particular weights.³¹⁷ 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

³¹⁶ 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.

³¹⁷ SDP submission to IPART consultation on debt margins, April 2020, pp 3-4 and Sydney Water, *Response to IPART's Draft Report and Determination*, April 2020, pp 125-127.

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.

J.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.

Water NSW re-iterated its support for annual updates in its response to our Draft Report. In its proposal, Water NSW argued that annual updates are better for customers, however it was referring to the end use customers. That is, Sydney Water's customers. In its proposal Sydney Water argued that an end of period true-up provides price stability that is preferable to its customers.³¹⁸ We consider that Sydney Water is better placed to understand its customers than Water NSW.

For these reasons our decision is to use an end of period true-up to account for the changes in the cost of debt over the course of the determination period.

³¹⁸ Sydney Water, *Pricing Proposal to IPART*, July 2019, Attachment 6, p 13.
K Cost pass-through for regulatory change and catastrophic events

Cost pass-through mechanisms allow the efficient costs of uncertain and uncontrolled events that arise during the regulatory period to be passed through to customers into prices as they are incurred within the regulatory period.

In this appendix, we summarise Water NSW's proposal for two new cost pass-through mechanisms for the 2020 determination period, our criteria and assessment of its proposal.

K.1 Summary of Water NSW's proposal

To have a new event cost pass-through mechanism

Water NSW proposes to introduce cost pass-through mechanisms to address risks (ie, allocate these risks to customers) arising during the determination period from:

- A regulatory change event, including changes to regulation, service standards and taxes, and
- A catastrophic event due to a natural disaster event or a terrorism event.³¹⁹

The proposed cost pass-through events will include:

- A symmetric framework that applies for both positive and negative cost events, and
- A materiality threshold of 2.5% of the annual revenue requirement, which would be triggered if there was a change in costs of approximately \$5 million.³²⁰

To expand its cost pass-through framework

Water NSW's pricing proposal and submission to our Issues Paper commented on the need for an expanded cost pass-through framework and provides relevant examples of cost pass through mechanisms from other jurisdictions and industries (eg, the Australian Energy Market Commission for electricity network businesses, Australian Competition and Consumer Commission and Essential Services Commission Victoria) that could be leveraged by IPART for the 2020 determination.³²¹

³¹⁹ Water NSW, *Pricing Proposal to IPART*, July 2019, p 39.

³²⁰ Water NSW, *Pricing proposal to IPART*, July 2019, p 40.

³²¹ Water NSW, Pricing proposal to IPART, July 2019, p 38, and Water NSW, Submission to IPART's Issues Paper – Review of prices for Water NSW Greater Sydney services from 1 July 2020, October 2019, pp 25-32.

K.2 Our cost pass-through framework

We assessed Water NSW's proposed cost pass-throughs against a set of criteria (See Box K.1).

Box K.1 Criteria for cost pass-through mechanisms

Cost pass-through mechanisms should only be applied in very limited circumstances. They are generally limited to situations where:

- 1. There is a trigger event (to activate the cost pass-through), which can be clearly defined and identified in the price determination.
- 2. The resulting efficient cost associated with the trigger event can be fully assessed, including whether there are other factors that fully or partially offset the direct cost of the event.^a
- 3. The resulting cost is assessed to exceed a materiality threshold.
- 4. The regulated business cannot influence the likelihood of the trigger event or the resulting cost.
- 5. The mechanism is symmetric in that it applies equally to cost increases and cost decreases (in cases where the risk can result in both cost increases and cost decreases).

It is clear the cost pass-through will result in prices that better reflect the efficient cost of service both before and after the trigger event occurs.

a Under the IPART Act, this effectively means the cost must be clearly identified and specified at the time of the price determination.

K.3 To not accept proposed general cost pass-throughs for regulatory change and catastrophic events

We have decided not to accept Water NSW's proposed general cost pass-throughs for regulatory change and catastrophic events. This is because these events do not satisfy our criteria in that:

- There is no clearly identified trigger event that is, Water NSW has proposed general cost pass throughs that could be triggered by any event that it considers falls under the categories of regulatory change and catastrophic events.
- The efficient cost resulting from an event cannot be fully assessed in response to our Issues Paper, Water NSW noted that it is guided by the principal objective under the *State Owned Corporations Act 1989* (SOC Act) to reduce the costs of any potential regulatory change event.³²² It also noted that under its proposed cost pass-through, Water NSW would still require IPART to review the costs of the event, but there is no defined approach regarding how the efficient costs of the proposed cost pass-through event will be calculated.

³²² Water NSW, Submission to IPART's Issues Paper - Review of Prices for WaterNSW Greater Sydney services from 1 July 2020, October 2019, p 26.

- The business can influence the trigger event or resulting cost there may be instances where Water NSW is able to influence either the trigger event and/or the resulting costs of regulatory change and catastrophic events. For example:
 - For some regulatory change events, Water NSW may be able to actively influence the likelihood and cost of these events. Water NSW acknowledged that, in limited cases, it may influence regulatory change, however Water NSW is bound by the SOC Act to have regard to the interests of the community in which it operates.³²³
 - For some catastrophic events, Water NSW can actively plan for these events and insure against these events to minimise the impact of the event risk and the resulting cost.

Therefore, we found that it was not appropriate to provide a general undefined cost passthrough mechanism for these categories of risk. Instead, if specific risks are identified, they should be assessed on a case-by-case basis as they arise. This will ensure that a pass-through mechanism is only applied when it is likely that the pass-through event will occur during the determination period (ie, in 2020-24); and where we can ensure that only the efficient costs resulting from this event are passed through to customers. Our criteria is designed to ensure that cost pass-throughs are limited to situations where it is more efficient to pass the risk onto customers, where the utility's incentive to manage the risk efficiently and effectively is not lost and where prices become more reflective of efficient cost to provide better signals to customers over the determination period.

With the exception of Water NSW who maintained its position from its proposal³²⁴, stakeholders generally agreed with our preliminary view in the Issues Paper that there is no need for a cost pass-through mechanism for regulatory change and catastrophic events as this can inefficiently shift risks to end-use customers. Stakeholders also commented that Water NSW should plan for these events and retain an incentive to avoid the likelihood of the occurrence and resulting cost impact of these events.³²⁵

K.4 To maintain our existing cost pass-through framework

Our current framework ensures that cost pass-throughs are limited to situations where the risk is clearly defined and it is possible to calculate and recover the efficient costs associated with the event. Otherwise, this may:

- Impact a utility's incentives to act efficiently it is important that the regulated business retains some risk to incentivise it to be proactive in managing its risks and advocate for the most effective and efficient solutions.
- Result in inefficient costs being passed through to customers if a business loses the incentive to manage these risks effectively, they could incur inefficient costs which may then be passed through to customers.

³²³ Water NSW, Submission to IPART's Issues Paper - Review of Prices for WaterNSW Greater Sydney services from 1 July 2020, October 2019, p 26.

³²⁴ Water NSW, Submission to IPART's Issues Paper - Review of Prices for WaterNSW Greater Sydney services from 1 July 2020, October 2019, pp 25-27 and Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 12-15.

³²⁵ Sydney Water, Submission to IPART's Issues Paper – Review of prices for Water NSW Greater Sydney services from 1 July 2020, October 2019, p 7 and p11, Flow Systems, Submission to IPART's Issues Paper – Review of prices for Water NSW Greater Sydney services from 1 July 2020, October 2019, p 2.

With the exception of Water NSW who maintained its position from its proposal, we did not receive any stakeholder feedback that indicate changing our current framework.

K.5 Water NSW can seek an early determination if required

If Water NSW considers that the impact arising from uncertain or unforeseen events materially affects its operating environment and financial position such that it requires price adjustments immediately, our current framework allows Water NSW to apply for an early price determination.

Under this approach, we would be able to consider all prudent and efficient costs of the utility business (including potentially offsetting effects, such as lower costs or higher revenues in other parts of its regulated Greater Sydney business) and we would be in a better position to assess net benefits and/or costs, and efficiently allocate risks between the business and its customers at the time of the price review when material changes would have occurred.

L Cost pass-through – Shoalhaven Transfer Scheme

In our 2016 Determination, we introduced a cost pass-through mechanism to allow Water NSW to recover additional costs incurred when transferring water from the Shoalhaven transfer scheme from Sydney Water.

In this appendix, we discuss:

- How the Shoalhaven transfer scheme operates
- Water NSW's proposal for amending the formula used to pass-through costs of the Shoalhaven Transfer Scheme to customers, and
- Our decisions on the Shoalhaven Transfer Scheme cost pass-through mechanism.

L.1 Operating conditions of the Shoalhaven transfer scheme

When dam levels in Sydney drop to 75%, the Shoalhaven transfer scheme is turned on under Water NSW's requirements in the 2017 Metropolitan Water Plan.³²⁶ When this occurs, water from the Tallowa Dam is fed into the Warragamba Dam to supply water to meet the needs of the people and environment of the Greater Sydney region.

There are some operating conditions for this scheme where by:

- The Shoalhaven system will turn off when Greater Sydney's dam levels reach 80%.327
- The drawdown level of Tallowa Dam is limited to one metre below the full supply level to avoid negative impacts on the recreational use of the river, storage and local economy.³²⁸
- During extreme drought conditions (ie, when dam levels drop to 30%), Water NSW are able to draw additional water from the Shoalhaven transfer scheme and lower the level in Tallowa Dam to three metres below the full supply level.

³²⁶ Metropolitan Water, 2017 Metropolitan Water Plan Water for a Liveable, Growing and Resilient Greater Sydney, March 2017, p 28.

³²⁷ Metropolitan Water, 2017 Metropolitan Water Plan Water for a Liveable, Growing and Resilient Greater Sydney, March 2017, Figure 5.

³²⁸ Metropolitan Water, 2017 Metropolitan Water Plan Water for a Liveable, Growing and Resilient Greater Sydney, March 2017, p 38. The capacity of Tallowa Dam available for transfers is 21,800ML as of 5 June 2020.

L.2 Summary of our decisions

Our decisions are to:

- Accept the proposed continuation of the Shoalhaven cost pass-through mechanism.
- Update the transfer formula to include the all-in efficient cost of the Shoalhaven transfer scheme. The all-in efficient cost is based on our benchmark of the efficient energy price per ML for the transfer scheme.
- Not accept the proposal to include a shortfall levy to recover revenue shortfalls incurred during the 2016 determination period through prices in the 2020 determination period.

We discuss our decisions in further details below.

L.3 We accepted the proposed continuation of the Shoalhaven cost passthrough mechanism

Our draft decision is to accept Water NSW's proposal to maintain its cost pass-through mechanism for the Shoalhaven transfer scheme because we found that the operation of the Shoalhaven transfer scheme is dependent on dam levels in accordance with the Metropolitan Water plan. The trigger is clearly outside of Water NSW's control. The pass-through mechanism also recognises the uncertainty associated with forecasting the incidence of the transfers and how much water is required. It also provides a signal to Sydney Water about the costs of supply augmentation in times of increased water scarcity. Based on the reasons above, we consider the Shoalhaven transfers meet our criteria in our cost pass-through framework set out in Appendix K.

In our 2016 price review, we concluded that the pass-through mechanism should not apply to the three council customers as the transfers result in water leaving the Shoalhaven transfer scheme.³²⁹ Councils should not pay for the transfers as they are triggered by dam levels in that part of the supply system which predominately services Sydney Water. The cost of transfers would not reflect the costs of providing water to the councils in times of increased scarcity.

In our Public Hearing, Wingecarribee Council expressed its concerns that the cost of the Shoalhaven transfer could be passed on to other customers (eg, councils) even if these customers do not drive the need for the transfer to occur.³³⁰ It noted that the Shoalhaven transfer predominantly occurs to supply Sydney.

For these reasons, we have decided to maintain the pass-through of Shoalhaven transfer costs to Sydney Water only. This mechanism passes-through the efficient costs of Shoalhaven transfers from Water NSW to Sydney Water. Sydney Water has a corresponding pass-through mechanism to pass-through these efficient costs to its customers.

³²⁹ IPART, *Review of prices for Water NSW from 1 July 2016 to 30 June 2020,* June 2016, p 79.

³³⁰ IPART, Sydney Water and Water NSW Public Hearings, Transcript, 26 November 2019, p 47.

L.4 We have decided to benchmark the efficient cost of Shoalhaven transfers

We have not accepted Water NSW's proposal to pass-through its actual energy costs to Sydney Water.

We consider that while Water NSW has limited influence over the triggers of when the Shoalhaven transfer scheme is required to come in and out of operation (as currently defined in the 2017 Metropolitan Water Plan), it has operational flexibility in terms of how and when it runs the pumps and in terms of how it procures energy for the scheme. For example, Water NSW may choose to pump during off-peak periods (ie, lower energy cost periods) or peak periods (ie, higher energy cost periods). Also, Water NSW could re-negotiate a different price for the energy required by the scheme. Therefore, allowing Water NSW to pass-through its actual costs to Sydney Water may impact its incentives to operate efficiently and to procure energy efficiently. Because Water NSW has some control over these costs, reducing or removing its incentive to manage these costs efficiently may result in inefficient costs being incurred and passed-through to Sydney Water and its end use customers.

Instead, we have decided to maintain our approach of passing through our best estimate of the benchmark efficient cost of operating the transfer scheme because this protects against the risk of inefficient costs being incurred and passed-through to customers.

Our updated formula for determining the costs of Shoalhaven transfers is defined in Box L.1.

Box L.1 Cost of Shoalhaven transfers (CST)

Cost of Shoalhaven Transfer = OPT + PT

Where:

OPT is the cost of transferring in the off-peak period using the following equation:

$$OPT = OP_p \times OP_V$$

Where:

 OP_p is the benchmark off-peak energy price in \$/ML, set out in Table L.1

 OP_V is the lower of the actual volume of water in ML, transferred from the Shoalhaven system during that month or OP_{max}

 OP_{max} is the sum of:

- Number of business days in a month multiplied by 2,092.0 ML (which is the maximum volume of water that can be transferred during off-peak hours on business days)
- Number of other days in a month multiplied by 2,510.4 ML (which is the maximum volume of water that can be transferred during off-peak period on other days)

PT is the cost of transferring in the peak period using the following equation:

$$PT = P_p \times P_V$$

Where:

 P_p is the benchmark peak energy price in \$/ML, set out in Table L.1

 P_V is:

- If the actual volume of water in ML transferred during the month is equal to or less than *OP_{max}* then 0;
- If the actual volume of water transferred during the month is greater than OP_{max} then the actual volume of water in ML less OP_{max}

Worked examples of applying the updated Shoalhaven transfer formula are provided in Box L.2.

Box L.2 Worked examples (expressed in \$2020-21)

The examples below compare the results of pumping water from the Shoalhaven Transfer Scheme in February 2023 for two scenarios: pumping in off-peak only and pumping in both peak and off-peak periods.

In February 2023, there are 20 business days and 8 other days. This means that OP_{max} is 61,923.2 ML.

Example 1: Pumping 5,000 ML of water

Since 5,000 ML of water is less than 61,923.2 ML, only the off-peak price will apply and the efficient cost of Shoalhaven transfers is calculated as:

CST = \$267.64 (ie, Q1 off-peak price in 2022-23) x 5,000 ML = **\$1,338,200**.

Example 2: Pumping 65,000 ML of water

Since 65,000 ML of water is greater than 61,923.2 ML, both off peak and peak prices will apply and the efficient cost of Shoalhaven transfers is calculated as:

CST = \$267.64 (ie, Q1 off-peak price in 2022-23) x 61,923.2 ML + \$774.18 (ie, Q1 peak price in 2022-23) x 3,076.8 ML= **\$18,955,122**.

L.4.1 Our updated formula is based on benchmark energy prices

Table L.1 outlines our estimate of the benchmark energy price when the Shoalhaven system is turned on. The benchmark energy unit price in \$/ML is calculated by multiplying the:

- The composite usage rate factor for the Shoalhaven system of 1.96 MWh/ML, by the
- Benchmark energy price estimated by our consultant, Frontier in \$/MWh.³³¹

In our 2016 review, we allowed Water NSW to recover Shoalhaven transfer costs from operating during the off-peak period only. However, we recognise that there may be instances when Water NSW may be required to pump water from the Shoalhaven system during peak periods. We have therefore updated our prices to include operating in off-peak and peak periods.

Our updated benchmark energy prices are provided on a quarterly basis. This is because we anticipate electricity prices will be influenced by seasonality (ie, there is a higher demand for electricity in summer resulting in more expensive electricity prices).

³³¹ The benchmark energy price is the sum of all components of the electricity price and is a quarterly price averaged over each month.

The following section outlines:

- How we estimated the composite usage rate factor, and
- How we calculated the benchmark energy prices.

Table L.1 Fronti	er's estimated	l benchmark	energy pr	ice (\$2020-2	1, \$/ML)
------------------	----------------	-------------	-----------	---------------	-----------

Quarter	2020-21	2021-22	2022-23	2023-24
Off-peak (OP _p)				
1 July – 30 September	\$210.32	\$193.26 x CPI1	\$215.38 x CPI ₂	\$198.86 x CPI₃
1 October – 31 December	\$180.77	\$165.36 x CPI1	\$169.06 x CPI ₂	\$158.03 x CPI₃
1 January – 31 March	\$250.03	\$230.80 x CPI1	\$267.64 x CPI ₂	\$245.68 x CPI₃
1 April – 30 June	\$187.21	\$171.47 x CPI₁	\$183.53 x CPI ₂	\$171.64 x CPI₃
Peak (P _p)				
1 July – 30 September	\$259.52	\$247.76 x CPI₁	\$281.15 x CPI ₂	\$264.74 x CPI₃
1 October – 31 December	\$222.66	\$209.04 x CPI1	\$227.87 x CPI ₂	\$210.73 x CPI₃
1 January – 31 March	\$769.07	\$749.83 x CPI₁	\$774.18 x CPI ₂	\$716.55 x CPI₃
1 April – 30 June	\$240.15	\$230.05 x CPI₁	\$251.18 x CPI ₂	\$243.00 x CPI₃

Note: Prices for 2021-22, 2022-23 and 2023-24 would need to be adjusted by the relevant CPI factor.

Source: Frontier Economics, *WaterNSW's Energy purchase costs – Shoalhaven Transfer Scheme*, Final Report for IPART, May 2020, tables 20-23, pp 27-30.

Estimating the composite usage rate factor in MWh/ML

In its pricing proposal, Water NSW included a composite usage rate factor of 1.96 MWh/ML to represent the energy demand or consumption required to transfer a unit of water through the Shoalhaven system. The proposed factor is consistent with the current Shoalhaven transfer formula.

We assessed the efficiency of Water NSW's proposal using a bottom up approach to estimate the variable energy required to pump water based on the Shoalhaven system's specifications. Our resulting estimate of variable energy volume was not materially different to Water NSW's proposal. We also note that the proposed composite usage rate factor is consistent with the Shoalhaven billing information and reflects the true value of the energy demand when the system was in operation during the current determination period. On this basis, we have accepted Water NSW's proposed variable energy volume to transfer a unit of water through the Shoalhaven system as efficient.

Calculating benchmark energy price in \$/MWh

We have engaged an independent consultant, Frontier Economics (Frontier), to calculate the benchmark energy price over the 2020 determination period.

Frontier estimated the efficient price of each electricity cost component that an electricity retailer would face in supplying electricity to Water NSW to operate the Shoalhaven transfer scheme.³³²

³³² Frontier Economics, Water NSW's Energy purchase costs – Shoalhaven Transfer Scheme, Final Report for IPART, May 2020, p 4.

To calculate the benchmark energy price, Frontier's methodology takes into account the impact of all the cost components of supplying energy, and how these components meet a constant load of the Shoalhaven system in a given period. We have accepted their methodology and asked Frontier to provide benchmark prices for off-peak and peak periods on a quarterly basis.³³³

Since its Draft Report, Frontier notes that wholesale spot prices and ASX Energy swap prices for NSW have fallen significantly due to the impact of COVID-19. However, it has not updated its modelling of the wholesale electricity prices due to the uncertainty regarding how long the effects of COVID-19 will persist and its impact on wholesale spot prices in NSW for 2020-21 and beyond. It also notes AEMO has not updated the gas price of demand input assumptions for these factors.³³⁴ We consider this reasonable and we have adopted Frontier's benchmark energy prices for our Final Report and Determination.

Table L.2 outlines Frontier's approach for estimating each cost component. Frontier has calculated each component separately and the sum of these cost components is its estimate of the benchmark energy price in \$/MWh.

Cost component	Approach
Wholesale electricity prices and the cost of purchasing electricity in the Shoalhaven Transfer Scheme	To forecast wholesale market prices, Frontier modelled the long-term investment outcomes in NSW and the NEM using its long-term optimisation model, WHIRLYGIG. It then used the long-term investment to forecast wholesale prices at the half- hourly level using its SYNC model. Electricity prices are a simple average of the half-hourly prices in the off-peak and peak periods. These half-hourly prices are then used to forecast cost of purchasing electricity to meet the electricity requirements of the Shoalhaven Transfer Scheme.
Renewable energy policy costs	Frontier modelled the cost of complying with green schemes including: large-scale Renewable Energy Target (LRET) and small-scale renewable energy scheme (SRES), and forecasted their impacts on costs of supplying electricity throughout the determination period. It has assumed that these schemes will continue to operate during the determination period.
Costs of complying with jurisdictional environmental policies	Frontier used the estimates from the AEMC to forecast the cost of complying with these policies (ie, NSW Energy Savings Scheme (ESS) and Climate Change Fund (CCF)). It has assumed that the costs remain constant in real terms from 2021-22.
Market fees	Frontier used market fees set by AEMO for 2019-20 to estimate the cost of fees in each year of the determination period. Based on AEMO's comments, it has applied growth rates over the determination period.
Ancillary services costs	Frontier estimated ancillary services costs by taking an arithmetic average of historical costs over the past five years.

Table L.2	Frontier's approach to calculate the electricity	v cost com	ponents

³³³ The off-peak and peak periods are defined by Endeavour Energy as: Peak – Business days 4pm to 8pm and Off-peak – All other times.

³³⁴ Frontier Economics, *Water NSW's Energy purchase costs – Shoalhaven Transfer Scheme*, Final Report for IPART, May 2020, p 10.

Cost component	Approach
Network costs	Frontier used publicly available data on Endeavour Energy's network tariff (N39) for 2019-20. Given the uncertainty around future tariffs, it has assumed that these costs remain constant in real terms over the determination period.
Energy losses	Frontier used publicly available distribution and transmission loss factors available from AEMO for Endeavour Energy.
Retail operating cost and margin	Given the limited publicly available information, Frontier used estimates on the fixed ROC and retail margin adopted by the Queensland Competition Authority (QCA) in its most recent decision.

Source: Frontier Economics, *Water NSW's Energy purchase costs – Shoalhaven Transfer Scheme*, Final Report for IPART, May 2020, sections 2 and 3, pp 5-21.

L.4.2 Our updated formula prioritises operating the Shoalhaven Transfer Scheme during off-peak periods

Electricity used in peak times may place a strain Australia's electricity networks. Electricity networks also generally charge off-peak electricity at a cheaper price to encourage consumers to use their electricity outside of these time periods. Therefore, we consider it is efficient to optimise pumping in the off-peak period.

We have prioritised operating the scheme during off-peak periods by first allowing Water NSW to recover costs up to the maximum volume available for transfer in the off-peak period at the off-peak price and then recover the remaining volume transferred at the peak price. This means that, if Water NSW chooses to operate the Shoalhaven transfer scheme during the peak period when there is capacity to transfer water during the off-peak period, the pass-through mechanism only compensates Water NSW for the costs incurred at the off-peak price.

Table L.3 sets out the maximum volume of water available for transfer in off-peak and peak periods in day.

Name	Type of day	Window of operation	ML per day
Off-peak	Business days	All times except 4pm to 8pm	2,092.0
Off-peak	Other days	All times	2,510.4
Peak	Business days	4pm to 8pm	418.4

Table L.3 Maximum volume of water available for transfer in a day

Note: The maximum volume of water available for transfer in the Shoalhaven Transfer Scheme in a day is 2,510.4 ML based on the volume of water pumped per hour at the two Burrawang pump stations.

Source: IPART calculations and Endeavour Energy, Network Price List: Network Tariffs 2019-2020.

L.5 We have not included a shortfall levy in the updated pass-through formula

Water NSW proposed to recover its revenue shortfall (incurred during the 2016 determination period) through prices over the 2020 determination period. In its submission to our Draft Report, Water NSW estimates the shortfall to be approximately \$1.7 million in total (revised down from its original estimate of \$4.4 million).³³⁵ It explained that the revenue shortfall is the result of IPART omitting certain elements of the all-in cost of energy from our benchmark cost estimate including greenhouse gas abatement charges, ancillary charges, network charges and network transmission losses.³³⁶ Water NSW stated that the shortfall was driven by errors in the formula in the 2016 Determination which meant that it was unable to recover its efficient costs.³³⁷

In the 2012 Determination, we provided an allowance of \$5.3 million (\$2011-12) for Water NSW to recover the cost of Shoalhaven transfers on an expected cost basis.³³⁸ Shoalhaven transfers did not occur over the 2012 determination period and as a result, Water NSW retained this revenue as profit as it did not incur the estimated pumping costs and we did not clawback this revenue over the 2016 determination period.

In our 2016 price review, we consulted with stakeholders on the formula of the cost passthrough before making a final decision. Water NSW provided a submission to our Draft Report indicating that the formula for Shoalhaven cost pass-through, while not perfect, was a reasonable method to cover its costs. Further, Water NSW provided its support of the passthrough mechanism over the 2016 determination period, and noted that it would work with IPART on potential refinements to the cost pass-through mechanism in the future.³³⁹

On balance, we decided to not accept Water NSW's proposal to recover the revenue shortfall it has incurred in the 2016 determination period from future customer prices. This is because we typically do not make retrospective adjustments for any under- or over-recovery between determination periods unless in exceptional circumstances.

We note that when Water NSW over-recovered its costs for Shoalhaven transfers in the 2012 Determination, it did not propose nor did we decide to return these amounts to customers. However, Water NSW is now proposing that it pass on losses it incurred over the 2016 Determination to customers.

As discussed in section L.4, we have updated the formula for the 2020 determination period to ensure the formula is reflective of the efficient cost of Shoalhaven transfers.

Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, pp 16 and Water NSW, Pricing Proposal to IPART, July 2019, Appendix D, p 190.

³³⁶ Water NSW, *Pricing Proposal to IPART*, July 2019, Appendix D, pp 188-190.

³³⁷ Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020, p 16.

³³⁸ IPART, *Review of prices for the Sydney Catchment Authority from 1 July 2012*, June 2012, pp 61-65.

³³⁹ Water NSW, *Prices for Water NSW Greater Sydney Area – WaterNSW response to IPART Draft Report*, April 2016, p 1.

M 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 will 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 M.1 and M.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 M.3 outlines why the ECM only applies to operating expenditure. Section M.4 explains how the ECM is applied and why we implement the ECM with a 1-year lag.

M.1 Regulatory framework without ECM

The four tables in Figure M.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 M.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 M.1 How the current framework	incentivises de	delaying efficiencies
--------------------------------------	-----------------	-----------------------

Permanent saving made in year 1									
	Re	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									
-	Re	gulatory	Period	1	Reg	gulatory	Period 2	1	
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	

Permanent saving made in year 3

Annual profit

Total profit in period

	Re	gulatory	Period '	1	Reg	gulatory	Period 2	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				

20

20

20

60

Permanent saving made in year 4

2014/2017/2017/07/2017/2017/2017/2017/2017/2	Re	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						

M.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 M.2 demonstrate the ECM for a 4-year determination. Using the same example as in Figure M.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 M.2 How the ECM removes incentives to delay efficiencies

Regulatory Period 1					Regulatory Period 2				
Permanent saving made	e 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	e 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	e 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	1.00	-	20	20	20	20	-	-	
Total profit in period				40				40	
Permanent saving made	e 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.

M.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 potential 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 the introduction of an ECM for capital expenditure.³⁴⁰

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.³⁴¹ 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:

- 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. ³⁴²
- WaterNSW 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.³⁴³
- Sydney Water indicated interest in exploring an ECM for capital expenditure and re-iterated its proposal from 2016.³⁴⁴

For reasons outlined above and in Chapter 8, 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 Water NSW, and as part of that broader review we will consider incentives for efficiency gains.

³⁴⁰ Water NSW, *Pricing Proposal to IPART*, July 2019, p 54.

³⁴¹ 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.

³⁴² Hunter Water, *Pricing Proposal to IPART, Technical Paper 3*, 1 July 2019, p B-12.

³⁴³ Water NSW, Pricing Proposal to IPART, July 2019, p 54.

³⁴⁴ Sydney Water, Pricing Proposal to IPART, July 2019, Attachment 7, pp 3-5.

M.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.

M.4.1 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 M.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.

		Re	aulator	Period 1	F	Regulatory	Period 2		
	ECM1 ECM2			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	-	-

Figure M.3 ECM is lagged one year so that it is based on actuals

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 M.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 WACC³⁴⁵ in order to ensure incentives are fully equalised in present value terms (because the WACC represents our view of the appropriate discount rate).

³⁴⁵ If cash flows are assumed to occur at the end of each year, this should be the WACC used for regulatory period 2.

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		_	-

Figure M.4 ECM adjustment to ensure savings are held for no longer than determination]

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.³⁴⁶

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.

³⁴⁶ This incentive already exists under the current form of regulation.

N Additional information on managing contingent project risks

In Chapter 5, we discussed Water NSW's proposed capital expenditure program of \$682 million over the 2020 determination period. In its pricing proposal, Water NSW indicated it is investigating several major capital projects as part of the NSW Government's planning for the Greater Sydney region (referred to as contingent projects), which are not included in its explicit proposed capital expenditure program for the 2020 determination period. The Government may decide that one or more of these projects are required to address climate variability and/or growth and may direct Water NSW to commence more detailed planning (and potentially construction) work during the 2020 determination period.³⁴⁷

Because of this uncertainty, Water NSW considers that if one or more contingent projects were to commence during the 2020 determination period, it would face a material risk if its revenue requirements and prices are not able to adjust to reflect the costs of these projects during the determination period (ie, contingent project risk). Consequently, Water NSW proposed options to address this risk as part of its pricing proposal and submission to our Issues Paper. These options range from adopting contingent project mechanisms based on those used in the energy sector through to seeking an early price review and determination.³⁴⁸

Our assessment of Water NSW's proposal and our decision are discussed below.

N.1 Summary of Water NSW's proposal and feedback during this review

In its pricing proposal, WaterNSW proposed to have one or more of the following mechanisms to manage the risk of contingent projects: ³⁴⁹

- To have a contingent project mechanism and/or capital expenditure reopener mechanism, which are currently being used in electricity regulation. WaterNSW preferred the contingent project mechanism because it provides certainty for the business as it set outs the defined events in advance.
- To incur the expenditure during the regulatory period and be allowed to include the expenditure (including funds during construction) in the RAB roll-forward for the subsequent determination. While this approach is neutral in NPV-terms, WaterNSW argued that this option does not address its financial (eg, cashflow) risk during the regulatory period. It also argues that this option does not guarantee that all costs incurred would be rolled into the RAB in the subsequent determination. On this basis, WaterNSW referred to this option as a 'last resort'.

³⁴⁷ Water NSW, *Pricing Proposal to IPART*, July 2019, p 44.

³⁴⁸ Water NSW, Pricing Proposal to IPART, July 2019, pp 44-49.

IPART, Review of prices for Water NSW Greater Sydney services from 1 July 2020 – Issues Paper, September 2019, pp 76-79.

³⁴⁹ Water NSW, *Pricing Proposal to IPART*, July 2019, pp 44-49.

To set a shorter determination period (eg, 2 or 3 years). WaterNSW proposed that a shorter determination period maybe appropriate if the risk is not sufficiently addressed. However, it noted that this may result in higher regulatory costs.³⁵⁰

In its submission to our Issues Paper, Water NSW slightly changed its proposal as follows:³⁵¹

- To have a contingent project mechanism and/or capex reopener mechanism
- For IPART to provide assurance (pre-approval) to WaterNSW that the costs would be roll-forward into the RAB in subsequent reviews, including a return on capital during the construction period, and
- To seek an early determination.

Lastly, in its submission to our Draft Report, Water NSW maintained its position to have a mechanism that would allow for intra-period price adjustments to recover the costs of contingent project. In addition, it suggested a price adjustment mechanism in the form of a 'Letter of Approval':³⁵²

- The Letter of Approval from IPART would effectively endorse the prudency of a contingent project in response to a defined trigger event.
- The trigger event could be a government direction to Water NSW or IPART in relation to a project.
- This mechanism would apply to projects that have total capital cost between \$50 million and \$300 million.
- Prices to Sydney Water would be adjusted based on a 'pre-determined uplift factor'. The uplift factor would approximately represent the return on a project. The uplift factor would also be a feature in the Final Determination.
- Price adjustments could be made as required following IPART's assessment of actual or forecast expenditure efficiency at the next price review.

N.2 Summary of other stakeholder feedback

We received the following submissions to our Issues Paper:

- one confidential submission
- a submission from Sydney Water, and
- a submission from Water NSW (discussed in section N.1).

The submission from Sydney Water did not support Water NSW's proposal for managing contingent project risk:³⁵³

³⁵⁰ Water NSW, *Pricing proposal to IPART*, July 2019, pp 44-49.

³⁵¹ Water NSW, Submission to the IPART's Issues Paper – Review of prices for WaterNSW Greater Sydney services from 1 July 2020, October 2019, pp 4, 37-45.

³⁵² Water NSW, Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020, April 2020 pp10-12 and Appendix 1.

³⁵³ Sydney Water, Submission to IPART's Issues Paper – Review of prices for WaterNSW Greater Sydney services from 1 July 2020, October 2019, pp 2, 8, 11-12.

- Sydney Water considered WaterNSW's first preference to deal with this risk presented an unreasonable high level of uncertainty and could result in significant bill increases without the ability to fully consult on these impacts beforehand. It also considered this type of mechanism would increase regulatory complexity and shift risks to customers for no clear benefit.
- Further, Sydney Water considered that WaterNSW should use existing mechanisms first. For example, if unexpected costs are incurred, it could seek to have these costs rolled into the RAB at the next price determination or to seek early determination. Sydney Water considered the idea of seeking an early determination to be reasonable as this would allow full consideration of all costs and the overall impact on the business and customers.

In response to our Draft Report, we received one submission on this matter from Water NSW (see section N.1)

N.3 Our decision on managing contingent project risk

We agree with Water NSW's approach to exclude contingent projects costs from its capital expenditure program for the 2020 determination period. This is because the types of projects, potential timing and associated costs of contingent projects are uncertain, are subject to ongoing planning processes and cannot be reasonably assessed for the 2020 Determination. If cost estimates for these projects were included in prices, prices would be unlikely to reflect efficient costs. However, we recognise that Water NSW can be exposed to project risks if new contingent projects are approved and commence during the determination period.

In our decision on the length of determination period (see chapter 3), one of the factors we consider is certainty (or uncertainty) of the operating environment. Overall, our decision on a 4-year determination period is an on-balance consideration of a range of factors including the sharing of risk between the utility and customers and the trade-off between price stability and cost reflectivity. We consider that the risk of contingent projects can be managed using a range of mechanisms as outlined below.

To address this risk, we consider that a set of options outlined in Box N.1 can be utilised by Water NSW. We consider that the decision on which option to pursue will depend on the materiality of the project or projects being considered. That is, a 'one size fits all' solution is inappropriate to deal with different materiality of project risk. We are open to engaging with the utility during the determination period to discuss specific contingent projects and how they may be assessed at the next price review.

The set of options also recognises that some of the risk should be borne by Water NSW. The high level of uncertainty around these contingent projects is at least partially the result of planning gaps across the water sector. Consequently, we consider that allowing some of the risks to remain with Water NSW provides the utility (and its shareholder, the NSW Government) an incentive to address these planning gaps, while continuing to provide price stability to customers over the determination period. While the need to have an immediate drought response solution has lessened due to the recent rainfall, the recent experience has highlighted how variable our climate is and the critical need for better water supply planning.

In addition, we consider that addressing project uncertainty through the introduction of cost pass through mechanisms can result in price uncertainty over the determination period. The likelihood of contingent projects materialising in the early years of the determination is low. The likelihood increases towards the end of the determination, so it might be only a year or two before prices can adjust (which is small relative to bulk water infrastructure, with asset lives of 100 years).

Box N.1 Options to manage contingent project risks

Depending on the materiality of risk, Water NSW can address the risk by:

- 1. If the materiality of risk is low, Water NSW can reprioritise its capital expenditure program during the determination period.
- 2. If the materiality of risk is medium, Water NSW can seek a preliminary assessment from IPART on the efficiency of a contingent project, which could provide it with a level of comfort that the capital expenditure will be rolled into the RAB at the next price determination.
- 3. If the materiality of risk is high, Water NSW can seek an early price determination.

Details of each options are outlined below.

Reprioritise capex program during the determination period

If a new major project is required during the determination period, Water NSW can reprioritise its capex program so that the total expenditure is still within its set allowance by shifting some capital expenditure into future periods, changing scope to reduce costs, and/or cancelling projects that are no longer efficient and/or a priority.

The risk is mostly allocated to the utility during the determination period:

- Customer prices are not adjusted during the determination period.
- Net capital costs are considered at the subsequent price review, when we undertake an expost assessment of capital expenditure.
- This risk allocation to the utility represents a financial incentive for it to manage its capital expenditure within its set capital allowance.

Seek a letter of comfort from IPART

Water NSW can engage with IPART during the determination period if a project commences that is not included in current prices. Water NSW and IPART can discuss the prudency of the project and how the project may be treated at the next price review. Water NSW could request IPART provide a letter of comfort setting out how IPART may treat a specific contingent project at the next price review based on the information available at the time. However, the efficient costs, and impact on prices, would be determined at the next price review.

This option shares the risk between Water NSW and its customers because:

- Customer prices are not adjusted during the determination period. However, if approved, customer prices would be adjusted to reflect the efficient costs of the contingent project at the next determination.
- ▼ The utility would bear the cost of the contingent project for the remainder of the current determination period. However, the utility would have a greater level of assurance that the efficient cost of the project would be factored into prices at the next determination.

Seek an early price determination

If project risks result in a material impact on Water NSW, which it is not able to manage in the short term and may require price adjustments as soon as possible, it can seek an early price determination.

This option involves costs to both the utility and other stakeholders and should be reserved for exceptional circumstances, where the utility does not have capacity to absorb the impact before the next price review (including, for example, by re-prioritising and delaying other projects). Considering these projects during a price review will also allow IPART to consider and consult on a range of factors, including whether some of the cost increase can be offset through efficiencies elsewhere in the business and customers' capacity to pay for the cost increase.

In response to Water NSW's proposed Letter of Approval, we have the following concerns:

- This would allow costs to be passed through to Sydney Water and its customers before being subject to efficiency review. This proposal therefore carries the risk of inefficient costs being passed through to Sydney Water and its customers.
- It could lead to unintended price volatility and customer impacts.
- It would pass costs to Sydney Water (and its end-use customers) and not Water NSW's other customers in Greater Sydney which may not be equitable in situations where the project should be paid for by all customers.

We consider our decisions provide a strong package of options to manage contingent project risk, while maintaining appropriate incentives for the business and the Government to undertake proactive, co-ordinated and robust planning across the sector. We have decided not to adopt the measures proposed by Water NSW because we consider these do not provide the right incentives for the utility to plan and may result in inefficiently allocating contingent project risk to customers.

O 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.

O.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).³⁵⁴ 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 Water NSW's financeability over the 2020 Determination, we analysed its forecast financial performance, financial position and cash flows for both the *benchmark*³⁵⁵ and *actual*³⁵⁶ business. We then forecast financial ratios for both tests and assessed Water NSW'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 O.1.

Ratios	Benchmark test (real cost of debt)	Actual test (actual cost of debt)
Interest cover ratio (ICR)	>2.2x	>1.8x
Funds from operations (FFO) over debt	>7.0%	>6.0%
Gearing	<70%	<70%

Table O.1 Target ratios for the benchmark and actual test

³⁵⁴ IPART, *Review of our financeability test*, November 2018, pp 1-2.

³⁵⁵ 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 identifies 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.

³⁵⁶ 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 indicates whether the business might face a financeability concern.

0.2 How we assess a utility's financeability

In the 2018 Financeability Review, we also outlined the following process (see Figure O.1) for identifying a financeability concern.



Figure O.1 Our process for identifying a financeability concern

Source: IPART, Review of our financeability test, November 2018, p 57.

O.3 Financeability assessment

Step 1: Calculate our standard financial ratios

Our financeability analysis is only for the benchmark test. Water NSW did not present financeability analysis in its pricing proposal and we do not have sufficient information on Water NSW's actual cost of capital to undertake the actual test.³⁵⁷

-			-		
	Target ratios	2020-21	2022-23	2022-23	2023-24
Interest cover					
Benchmark test	>2.2x	4.1	4.1	4.0	4.1
Does it meet the target?		\checkmark	✓	\checkmark	\checkmark
FFO over debt					
Benchmark test	>7.0%	6.8%	6.8%	6.6%	6.8%
Does it meet the target?		×	×	×	×
Gearing					
Benchmark test	<70%	60%	60%	60%	60%
Does it meet the target?		\checkmark	\checkmark	\checkmark	\checkmark

 Table O.2
 Financeability test results based on our final prices

Source: IPART analysis

The benchmark test results show that Water NSW are forecast to be slightly below the target for real FFO over Debt ratio. Given that it is forecast to not meet all target ratios for the benchmark test, 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.³⁵⁸

³⁵⁷ In its pricing proposal, Water NSW did not provide financial ratios or a detailed analysis of its expected financeability. Water NSW, *Pricing proposal to IPART*, July 2019.

In its submission to our Draft Report, Water NSW did not provide its actual test results. It presented its own analysis based on the benchmark test. Water NSW, *Submission to IPART's Draft Report – Review of prices for Water NSW Greater Sydney from 1 July 2020*, April 2020, pp 59-66.

In May 2020, Water NSW provided information on its aggregate gearing level and actual cost of debt. However, it did not provide specific information for the portion of its business that relates to Greater Sydney. Water NSW also did not provide information on various adjustments that are required to undertake the actual test (eg, superannuation and lease adjustments). Therefore, we were unable to perform an actual test that accurately represents the Greater Sydney business unit of Water NSW.

³⁵⁸ IPART, *Review of our financeability test*, November 2018, p 49.

The following sections analyse the trends for the ICR and FFO over Debt ratios in the benchmark test.

Benchmark test - Real interest cover ratio

Water NSW is expected to meet the target for real 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, Water NSW is forecast to have a minimum headroom of 1.8x 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 – Real 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.

Water NSW is forecast to be slightly below target by 0.3 percentage points on average over the 2020 determination period. In terms of trend, this ratio is forecast to be relatively stable at 6.8% for most of the period, with a slight dip to 6.6% in Year 3. The dip relates to higher capital expenditure in that year, which we assume will require more debt funding compared to other years in the determination period.

The slight underperformance is driven by lower returns on assets and that those assets have long asset lives and are mostly funded with debt.

- The FFO³⁵⁹ 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, but not sufficient to offset the other two factors discussed below.
- The increase in capital expenditure that Water NSW proposed, and we mostly accepted, places downward pressure on its FFO over Debt ratio.
- In addition, Water NSW is investing in assets with long economic lives which, all else equal, results in lower depreciation allowances.
- The combined effect of these factors has put a downward pressure on the FFO over Debt ratio so that it is slightly below target over the 2020 determination period.

³⁵⁹ 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)

Whilst Water NSW does not meet the target FFO over Debt ratio in the short-term, this does not necessarily mean that there is a medium-term financeability concern. The slight underperformance in FFO over Debt in the short-term is driven by lower returns on assets and that those assets have long asset lives and are mostly funded with debt.

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.

Step 3: Conclusion

Overall, we did not identify a financeability concern for Water NSW that needs to be addressed in this review. It is our view that Water NSW can remain financially sustainable and continue to provide sustainable services over the determination period.

Below we outline a range of other factors that support Water NSW's financeability over the 2020 Determination Period.

There is significant headroom in ICR

Under the benchmark test, Water NSW is forecast to have real interest coverage ratios (ICR) well above target, ie an average of 4.0x compared to a target of 2.2x over the 2020 determination period. This indicates that Water NSW could still comfortably meet its interest payments, even if interest rates increase significantly over the determination period, under our benchmark assumptions.

FFO over Debt is slightly below the target level

Water NSW is forecast to have an average FFO over Debt of 6.7%, which is slightly below the target. The relatively low FFO over Debt ratio is explained by the combined effects of the current low interest rate environment and the fact Water NSW 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). In particular, we have allowed a higher level of capital expenditure in this price review than in the 2016 price review for Water NSW Greater Sydney. In Chapter 5, we explained our decision to allow \$373 million of capital expenditure over the 2020 determination period, which is \$93 million higher than the ex-post efficient level allowed over the 2016 determination period.

We do not consider that Water NSW's FFO over Debt ratios represent a financeability concern for the 2020 determination period, for a combination of reasons:

- The ICR ratios indicate that Water NSW is expected to generate cash flows that will 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 Water NSW and other water utilities further manage/mitigate their cost and revenue risks (discussed below).

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 Water NSW'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 its long term financial sustainability.

The visibility of future cash flows that is generated by the regulatory framework provides Water NSW 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 Water NSW 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 Water NSW

We have put in place a number of regulatory mechanisms that reduce financial risks to Water NSW. These include:

- Setting a price structure that closely matches the utility's cost structure, which reduces revenue risk.
- Introducing dynamic water usage pricing for all three utilities, which reduces 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.
- Maintaining the SDP charging mechanisms, which addresses revenue risks due to reduce water sales as a result of water supply from SDP to Sydney Water during drought.
- Introducing a trailing average cost of debt approach, which addresses refinancing risk.
- Maintaining the Shoalhaven Transfer Scheme cost pass-through, which reduces cost risks as it allows efficient costs of the scheme to be passed through to customers when the scheme is in operation.

Glossary

2016 determination period	The period set by IPART from 1 July 2016 to 30 June 2020
2020 determination period	The period commencing 1 July 2020
ABS	Australian Bureau of Statistics
Annual revenue requirement	The notional revenue requirement in each year of the determination period
Bulk water	Water delivered by Water NSW to irrigators and other licence holders on regulated rivers across NSW
Current determination period	The period from 1 July 2016 to 30 June 2020, as set in the 2016 Determination
CPI	Consumer Price Index
Determination period	Given period over which price limits (maximum prices) set by IPART apply.
DVAM	Demand Volatility Adjustment Mechanism
E-flows	Environmental flows
ECM	Efficiency carryover mechanism
EPA	Environment Protection Authority
EPL	Environment Protection Licence
FFO	Funds from operations
GL	Gigalitre (one billion litres)
Hunter Water	Hunter Water Corporation
IPART	Independent Pricing and Regulatory Tribunal of NSW
IPART Act	Independent Pricing and Regulatory Tribunal Act 1992 (NSW)
kL	Kilolitre

LRMC	Long run marginal cost
ML	Megalitre (one million litres)
MFP	Multi-factor productivity
MWP	Metropolitan Water Plan
NRR	Notional revenue requirement. Revenue requirement set by IPART that represent the efficient costs of providing Water NSW's monopoly services
NPV	Net Present Value
RAB	Regulatory asset base
RWSA	Raw Water Supply Agreement
Section 16A direction	Ministerial direction pursuant to section 16A of the IPART Act
Section 20P directions	Ministerial directions pursuant to section 20P of the SOC Act
SDP	Sydney Desalination Plant
SMP	Statement of Monetary Policy
SOC Act	State Owned Corporations Act 1989 (NSW)
Sydney Water	Sydney Water Corporation
Target revenue	The revenue Water NSW generates from maximum prices set by IPART
UPA	Unregulated pricing agreement
WACC	Weighted average cost of capital
Water NSW GS	Water NSW Greater Sydney