

Independent Pricing and Regulatory Tribunal
New South Wales

Review of prices for WaterNSW Greater Sydney

From 1 July 2020

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Tribunal Members

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Invitation for submissions

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

Submissions are due by 21 October 2019.

We would prefer to receive them electronically via our online submission form <www.ipart.nsw.gov.au/Home/Consumer_Information/Lodge_a_submission>.

You can also send comments by mail to:

Review of prices for WaterNSW Greater Sydney

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

Contents

Tribunal Members	iii
Invitation for submissions	iii
1 Executive summary	1
1.1 Process for conducting the review	3
1.2 Review of costs and revenues over 2016 determination period	4
1.3 WaterNSW's pricing proposal	4
1.4 Key issues in this review	9
1.5 List of questions in this Issues Paper	10
1.6 Structure of this Issues Paper	13
2 How we set prices and context for the review	14
2.1 Our propose-respond review process	14
2.2 What services does WaterNSW provide in the GS area?	15
2.3 How do we set prices?	16
2.4 What drives WaterNSW's costs in the GS area?	19
3 Decisions we will make before setting prices	22
3.1 How long should we set prices for?	22
3.2 What costs should be included in WaterNSW's prices?	24
3.3 What method should we use to control prices?	26
4 Efficient operating costs	28
4.1 WaterNSW's actual/forecast operating expenditure for the 2016 determination period	29
4.2 WaterNSW's proposed operating expenditure for the 2020-24 period	30
4.3 IPART's response on operating expenditure	31
5 Efficient capital expenditure	33
5.1 WaterNSW's proposal on past capital expenditure	33
5.2 WaterNSW's proposal on capital expenditure for the 2020 determination period	35
5.3 Comparing WaterNSW's proposed and historical capital expenditure	38
5.4 IPART's response on capital expenditure	39
6 Cost of capital and tax	41
6.1 Value of the RAB	41
6.2 Allowance for return on assets	44
6.3 WaterNSW's proposed asset lives and regulatory depreciation	48
6.4 Allowance for tax	49
6.5 Non regulated income	50
6.6 Return on working capital	51
7 Notional revenue requirement	52
7.1 Review of actual revenue for the 2016 determination period	52
7.2 WaterNSW's proposed revenue requirement for the 2020 determination period	53

8	Customer numbers and water sales forecasts	55
8.1	WaterNSW's proposal on forecast customer numbers and water sales	55
8.2	IPART's response on forecast water sales and customer numbers	56
9	Cost allocation, price structures and price levels	58
9.1	Allocating costs between customers in the GS area	58
9.2	WaterNSW's proposed prices to Sydney Water	59
9.3	WaterNSW's proposed prices to Council customers	62
9.4	WaterNSW's proposed prices to raw and unfiltered water customers	63
9.5	The effect of a lower WACC on NRR and prices	65
10	Risk allocation and incentive mechanisms	66
10.1	Promoting future efficiency savings	67
10.2	Considering costs risks and uncertainty	69
10.3	Considering revenue and demand risks	80
A	Matters to be considered by IPART in this review	83
B	2017 Metropolitan Water Plan	84
C	Efficiency carryover mechanism	85
D	WaterNSW's proposed additional cost pass-through events	92
E	Formation of WaterNSW	94
F	WaterNSW's proposed adjustment to the Shoalhaven transfer formula	95
G	Output measures	99
	Glossary	101

1 Executive summary

The Independent Pricing and Regulatory Tribunal of New South Wales (IPART or ‘we’) has begun a review to determine the maximum prices WaterNSW can charge for the water services it provides to customers in the Greater Sydney (GS) area. These services include:

- ▼ Bulk water services, which it supplies to four water utilities (Sydney Water Corporation, Wingecarribee Council, Shoalhaven Council and Goulburn-Mulwaree Council). These utilities then treat this water and on-sell it to their residential and non-residential customers.
- ▼ Raw water and unfiltered water services, which it supplies to 59 customers along its bulk water supply system.¹

Our last review set prices for these services applying for four years from 1 July 2016 to 30 June 2020 (2016 determination period).² This review will set prices for these services for a period up to five years from 1 July 2020 (2020 determination period).

We are also currently reviewing the prices that Sydney Water (WaterNSW’s major bulk water customer, which accounts for 99% of WaterNSW’s water sales in Greater Sydney)³ charges for its regulated water, wastewater and stormwater services.⁴ The WaterNSW and Sydney Water reviews are inter-related:

- ▼ The demand forecast we use to set WaterNSW’s prices is driven primarily by forecast demand from Sydney Water’s customers (this is subject to comprehensive review in the Sydney Water review), and
- ▼ The prices we set to reflect the efficient cost of WaterNSW’s bulk water services will be a key cost component factored into the prices we set for Sydney Water’s services.

We have released this Issues Paper to:

- ▼ Summarise WaterNSW’s proposed costs, revenue needs and prices for the 2020 determination period
- ▼ Outline the process we will follow to conduct the review, including the decisions we will make, and
- ▼ Identify, analyse and seek stakeholder feedback on the key issues for this review.

All dollar figures in this Issues Paper are in \$2019-20 unless otherwise specified.

¹ WaterNSW pricing proposal to IPART, July 2019, p 159.

² IPART, Review of prices for WaterNSW Greater Sydney from 1 July 2016 – Final Report, June 2016.

³ WaterNSW pricing proposal to IPART, July 2019, p 160.

⁴ IPART, Review of prices for Sydney Water Corporation from 1 July 2020 – Issues Paper, September 2019.

The 2020 WaterNSW review at a glance

WaterNSW's proposal

Operating expenditure	\$384 million over four years. This is a 6% decrease from the \$407 million allowed over the 2016 determination period.
Capital expenditure	\$682 million over four years. This is more than 2.5 times the \$254 million allowed over the 2016 determination period.
Weighted average cost of capital (WACC)	Post tax real WACC of 4.1%. This represents a 0.8% (ie, 80 basis point) decrease from the 4.9% applying over the 2016 determination period.
Notional revenue requirement (NRR)	\$889 million over four years. This is a 2% increase from the \$872 million allowed over the 2016 determination period.
Water sales	Total forecast water sales of 2,373,332 megalitres (ML) over four years. This represents an 8.5% increase compared to the forecast used to set prices over the 2016 determination period.
Prices	All prices decrease 1% in 2020-21 (compared to prices in 2019-20) and then remain relatively constant, in real terms, over the 2020 determination period. By applying the same price change across all prices, WaterNSW is proposing to maintain the existing allocation of efficient costs between the three customer groups – ie, Sydney Water, Council customers, and raw and unfiltered water customers.
Risk allocation	WaterNSW is proposing to establish cost pass-through mechanisms to recover costs of certain events, if they occur, to customers during the 2020 determination period. WaterNSW is also proposing several contingent projects, which if commenced, would allow the resulting costs to be passed through into prices during the 2020 determination period.

IPART's review approach

Revenue requirement	Engage expert consultants to review WaterNSW's historical and proposed costs, and apply a building block model to establish WaterNSW's efficient revenue needs.
Prices	Set maximum prices to recover these costs, taking into account our pricing principles and matters listed under section 15 of the IPART Act.
Risk sharing and incentive mechanisms	Assess the potential costs and benefits of various mechanisms to manage the allocation of risk between WaterNSW and customers and incentivise efficient outcomes.

Key review issues

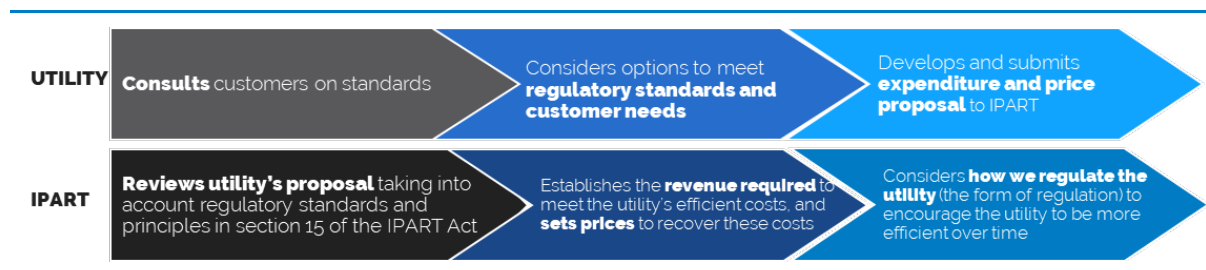
Assessing past expenditure	What has driven the pattern of capital expenditure relative to the allowance (ie, underspending in early years and projected overspends in later years)? Has this impacted service quality and/or asset management? Is the actual and forecast capital expenditure over the 2016 determination period efficient?
Assessing forecast expenditure	Is the large increase in proposed capital expenditure over the 2020 determination period required and sufficiently justified? Do the projected estimates reflect robust and efficient cost estimates? Does WaterNSW have the capability to deliver this program of work?
Ensuring efficient risk allocation	Are the risks associated with specific events, specific projects and fluctuations in demand appropriately allocated between WaterNSW and customers to facilitate efficient outcomes?

1.1 Process for conducting the review

We received WaterNSW's pricing proposal on 1 July 2019, which outlines its proposed costs, revenue needs and prices. It is available on our website.⁵

This Issues Paper explains the propose-respond process we will follow to conduct the review, the approach we will use to make our pricing decisions, and the key issues we will consider in making these decisions. It also sets out our preliminary views on some of these issues. We invite all interested parties to make submissions in response to this Issues Paper (details on how to make a submission are provided on page iii at the start of the Issues Paper.)

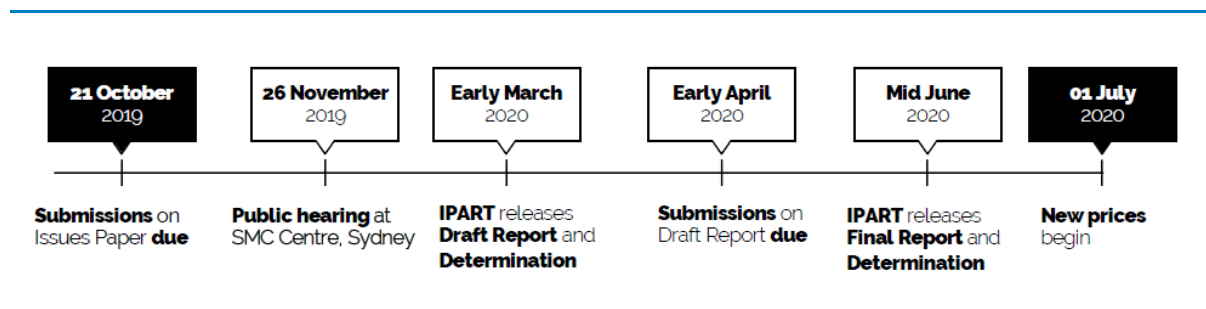
Figure 1.1 Our process to setting prices under a propose-respond regulatory model



We will hold a public hearing in Sydney on 26 November 2019, to provide stakeholders with another opportunity to provide their views on WaterNSW's pricing proposal and key issues for this review.

There will be a further opportunity provided to respond to our Draft Report in March 2020. We will consider all comments made in submissions and at the public hearing before making our draft decisions. We will then release a Draft Report and Draft Determination, and invite further comments from stakeholders including WaterNSW and its customers. We will consider all these comments before making our Final Determination and publishing our Final Report in June 2020.

Figure 1.2 Indicative timetable for this review



Note: These dates are indicative and may be subject to change.

⁵ www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Metro-Pricing/Prices-for-WaterNSW-Greater-Sydney-from-1-July-2020

1.2 Review of costs and revenues over 2016 determination period

The following table compares the notional costs and revenues we used to set prices over the 2016 determination period to the actual costs incurred and revenues generated by WaterNSW over the 2016 determination period.

Table 1.1 Comparing NRR to actual costs and revenues (\$2019-20, \$ million)

	2016-17	2017-18	2018-19	2019-20	Total
NRR over 2016 determination period					
▼ NRR reported by WaterNSW (incorrect CPI)	211.1	213.9	218.7	221.0	864.8
▼ NRR calculated by IPART (correct CPI)	212.9	215.7	220.6	222.9	872.1
Actual cost and revenue over 2016 determination period					
▼ Actual cost ^a	203.2	197.3	210.4	215.0	825.8
▼ Actual revenue	213.7	219.3	220.5	222.1	875.6
Difference between NRR (calculated by IPART) and actual cost and revenue					
▼ NRR minus actual cost	9.7	18.4	10.2	7.9	46.3
▼ Actual revenue minus NRR	0.8	3.7	(0.1)	(0.8)	3.6
▼ Total surplus (deficit)	10.5	22.1	10.1	7.1	49.9

^a Estimated by IPART based on WaterNSW's actual and forecast opex and capex for the 2016 determination period.

Note: Actuals for 2018-19 and 2019-20 are based on WaterNSW current forecasts presented in its July 2019 pricing proposal.

Source: WaterNSW pricing proposal to IPART, July 2019, p 59, 99, 164. IPART analysis.

Compared to the allowances set by IPART for the 2016 determination period, WaterNSW's actual costs were \$46 million lower (driven primarily by lower than anticipated operating costs) and revenues \$4 million higher (driven by higher than anticipated water sales) than expected resulting in a total surplus of approximately \$50 million.

1.3 WaterNSW's pricing proposal

Proposed revenue from customers over the 2020 determination period

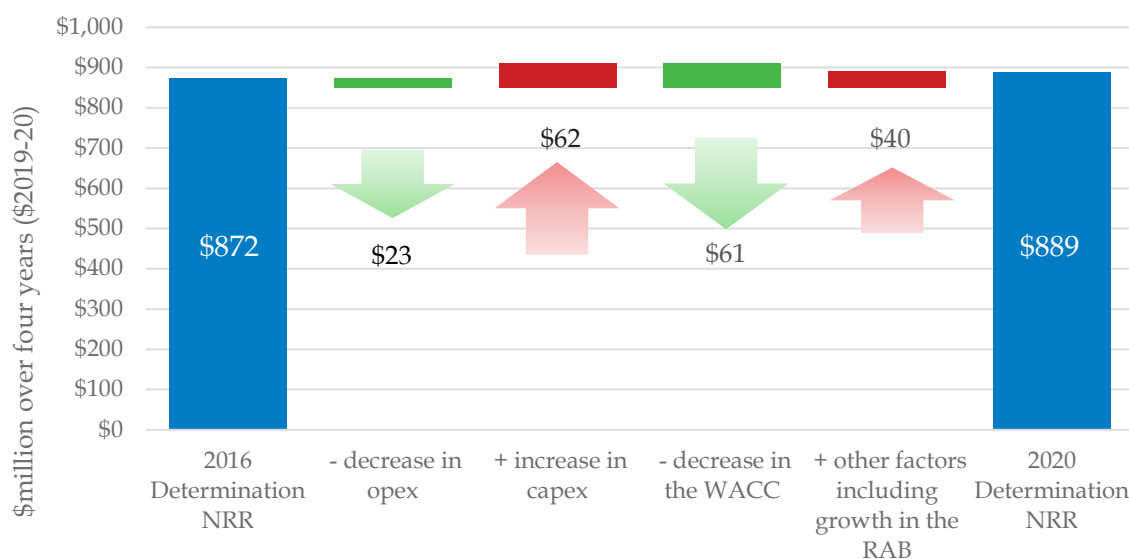
WaterNSW has proposed prices that, subject to forecast demand, would allow it to recover \$889 million of revenue over four years commencing 1 July 2020, based on its proposed operating, capital and other costs for this period. This represents a 2% increase compared to IPART's allowance for the 2016 determination period.

Table 1.2 WaterNSW's revenue requirement (\$2019-20, \$ million)

	IPART allowance for 2016 determination period	WaterNSW proposed for 2020 determination period
Operating costs	407.4	384.4
Return on capital	328.9	341.9
Return of capital	114.7	142.3
Other costs	27.7	21.0
Total revenue requirement	878.7	889.6
Less: 50% of non-regulated revenue	6.5	0.4
Notional revenue requirement	872.1	889.2

Source: WaterNSW pricing proposal to IPART, July 2019, pp 163-164. IPART analysis.

Figure 1.3 illustrates the key changes between WaterNSW's 2016 NRR (\$872 million) and proposed 2020 NRR (\$889 million).

Figure 1.3 Key changes between 2016 NRR and 2020 NRR (\$2019-20, \$ millions)

Note: 'other factors including growth in the RAB' captures all other differences between the 2016 and 2020 NRRs. The main difference is that the opening RAB for the 2020 period has been adjusted for actual capital expenditure (and depreciation) over the 2016 determination period and is therefore larger than the opening RAB for the 2016 period.

Data source: IPART analysis.

Figure 1.3 shows that the \$17 million net increase in WaterNSW's proposed NRR for the 2020 determination period (compared to the 2016 determination period) is the result of:

- ▼ A \$23 million reduction in operating costs
- ▼ A \$62 million increase in NRR as a result of higher capital expenditure
- ▼ A \$61 million decrease in NRR as a result of a lower WACC, and
- ▼ A \$40 million increase in NRR resulting from all other factors including growth in the Regulatory Asset Base (RAB) over the 2016 determination period.

Capital expenditure

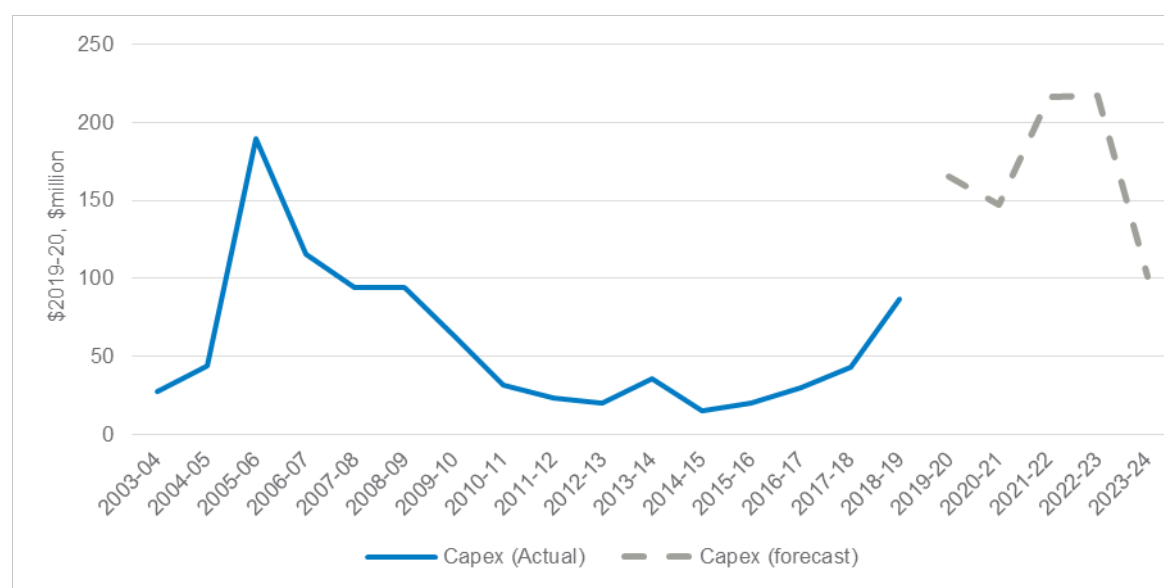
As outlined in Chapter 5 of this Issues Paper, the efficient capital expenditure that WaterNSW incurs is added to its RAB and recovered from customers over time.

WaterNSW has proposed capital expenditure of \$682 million over the 2020 determination period. This is more than 2.5 times the capital expenditure allowance set for the 2016 determination period. As shown in the figure below, the proposed capital expenditure over the 2020 determination is much higher than WaterNSW's historical level of capital expenditure. WaterNSW attributes this increase to the following drivers:⁶

- ▼ Advancement of works due to changes to Government policy, risk or to offset deferred or cancelled projects
- ▼ Expansion of project scope for some legacy projects
- ▼ Cost increases due to 'carryover' from prior periods or from market costs being identified for retrospective projects
- ▼ Advancement of projects due to ongoing drought conditions in NSW.

The large increase in proposed capital expenditure has been offset by a reduction in interest rates – referred to as the WACC. WaterNSW's pricing proposal employed a WACC of 4.1% for the 2020 period (compared to a WACC of 4.9% in the 2016 period).⁷

Figure 1.4 WaterNSW's capital investment from 2003-04 to 2023-24 (\$2019-20, \$million)



Date source: WaterNSW pricing proposal, July 2019, Table 5.1 & Table 5.2, pp 56-59 for its forecast capital expenditure. Historical data from WaterNSW's annual information returns provided to IPART.

⁶ WaterNSW pricing proposal to IPART, July 2019, pp 61-62.

⁷ We note that we will update the WACC to reflect the most up to date information when setting and publishing draft and final prices in the first half of 2020.

Operating expenditure

WaterNSW is proposing a 6% decrease in operating expenditure compared to IPART's operating expenditure allowance over the 2016 determination period.

WaterNSW considers that its proposed operating expenditure plan for the 2020 determination period would enable it to deliver regulated services more efficiently and support the expected growth across the region. WaterNSW's proposed operating expenditure plan also includes a productivity adjustment of 1% per annum, which equates to \$3.9 million over the 2020 determination period.⁸ WaterNSW states that this productivity adjustment demonstrates its commitment to continuing to achieve efficiency gains and place downward pressure on water prices for customers.⁹

WaterNSW submits that it has significantly transformed its operational structure and that it has been able to realise productivity gains resulting from the merger of the Sydney Catchment Authority (SCA) and State Water Corporation. It states that its proposed expenditure plan is more reflective of a steady state operating environment for WaterNSW.¹⁰

Customer engagement

WaterNSW engaged with its customers during the preparation of its pricing proposal.¹¹

This included direct consultation with its major customer Sydney Water on a range of issues including ensuring proposed expenditure and investment programs maintain service levels at least cost, that sufficient investments are planned to cater for expected growth in water demand, and working together to develop longer-term water supply and drought supply options.

WaterNSW also engaged directly with its Council customers (Wingecarribee Council, Goulburn-Mulwaree Council and Shoalhaven Council) in relation to water supply and levels of service and with its Greater Sydney Customer Advisory Group¹² on a range of issues including system operations, asset maintenance, drought response and regulatory change updates as relevant to the Greater Sydney area.

WaterNSW's proposed prices

WaterNSW is proposing a 1% real decrease in prices from 1 July 2020 (ie, excluding the effects of inflation). These prices would then be held relatively constant in real terms (ie, excluding the effects of inflation) throughout the 2020 determination period.

⁸ WaterNSW pricing proposal to IPART, July 2019, p 108.

⁹ WaterNSW pricing proposal to IPART, July 2019, p 108.

¹⁰ WaterNSW pricing proposal to IPART, July 2019, p 97.

¹¹ WaterNSW pricing proposal to IPART, June 2019, pp 31-32.

¹² WaterNSW is required to establish and maintain a series of customer advisory groups under clause 6.6 of its operating licence. The customer representatives for the Customer Advisory Group (CAG) are a mixture of customers relevant to the GS Determination, Rural Valleys Determination and WAMC Determination, which were from Oberon Council, Energy Australia, Goulburn Mulwaree Council, Lower Nepean Hawkesbury River Water Users Association, Shoalhaven Water and Lithgow City Council.

Although WaterNSW is proposing a large increase in capital expenditure, the reduction in the cost of capital and the forecast growth in demand for bulk water sales over the 2020 determination period results in an overall 1% reduction in prices from 1 July 2020.

We note that we are now in an environment of particularly low cost of capital, which dampens the impact that capital expenditure has on prices. However, capital expenditure remains in the RAB for the life of the asset (in WaterNSW-GS's case this is 60 years), and a future rise in the cost of capital could significantly impact prices over time. For example, if the cost of capital of 4.9% used in the 2016 determination period is applied over the 2020 determination (instead of the proposed 4.1% cost of capital) and assuming all else is equal, this would result in one-off price increase of 6.6% instead of the proposed price decrease of 1% from 1 July 2020 (ie, excluding the effects of inflation).

Table 1.3 WaterNSW proposed annual prices (\$2019-20)

	2019-20	2020-21	2021-22	2022-23	2023-24
Sydney Water Corporation					
Fixed charge (\$million/year)	175	175	176	176	177
Volumetric charge (\$/ML) (SDP 'Off') ^a	80	76	75	75	74
Volumetric charge (\$/ML) (SDP 'On') ^a	95 ^b	90	89	88	87
Councils					
Wingecarribee Council fixed charge (\$M)	1.12	1.11	1.11	1.11	1.11
Shoalhaven City Council fixed charge (\$M)	0.02	0.02	0.02	0.02	0.02
Goulburn-Mulwaree Council fixed charge (\$M)	0.03	0.02	0.02	0.02	0.02
Volumetric charge (\$/ML)	58	58	58	58	58
Raw water customers					
Fixed charge (\$)	0	0	0	0	0
Volumetric charge (\$/ML)	736	729	729	729	729
Unfiltered water customers					
Fixed charge for 20mm meter (\$) ^c	112	111	111	111	111
Fixed charge for 200mm meter (\$) ^c	11,241	11,131	11,131	11,131	11,131
Volumetric charge (\$/ML)	1,280	1,268	1,268	1,268	1,268

a SDP 'Off' means when the Sydney Desalination Plant (SDP) is not supplying water to Sydney Water. Then, SDP 'On' is when the SDP is being used to supply water to Sydney Water.

b In its pricing proposal, WaterNSW indicated a volumetric charge of \$80/ML to Sydney Water assuming SDP 'On' in 2019-20, which is the same as the charges assuming SDP 'Off'. Using the same method that WaterNSW has used to calculate the prices assuming SDP 'On' over the 2020 determination, we estimated the volumetric charge to be \$95/ML in 2019-20 period.

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 and 200mm connections in this table.

Source: WaterNSW pricing proposal to IPART, July 2019, pp 165-167.

Risk allocation and incentive mechanisms

WaterNSW is proposing a suite of mechanisms to manage the allocation of risk between it and its customers and to incentivise efficiency savings over the 2020 determination period. We have grouped these mechanisms under three broad headings: 1) managing cost risk, 2) managing revenue risk and 3) incentivising efficiency savings.

Managing cost risk

Firstly, a key focus of WaterNSW's pricing proposal is to expand the use of cost pass-through mechanisms to address significant unforeseen costs during the regulatory period. It is proposing to have the following mechanisms to address its cost risk:¹³

- ▼ To establish additional cost pass-throughs to address cost risks associated with regulatory change events and catastrophic events
- ▼ To adjust the existing cost pass-through event for the Shoalhaven Transfer Scheme to recover all electricity costs and estimated revenue shortfall
- ▼ To establish a process or mechanism to address risks associated with contingent projects (ie, projects that may or may not be needed, that are not fully costed and that may or may not go ahead over the determination period).

Managing revenue risk

Under WaterNSW's current (and proposed) price structure, 80% of its revenue requirement comes from its fixed charge to Sydney Water and 20% from its volumetric (or usage) charge – which means that 20% of its revenue can fluctuate depending on actual water sales during the determination period. To manage its revenue risk, WaterNSW is proposing:¹⁴

- ▼ To maintain the charging formula to calculate volumetric prices to large customers (eg, Sydney Water) to reflect all possible modes of operation of the SDP
- ▼ To introduce a demand volatility adjustment mechanism for WaterNSW Greater Sydney, with a material variation in sales set at $\pm 5\%$ change over the determination period similar to the mechanism in place for Sydney Water and Hunter Water Corporation.

Incentivising efficiency savings

For incentive mechanisms, WaterNSW is proposing to maintain the efficiency carryover mechanism (ECM) for operating expenditure savings but to not extend the ECM to capital expenditure savings. Overall, it considers that having a capital expenditure ECM would not improve incentives for capital efficiency or result in improved outcomes for the business and customers. In particular, WaterNSW considers that the lumpy nature of capital expenditure means that there can be significant shifts from year to year, which can be related to different stages of the asset life-cycle, business decisions and planning, and/or government-directed investment, rather than efficiency.¹⁵

1.4 Key issues in this review

We have identified the following key issues for this review.

1. Has WaterNSW's capital expenditure over the 2016 determination period been efficient?
2. Is WaterNSW's proposed expenditure over the 2020 determination period required, efficient and likely to be delivered?

¹³ WaterNSW pricing proposal to IPART, July 2019, pp 37-49. This is further discussed in Chapter 10.

¹⁴ WaterNSW pricing proposal to IPART, July 2019, pp 49-52. This is further discussed in Chapter 10.

¹⁵ WaterNSW pricing proposal to IPART, July 2019, pp 52-54. This is further discussed in Chapter 10.

-
3. How should the risks of specific events and contingent projects be shared between WaterNSW and customers to encourage efficient behaviour and ensure prices reflect efficient costs?

1.5 List of questions in this Issues Paper

How we set prices

- | | | |
|---|--|----|
| 1 | How long should we set prices for in the 2020 determination period? | 24 |
| 2 | Do you agree that we should maintain alignment between the WaterNSW Greater Sydney and Sydney Water determinations periods? | 24 |
| 3 | Do you agree that WaterNSW-GS's prices should reflect the efficient costs of providing its regulated monopoly services and should exclude any costs that fall outside the scope of these services? | 25 |
| 4 | Can you identify specific costs that may be considered outside the scope of WaterNSW-GS's regulated monopoly services? | 25 |
| 5 | Do you support the ongoing use of a price cap as the form of price control used for WaterNSW Greater Sydney? | 27 |

Operating expenditure

- | | | |
|---|---|----|
| 6 | Is WaterNSW's actual/forecast operating expenditure over the 2016 determination period efficient, including the step increase in the second half of the period? | 32 |
| 7 | Are WaterNSW's proposed operating costs for the 2020 determination period efficient, taking into account drivers of this expenditure, efficiency savings revealed over the 2016 determination period and the bulk water services to be delivered? | 32 |

Capital expenditure

- | | | |
|----|---|----|
| 8 | Has WaterNSW's capital expenditure during the 2016 determination period been efficient, taking into account drivers of this expenditure and services achieved? | 40 |
| 9 | Is WaterNSW's proposed capital expenditure program for the 2020 determination period efficient, taking into account expenditure drivers and service outcomes to be achieved? | 40 |
| 10 | Can WaterNSW efficiently deliver its proposed capital expenditure program for the 2020 determination period, taking into account the size of this program and its historical capital expenditure? | 40 |
| 11 | Are WaterNSW's proposed output measures for the 2020 determination period sufficient for monitoring its progress in efficiently delivering against its proposed major projects? | 40 |

Cost of capital and tax

- 12 Do you agree with WaterNSW that the Braidwood land parcels were non-operational when the RAB was established in 2000 and therefore any proceeds from the sale of this land should not be shared with customers? 44
- 13 Should we update the cost of debt component of WaterNSW's WACC annually (ie, factored into prices each year), or should this be subject to a true-up at the next determination (ie, netted out and applied across all years of the next determination period)? 48
- 14 Should we adopt WaterNSW's proposal to calculate regulatory depreciation based on an average asset life of 60 years? 49
- 15 What are other factors should we consider? For example, do you agree that there is merit in this review (or a future review) to take a more disaggregated approach to the calculation of WaterNSW-Greater Sydney's regulatory depreciation by unbundling its RAB into separate asset categories each with an asset category-specific asset life? 49

Customer numbers and sales forecasts

- 16 Are WaterNSW's forecast customer numbers for the 2020 determination period reasonable? 57
- 17 Is it reasonable that WaterNSW has adopted Sydney Water's demand forecast (gross of losses in Sydney Water's network) for the 2020 determination period? 57
- 18 Are WaterNSW's demand forecasts for Councils reasonable? 57
- 19 Is WaterNSW's assumption of constant demand from raw and unfiltered water customers reasonable? 57

Price structures and levels

- 20 Do you agree with WaterNSW's proposal that the cost allocation between customers should remain unchanged? If not, what factors should we consider when allocating costs between different types of customers? 59
- 21 Is WaterNSW's proposal to maintain the existing price structure to Sydney Water (ie 80% fixed and 20% volumetric) reasonable? Or should we change the price structure to Sydney Water to more closely align it with WaterNSW's cost structure? 61
- 22 Should we maintain the approach of increasing the volumetric charge in proportion to SDP's water sales to Sydney Water? 62
- 23 Should we maintain the cost pass-through mechanism for the costs of Shoalhaven transfers? 62
- 24 Is WaterNSW's proposal to maintain the existing price structure to the Councils (ie, 80% fixed and 20% volumetric) reasonable? 63

25	Do WaterNSW's proposed prices allocate a reasonable share of costs to the Councils?	63
26	Are WaterNSW's proposed prices and price structures to raw water and unfiltered water customers reasonable?	64

Risk allocation and incentive mechanisms

27	Do you agree that WaterNSW should not apply for an ECM carry forward on the underspends against its regulatory operating allowance in this current determination period?	68
28	Should we continue to apply an ECM to WaterNSW's operating expenditure? Are there any specific improvements we should consider to our ECM? If so, what are these?	68
29	What efficiency incentive mechanisms should we consider for capital expenditure in future reviews?	68
30	Do you agree with WaterNSW that there is a need to have a cost-pass through mechanism for regulatory changes and catastrophic events? If so, what should the mechanism look like?	72
31	What other criteria should we consider when assessing cost pass-through mechanisms?	72
32	Is there a case for WaterNSW to pass any cost under-recovery for the Shoalhaven Transfer Scheme in this current determination period into future prices?	75
33	Should we adopt WaterNSW's proposed changes to the Shoalhaven cost pass-through mechanism? Are there any alternative approach that we should consider, eg a benchmark cost approach?	76
34	Do you agree with WaterNSW that a separate mechanism should be established to deal with contingent project risks?	79
35	If so, what should a regulatory mechanism for contingent project look like? How should we design it? How should it be applied? Should it affect prices during the determination period or only provide assurance to the business that these costs will be recognised and reflected in prices in the future (ie, from the next scheduled price determination)?	79
36	Relative to the current framework, will a new mechanism likely complement or confound the existing mechanisms and incentives? What incremental benefits would this provide and what are the potential unintended consequences?	79
37	What can we learn from the experience of other jurisdictions and regulated industries on addressing contingent projects?	79
38	In terms of actual additional costs (or cost savings) incurred (or generated) by the business during a determination period, do you agree with our current approach to not compensate (or claw back from) for return on capital over the period when they incur those costs and when we review the prices?	79

39	Do you agree with WaterNSW that we should introduce a demand volatility mechanism to address its residual demand (revenue) risk?	82
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1.6 Structure of this Issues Paper

The following chapters of this Issues Paper provide more information on this review, WaterNSW's pricing proposal, and our preliminary positions on the key issues in this review:

- ▼ Chapter 2 provides background, our approach and context to this review. It explains the service and regulatory requirements that impact WaterNSW's pricing proposal.
- ▼ Chapters 3 covers the length of determination, costs that should be included in WaterNSW's prices in the GS area, and form of price control.
- ▼ Chapters 4, 5 and 6 cover WaterNSW's proposed operating and capital expenditure, cost of capital and tax allowances.
- ▼ Chapter 7 considers WaterNSW's Notional Revenue Requirement (NRR).
- ▼ Chapter 8 discusses forecast sales volumes and customer numbers that we need in order to set prices to recover WaterNSW's efficient costs.
- ▼ Chapter 9 presents WaterNSW's proposed prices.
- ▼ Chapter 10 covers risk allocation and incentive mechanisms.

2 How we set prices and context for the review

This chapter outlines our process for setting prices for metropolitan water utilities like WaterNSW Greater Sydney. It also outlines the drivers of WaterNSW's costs in the Greater Sydney (GS) area, such as regulatory and environmental requirements.

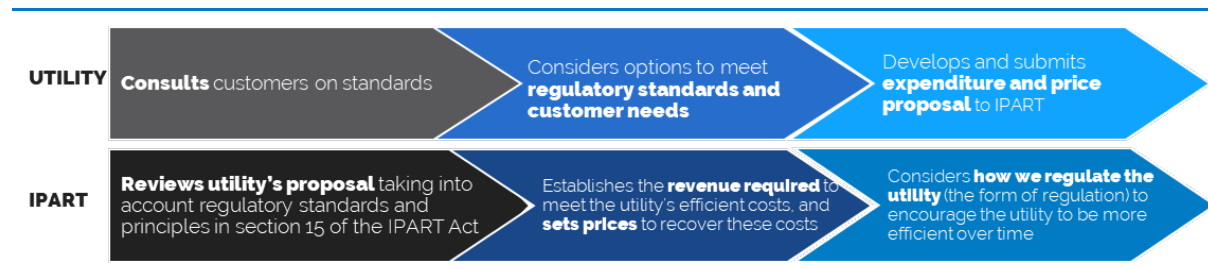
The following sections discuss:

- ▼ **Our review process**, including how and when we seek stakeholder views.
- ▼ **The services** that WaterNSW delivers.
- ▼ **Our pricing framework**, including how we assess WaterNSW's efficient costs of delivering these services, and how this is recovered through prices.
- ▼ **The key drivers** of WaterNSW's operating and capital costs to deliver these services in the GS area.

2.1 Our propose-respond review process

This review sets the maximum bulk water prices WaterNSW can charge its customers in the GS area. We are using a propose-respond regulatory model for this review (see Figure 2.1).

Figure 2.1 Our process to setting prices under a propose-respond regulatory model



WaterNSW submitted a pricing proposal on 1 July 2019, which includes its proposed operating and capital costs, prices, and preferred regulatory framework for the four years from 1 July 2020.

In determining WaterNSW's maximum prices, we will respond to its proposal and make an assessment of:

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

To set prices, we consider our 'form of regulation'. These are methods we use to incentivise WaterNSW to make efficient investment decisions, better respond to customer needs and find cost efficiencies where reasonable. We also set prices to encourage efficient levels of consumption of WaterNSW's services.

We will also take into account a broad range of issues consistent with the matters we must consider under the *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act). These are provided in Appendix A.

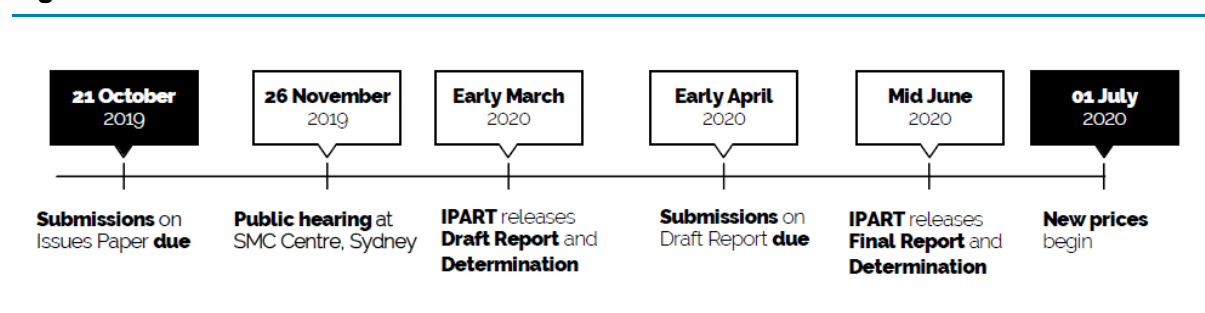
We will consult with stakeholders before we set prices

This Issues Paper is IPART's initial response to WaterNSW's pricing proposal. It identifies the key issues for the review and our approach to setting prices. We raise questions throughout this paper to facilitate stakeholder views.

Later in the review, we will hold a public hearing and release a Draft Report to elicit further stakeholder views as our analysis of the issues progress.

Figure 2.2 below sets out the rest of our review milestones and timeline, including when stakeholders can have their say.

Figure 2.2 Indicative timetable for this review



Note: These dates are indicative and may change.

2.2 What services does WaterNSW provide in the GS area?

For this pricing review, the monopoly services in the GS area include the supply of bulk water to urban water utilities for treatment and then consumption by Sydney, Illawarra, Blue Mountains, Southern Highlands and Shoalhaven communities. WaterNSW also supplies non-monopoly services within the GS region, such as leasing some of its facilities and certain commercial hydrometrics services.

The customers include Sydney Water, Wingecarribee Shire Council, Shoalhaven City Council and Goulburn-Mulwaree Council. It also provides raw and unfiltered water supply to 63 other smaller customers.¹⁶

The roles and responsibilities of WaterNSW are prescribed by the *Water NSW Act 2014*, and its operating licence. Under Section 6 of the *Water NSW Act 2014*, WaterNSW 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

¹⁶ WaterNSW pricing proposal to IPART, July 2019, p 22.







- ▼ 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 WaterNSW 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.¹⁷

2.3 How do we set prices?

We set the maximum bulk water prices to recover the efficient costs that WaterNSW will incur in delivering services to its customers in the GS area. We also consider how we can structure prices to encourage efficient consumption and investment decisions. Figure 2.3 provides an overview of our key considerations when setting prices and where they are discussed in this Issues Paper.

Figure 2.3 Our key considerations when setting prices

Refer to:		
1. How many years to set prices for?	Chapter 3	
2. What form of regulation to apply?	Chapters 3	
3. How much revenue WaterNSW needs to deliver its services efficiently in the GS area?	Chapters 4, 5, 6 and 7	
4. How much water is likely to be consumed and by how many customers?	Chapter 8	
5. How WaterNSW's costs are shared between different types of customers?	Chapter 9	
6. How should we allocate risk between the utility and its customers and incentivise the business to seek efficiencies?	Chapter 10	

¹⁷ WaterNSW pricing proposal to IPART, July 2019, p 23.

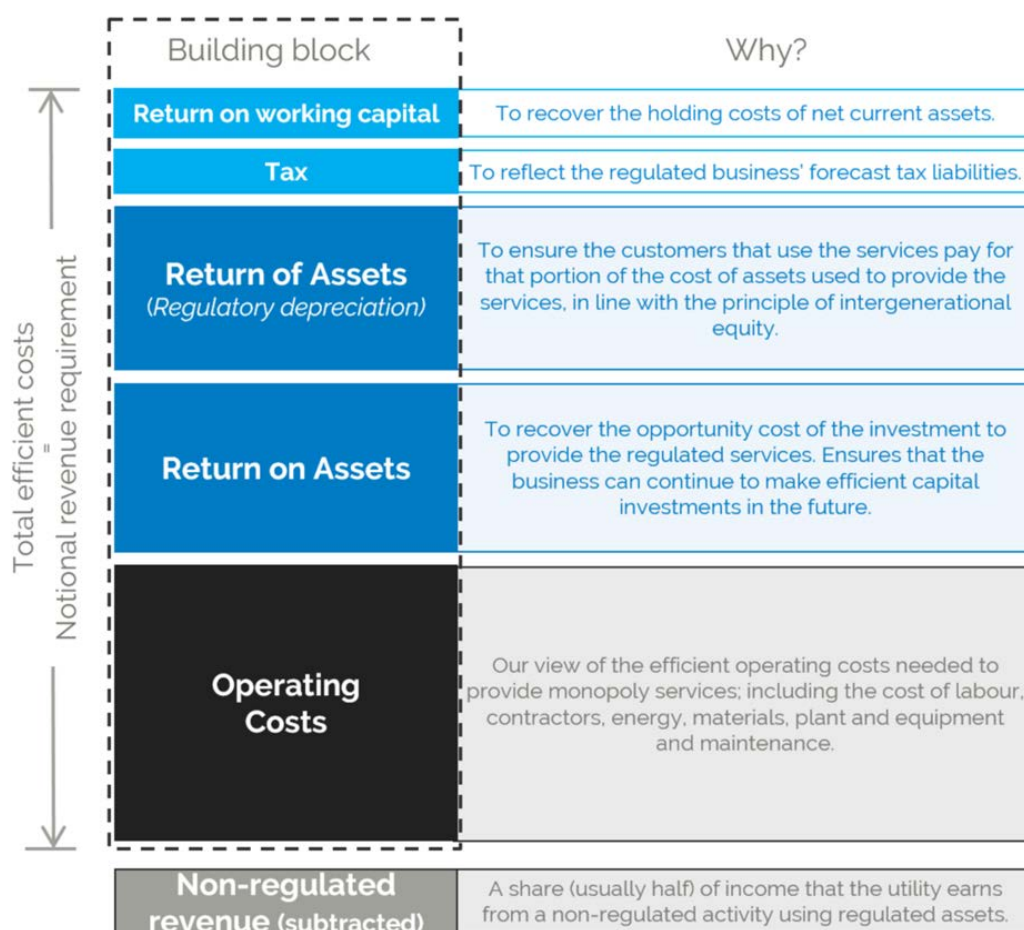
Estimating efficient costs

Our first step in determining prices is to calculate the notional revenue requirement (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.

In previous reviews, we have used a 'building-block' approach to calculate WaterNSW's NRR for the GS area. Figure 2.4 provides a brief explanation of each cost building block allowance within the NRR. We generally set prices to recover the utility's NRR.¹⁸

Chapters 4, 5, 6 and 7 in this Issues Paper provide more detail on how we calculate the 'building blocks', what WaterNSW has proposed for each building block, and our initial response. We have engaged expert expenditure consultants to assist us in determining efficient capital and operating costs for WaterNSW, including any potential efficiency gains it can reasonably achieve over the determination period.

Figure 2.4 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.

¹⁸ Before setting prices, we subtract 50% of any non-regulated revenue that WaterNSW may generate, and then set prices to recover the remaining NRR. Non-regulated revenue is generally very small compared to regulated revenue.

We propose to continue using our building block method to set the NRR. This is in line with WaterNSW's proposal and our standard approach.

Setting prices to recover the NRR

In structuring prices, we aim to find a balance between the principle that customers should pay for the costs they create, thus sending appropriate price signals, and having a relatively simple and easy to understand framework. We generally work within a postage stamp pricing framework, consistent with Government policy.¹⁹ A key consideration for setting prices is how to balance the share of revenue that should be recovered from fixed charges against volumetric (or usage) charges for bulk water services. Box 2.1 outlines our principles in setting prices. Chapter 9 provides more information on price structures and price levels.

Box 2.1 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), and
 - 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 WaterNSW to administer, and customer preferences.

Other reviews

Other reviews that we have undertaken recently or are undertaking concurrently may interact with the decisions we make in either estimating the required revenue, setting Sydney Water's prices, or considering the form of regulation. These reviews are listed in Box 2.2, along with weblinks to relevant documents on our website.

¹⁹ Postage stamp pricing means that customers pay the same for a service regardless of where in the utility's area of operations they are located. That is, we generally cannot set location-based prices.

Box 2.2 Other related IPART reviews we consider when setting prices

We are concurrently reviewing the prices for Sydney Water and Hunter Water. These reviews follow a similar framework, but may raise issues that we have not yet identified for WaterNSW.

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

- ▼ Prices for WaterNSW's other regulated bulk water services:
 - Review of prices for rural bulk water services, prices have been set until 30 June 2021 ([Review of prices for rural bulk water services from 1 July 2017 to 30 June 2021](#))
 - 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, note that we are changing the way we estimate beta ([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)
- ▼ 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.

After this review, we will work with regulated businesses in NSW, other interested stakeholders and regulators in other jurisdictions to further develop our framework and address any issues that have may arise.

2.4 What drives WaterNSW's costs in the GS area?

We set prices to recover the efficient cost of WaterNSW delivering its monopoly services in the GS area. WaterNSW's costs can be allocated into broad categories. These categories will be discussed below and are the costs:

- ▼ To meet its existing service standards and **regulatory obligations**, including any new or amended requirements under its operating licence and dam safety legislation
- ▼ To implement any long-term plans under the **2017 Metropolitan Water Plan**, and
- ▼ Of **discretionary** projects, where it demonstrates its customers are willing to pay to receive services above its regulated standards.

2.4.1 Regulatory and licencing requirements

WaterNSW'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 WaterNSW can charge to customers for its monopoly services.

- ▼ **IPART (licensing):** We are also responsible for monitoring and reporting on WaterNSW's compliance with its operating licence, including its obligations in relation to customer service, water quality, and system performance.
- ▼ **NSW Dam Safety Committee:** The Committee is responsible for prescribing dam safety requirements and monitoring compliance of WaterNSW's prescribed dams with those requirements.
- ▼ **NSW Health:** NSW Health provides advice to WaterNSW on public health issues in regard to drinking water. The Memorandum of Understanding (MoU) between NSW Health and WaterNSW sets out the role of each agency in relation to water quality standards and public health.
- ▼ **Water Administration Ministerial Corporation (WAMC) and Natural Resources Access Regulator (NRAR):** WAMC, NRAR and WaterNSW 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 WaterNSW'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 WaterNSW Act, WaterNSW is required to conduct catchment audits every three years, and assess 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 WaterNSW and its customers for the supply of water.

2.4.2 WaterNSW's operating licence

WaterNSW operates in accordance with its operating licence (licence) granted under section 11 of the WaterNSW Act. The term of the current licence is 1 July 2017 to 30 June 2022.

IPART completed the first operational audit of WaterNSW's compliance with the requirements of the new combined WaterNSW 2017-22 Operating Licence in February 2019, for the period 1 July 2017 to 30 June 2018.²⁰ The audit revealed some shortcomings of the business (eg, integration of asset management system) at the time when it was newly formed in 2015. WaterNSW has gradually addressed these shortcomings since the audit. In Chapter 5, we discuss the transition of the business and how it impacts costs for this current determination period and over the upcoming determination period.

2.4.3 Dam safety compliance

WaterNSW owns, operates and maintains 21 prescribed dams within the GS area.²¹ As the owner of these dams, WaterNSW manages risk to public and employee safety, the environment and the reliability of supply.

²⁰ IPART, *WaterNSW Operational Audit 2018 – Report to the Minister*, February 2018.

²¹ WaterNSW pricing proposal to IPART, July 2019, p 29.

To manage these risks, WaterNSW has a dam safety program that is based on the NSW Dam Safety Committee's (DSC) requirements and guidelines published by the Australian National Committee on Large Dams.²² Its dam safety program is based on inspections and monitoring of instrumentation data from the dams. If potential deficiencies are identified for further study and when dam safety improvements are found to be necessary, WaterNSW would prioritise and add these projects into its capital planning process. We discuss WaterNSW's costs that relate to the dam safety program in Chapters 4 and 5.

2.4.4 The 2017 Metropolitan Water Plan

This is the Government's plan to ensure sufficient water to meet the needs of the people and environment within the GS area. The plan sets out a mix of supply and demand measures to:²³

- ▼ 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.

The plan includes a series of water supply and drought response measures for the region, including trigger levels for these measures. A summary of this plan is outlined in Appendix B. The plan will continue to be reviewed on a regular basis so that it remains up to date and responsive to the challenges ahead.

As at 15 September 2019, WaterNSW's total dam storages in the GS area are below 50%.²⁴ This has affected WaterNSW's operations and planning processes. Under the current plan, the following measures have been implemented:

- ▼ The transfer of water from the Shoalhaven system into the Sydney system (ie, the Shoalhaven transfer scheme discussed in Chapter 10).
- ▼ The supply of water from the Sydney Desalination Plant (SDP) to Sydney Water.
- ▼ The introduction of Level 1 water restrictions.

2.4.5 Discretionary spending

Although WaterNSW's costs are largely driven by delivering its monopoly services within its regulatory framework, it may elect to undertake discretionary expenditure. This is expenditure to achieve outcomes above those required from regulatory obligations (eg, service outcomes above those mandated in WaterNSW's Operating Licence or other regulatory instruments).

²² WaterNSW pricing proposal to IPART, July 2019, p 29.

²³ Metropolitan Water, *2017 Metropolitan Water Plan Water for a Liveable, Growing and Resilient Greater Sydney*, March 2017, pp 7-10.

²⁴ Specifically, 49%. For the latest dam storage level, refer to the WaterNSW website [here](#).

3 Decisions we will make before setting prices

This chapter discusses several decisions we will make before setting prices, including:

- ▼ How long should we set prices for (ie, the length of the determination period)
- ▼ What costs should be included in WaterNSW-GS prices, and
- ▼ What method should we use to control prices (ie, the form of price control).

In Chapters 4 to 7, we discuss in detail the various proposals put forward by WaterNSW for each element of the building block framework. In Chapter 10, we outline WaterNSW's proposed mechanisms to manage the allocation of risk and to incentivise efficiency savings over the 2020 determination period.

3.1 How long should we set prices for?

For each water pricing review, we decide how long to set prices for (the length of the determination period). In general, the determination period can be between one and five years, depending on the circumstances. The period of the current 2016 Determination is four years.²⁵

We will consider a number of factors when deciding on the length of the determination period:

- ▼ The range of factors that typically influence the optimal length for a determination period. These factors are outlined in Box 3.1.
- ▼ The merits of aligning the determination periods across regulated water utilities. The issues we consider are outlined in Box 3.2.
- ▼ The different mechanisms in place to manage cost and demand risks and how the length of determination influences the effectiveness of these mechanisms (further discussed in Chapter 10).
- ▼ Stakeholders' views.

²⁵ IPART, *Review of prices for WaterNSW – Final Report*, June 2016, p 13.

Box 3.1 Factors we consider in deciding on length of the determination period

In general, the factors we consider when deciding the length of determination period are:

- ▼ The confidence we have in the utility's forecasts
- ▼ The risk of structural changes in the industry
- ▼ The need for price flexibility and incentives to increase efficiency
- ▼ The need for regulatory certainty and financial stability
- ▼ The timing of other relevant reviews, and
- ▼ Stakeholder views.

Advantages of having longer determination periods are: provides greater stability and predictability (which may lower a utility's business risk and assist investment decision-making); creates strong incentives for a utility to increase its efficiency; and reduces regulatory costs.

However, disadvantages of longer determination periods are: increased risk associated with using inaccurate data to set prices; possible delays in customers benefitting from any efficiency gains; and the risk that changes in the industry will impact the effectiveness of the determination.

Box 3.2 Issues associated with alignment of determination periods

There are 4 broad categories of issues potentially associated with aligning determination periods:

- ▼ **Methodological consistency:**
 - There can be issues when agencies of a similar nature have determinations at difference times. For example, after a request from Hunter Water, we aligned its determination period with Sydney Water's because it allows for consistent regulatory decisions (eg, WACCs) for similar water utilities and allows better comparison of performance.
- ▼ **Organisational relationships/interactions:**
 - Sydney Water purchases its bulk water from both WaterNSW and SDP. Therefore, Sydney Water's bulk water costs are determined by WaterNSW's and SDP's prices. If the determination periods of these utilities' are not aligned, we may need to use more complicated approaches to ensure that Sydney Water's prices recover its bulk water costs, such as cost pass-through mechanisms.
- ▼ **Common customer base:**
 - Rural water customers in NSW used to receive services and common bills from two organisations: WaterNSW (Rural) and the former NSW Office of Water (on behalf of the Water Administration Ministerial Corporation). Customers may be confused about the distinct roles of each agency and the appropriate determination for a particular issue. Aligning pricing determinations may improve transparency and customers' understanding of prices.
- ▼ **Internal organisation and cost allocation issues:**
 - There can be issues arising from an organisation's internal requirements. For example, we currently determine prices for WaterNSW's services in the GS area and in rural areas separately, and for different periods. Aligning the determination periods (or making a combined determination) may streamline the process and reduce regulatory costs for the business and other stakeholders.

WaterNSW's proposes a 4-year determination period

WaterNSW proposes a 4-year determination period from 1 July 2020 to 30 June 2024. In its submission, WaterNSW states that it:

Considered 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.²⁶

However, WaterNSW has suggested that the length of determination be reviewed when considering the appropriate regulatory mechanism to address contingent projects (further discussed in section 10.2). In particular, WaterNSW indicated that:

...if IPART is not able to adequately address the uncertainty, a shorter determination period (eg, 2 or 3 years) may be more appropriate to manage the underlying risks.²⁷

IPART's preliminary response

Our preliminary view is to accept WaterNSW's proposal to have a 4-year determination period. In recent years, we have favoured 4-year determinations as we consider that a 4-year price path strikes an appropriate balance between providing certainty to the regulated business and limiting delays in customers benefitting from efficiency gains.

Our preliminary view means that we would maintain the alignment between WaterNSW's price path for the GS area with that of Sydney Water Corporation (Sydney Water). In our previous reviews, we decided to align WaterNSW and Sydney Water's price reviews given that WaterNSW's prices are a significant operating expenditure input into Sydney Water's prices.

IPART seeks comments on the following

- 1 How long should we set prices for in the 2020 determination period?
- 2 Do you agree that we should maintain alignment between the WaterNSW Greater Sydney and Sydney Water determinations periods?

3.2 What costs should be included in WaterNSW's prices?

We consider that prices for regulated monopoly services should reflect the full efficient costs of providing these services.²⁸ This principle of 'full cost recovery' is consistent with the service provider recovering their efficient costs and it provides price signals that encourage the efficient use of, and investment in, these services.

As part of this review, we will consider whether any of the costs proposed by WaterNSW fall outside the scope of its regulated monopoly services and should therefore not be included in WaterNSW's prices in the GS area.

²⁶ WaterNSW pricing proposal to IPART, July 2019, p 37.

²⁷ WaterNSW pricing proposal to IPART, July 2019, p 37.

²⁸ Our pricing principles are further discussed of Chapter 2 of this Issues Paper.

To do this, we will apply the impactor pays principle. This principle aims to ensure that those that create the need to make an investment and/or undertake an activity should pay for the costs associated with this investment and/or activity.

In most cases, the water services provided by a regulated business to its customers are private goods.²⁹ Customers are the impactors because they create the need for the water services. Therefore, customers should pay the full efficient costs of these services through prices.

However, there may be situations where costs should be allocated to other segments of the community (ie, other than the customers of the regulated monopoly service).

This can occur when costs are incurred to make investments and/or undertake activities to provide **other** goods or services to the community.³⁰ For example, if additional costs are incurred to deliver outcomes that are outside the scope of the regulated monopoly service (such as flood mitigation or provision of recreation services) in addition to the core water services, it may be appropriate to allocate these additional costs to other segments of the community. If it is not practical to recover these costs directly from the other segments of the community (eg, from user charges), it may be appropriate to allocate these costs to the NSW Government (on behalf of the broader community).

This can also occur when additional costs are incurred as a direct result of third parties. For example, if additional costs are incurred to limit and/or remedy the impacts of mining activity in the catchment, it may be appropriate to allocate these additional costs to the third party or parties that have caused the impact and created the need to incur these costs.

Examples of cost drivers discussed in WaterNSW's pricing proposal that might, depending on the circumstances, be considered outside the scope of WaterNSW's regulated monopoly services in the GS area and therefore not included in prices include:

- ▼ Costs associated with the management of recreational areas³¹
- ▼ A potential flood mitigation function for Greater Sydney storages³², and
- ▼ Costs resulting from mining activities in the catchment³³.

IPART seeks comments on the following

- 3 Do you agree that WaterNSW-GS's prices should reflect the efficient costs of providing its regulated monopoly services and should exclude any costs that fall outside the scope of these services?
- 4 Can you identify specific costs that may be considered outside the scope of WaterNSW-GS's regulated monopoly services?

²⁹ In economics, private goods are goods or services that are excludable (those that do not pay for the service can be excluded from the good or service) and rivalrous in consumption (consumption by one party reduces the ability of another party to consume the good or service).

³⁰ We have adopted this approach in sharing costs between rural water customers and the NSW Government (on behalf of the broader community) when determining prices for WaterNSW's rural bulk water services and the Water Administration Ministerial Corporation's (WAMC's) monopoly water management services.

³¹ WaterNSW pricing proposal to IPART, July 2019, p 101, p 115 and p 122.

³² WaterNSW pricing proposal to IPART, July 2019, p 65.

³³ WaterNSW pricing proposal to IPART, July 2019, p 101, p 110 and p 113

3.3 What method should we use to control prices?

The form of price control can determine how much discretion the regulated business has to adjust its prices within a determination period, and how frequently the regulator reviews or adjusts prices, and how risks and rewards are shared between the regulated business and its customers.

There are several forms of price control, each of which provides different incentives to the regulated entity to deliver its services more efficiently, and/or result in different distributions of risk between the regulated entity and its customers. Some of the most common forms are summarised in Box 3.3.

Box 3.3 Different forms of price controls

The different forms of price control include the following:

- ▼ **Price cap** – maximum prices are determined at the start of the determination period and adjusted each year for inflation. This approach provides predictable prices for customers, but the regulated entity bears volume-related risk to the extent that price structures do not perfectly match the utility's cost structures. The utility will not face volume-related risk if its fixed price is set to recover its fixed costs, and its usage price is set to recover its variable costs.
- ▼ **Revenue cap** – a regulated entity receives its total revenue allowance for a regulatory period, irrespective of the volume of regulated services provided. Customers bear any volume-related risk through price increases or decreases over the regulatory period.
- ▼ **Weighted average price cap** – a maximum average price is set for each group of the utility's prices for the first year of the determination. A formula can also be determined for adjusting this average price in each subsequent year of the regulatory period. The regulator can also set limitations on the amount by which some or all individual prices within the groups can increase during the determination. Utilities then have the freedom to rebalance prices (increase or decrease individual prices), so long as the weighted average of the prices is less than or equal to the maximum average price, and they comply with any limitations imposed. The accuracy of volume forecasts will significantly affect the overall revenue that the utility is able to earn while keeping within the weighted average price cap.^a
- ▼ **Hybrid** of the revenue and price cap controls – a price control is in place but additional measures to mitigate the risk of the utility under or over-recovering its revenue requirement are also used.

^a IPART, *Form of Economic Regulation for NSW Electricity Network Charges*, Discussion Paper, August 2001, pp 5-6.

WaterNSW proposes to maintain the use of price caps as the form of price control

WaterNSW proposes to continue the use of price caps as the form of price control over the 2020 determination period.³⁴ It has considered other forms of price control and concluded that:

... the current maximum price cap approach implemented by IPART, combined with adjustments for changes in costs and sales as discussed in this section, is fit-for-purpose for Greater Sydney as it

³⁴ WaterNSW pricing proposal to IPART, July 2019, p 36.

promotes pricings stability and is well understood by customer. We therefore propose maintaining the current approach for maximum prices for the upcoming determination.³⁵

IPART's preliminary response on form of price control

Our preliminary view is to maintain the current form of price control as it provides certainty and stability for both customers and WaterNSW.

However, other stakeholders may propose to change the form of regulation. We will consider these proposals based on whether potential benefits are likely to outweigh potential costs, or risks.

We discuss our pricing principles and other pricing considerations in Chapter 9.

IPART seeks comments on the following

- 5 Do you support the ongoing use of a price cap as the form of price control used for WaterNSW Greater Sydney?

³⁵ WaterNSW pricing proposal to IPART, July 2019, p 36.

4 Efficient operating costs

This Chapter outlines WaterNSW's forecast/actual operating expenditure over the 2016 determination period, and then discusses its proposed operating expenditure for the 2020 determination period and our preliminary response to this proposal.

As Chapter 7 discusses, the allowance for operating expenditure within the notional revenue requirement reflects our view of the efficient level of operating costs WaterNSW will incur in providing its bulk water services over the 2020 determination period. These include, among others, the cost of labour, service contractors, energy, materials, plant and equipment.

To decide how much operating expenditure is reflected in prices for the 2020 determination period, we will review WaterNSW's proposal and apply an efficiency test to the proposed operating expenditure (see Box 4.1). This is to examine whether the expenditure represents the best and most cost effective way of delivering regulated services. We will also apply the efficiency test to past operating expenditure in the current determination period to the extent necessary to assess the efficiency of the proposed operating expenditure. We will also apply the efficiency test to our of WaterNSW's capital expenditure which is discuss in Chapter 5.

Box 4.1 Our efficiency test

The efficiency test examines whether a utility's capital and operating expenditure represents the best and most cost effective way of delivering 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).

4.1 WaterNSW's actual/forecast operating expenditure for the 2016 determination period

WaterNSW's pricing proposal includes actuals for 2016-17 and 2017-18 periods and forecast expenditure for 2018-19 and 2019-20 periods. WaterNSW's actual/forecast operating expenditure during the 2016 determination period varied from year to year (see Table 4.1). Overall, WaterNSW's actual/forecast expenditure for the 2016 determination period is lower than the IPART allowance by \$46.5 million (11.4%), with the greatest difference occurring in 2017-18 (\$18.5 million or 18.3% below the allowance), as shown in Table 4.1.

Table 4.1 Operating expenditure over the 2016 determination period (\$2019-20, \$ millions)

	2016-17	2017-18	2018-19	2019-20	Total
Allowance	103.0	101.1	102.3	101.0	407.4
Actual/Forecast	93.3	82.6	92.1	93.0	361.0
Difference (\$)	9.7	18.5	10.3	8.0	46.5
Difference (%)	9.4	18.3	10.0	7.9	11.4

Source: WaterNSW price proposal, July 2019, Table 6.1, p 99.

In its proposal, WaterNSW stated that, while its actual operating expenditure is below the operating allowance, its actual operating expenditure does not reflect a steady state operating environment.³⁶ WaterNSW submits that it exercised temporary restraint on activity following the 2015 merger of the Sydney Catchment Authority (SCA) and State Water Corporation.³⁷ It adds that catchment management expenditure over the 2016 determination period, particularly in 2018, was influenced by the temporary restraint on activity following this merger.³⁸

WaterNSW submits that it achieved savings in each year of the 2016 determination period through the effective management of its operating expenditure and the reprioritisation of projects and programs.³⁹ It states that it carried out a number of activities to improve its operations, including a significant restructure of its business and amendments to its budgeting and financial delegations processes to deliver savings.⁴⁰

Efficiency Carryover Mechanism

Our Final Report on WaterNSW's 2016 Determination stated that we would introduce an Efficiency Carryover Mechanism (ECM) for the 2020 Determination, which will:

- apply to controllable operating expenditure from 2016-17 to 2018-19
- ensure the business is able to retain permanent cost reductions for four years before they are passed on to customers through lower prices, regardless of when these cost reductions are made within the determination period

³⁶ WaterNSW price proposal IPART, July 2019, p 99.

³⁷ WaterNSW was formed on 1 January 2015 under the *Water NSW Act 2014* (NSW), effecting a merger of the former Sydney Catchment Authority and the former State Water Corporation. See Appendix E for the timeline of this merger.

³⁸ WaterNSW pricing proposal to IPART, July 2019, p 99.

³⁹ WaterNSW pricing proposal to IPART, July 2019, p 98.

⁴⁰ WaterNSW pricing proposal to IPART, July 2019, p 102-103.

- maintain the existing incentive for the business to control costs, and
- maintain the existing incentive for the business to manage temporary fluctuations in expenditure.⁴¹

WaterNSW submits that even though it has achieved costs savings over the 2016 determination period, it is not proposing to include an ECM carry forward for the 2020 determination period. WaterNSW states that its motivation to achieve efficiency gains is not driven by the ECM; rather it seeks to provide high quality water at the lowest price for its customers, consistent with its statutory obligations. It also states that it does not consider it appropriate to carry forward additional costs to the 2020 determination period in time of drought. It considers that prices would be lower if it did not apply for an ECM and, as such, is not applying for a carry forward.⁴²

We discuss our preliminary response to its proposal on ECM in Chapter 10.

4.2 WaterNSW's proposed operating expenditure for the 2020-24 period

WaterNSW is proposing \$384.4 million in operating expenditure for the proposed 2020 determination period.⁴³ This represents:

- ▼ A 5.6% decrease from the 2016 IPART allowance of \$407.4 million, and
- ▼ A 6.5% increase from its actual/forecast expenditure of \$361.0 million over the 2016 determination period.⁴⁴

WaterNSW submits it has adopted a 'top down' approach to its operating expenditure forecast by including productivity targets across its controllable expenditure. In its submission, WaterNSW is proposing annual productivity adjustment targets (or efficiency target) of 1% of its base costs each year from 2020-21. WaterNSW provides that this equates to a reduction of approximately \$1 million per annum in its proposed operating expenditures over the determination period.⁴⁵

Figure 4.1 shows WaterNSW's proposed operating expenditure for the 2020 determination period and compares this to its historical operating expenditure, the IPART allowance and WaterNSW's actual/forecast expenditure for the 2016 determination period.

WaterNSW considers that its proposed operating expenditure plan is more reflective of a steady state operating environment for WaterNSW. It submits that its proposed increase in operating expenditure from 2019-20 to the 2020 determination period is due to a range of activities including:

- ▼ An increase in water monitoring
- ▼ Increased land management costs
- ▼ Increased maintenance activities

⁴¹ IPART, Review of prices for WaterNSW, Final Report, June 2016, p 6

⁴² WaterNSW pricing proposal to IPART, July 2019, p 53.

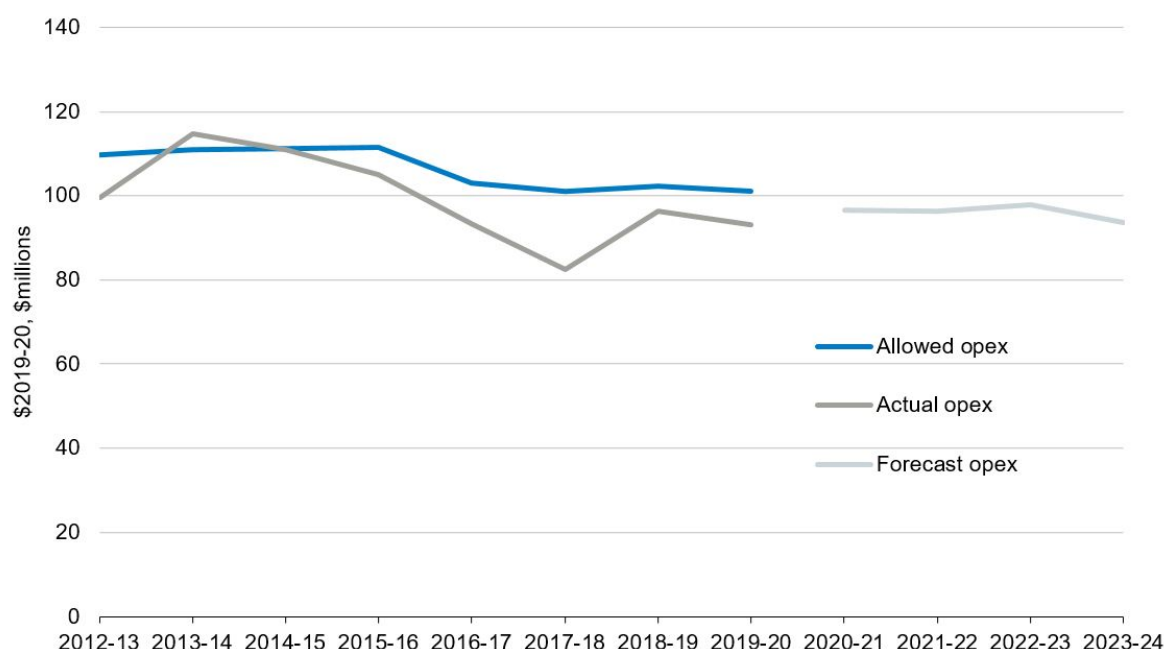
⁴³ WaterNSW pricing proposal to IPART, July 2019, Table 6.4 p 109.

⁴⁴ WaterNSW pricing proposal to IPART, Table 6.1 & Table 6.4, pp 99 & 109.

⁴⁵ WaterNSW pricing proposal to IPART, July 2019, p 96.

- ▼ Higher land contamination costs, and
- ▼ Increases in insurance premiums.⁴⁶

Figure 4.1 WaterNSW's proposed operational expenditure and its historical allowed and forecast/actual operational expenditure (\$2019-20, \$ millions)



Data source: WaterNSW pricing proposal, Table 6.1 & Table 6.4, pp 99-109. IPART analysis for historical data.

Table 4.2 breaks down WaterNSW's proposed operating expenditure in each year of the proposed 2020 determination period.

Table 4.2 WaterNSW's proposed operating expenditure over 2020 determination period (\$2019-20, \$ millions)

	2019-20	2020-21	2021-22	2022-23	2023-24	Total
Forecast actual	93.0					
Proposed		96.5	96.4	97.8	93.7	384.4
Change (year on year)		+3.8%	-0.1%	1.5%	-4.2%	

Source: WaterNSW pricing proposal, Table 6.1 & Table 6.4, pp 99 & 109.

4.3 IPART's response on operating expenditure

We have not formed a preliminary view on WaterNSW's proposed operating expenditure for the 2020 determination period. We have engaged an expert consultant to review and make recommendations to us on the efficiency of WaterNSW's proposed operating expenditure. This will involve examining whether the expenditure represents the best way of meeting customers' needs for Greater Sydney's bulk water services. We will also consider and address

⁴⁶ WaterNSW pricing proposal to IPART, July 2019, p 109 and p 111.

all stakeholder feedback in response to our Issues Paper, at the public hearing, and in response to our Draft Report.

In reviewing WaterNSW's proposal, we will focus on establishing the efficient level of operating expenditure required by WaterNSW as well as its historical performance and the potential for further efficiency gains over the 2020 determination period.

IPART seeks comment on the following:

- 6 Is WaterNSW's actual/forecast operating expenditure over the 2016 determination period efficient, including the step increase in the second half of the period?
- 7 Are WaterNSW's proposed operating costs for the 2020 determination period efficient, taking into account drivers of this expenditure, efficiency savings revealed over the 2016 determination period and the bulk water services to be delivered?

5 Efficient capital expenditure

This section outlines WaterNSW's proposal on past and forecast capital expenditure and our preliminary response to its proposal.

Under the building block method, there is no explicit allowance for capital expenditure in the notional revenue requirement. Instead, capital expenditure is added to the RAB and recovered through the allowances for a return on assets and regulatory depreciation, as discussed in Chapter 6. To decide how much capital expenditure is added to the RAB, we review WaterNSW's proposal and apply an efficiency test (see Box 4.1). We then incorporate the efficient capital expenditure into the value of the RAB, and use this value in calculating the allowances for a return on assets and regulatory depreciation.

5.1 WaterNSW's proposal on past capital expenditure

WaterNSW's forecast/actual capital expenditure for the 2016 determination period is \$326 million, which exceeds the IPART allowance of \$254 million by \$72 million (28%), see Table 5.1. This is despite an underspend of \$74 million during the first two years of the determination period (2016-17 and 2017-18).⁴⁷ Just over half (51%) of WaterNSW's total actual/forecast expenditure for the 2016 determination period is to occur in year 2019-20 of the determination period.

Table 5.1 Capital expenditure over the 2016 determination period (\$2019-20, \$ millions)

	2016-17	2017-18	2018-19	2019-20	Total
Allowance	67	80	58	49	254
Actual/Forecast	30	43	87	166	326
Difference (\$)	-37	-37	29	117	72
Difference (%)	-55%	-46%	50%	241%	28%

Source: WaterNSW pricing proposal, Table 5.2, p 59.

WaterNSW submits that of the \$325.6 million in forecast/actual expenditure for the 2016 determination period, \$57 million is on planning for drought resilience in 2019-20. WaterNSW considers this investment was unforeseen at the time of the 2016 price review but is critical to ensure it remains 'plan ready' to maintain water supply to Greater Sydney.⁴⁸ WaterNSW provides that, excluding the unforeseen planning for drought resilience, actual capital expenditure would have been \$269 million, which would \$15 million (6%) higher than the IPART allowance.⁴⁹

Figure 5.1 shows WaterNSW's actual/forecast expenditure for the 2016 determination period including and excluding its forecast expenditure for drought resilience planning in comparison to the IPART allowance. It also shows WaterNSW's proposed capital expenditure

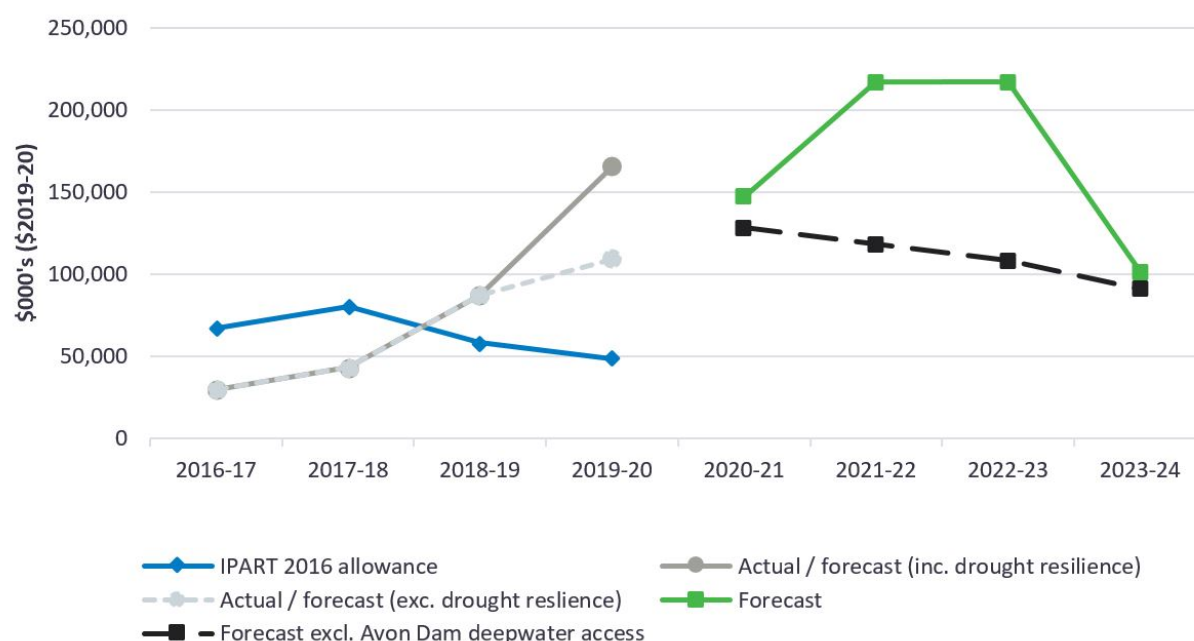
⁴⁷ WaterNSW pricing proposal to IPART, July 2019, p 55.

⁴⁸ WaterNSW pricing proposal to IPART, July 2019, p 13.

⁴⁹ WaterNSW pricing proposal to IPART, July 2019, p 59.

for the 2020 determination period including and excluding the Avon Deep Water Access project, the largest project in WaterNSW's pricing proposal.

Figure 5.1 WaterNSW's capital expenditure allowance and actual/forecast capital expenditure for the 2016 determination period, and proposed capital expenditure for the 2020 determination period.



Data source: WaterNSW pricing proposal, Figure 5.1, p 55.

WaterNSW submits that at the time of the 2016 price review, it was not a 'steady state' business.⁵⁰ It submits that the 2016 determination included activities to support the implementation of a combined structure after the merger of the former Sydney Catchment Authority (SCA) and State Water Corporation in 2015.⁵¹ WaterNSW considers that these activities resulted in some disruption at the beginning of the 2016 determination period and that "this led to a slow start in delivery of the program".⁵²

WaterNSW submits that during the 2016 determination period it implemented a new approach to asset management and the delivery of its capital works program. This includes restructuring of its delivery team to allow for increased delivery capability and scalability across the combined business. WaterNSW submits that its asset investment processes ensure that works are appropriately prioritised based upon risk to its business, customers and stakeholder, and that significant savings have been realised for several capital projects.⁵³

WaterNSW submits that the variances between allowed and actual/forecast capital expenditure over the 2016 determination period were driven by the factors shown in Table 5.2.

⁵⁰ WaterNSW pricing proposal to IPART, July 2019, p 60.

⁵¹ WaterNSW was formed on 1 January 2015 following a merger of the former Sydney Catchment Authority (SCA) and State Water Corporation. See Appendix E for further details.

⁵² WaterNSW pricing proposal to IPART, July 2019, p 61.

⁵³ WaterNSW pricing proposal to IPART, July 2019, pp 57-58.

Table 5.2 Drivers for variances between allowed and actual/forecast expenditure over the 2016 determination period.

Driver for variance	Impact to capital expenditure (\$ millions)
Downward cost pressures	
Delays due to the implementation of the new organisational structure with respect to both asset management and capital project delivery. This was offset by a substantial “catch up” toward the end of the regulatory period	\$5.2 million
Strategic deferrals and cancellations in line with both NSW Government policy and the new WaterNSW strategy	\$47.6 million
Cost savings through management of project scope and/or efficient procurement.	\$30 million
Other	\$9 million
Total downward cost pressure	\$91.8 million
Upward cost pressures	
Works advanced due to changes to Government policy, risk or need to “offset” the deferred or cancelled projects	\$43.9 million
Detailed project planning of some legacy projects resulted in the identification of additional scope required to achieve project objectives	\$22 million
Several projects were subject to cost increases arising from either expenditure ‘carryover’ from prior periods or from market costs being identified during the planning phase of retrospective projects	\$23 million
A number of projects were advanced due to ongoing drought conditions in NSW. These include preliminary planning activities on a number of drought related initiatives	\$75 million ^a , including \$57 million for the Avon Deep Water Access project.
Total upward cost pressure	\$163.9 million
Net increase in capital expenditure compared to the IPART allowance	\$72.1 million^b

a: WaterNSW pricing proposal, July 2019, Figure 5.4, p 60.

b: Does not add up to values presented in Table 5.1 due to rounding.

Source: WaterNSW pricing proposal, July 2019, pp 61-62.

5.2 WaterNSW’s proposal on capital expenditure for the 2020 determination period

WaterNSW is proposing \$682.4 million in capital expenditure over the 2020 determination period. This represents an increase of \$428 million (169%) from the IPART allowance of \$254.1 million for the 2016 determination period and an increase of \$356 million (110%) over its actual/forecast expenditure for the same period.⁵⁴

WaterNSW submits that a fundamental driver of its capital expenditure plan is to improve the availability of water. It states that its capital expenditure program is heavily influenced by the 2017 Metropolitan Water Plan and resultant Government policy decisions in addition to the ongoing drought in NSW.

⁵⁴ WaterNSW pricing proposal, July 2019, p 73.

WaterNSW's proposed capital expenditure for the 2020-24 determination period is outlined in Table 5.3.

Table 5.3 Proposed capital expenditure over the 2020 determination period (\$2019-20, \$ millions)

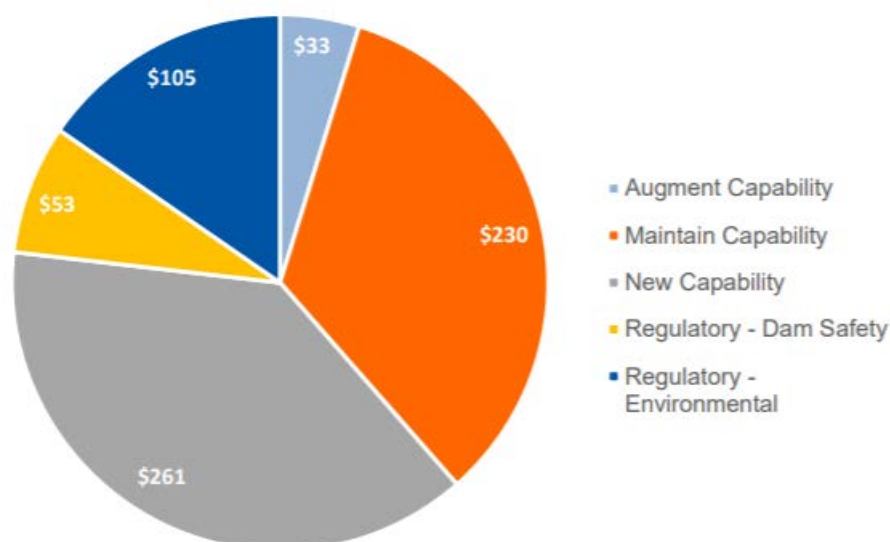
	2019-20	2020-21	2021-22	2022-23	2023-24	Total
Forecast actual	166					
Proposed		147	217	217	101	682
Change (year on year)	–	203%	47%	0.0%	-53%	

Source: WaterNSW pricing proposal, July 2019, Table 5.1, p 56 and Table 5.2, p 59.

In its submission, WaterNSW has broken down its proposed capital expenditure by capability driver, see Figure 5.2. The largest of WaterNSW's proposed capital investment drivers is 'new capability' at \$261.3 million, or 38% of its total proposed capital program. This driver includes the Avon Deep Water Access project, the largest individual project under WaterNSW's proposed capital expenditure program. This project aims to provide drought resilience by addressing the supply risk to Illawarra.

Additionally, WaterNSW is proposing to invest \$230 million (34%) of its total proposed capital expenditure to maintain the capability of WaterNSW's existing assets as well as a total of \$158 million to address regulatory compliance requirements, including \$105 million for environmental compliance and \$53 million to address dam safety obligations.

Figure 5.2 Proposed capital expenditure by capability driver for the 2020 determination period (\$2019-20, \$ millions)



Source: WaterNSW pricing proposal, July 2019, Figure 5.10, p 74.

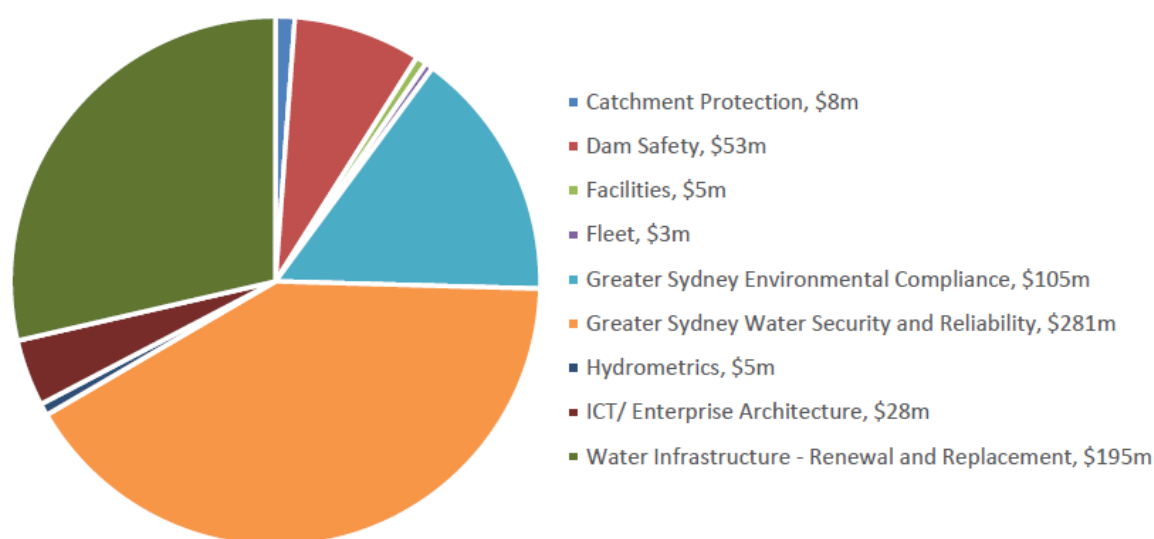
Table 5.4 breaks down the proposed capital expenditure in each year of the 2020 determination period by capability driver.

Table 5.4 Proposed capital expenditure forecast by key driver (\$2019-20, \$ millions)

	2019-20	2020-21	2021-22	2022-23	2023-24	Total FY21-24
Augment Capability	8.3	12.2	7.9	7.3	5.3	5.3
Maintain Capability	74.6	65.0	55.4	53.2	56.8	230.4
New Capability	68.4	44.1	98.2	108.5	10.5	261.3
Regulatory – Dam Safety	4.9	12.8	15.2	17.5	7.7	53.2
Regulatory – Environmental	9.4	13.2	40.2	30.4	21.2	104.9
Total	165.6	147.2	216.9	216.9	101.5	682.4

Source: WaterNSW pricing proposal, July 2019, Table 5.4, p 74.

WaterNSW submits that its capital investment plan for Greater Sydney has been developed to address a number of current service needs informed by the requirements of its customers, stakeholders and regulators. WaterNSW's forecast expenditure for Greater Sydney comprises of several programs to address these service needs. Figure 5.3 shows WaterNSW's proposed capital expenditure by each of these programs.

Figure 5.3 Proposed capital expenditure forecast by program (\$2019-20, \$ millions)

Data source: WaterNSW pricing proposal, July 2019, Figure 5.11, 75.

WaterNSW's largest capital expenditure is proposed for the 'Greater Sydney Water Security and Reliability' program. WaterNSW submits that this program includes a combination of asset enhancements and new asset solutions to address new and emerging needs.

WaterNSW states that its proposed capital expenditure will allow it to continue to provide the availability of water resources that are essential for its Greater Sydney customers and to comply with its operating licence.

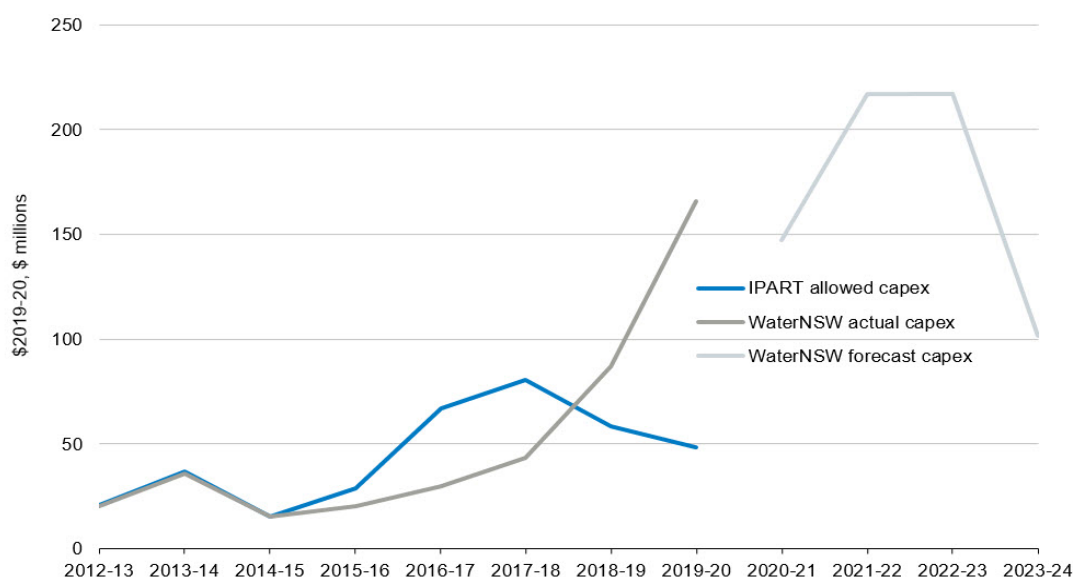
WaterNSW's proposed expenditure for the first part of the 2020 determination period is predominantly focussed on maintaining asset reliability and asset renewals, including the Warragamba to Prospect pipeline and corridor restoration at a cost of approximately \$108 million. From the second half of the determination period, the major component of WaterNSW's proposed capital expenditure is the Avon Deep Water Access project, at an estimated cost of \$236 million.⁵⁵ The project will enable access to the deep water in the reservoir, which is currently inaccessible, providing up to an additional two years of supply during prolonged drought conditions.⁵⁶

5.3 Comparing WaterNSW's proposed and historical capital expenditure

Figure 5.4 shows WaterNSW's proposed capital expenditure for the 2020 determination period and compares this to its historical capital expenditure, the IPART allowance and WaterNSW's actual/forecast expenditure for the 2016 determination period.

WaterNSW's actual/forecast capital expenditure was below IPART's allowance in the first two years of the 2016 determination period. It is forecasting to exceed this allowance in the third year and forecasts that it will triple the IPART allowance in the final year of the current determination period. WaterNSW's proposed capital expenditure for the 2020 determination period is significantly higher than its historical capital expenditure, as shown in Figure 5.4.

Figure 5.4 Allowed, actual and proposed capital expenditure (\$2019-20, \$ millions)



Source: WaterNSW pricing proposal, Table 5.1 & Table 5.2, pp 56-59. Historical data from IPART analysis.

⁵⁵ WaterNSW pricing proposal to IPART, July 2019, p 16.

⁵⁶ WaterNSW pricing proposal to IPART, July 2019, p 16.

Output measures

At the 2016 pricing review, we set 10 output measures for WaterNSW to measure the delivery of its capital expenditure program and report annually on its progress to IPART.⁵⁷ As shown in Appendix G, Table G.1, WaterNSW 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.

WaterNSW has proposed seven output measures for the 2020 determination period (see Table 5.5). The proposed output measures represent the major projects that WaterNSW is proposing to undertake during the 2020 determination period. It states that monitoring its progress will provide IPART and stakeholders with confidence in WaterNSW's delivery capability.

Table 5.5 WaterNSW's proposed output measures for the 2020 determination period

Project	Output measures	Expected completion
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
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
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 2024

Source: WaterNSW pricing proposal to IPART, July 2019, Table 13.1, p 172.

5.4 IPART's response on capital expenditure

We have not formed a preliminary view on WaterNSW's proposed capital expenditure. To inform our decision in response to WaterNSW's proposal, we have engaged an expert consultant to review the efficiency of its past capital expenditure as well as the need, efficiency and capability to deliver its forecast capital expenditure over the 2020 determination period.

We will also consider views and information provided by stakeholders in written submissions in response to this Issues Paper, during the public hearing and in response to our Draft Report. For this review, we are particularly interested in stakeholders' views on WaterNSW's variances in its actual/forecast expenditure compared to IPART's allowance and its proposal

⁵⁷ IPART, review of prices for WaterNSW, Final Report, June 2016, p39.



to increase its capital expenditure by 110% compared to its actual/forecast expenditure for the 2016 determination period.

In reviewing WaterNSW's proposal, we will consider WaterNSW's historical underspend on capital expenditure, identify the drivers of this and assess WaterNSW's capability to deliver increased capital expenditure over the 2020 determination period.

IPART seeks comment on the following:

- 8 Has WaterNSW's capital expenditure during the 2016 determination period been efficient, taking into account drivers of this expenditure and services achieved?
- 9 Is WaterNSW's proposed capital expenditure program for the 2020 determination period efficient, taking into account expenditure drivers and service outcomes to be achieved?
- 10 Can WaterNSW efficiently deliver its proposed capital expenditure program for the 2020 determination period, taking into account the size of this program and its historical capital expenditure?
- 11 Are WaterNSW's proposed output measures for the 2020 determination period sufficient for monitoring its progress in efficiently delivering against its proposed major projects?

6 Cost of capital and tax

To calculate the allowances for a return on assets, regulatory depreciation, tax liabilities and a return on working capital in the revenue requirement, we need to determine three key inputs:

- ▼ The value of WaterNSW's regulatory asset base (RAB), which represents the economic value of the assets used to deliver the monopoly services
- ▼ The appropriate rate of return (eg, the weighted average cost of capital) on WaterNSW's RAB, and
- ▼ The appropriate asset lives and depreciation method to apply to WaterNSW's RAB.

The sections below discuss WaterNSW's proposals on these three inputs and its proposed tax allowance, and our preliminary responses to these proposals.

6.1 Value of the RAB

In general, to determine the value of the RAB over the 2020 determination period, we:

- ▼ Take the RAB value we determined at the start of the 2016 period (the opening RAB) and incorporate WaterNSW's prudent and efficient actual capital expenditure over that period (discussed in Chapter 5), and make adjustments to account for other changes to the RAB over the period (eg, asset disposals, capital contributions and regulatory depreciation). This determines the opening RAB for the 2020 determination period.
- ▼ Roll forward this opening RAB to the end of the 2020 determination period by including prudent and efficient forecast capital expenditure over the period (discussed in Chapter 5), and making adjustments to account for other forecast changes to the RAB (eg, asset disposals, capital contributions and regulatory depreciation). This gives the forecast RAB for each year of the 2020 period.

6.1.1 WaterNSW's proposal on the value of the RAB

Table 6.1 shows WaterNSW's proposed opening RAB for the 2020 determination period and the adjustments WaterNSW made to derive that value. It proposes that its RAB has increased in value by \$344 million or 23% over the 2016 determination in nominal terms.

Table 6.1 WaterNSW calculated RAB for the 2016 determination (\$ million, nominal)

	2015-16	2016-17	2017-18	2018-19	2019-20
Opening RAB	1,471	1,476	1,507	1,552	1,643
Plus: Capex (net of cap cons)	18	28	41	85	166
Less: Asset Disposals	1	0	0	0	0
Less: Regulatory depreciation	27	26	27	29	31
Plus: Indexation	15	28	32	35	43
Closing RAB	1,476	1,507	1,552	1,643	1,820

Note: Totals may not add due to rounding.

Source: WaterNSW pricing proposal to IPART, July 2019, Table 7.2, p 126.

Table 6.2 shows WaterNSW's proposed RAB and adjustments for each year of the 2020 determination period (note that the closing RAB in 2019-20 is equal to the opening RAB in 2020-21). WaterNSW is proposing to increase the value of the RAB by \$536 million or 30% (ie, from \$1,820 million to \$2,356 million) over the 2020 determination period in real terms.

Table 6.2 WaterNSW proposed RAB for the 2020 determination (\$ million, \$2019-20)

	2020-21	2021-22	2022-23	2023-24
Opening RAB	1,820	1,935	2,117	2,295
Plus: Capex (net of cap cons)	147	217	217	101
Less: Asset Disposals	0.5	0.5	0.5	0.5
Less: Regulatory depreciation	32	35	38	41
Closing RAB	1,935	2,117	2,295	2,356

Note: Totals may not add due to rounding.

Source: WaterNSW pricing proposal to IPART, July 2019, Table 7.5, p 130.

6.1.2 IPART's response on the value of the RAB

To determine allowances for a return on assets and regulatory depreciation, we must establish the value of WaterNSW's RAB in each year of the 2020 determination period.

In order to establish the starting value of WaterNSW's RAB for the 2020 determination period, we will review past capital expenditure in the ultimate year of the 2012 determination period and each year of the 2016 determination period taking into account the recommendations of our capital and operating expenditure consultants.

From this starting point (ie, opening RAB in 2020-21), we will then roll this forward by adding our assessment of efficient capital expenditure and deducting any asset disposals and our assessment of efficient depreciation for each year of the 2020 determination period.

In forecasting the rolled forward value of the RAB during the 2020 determination period we will review forecast capital expenditure, taking into account the recommendations of our expenditure consultants.

6.1.3 Cash capital contributions and grants

Cash capital contributions are funds paid to WaterNSW to pay (partially or full) for a specific project or development. An example is a government grant for new drought proofing infrastructure.

In establishing the value of the RAB, we deduct the value of any cash capital contributions. This is so customers do not pay for a return on assets or regulatory depreciation for capital expenditure that WaterNSW is not funding.

WaterNSW's proposed RAB for the 2020 Determination includes zero cash contributions or grants.

6.1.4 Asset disposals

The value of any regulatory assets WaterNSW proposes to sell or dispose of during the 2020 determination period is deducted from the RAB. This ensures customers are not charged a return on assets or regulatory depreciation for assets that no longer provide them with any benefit in receiving regulated services.

WaterNSW forecasts disposals of approximately \$0.5 million per annum, based on the application of IPART's standard methodology applied to an assessment of historic costs.⁵⁸

In its proposal WaterNSW has identified that it intends to dispose of land parcels at Braidwood, which it considers are in excess of WaterNSW's operational requirements. WaterNSW reports that the Braidwood land parcels consist of approximately 28,050 hectares.⁵⁹ WaterNSW contends that this land was non-operational when the 'line-in-the-sand' RAB was established by IPART in 2000, should not be considered part of the RAB and therefore the RAB should not be adjusted for the proceeds of any future sale of the Braidwood land parcels.⁶⁰

WaterNSW's proposal to not adjust the RAB means that the proceeds of sale of this land would be fully retained by WaterNSW and not shared with customers. In support of its position, WaterNSW notes IPART's 2016 decision to not adjust Sydney Water's RAB for the proceeds of the sale of its Central Workshops site on the basis that this was considered by IPART to be non-operational when Sydney Water's RAB was established.

6.1.5 IPART's response on asset disposals

It is IPART's policy that "...if a business can make a convincing case that an asset was clearly non-operational at the line-in-the-sand, then, on an exception basis, we would not adjust the RAB for that asset sale."⁶¹

The rationale for this position is that the RAB represents the economic value of the utility's assets used to provide customers with regulated or 'monopoly' services and that if an asset is

⁵⁸ WaterNSW pricing proposal to IPART, July 2019, p 127.

⁵⁹ To put this in perspective, the area of a standard football field is approximately 1 hectare.

⁶⁰ WaterNSW pricing proposal to IPART, July 2019, p 127.

⁶¹ IPART, *Asset Disposals Policy Paper – Final Report*, February 2018, p 24.

not used to supply customers with these services then it should not be in the RAB. It follows that if an asset's value has never been included in the RAB (which means that customers have not been paying for it) then its value should not be deducted from the RAB when it is sold. If an asset's value is deducted from the RAB when it is sold, then customers would effectively share in the sales proceeds through lower prices.⁶²

In 2000, when we established WaterNSW's initial RAB, we did not identify and sum the value of individual assets used to provide its services to customers. Rather, we calculated the RAB by discounting the utility's forecast future cash flows from sales of its monopoly services (ie, bulk water services). Therefore, if an asset was clearly outside the scope of WaterNSW's monopoly services (ie, it was non-operational), it should not have been reflected in the initial RAB value. Since the establishment of that initial 'line-in-the-sand' RAB, we have rolled forward the RAB by adding efficient capital expenditure (when that expenditure is incurred as opposed to when assets come into operation) required to deliver monopoly services (as outlined above).

We have not formed a preliminary view on whether these land parcels meet the criteria for being non-operational (and hence not included in the RAB) at the time the 'line-in-the-sand' RAB was established. As part of this review we will investigate this further and present our findings in the Draft Report.

We seek your comment:

- 12 Do you agree with WaterNSW that the Braidwood land parcels were non-operational when the RAB was established in 2000 and therefore any proceeds from the sale of this land should not be shared with customers?

6.2 Allowance for return on assets

The allowance for a return on assets included in the revenue requirement represents our assessment of the opportunity cost of the capital the regulated business (or its owner) has invested to provide the regulated services, and ensures that it can continue to make efficient capital investments in the future.

To calculate this allowance, we multiply the value of the RAB in each year of the determination period by an appropriate rate of return. As for previous reviews, we intend to determine the rate of return using a weighted average cost of capital (WACC).

In our 2016 Determination, we adopted the use of a real post-tax WACC. We propose to continue this approach to calculate the allowance for a return on capital for the 2020 Determination.

Since the 2016 Determination, we have changed our methodology and process for calculating the WACC. We propose to use our current methodology and processes for calculating the WACC.

⁶² This share would range from 100% (if the full sales proceeds were deducted from the RAB) to less if a value less than the full sales proceeds were deducted from the RAB. Where an asset is in the RAB and then sold, we favour deducting the 'regulatory value' rather than sales value from the RAB.

6.2.1 We seek comment on how we set some WACC parameters

In our WACC Final Report⁶³, we decided we would seek comment on certain WACC parameters in subsequent price reviews.

How should we update the cost of debt?

We decided to transition to a trailing average cost of debt in our 2018 WACC method. In our view, a trailing average cost of debt allows regulated businesses to better manage their refinancing risk, while maintaining their incentives for efficient investment.

Implementing a trailing average involves updating the cost of debt at the start of each year within a regulatory period.

To do this, we need to decide in each price review whether:

- ▼ Annual changes in the cost of debt should flow through to prices in the subsequent year (annual updating), or
- ▼ Whether they should be cumulated and passed through via a regulatory true-up in the subsequent regulatory period.

We will re-estimate equity betas

The equity beta for a firm measures the relationship between the firm's returns on equity to the returns of equity to the market as a whole. A firm with more volatile returns than the market would have an equity beta greater than 1, and a firm with less volatile returns than the market would have an equity beta of less than 1.

We decided we would re-estimate the equity beta at each price review, including this price review. While we may not necessarily change the equity beta that we have determined for the water industry, we are mindful that an equity beta analysis outside the current price review may not be sufficiently timely.

To estimate the equity beta, we will use the broadest possible selection of proxy companies to estimate equity beta (but exclude thinly traded stocks). In forming this selection, we seek stakeholder feedback on the comparable industries we should include to establish the proxy companies we use in this review.

We recently consulted with stakeholders on a new method of using market data to estimate equity beta.⁶⁴ Several submissions were received in April 2019. We are currently considering these submissions and will continue to consult with stakeholders on beta estimation through our current 2019-20 price reviews for Sydney Water, Hunter Water and WaterNSW – Greater Sydney.

We consider that we should review the gearing ratio at the same time that we review the equity beta. As for the equity beta, we would not automatically change the gearing we use in WACC calculations.

⁶³ IPART, *Review of our WACC method – Final Report*, February 2018.

⁶⁴ <https://www.ipart.nsw.gov.au/files/sharedassets/website/shared-files/investigation-administrative-legislative-requirements-sea-wacc-methodology-2017/fact-sheet-estimate-equity-beta-1-april-2019.pdf>

6.2.2 WaterNSW proposal on return on assets

WaterNSW's WACC represents the return it requires on its capital assets to service its debts and make a commercial return on equity for its shareholders. WaterNSW has proposed using IPART's 2018 WACC methodology and estimated the WACC based on our February 2019 bi-annual market update, noting that the WACC will be updated with recent financial market data closer to the start of the 2020 determination period.

Table 6.3 outlines the WACC parameters WaterNSW has used in formulating its proposal to IPART for the 2020 determination period.

Table 6.3 WaterNSW proposed WACC parameters

	Current market data	Long term averages
Nominal risk free rate	2.4%	3.6%
Inflation	2.4%	2.4%
Debt margin ^a	2.5%	2.7%
Debt to total assets	60%	60%
Market risk premium	8.6%	6.0%
Gamma	0.25	0.25
Equity Beta	0.7	0.7
Cost of equity (nominal post-tax)	8.4%	7.8%
Cost of debt (nominal pre-tax)	4.8%	6.3%
Real post tax WACC	3.8%	4.4%
Mid-point WACC	4.1%	

^a Includes 12.5 basis points for debt raising costs.

Source: WaterNSW pricing proposal to IPART, July 2019, Table 8.1, p 150; and WaterNSW accompanying modelling.

WaterNSW is proposing that IPART apply annual updates to the cost of debt

WaterNSW is requesting that IPART apply annual updates to the cost of debt. It argues that this is superior to a true-up to apply at the next determination period, and presents the following reasons:⁶⁵

- ▼ **Customers' interests:** WaterNSW puts forward that annual updates provide smaller incremental price changes to customers and reduce price shocks at regulatory reset dates. WaterNSW is particularly concerned about this risk given that water bills can have a material and direct impact on the end user.
- ▼ **Cashflow timing impacts:** WaterNSW states that without annual updates the cashflow impact of differences between the cost of debt allowance and the actual interest costs are borne by the firm and may impact on credit ratings. It claims that this may impact the financeability of the firm.
- ▼ **Incentive to incur efficient debt raising costs:** WaterNSW expresses that under annual updates the annual cost of debt allowance would reflect as much as possible the actual interest costs expected to be incurred by a prudent and efficient firm. WaterNSW proposes that this would incentivise the firm to adjust its debt raising practices on an

⁶⁵ WaterNSW pricing proposal to IPART, July 2019, pp 138-139.

annual basis so as to incur debt raising costs which align with the benchmark allowances.

- ▼ **Administratively simple:** WaterNSW proposes that annual updates are a core feature of most well-functioning regulatory frameworks and determinations. It notes that annual adjustments for inflation and other price inputs make the annual adjustment process commonplace.

WaterNSW has further argued that it expects that the cost of debt will reduce over the 2020 determination period. It cites that a true-up would result in a delay in the time in which customers would benefit from the lower cost of debt through lower prices.⁶⁶

6.2.3 IPART's response on the return on assets

We reviewed our method for determining the WACC in 2018, and we propose to use our updated method in this review. Box 6.1 summarises the key changes we made to our WACC method in the 2018 review (compared to the 2013 method we used for the 2016 determination).

Box 6.1 Summary of changes to our WACC method

We use a 'trailing average' approach to calculate both historic and current cost of debt

Our 2013 method set a cost of debt as the midpoint between our estimates of the historic and current cost unless there is significant economic uncertainty, and did not update this cost during the regulatory period. In response to stakeholder feedback that this approach creates a refinancing risk for regulated businesses, we decided to estimate both the historic and current cost of debt using a trailing average approach, which will update the cost of debt annually over the regulatory period.

We update the cost of debt annually within a regulatory period and decide how annual changes are passed through on a case-by-case basis, as part of our price review process.

We considered whether we should update prices to reflect the updated cost of debt annually, or use a regulatory true-up in the notional revenue requirement for the next period, which we would pass through to prices at the beginning of the next period. We decided to determine the most appropriate option on a case-by-case basis, as part of our price review process. Where we decide to use a true-up, we will use the WACC as the discount rate for calculating the true-up.

We use the expected rate of inflation over the regulatory period

Under our method, we measure the cost of debt and equity in nominal terms, but apply a real post-tax WACC. Therefore, we need to adjust the nominal measurements by inflation to derive a real WACC.

We decided to use the expected rate of inflation over the regulatory period (previously we used 10 years of expected inflation). We calculate the expected rate of inflation by first calculating the geometric average of the forecast change in the level of prices over the regulatory period, and then converting this average into an annual inflation rate separately.

Source: IPART, *Review of our WACC method – Final Report*, February 2018.

⁶⁶ WaterNSW pricing proposal to IPART, July 2019, p 140.

IPART's response on whether to apply annual updates to the cost of debt

Our preliminary position is to not pass through annually the updated cost of debt, and instead apply an NPV-neutral true-up at the next determination period.

We prefer the option of applying a regulatory true-up at the subsequent determination period because it provides certainty to customers about their prices over the upcoming determination period. In contrast, if we applied an annual update, a large change in the cost of debt would flow through to customer prices in the following year of the determination period, unless additional side constraints were imposed in the determination.

It is also our position to not make assumptions about the direction of change in the cost of debt over the determination period. The revenue adjustment for the change in the cost of debt is based on a 10-year rolling average which makes forecasting the direction of the adjustment highly unreliable over a 4-year period. We therefore do not let expectations of future changes in interest rates influence the decision as to whether a true-up or annual update is best.

We seek your comment:

- 13 Should we update the cost of debt component of WaterNSW's WACC annually (ie, factored into prices each year), or should this be subject to a true-up at the next determination (ie, netted out and applied across all years of the next determination period)?

6.3 WaterNSW's proposed asset lives and regulatory depreciation

WaterNSW proposed an allowance for regulatory depreciation of \$146 million over the 2020 determination period.⁶⁷ To calculate this allowance, it applied the straight-line depreciation method and a useful life of 60 years for existing and new depreciating assets.⁶⁸

Existing asset lives

WaterNSW considers that 60 years remains appropriate for the weighted average of remaining lives of assets obtained prior to the start of the 2020 determination period. This is consistent with our 2016 decision on asset lives.

WaterNSW argues that 60 years most reasonably reflects the overall composition of its assets.⁶⁹

New asset lives

WaterNSW proposes to apply an average remaining life of 60 years to new capital expenditure during the 2020 determination period. The weighted average asset life of the capital expenditure during the 2020 determination period, calculated by WaterNSW, is 61.2 years. However, WaterNSW prefers to use the 60-year average asset life as it reasonably reflects its detailed weighted average calculation while not suggesting an unreasonable level of precision.⁷⁰

⁶⁷ WaterNSW pricing proposal to IPART, July 2019, p 130.

⁶⁸ WaterNSW pricing proposal to IPART, July 2019, p 129.

⁶⁹ WaterNSW pricing proposal to IPART, July 2019, p 128.

⁷⁰ WaterNSW pricing proposal to IPART, July 2019, p 129.

6.3.2 IPART's response on the asset lives and regulatory depreciation

The allowance for regulatory depreciation included in the revenue requirement (and used in calculating the value of the RAB, as discussed in section 6.1 above) is intended to ensure that the capital the regulated business (or its owner) invests in the regulatory assets is returned over the useful life of each asset.

To calculate the allowance for regulatory depreciation (or 'return of capital'), we need to determine the appropriate lives for the assets in WaterNSW's RAB, and the best depreciation method to use. For this determination we propose to continue to use the straight line depreciation method to calculate WaterNSW's return of capital. This means that value of the asset is returned to WaterNSW (through the depreciation allowance) evenly over the asset's life.

It is important that the asset lives we use in calculating WaterNSW's depreciation allowance are accurate – ie, that they reasonably reflect the consumption of its assets. If they are too short, today's customers will over-pay (ie, pay for future customer's 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 will consider the full and remaining lives for assets in the RAB and appropriate asset lives for forecast capital expenditure that we deem to be prudent and efficient. We have not formed a preliminary view on WaterNSW's proposed asset lives. However, we note that WaterNSW's approach is consistent with that in the previous price review.

Our decision will be informed by the expenditure review to be undertaken by our consultants, which includes an assessment of the appropriateness of WaterNSW's proposed asset lives, given the state of its assets. Through this process, we will also consider whether there is merit to take a more disaggregated approach to the calculation of WaterNSW's regulatory depreciation by (1) unbundling the RAB into separate asset categories, then (2) assigning asset category-specific asset lives.

We seek your comment:

- 14 Should we adopt WaterNSW's proposal to calculate regulatory depreciation based on an average asset life of 60 years?
- 15 What are other factors should we consider? For example, do you agree that there is merit in this review (or a future review) to take a more disaggregated approach to the calculation of WaterNSW-Greater Sydney's regulatory depreciation by unbundling its RAB into separate asset categories each with an asset category-specific asset life?

6.4 Allowance for tax

As discussed above, because we use a post-tax WACC to estimate the allowance for a return on assets in the revenue requirement, we also include an explicit allowance for tax, which reflects the regulated business's forecast tax liabilities.

We calculate the tax allowance for each year by applying a 30% statutory corporate tax rate, adjusted for gamma to the business's (nominal) taxable income.⁷¹ For this purpose, taxable income is the notional revenue requirement (excluding tax allowance) less operating cost allowances, tax depreciation, and interest expense. 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 expense are based on the parameters used for the WACC, and the value of the RAB.⁷²

6.4.1 WaterNSW's proposal on the tax allowance

WaterNSW has proposed a tax allowance of \$4 million in each year of the 2020 determination period. WaterNSW calculated this value using IPART's approach to calculating the tax allowance, applying a corporate tax rate of 30%.⁷³

6.4.2 IPART's response on the tax allowance

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. Therefore, our decision on the actual tax allowance to be included in the NRR will be subject to our decisions on those other items.

6.5 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.

WaterNSW's proposed NRR includes a deduction of \$0.1 million in each year of the 2020 determination period. This \$0.1 million represents customers' share (50%) of WaterNSW's non-regulated income.⁷⁴ Sharing non-regulated income 50:50 with customers is what we have done in the past and it is our preliminary position that this should continue for the 2020 determination period. This provides the utility with an incentive to pursue non-regulated income, while also benefiting customers.

WaterNSW's non-regulated income is earned from multiple sources including leasing facilities and commercial hydrometrics services.⁷⁵

⁷¹ Under a post-tax framework, the value of franking credits (gamma) enters the regulatory decision only through the estimate of the tax liability.

⁷² The nominal cost of debt is the sum of the nominal risk-free rate and nominal debt margin.

⁷³ WaterNSW pricing proposal to IPART, July 2019, pp 156-157.

⁷⁴ WaterNSW pricing proposal to IPART, July 2019, Table 11.2, p 164 and accompanying modelling.

⁷⁵ WaterNSW pricing proposal to IPART, June 2019, p 22.



6.6 Return on working capital

WaterNSW has proposed having its return on working capital calculated using IPART's working capital policy.⁷⁶ It is our preliminary position to support this proposal.

⁷⁶ WaterNSW pricing proposal to IPART, June 2019, p 154. Our latest working capital policy paper was published in November 2018 and is available on our website.

7 Notional revenue requirement

The notional revenue requirement (NRR) represents our view of the total efficient costs of providing WaterNSW's regulated services to its customers in each year of the determination period. The NRR is the sum of the efficient levels of operating costs, return of and on capital, and other building block components (see Chapters 4 to 6). In general, we set prices to recover this amount of revenue.

Once we have calculated WaterNSW's notional revenue requirement, we decide on the approach we should use to convert this amount into prices. This involves deciding on the target revenue for each year – that is, the actual revenue we will expect WaterNSW to generate from prices and charges for that year. To make this decision, we consider a range of factors, including:

- ▼ The implications of the notional revenue requirement on price levels, and the rate and way in which they would change, and
- ▼ The impact of this on WaterNSW and its customers.

7.1 Review of actual revenue for the 2016 determination period

WaterNSW's allowed NRR for the 2016 determination period is shown in Table 7.1.

Table 7.1 WaterNSW's determined NRR (\$ million, \$2019-20)

	2016-17	2017-18	2018-19	2019-20	Total
Operating expenditure	103.0	101.0	102.3	101.0	407.4
Return on assets	79.5	81.5	83.5	84.5	328.9
Return of assets (depreciation)	27.0	28.2	29.3	30.2	114.7
Return on working capital	0.7	0.7	0.8	0.8	2.7
Regulatory tax allowance	4.8	5.8	6.9	7.6	25.0
Total NRR	214.9	217.2	222.6	224.0	878.7
Less non-regulated revenue	2.0	1.5	2.0	1.1	6.5
Target NRR	212.9	215.7	220.6	222.9	872.1

Source: IPART, *Review of prices for WaterNSW – Final Report*, June 2016, Table 2.1, p 16; IPART calculations, which included the correction to the CPI application.

During the 2016 determination period WaterNSW collected \$11 million more revenue than what was expected to be recovered through prices over the 2016 determination period. This is shown in Table 7.2 below. The reason for this was higher actual bulk water sales than what was forecast and used to set prices in the 2016 Determination. Table 7.2 shows allowed and actual revenue over the 2016 determination period as reported by WaterNSW.

Table 7.2 Allowed and actual revenue during 2016 determination (\$ million, \$2019-20)

	2016-17	2017-18	2018-19	2019-20	Total
Allowed revenue under 2016 Determination (incorrect CPI)	211.1	213.9	218.7	221.0	864.8
Actual revenue	213.7	219.3	220.5	222.1	875.6
Additional revenue collected	2.6	5.5	1.8	1.1	10.9
Additional revenue collected (%)	1.2%	2.6%	0.8%	0.5%	1.2%

Source: WaterNSW pricing proposal to IPART, July 2019, Table 11.3, p 164.

WaterNSW used an incorrect CPI series to inflate the 'allowed revenue under the 2016 Determination from \$2015-16 to \$2019-20. Table 7.3 re-presents the information shown in Table 7.2 after correcting the 'allowed revenue under the 2016 Determination' using the correct CPI data. The effect of this correction is to increase the allowed revenue which in turn reduces the additional revenue collected over the 2016 determination period from \$11 million to \$4 million.

Table 7.3 Allowed and actual revenue adjusted for correct CPI (\$ million, \$2019-20)

	2016-17	2017-18	2018-19	2019-20	Total
Allowed revenue under 2016 Determination (correct CPI)	212.9	215.7	220.6	222.9	872.1
Actual revenue	213.7	219.3	220.5	222.1	875.6
Additional revenue collected	0.8	3.7	(0.1)	(0.8)	3.6
Additional revenue collected (%)	0.4%	1.7%	0.0%	(0.4%)	0.4%

Source: IPART analysis and WaterNSW pricing proposal to IPART, July 2019, Table 11.3, p 164.

As part of our review, and in conjunction with our expenditure consultants, we will assess the efficiency of WaterNSW's proposed NRR.

7.2 WaterNSW's proposed revenue requirement for the 2020 determination period

WaterNSW has proposed a total NRR of \$889.2 million and a target revenue of \$887.2 million over the 2020 determination period as shown in Table 7.3.⁷⁷

⁷⁷ The target revenue is a re-profiling of the NRR. It is equivalent to the NRR in net present value (NPV) terms and results in prices that decrease by 1% on 1 July 2020 (excluding the effect of inflation) and then remain relatively constant in real terms (ie, excluding the effect of inflation) throughout the 2020 determination period.

Table 7.4 WaterNSW's proposed NRR (\$ million, \$2019-20)

	2020-21	2021-22	2022-23	2023-24	Total
Operating expenditure	96.5	96.4	97.8	93.7	384.4
Return on assets	76.1	82.1	89.4	94.3	341.9
Return of assets (depreciation)	30.9	33.9	37.4	40.0	142.3
Return on working capital	1.4	1.2	1.3	2.0	6.0
Regulatory tax allowance	3.6	3.7	3.7	4.0	15.0
Total revenue requirement	208.6	217.3	229.6	234.1	889.6
Less: non regulated revenue	0.1	0.1	0.1	0.1	0.4
Notional revenue requirement	208.5	217.2	229.6	234.0	889.2
Target revenue from prices	220.9	221.5	222.0	222.7	887.2

Source: WaterNSW pricing proposal to IPART, July 2019, Table 11.1 and Table 11.2, pp 163-164.

WaterNSW's proposed NRR is 2% higher than the target revenue of \$872.1 million used to set prices in the 2016 Determination. This increase is driven by increases in the return on assets and the return of assets (depreciation). The increases in the return on and of assets are partially offset by decreases in operating expenditure and a decrease in the return on working capital.

Factors placing upward pressure on the NRR include a 23% increase in the nominal value of the RAB over the 2016 determination period and the large increase in proposed capital expenditure over the 2020 determination period. These factors are largely offset by a large decrease in the cost of capital and reductions in proposed operating expenditure and working capital.

8 Customer numbers and water sales forecasts

Once we have determined the revenue requirement for the 2020 determination period, the next step in our approach is to decide on the forecast water sales and customer numbers. These forecasts are used in calculating the price levels necessary to recover WaterNSW's required revenue.

It is important that the forecasts are sound. If they differ markedly from WaterNSW's actual water sales volumes over the determination period, the determined prices will result in the utility significantly over- or under-recovering its required revenue. If the forecasts are lower than actual sales, its customers (and their end-use customers) will pay higher than efficient prices. If they are higher than actual sales, WaterNSW may not earn sufficient revenue to recover its efficient costs.

This chapter outlines WaterNSW's proposal on its water sales forecasts and customer numbers for the 2020 determination period, and discusses our preliminary response to this proposal.

8.1 WaterNSW's proposal on forecast customer numbers and water sales

Customer numbers

WaterNSW is proposing stable customer numbers and notes that Sydney Water accounts for 99% of its total water sales and therefore its customer number forecasts are not as important in setting prices as forecast water sales.⁷⁸

WaterNSW is forecasting no change in customer numbers over the 2020 determination period compared to 2019-20 levels, which have been constant since 2017-18. Table 8.1 shows WaterNSW's customer number forecasts.

Table 8.1 WaterNSW proposed customer numbers

	2019-20	2020-21	2021-22	2022-23	2023-24
Wholesale customers	4	4	4	4	4
Raw water	6	6	6	6	6
Unfiltered water	53	53	53	53	53
Total customers	63	63	63	63	63

Source: WaterNSW pricing proposal to IPART, July 2019, Table 10.2, p 159.

Water sales

WaterNSW has not conducted its own water demand forecast for Sydney Water's end use customers. Sydney Water prepares these forecasts and provides regular updates to

⁷⁸ WaterNSW pricing proposal to IPART, July 2019, Table 10.4, p 161.

WaterNSW. WaterNSW is proposing to adopt Sydney Water’s demand forecast (gross of losses in Sydney Water’s network) as the basis on which to set bulk water prices for Sydney Water. A summary of Sydney Water’s approach to forecasting demand is presented in Box 8.1.

Box 8.1 Sydney Water’s demand model

Sydney Water’s water demand forecasting method has three parts:

1. Historical information is used to determine what factors influence water consumption. To do this, Sydney Water divided its customer base into 34 segments based on factors such as dwellings, lot size and whether the property was built under the BASIX system.
2. An econometric model is estimated for each segment based on historical customer usage. The parameters of this model quantify the impact on demand of the factors that influence water consumption within each group, such as price elasticity, weather and seasonality.
3. Climate projections, estimates of system water losses and price elasticity are applied to the econometric model for each customer segment to generate average demand levels. This is then multiplied by the forecast number of customers for each segment to generate demand forecasts for the 2020 determination period..

The model was tested using “hind casting”— forecasting demand from 2009 to 2017 with historical inputs and comparing the output to actual water sales. The model was able to estimate historical demand over the 2016 period to less than 1% average (absolute) error.

Source: Sydney Water pricing proposal, July 2019, Appendix 8A.

To forecast its sales volumes to the councils, WaterNSW has worked with these customers to provide forecasts based on the expected annual growth rates in their water demand.

For raw and unfiltered water customers, it has used historical average demand and assumed that sales remains constant at these levels for the 2020 determination period.

Table 8.2 shows WaterNSW’s proposed water sales forecasts.

Table 8.2 WaterNSW forecast water sales (ML)

	2020-21	2021-22	2022-23	2023-24	Total
Sydney Water	575,928	582,798	589,588	598,136	2,346,449
Wingecarribee Shire Council	6,219	6,343	6,470	6,600	25,632
Shoalhaven City Council	108	110	112	114	444
Goulburn Mulwaree Council	50	50	50	50	200
Raw water customers	5	5	5	5	19
Unfiltered customers	147	147	147	147	588
Total forecast demand	582,457	589,453	596,372	605,051	2,373,332

Source: WaterNSW pricing proposal to IPART, July 2019, Table 10.4, p 161.

8.2 IPART’s response on forecast water sales and customer numbers

We have engaged expert consultants to review Sydney Water’s demand forecasts in the concurrent Sydney Water price review. We have also engaged expert consultants to review WaterNSW’s demand forecasts for its Council customers and its raw and unfiltered water

customers. Our view on the reasonableness of WaterNSW's proposed demand values will be informed by the results of these reviews. We also welcome input from stakeholders on both Sydney Water's demand forecasts (through our Sydney Water review) and WaterNSW's demand forecasts for its Council customers and its raw and unfiltered water customers.

IPART seeks comments on the following

- 16 Are WaterNSW's forecast customer numbers for the 2020 determination period reasonable?
- 17 Is it reasonable that WaterNSW has adopted Sydney Water's demand forecast (gross of losses in Sydney Water's network) for the 2020 determination period?
- 18 Are WaterNSW's demand forecasts for Councils reasonable?
- 19 Is WaterNSW's assumption of constant demand from raw and unfiltered water customers reasonable?

9 Cost allocation, price structures and price levels

In Chapter 2, we outlined our overarching principles to set prices to be cost-reflective. In Chapter 7 and 8, we summarised WaterNSW's proposed revenue requirement, and customer numbers and water sales forecasts for the upcoming determination period. In this chapter, we outline WaterNSW's proposed price structures and bulk water prices to apply from 1 July 2020, and our preliminary views where we have them.

Currently, WaterNSW's customers pay the following water charges:

- ▼ A **fixed charge** that is applied regardless of water supplied, and
- ▼ A **volumetric (or 'variable')**⁷⁹ charge that is levied per megalitre (ML) of water delivered.

For the 2016 Determination, we accepted WaterNSW's proposed price structure to Sydney Water, so that 80% of its revenue requirement was received from its fixed charge and 20% from its volumetric charge (ie, an '80:20' fixed to volumetric price structure). We also accepted the proposal to align the price structure of its three Council customers with that of the structure of its prices to Sydney Water. Further, we accepted WaterNSW's proposal to continue to align the price structure of small raw water and unfiltered water customers with the price structure of the retail network.

For the upcoming determination period, WaterNSW proposes to maintain these price structures.

In assessing WaterNSW's proposed price structures and price levels, we will consider appropriate pricing principles as well as price stability, affordability and managing revenue risk for the utility.

9.1 Allocating costs between customers in the GS area

Price structures determine how the customers' share of the total efficient cost of delivering the service is split between:

- ▼ Different **types of customers** (eg, Sydney Water, Councils and raw and unfiltered water customers), and
- ▼ 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).

Overall, WaterNSW proposes to maintain the existing allocation of costs between the three different types of customers for the 2020 determination period, with the majority of its costs being allocated to Sydney Water. In the regulatory pricing model submitted by WaterNSW, we observed that WaterNSW has used the current prices of the last year of this current

⁷⁹ In its pricing proposal, WaterNSW used the term 'variable charge' instead of volumetric charge. In line with our 2016 Determination, we will use the term volumetric charge for the 2020 Determination.

determination as an anchor for its proposed future prices, which implies that cost allocation between customers are unchanged and deemed to be appropriate for future pricing.

We will assess whether this proposal is reasonable or if there is a case to change the cost allocation between customers to ensure prices for each customer are reflective of efficient cost incurred to deliver the service to that customer.

IPART seeks comments on the following

- 20 Do you agree with WaterNSW's proposal that the cost allocation between customers should remain unchanged? If not, what factors should we consider when allocating costs between different types of customers?

9.2 WaterNSW's proposed prices to Sydney Water

Revenues from Sydney Water account for about 99% of WaterNSW's total bulk water sales and revenue in the GS area.

WaterNSW's proposed prices to Sydney Water over the 2020 determination are underpinned by the following key proposals:

- ▼ To **maintain the current 80:20 ratio of fixed to volumetric charges** for its bulk water prices to Sydney Water over the 2020 determination period. WaterNSW maintains its position that the high fixed to volumetric ratio reflects the largely fixed cost nature of its business and provides cost certainty to its largest customer.⁸⁰
- ▼ To **maintain the SDP charging formula to reflect different operational modes of the SDP**. This mechanism is discussed in Chapter 10 of this Issues Paper. The charging formula allows WaterNSW's volumetric charge to Sydney Water to increase when SDP is supplying water to Sydney Water so that WaterNSW receives sufficient revenue regardless of the SDP's operating regime. That is, as the operation of SDP would mean that WaterNSW is selling less water to Sydney Water, the formula proportionally increases WaterNSW's volumetric charge to Sydney Water so that its revenue (and hence ability to cover its efficient costs) is not affected by the operation of SDP. As a result, WaterNSW is not exposed to demand risk as a result of the SDP's operations.
- ▼ To continue to have a **cost pass-through mechanism in the price determination for the Shoalhaven transfer scheme**, so that it recovers its costs of transferring water from the Shoalhaven if it is necessary to make such transfers. WaterNSW has also proposed to adjust the formula to recover all electricity costs and revenue shortfall during the current determination period. This is further discussed in Chapter 10.

Table 9.1 shows WaterNSW's proposed prices to Sydney Water when SDP is 'off' or in shutdown mode. Proposed prices if SDP is fully operational, ie, assuming 90,000 ML per year is supplied by SDP to Sydney Water from 1 July 2020, are provided in Table 9.2. Both of these tables do not include the cost of the Shoalhaven transfer scheme.

⁸⁰ WaterNSW pricing proposal to IPART, p 165. Prior to the 2012 Determination for then Sydney Catchment Authority, the price structure was 40% fixed and 60% volumetric, where 40% of revenue from Sydney Water was collected through the fixed charge and 60% through the volumetric charge.

Table 9.1 WaterNSW proposed prices to Sydney Water – SDP ‘OFF’ (\$2019-20)

	2019-20	2020-21	2021-22	2022-23	2023-24
Fixed charge (\$M/Year)	175	175	176	176	177
Volumetric charge (\$/ML)	80	76	75	75	74
Revenue from fixed charge (\$M)	175	175	176	176	177
Revenue from volumetric charge (\$M)	45	44	44	44	44
Total revenue (\$M)	221	219	220	220	221
Change in revenue year on year (%)^a		-0.8	0.2	0.2	0.3

^a IPART analysis. Percentage calculation may be different due to rounding.

Note: In its pricing proposal, WaterNSW used the term ‘variable charge’ instead of volumetric charge. In line with our 2016 Determination, we will use the term volumetric charge for the 2020 Determination.

Source: WaterNSW pricing proposal to IPART, p 165.

Table 9.2 WaterNSW proposed prices to Sydney Water – SDP ‘ON’ (\$2019-20)

	2019-20	2020-21	2021-22	2022-23	2023-24
Fixed charge (\$M/Year)	175	175	176	176	177
Volumetric charge (\$/ML)	95 ^a	90	89	88	87
Revenue from fixed charge (\$M)	175	175	176	176	177
Revenue from volumetric charge (\$M)	45	44	44	44	44
Total revenue (\$M)	221	219	220	220	221
Change in revenue year on year (%)		-0.8	0.2	0.2	0.3

^a In its pricing proposal, WaterNSW indicated a volumetric charge of \$80/ML to Sydney Water assuming SDP ‘On’ in 2019-20, which is the same as the charges assuming SDP ‘Off’. Using the same method that WaterNSW has used to calculate the prices assuming SDP ‘On’ over the 2020 determination, we estimated the volumetric charge to be \$95/ML in 2019-20 period.

Note: In its pricing proposal, WaterNSW used the term ‘variable charge’ instead of volumetric charge. In line with our 2016 Determination, we will use the term volumetric charge for the 2020 Determination.

Source: WaterNSW pricing proposal to IPART, p 166.

Under the SDP ‘ON’ scenario, the proposed volumetric charges to Sydney Water are higher by \$14 per ML (or around 18%) when SDP is not in operation.

9.2.1 IPART’s response to WaterNSW’s proposed prices to Sydney Water

For this price review, we will consider whether to:

- ▼ Maintain the current 80:20 fixed to volumetric charge ratio or adopt a more cost reflective price structure
- ▼ Maintain the charging formula to adjust WaterNSW’s volumetric charge to Sydney Water with the operation of the SDP, and
- ▼ Maintain the cost pass-through mechanism for the Shoalhaven transfer scheme as it currently stands or make adjustments to make it more cost reflective.

Price structure

At the 2012 Determination, we changed the structure of WaterNSW’s prices to Sydney Water from a 40:60 to a 80:20 fixed to volumetric ratio. This was designed to more accurately reflect

the split between WaterNSW's fixed to variable costs, and give WaterNSW greater revenue certainty should water sales significantly differ from our forecasts.

For this price review, we will consider whether there is a case to change the 80:20 fixed to volumetric ratio of charges to Sydney Water, taking into account a range of factors including WaterNSW's cost structure, the distribution of risk between WaterNSW and Sydney Water, and stakeholder views. In particular:

- ▼ We will investigate if there is a case to set prices to more closely reflect its cost structure. In Chapter 10, we discuss our understanding that WaterNSW's cost structure has a ratio of greater than 80:20, which results in revenue risk for the business. To address this risk, WaterNSW is proposing to maintain the use of the SDP adjustment formula and to introduce a demand volatility adjustment mechanism over the 2020 determination period.
- ▼ If we are to fully align WaterNSW's price structures with its cost structures, there would be no need to have a SDP adjustment formula or a demand volatility allowance (both discussed in Chapter 10). As such, we will look into unwinding this type of mechanism in WaterNSW's regulatory framework. Further, we will investigate if there is merit to simply setting a fixed charge to Sydney Water (with no volumetric charge). We note that, unlike Sydney Water, the signalling effect of low (or no usage charge) is less pertinent in WaterNSW's case. This is because the volumetric (or usage price) that WaterNSW charges to Sydney Water does not directly feed through to consumer demand behaviour.

SDP price schedule

Our preliminary view is to maintain the current approach of tying WaterNSW's volumetric charge to Sydney Water to SDP's operating regime.

This approach reduces revenue risk to WaterNSW and is also a move towards bulk water prices better reflecting the scarcity value of dam water (ie, under the Metropolitan Water Plan, it has the effect of increasing WaterNSW's volumetric charge to Sydney Water when total dam storage levels drop below 60% and the operational trigger for SDP is on, and will continue until total dam storage level reaches 70%).

Pass through mechanism for Shoalhaven

Our preliminary view is to continue to have a cost pass-through mechanism to allow WaterNSW to recover the efficient costs of transferring water from the Shoalhaven. We consider such a mechanism is consistent with our cost pass-through criteria (see Box 10.1, in Chapter 10).

As discussed in Chapter 10, we will review the effectiveness of the cost pass-through formula in allowing WaterNSW to recover the full efficient costs of transfers from the Shoalhaven.

IPART seeks comments on the following

- 21 Is WaterNSW's proposal to maintain the existing price structure to Sydney Water (ie 80% fixed and 20% volumetric) reasonable? Or should we change the price structure to Sydney Water to more closely align it with WaterNSW's cost structure?

- 22 Should we maintain the approach of increasing the volumetric charge in proportion to SDP's water sales to Sydney Water?
- 23 Should we maintain the cost pass-through mechanism for the costs of Shoalhaven transfers?

9.3 WaterNSW's proposed prices to Council customers

In addition to Sydney Water, WaterNSW supplies bulk water to Wingecarribee Council, Shoalhaven City Council and Goulburn-Mulwaree Council.

WaterNSW's proposed prices for each of its Council customers are shown below.

Table 9.3 WaterNSW proposed prices to Councils (\$2019-20)

	2019-20	2020-21	2021-22	2022-23	2023-24
Fixed charge (\$M/Year)					
Wingecarribee Council	1.12	1.11	1.11	1.11	1.11
Shoalhaven City Council	0.02	0.02	0.02	0.02	0.02
Goulburn-Mulwaree Council	0.03	0.02	0.02	0.02	0.02
Volumetric charge (\$/ML)	58	58	58	58	58
Revenue from fixed charge (\$M)	1.16	1.15	1.15	1.15	1.15
Revenue from volumetric charge (\$M)	0.37	0.37	0.37	0.38	0.39
Total revenue (\$M)	1.53	1.52	1.53	1.53	1.54
Change in revenue year on year (%)		-0.6	0.5	0.5	0.5

Note: In its pricing proposal, WaterNSW used the term 'variable charge' instead of volumetric charge. In line with our 2016 Determination, we will use the term volumetric charge for the 2020 Determination.

Source: WaterNSW regulatory pricing model submission and WaterNSW pricing proposal to IPART, July 2019 p 166.

WaterNSW proposes to reduce the current charges to each Council by 1% in real terms over the 2020 determination period.⁸¹

Its proposed prices to Councils are predicated on the following proposals:

- ▼ To maintain the alignment between Council customers' price structure with that of Sydney Water, ie, a 80:20 fixed to volumetric ratio. According to WaterNSW, the application of a high fixed charge reflects the cost base of its business and recognises the highly secure nature of water availability to Councils.
- ▼ That it has moved away from the approach in the 2016 Determination, where the revenue requirement from Council customers was based on the derived cost of supplying each Council based on their location of the network. Instead, its pricing proposal indicated that:⁸²

"We have moved to an approach of maintaining charges in real terms to remove pricing uncertainty associated with volume forecasts for the Councils that would lead to significant price shocks for some Councils."

⁸¹ WaterNSW pricing proposal to IPART, p 166.

⁸² WaterNSW pricing proposal to IPART, p 166.

9.3.1 IPART's response to proposed prices to Councils

We will review WaterNSW's proposed price changes to the Councils, taking into account the relationship between its cost structure and its price structure, the distribution of risk between WaterNSW and the Councils, the views of stakeholders (including the Councils), and our decision on the structure of WaterNSW's prices to Sydney Water.

We will also review WaterNSW's method for attributing costs to each of the Councils. In our 2012 Determination, we set prices to the Councils based on an estimate of their share of the costs of assets used to supply them. The costs were apportioned to each Council based on the Council's water demand.⁸³ In our 2016 Determination, we adopted a similar approach, but made some adjustments to become more cost reflective.

IPART seeks comments on the following

- 24 Is WaterNSW's proposal to maintain the existing price structure to the Councils (ie, 80% fixed and 20% volumetric) reasonable?
- 25 Do WaterNSW's proposed prices allocate a reasonable share of costs to the Councils?

9.4 WaterNSW's proposed prices to raw and unfiltered water customers

In the 2012 Determination, WaterNSW proposed to align the price structure of raw and unfiltered water customers with the price structure of the retail network (eg, Sydney Water's prices to its water customers).⁸⁴ According to WaterNSW, this strategy ensured that prices do not provide incentives for customers to disconnect from or connect to an alternative supply (where available).⁸⁵ This proposal was accepted by IPART.

In the 2016 Determination, WaterNSW proposed to maintain the same approach for raw and unfiltered water customers. For the 2020 Determination, WaterNSW is proposing to maintain the same pricing approach and prices to have a one-off marginal decrease in 2020-21. This is to provide pricing stability for these customers.

⁸³ IPART, Review of prices for WaterNSW from 1 July 2016 to 30 June 2020, Final Report, June 2016, p 78.

⁸⁴ IPART, Review of prices for WaterNSW from 1 July 2016 to 30 June 2020, Final Report, June 2016, p 81.

⁸⁵ WaterNSW pricing proposal to IPART, July 2019, p 167.

Table 9.4 WaterNSW proposed prices to raw and unfiltered water customers (\$2019-20)

	2019-20	2020-21	2021-22	2022-23	2023-24
Raw water customers					
Fixed charge (\$/Year)	0	0	0	0	0
Volumetric charge (\$/ML)	736	729	729	729	729
Fixed charge revenue (\$000s/year)	0	0	0	0	0
Volumetric charge revenue (\$000s/year)	3.50	3.47	3.47	3.47	3.47
Unfiltered customers					
Fixed charge for 20mm meter (\$/Year)	112	111	111	111	111
Fixed charge for 25mm meter (\$/Year)	176	174	174	174	174
Fixed charge for 30mm meter (\$/Year)	253	250	250	250	250
Fixed charge for 32mm meter (\$/Year)	288	285	285	285	285
Fixed charge for 40mm meter (\$/Year)	450	445	445	445	445
Fixed charge for 50mm meter (\$/Year)	703	696	696	696	696
Fixed charge for 80mm meter (\$/Year)	1,799	1,781	1,781	1,781	1,781
Fixed charge for 100mm meter (\$/Year)	2,810	2,783	2,783	2,783	2,783
Fixed charge for 150mm meter (\$/Year)	6,323	6,261	6,261	6,261	6,261
Fixed charge for 200mm meter (\$/Year)	11,241	11,131	11,131	11,131	11,131
Volumetric charge (\$/ML)	1,280	1,268	1,268	1,268	1,268
Fixed charge revenue (\$000s/year)	6	6	6	6	6
Volumetric charge revenue (\$000s/year)	188.35	186.51	186.51	186.51	186.51
Total revenue (\$000s)	197.81	195.88	195.88	195.88	195.88
Change in revenue year on year (%)	-	-1.0	0	0	0

Note: In its pricing proposal, WaterNSW used the term 'variable charge' instead of volumetric charge. In line with our 2016 Determination, we will use the term volumetric charge for the 2020 Determination.

Source: WaterNSW pricing proposal to IPART, July 2019, p 167.

9.4.1 IPART's response to proposes prices to raw and unfiltered water customers

Our preliminary view is to maintain the current approach to setting prices for raw and unfiltered water customers, as proposed by WaterNSW.

In the 2012 Determination, we accepted WaterNSW's proposal to align the price structure of small customers to the retail network. In 2012, we also considered that the prices for raw and unfiltered water customers would ensure these customers adequately contributed to the recovery of WaterNSW's efficient costs.

In the 2016 Determination, on balance and on the basis of price stability, we accepted WaterNSW's proposal to maintain the same approach for these customers.

IPART seeks comment on the following

- 26 Are WaterNSW's proposed prices and price structures to raw water and unfiltered water customers reasonable?

9.5 The effect of a lower WACC on NRR and prices

In Chapter 5, we discussed WaterNSW's proposed capital expenditure of \$682 million over the 2020 determination period. This is more than 2.5 times the capital expenditure allowance set for the 2016 determination period.

In Chapter 6, we discussed the 4.1% WACC (real, post-tax) that WaterNSW has used in its pricing proposal. This represents a large decrease compared to the WACC that was used in the 2016 Determination of 4.9%.

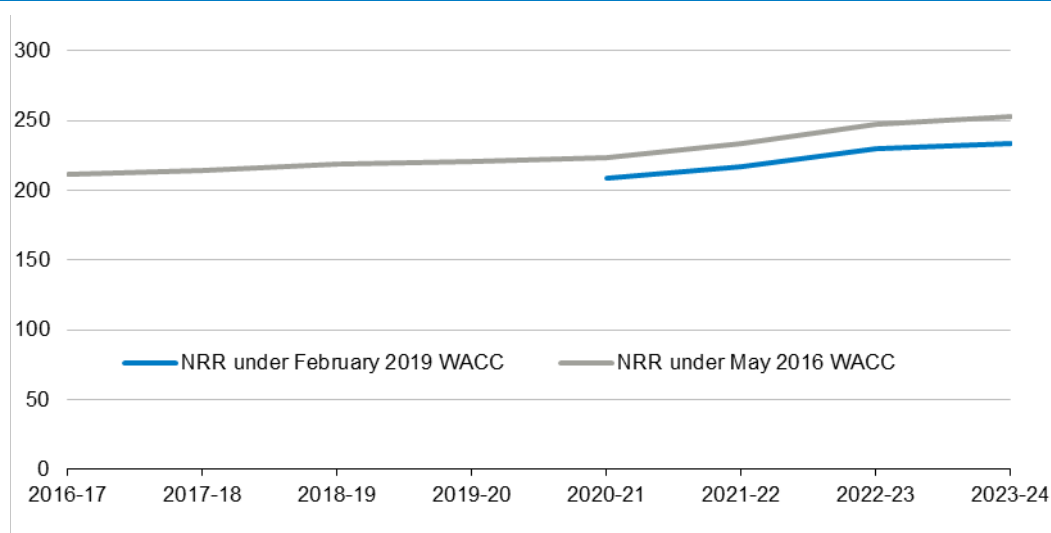
Then, in Chapter 7, we discussed WaterNSW's proposed NRR of \$889.2 million over the 2020 determination period. We also discussed the key drivers of the modest \$17 million increase from the 2016 Determination.

Overall, the large reduction in the WACC has enabled WaterNSW to propose modest price decreases of 1% (ie, a one-off price change in 2020-21 then prices are held constant in real terms) while at the same time proposing a significant increase in capital expenditure.

If the WACC was held constant at 4.9% for the 2020 determination period, all else being equal, we estimate that WaterNSW's prices would need to have a one-off real increase of 6.6% in 2020-21 (instead of a 1% decrease and keeping the same profile as proposed by WaterNSW).

Figure 9.1 shows how sensitive WaterNSW's proposed NRR is to the current WACC environment, which then affects customer prices.

Figure 9.1 Comparison of Proposed NRR under two different WACC scenarios (\$ millions, \$2019-20)



Data source: WaterNSW pricing proposal and IPART analysis.

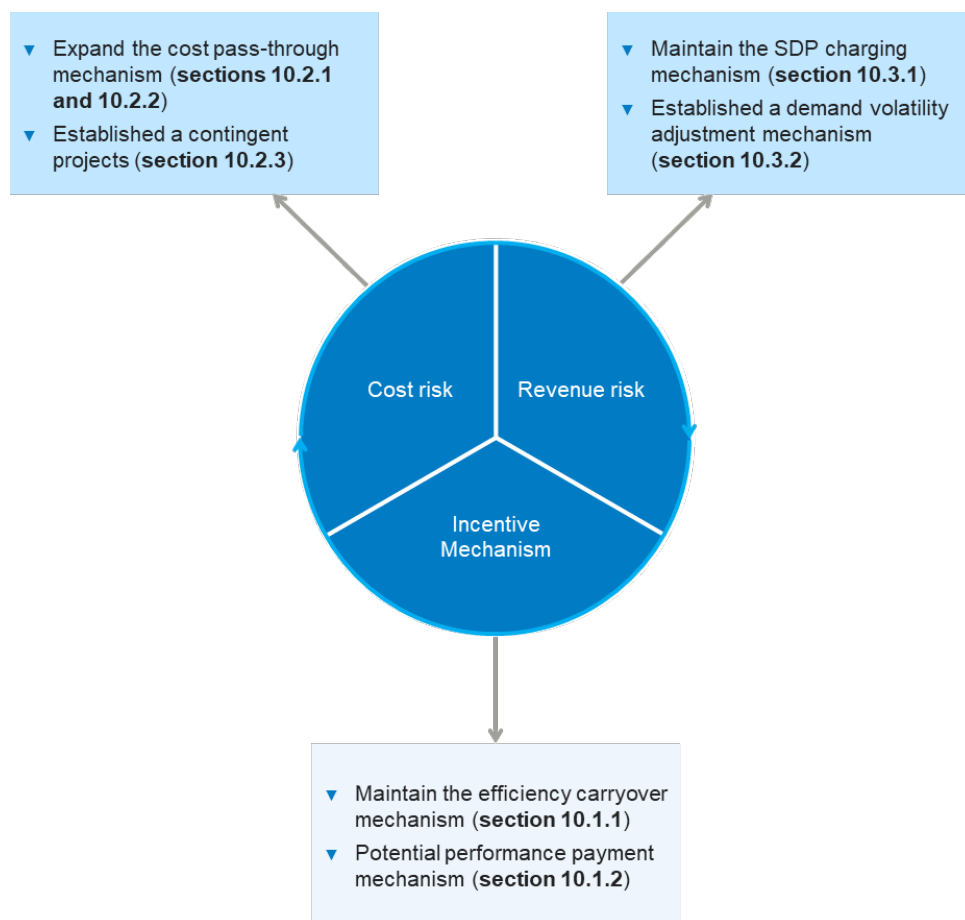
10 Risk allocation and incentive mechanisms

This chapter discusses how revenue and cost risks are shared between the utility and its customers, and how performance gains of the utility are incentivised. Figure 10.1 provides an overview of WaterNSW's proposed risk allocation and incentive mechanisms. WaterNSW has proposed:

- ▼ To change and expand its cost pass-through mechanisms
- ▼ To establish a mechanism to address financial risks associated with major projects that are not included in its proposed capital expenditure program but may proceed for reasons outside WaterNSW's control (referred to as contingent projects)
- ▼ To establish a demand volatility adjustment mechanism to address residual revenue risk, and
- ▼ To maintain the current form of the efficiency carryover mechanism (ECM).⁸⁶

We discuss each of these proposals and our preliminary views in the following sections.

Figure 10.1 WaterNSW's key proposals on regulatory framework applicable for GS area



⁸⁶ WaterNSW pricing proposal to IPART, July 2019, p 33.

10.1 Promoting future efficiency savings

We set maximum prices that reflect our best estimate of the efficient costs required to deliver regulated services over the determination period. Therefore, if the business makes further cost savings during the determination period, our standard approach would allow the business to keep these profits from cost savings made during the determination period. If these cost savings are permanent, they are then passed onto customers through lower prices (reflecting lower costs) at the next price determination.

10.1.1 The efficiency carryover mechanism

In our 2016 review of WaterNSW's prices for the GS area we recognised that a shortcoming of our standard approach is that the financial reward for achieving savings reduces over the determination period, as we get closer to the next price determination (when costs are re-assessed and prices are set to reflect the latest estimate of efficient costs).⁸⁷ This means WaterNSW has an incentive to delay savings from the latter years of one determination period to the beginning of the next.

To address this shortcoming, we introduced an ECM for operating expenditure to allow permanent efficiency gains (ie, cost decreases) to be held by the utility for a specified period (eg, four years) before they are passed on to customers, regardless of when they are achieved within a determination period. This equalises the incentive to make permanent efficiency savings over a determination period. As a result, this removes the incentive to defer identifying cost savings to the beginning of the following regulatory period. Further information on our ECM is available in Appendix C. The ECM is currently limited to controllable operating expenditure.

In our Submission Information Package letter to WaterNSW, we asked the utility to:

- ▼ Submit a claim under the current ECM, if relevant, and
- ▼ Whether the ECM should be extended to include capital expenditure.

We discuss WaterNSW's response and proposal on the ECM in the following sections.

WaterNSW is not proposing to make a claim under the current ECM

In Chapter 4, we discuss how WaterNSW's actual operating costs over the current determination period are below the regulatory operating allowance set in the 2016 Determination. It has estimated the total underspend to be \$46.5 million.⁸⁸

WaterNSW proposes to not include an ECM carry forward for any of this underspending to upcoming price review. It argues that:

The significant cost savings we expect to achieve during the current determination period are driven by Management's motivation to achieve efficiencies and not directly by the incentives of the ECM. Therefore, as a priori price levels would be lower in the 2020-24 determination period if we did not apply for an ECM carry forward...⁸⁹

⁸⁷ IPART, *Review of prices for WaterNSW from 1 July 2016 to 30 June 2020*, Final Report, June 2016, p 63.

⁸⁸ WaterNSW pricing proposal to IPART, July 2019, pp 98-99.

⁸⁹ WaterNSW pricing proposal to IPART, July 2019, p 53.

While WaterNSW is not applying for a carry forward, we note that WaterNSW supports maintaining the ECM in its current form.⁹⁰

WaterNSW proposes to not extend the ECM to capital expenditure for the 2020 determination period

WaterNSW considers that extending the ECM to include capital expenditure or introducing an alternative capital incentive scheme (eg, the capital expenditure sharing scheme used in the energy sector) would not improve incentives for capital efficiency or result in improved outcomes for the business and customers. It considers that the lumpy nature of capital expenditure means that there can be significant shifts from year to year, which can be related to different stages of the asset life-cycle, business decisions and planning, and/or government-directed investment, rather than efficiency.⁹¹

IPART's preliminary response on the ECM

Our preliminary views on WaterNSW's proposals on the ECM are as follows:

- ▼ In terms of the underspending in actual operating costs relative to the operating allowance in the current determination period, we will work with WaterNSW and our expenditure review consultants to understand the drivers of this underspend and to assess the reasons for not applying for an ECM carry forward.
- ▼ Given that WaterNSW did not propose any arguments against the continued use of the current form of the ECM, our preliminary view is to maintain the use of the current ECM.
- ▼ We agree with WaterNSW to not introduce a capital expenditure ECM at this time. In Chapter 6, we discuss the large difference between WaterNSW's actual capital expenditure and its regulatory allowance in this current determination period, with underspends in earlier years and overspends in other years. While we will review the drivers and impacts of this on WaterNSW's performance, this demonstrates the difficulty and potential risks with applying an incentive mechanism like the ECM to capital expenditure.

We would like to further explore, together with stakeholders, how our future form of regulation could create efficiency incentives for capital expenditure, but this may best be undertaken in a process separate to this review.

IPART seeks comment on the following

- 27 Do you agree that WaterNSW should not apply for an ECM carry forward on the underspends against its regulatory operating allowance in this current determination period?
- 28 Should we continue to apply an ECM to WaterNSW's operating expenditure? Are there any specific improvements we should consider to our ECM? If so, what are these?
- 29 What efficiency incentive mechanisms should we consider for capital expenditure in future reviews?

⁹⁰ WaterNSW pricing proposal to IPART, July 2019, p 33.

⁹¹ WaterNSW pricing proposal to IPART, July 2019, p 54.

10.1.2 Performance payment mechanism under the Raw Water Supply Agreement (RWSA)

WaterNSW and Sydney Water are negotiating a new Raw Water Supply Agreement (RWSA) that will include a performance payment mechanism. This appears to be a continuation of the annual water quality incentive payment (AWQIP) scheme that was introduced in the 2016 Determination,⁹² which set out the conditions under which Sydney Water would provide an incentive payment to WaterNSW for delivery of a higher quality of raw water.

In our 2016 Determination, we deferred regulating prices associated with the AWQIP scheme to allow WaterNSW and Sydney Water to negotiate and conclude payments associated with the scheme during the determination period.⁹³

IPART's preliminary response on the performance payment scheme

In principle, we support the rationale behind the performance payment mechanism and for both parties to negotiate on terms that would mutually benefit them without adversely impacting customers. As outlined above, we made a decision to defer regulation in our 2016 Determination. For this upcoming price review, we will investigate this further.

10.2 Considering costs risks and uncertainty

Cost pass-through mechanisms allow uncertain and unknown costs that arise during the regulatory period to be passed through to customers within the regulatory period. This mechanism addresses the risk that a utility's actual costs may vary from its forecast costs due to uncertain or uncontrollable events.

WaterNSW considers "that a well-functioning regulatory framework needs to ensure a reasonable sharing of risks so that a business can recover its efficient costs, meet customer obligations and remain financially viable".⁹⁴ Therefore, a key focus of WaterNSW's pricing proposal is to expand its cost pass-through mechanisms to address significant unforeseen costs during the regulatory period. It is proposing to:

- ▼ Establish additional cost pass-throughs to address cost risks associated with regulatory change events and catastrophic events
- ▼ Adjust the existing cost pass-through event for the Shoalhaven Transfer Scheme to recover all electricity costs and estimated revenue shortfall
- ▼ Establish a cost pass-through to address financial risks associated with contingent projects

We discuss these cost pass-through proposals, and our preliminary views on these proposals, below.

⁹² IPART, *Review of prices for WaterNSW from 1 July 2016 to 30 June 2020*, Final Report, June 2016, p 60.

⁹³ IPART, *Review of prices for WaterNSW from 1 July 2016 to 30 June 2020*, Final Report, June 2016, pp 60-62.

⁹⁴ WaterNSW pricing proposal to IPART, July 2019, p 37.

10.2.1 WaterNSW's proposal to establish cost pass-throughs for regulatory change and catastrophic events

WaterNSW considers cost pass-through mechanisms are important, as they provide an appropriate balance in the allocation of risks between the business and customers. Further, it considers that “if a business is not provided with the opportunity to recover its efficient costs... there would be a diminishing of the incentive to invest in the network, which is not in the long-term interest of our customers”.⁹⁵

In its pricing proposal, WaterNSW has highlighted the recent decision by the Australian Energy Regulator to allow several cost pass-throughs events to be included in the pricing determination for NSW distribution network service providers. WaterNSW argues that these cost pass-throughs are equally relevant for water infrastructure businesses.

Accordingly, WaterNSW proposes to have cost pass-throughs to address the following events during the determination period:

- ▼ A **regulatory change event** to address costs risks due to a regulatory change event, service standard event and tax event, and
- ▼ A **catastrophic event** to address costs risks due to a natural disaster event or a terrorism event.

In addition, these 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.⁹⁶

WaterNSW considers that these cost pass-through events would meet PART's criteria (see Box 10.1) and should be a core feature of IPART's determinations to ensure a fair sharing of risks, while enabling businesses such as WaterNSW to recover their efficient costs within a determination period.

Further details on the proposed definition and materiality to apply to these events are provided in Appendix D.

IPART's preliminary response on additional cost pass-through events

Under the current form of regulation, we set efficient operating and capital expenditure allowances for the regulatory period with an expectation that costs can fluctuate, some new costs will rise, and some expected costs will not occur. If there is no bias in the forecasts, we would expect the gains from underspends to offset the losses from overspends over the long term.

Where there is a significant cost that may or may not occur during the regulatory period, and if the business has no meaningful influence over whether the cost is incurred or how big the cost will be, there can be a case to provide a mechanism in the determination to pass through these costs into prices as they are incurred. Cost pass-through mechanisms allow the efficient

⁹⁵ WaterNSW pricing proposal to IPART, July 2019, p 39.

⁹⁶ WaterNSW pricing proposal to IPART, July 2019, p 39.

costs of uncertain and uncontrolled events that arise during the regulatory period to be passed through to customers within the regulatory period.

We have a set of criteria that we have used to assess proposed cost pass-through mechanisms, which is outlined in Box 10.1 below.

Box 10.1 Criteria for cost pass-through mechanisms

Cost pass-through mechanisms should only be applied in 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).
6. 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 The costs to be passed through must be specified in the price determination.

We consider that 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, and where prices become more cost reflective to provide better signals to customers.

Using this criteria for cost pass-throughs, our preliminary views on WaterNSW's proposal are as follows:

- ▼ The proposed cost pass-through events may not meet criterion 2 because the scope of those events are very broad and it is unlikely that we can properly assess the efficient costs and scope of the trigger event.
- ▼ It is unclear whether these events can meet criterion 4. If we were to implement a cost pass-through event to eliminate these risks, there would be no incentive for the utility to plan for, and engage with, potential regulatory changes or plan for catastrophic events. We consider it efficient for the business to have an incentive to influence new costs as a result of a legislative, legal or regulatory development. It is important that the regulated business retains some risk in these situations in order to incentivise it to actively engage in the consultation process and advocate for the most effective and efficient solutions.
- ▼ We consider it more appropriate that if an event does have a materially adverse impact on WaterNSW's operating environment and financial position, for it to seek an early price review and determination. Under this scenario, we would be able to consider all efficient costs and be in a better position to assess the reallocation of risks between the businesses and its customers.

- ▼ Due to asymmetric information between regulated businesses and regulator, a broader cost pass-through mechanism could be used to retain upside risk and pass downside risk onto customers. That is, due to information asymmetry, it would be very difficult in practice to ensure that broad cost pass-through are symmetric. This may not result in a net benefit to customers in the long run.
- ▼ We note that WaterNSW has not proposed a cost pass-through methodology and process for these pass-through events apart from having a materiality threshold. It is unclear how and when the additional costs (or revenue requirement) from these events would be passed onto customers in WaterNSW's proposal.
- ▼ In principle, we acknowledge that there may be an argument for including a cost pass-through event for tax changes. However, given the low likelihood of further tax changes over the 2020 determination period (ie, there has been no further announcement or indication from the Government that it would make further tax changes),⁹⁷ our preliminary view is that this is not warranted at this stage.

We are open to exploring further whether we can improve our criteria for assessing cost pass-through mechanisms, and approaches for dealing with cost risk in general. However, this may be best undertaken in a process separate to this review.

IPART seeks comments on the following

- 30 Do you agree with WaterNSW that there is a need to have a cost-pass through mechanism for regulatory changes and catastrophic events? If so, what should the mechanism look like?
- 31 What other criteria should we consider when assessing cost pass-through mechanisms?

10.2.2 WaterNSW's proposal to amend the existing Shoalhaven Transfer Scheme cost pass-through mechanism

WaterNSW incurs additional costs if it transfers water from the Tallowa Dam on the Shoalhaven River to Upper Nepean Dams and Warragamba Dam (ie, the Shoalhaven Transfer Scheme) in times of low water availability. Under the 2017 Metropolitan Water Plan, the transfer is triggered when the total dam storage level in the Sydney system is less than 75% and would continue until the total dam storage level reaches 80%.⁹⁸

In the 2016 Determination, we introduced a mechanism to pass through WaterNSW's costs of the Shoalhaven Transfer Scheme to the volumetric charge to Sydney Water (see Box 10.2). The change in the volumetric charge sends a signal to Sydney Water about the costs of bulk water supply in times of increased water scarcity as the Shoalhaven Transfer Scheme relates to dam levels.

⁹⁷ The full company tax rate is 30% and the lower company tax rate is 27.5%. The lower tax rate became effective from 2018-19 financial year and applies to base rate entities. A base rate entity is a company that both has an aggregated turnover less than the threshold of \$25 million for the 2017-18 financial year, and 80% or less of their assessable income is base rate entity passive income.

⁹⁸ Metropolitan Water, *2017 Metropolitan Water Plan Water for a Liveable, Growing and Resilient Greater Sydney*, March 2017, p 28.

In its pricing proposal, WaterNSW supports the continuation of the cost pass-through mechanism for the Shoalhaven Transfer Scheme over the 2020 determination period.

However, WaterNSW is proposing to adjust the existing formula in Box 10.2 to allow recovery of:

1. All relevant electricity charges, and
2. The revenue shortfall incurred by the business in the current determination period because of the inadequacy of the current transfer formula.⁹⁹

Box 10.2 Current formula for passing through the cost of the Shoalhaven Transfer Scheme

$$\text{Cost of the Shoalhaven Transfer} = RRP \times 1.96MWh/ML \times STV$$

Where:

RRP is the NSW regional reference price for the 18 half-hourly periods from 10:00pm to 07:00am averaged over each month, in \$/MWh, as reported by the Australian Energy Market Operator.

STV (Shoalhaven transfer value) is the number of MLs transferred from the Shoalhaven system.

1.96MWh/ML is the composite usage rate factor in MWh/ML for the Shoalhaven system.^a

^a Email to IPART, WaterNSW, 18 February 2016.

Firstly, WaterNSW argues that the above formula does not:

...include a number of specific charges that would normally be included in efficient retail charges for electricity, and which are reflected in the monthly electricity bill generated by a third party for WaterNSW under the Shoalhaven pumping Scheme.¹⁰⁰

Specifically, it argues that the regional reference prices (RRPs) for NSW, as reported by the Australian Energy Market Operator (AEMO) in off-peak periods, only capture the wholesale cost of electricity and do not include:

- ▼ Network transmission costs, which are determined by the electricity regulator
- ▼ Environmental costs (eg, greenhouse gas abatement scheme costs)
- ▼ NEM fees, and
- ▼ Transmission losses.¹⁰¹

According to WaterNSW, these costs are typically determined by an independent statutory authority or determined through the market.

Then, WaterNSW has identified a minor differences between the RRP included in the Transfer Scheme formula and the RRP amount actually incurred by WaterNSW under its retail contract. It argues that the existing formula only relates to the monthly average of RRP in off-peak periods during weekdays. However, its retail contract is based on the monthly average of RRP in all off-peak periods, ie including weekends and NEM holidays.

⁹⁹ WaterNSW pricing proposal to IPART, July 2019, p 42.

¹⁰⁰ WaterNSW pricing proposal to IPART, July 2019, Appendix D – Shoalhaven transfers formula.

¹⁰¹ WaterNSW pricing proposal to IPART, July 2019, p 42.

In summary, WaterNSW claims that the existing formula does not achieve the intended outcome of cost reflectivity and has resulted in revenue shortfall estimated to be around \$4.2 million.¹⁰² Consequently, WaterNSW proposes to change the existing formula for the Shoalhaven transfer scheme to the approach outlined in Box 10.3.

Box 10.3 WaterNSW's proposed changes to the formula for CST

$$CST = (RRP + CL + NEM Ancillary Service Fees + NEM Variable Market Fees) \times MLF \\ \times (1.96MWh/ML \times STV) + Network costs + Shortfall levy$$

Where:

RRP is the NSW regional reference price, averaged for the month, in \$/MWh, as reported by the Australian Energy Market Operator for the relevant billing period.

STV or Shoalhaven transfer value is the number of ML calculated in accordance with clause 5 of the 2016 Determination for WaterNSW GS.

CL is the Carbon Liabilities arising from obligations associated with the Shoalhaven transfers.

NEM Ancillary Services Fees are for ancillary services provided by AEMO and calculated as per AEMO's guidelines on payments and recovery of ancillary services.

NEM Variable Market Fees is the NEM Fee, Full Retail Contestability Fee, the National Transmission Planner fee, and any other fee determined and published by AEMO.

MLF is the Marginal Loss Factor

Network costs means the network charges, fees or tariffs approved by the AER and paid on either per MWh or a fixed basis by WaterNSW to a Network Provider in respect of electricity supplied for the Shoalhaven transfer.

Shortfall levy applies when the STV is greater than nil for the relevant month and means the lesser of \$250,000, and the calculated shortfall balance.

Source: WaterNSW pricing proposal to IPART, July 2019, p 187-190

Further information on WaterNSW's proposed changes to the cost pass-through mechanism for the Shoalhaven Transfer Scheme is available in Appendix F.

IPART's preliminary response on amending the current cost pass-through for the Shoalhaven Transfer scheme

Firstly, we accept WaterNSW's proposal to maintain having a cost pass-through mechanism for the Shoalhaven Transfer scheme. In principle, we also support amending the existing cost pass-through mechanism if the resultant prices are more cost reflective. We note that the pass-through mechanism is intended to recover the efficient costs of transferring water from the Shoalhaven and that this will largely reflect efficient energy costs – which can vary with decisions on when to pump/transfer water (to the extent WaterNSW has discretion around this).

In our 2016 Determination, WaterNSW provided a submission to our Draft Report indicating that the current approach, while not perfect, was a reasonable method to cover its costs. Further, WaterNSW provided its support of the pass-through mechanism over the 2016 determination period, and would work with IPART on potential refinements to the cost

¹⁰² WaterNSW pricing proposal to IPART, July 2019, p 43.

pass-through mechanism in the future.¹⁰³ Accordingly, we plan to progress this matter with WaterNSW in this review process.

To address the specifics of WaterNSW's proposed changes, we will consider the following matters:

- ▼ We recognise that our current formula does not cover all of WaterNSW's actual costs. We will work with our expenditure review consultant or energy consultant to advise us on efficient electricity costs, including the key components that drive electricity costs.
- ▼ We will also explore further the extent to which WaterNSW has discretion around when it pumps water from the Shoalhaven as this will impact energy costs (eg, whether there is scope to pump in off-peak versus peak energy price periods). As part of this review, we will make a decision on whether to use WaterNSW's proposal (ie, to cover its electricity costs under its retail contract) or use alternative approaches such as benchmarking estimates of efficient energy prices. We note that adopted benchmark estimates can be appropriate since it de-links prices and actual costs. This provides the business with incentives to manage its cost efficiently, and is consistent with outcomes expected in a competitive market.
- ▼ For the estimated under-recovery (or revenue shortfall) incurred with the Shoalhaven Transfer Scheme in this current determination, our preliminary position is to not allow WaterNSW to claw back any under-recovery from future customer prices. This is because:
 - On balance, we typically do not make retrospective adjustments for any under- or over-recovery between determination periods unless in exceptional circumstances. This is because we set efficient operating and capital expenditure allowances for the regulatory period with an expectation that costs can fluctuate, some new costs will rise, and some expected costs will not occur. If there is no bias in the forecasts, we would expect the gains from underspends to offset the losses from overspends over the long term.
 - This is particularly highlighted in our findings in Chapter 4, where we observed WaterNSW's total actual operating expenditure was materially below the total operating expenditure allowance by around \$46.5 million over the 2016 determination period. Any under-recovery associated with this Shoalhaven Transfer Scheme is more than offset by WaterNSW's operating expenditure savings over the 2016 determination period.

We welcome stakeholder views on WaterNSW's proposed changes to the cost pass-through formula and our preliminary position on not allowing to pass any cost under-recovery in this current determination period into future prices.

IPART seeks comments on the following

- 32 Is there a case for WaterNSW to pass any cost under-recovery for the Shoalhaven Transfer Scheme in this current determination period into future prices?

¹⁰³ WaterNSW, *Prices for WaterNSW Greater Sydney Area – WaterNSW response to IPART Draft Report*, April 2016, p 1.

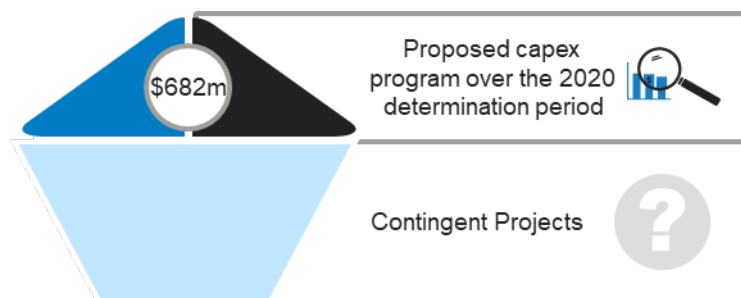
- 33 Should we adopt WaterNSW's proposed changes to the Shoalhaven cost pass-through mechanism? Are there any alternative approach that we should consider, eg a benchmark cost approach?

10.2.3 WaterNSW's proposal to have a mechanism to address contingent projects

In Chapter 5, we discuss WaterNSW's proposed capital expenditure program of \$682 million over the 2020 determination period.

WaterNSW also indicates that it has a number of significant major projects (or contingent projects) that are not included in its proposed capital expenditure program other than for some minor related planning works or early investigation works. WaterNSW claims that any of these contingent projects may need to commence during the upcoming regulatory period for reasons outside of WaterNSW's control. For example, WaterNSW may need to proceed with one of the contingent projects to ensure water security should dam levels continue to fall.

Figure 10.2 Contingent projects



Note: The figure above are not to scale and for illustrative purposes only.

The figure above illustrates that, in addition to WaterNSW's proposed capital expenditure program (see Chapter 5) for the 2020 determination period, there could be one or more contingent projects that may proceed during the upcoming determination period. If this is to occur, WaterNSW claims that it would face major financial risk if costs are not passed through into prices in the 2020 determination period (and if Government funding for these projects is not received).

While WaterNSW provided some high-level information about these contingent projects as part of its pricing proposal to IPART, WaterNSW did not include any of these projects and costs into its proposed capital expenditure program because there is a high level of uncertainty around the likelihood, timing, scope and efficient costs of these projects. WaterNSW did not consider it reasonable to include these projects in its capital expenditure program because the uncertainty around if, when and how much these projects will cost could result in prices that do not reflect efficient costs.

WaterNSW is not proposing to use a cost pass-through mechanism (like what is in place for the Shoalhaven Transfer Scheme) as it is not yet in a position to identify the exact trigger event for these projects and resulting efficient costs.

Rather, WaterNSW proposes to have one or more of the following mechanisms to manage this risk:

- ▼ To have a **contingent project mechanism and/or capital expenditure reopener mechanism**, which are currently being used in electricity regulation (see Box 10.4 and Box 10.5 for more information). WaterNSW prefers 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 argues 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 sees this option as a 'last resort'.
- ▼ To set a **shorter determination period** (eg, 2 or 3 years). WaterNSW proposes 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.¹⁰⁴

Box 10.4 WaterNSW's proposal – Contingent project mechanism

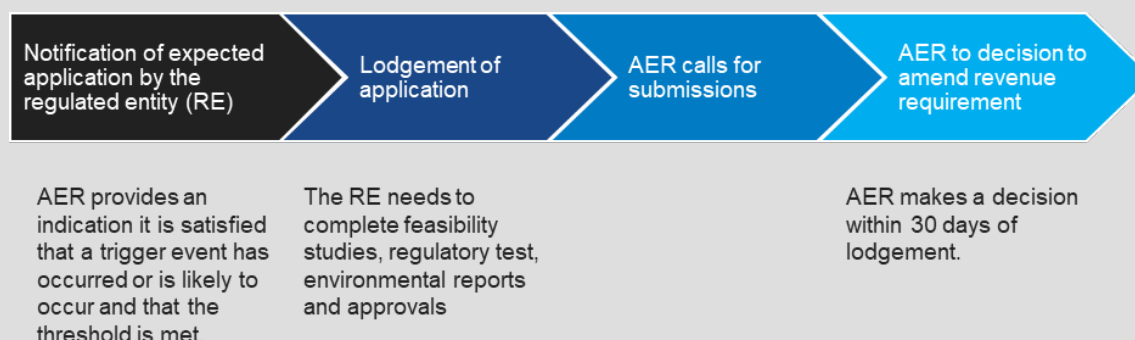
WaterNSW proposes to use the following definition used in the electricity regulation:

The **contingent project mechanism** allows the regulator to exclude a contingent project from the ex-ante capital expenditure allowance because of uncertainty about its requirement, timing or costs. However, the determination identifies a trigger event. If the trigger event occurs, the business may apply to amend its NRR and prices to include forecast capital expenditure and incremental operating expenditure for the project.

WaterNSW proposes to adopt the following steps for this mechanism:

1. Identify the project to be included as a contingent project and the proposed trigger
2. Establish that the contingent project capital expenditure is reasonably required, and:
 - a) Is not provided in, and does not impact on, the approved capital expenditure for the determination, and
 - b) Exceeds the greater of \$30 million, or 5% of the annual revenue requirement in Year 1.

Based on the AER's guideline, we understand the application process to be as follows: ^a



^a Australian Energy Regulator, *Process guideline for contingent project applications under the National Electricity Rules*, September 2007.

Source: WaterNSW pricing proposal to IPART, July 2019, pp 45-46.

¹⁰⁴ WaterNSW pricing proposal to IPART, July 2019, pp 44-49.

Box 10.5 WaterNSW's proposal – Capital expenditure reopener mechanism

WaterNSW proposes to adopt the **capital expenditure reopener mechanism** in place in electricity regulation. This mechanism is used for large 'ship-wreck' events, where the event is 5% of the opening RAB. The mechanism cannot be used if the expenditure is already subject to a cost pass-through or contingent event.

Source: WaterNSW pricing proposal to IPART, July 2019, pp 46-47.

IPART's preliminary response on having a mechanism for contingent projects

In principle, we agree with WaterNSW's approach to exclude costs that are uncertain and cannot be fully assessed from its pricing proposal. Otherwise, prices would not be cost reflective and unnecessary risk is passed onto customers.

WaterNSW has proposed different mechanisms to deal with contingent projects instead of utilising the existing regulatory mechanisms. We understand that WaterNSW wants to have a range of regulatory mechanisms to cater for different type of risks. However, we consider all of these mechanisms (whether it is contingent project mechanism, capital expenditure re-opener or a cost pass-through mechanism) to have similar characteristics – ie, aim to have the same outcome of better cost reflective prices and efficiently allocate risk between businesses and their customers. Hence, we will use our cost pass-through principles as first principles.

Our preliminary views are as follows:

- ▼ We consider it efficient that WaterNSW retains some risks to give the business an incentive to influence water security and infrastructure planning in Greater Sydney. It is important that the regulated business retain some risk in these situations in order to incentivise it to actively engage in the consultation process and advocate for the most effective and efficient solutions.
- ▼ If one or more contingent projects proceed during the regulatory period and would have a material impact on the business and it cannot wait until the next schedule price determination to correct for this impact, we consider it more appropriate that WaterNSW seek an early price determination. Under this scenario, we would be able to consider all efficient costs of the business, instead of only assessing a specific project. In doing so, 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 change would have occurred.

- ▼ In terms of the proposal to roll-forward the incurred capital expenditure into the RAB for the subsequent determination, we note that this largely already takes in place in our current form of regulation. In most cases, the actual capital expenditure of a regulated businesses can differ from its regulated capital allowance. If businesses can justify these costs to be efficient, then we roll-forward these costs into the RAB at the start of the next regulatory period. However, we acknowledge that we currently do not compensate (or claw back from) the business for the return on capital for the period between when additional costs (or cost savings) are incurred and when the next price determination occurs. The reason for this is to provide the business with financial incentives to manage its capital expenditure within its set allowance. For this price review, we will investigate the appropriateness of continuing this approach and consider alternative options that would not compromise our regulatory framework.
- ▼ While having a shorter determination period is an option, we will need to consider whether the potential benefits of a shorter determination period are likely to outweigh the associated risks and costs. We agree with WaterNSW's consideration that this may result in higher regulatory costs. Given that the current form of regulation allows WaterNSW to seek an early price determination in exceptional circumstances, our initial view is that having a shorter determination period to address the possible risk of a contingent project may have less merit.

We understand that WaterNSW is proposing to use the regulatory mechanisms in place in other industries such as the energy industry. However, its proposal did not provide details on how these mechanisms can work in practice in the water sector. Further, it did not assess how these new mechanisms fit within the existing regulatory framework. That is, WaterNSW did not present information on potential incremental benefits and unintended consequences of expanding the mechanisms to both the business and customers. We are interested to know from WaterNSW further details before forming our decision.

We are interested in stakeholders' views as to whether a separate mechanism should be established to deal with contingent projects, how to design it and how it should be applied.

IPART seeks comments on the following

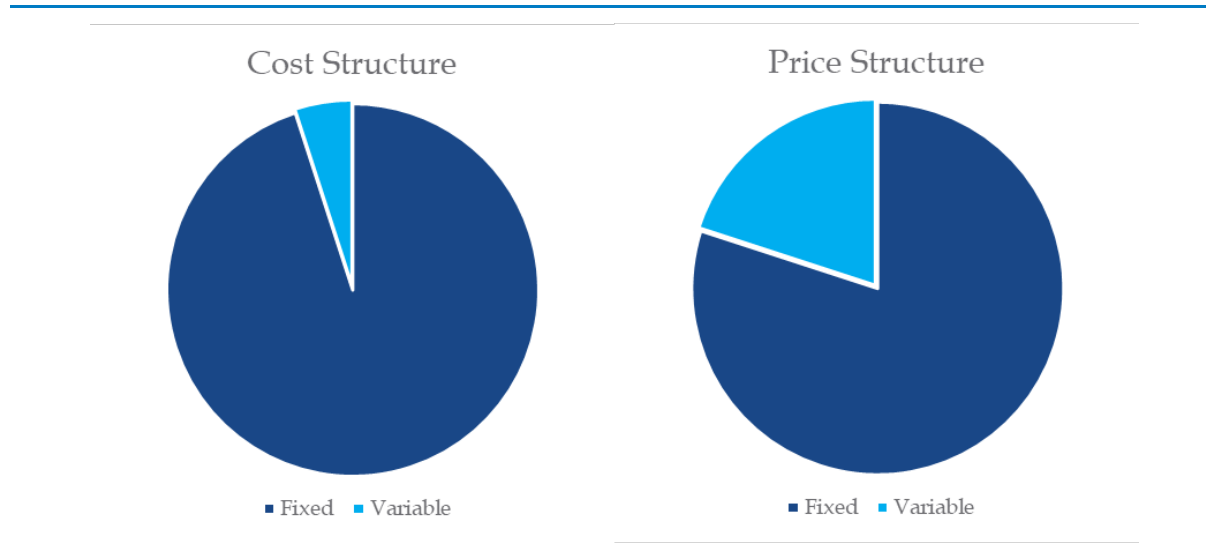
- 34 Do you agree with WaterNSW that a separate mechanism should be established to deal with contingent project risks?
- 35 If so, what should a regulatory mechanism for contingent project look like? How should we design it? How should it be applied? Should it affect prices during the determination period or only provide assurance to the business that these costs will be recognised and reflected in prices in the future (ie, from the next scheduled price determination)?
- 36 Relative to the current framework, will a new mechanism likely complement or confound the existing mechanisms and incentives? What incremental benefits would this provide and what are the potential unintended consequences?
- 37 What can we learn from the experience of other jurisdictions and regulated industries on addressing contingent projects?
- 38 In terms of actual additional costs (or cost savings) incurred (or generated) by the business during a determination period, do you agree with our current approach to not compensate (or claw back from) for return on capital over the period when they incur those costs and when we review the prices?

10.3 Considering revenue and demand risks

The current structure of bulk water prices to Sydney Water is based on an 80:20 fixed to variable ratio, ie, prices are set so that, notionally, 80% of sales revenue from Sydney Water is collected through the fixed charge and 20% through the volumetric charge. This means that 80% of WaterNSW's notional revenue from Sydney Water is effectively guaranteed and not subject to demand risk while the other 20% of WaterNSW's notional revenue from Sydney Water is subject to variability depending on actual demand (ie, if actual demand is higher (lower) than expected, WaterNSW will generate more (less) revenue than expected). If WaterNSW's cost structure was also 80% fixed and 20% variable, demand driven changes in revenue would be offset by changes in costs and WaterNSW would be financially indifferent to changes in demand – ie, it would face no demand risk.

The issue is that WaterNSW's cost structure is predominately fixed – ie, we expect that more than 80% of its costs are fixed. This means that when demand changes, the resulting change in revenue is greater than the resulting change in costs. This is a risk that can result in both deficits (when demand is lower than expected) and surpluses (when demand is higher than expected) to WaterNSW. The difference between WaterNSW cost structure and price structure in the GS area is illustrated in Figure 10.3.

Figure 10.3 WNSW-GS cost structure and price structure (illustrative only)



Data source: The figure above are not to scale and for illustrative purposes only.

To address this revenue risk, WaterNSW has proposed the following:

- ▼ To maintain the charging formula to calculate usage (volumetric) prices to large customers (eg, Sydney Water) to reflect all possible modes of operation of the SDP
- ▼ To establish a demand volatility adjustment mechanism with a material variation in sales set at $\pm 5\%$ change over the determination period.

We discuss these proposals, and our preliminary views on these proposals, below.

As a starting point, we note that if we are able to align the price structure with the cost structure, WaterNSW would no longer have revenue risk exposure. Therefore, an alternative would be to change WaterNSW's price structure so that, for example, its fixed charge to

Sydney Water is increased and its usage charge proportionally decreased so that greater than 80% of its revenue is recovered from the fixed charge. Price structures are discussed further in Chapter 9.

10.3.1 WaterNSW's proposal to maintain the charging formula to reflect different operational modes of the SDP

WaterNSW has proposed to maintain the formula used to calculate volumetric (usage) prices for large customers to reflect all possible operational modes of the SDP¹⁰⁵ to ensure WaterNSW recovers its efficient costs. As shown in the following box, the formula will increase WaterNSW's usage prices to large customers (eg, Sydney Water) in proportion to any increase in the SDP's supply of water to Sydney Water.

Box 10.6 Volumetric price for large customers (\$/ML)

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

Where:

- ▼ *TR* is the target revenue requirement from prices to be recovered from all large customers 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)
- ▼ *Q_{SDP}* is actual water supplied (ML) from SDP to all large customers in the relevant month, however if:

Q_{SDP} ≥ FS, then the volumetric price to SWC is nil

- ▼ *AS* is the actual sales (ML) from WaterNSW to all large customers in the relevant month, and
- ▼ *CST* is the cost of Shoalhaven transfers in the relevant month.

a Currently Sydney Water is WaterNSW's only large customer.

WaterNSW's proposal to have a demand volatility adjustment mechanism

WaterNSW proposes to introduce a demand volatility mechanism for customer consumption for the GS area over the 2020 determination period. This mechanism is aimed to mitigate the possible over or under-recovery of revenues due to material variation between the level of actual sales over the determination period and the sales forecast used in setting prices. WaterNSW proposes to have a material variation in sales be defined as a ±5% change over the determination period.¹⁰⁶

WaterNSW's is proposing to have this mechanism to address its residual risk, which can be useful to have under extreme circumstances (eg, decline in water sales due to drought). It also indicated that most of the water utilities in NSW has some form of demand volatility adjustment apart from WaterNSW GS.¹⁰⁷

¹⁰⁵ For example, SDP can be in a 'low-flow' operational mode, ie operating at a level less than full production capacity.

¹⁰⁶ WaterNSW pricing proposal to IPART, July 2019, p 51.

¹⁰⁷ WaterNSW pricing proposal to IPART, July 2019, pp 49-51.

10.3.2 IPART's preliminary response on demand mechanisms

Our preliminary view is to maintain the use of the formula based approach for the SDP to calculate its usage charge in the 2020 determination period. This approach reduces revenue risk for WaterNSW and has the effect of better reflecting the scarcity value of dam water.¹⁰⁸

In our 2016 Determination for WaterNSW GS, we decided not to incorporate a demand volatility adjustment mechanism because of our decision on the overall price structure¹⁰⁹ and adjustment to usage prices to reflect SDP's mode of operation. However, while these decisions may reduce demand risk, we acknowledged that WaterNSW still has some residual demand risk. Therefore, we will investigate the appropriate risk sharing between WaterNSW and its customers and the ability of each party to mitigate its share of risks.

If we were to introduce a demand volatility mechanism for WaterNSW, our preliminary view is to introduce the same mechanism we currently have in place for Sydney Water and Hunter Water to apply in future determinations. The current mechanism allows "an adjustment to the revenue requirement and prices" at subsequent price review to address any over- or under-recovery of revenue due to material variation between forecast and actual water sales. A material variation is defined as "more than $\pm 5\%$ over the whole determination period".

If we were to introduce a demand volatility mechanism for WaterNSW, we note that prices in the 2020 determination period would not be affected. If the variance between forecast and actual water sales over the 2020 determination period was in excess of the defined materiality threshold, it would affect prices for the subsequent price determination – ie, after 2024.

Under our pricing principles, we aim to align price structures with cost structures.¹¹⁰ Therefore, as an alternative to a demand volatility adjustment mechanism, we will also consider if there is merit in better aligning WaterNSW's price structure with its cost structure, which would then eliminate the need for a demand volatility adjustment mechanism. For example, if WaterNSW's costs are largely fixed, there may be a case to simply have a fixed charge to Sydney Water (with no variable charge).

We are interested in stakeholder views on whether the use of a demand volatility adjustment mechanism is appropriate for WaterNSW in the GS area. We note that our concurrent reviews for Sydney Water and Hunter Water are considering the design of this mechanism for those utilities, which we will take into consideration in this review should we decide to introduce a demand volatility adjustment mechanism for WaterNSW.

IPART seeks comments on the following

- 39 Do you agree with WaterNSW that we should introduce a demand volatility mechanism to address its residual demand (revenue) risk?

¹⁰⁸ Under SDP's current operating regime, it has the effect of increasing WaterNSW's volumetric charge to Sydney Water when dam levels drop to below 70%.

¹⁰⁹ We set it at 80:20 fixed to variable ratio, ie 80% of its revenue is derived from access (fixed) prices and 20% are recovered through usage (volumetric) prices.

¹¹⁰ We discuss our pricing principles in Chapter 2.

A Matters to be considered by IPART in this review

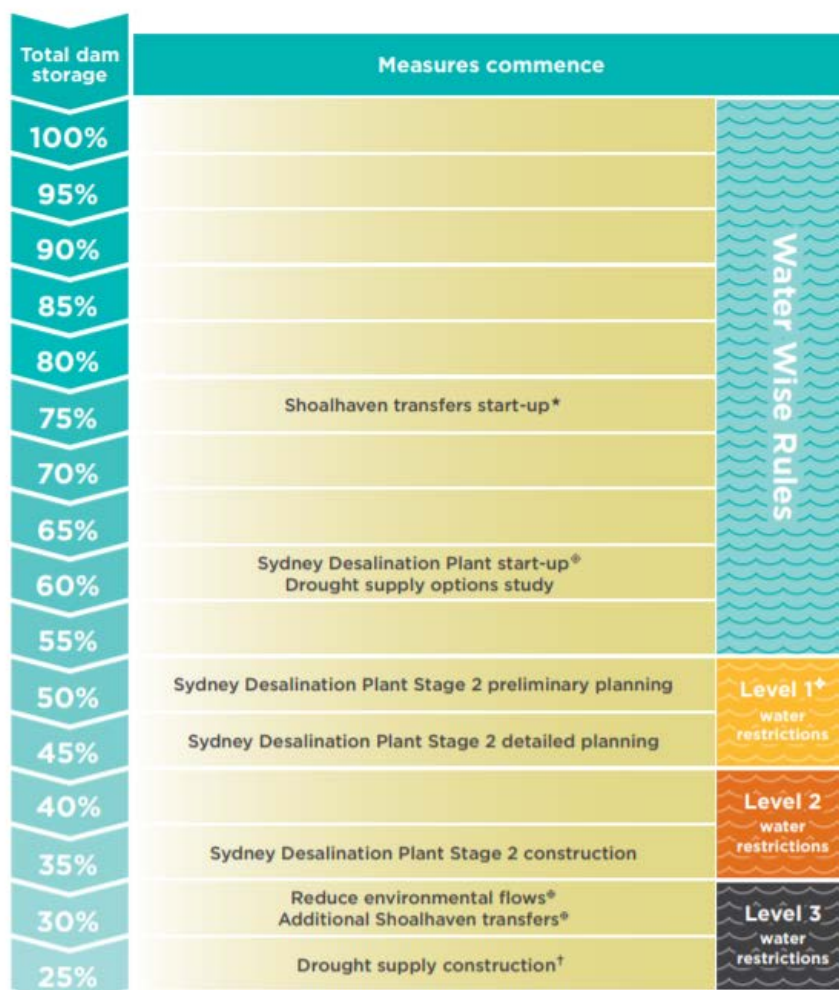
In making determinations, IPART is required under section 15 of the IPART Act to have regard to the following matters (in addition to any other matters IPART considers relevant):

- a) the cost of providing the services concerned,
- b) the protection of consumers from abuses of monopoly power in terms of prices, pricing policies and standard of services,
- c) the appropriate rate of return on public sector assets, including appropriate payment of dividends to the Government for the benefit of the people of New South Wales,
- d) the effect on general price inflation over the medium term,
- e) the need for greater efficiency in the supply of services so as to reduce costs for the benefit of consumers and taxpayers,
- f) the need to maintain ecologically sustainable development (within the meaning of section 6 of the *Protection of the Environment Administration Act 1991*) by appropriate pricing policies that take account of all the feasible options available to protect the environment,
- g) the impact on pricing policies of borrowing, capital and dividend requirements of the government agency concerned and, in particular, the impact of any need to renew or increase relevant assets,
- h) the impact on pricing policies of any arrangements that the government agency concerned has entered into for the exercise of its functions by some other person or body,
- i) the need to promote competition in the supply of the services concerned,
- j) considerations of demand management (including levels of demand) and least cost planning,
- k) the social impact of the determinations and recommendations,
- l) standards of quality, reliability and safety of the services concerned (whether those standards are specified by legislation, agreement or otherwise).

B 2017 Metropolitan Water Plan

Figure B.1 2017 Metropolitan Water Plan portfolio of measures

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.

C Efficiency carryover mechanism

In this Appendix, we explain why an Efficiency Carryover Mechanism (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. For example, for a 4-year determination, any permanent efficiency savings would be retained for four years.

Sections C.1 and C.2 below compare the ‘profits’ that a utility would enjoy if it implemented a permanent efficiency saving under the regulatory framework that does not have ECM, with those available under the ECM. Section C.3 explains how the ECM is applied. Section C.4 explains why we implement the ECM with a 1-year lag.

C.1 Regulatory framework without ECM

The four tables in Figure C.1 show the profits that a regulated utility retains after making an efficiency improvement **decrease** the further into a regulatory period that the efficiency is made. The efficiency is then incorporated into the regulatory allowance – in the form of lower prices to customers – in the next determination period and the utility gains no more profit from that efficiency. This creates the incentive for the utility to delay efficiencies to the first year of a new regulatory period.

Figure C.1 assumes that an efficiency saving implemented by a utility in the final year of a determination would be identified by IPART in the expenditure review process.

Figure C.1 How the current framework incentivises delaying efficiencies

Permanent saving made in year 1

Year	Regulatory Period 1				Regulatory Period 2			
	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

Year	Regulatory Period 1				Regulatory Period 2			
	1	2	3	4	5	6	7	8
	\$	\$	\$	\$	\$	\$	\$	\$
Allowance	100	100	100	100	80	80	80	80
Actual	100	80	80	80	80	80	80	80
Annual profit	-	20	20	20	-	-	-	-
Total profit in period	60							

Permanent saving made in year 3

Year	Regulatory Period 1				Regulatory Period 2			
	1	2	3	4	5	6	7	8
	\$	\$	\$	\$	\$	\$	\$	\$
Allowance	100	100	100	100	80	80	80	80
Actual	100	100	80	80	80	80	80	80
Annual profit	-	-	20	20	-	-	-	-
Total profit in period	40							

Permanent saving made in year 4

Year	Regulatory Period 1				Regulatory Period 2			
	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							

Figure C.2 How the current framework incentivises delaying efficiencies

Permanent saving made in year 1

Year	Regulatory Period 1				Regulatory Period 2			
	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

Year	Regulatory Period 1				Regulatory Period 2			
	1	2	3	4	5	6	7	8
	\$	\$	\$	\$	\$	\$	\$	\$
Allowance	100	100	100	100	80	80	80	80
Actual	100	80	80	80	80	80	80	80
Annual profit	-	20	20	20	-	-	-	-
Total profit in period	60							

Permanent saving made in year 3

Year	Regulatory Period 1				Regulatory Period 2			
	1	2	3	4	5	6	7	8
	\$	\$	\$	\$	\$	\$	\$	\$
Allowance	100	100	100	100	80	80	80	80
Actual	100	100	80	80	80	80	80	80
Annual profit	-	-	20	20	-	-	-	-
Total profit in period	40							

Permanent saving made in year 4

Year	Regulatory Period 1				Regulatory Period 2			
	1	2	3	4	5	6	7	8
	\$	\$	\$	\$	\$	\$	\$	\$
Allowance	100	100	100	100	80	80	80	80
Actual	100	100	100	80	80	80	80	80
Annual profit	-	-	-	20	-	-	-	-
Total profit in period	20							

Note: Regulatory period 2 does not necessarily have to be the same length as previous regulatory period. We have not made a decision on the length of the subsequent regulatory period. The tables in this figure are illustrative only.

C.2 How the ECM removes the incentive to delay savings

The ECM removes the incentive to delay savings by allowing the utility to retain profits for each permanent saving as though the saving were made in year 1 of the determination period in the scenario above. That is, the total profit for the utility is the same regardless of which year the efficiency was made.

The four tables in Figure C.2 demonstrate the ECM for a 4-year determination. Using the same example as in Figure C.1, the utility retains an \$80 profit regardless of which determination year it makes the saving in. This is because we calculate a “carryover” into the next determination period.

After four years, the saving is passed onto customers.

Figure C.3 How the ECM removes incentives to delay efficiencies

	Regulatory Period 1				Regulatory Period 2			
Permanent saving made in year 1								
Year	1	2	3	4	5	6	7	8
	\$	\$	\$	\$	\$	\$	\$	\$
Base allowance	100	100	100	100	80	80	80	80
Actual	80	80	80	80	80	80	80	80
Permanent saving	20	20	20	20	-	-	-	-
Incremental saving	20	20	20	20	-	-	-	-
Carryover calc	N/A	N/A	N/A	N/A				
Net allowance	100	100	100	100	80	80	80	80
Annual profit	20	20	20	20	-	-	-	-
Total profit in period	80				-			
Permanent saving made in year 2								
Year	1	2	3	4	5	6	7	8
	\$	\$	\$	\$	\$	\$	\$	\$
Base allowance	100	100	100	100	80	80	80	80
Actual	100	80	80	80	80	80	80	80
Permanent saving	-	20	20	20	-	-	-	-
Incremental saving	-	20	20	20	-	-	-	-
Carryover calc		20	20	20	20			
Net allowance	100	100	100	100	100	80	80	80
Annual profit	-	20	20	20	20	-	-	-
Total profit in period	60				20			
Permanent saving made in year 3								
Year	1	2	3	4	5	6	7	8
	\$	\$	\$	\$	\$	\$	\$	\$
Base allowance	100	100	100	100	80	80	80	80
Actual	100	100	80	80	80	80	80	80
Permanent saving	-	-	20	20	-	-	-	-
Incremental saving	-	-	20	20	-	-	-	-
Carryover calc			20	20	20	20		
Net allowance	100	100	100	100	100	100	80	80
Annual profit	-	-	20	20	20	20	-	-
Total profit in period	40				40			
Permanent saving made in year 4								
Year	1	2	3	4	5	6	7	8
	\$	\$	\$	\$	\$	\$	\$	\$
Base allowance	100	100	100	100	80	80	80	80
Actual	100	100	100	80	80	80	80	80
Permanent saving	-	-	-	20	-	-	-	-
Incremental saving	-	-	-	20	-	-	-	-
Carryover calc				20	20	20	20	
Net allowance	100	100	100	100	100	100	100	80
Annual profit	-	-	-	20	20	20	20	-
Total profit in period	20				60			

Note: Regulatory period 2 does not necessarily have to be the same length as previous regulatory period. We have not made a decision on the length of the subsequent regulatory period. The tables in this figure are illustrative only.

C.3 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.

C.4 Why there is a 1-year lag in implementation

In practice, at the time we undertake our review, we only have a forecast of expenditure in the final year of the determination period.

To address this limitation, we make three adjustments.

First, we lag the implementation of the ECM by one year. For example, with a 4-year determination period, we apply the ECM calculation to the first three years of the current determination period (years 1, 2, and 3), and to the final year of the previous regulatory period (ie, year 0). Efficiency savings in the final year of the current period (year 4) would be included in the ECM calculation for the following determination period.

Second, we assume an efficiency saving made in year 3 is permanent. Therefore, the benefit is held in year 3 and year 4, and the ECM allows the benefit to be carried forward in years 5 and 6.

Figure C.3 shows the first two adjustments. In this example, the two regulatory periods are years 1 to 4 (regulatory period 1), and year 5 to 8 (regulatory period 2). The ECM is then applied to operating expenditure in Years 0 to 3 in the first regulatory period, and years 4 to 7 in the second.

Figure C.4 ECM is lagged one year so that it is based on actuals

Year	Regulatory Period 1					Regulatory Period 2			
	ECM1	ECM2							
	-	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	-	-

Source: IPART analysis.

The third adjustment made is to ensure that any efficiency made in the final year of a determination period is only retained for one regulatory period, in present value terms. This is because we review efficiency savings made in the final year of a determination in the following period. For example, with a 4-year determination period, it is five years before we review this expenditure. Therefore, the utility would have retained these cost savings for five years.

Figure C.4 shows that we would calculate a 'year 0 adjustment' to ensure permanent savings made in the last year of a determination are only held for the length of the determination period, in this example for four (and not five) years.

In this example, a permanent efficiency saving of \$20 is made in Year 0. Without an adjustment factor, the business would retain this saving for five years. The 'Year 0 adjustment' offsets the fifth year of benefit (received in year 4) with a corresponding negative adjustment to the allowance in the first year of the next regulatory period (ie, year 5). Note that we are inflating this adjustment term by the WACC¹¹¹ in order to ensure incentives are fully equalised in present value terms (because the WACC represents our view of the appropriate discount rate).

¹¹¹ If cash flows are assumed to occur at the end of each year, this should be the WACC used for regulatory period 2.

Figure C.5 ECM adjustment to ensure savings are held for no longer than determination]

	Regulatory Period 1					Regulatory Period 2			
	ECM1					ECM2			
Year	-	1	2	3	4	5	6	7	8
	\$	\$	\$	\$	\$	\$	\$	\$	\$
Base allowance	100	100	100	100	100	80	80	80	80
Actual	80	80	80	80	80	80	80	80	80
Under (over)	20	20	20	20	-	-	-	-	-
Outperformance	20	20	20	20	-	-	-	-	-
Performance gain	20	20	20	20					
Incremental gain	20	-	-	-					
ECM1 calc									
- year 0	20	20	20	20	20				
- year 1		-	-	-	-				
- year 2			-	-	-				
- year 3				-	-				
- year 0 adjustment						-21			
ECM benefit						-21	-	-	-
Total allowance		100	100	100	100	59	80	80	80
Total gain (loss)	20	20	20	20	20	-21	-	-	-

Source: IPART analysis.

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.¹¹²

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.

¹¹² This incentive already exists under the current form of regulation.

D WaterNSW's proposed additional cost pass-through events

Table D.1 WaterNSW's proposed additional cost pass-through events

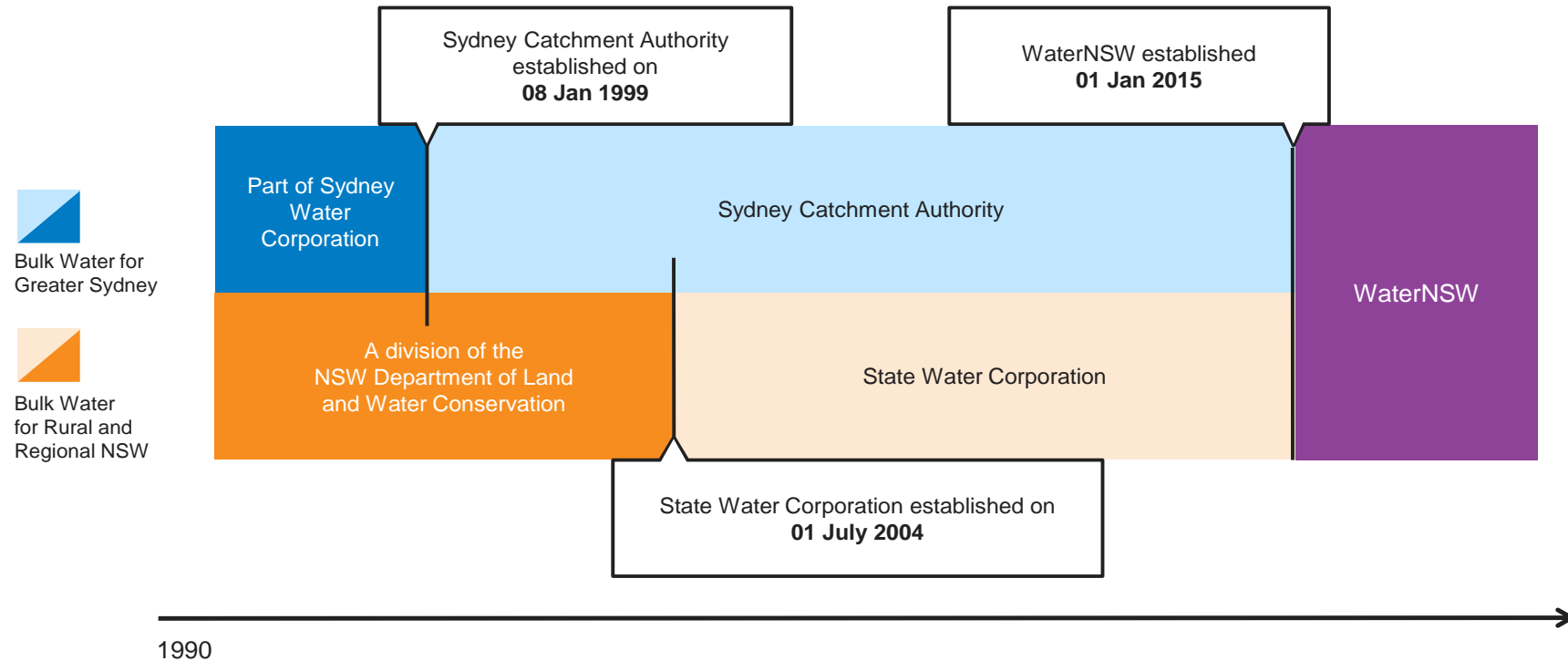
Pass-through event	Description	Effect
Regulatory change event	<p>During the regulatory period, a material increase or decrease in the cost of WaterNSW providing a regulated service due to:</p> <ul style="list-style-type: none"> ▼ A change in a regulatory obligation or requirement that: <ul style="list-style-type: none"> – falls within no other category of pass-through event – occurs during the course of a regulatory control period – substantially affects the manner in which WaterNSW provides regulated water services, and – materially increases or materially decreases the costs of providing those services. ▼ A legislative or administrative act or Decision that has the effect of: <ul style="list-style-type: none"> – substantially varying the manner in which WaterNSW is required to provide a regulated service – imposing, removing or varying minimum service standards applicable to regulated water services – altering the nature or scope of regulated water services provided by WaterNSW ▼ A change or removal of a relevant tax 	WaterNSW would be able to pass on costs of this change above a materiality threshold of 2.5% of the annual revenue requirement or approximately \$5 million.
Catastrophic event	<p>During the regulatory period, a material increase in the cost of WaterNSW providing a regulated service due to:</p> <ul style="list-style-type: none"> ▼ A natural disaster event and assessing the impact by having regard to: <ul style="list-style-type: none"> – whether WaterNSW has insurance against the event – the level of insurance that an efficient and prudent utility would obtain in respect of the event – whether a relevant government authority has made a declaration that a natural disaster has occurred. ▼ A terrorism event meaning an act (including, but not limited to, the use of force or violence or the threat of force or violence of any person or group of persons, whether acting alone or on behalf of or in connection with any organisation or government), which: 	WaterNSW would be able to pass on costs of this change above a materiality threshold of 2.5% of the annual revenue requirement or approximately \$5 million.

Pass-through event	Description	Effect
	<ul style="list-style-type: none"> – From its nature or context is done for, or in connection with, political, religious, ideological, ethnic or similar purposes or reasons (including the intention to influence or intimidate any government and/or put the public, or any section of the public, in fear), and – Increases the costs to WaterNSW in providing regulated services. <p>▼ A terrorism event will be assessed by having regard to:</p> <ul style="list-style-type: none"> – whether WaterNSW has insurance against the event – the level of insurance that an efficient and prudent utility would obtain in respect of the event – whether a relevant government authority has made a declaration that a terrorism event has occurred. 	

Source: WaterNSW pricing proposal to IPART, July 2019, pp 37-40 and Appendix B.

E Formation of WaterNSW

Figure E.1 Timeline of the establishment of WaterNSW



F WaterNSW's proposed adjustment to the Shoalhaven transfer formula

We introduced a cost pass-through mechanism in the 2016 Determination for Shoalhaven transfers. This recognises the uncertainty associated with forecasting the incidence of the transfers, and will provide a signal to Sydney Water about the costs of supply augmentation in times of increased water scarcity.

WaterNSW incurs additional costs in transferring water from the Shoalhaven. As these transfers are activated by dam level rules, they can be difficult to predict. The pass-through mechanism can address such uncertainty.

Our formula for determining the costs of Shoalhaven transfers is defined in the following box. The formula multiplies average monthly off-peak energy prices in \$/MWh and the number of ML transferred from the Shoalhaven system. The formula approximates the actual costs incurred by WaterNSW that will pass through to Sydney Water for each month when water is transferred.

Box F.1 Cost of Shoalhaven Transfers (CST)

$$CST = RRP \times 1.96MWh/ML \times STV$$

Where:

RRP is the NSW regional reference price for the 18 half-hourly periods from 10:00pm to 07:00am averaged over each month, in \$/MWh, as reported by the Australian Energy Market Operator.

STV (Shoalhaven transfer value) is the number of MLs transferred from the Shoalhaven system.

1.96MWh/ML is the composite usage rate factor in MWh/ML for the Shoalhaven system.^a

^a Email to IPART, WaterNSW, 18 February 2016.

F.1 The case for change as put forward by WaterNSW

In its proposal, WaterNSW indicates that:

"... it has become evident that the [transfer] formula from the 2016 Determination does not include a number of specific charges that would normally be included in efficient retail charges for electricity, and which are reflected in the monthly electricity bill generated by a third party for WaterNSW under the Shoalhaven pumping Scheme..."^{113,114}

WaterNSW mentions that the transfer formula only captures the typical spot price paid to a generator for off-peak electricity purchases.

¹¹³ WaterNSW pricing proposal to IPART, July 2019, Appendix D, p 184.

¹¹⁴ WaterNSW has contracted a third party for the provision of pumping services under the Scheme. The contract governs the cost of energy incurred by WaterNSW for the Shoalhaven transfer scheme.

According to WaterNSW, it is unable to recover additional electricity charges shown in the following table. In addition, it has identified minor differences between IPART's calculation of the monthly average RRP and the RRP costs incurred by WaterNSW under its contract.

Table F.1 WaterNSW's findings on additional charges and adjustments that should be made to the transfer formula

Electricity charges	Description
Network charges	<ul style="list-style-type: none"> ▼ Payable by WaterNSW under its contract with a third party in respect of electricity supplied as part of the Shoalhaven transfer ▼ Network charges typically reflects the costs of the transmission and distribution networks that are regulated by the AER.
Greenhouse gas (GHG) abatement scheme costs	<ul style="list-style-type: none"> ▼ This cost category includes the carbon liabilities payable by WaterNSW under its contract with a third party. ▼ The liabilities arise through the implementation of Government schemes which impose additional costs on market participants in the electricity supply industry, of which a percentage of the cost is passed onto the end-user. Such schemes aim to reduce, limit or manage levels of GHG emissions or increase the uptake of renewable energy.
NEM fees	<ul style="list-style-type: none"> ▼ These are the fees for services provided for AEMO
Transmission losses	<ul style="list-style-type: none"> ▼ As advised by WaterNSW's retailer, the Transmission Losses is an uplift to compensate for energy losses under the transmission and distribution network. ▼ As published by AEMO, the transmission losses refer to the Marginal Loss Factor to the Kangaroo Valley 330kV Switching Station and the Burrawang 0.0kV substation.
NSW Regional Reference Price	<ul style="list-style-type: none"> ▼ This is the wholesale cost of generation payable by WaterNSW under its contract with a third party for the Shoalhaven transfer. ▼ According to WaterNSW, its contract with its retailer calculates the RRP as the monthly RRP in all off-peak periods, including all hours of the weekend and NEM holidays and not just weekdays as intended by the existing formula. ▼ Furthermore, according to WaterNSW, each half hourly period is capped at 1% of the market price cap published by the AEMC for the relevant year.

Source: WaterNSW pricing proposal to IPART, Appendix D, pp 188-189.

According to WaterNSW, the impact of the above charges being excluded from the transfer formula is significant. In December 2018, it has estimated that its costs exceeded IPART's allowance by over 31% or \$682,132.¹¹⁵ The revenue shortfall was because of:

- ▼ the difference between the actual \$MWh incurred by WaterNSW and the RRP in the IPART transfer formula, and
- ▼ the actual volumes pumped during the month.

Further, WaterNSW expects that it would incur a shortfall of \$4.2 million to 2019-20:

- ▼ the estimated 2018-19 actual shortfall of \$1.0 million, and
- ▼ the forecast 2019-20 shortfall of \$3.2 million based on the probabilistic pumping model in 2019-20 and forecast difference of \$20 per MWh assumption.

The following figure shows the potential revenue impact as included in WaterNSW's pricing proposal.

¹¹⁵ WaterNSW pricing proposal to IPART, July 2019, p 43 and Appendix D, p 190.

Figure F.1 WaterNSW's estimated revenue shortfall incurred in 2016-17 to 2019-20 period

Month	MLs under transfer	MWh	IPART \$MWh price	Energy cost \$MWh Price	\$MWh Difference	Approx. Revenue shortfall
Dec-18	16,525ML	32,389 MWh	\$67.210	\$88.271	-\$21.061	-\$682,132
Jan-19	5,783ML	11,335 MWh	\$80.290	\$101.255	-\$20.965	-\$237,632
Feb-19	3,409ML	6,682 MWh	\$75.780	\$94.333	-\$18.553	-\$123,964
FY19 Total Shortfall Actuals:						-\$1,043,728
FY20	79,288ML*	155,405 MWh	N/A	N/A	-\$20.467**	-\$3,180,686
Total Shortfall FY19 and FY20:						-\$4,224,414

* Pumping volumes for FY20 are a sum of the monthly probabilistic pumping volumes derived from WaterNSW's drought depletion modelling using 10,000 replicates, starting from February 2019 at total starting storage level of 59.5%. WaterNSW expects pumping to be more intensive if Dam Levels drop to 35%.

** the FY20 \$MWh differential was calculated by multiplying the relevant power percentage from December 2018 (Small and Large Scale) by the 50-percentile value of the monthly market price for greenhouse large and small certificates, as provided by our retailer, plus the latest NEM ancillary fees and loss factor allowances omitted from the IPART formula. Source: WaterNSW analysis

Source: WaterNSW pricing proposal to IPART, Appendix D, p 186.

F.2 Summary of WaterNSW's proposed changes

WaterNSW proposes that while a formula-based approach to calculating a price for Shoalhaven transfers is appropriate, the formula needs to be updated to include:

- ▼ All required components of retail electricity charges:
 - Carbon liabilities
 - NEM ancillary service fees
 - NEM variable market fees
 - Network losses
 - Network charges
- ▼ A shortfall levy adjustment.

Its proposed adjusted formula is shown in Box F.2 below. For further details, refer to Appendix D of WaterNSW's pricing proposal.

Box F.2 WaterNSW's proposed changes to the formula for CST

$$CST = (RRP + CL + NEM Ancillary Service Fees + NEM Variable Market Fees) \times MLF \\ \times (1.96MWh/ML \times STV) + Network costs + Shortfall levy$$

Where:

RRP is the NSW regional reference price, averaged for the month, in \$/MWh, as reported by the Australian Energy Market Operator for the relevant billing period. WaterNSW has proposed to also include RRP for weekends and NEM holidays.

STV or Shoalhaven transfer value is the number of ML calculated in accordance with clause 5 of the 2016 Determination for WaterNSW GS. WaterNSW did not propose any changes to this definition.

CL are Carbon Liabilities associated with the Shoalhaven transfers. The associated costs are typically passed on by generators to retailers (or direct customers) or by retailers to customers in NSW for the purpose of reducing, limiting or managing levels of GHG emissions or for increasing the uptake of renewable electricity including but not limited to the sum of charges relating to:

- ▼ Large Scale Renewable Energy Certificates charge, and
- ▼ Small Scale Renewable Energy Certificates charge.

NEM Ancillary Services Fees are for ancillary services provided by AEMO and calculated as per its guidelines on payments and recovery of ancillary services, which includes but is not limited to:

- ▼ Frequency control ancillary services
- ▼ Network support and control ancillary services, and
- ▼ System restart ancillary services.

NEM Variable Market Fees is the NEM Fee, Full Retail Contestability Fee, the National Transmission Planner fee, and any other fee determined and published by AEMO.

MLF is the Marginal Loss Factor calculated as follows:

$$(8 \times MLF(Kangaroo Valley) + 200 \times MLF(Marulan)) \div 208$$

- ▼ MLF(Kangaroo Valley) refers to the MLF to the Kangaroo Valley 330kV Switching Station as published by the AEMO for the relevant year
- ▼ MLF (Marulan) refers to the MLF to the Burrawang 132kV substation as published by the AEMO for the relevant year.

Network costs means the network charges, fees or tariffs approved by the AER and paid on either a per MWh or a fixed basis by WaterNSW to a Network Provider in respect of electricity supplied for the Shoalhaven transfer.

Shortfall levy applies when the STV is greater than nil for the relevant month and means the lesser of:

- ▼ \$250,000, and
- ▼ the shortfall balance, where
 - \$4,435,749 is the starting shortfall balance as at 1 July 2020, minus
 - The sum of contributions made to the balance since 1 July under this clause, plus
 - Efficiency funding costs which accrues at the end of each regulatory year of the determination period and which is calculated by multiplying the post-tax WACC by the residual shortfall balance (taking the difference between the above two points).

Source: WaterNSW pricing proposal to IPART, Appendix D, pp 187-190.

G Output measures

As part of the 2016 pricing review, we specified 10 outputs to measure WaterNSW's delivery of its capital expenditure program. WaterNSW's progress against these capital expenditure output measures is shown in Table G.1.

Table G.1 Activity against output measures to the end of 2019-19

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 WaterNSW 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 WaterNSW risks. The rationalised scope of works will be delivered by December 2019.
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.

Project	Capital expenditure (\$2019-20)	Output measure	Expected completion	Activity to end 2018-19
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: WaterNSW pricing proposal, July 2019, Table 5.3, p 62-64.

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
Annual revenue requirement	The notional revenue requirement in each year of the determination period
Bulk water	Water delivered by WaterNSW to irrigators and other licence holders on regulated rivers across NSW
CPI	Consumer Price Index
ECM	Efficiency carryover mechanism
EPA	Environment Protection Authority
EPL	Environment Protection Licence
GL	Gigalitre (one billion litres)
Hunter Water	Hunter Water Corporation
IPART	Independent Pricing and Regulatory Tribunal of NSW
IPART Act	<i>Independent Pricing and Regulatory Tribunal Act 1992 (NSW)</i>
kL	Kilolitre
LRMC	Long run marginal cost
ML	Megalitre (one million litres)
MWP	Metropolitan Water Plan
NRR	Notional revenue requirement. Revenue requirement set by IPART that represent the efficient costs of providing Essential Water's monopoly services
NPV	Net Present Value

RAB	Regulatory asset base
Rouse Hill Area	The area to which the Rouse Hill stormwater drainage charges apply
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
SOC Act	<i>State Owned Corporations Act 1989 (NSW)</i>
Sydney Water	Sydney Water Corporation
Target revenue	The revenue Sydney Water generates from maximum prices set by IPART
UPA	Unregulated pricing agreement
WACC	Weighted average cost of capital