IPART
New South Wales

Independent Pricing and Regulatory Tribunal

Review of prices for Sydney Water Corporation

From 1 July 2016 to 30 June 2020

Water — Draft Report
March 2016

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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 18 April 2016.

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:

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

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1 Executive summary

The Independent Pricing and Regulatory Tribunal of NSW (IPART) is determining the maximum prices Sydney Water Corporation (Sydney Water) can charge its customers for water, wastewater[1] and stormwater drainage services.[2] As part of this review, we are also determining the maximum prices for Sydney Water's trade waste services, a range of ancillary and miscellaneous services, and the Rouse Hill recycled water scheme.[3]

This Draft Report sets out our draft decisions on Sydney Water's maximum prices over the 4-year period from 1 July 2016 to 30 June 2020 (the 2016 determination period) and how these would affect residential and non-residential customers. It also explains how we reached these draft decisions and how our draft prices compare to Sydney Water's proposed prices.

We invite submissions from all interested parties, which we will consider before finalising our decisions and our report in June 2016. The new charges are expected to apply from 1 July 2016.

Concurrent to this determination of Sydney Water's maximum prices, we are also reviewing and recommending late payment and dishonoured or declined payment fees to be charged by Sydney Water. We received a referral to undertake this review from the Premier under section 12A of the IPART Act.[4] A late payment fee[5] and a dishonoured or declined payment fee[6] are not fees for the provision of a monopoly service.

---

1 We have used the term wastewater in this Draft Report to refer to sewerage services. This is in line with Sydney Water's pricing proposal and terminology it uses with its customers. The Draft Determination, however, uses the term sewerage given that sewerage supply services are the declared monopoly service under the *Independent Pricing and Regulatory Tribunal (Water, Sewerage and Drainage Services) Order 1997*.

2 This review is conducted under section 11 of the *Independent Pricing and Regulatory Tribunal Act 1992* (the IPART Act).

3 We are deferring regulation of the prices for other recycled water schemes until we have completed a broader review of our approach to regulating recycled water prices. This is discussed in more detail in Chapter 10.

4 We received the referral under section 12A and the terms of reference for review of both fees on 7 December 2015 (see Appendix C).

5 Under clause 4.4.5 of its customer contract, Sydney Water may charge a late payment fee, but only if IPART has specified the maximum late payment fee as part of a review conducted under the IPART Act. Any late payment fee charged by Sydney Water must not exceed the maximum late payment fee specified by IPART (clause 4.4.5).

6 Under clause 4.11.1 of its customer contract, Sydney Water may charge a dishonoured or declined payment fee in an amount not exceeding the amount specified on its website, as amended from time to time.

We have also decided to conduct a separate review of wholesale water and wastewater prices, given that this is a new area of price regulation for IPART, its potential impact on the future of the NSW urban water market, and the need to ensure a consistent approach across the Sydney and Lower Hunter regions.[7] Therefore, our Draft Determination does not apply to wholesale water and wastewater services. Rather, it sets maximum prices for 'residential' and 'non-residential' properties, with no reference to wholesale customers.[8]

1.1 Our draft prices for Sydney Water result in bill decreases for customers

A Sydney Water bill includes amounts for water consumption, water and wastewater connection and in some areas stormwater. Wastewater usage charges also apply to non-residential customers who are deemed to have discharged more than the discharge allowance.

All dollar figures quoted in this report are in $2015-16, unless stated otherwise.

1.1.1 Our draft prices

Most prices under our draft decisions will either remain unchanged or decrease in 2016-17. Thereafter, they will remain constant in real terms (ie, they will rise by the rate of inflation only from 2016-17 onwards, which we estimate as 2.5% per year).

We have accepted Sydney Water's proposed water usage charge of $1.97 per kL over the 2016 determination period. This represents a decrease of $0.31 per kL (or 13.5%) compared with the current usage charge.[9] Our decision to accept Sydney Water's proposed water usage charge balances a number of competing considerations, including customers having greater control over bills and a move towards our best estimate of the long-term costs of water supply.

Most water and wastewater service charges will also decrease in 2016-17, and remain flat in real terms over the 4-year determination period.

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7 We note that this issue is equally relevant to our concurrent review of Hunter Water's prices, as Hunter Water also has wholesale customers.

8 To date, 'wholesale water and wastewater pricing' has been considered as part of this Sydney Water price review. All stakeholder submissions received on this issue and public hearing will still be considered as part of our separate wholesale pricing review. The timetable for our separate review of the maximum charges for Sydney Water and Hunter Water wholesale water and wastewater services is available at http://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Metro_Pricing/Review_of_wholesale_pricing_for_Sydney_Water_and_Hunter_Water.

9 This differs from the changes stated in Sydney Water's pricing proposal to IPART, June 2015, p 100. This is because 2015-16 prices were not available when Sydney Water finalised its proposal so changes stated in Sydney Water's pricing proposal were based on forecast prices.

Stormwater drainage charges will not increase under our draft decisions. We have decided to continue the transition toward area-based stormwater drainage charges by allocating cost reductions to residential and small non-residential customers, and maintaining prices at current levels (in real terms) for large non-residential customers.

Other features of our draft prices include:

- We have decided to charge dual occupancies based on the number of meters connected to Sydney Water's network. This means that dual occupancies with a single meter would no longer pay two service charges.
- We have decided to set a low-impact customer category for residential stormwater customers equal to the charge for apartments. This could accommodate, for example, a situation where a customer invests in significant on-site water retention facilities.[10]

Our draft prices are outlined in Table 1.1.

[10] Sydney Water currently requires non-residential customers to apply for the low impact discount: there is a simple 2-page form, which is followed by Sydney Water's assessment (at Sydney Water's cost). We consider that this process should also be available to residential customers.

Table 1.1 Draft prices for major services from 1 July 2016 ($2015-16) – without inflation

	2015-16[a]	2016-17	2017-18	2018-19	2019-20
Water					
Usage charge ($/kL)	2.28	1.97	1.97	1.97	1.97
Annual change		*-13.5%*	*0.0%*	*0.0%*	*0.0%*
Residential service charge ($/year)	102.53	84.02	84.02	84.02	84.02
Annual change		*-18.1%*	*0.0%*	*0.0%*	*0.0%*
20mm non-residential service charge ($/year)	129.83[b]	84.02	84.02	84.02	84.02
Annual change		*-35.3%*	*0.0%*	*0.0%*	*0.0%*
Wastewater					
Usage charge ($/kL)	1.10	1.10	1.10	1.10	1.10
Annual change		*0.0%*	*0.0%*	*0.0%*	*0.0%*
Residential service charge ($/year)[c]	609.14	569.95	569.95	569.95	569.95
Annual change		*-6.4%*	*0.0%*	*0.0%*	*0.0%*
20mm non-residential service charge ($/year)[d]	1,042.67[b]	704.93	704.93	704.93	704.93
Annual change		*-32.4%*	*0.0%*	*0.0%*	*0.0%*
Stormwater					
Multi premise residential, small and multi premise non-residential ($/year)	31.55	23.61	23.61	23.61	23.61
Annual change		*-25.2%*	*0.0%*	*0.0%*	*0.0%*
Standalone residential and medium non-residential ($/year)	86.02	74.40	74.40	74.40	74.40
Annual change		*-13.5%*	*0.0%*	*0.0%*	*0.0%*
Large non-residential ($/year)	430.12	430.12	430.12	430.12	430.12
Annual change		*0.0%*	*0.0%*	*0.0%*	*0.0%*

a 2015-16 prices were not available when Sydney Water finalised its pricing proposal. The prices for 2015-16 have been updated to reflect actual inflation and prices.

b This service charge applied to non-residential customers on a shared meter or with multiple 20mm meters. Under the 2012 Determination 20mm, standalone non-residential customers paid the residential service charges instead which was $609 in 2015-16. From 2016-17 Sydney Water's proposal would see these customers charged the same as other non-residential customers with 20mm meters. Actual charges may be less than $704 depending on the discharge factors applied. These are explained further in Chapter 8.

c Residential service charge has the 75% residential discharge factor applied and the 150 kL discharge allowance usage charge (of $165) added to it.

d The 20mm non-residential service charge assumes a 100% discharge factor and has the 150 kL discharge allowance usage charge (of $165) added to it.

1.1.2 Customer bills

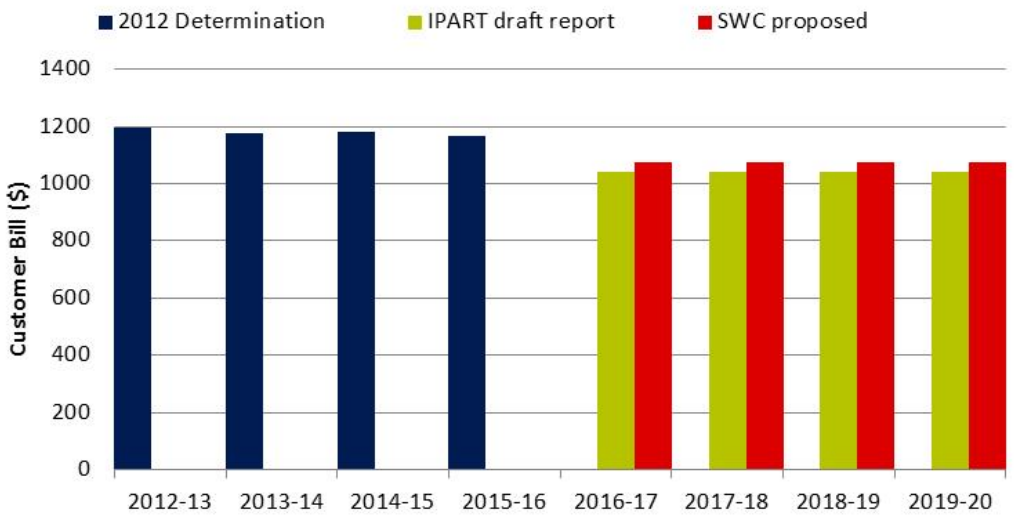
Bills for residential and most non-residential customers would decrease over the 4-year determination period as a result of changes we have made to the structure of some prices. Some non-residential customers, however, will face slight bill increases over the 4-year determination period. These price structure changes are intended to ensure that customers who receive similar services in Sydney Water's network pay similar charges (ie, remove existing cross-subsidies).

Residential customers

All residential customers' water and wastewater bills would fall under our draft prices in 2016-17 and then increase at the rate of inflation thereafter (estimated to be about 2.5% per year). Had we adopted Sydney Water's proposal, most households would have experienced a nominal increase in their annual water and wastewater bill by the end of the 4-year period.

Figure 1.1 below compares the typical residential bill using our draft prices, with Sydney Water's proposal and our 2012 determination.

Figure 1.1 Comparison of typical residential water and wastewater bills under different prices ($2015-16) – without inflation



Note: Based on an individually metered residential customer with annual water consumption of 200 kL.

Under our draft prices:

- A **typical household** consuming 220 kL per year would see its annual bill decrease by $103 (or 8.5%) in 2016-17 from $1,213 to $1,109. This is $33 lower than under Sydney Water's proposed prices. By 2019-20, a typical household would pay $1,194, which represents a reduction of $18 in nominal terms over the 4-year period. Sydney Water proposed a nominal increase of $17 over this same period.
- A **typical apartment** consuming 160 kL per year would see its annual bill decrease by $87 (or 8.1%) in 2016-17 from $1,076 to $989. This is $32 lower than under Sydney Water's proposed prices. By 2019-20, a typical apartment would pay $1,065, which represents a reduction of $11 in nominal terms over the 4-year period. Sydney Water proposed a nominal increase of $23 over this same period.

- **Eligible pensioners** would see their annual water and wastewater bills decrease between $8 and $22 over the 2016 determination period, depending on water consumption. This means that a pensioner's bill in 2019-20 should be lower than their current bill, including the effect of inflation. Pensioners receive a concession of 83% of the wastewater service charge and are consequently largely unaffected by our decision to restructure this charge.

Customers who pay **stormwater drainage** charges would also see a reduction in their bills.[11] For households, annual stormwater service charges would decrease from $86.02 in 2015-16 to $75.89[12] in 2016-17. Sydney Water proposed a service charge of $85.54 in 2016-17. For residents in apartments, annual stormwater service charges would decrease from $31.55 in 2015-16 to $24.08 in 2016-17. Sydney Water proposed a service charge of $31.37 in 2016-17.

Table 1.2 shows the residential bills under our draft prices and Sydney Water's proposed prices.

Table 1.2 Residential bills ($ nominal) – with inflation

	2015-16[a]	2016-17	2017-18	2018-19	2019-20	IPART change 2015-20	Sydney Water change 2015-20
160 kL/year	1,076	989	1,013	1,039	1,065	-11	23
Annual change		*-8.1%*	*2.5%*	*2.5%*	*2.5%*	*-1.1%*	*2.2%*
200 kL/year	1,167	1,069	1,096	1,123	1,151	-16	19
Annual change		*-8.4%*	*2.5%*	*2.5%*	*2.5%*	*-1.4%*	*1.7%*
220 kL/year	1,213	1,109	1,137	1,165	1,194	-18	17
Annual change		*-8.5%*	*2.5%*	*2.5%*	*2.5%*	*-1.5%*	*1.4%*
160 kL/year unit with stormwater[a]	1,108	1,013	1,038	1,064	1,090	-17	23
Annual change		*-8.6%*	*2.5%*	*2.5%*	*2.5%*	*-1.5%*	*2.1%*
220 kL/year house with stormwater[a]	1,299	1,185	1,215	1,245	1,276	-23	16
Annual change		*-8.7%*	*2.5%*	*2.5%*	*2.5%*	*-1.7%*	*1.2%*

a 2015-16 prices were not available when Sydney Water finalised its pricing proposal. The bills for 2015-16 have been updated to reflect actual inflation and prices.

b These figures were not included in Sydney Water's proposal, and have been calculated by IPART.

Note: Inflation is estimated to be 2% in 2016-17 and 2.5% per annum over the rest of the 2016 determination period. 160 kL/year is average usage for a unit, 220 kL/year is average for a house and 200 kL/year is average for residential.

Source: Sydney Water pricing proposal to IPART, June 2015, p 103; Sydney Water Annual Information Return, June 2015; and IPART's analysis.

11 Residential dwellings in Sydney Water's stormwater catchments pay Sydney Water stormwater charges in addition to wastewater and water charges. Customers in other areas pay these fees to local councils.

12 Including 2% inflation.

Non-residential customers

Non-residential customers' bill impacts depend on their meter size and discharge factors, as well as their water and wastewater usage.

Under our draft prices, almost all non-residential customers would experience decreases in their water and wastewater bill from 2016-17 onwards. In general, non-residential customers would see their annual water and wastewater bills fall between 5.1% and 15.7% in 2016-17. Thereafter, some non-residential customers would see their bills increase above the rate of inflation due to our decisions to realign wastewater usage and service charges to more cost-reflective levels (see Box 1.1).

Box 1.1 Our changes to price structures mean cost reflective treatment of Sydney Water's customers

We have made changes across Sydney Water's price structures to ensure that wastewater charges are more cost reflective so that customers groups imposing similar costs on the system are treated consistently.

▼ **Wastewater service charges**

Wastewater service charges predominantly recover fixed costs, reflecting a customer's ability to access the system (ie, that they are connected to the system). Estimating a customer's draw on the wastewater system is problematic because, unlike water, wastewater is not metered. Wastewater charges are, therefore, based on a customer's water meter size multiplied by a discharge factor. The discharge factor is the percentage of metered water consumption that is estimated to be discharged to the wastewater system.

For the 2016 Determination, we are applying a 75% discharge factor to the wastewater service charge for residential customers (ie, residential customers pay 75% of the base 20mm meter service charge). For non-residential customers, Sydney Water has specific discharge factors that it determines based on the nature of the business and the amount of wastewater that it is likely to discharge.

Discharge factors have previously applied to all non-residential customers, except 20mm standalone customers who were charged the same as residential customers. Where a discharge factor has not been previously assigned to a non-residential customer (ie, 20mm meter standalone customers), Sydney Water states it will apply a default discharge factor of 78% in its policies.

We consider it important that Sydney Water clearly communicate where the discharge factor is greater than 75% for non-residential customers with a 20mm connection (ie, small businesses).

▼ **Wastewater usage charges**

Non-residential customers that discharge more than the discharge allowance pay a wastewater usage charge. Currently, the discharge allowance is set at 300 kL.

We consider it appropriate that the discharge allowances for residential and non-residential customers are the same. Going forward, all wastewater service charges would include the cost of a fixed discharge allowance of 150 kL. This reflects a residential customer's average annual discharge.

We have therefore reduced the non-residential discharge allowance from 300 kL to 150 kL by 2018-19 (ie, by 50 kL increments per year), after which it would remain at this level.

Under our draft prices, **small businesses** with a discharge factor of 75% would face the same bill reductions as residential customers. This is because we have introduced discharge factors for residential customers of 75%.[13]

Where the discharge factor is greater than 75%, non-residential customers with similar sized meters to residential properties (ie, a standalone 20mm connection) would be billed more than a residential customer. In particular, small businesses:

- with a discharge factor of 78% (Sydney Water's default discharge factor), would face nominal bill increases of about $9 (or 0.8%) over the 4-year period.
- with a discharge factor of 82% (example of a different discharge factor), would face nominal bill increases of about $42 (or 3.6%) over the 4-year period.

Sydney Water assigns discharge factors for non-residential customers, but not residential customers.[14] In light of this, we consider it important that Sydney Water clearly communicate where the discharge factor is greater than 75% for non-residential customers with a 20mm connection (ie, small businesses). Generally, where a discharge factor has not been previously assigned to a non-residential customer, Sydney Water applies a default discharge factor of 78%.[15]

Some non-residential customers would now face wastewater usage charges within the 2016 determination period and potential bill increases. This is because we have decided to lower the discharge allowance to 150 kL per annum by 2018-19. For example:

- a non-residential customer with a standalone 20mm meter, consumption of 310 kL per year and a discharge factor of 83%, would see an increase in their bill of $149 (or 10.5%) by 2019-20 in nominal terms.

Our price structure changes have been implemented to remove existing cross-subsidies. Reducing the non-residential discharge allowance from 300 kL to 150 kL means that small non-residential customers discharging up to 150 kL are no longer paying more than they should.

Large non-residential customers would see their bill decrease by up to $11,162 (or 8.4%) over the 4-year period to 2019-20. Notably, this reflects our decision to no longer implicitly recover the 150 kL of discharge (not recovered through the wastewater usage charges) through wastewater service charges – ie, large meters paid too much for wastewater discharge, as a result of the multiplication of the wastewater service charge per meter.

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13 We have applied a discharge factor of 75% to residential customers, which reflects their average discharge of 150 kL of wastewater per year given their average consumption of 200 kL of water per year. See Chapter 8.

14 IPART conducted a review of discharge factors in 2014. We decided to "maintain our current approach of using the discharge factors as set by the water utilities", IPART, *Discharge factors for non-residential customers – Final Report*, December 2014, p 3.

15 We also decided to continue to allow regulated water utilities to determine the discharge factors. However, we recommended that water utilities be transparent in the process of setting discharge factors and communicate with customers via their websites. IPART, *Discharge factors for non-residential customers – Final Report,* December 2014, p 3.

1.1.3 Charges for the Rouse Hill Area

There are currently two charges for the Rouse Hill Area:

- **Rouse Hill stormwater drainage charge,** which recovers the operating costs of the drainage system, including for activities such as cleaning out trash racks, bush regeneration and weed and ground management.
- **Rouse Hill land charge,** which recovers a portion of Sydney Water's capital expenses for the same system.

We have accepted Sydney Water's proposal to maintain the Rouse Hill stormwater drainage charge in real terms at $139.65 per year for residential and non-residential properties less than or equal to 1,000m^2.[16]

We have not accepted Sydney Water's proposal for the Rouse Hill land charge to remain at $248.85 per year in real terms over the 2016 determination period.[17] This is because the current Rouse Hill land charge is set below cost reflective levels. To maintain the current charge, Sydney Water argued that the additional land purchase costs in the Rouse Hill stormwater catchment area should be recovered entirely from its broader wastewater customer base.

Instead, we have decided to share the capital costs (both land and civil works) for Rouse Hill equally between residents in Rouse Hill and Sydney Water's broader customer base. This reflects the integrated water management system in Rouse Hill, which performs dual stormwater (specific to Rouse Hill) and wastewater functions (costs to be shared across Sydney). As such, we have set the Rouse Hill land charge to $432.89 per year in real terms over the 2016 determination period.

We note that the NSW Government retains the discretion to reduce the Rouse Hill land charge from the price we set.[18]

16 In its June submission, Sydney Water forecasted the 2015-16 prices as $140.33, based on a CPI of 2.5%. The subsequent actual price was $139.65, based on actual inflation.

17 In its June submission, Sydney Water forecast the 2015-16 prices as $249.97, based on a CPI of 2.5%. The actual price for customers in 2015-16 is $248.85, based on actual inflation.

18 On 8 August 2013, the Treasurer directed Sydney Water to reduce the charge from $969 per annum to $237 per annum pursuant to section 18(2) of the IPART Act following a reconsideration, and reduction, of the amount of land needed in Rouse Hill. The charge was reduced to $237 per year to ensure the savings from the reduction in land acquisition were passed on in full to customers.

1.1.4 Dishonoured or declined payment and late payment fees

We have accepted Sydney Water's proposed late payment and dishonoured or declined payment fees, however with an upward adjustment for corporate costs. Our:

- specified late payment fee is $4.16 in 2016-17 increasing to $4.40 in real terms by 2019-20, the end of the determination period
- recommended dishonoured or declined payment fee is $12.50 in 2016-17 increasing to $13.23 in real terms by 2019-20, the end of the determination period.

Sydney Water has the provision to charge both these fees under its Customer Contract. We consider that Sydney Water's proposed fees are reasonable, simple to understand, and below that charged by other service providers.[19]

With respect to the late payment fee, we consider that it is appropriate to recover the efficient costs of late payment in this fee, given that there are protections for financially vulnerable customers. Customers who impose additional costs should pay for them, rather than all customers (including vulnerable customers) bearing additional costs.

At a minimum, Sydney Water cannot charge a late payment fee if it has already agreed to a deferred payment date or another payment arrangement with a customer.[20] Customers identified as being in hardship are also exempt from late payment fees. Sydney Water's proposed terms and conditions for its late payment fee mostly mirror exemptions available in NSW under the *National Energy Consumer Framework* (NECF)[21] and were generally supported by stakeholders.[22] We have accepted Sydney Water's terms and conditions, with an added provision that the fee only be levied if the customer has been notified in advance of the late payment fee.

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19 However, we have recommended an upward adjustment to the fees for corporate costs. We consider it important to allocate costs consistently across the business.

20 Sydney Water's operating licence provides that, at a minimum, Sydney Water must not charge a late payment fee if it has already agreed with a customer a deferred payment date, or an arrangement to pay by instalments with respect to the overdue account balance, or it has entered into a payment assistance arrangement with the customer. IPART, *Sydney Water Corporation Operating Licence 2015-20*, Schedule 4 - Customer Contract, July 2015, p 14.

21 See Rule 73(2) of the *National Energy Retail Rules*, and clause 10 of the *National Energy Retail Law (Adoption) Regulation 2013*.

22 The Energy Water Ombudsman NSW (EWON) was supportive of this fee and the exemptions, noting they could be extended to pensioners: EWON submission to IPART Issues Paper, October 2015, pp 6-7. The Public Interest Advocacy Centre (PIAC) was supportive of the proposed fee and its conditions as long as it does not negatively impact those who are facing hardship: PIAC submission to IPART Issues Paper, October 2015, p 9.

1.2 We are encouraging Sydney Water to be more efficient and responsive to its customers

1.2.1 We are reducing Sydney Water's allowance for capital and operating expenditure

We have decided to reduce Sydney Water's allowance for capital and operating expenditure over the 2016 determination period to ensure efficient and prudent expenditure. We are satisfied our approach will not adversely affect the ability of Sydney Water to operate, maintain, renew and develop the assets required to deliver its regulated services over the 2016 determination period. Further, we are satisfied our draft decisions will enable Sydney Water to earn a reasonable rate of return on its assets.

We have set Sydney Water's allowance for **operating expenditure** at $4,908 million over the 2016 determination period. In doing so, we have reduced Sydney Water's proposed operating expenditure by 1.9%, which included the following adjustments:

- core operating expenditure $81 million (2.3%) lower than Sydney Water's proposal
- bulk water costs $14 million (0.9%) lower than Sydney Water's proposal.

A large part of the reductions to Sydney Water's proposed operating expenditure comprise continuing and catch-up efficiency targets ($53 million). We acknowledge that these efficiencies are challenging, but our expenditure consultants noted that Sydney Water has the capacity to deliver.[23]

Our draft decision on forecast **capital expenditure** is to include $2,353 million in capital expenditure over the 2016 determination period. In doing so, we reduced Sydney Water's proposed capital expenditure by $420 million (15.1%), which included the following adjustments:

- $265 million (or 9.5%) of reductions to specific capital programs, and
- $155 million (or 5.6%) in efficiency savings.

As part of its capital program, Sydney Water proposed $328 million on information technology (IT) programs over the 2016 determination period. This significant increase in IT capital expenditure includes a new customer billing system and an Enterprise Resource Planning (ERP) platform. Our consultant found this expenditure to be prudent and efficient, given Sydney Water's current customer billing system is 28 years old and broad consensus in the world's leading corporations that an ERP is a vital organisational tool. However, we have removed $24.8 million from the RAB in 2017-18 for stranded IT assets superseded by the ERP platform.

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23 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 17.

We applied a real post-tax WACC of 4.8% for the purposes of calculating an appropriate rate of return on Sydney Water's assets. Our draft decision is to use our standard methodology for all parameters. Sydney Water's initial proposal was for a WACC of 4.6%.[24] It updated its proposed WACC to 4.97% in its response to our Issues Paper to reflect changes in market parameters.[25]

1.2.2 We are introducing pricing flexibility

We have decided to introduce greater pricing flexibility by allowing Sydney Water and large non-residential customers to enter into unregulated pricing agreements for water and wastewater services.

The default is for the prices set by IPART to apply to Sydney Water's customers. Unregulated pricing agreements will only apply where Sydney Water and a customer have agreed to opt-out of the prices set by IPART. If Sydney Water and a large non-residential customer enter into such an agreement, Sydney Water and that customer will not be subject to IPART's determined prices for water and wastewater services to the extent that such prices are set in the pricing agreement.

Unregulated pricing agreements can be entered into by large non-residential customers defined as stand-alone non-residential customers that have annualised water consumption greater than 7.3 ML.

This form of pricing flexibility would allow Sydney Water to search for opportunities to uncover value for its customers by tailoring prices and potentially services to better meet their customers' individual preferences, as would occur in a competitive setting. It provides a strong incentive for Sydney Water to engage with customers to learn more about their preferences in order to develop mutually beneficial price offers specifically targeted to each customer's preferences. This was one of Sydney Water's primary objectives for pricing flexibility.

Importantly, we have identified and discussed some key features and implications of unregulated pricing agreements that should be considered by both parties before entering into an agreement (see Chapter 2).

24 Sydney Water pricing proposal to IPART, June 2015, p 218.
25 Sydney Water, *Response to IPART Issues Paper*, October 2015, p 44.

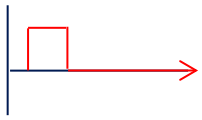
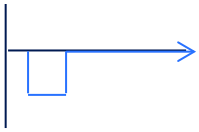
1.2.3 We are introducing an efficiency carryover mechanism for Sydney Water

We have decided to establish an efficiency carryover mechanism (ECM). This approach will remove any incentive to delay permanent cost savings, which means customers can benefit, through lower prices, sooner. This mechanism:

- applies to controllable operating expenditure from 2015-16 to 2018-19
- ensures the business is able to retain permanent cost reductions for four years before they are passed on to customers through lower prices
- maintains the existing incentive for the business to control costs, and
- maintains the existing incentive for the business to manage temporary fluctuations in expenditure.

Table 1.3 compares Sydney Water's proposed EBSS and IPART's ECM to the current form of regulation. We have highlighted in blue where the EBSS and ECM differ from the current form of regulation.

Table 1.3 Comparison of IPART's ECM to the current form of regulation

Change in actual expenditure relative to the allowance	Current form of regulation	Sydney Water's EBSS	IPART's ECM
1. Permanent increase in costs	Retained by the business until IPART can assess at next price review.	Retained for 5 years – then passed on to customers.	Retained by the business until IPART can assess at next price review.
2. Temporary increase in costs 	Retained by the business.	Passed on to customers after 5-year lag.	Retained by the business.
3. Temporary reduction in costs 	Retained by the business.	Passed on to customers after 5-year lag.	Retained by the business.
4. Permanent decrease in costs	Retained by the business until IPART can assess at next price review.[a]	Retained for 5 years – then passed on to customers.	Retained for 4 years – then passed on to customers.

[a] That is, if the saving is made in year 1 it can be held for four years. If it is made in year 4, it can be held for one year. Note this assumes we know the actual year 4 expenditure when we reset the allowance for the next regulatory period. In reality, the business could make an unexpected saving in year 4 and retain if for five years, given the timing of our price reviews.

Source: IPART analysis.

Our expectation is that by removing the incentive to delay savings and providing a tool for Sydney Water to demonstrate its performance over the regulatory period, the ECM would improve the amount and quality of information available to us at the next round of expenditure reviews.

1.2.4 We are encouraging greater use of performance benchmarking

We have decided to work with regulated businesses and regulators in other jurisdictions to develop a performance benchmarking capability to inform future price reviews. While our current form of regulation makes some use of benchmarking in assessing performance during the expenditure review, we intend to make greater use of benchmarking in future price reviews. We consider that greater use of performance benchmarking would help Sydney Water demonstrate its performance gains to stakeholders and would help to drive further performance gains in the future.

1.3 We are including explicit charges for bulk water costs to send scarcity signals to customers

1.3.1 Pass through of Sydney Desalination Plant costs

In a shutdown mode (ie, not supplying desalinated water to Sydney Water), Sydney Desalination Plant Pty Limited's (SDP) **fixed costs** represent about $94 (9%) of a typical annual residential bill.

If SDP moves into operation mode (ie, supplying desalinated water to Sydney Water), then Sydney Water faces additional variable costs from purchasing desalinated water. We have accepted Sydney Water's proposal to make these drought-response costs more transparent to customers in times of relative scarcity. As a result, we have decided to vary water usage charges to reflect the per kL cost of desalinated water if SDP is activated.

Our decision is to increase the **water usage charge** by $0.12 per kL ($2015-16) over the 2016 determination period if SDP is operating. This will recover the additional **variable costs** associated with it supplying desalinated water.

For a typical household consuming 220 kL per year, this would add about $26.40 to their annual bill (ie, in addition to the $94 in their annual bill covering SDP's fixed costs). For a typical apartment consuming 160 kL per year, this would add about $19.20 to their annual bill. Large users of water (ie, large non-residential customers) would pay proportionately more.

The challenge to varying Sydney Water's usage price to reflect the variable cost of desalinated water is that we do not have determined prices for SDP from 2016-17 onwards. To simplify prices, we have therefore decided to apply a constant uplift of $0.12 per kL over the 2016 determination period based on SDP's determined charges for 2016-17 only. The service charge pass-through mechanism will account for any forecast error in our estimate of the water usage charge adjustment.[26]

1.3.2 Pass through of Shoalhaven transfer costs

We are introducing a service charge cost pass-through mechanism to compensate Sydney Water for actual bulk water costs incurred from WaterNSW for transfers from the Shoalhaven.[27]

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26 The usage charge pass-through is revenue neutral. Under current arrangements, the additional costs to Sydney Water of purchasing desalinated water if SDP is required to operate would be passed through to water consumer's fixed service charges at a 1-year lag.

27 This differs from the 2012 Determination, where we decided to allow for the cost recovery of Shoalhaven pumping on **expected** costs basis (rather than through a cost pass-through mechanism).

The size of these costs and their impact on customers will depend on the transfers from the Shoalhaven. Under the 2010 Metropolitan Water Plan, WaterNSW must start pumping from the Shoalhaven system when Sydney's dam levels fall to 75% and continue until they rise above 80%.[28]

1.4 IPART's review process

We will consider all submissions received on the Draft Report and Determination prior to releasing the Final Report and Determination in June 2016. The indicative timetable for this review is outlined in Table 1.4 below.

We are conducting a separate public hearing for Sydney Water's late payment and dishonoured or declined payment fees in April 2016.

Table 1.4 Indicative review timetable

Task	Timeframe
Received pricing proposal from Sydney Water	*30 June 2015*
Released Issues Paper	*7 September 2015*
Received submissions to the Issues Paper and to Sydney Water's pricing proposal	*5 October 2015*
Held Public Hearing	*10 November 2015*
Released Draft Report and Draft Determination	*22 March 2016*
Public Hearing – late and dishonoured or declined payment fees	11 April 2016
Receive submissions to the Draft Report	18 April 2016
Release Final Report and Determination	Mid-June 2016

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

In making our draft decisions, we have considered the matters we are required to consider under section 15 of the IPART Act (see Appendix A). As part of our review process, we have undertaken an extensive investigation and public consultation, including:

- inviting Sydney Water to make a pricing proposal in June 2015 detailing its prices, financial and performance data on the future capital and operating expenditure necessary to maintain service levels and respond to regulatory demands
- released an Issues Paper in September 2015 to respond to Sydney Water's pricing proposal and assist stakeholders identify and understand the key issues for review
- invited stakeholders to make submissions on the Issues Paper and Sydney Water's proposal by October 2015[29]

[28] There are also other constraints; for example, the water level in Tallowa Dam has to be within 1 metre of the top water level of the dam. NSW Government, *2010 Metropolitan Water Plan*, August 2010, p 24.

[29] A total of 50 written submissions were received from other interested parties.

- held a public hearing in November 2015 to discuss a wide range of issues raised by Sydney Water and other stakeholders
- engaged independent consultants to review Sydney Water's:
  - proposed efficiency carryover mechanism and a modified efficiency carryover mechanism that we proposed in our Issues Paper - Cambridge Economic Policy Associates Pty Ltd (CEPA)[30]
  - capital expenditure, asset planning and operating expenditure proposals - WS Atkins International (Australia) Limited, in association with Cardno (Queensland) Pty (Atkins Cardno)[31]
  - forecast water demand and customer numbers - Jacobs Australia Pty Limited (Jacobs)[32]
  - proposed prices for its trade waste services and range of ancillary and miscellaneous services - Synergies Economic Consulting (Synergies)[33]
- released this Draft Report and Draft Determination and invited stakeholders to make submissions in response to the drafts.

Our Issues Paper, stakeholder submissions, the transcript from the public hearing, and consultants' reports are available on our website (www.ipart.nsw.gov.au).

1.5 Structure of this Draft Report

The rest of this Draft Report provides more information about our draft decisions, and Sydney Water's pricing proposal:

- Chapter 2 outlines the changes we are making to how we regulated Sydney Water to encourage it to become more efficient and give Sydney Water greater pricing flexibility to respond to their customers' preferences.
- Chapters 3 to 10 discuss the issues related to the steps in our approach for setting water, wastewater, stormwater and other prices:
  - Chapter 3 covers the length of the determination period and the Sydney Water's notional annual revenue requirement
  - Chapters 4 to 6 focus on the key inputs for applying this approach, including the allowance for operating expenditure, prudent and efficient capital expenditure, and the allowances for a return on capital, regulatory depreciation and tax

30 CEPA's final report was received in February 2016 and published on our website in March 2016.
31 Atkins Cardno's final report was received in December 2015 and published on our website in February 2016.
32 Jacobs' final report was received in January 2016. Much of the supplementary information on demand used in its analysis was provided to us by Sydney Water on a commercial-in-confidence basis. Therefore, we have not published this report on our website.
33 Synergies' final report was received in December 2015. Much of the supplementary information on costs used in its analysis was provided to us by Sydney Water on a commercial-in-confidence basis. Therefore, we have not published this report on our website.

  - Chapters 7 covers the forecast sales volumes and customer numbers
  - Chapters 8 and 9 explain the decisions on price structures and set out price levels
  - Chapter 10 outlines our discussion of recycled water.
- Chapter 11 assesses the implications of our pricing decisions on customers, Sydney Water, general inflation and the environment.

1.6 List of draft decisions and recommendations

Our draft decisions and draft recommendations are outlined in the chapters of this Draft Report. For convenience, they are also listed below. We invite comments on any or all of these draft decisions and recommendations or any other matter relevant to our review.

Form of regulation

1 We have decided to: 30
  - allow Sydney Water and large non-residential customers to opt-out of IPART's determined water and wastewater prices by voluntarily entering into unregulated pricing agreements, and 30
  - define large non-residential customers as stand-alone non-residential customers that have annualised water consumption greater than 7.3 ML. 30

2 We have decided to establish an efficiency carryover mechanism for Sydney Water. This mechanism: 37
  - applies to controllable operating expenditure from 2015-16 to 2018-19 37
  - ensures the business is able to retain permanent cost reductions for four years before they are passed on to customers through lower prices, and 37
  - allows the business to retain temporary over and under spends. 37

3 We have decided to maintain our current approach to cost pass-throughs which: 42
  - will continue to be considered on a case by case basis at each price review, and 42
  - requires cost pass-throughs to comply with the criteria outlined in Box 2.3 below, including having a clear trigger event and resulting efficient costs (or means of calculating the resulting efficient costs) specified in the price determination. 42

4 We have decided to work with regulated businesses in NSW and regulators in other jurisdictions to develop a performance benchmarking capability to inform future price reviews. 45

Length of determination

5 We have decided to adopt a 4-year determination period from 1 July 2016 to 30 June 2020. 47

Sydney Water's revenue requirement

6 We have decided to: 50

- set Sydney Water's notional revenue requirement and target revenue as shown in Table 3.1, and 50
- set the components of the target revenue as shown in Table 3.6. 50

Operating costs

7 We have decided to set the efficient level of Sydney Water's operating expenditure as shown in Table 4.1. 59

Bulk water pass-throughs

8 We have decided to: 68

- continue to enable Sydney Water to pass through into water service charges (after a 1-year lag) the difference between its actual and forecast SDP-related bulk water costs over the 2016 determination period 68
- apply the current cost pass-through mechanism in the first year of the 2016 Determination and pass through into 2016-17 water service charges the actual 2015-16 SDP costs incurred by Sydney Water above those included in 2015-16 prices, and 68
- introduce a pass through of the annual actual Shoalhaven transfer costs that Sydney Water incurs into the water service charges at a one year lag. 68

Capital expenditure

9 We have decided to set the prudent and efficient level of Sydney Water's capital expenditure to be included in the RAB as shown in Table 5.1 and Table 5.2. 72

Regulatory asset base

10 We have decided to: 86

- set the opening RAB at 1 July 2016 by rolling the RAB forward from 2011-12 to 2015-16 as shown in Table 6.1 86
- adopt the value of the RAB in each year of the 2016 Determination as shown in Table 6.2. 86

Asset disposals

11 We have decided to: 90

- deduct the regulatory value of actual and forecast asset disposals from the RAB, where the regulatory value is determined as: 90
  a. for significant sales of assets purchased before the RAB line-in-the-sand: Asset sales revenue x RAB/DRC at the time the RAB was established 90
  b. for significant sales of assets purchased post RAB line-in-the-sand: purchase price + capital expenditure – depreciation + indexation 90
  c. for significant asset write-offs: Determined on a case-by-case basis 90
  d. for non-significant write-offs: Zero unless determined by exception on a case- by-case basis 90
  e. for non-significant asset sales: Receipts from asset sales 90
- not to deduct the sale of the Central Workshops land parcel from Sydney Water's RAB. 90

Finance leases

12 We have decided to value Sydney Water's finance leased assets by: 93

- discounting all future principal and interest payments associated with each lease over the life of the lease agreement 93
- using the implied interest rate in each lease agreement as the discount rate 93
- adding $558.9 million to the RAB as the value of Sydney Water's assets subject to finance leases (instead of passing through finance lease payments as operating expenditure), and 93
- adding a further $18.7 million to the RAB as the capitalised value of Sydney Water's risk premium. 94

WACC

13 We have decided to: 96

- apply a real post-tax WACC of 4.8% for the purposes of calculating an appropriate rate of return on Sydney Water's assets, and 96
- set an allowance for return on capital as shown in Table 6.5 below. 96

Regulatory depreciation

14 We have decided to adopt: 99

- a straight-line depreciation method for the 2016 determination period 99

– new and existing asset lives as set out in Table 6.6, and 99

– asset lives for assets subject to finance leases as set out in Table 6.7. 99

Tax allowance

15 We have decided to: 102

– make no adjustment to the regulatory tax allowance for capital gains tax on land sales 102

– make no adjustment to the regulatory tax allowance for revenue from grants and cash capital contributions 102

– adopt Sydney Water's forecasts for assets free of charge, and 102

– adopt the regulatory tax allowance shown in Table 6.9 below. 102

Water sales and customer numbers

16 We have decided to: 109

– adopt Sydney Water's revised estimate of -0.264 for the price elasticity of demand for non-residential customers, for the purpose of forecasting water sales 109

– use a 25% reduction in both residential and non-residential elasticity estimates in forecasting water sales, to account for the perceived asymmetry in demand responses to price increases and price decreases, and 109

– adopt the residential and non-residential water demand forecasts in Table 7.3 for the purpose of setting Sydney Water's draft maximum water prices. 109

17 We have decided to adopt for the purpose of setting Sydney Water's draft maximum prices: 114

– the forecast residential customer numbers in Table 7.4, and 114

– the forecast non-residential customer numbers in Table 7.5. 114

18 We have decided to adopt the forecasts for wastewater chargeable volumes as shown in Table 7.6. 119

Demand volatility mechanism

19 We have decided to consider at the next determination of Sydney Water's prices: 120

– an adjustment to the revenue requirement and prices to address any over- or under-recovery of revenue over the 2016 determination period due to material differences between the level of water sales over the period and the forecast water sales used in making this determination: 120

a. unlike previous determinations, we have not specified a 'deadband' of water sales variability within which such an adjustment would not be considered 120

b. at the 2020 Determination, we will consider whether and how best to make a revenue adjustment based on the circumstances at the time. 120

Water usage charges

20 We have decided to: 124

- set Sydney Water's maximum water usage charge at $1.97 per kL in real terms over the 2016 determination period 124
- pass through the per kL cost of desalinated water into Sydney Water's water usage charges if the Sydney Desalination Plant (SDP) is operating and supplying water to Sydney Water: 124
  a. the water usage charge is increased by $0.12 per kL in real terms over the 2016 determination period if SDP is operating 124
  b. this uplift to the water usage charge is triggered if SDP is required to operate the plant under the conditions of its licence or operational approval (as in force at the relevant time) granted under the *Water Industry Competition Act 2006*. 124

Wastewater usage charges

21 We have decided to: 128

- set a maximum non-residential wastewater usage charge of $1.10 per kL in real terms over the 2016 determination period 128
- reduce the non-residential discharge allowance from 300 kL to 150 kL per year, with a 50 kL per year transition from 2016-17 onwards, and 128
- not introduce an explicit residential wastewater usage charge. 128

Water and wastewater service charges

22 We have decided to: 131

- set water and wastewater service charges for residential and non-residential customers on a 20mm meter equivalent basis, where residential dwellings are deemed to each be one 20mm meter equivalent customer 131
- separate the implicit connection and usage components of the wastewater service charge, and 131
- apply a 75% discharge factor to the connection portion of the residential wastewater service charge. 131

23 We have decided to 135
- set the maximum water service charges as shown in Table 8.4, and 135
- set the maximum wastewater service charges as shown in Table 8.5. 135

Joint service arrangements

24 We have decided to: 139
- maintain the current charging regime for non-residential multi-premise joint service customers, and 139
- specify in the 2016 Determination that all instances of joint services should be considered a form of multi-premise customer. 139

Dual occupancies

25 We have decided to charge dual occupancies based on the number of meters connected to Sydney Water's network. 141

Stormwater drainage charges

26 We have decided to: 142
- set stormwater drainage charges on a constrained area basis, as outlined in Table 8.6 142
- introduce a low-impact customer category for residential customers equal to the charge for apartments, and 142
- set the maximum stormwater drainage charges outlined in Table 8.7. 142

Trade waste charges

27 We have decided to: 149
- set the maximum trade waste prices as listed in Appendix K, which include an allowance for corporate overheads 149
- amend the trade waste pricing principles to clarify that charges should recover efficient costs, including corporate overheads 149
- deduct the trade waste revenue as set out in Table 9.1 from the notional revenue requirement 149
- change the trade waste price structure as proposed by Sydney Water as follows: 149
  a. reclassify shopping centres with centralised onsite pre-treatment as industrial customers (under Risk Index 6), and 149
  b. include "pre-treatment not maintained in accordance with requirements" as an explicit commercial activity code. 149

Miscellaneous and ancillary charges

28 We have decided to: 152

- set the maximum prices for miscellaneous and ancillary services to apply from 1 July 2016 as set out in Appendix L 152
- not regulate the credit card payment fee 152
- not set maximum prices for hot water metering services at this stage, and 152
- deduct the revenue from miscellaneous and ancillary services from the notional revenue requirement as set out in Table 9.3. 152

Rouse Hill charges

29 We have decided to: 161

- set the Rouse Hill land charge at $432.89 per year in real terms 161
  a. apply the land charge, for a period of five years, to new properties that connect (or have connected) to Sydney Water's water system between 1 July 2012 and 30 June 2026 161
  b. set the land charge to recover 50% of Sydney Water's efficient capital costs in Rouse Hill over 2012-13 to 2025-26, with the remaining 50% to be recovered through the wastewater RAB 161
- maintain the Rouse Hill stormwater drainage charge at: 161
  a. $139.65 per year in real terms for residential properties and non-residential properties less than or equal to 1000m^2 161
  b. $139.65 per year x land area in m^2/1000 in real terms for non-residential properties greater than 1000m^2 161
- include the Rouse Hill Area map in the 2016 Determination. 161

Unfiltered and unmetered water charges

30 We have decided to set the maximum unfiltered usage charge at the potable water usage charge less $0.30 per kL. 166

31 We have decided to maintain the current approach to charging unmetered properties, which includes: 166

- a water service charge equal to the residential service charge, and 166
- 180 kL of deemed water usage per year (ie, 180 kL x the water usage price). 166

Minor service extensions

32 We have decided to maintain the existing methodology for setting minor service extension charges, with the exception of: 167

- updating the discount rate to be based on Sydney Water's pre-tax weighted average cost of capital. 167

Recycled water charges

33 We have decided to: 170

- defer regulation of recycled water prices for all schemes apart from Rouse Hill until we have completed a broader review of our approach to regulating recycled water prices 170
- set a maximum usage charge of $1.77 per kL in real terms over the 2016 determination period for recycled water supplied as part of the Rouse Hill recycled water scheme, and 170
- reallocate a proportional share of Sydney Water's corporate costs from its water and wastewater business to its recycled water business. 170

Rosehill (Camellia) recycled water scheme – draft recommendation

1 We recommend that, in light of the changes since the scheme was established, the ongoing economic case for the Rosehill (Camellia) recycled water scheme be reassessed. 57

Late payment and dishonoured or declined payment fees – draft recommendation

2 In accordance with our Terms of Reference, we: 158

- recommend the maximum price for the existing dishonoured or declined payment fee as set out in Table 9.4, and 158
- specify a late payment fee as set out in Table 9.4 and the terms and conditions in charging that fee as set out in Appendix M. 158

2 Form of regulation

Form of regulation refers to the collection of methods used to regulate prices for monopoly services. These methods include how costs are assessed, whether prices are directly or indirectly controlled, how differences between forecast and actual demand are handled, and how performance gains are incentivised.

We are making changes to the form of regulation for Sydney Water (as well as the other metropolitan water utilities we regulate).[34] These changes are aimed at more effective regulation that encourages businesses to become more efficient and gives them flexibility to better respond to customer preferences. We consider these changes will enhance the long term interests of all stakeholders, in particular Sydney Water's customers.

In this chapter, we begin by setting out the framework and questions we asked when considering options to change the form of regulation. We then report and discuss our decisions on:

- **Introducing pricing flexibility**: this will allow businesses to tailor their prices and services to better meet individual customer preferences.
- **Introducing an efficiency carryover mechanism (ECM)**: this will remove the incentive for businesses to delay cost savings, which means customers benefit, through lower prices, sooner.
- **Maintaining our current approach to cost pass-throughs**: so that businesses continue to accept risks that they are in the best position to manage.
- **Making greater use of performance benchmarking**: this will improve our ability to assess business' costs while encouraging them to improve their performance.

[34] We are also currently reviewing prices for Hunter Water Corporation, WaterNSW (Greater Sydney) and DPI Water. In 2016-17, we plan to review prices for Sydney Desalination Plant, WaterNSW (Rural), Gosford City Council and Wyong Water 2016-17. We are reviewing the form of regulation for these other utilities and making changes where appropriate.

2.1 Assessment framework

Sydney Water proposed changes to the form of regulation under the theme of 'modernising regulation'.[35] In particular, it proposed three specific changes to the form of regulation:

- a **weighted average price cap (WAPC)** to allow Sydney Water to vary the types and levels of tariffs it charges customers during the regulatory period[36]
- an **efficiency benefit sharing schemes (EBSS)** to increase and equalise the financial incentive to achieve efficiency savings during the regulatory period, and
- a **cost pass-through framework** to allow Sydney Water to pass through the cost of significant events and material cost changes to customers during the regulatory period.

In our Issues Paper, we outlined Sydney Water's proposals, provided preliminary responses, and asked targeted questions to stakeholders. We also set out our preliminary framework to assess options and make decisions.

Several stakeholders commented on the proposed changes to the form of regulation and how options should be assessed. For example:

- Sydney Water suggested IPART consider whether the options:[37]
  - promote the objectives of regulation (ie, efficiency, commercial sustainability, and protection of customers)
  - promote the objectives of the IPART Act (including efficiency, reasonable dividends, and delivery of specified service standards), and
  - demonstrate best practice principles of regulation (ie, transparent, accountable, proportionate, consistent, and targeted).
- The UTS Institute for Sustainable Futures commented that changes to the form of regulation, such as pricing flexibility, should be considered in a more holistic context with wider stakeholder consultation.[38]
- The Public Interest Advocacy Centre (PIAC) stressed the importance of stakeholder consultation to ensure changes to the form of regulation uphold the interests of customers.[39]

35 Sydney Water pricing proposal to IPART, June 2015, pp 56-74.
36 'Regulatory period' means the period of the price determination. It is therefore also referred to as 'determination period'. Under our draft decision, the regulatory period (or determination period) for the 2016 Determination is the four years from 2016-17 to 2019-20.
37 Sydney Water submission to IPART Issues Paper, October 2015, pp 5-6.
38 UTS Institute for Sustainable Futures response to IPART Issues Paper, October 2015, p 13.
39 PIAC response to IPART Issues Paper, October 2015, p 11.

We have ensured this feedback is clearly reflected in our assessment framework. In assessing the options, we considered:

- **The potential benefits**: whether the options promote outcomes that are more consistent with competitive market outcomes including allocative, productive and dynamic efficiency; the efficient allocation of risk between the business and customers; and responsiveness to customer needs and preferences.
- **The potential costs:** how they could lead to a more complex, burdensome, and costly regulatory environment.
- **The potential risks**: how the options could result in limited benefits and/or unintended consequences due to market power, government ownership, and asymmetric information.

Box 2.1 How we assessed the options

When working through the options, we explored a range of questions including:

1. What is the problem with the current form of regulation that we are trying to address or solve? What are the potential benefits of solving this problem?
2. Does the proposed option solve the problem? Does it do anything else? How does it affect the overall form of regulation?
3. Is the option appropriate given the current circumstances in the sector (ie, market power, government ownership, and asymmetric information)?
4. What can we learn from experiences in other jurisdictions?
5. What do stakeholders have to say about the options?
6. Are there alternative options that solve the problem and involve lower risks and/or lower costs given the characteristics of the NSW urban water sector?
7. Which option promotes outcomes most in-line with competitive market outcomes and which option supports the ongoing structural reform process?
8. Which option is likely to present the largest net benefit to the sector and is likely to be in the best long term interests of customers?

2.2 Pricing flexibility

Our current form of regulation involves us setting price structures and maximum price levels for regulated services that apply for each year of the determination. In setting prices, we have recently adopted a 'propose respond' model for Sydney Water (as well as some of the other metropolitan utilities we regulate, including Hunter Water and WaterNSW (Greater Sydney)). This model allows the business to propose its own price structures and levels as a starting point. IPART then reviews the business's pricing proposal in making its price determination.

Sydney Water proposed a further move towards greater pricing flexibility in the 2016 determination period. The proposal would allow Sydney Water to vary prices **during** the period for different customer groups.[40]

Specifically, Sydney Water proposed increasing pricing flexibility through a WAPC. In our Issues Paper, we said that we are open to greater pricing flexibility for large non-residential customers and raised an alternative option of allowing large non-residential customers a choice to opt-out of regulated prices and opt-into an alternative price offered by Sydney Water.

In response to our Issues Paper, Sydney Water supported limiting pricing flexibility to large non-residential customers at first, but did not support the option of allowing these customers a choice between regulated prices and alternative prices.[41]

IPART's draft decision

1 We have decided to:

- allow Sydney Water and large non-residential customers to opt-out of IPART's determined water and wastewater prices by voluntarily entering into unregulated pricing agreements, and
- define large non-residential customers as stand-alone non-residential customers that have annualised water consumption greater than 7.3 ML.

2.2.1 Reasons for draft decision

We support introducing pricing flexibility during the regulatory period, where it is likely to lead to more efficient prices and/or deliver value to customers. As such, we have decided to allow Sydney Water and large non-residential customers to enter **unregulated pricing agreements**.

Under this approach, the default is for the prices set by IPART to apply to Sydney Water's customers. Unregulated pricing agreements would only apply where Sydney Water and a large non-residential customer has agreed to opt-out of the prices set by IPART.

Therefore, we would continue to set maximum prices that would apply generally to all monopoly services. However, the determined prices would not apply to large non-residential customers that elect to opt-out of these prices by entering into a pricing agreement with Sydney Water for the term of that agreement (we discuss the implementation of this approach below).

40 Sydney Water pricing proposal to IPART, June 2015, pp 246-258.

41 On 19 January 2016, Sydney Water submitted its revised proposal for a WAPC. Sydney Water, Proposal for Pricing Flexibility, January 2015.

This form of pricing flexibility would allow Sydney Water to search for opportunities to uncover value for its customers by tailoring prices and potentially services to better meet their individual preferences as would occur in a competitive setting. It provides a strong incentive for Sydney Water to engage with customers in order to develop mutually beneficial price offers specifically targeted to each customer's preferences. This was one of Sydney Water's primary objectives for pricing flexibility.[42]

The main benefits of this approach is that it would provide Sydney Water the flexibility to add value to customers while avoiding the potential for cross-subsidies and wealth transfers that might occur under a WAPC. This option relies on Sydney Water and its customers making informed decisions in their own self-interest. Therefore, it carries lower risk of adverse outcomes for customers and does not require regulatory controls on the degree of pricing flexibility such as the level of prices, the rate of price changes, or the size of bill impacts.

We provide some examples of how large non-residential customers and Sydney Water could mutually benefit from unregulated pricing arrangements.

Box 2.2 Examples of situations where an unregulated pricing agreement might be entered into

The following examples are designed to show the types of situations where it might be in both Sydney Water's and customers' interests to enter into an unregulated pricing agreement.

1. A seasonal business that would prefer their water bill to better match their level of business activity through the year. This business might be willing to pay a premium for a lower fixed charge and a higher variable charge.
2. A business subject to large fluctuations in its water usage but relatively flat revenue may prefer more bill certainty. This business may be willing to pay a premium for a higher fixed charge and lower variable charge. Alternatively, this business might be willing to pay a smaller premium for a tiered usage charge to partially reduce its bill fluctuations.
3. A business may require a lower or higher level of service than is specified in the customer contract. This customer could negotiate with Sydney Water and agree on an alternative arrangement that is mutually beneficial.

[42] For example, Sydney Water's pricing proposal discusses that in a competitive market, successful businesses must understand what customers value and supply service levels and prices that match these preferences. Sydney Water pricing proposal to IPART, June 2015, p xviii. Sydney Water's pricing proposal also discusses how pricing flexibility provides the opportunity to develop a suite of tariff options, and gives customers the freedom to choose tariffs that suit them best. Sydney Water pricing proposal to IPART, June 2015, p 247.

On balance, we do not consider a WAPC presents the best option for additional pricing flexibility at this time. A risk with applying a WAPC in the absence of competition is that decisions to change prices are unilateral decisions that can create both winners and losers. Sydney Water acknowledged this risk and responded by proposing a set of pricing principles and indicating that it would seek agreement from 75% of affected customers before proceeding with a price change under the WAPC.[43] While these measures would limit the risk, there remain 25% of affected customers that could be made worse off under a WAPC. Unregulated pricing agreements offer customers the opportunity to voluntarily enter agreements that benefit them.

Other considerations with a WAPC include:

- A WAPC represents a move to lighter handed regulation. Given the relative lack of competitive forces in the urban water sector at this time, a WAPC would require strong regulatory controls including pricing principles and side constraints. There is a risk that these regulatory measures will limit, but not prevent, unintended consequences. There is also a risk that these regulatory controls will limit the extent of pricing flexibility which we consider would be counterproductive.
- A WAPC could be used by a business to set less efficient prices in order to generate excess profits if price changes are not tightly controlled by the regulator. The AER discussed this problem as a reason for its move away from WAPCs to revenue caps.[44]
- A WAPC could make some customers worse-off.

Few stakeholders commented explicitly on the WAPC. Those that did comment did not support its introduction.[45] However, some stakeholders supported flexible pricing in principle.[46]

If the purpose of additional pricing flexibility is to allow businesses to respond to their customers' preferences, as outlined in Sydney Water's pricing proposal, a more targeted, less restrictive, and less risky option is to allow businesses and their customers to voluntarily enter into unregulated pricing agreements.

43 Sydney Water proposal for pricing flexibility, January 2016, p 7.

44 AER, *Stage 1 Framework and Approach – NSW electricity distribution network service providers*, March 2013, pp 48-49.

45 See, for example, Permeate Partners submission to IPART Issues Paper, October 2015, p 1; Public Interest Advocacy Centre submission to IPART Issues Paper, October 2015, p 12.

46 See, for example, Institute for Sustainable Futures submission to IPART Issues Paper, October 2015, p, 3; Council of the City of Sydney submission to IPART Issues Paper, October 2015, p 3; Energy & Water Ombudsman NSW submission to IPART Issues Paper, October 2015, p 1.

We note that there are risks to unregulated pricing agreements. The main risk is that customers may enter agreements that are not in their best interests. If this occurs, there is no express provision in the legislative framework that would allow them to change their mind and opt back in to regulated prices. We have mitigated this risk by limiting the option of unregulated pricing agreements to large non-residential customers (we discuss our definition of large non-residential customers below).

Coverage of unregulated pricing agreements

We are proposing that Sydney Water and large non-residential customers should be able to opt out of IPART's regulated prices for water and wastewater services only. We have excluded trade waste, stormwater and miscellaneous charges from unregulated pricing agreements at this stage. We are interested in stakeholder feedback on what services should and should not be able to be included in unregulated pricing agreements.

We have limited the option of negotiating unregulated pricing agreements to large non-residential customers. This is because these large businesses are likely to have experience negotiating commercial agreements. This option would be available at any time during the regulatory period.

EWON supported the introduction of flexible pricing for large non-residential customers as it would better match pricing to the usage profile of large businesses, provide customer choice, and offer incentives to encourage efficient usage. It did not support the extension of flexible pricing to residential customers until at least advanced metering technology is in place to facilitate a shift to flexible pricing.[47]

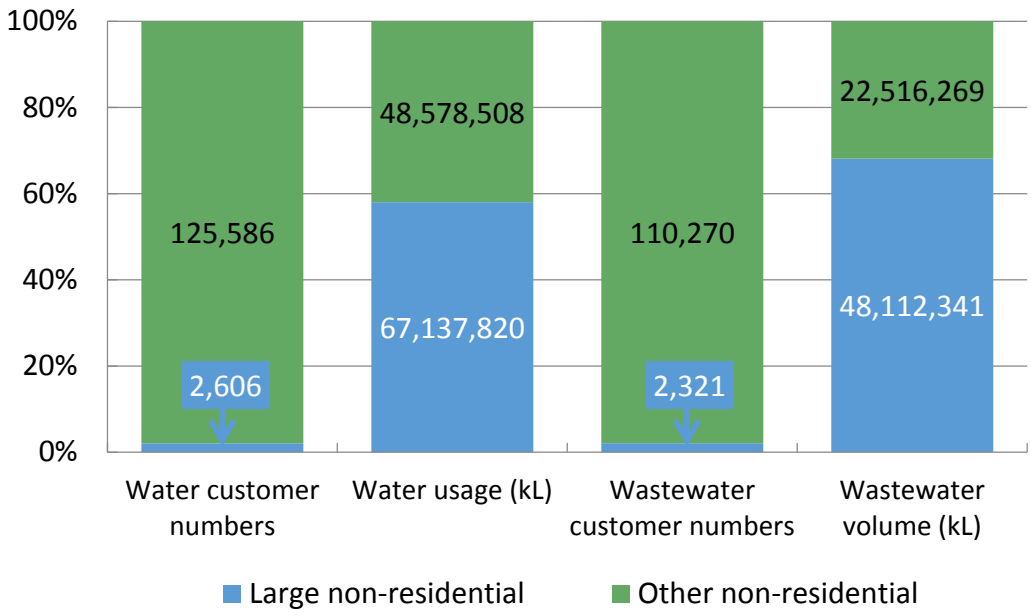
We have defined large non-residential customers as non-residential customers:

- that are standalone water or water and wastewater customers (ie, not customers that share a connection with other customers), and
- that have annualised metered water consumption greater than 7.3 ML (ie, water consumption greater than 20 kL per day on average).

Large non-residential customers would need to meet this definition in order to enter an unregulated pricing agreement with Sydney Water. We note that this definition covers a small portion of Sydney Water's non-residential customers but applies to a large portion of non-residential water usage and wastewater volumes. This is shown in Figure 2.1.

47 EWON response to IPART Issues Paper – Sydney Water, October 2015, p 1.

Figure 2.1 Large non-residential customers as a share of total non-residential customers (2014-15)



Note: The disparity between water and wastewater customer numbers is because not all water customers are wastewater customers.

Data source: Sydney Water, email received by IPART on 5 February 2016.

This definition is broadly in-line with the definition of large non-residential customers included in Sydney Water's proposal for pricing flexibility.[48] We are interested in stakeholder feedback on our definition of large non-residential customers and whether there is a more appropriate definition. Specifically, we are interested in views on whether there is merit in lowering the threshold to allow a larger share of non-residential customers the option of entering an unregulated pricing agreement with Sydney Water.

Implications for Sydney Water's revenue and costs

Pricing flexibility has the potential to benefit both customers and Sydney Water. The potential for mutual gains provides incentives for Sydney Water and customers to engage with each other, uncover value, and agree on unregulated prices that share this value between Sydney Water and customers. We consider these incentives should be maintained over time by allowing Sydney Water and customers to retain any gains they generate through unregulated pricing agreements.

Gains retained by Sydney Water should be retained regardless of whether they are the result of increases in revenue or decreases in costs. While this is relatively straightforward for changes in revenue (additional revenue is automatically retained by the business), it can present challenges for changes in costs (which may be difficult to go back and isolate from the business's wider cost base).

48 Sydney Water proposal for pricing flexibility, January 2016, pp 3-4.

To ensure that the regulated cost base and regulated prices continue to reflect the efficient costs of providing regulated services in the future, Sydney Water would be required to 'ring-fence' any changes in costs resulting from unregulated price agreements. This information would be assessed and factored into resetting expenditure allowances at the next price review. We will engage with Sydney Water between Draft and Final Report to establish how this information would be recorded and reported.

Implementation of unregulated pricing agreements

As noted above, if a large non-residential customer chooses to enter a pricing agreement with Sydney Water, the customer would no longer be subject to our determined prices for the term of that agreement. We have identified some key features and implications of unregulated pricing agreements that should be considered by both parties before entering into an agreement:

1. **The legislative framework does not allow for either party to opt back into regulated prices while the pricing agreement is in place.** For such a right to exist, it would have to be written into the pricing agreement or both parties would have to agree to terminate the pricing agreement.
2. **We do not specify what terms are to be included in a pricing agreement.** The terms of a pricing agreement are negotiated and/or accepted by both parties. This includes the duration of a pricing agreement (ie, end date) and conditions for terminating and cancelling pricing agreements (eg, whether Sydney Water's consent is required to terminate a pricing agreement).
3. **The terms of a pricing agreement apply.** If the pricing agreement contains terms that are inconsistent with any provisions contained in Sydney Water's customer contract, the provisions in the customer contract will cease to apply to the extent of any inconsistencies.
4. **If an agreement extends beyond a regulatory period, this could have implications for the prices contained within the pricing agreement.**
   a) Prices contained in pricing agreements will be valid as long as the option to opt out of determined prices applies in future regulatory periods. If a future IPART Tribunal removes this option from a determination, it could mean that prices contained in unregulated pricing agreements are no longer valid. Specifically, where the pricing agreement price is higher than IPART's determined maximum price, the pricing agreement price would be unlawful to the extent that it involves Sydney Water fixing a price above the determined maximum price.
   b) Where the pricing agreement price is lower than IPART's determined maximum price, the parties to the pricing agreement may disagree on which of those prices apply. For example, a party may claim that the pricing agreement price does not apply unless the NSW Treasurer's approval to fix the price below IPART's determined price is obtained (in accord with section 18(2) of the IPART Act).

c) We consider these risks could be mitigated, at least to some extent, by aligning the contract dates with Sydney Water's price determinations.

2.3 Efficiency carryover mechanism

Our current form of regulation allows businesses to keep profits resulting from cost savings made during the regulatory period. We set maximum prices for the regulatory period (eg, four years) based on our assessment of the business's efficient costs (or its revenue requirement) over that period. If the business can deliver its services at a lower cost than we allow for in setting maximum prices, then it retains a profit until we reassess the business's costs for the next regulatory period, at the next price review.

This feature of our form of regulation is referred to as 'incentive regulation' because it provides a financial reward to incentivise businesses to deliver cost savings. Cost savings are considered a good thing because, if they are permanent, they can be passed on to customers, through lower prices, in subsequent regulatory periods.

A shortcoming of the current approach is that, to the extent there are opportunities to make permanent efficiency savings, the financial reward for achieving these savings deteriorates over the regulatory period. That is, a saving made in year one of the regulatory period results in four years of additional profit. Whereas a saving made in year three of the regulatory period results in just two years of additional profits.

The consequence of this feature of our form of regulation is that there is an incentive to delay savings from the latter years of one regulatory period to the early years of the next regulatory period. Delaying efficiency savings is wasteful and it means customers have to wait longer before they benefit from lower prices (see Appendix E).

An efficiency carryover mechanism allows gains (or losses) to be held for a specified period of time, regardless of when they are achieved within the regulatory period. In its pricing proposal, Sydney Water proposed to solve this issue by introducing a symmetric efficiency benefit sharing scheme (EBSS) applying to controllable operating expenditure and a portion of capital expenditure.[49] WaterNSW also proposed an EBSS for operating expenditure for its Greater Sydney bulk water price determination.[50]

In our Issues Paper, we said that we were open to considering a modified version of Sydney Water's proposed operating expenditure EBSS and said that we were unlikely to adopt a capital expenditure EBSS at this time.[51]

49 Sydney Water pricing proposal to IPART, June 2015, pp 254-265.
50 WaterNSW pricing proposal to IPART, June 2015, p 63.
51 IPART, Issues Paper for Sydney Water Price Review, September 2015, pp 83, 89.

IPART's draft decision

2 We have decided to establish an efficiency carryover mechanism for Sydney Water. This mechanism:

- applies to controllable operating expenditure from 2015-16 to 2018-19
- ensures the business is able to retain permanent cost reductions for four years before they are passed on to customers through lower prices, and
- allows the business to retain temporary over and under spends.

2.3.1 Reasons for draft decision

Our intention is to apply an efficiency carryover mechanism (ECM) to controllable operating expenditure at the next price review that balances the incentives for permanent efficiency savings (ie, permanent cost reductions) over the regulatory period. The objective of the ECM is to equalise the incentive to make permanent efficiency savings regardless of when they are made. This is done by guaranteeing Sydney Water will be able to retain an efficiency saving for four years regardless of when it is made within the regulatory period.

The process for implementing the ECM at the next price review can be described in four steps:

1. Did Sydney Water **permanently** reduce costs below the allowance ($X)?
2. In which year was this saving achieved (n)?
3. Ensure the allowance in the next regulatory period reflects the saving = $X.
4. Carryover an efficiency benefit to the next regulatory period equal to $X*(n-1) to ensure Sydney Water retains the benefit for four years.[52]

We consider the ECM would improve the form of regulation by removing the incentive to delay cost savings. Accelerating the delivery of cost savings is in the long term interests of Sydney Water's customers.

[52] For example, if the business makes a $10 million (X=$10m) saving in year 3 (n=3) of a 4-year regulatory period, the ECM ensures the $10 million saving is factored into the expenditure allowance of the next regulatory period and it provides a carryover benefit of $10 million * (3-1) = $20 million in the next regulatory period. Adding this $20 million carryover benefit to the $20 million gained from under spending in years 3 and 4 of the first regulatory period means the total benefit to the business is $40 million (4 * $10m).

Our ECM is asymmetric in the sense that while it equalises the incentive to achieve permanent efficiency savings over time, it preserves all other features of the current form regulation. That is:

- Permanent cost increases are held by the business until the next price review where they are assessed by the regulator and, if determined to be efficient, passed on to customers (through price increases as a result of an increase in the business's operating expenditure allowance) – this provides an incentive to the business to avoid inefficient increases in costs because these will not be passed on to customers.
- Temporary over and under spends are retained by the business – this provides an incentive for the business to manage within its budget.

Sydney Water proposed a symmetric EBSS to equalise its incentive to achieve permanent efficiency savings during the regulatory period. This symmetric EBSS would reward under spends and penalise overspends on a 'symmetric' basis, such that positive and negative deviations in expenditure would be shared with customers.[53] We consider the symmetric EBSS is not in the best interests of customers. We found that Sydney Water's proposed mechanism goes further than addressing the identified problem. Our concern is that by passing overspends on to customers, the symmetric EBSS could weaken Sydney Water's incentive to control costs and that could possibly compromise the effectiveness of expenditure reviews in the future.

We engaged Cambridge Economic Policy Associates Pty Ltd (CEPA) to review both Sydney Water's proposed EBSS and a modified EBSS that we proposed in our Issues Paper. Our modified EBSS in our Issues Paper was identical to Sydney Water's proposed EBSS as long as actual expenditure remained below the regulatory allowance (the current form of regulation would apply to temporary and permanent overspends).[54] CEPA reviewed the options in light of experiences in other jurisdictions and the particular circumstances in NSW's urban water sector.[55]

Our ECM is based on CEPA's recommendation. It departs from our modified EBSS in that it would allow the business to retain both temporary over and under spends. We agree with Sydney Water that an asymmetric treatment of temporary over and under spends would penalise the business for legitimate

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53 We note that Sydney Water's proposed EBSS: was limited to around 60% of operating expenditure and 10% to 15% (later revised to about 9.5%) of capital expenditure; included a cap and collar to $50 million each for operating and capital expenditure carryover benefits and losses; maintained an ongoing role for efficiency audits; and a corresponding materiality threshold for Sydney Water's proposed cost pass-through methodology to ensure some cost increases would be captured by the EBSS and not immediately passed through to customers. Sydney Water pricing proposal to IPART, June 2015, pp 256-257.

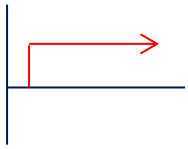
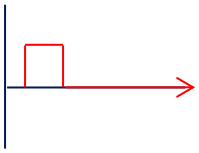
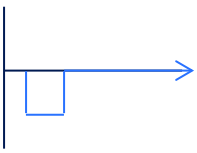
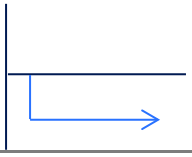
54 IPART, Issues Paper for Sydney Water Price Review, September 2015, pp 84-85.

55 CEPA, Advice on Efficiency Carryover Mechanisms, February 2016. Available online: http://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Metro_Pricing/Review_of_prices_for_Sydney_Water_Corporation_from_1_July_2016

year to year fluctuations in expenditure above and below the allowance and could place too much risk on the business.[56]

Table 2.1 compares how permanent and temporary over and under spends are treated relative to the current form of regulation for each of the mechanisms considered. We have highlighted in blue where the option differs from the current form of regulation.

Table 2.1 Comparison of proposed efficiency carry over mechanisms relative to the current form of regulation

Change in actual expenditure relative to the allowance	1. Current form of regulation	2. Sydney Water Proposed EBSS	3. IPART Modified EBSS (Issues Paper)	4. IPART's draft ECM, based on CEPA
1. Permanent increase in costs 	Retained by the business until IPART can assess at next price review.	Retained for 5 years – then passed on to customers.	Retained by the business until IPART can assess at next price review.	Retained by the business until IPART can assess at next price review.
2. Temporary increase in costs 	Retained by the business.	Passed on to customers after 5-year lag.	Retained by the business.	Retained by the business.
3. Temporary reduction in costs 	Retained by the business.	Passed on to customers after 5-year lag.	Passed on to customers after 4-year lag.	Retained by the business.
4. Permanent decrease in costs 	Retained by the business until IPART can assess at next price review.[a]	Retained for 5 years – then passed on to customers.	Retained for 4 years – then passed on to customers.	Retained for 4 years – then passed on to customers.

[a] That is, if the saving is made in year 1 it can be held for four years. If it is made in year 4, it can be held for one year. Note this assumes we know the actual year 4 expenditure when we reset the allowance for the next regulatory period. In reality, the business could make an unexpected saving in year 4 and retain if for five years, given the timing of our price reviews.

Source: IPART analysis.

[56] Sydney Water, response to IPART's Issues Paper, October 2015, pp 10-11.

We intend to apply the ECM to Sydney Water's controllable operating expenditure. This excludes bulk water purchase costs and would cover approximately 60% of Sydney Water's total operating expenditure for regulated services.

We have decided not to apply an ECM to capital expenditure, as proposed by Sydney Water. We agree with CEPA's finding[57] that the proposed application of the capex EBSS to just 9.5% of capex limits opportunities for substitutability between operating and capital expenditure.[58] Given the additional complexity associated with introducing an ECM for capital expenditure, the additional risk of unintended consequences (ie, incentivising the business to over forecast and to inefficiently defer capital expenditure), and the limited opportunities for efficient trade-offs between operating and capital expenditure, we have decided not to introduce a capex ECM at this time.

However, we acknowledge the potential value in encouraging efficient trade-offs between operating and capital expenditure.[59] We consider this to be a complex issue that requires a carefully considered response. We do not accept that operating and capital expenditure incentives are necessarily balanced under the current form of regulation. Therefore, we do not accept that applying the same ECM to both operating and capital expenditure will necessarily achieve the intended outcome of balancing these incentives.[60] We consider this issue could be explored further in the future as noted by CEPA.

Implementing the ECM at future price reviews and the role of the expenditure review

We are consulting on our proposed ECM as part of this draft report. If included in the final report, our expression of intent to adopt an ECM as outlined above does not bind a future Tribunal to adopt such a mechanism. Therefore, we cannot prevent a future Tribunal deciding not to adopt, remove, amend, or replace the ECM. We acknowledge that the effectiveness of incentive mechanisms rests on the confidence businesses have in them. However, we consider this is the businesses' opportunity to respond to the improved incentives, demonstrate the value of the ECM and make a case for its continued use in the future.

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57 CEPA, *Advice on Efficiency Carryover Mechanisms*, February 2016, p 26.

58 Sydney Water's proposal limited the capex EBSS to around 9.5% of capital expenditure which it considers to be more recurrent and where there are clear opportunities for substitution between operating and capital expenditure solutions. Sydney Water submission to IPART's Issues Paper, October 2015, pp 12-13.

59 That is, if an operating expenditure solution costs less than a capital expenditure solution, the business should have an incentive to choose the lowest cost option.

60 A key reason Ofwat moved away from separate operating and capital allowances (with separate ECMs in place) was that this approach was not resulting in efficient trade-offs between operating and capital expenditure. Ofwat, *Setting price controls for 2015-20 – Final methodology and expectations for companies' business plans*, July 2013, pp 18-19.

Importantly, a key feature of our ECM is that we retain discretion in resetting expenditure allowances at the start of each regulatory period. The role of the expenditure review is therefore maintained and we can continue to set expenditure allowances to reflect the best available information on efficient costs.

In preparation for the next price review, we would request the business populate and submit the ECM spreadsheet along with their pricing proposal. We would then use a populated ECM spreadsheet as a tool to inform the expenditure review. Our expectation is that by removing the incentive to delay savings and providing a tool for utilities to demonstrate their performance over the regulatory period, the ECM would improve the amount and quality of information available to us at the next round of expenditure reviews.

Unlike the modified EBSS outlined in our Issues Paper, which passes temporary under spends on to customers, the ECM does not remove the incentive businesses could have to under spend the allowance early in the determination and to increase spending towards the end of the determination.[61] We will continue to monitor historical expenditure patterns and factor this information into our expenditure review process.

Appendix E sets out the design of the ECM in greater detail and provides worked examples showing how the ECM would be applied in various scenarios.

2.4 Cost pass-throughs

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 up and down, some new costs will arise, and some expected costs will not occur. If there is no bias in the forecasts, we would expect the gains from under spends to offset the losses from overspends over the long term.

There are some exceptions to this. 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 cost pass-through for these costs. Cost pass-through mechanisms allow the efficient costs of uncertain and uncontrolled events that arise during the regulatory period to be passed through to customers within the regulatory period.

[61] The long term profit maximising strategy is to repeatedly under spend early in the regulatory period (in order to generate excess returns) and increase spending towards the end of the regulatory period (to make a case for maintaining the expenditure allowance at higher levels at the next price determination).

A good example of this is the cost pass-through Sydney Water currently has for its Sydney Desalination Plant Pty Ltd (SDP) bulk water costs. If the SDP becomes operational, the additional costs Sydney Water incurs can be passed on. In this case, the trigger event (WaterNSW dam levels falling below 70%) is clearly defined in the conditions of SDP's licence and the resulting costs are clearly pre-determined and defined under SDP's price determination.[62]

Sydney Water is proposing a broader application of cost pass-throughs, beyond its bulk water costs, during the determination period.

IPART's draft decision

3 We have decided to maintain our current approach to cost pass-throughs which:

- will continue to be considered on a case by case basis at each price review, and
- requires cost pass-throughs to comply with the criteria outlined in Box 2.3 below, including having a clear trigger event and resulting efficient costs (or means of calculating the resulting efficient costs) specified in the price determination.

2.4.1 Reasons for our draft decision

We consider that cost pass-through mechanisms should only be applied in exceptional circumstances. Box 2.3 outlines the circumstances under which we consider cost pass-throughs should apply.

[62] In line with the NSW Government's Metropolitan Water Plan, SDP is required as part of its licence to operate at full production capacity and supply desalinated water to Sydney Water's area of operations when total WaterNSW dam storage level is below 70% and will continue to do so until the total dam storage level reaches 80%. The cost pass-through mechanism allows Sydney Water to pass the resulting SDP costs on to customers through its water service charges. NSW Government, *2010 Metropolitan Water Plan*, August 2010, p 36.

Box 2.3 Circumstances when cost pass-through mechanism may apply

Cost pass-through mechanisms should only be applied in situations where:

- There is a trigger event (to activate the cost pass-through), which can be clearly defined and identified in the price determination.
- 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]
- The resulting cost is assessed to exceed a materiality threshold.
- The regulated business cannot influence the likelihood of the trigger event or the resulting cost.
- The mechanism is symmetric in that it applies equally to both cost increases and cost decreases (in cases where the risk can result in both cost increases and cost decreases).
- It is clear that the cost pass-through will result in prices that better reflect the efficient cost of service.

a Under the IPART Act, the costs to be passed through must be specified in the price determination.

We currently include a cost pass-through mechanism under Sydney Water's price determination that allows Sydney Water to pass-through costs it incurs if SDP is in operation. This is a good example of a cost pass-through mechanism that meets the criteria set out in Box 2.3.

For the 2016 determination period, we have decided to maintain the cost pass-through mechanism included in the 2012 Determination (with the exception that SDP's additional variable costs are passed through to customers in the water usage charge as they are incurred).[63] We are also introducing a service charge cost pass-through mechanism to compensate Sydney Water for actual bulk water costs incurred from WaterNSW for transfers from Shoalhaven (bulk water pass-through costs are outlined in Chapter 4).

We consider our limited application of cost pass-throughs is working effectively at the moment. Under the current form of regulation, risk is shared between regulated businesses and customers to minimise the likelihood and cost of downside risk and maximise the likelihood and benefits of upside risk.

Sydney Water clarified its proposed framework for a broader application of cost pass-through mechanisms, noting that its proposed framework includes both cost pass-through mechanisms for uncertain events as well as cost contingency schemes for material changes in project costs.[64] While this clarification makes the proposal clearer, it does not affect the reasons we have for maintaining the current approach for passing through costs during the determination.

63 Sydney Water pricing proposal to IPART, June 2015, p 241.
64 Sydney Water submission to IPART Issues Paper, October 2015, p 25.

In particular, we do not consider there is a case to broaden the application of cost pass-throughs for the following reasons:

- It is efficient for the business to be at least partially exposed to risks that it has some ability to control or influence. This provides the business with an incentive to minimise the likelihood and cost of downside risk and maximise the likelihood and benefits of upside risk.
- It is 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 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.
- The current form of regulation accommodates the risk of a major event (ie, 'shipwreck'), such as a natural disaster as it allows the business to seek an early price determination if a major event or change to its operating environment occurs.
- Due to asymmetric information between the business and the regulator, a broader application of cost pass-through mechanisms could be used to retain upside risk and pass downside risk onto customers. This may not result in a net benefit to customers in the long run.

2.5 Performance benchmarking

Our current form of regulation makes some use of benchmarking in assessing business' performance during the expenditure review.

We have also undertaken performance benchmarking work in the urban water and transport sectors. For example, in 2009 we were asked by the NSW Government to review the productivity of selected State-Owned Corporations (SOCs).[65] More recently, as part of our current review into public transport fares, we published an information paper on the total factor productivity of Sydney's rail network.[66]

In our Issues Paper, we indicated our intention to make greater use of performance benchmarking of urban water utilities in NSW.[67] In response to our Issues Paper, Sydney Water commented that it supports greater use of performance benchmarking provided benchmarking results are put in context by qualitative factors that could influence the results. For example, Sydney Water considers that quantitative benchmarking analysis, if carefully conducted and used, can improve the transparency and predictability of regulatory assessments of allowed costs and strengthen the incentive to improve efficiency and disclose efficient costs.[68]

65 IPART, *Review of the productivity of state owned corporations - Final Report*, July 2010.
66 IPART, *Information Paper 13 – Total Factor Productivity Sydney's rail network*, December 2015.
67 IPART, Issues Paper for Sydney Water Price Review, September 2015, pp 80-81.
68 Sydney Water submission to Issues Paper, October 2015, pp 29-30.

Draft decision

4 We have decided to work with regulated businesses in NSW and regulators in other jurisdictions to develop a performance benchmarking capability to inform future price reviews.

2.5.1 Reasons for our draft decision

In a competitive market, firms are continually benchmarked against each other by their customers. Customers will gravitate towards strong performers that are offering value for money and away from poor performers that are not offering value for money. These competitive forces drive businesses to improve. In the absence of competition, there is an opportunity for the regulator to simulate these competitive forces by undertaking benchmarking.

There are several benefits to performance benchmarking:

- It will help inform our expenditure reviews.
- It will help businesses demonstrate their performance.
- It will simulate competitive forces and help drive businesses to improve.

Benchmarking urban water businesses in NSW is challenging for a number of reasons - there are relatively few water businesses and each varies significantly in size and scope of operations. However, we consider the potential value in benchmarking justifies us finding solutions to these challenges and developing a performance benchmarking capability.

There are several approaches to performance benchmarking that we intend to consider and develop, including:

- **Cost driver and activity benchmarking.** This approach analyses and compares specific cost drivers (eg, labour expenses) and activities (eg, IT and billing systems) against other businesses. Some functions (eg, billing) are general enough to be compared across businesses in different sectors.
- **Productivity index analysis.** This approach allows relatively small samples of firms to be benchmarked against each other. This is relevant in NSW where there are few urban water utilities. This approach also allows analysis of changes in a business's own productivity over time.
- **Efficiency frontier analysis.** This approach involves measuring a business's efficiency relative to an efficiency frontier, where the frontier represents the most efficient performance, across a range of measures, from a sample of comparable businesses.

There are opportunities to benefit from the benchmarking capabilities that have already been developed in other jurisdictions. For example, the Essential Services Commission (ESC) in Victoria has extensive experience in benchmarking urban water utilities.[69] Ofwat in the UK and the AER in Australia have also developed and applied benchmarking methodologies, which we can learn from. There may also be opportunities to collaborate with regulators in other jurisdictions to broaden the set of comparator utilities included in comprehensive benchmarking exercises.[70]

We note that the success of a performance benchmarking program depends significantly on the extent of involvement and buy-in from the utilities. A major challenge will be developing and refining data sets for the regulated businesses.

However, we consider benchmarking complementary to potential further changes in the form of regulation, as is the case in the UK. Developing datasets by business function could also facilitate a future move towards component pricing, which would make costs more transparent, assist in performance comparisons, and could open the sector up to greater competition.

69 For example: ESC, Victorian Urban Water Utility Benchmarking – prepared by Economic Insights, July 2014. Available online: http://www.esc.vic.gov.au/Water/Relevant-papers-and-submissions-prepared-by-the-Wa/2014-Study-into-the-productivity-of-water-business/Victorian-Urban-Water-Utility-Benchmarking-prepare.

70 Note that this collaboration would extend the work already undertaken and published through the national performance report (http://www.bom.gov.au/water/npr/).

3 Length of determination period and revenue requirement

The first step in our approach for determining prices is to decide on the length of the determination period and the approach for calculating the revenue requirement over this period. This chapter outlines our draft decisions on each of these issues.

3.1 Length of the determination period

Draft decision

5 We have decided to adopt a 4-year determination period from 1 July 2016 to 30 June 2020.

3.1.1 Reasons for our draft decision

We have accepted Sydney Water's proposal for a 4-year determination period from 1 July 2016 to 30 June 2020. In making our draft decision we considered the following issues.

- **The confidence we can place in the utility's forecasts.** We consider a 4-year Determination gives sufficient confidence in our forecasts of capital and operating expenditure. We have less confidence in the detailed expenditure forecasts beyond June 2020.
- **The risk of structural changes in the industry.** A 4-year determination period balances the risk of structural change in the industry. We consider that significant structural change is unlikely in the next four years. However, the number of utilities operating under the *Water Industry Competition Act 2006* (WIC Act) is growing, showing that the industry is potentially changing.
- **The need for price flexibility and incentives to increase efficiency.** We consider that a 4-year Determination provides sufficient incentives to achieve efficiencies, while allowing for a timely reset of prices.
- **The need for regulatory certainty and financial stability**. A 4-year Determination generally provides sufficient regulatory certainty, while balancing financial stability.

- **The benefits of aligning the determination with the term of the operating licence**. Sydney Water's operating licence is due to expire on 30 June 2020. Aligning the operating licence and price reviews will ensure overlapping issues can be treated consistently.

Sydney Water supported maintaining a 4-year determination period for similar reasons. In particular, it noted that:[71]

- It would provide an opportunity to align the next price review with the next review of its Operating Licence, scheduled for 2020.
- There are practical constraints that prevent a longer determination period from being applied from 2016. In particular, there is insufficient time to prepare the correct models, gather relevant data, and reassess forecasts accurately to support a longer determination period.[72]

We have also decided to set a 4-year determination period for WaterNSW (Greater Sydney). It is useful to align Sydney Water's and WaterNSW's price reviews, as WaterNSW's prices are a significant operating expenditure input into Sydney Water's prices.

Other stakeholders including the Institute for Sustainable Futures[73], Permeate Partners[74], Total Environment Centre (TEC)[75] and NSW Business Chamber[76] also supported a 4-year determination period.

3.2 Approach for calculating notional revenue requirement

The notional revenue requirement represents our view of the total efficient costs of providing Sydney Water's regulated services in each year of the determination period. In general, we set prices to recover this amount of revenue.

As for previous reviews, we have used a 'building block' method to calculate Sydney Water's revenue requirement. This involved determining, for each year of the determination period, an allowance for:

- **Operating expenditure,** which represents our estimate of the efficient level of Sydney Water's forecast operating, maintenance and administration costs.
- A **return on the assets** Sydney Water uses to provide its services. This amount represents our assessment of the opportunity cost of the capital invested in Sydney Water, and ensures that it can continue to make efficient capital investments in the future. To calculate this amount, we need to decide on the efficient and prudent levels of Sydney Water's past and forecast capital

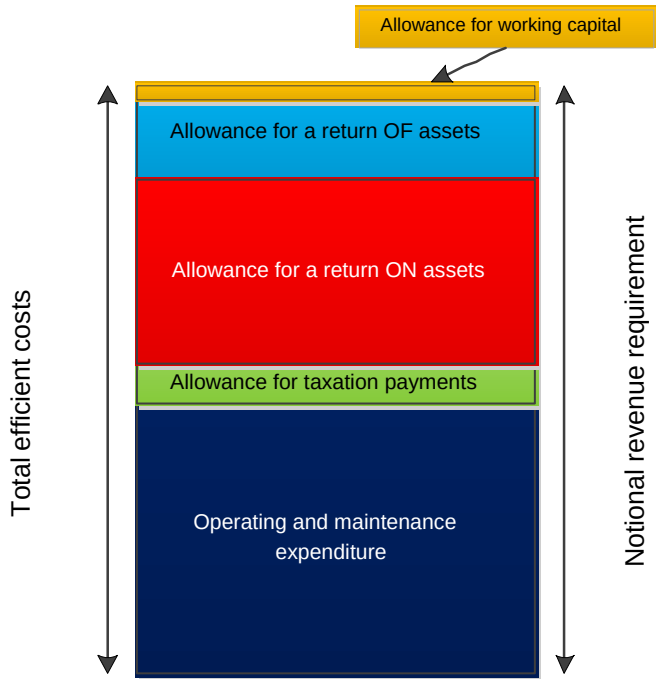
71 Sydney Water pricing proposal to IPART, June 2015, p 231.
72 We note that Sydney Water's pricing proposal only includes prices to 2019-20.
73 Institute for Sustainable Futures UTS submission to IPART Issues Paper, October 2015, pp 2-4.
74 Permeate Partners submission to IPART Issues Paper, October 2015, p 1.
75 Total Environment Centre submission to IPART Issues Paper, October 2015, p 2.
76 NSW Business Chamber submission to IPART Issues Paper, October 2015, p 1.

expenditure, the value of Sydney Water's regulatory asset base (RAB), and the appropriate weighted average cost of capital (WACC).

- A **return of those assets (regulatory depreciation).** This allowance recognises that through the provision of services to customers, a utility's capital infrastructure will wear out over time, and therefore revenue must recover the cost of maintaining the RAB. To calculate this allowance, we need to decide on the appropriate asset lives and depreciation method.
- An **allowance for meeting tax obligations**. We use a real post-tax WACC to calculate the allowances of a return on assets and regulatory depreciation, and calculate the allowance for tax as a separate cost block. We consider this method accurately estimates the tax liability for a comparable commercial business.
- An **allowance for working capital**, which represents the holding cost of net current assets.

The sum of these allowances is the notional revenue requirement (see Figure 3.1).

Figure 3.1 Building block approach



Once we have calculated Sydney Water's notional revenue requirement, we decided on the approach we would use to convert this amount into prices. This involved deciding on the target revenue for each year – that is, the actual revenue we expect Sydney Water to generate from prices and charges for that year. To make this decision, we considered 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 Sydney Water and its customers.

The section below summarises our draft findings and decisions on Sydney Water's revenue requirements. Chapters 4 to 6 discuss our draft findings on the individual building-blocks of the notional revenue requirement in detail.

3.3 Sydney Water's revenue requirements

Draft decision

6 We have decided to:

- set Sydney Water's notional revenue requirement and target revenue as shown in Table 3.1, and
- set the components of the target revenue as shown in Table 3.6.

Table 3.1 Draft notional and target revenue requirement ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20
IPART draft decision				
Operating expenditure	1,239	1,233	1,220	1,215
Return on assets	285	302	319	334
Regulatory depreciation	773	788	801	810
Return on working capital	6	6	7	7
Tax allowance	55	56	53	58
Total notional revenue requirement	**2,358**	**2,385**	**2,399**	**2,425**
Target revenue	2,350	2,378	2,406	2,435
Rate of return[a]	4.8%	4.8%	4.8%	4.9%

[a] Effective real post-tax rate of return. We set target revenue to be NPV neutral with the notional revenue requirement over the 4-year determination period. In some years, target revenue is higher than the notional revenue requirement, and in some years lower. As such, the predicted rate of return varies slightly from the WACC of 4.8% from year to year.

Note: Totals may not add due to rounding.

Source: IPART calculations.

3.3.1 Reasons for our draft decisions

Comparison with Sydney Water's proposal

Our draft notional revenue requirement of $9,567 million is $118 million (1.2%) lower than Sydney Water's proposal over the four years of the 2016 determination period. The notional revenue requirement compared to Sydney Water's proposal is shown below in Table 3.2.

Table 3.2 Draft notional revenue requirement ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20	Total
IPART draft decision	2,358	2,385	2,399	2,425	9,567
Sydney Water proposed	2,361	2,402	2,439	2,483	9,685
Difference	*-3*	*-17*	*-40*	*-58*	*-118*
Difference %	*-0.1%*	*-0.7%*	*-1.6%*	*-2.3%*	*-1.2%*

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

Source: Sydney Water's pricing proposal to IPART, June 2015, p 83.

Table 3.3 below compares each of our building blocks with Sydney Water's proposal over the 2016 determination period. The main reasons for the difference are our draft decisions to:

- Lower operating expenditure (**-$95 million)** due to:
  - Greater ongoing efficiencies, driven by scope for further rationalisation and improved productivity arising from the implementation of an enterprise resource planning platform.
  - Lower bulk water costs from WaterNSW, partially offset by higher bulk water costs from SDP.[77]
- Higher return on capital (**+$63 million**) through:
  - a higher WACC of 4.8% compared with Sydney Water's proposed 4.6%
  - a higher RAB arising from a lower asset disposals program than Sydney Water originally included in its June pricing proposal, and
  - partially offset by a lower RAB arising from around $400 million less capital expenditure over four years than Sydney Water proposed.
- Lower return of capital (**-$50 million**) – mainly through lower capital expenditure than Sydney Water proposed.

[77] Sydney Water included a forecast reduction in SDP's regulated prices from 2017-18. We have based forecasts on SDP's prices to Sydney Water remaining constant in real terms at 2016-17 prices. Any change in prices arising from the 2017 SDP determination will be passed through to Sydney Water's customers. Customers' water service charges will be increased/reduced to account for the difference between what SDP actually charges Sydney Water and the SDP-related costs we have included in the bulk water-related operating expenditure.

- Lower tax allowance (**-$38 million**) – mainly due to making no allowance in the tax calculation for capital gains tax on disposed assets.
- Higher return on working capital (+**$2 million**) – mainly due to a higher WACC of 4.8% compared with Sydney Water's proposed 4.6%.

Table 3.3 IPART's draft and Sydney Water's proposed notional revenue requirement over the 2016 determination period ($millions, $2015-16)

	Total for 2016-17 to 2019-20			
Building block	**SWC proposed**	**IPART**	**Difference**	**Difference (%)**
Operating expenditure	5,002	4,908	-95	-1.9%
Return on assets	3,109	3,172	63	2.0%
Regulatory depreciation	1,289	1,239	-50	-3.8%
Return on working capital	24	26	2	9.4%
Tax	260	222	-38	-14.7%
Total	**9,685**	9,567	**-118**	**-1.2%**

Note: Totals may not add due to rounding.

Source: Sydney Water's pricing proposal to IPART, June 2015, p 83; IPART calculations.

Comparison with our 2012 determination

Our draft notional revenue requirement is also $576 million (5.7%) below what we used to set prices at the 2012 Determination. Table 3.4 below compares each of the building blocks between those we used to set prices at the 2012 Determination, and our draft decisions for the 2016 Determination.

Table 3.4 Comparison of IPART's draft notional revenue for the 2016 determination period with the 2012 determination period ($millions, $2015-16)

	4-year total			
Building block	**2012-16**	**2016-20**	**Difference**	**Difference (%)**
Operating expenditure	5,589	4,908	-682	-12.2%
Return on assets	3,335	3,172	-163	-4.9%
Regulatory depreciation	1,020	1,239	220	21.5%
Return on working capital	29	26	-3	-11.1%
Tax	170	222	52	30.6%
Total	**10,143**	9,567	**-576**	**-5.7%**

Note: Totals may not add due to rounding.

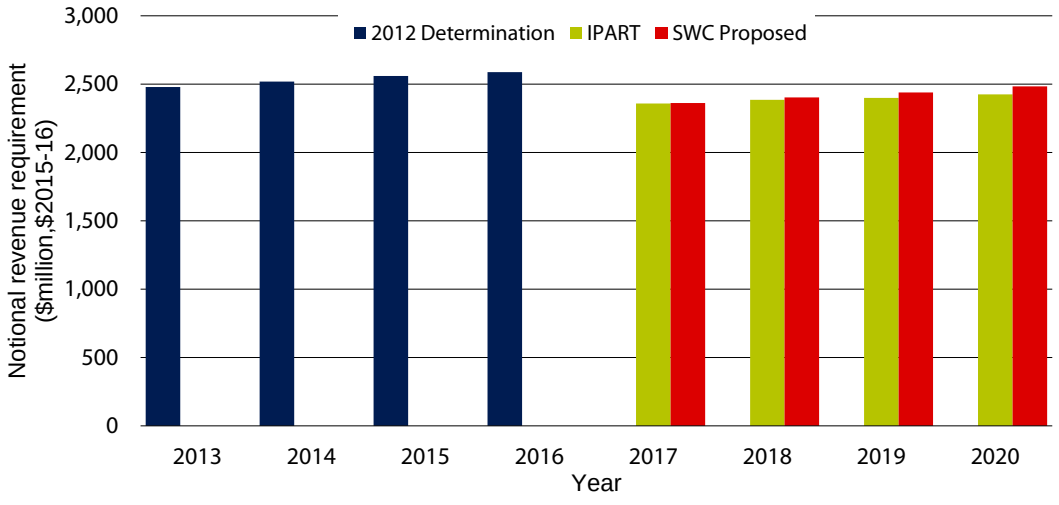
Source: IPART, Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016, June 2012, p 46; IPART calculations.

The overall reduction in the notional revenue requirement is due to our draft decisions relating to:

- Lower operating expenditure (**-$682 million)** due to:
  - efficiencies Sydney Water achieved over the 2012 determination period and our draft decision on further ongoing efficiencies over the 2016 determination period
  - the removal of capital and interest payments associated with Sydney Water's finance leases, and
  - lower bulk water costs from WaterNSW.
- Lower return on capital (**-$163 million**) through:
  - a reduction in the WACC from 5.6% to 4.8%, and
  - partially offset by a higher RAB arising from capital expenditure outstripping regulatory depreciation.
- Higher return of capital (+**$220 million**) from a higher RAB and greater expenditure on short lived assets.
- Higher tax allowance (**+$52 million**) – mainly due to higher forecast assets-free-of-charge (AFOC).
- Lower return on working capital (**-$3 million**) due to a lower WACC of 4.8% compared with our 2012 WACC of 5.6%.

Figure 3.2 below compares our draft decision on the notional revenue requirement with both Sydney Water's proposed and the notional revenue requirement we used to set prices over the 2012 determination period.

Figure 3.2 Comparison of 2016 draft notional revenue requirement with 2012 determination and Sydney Water's proposal ($millions, $2015-16)



Data source: Sydney Water pricing proposal to IPART, p 83; IPART analysis.

Our draft decisions and findings on each of Sydney Water's building blocks are discussed in more detail in chapters four, five and six.

Target revenue

We have decided to set target revenue that smooths customers' bills and prices over the 2016 determination period. That is, the price path provides an initial drop in prices in the first year and then constant prices thereafter for the following three years to achieve full cost recovery. For all services, target revenue is Net Present Value (NPV) neutral. This means that while the target revenue is higher than the notional revenue requirement in some years and lower in other years, customers are no better or worse off over the whole determination period (in present value terms).

This price path is consistent with Sydney Water's proposed target revenue and price path over the 2016 Determination (except for stormwater drainage prices).[78] Sydney Water sought to over-recover $12 million in notional stormwater drainage revenue in the 2016 determination period, and under-recover this revenue in the subsequent period, making its stormwater charges NPV-neutral over eight years (ie, the next two determination periods) rather than four (the 2016 determination period).[79] We do not consider this appropriate and outline our reasons in Chapter 9.

The total target revenue is $9,569 million over four years, which is $125 million lower than proposed by Sydney Water. The target revenue is shown below in Table 3.5. It results in full cost-recovery in NPV terms over the 4-year period, with a slight under-recovery in 2016-17 and 2017-18, and a slight over-recovery in 2018-19 and 2019-20.

78 Sydney Water pricing proposal to IPART, June 2015, p 80.
79 Sydney Water pricing proposal to IPART, June 2015, p 82.

Table 3.5 Comparison of IPART's draft notional revenue requirement and target revenue ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20	4-yr NPV
Notional revenue requirement (NRR)					
Water	1,120.6	1,130.6	1,135.5	1,144.8	4,054.4
Wastewater	1,205.4	1,221.0	1,229.2	1,244.4	4,383.1
Stormwater	32.0	33.5	34.4	35.6	121.0
NRR Total	**2,358.0**	**2,385.1**	**2,399.2**	**2,424.9**	**8,558.6**
Target revenue					
Water	1,114.1	1,128.1	1,138.6	1,152.2	4,054.4
Wastewater	1,202.9	1,216.3	1,233.1	1,248.6	4,383.1
Stormwater	33.2	33.6	34.0	34.4	121.0
Target revenue total	**2,350.2**	**2,378.0**	**2,405.7**	**2,435.2**	**8,558.6**
Difference $	*-7.7*	*-7.1*	*6.5*	*10.3*	*0.0*
Difference %	*-0.3%*	*-0.3%*	*0.3%*	*0.4%*	*0.0%*
Return on assets	4.8%	4.8%	4.8%	4.9%	4.8%

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

Components of the target revenue

Whilst most of Sydney Water's revenue is raised through water, wastewater and stormwater drainage charges, it also generates revenue through other charges. When we set prices, we first deduct the total revenue generated from these other sources, and then set usage and service charges for its major services to raise the balance of the target revenue.

The revenue components of Sydney Water's total target revenue are set out in Table 3.6 below.

Table 3.6 Draft components of target revenue ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20
Target revenue	**2,350**	**2,378**	**2,406**	**2,435**
Less				
Recycled water revenue[a]	*3.2*	*1.8*	*1.8*	*1.8*
Non-regulated revenue (including rental income)	*6.3*	*6.4*	*6.5*	*6.6*
Revenue from potable top-up[b]	*0.8*	*0.9*	*0.9*	*1.0*
Unfiltered water sales	*0.9*	*0.9*	*0.9*	*0.9*
Miscellaneous	*12.6*	*12.6*	*12.7*	*12.9*
Trade waste	*31.8*	*32.4*	*33.0*	*33.6*
Revenue from usage and service charges	**2,295**	**2,323**	**2,350**	**2,378**

a Revenue from recycled water sales in the Rosehill-Camellia scheme.
b Notional revenue from recycled water schemes using potable water to top-up supply.
Note: Totals may not add due to rounding.
Source: IPART calculations.

As part of this draft determination, we have made a number of draft decisions relating to the revenue components shown in the table above. Revenue from:

- unfiltered water sales, miscellaneous charges and trade waste fees and charges are discussed in Chapter 9, and
- potable top-up of recycled water is discussed in Chapter 10.

Revenue from non-regulated income and the Rosehill-Camellia recycled water scheme are discussed in the sections below.

Revenue from non-regulated sources

Historically, we have deducted non-regulated revenue[80] derived from regulated assets from the notional revenue requirement before prices are set. In the 2008 Sydney Water price review, we decided to deduct 50% of Sydney Water's rental income from the notional revenue requirement. This 50% sharing of rental income approach was adopted and maintained for water price reviews since the Sydney Water 2008 price review. The rationale for sharing the income is that it gives the agency a financial incentive to pursue more rental income where appropriate – while ensuring that 50% of the benefits will eventually flow on to customers through lower prices.

We have decided to maintain the above approach again for this price review. Table 3.7 below sets out Sydney Water's forecast rental revenue and the amount we deduct from target revenue.

Table 3.7 Sydney Water's rental income for the 2016 determination period ($'000, $2015-16)

	2016-17	2017-18	2018-19	2019-20
Total rental income	12,030	12,204	12,378	12,582
50% to be deducted	6,015	6,102	6,189	6,291

Source: Sydney Water Annual Information Return, September 2015.

In addition to rental income, Sydney Water also forecasts it will receive around $300,000 per annum from the NSW Government as a community service obligation (CSO) payment.[81] Our draft decision is to deduct all of this CSO income, shown in Table 3.8 below, from the target revenue.

[80] This is distinct from unregulated revenue, which is revenue that is received from an agency's unregulated businesses; that part of the business applied to producing products or services other than regulated business services.

[81] This CSO provides a subsidy for Sydney Water to continue the Blue Mountains septic pump-out service. Sydney Water has included the full cost of the septic pump-out service in its operating expenditure. Sydney Water is then reimbursed for this subsidy from the NSW State Budget as a CSO.

Table 3.8 Sydney Water's other non-regulated revenue for the 2016 determination period ($'000, $2015-16)

	2016-17	2017-18	2018-19	2019-20
Total	297	297	297	297

Note: This income is deducted for the target revenue for the purpose of setting Wastewater charges, as the CSO is for a sewerage pump-out service.

Source: Sydney Water Annual Information Return, September 2015.

Revenue from the Rosehill (Camellia) recycled water scheme

Draft recommendation

1 We recommend that, in light of the changes since the scheme was established, the ongoing economic case for the Rosehill (Camellia) recycled water scheme be reassessed.

The NSW Government (usually the portfolio Minister) can issue directions for Sydney Water to complete projects in the public interest, which may not be in the shareholders' interests.[82] To ensure this investment is not deemed imprudent, the Minister can direct IPART (with the Premier's approval) under section 16A of the IPART Act to include the efficient costs of complying with the specified requirement in Sydney Water's prices.[83] This can take the form of either:

- a 'standing direction' (which applies whenever IPART makes a determination in relation to a particular government monopoly service), or
- a 'one-off direction' (which applies when IPART makes a particular pricing determination).

One such s16A direction relates to the Rosehill (Camellia) Recycled Water Project. We are directed to pass through the difference between the charges paid by Sydney Water to the owner of the Rosehill (Camellia) Recycled Water infrastructure and distribution pipelines, and the revenue received by Sydney Water for the sale of recycled water to customers (see Appendix B).

In its pricing proposal, Sydney Water forecasts that revenue from recycled water sales from the Rosehill (Camellia) scheme will decline significantly over the 2016 determination period.[84]

82 Typically through a direction given under section 20P of the SOC Act. See Sydney Water pricing proposal to IPART, June 2015, p 68.

83 Under Section 16A(3) of the IPART Act, a specified requirement may only be a requirement imposed by or under a licence or authorisation, a requirement imposed by a ministerial direction under an Act, or some other requirement imposed by or under an Act or statutory instrument.

84 Sydney Water pricing proposal to IPART, June 2015, p 302.

Gross annual operating costs of the scheme are now around $18 million, while revenue from recycled water sales are forecast to fall to $1.7 million per annum in 2017-18 and beyond.[85] This reduction in sales revenue is the result of two major industrial customers ceasing operation and no longer purchasing recycled water.[86]

Over the four years of the 2016 determination period, Sydney Water forecasts that total costs of the scheme will be around $72 million, with sales revenue declining to around $8 million. This represents a net deficit of $64 million over the four years. For comparison, the net deficit over the current 2012 determination period is expected to be around $48 million.[87]

For the volume of recycled water sold, the net cost of the scheme equates to around $14 per kilolitre over the 2016 determination period,[88] with the net cost of the scheme adding around $8 to a typical residential customer's water and sewerage bill. Whilst we are required to pass-through the net costs to customers through water prices, we consider it important that the ongoing economic case for this scheme be reassessed and all options considered.

85 Sydney Water pricing proposal to IPART, June 2015, pp 300-302.
86 Sydney Water Annual Information Return, September 2015.
87 Sydney Water pricing proposal to IPART, June 2015, p 302.
88 Average over the four years. In 2019-20, the net cost of the scheme equates to around $17 per kilolitre.

4 Operating expenditure allowance

This chapter sets out our assessment of Sydney Water's efficient level of operating expenditure over the 2016 determination period. As Chapter 3 discussed, the allowance for operating expenditure within the notional revenue requirement reflects our view of the efficient level of operating costs Sydney Water will incur in providing its services over the 2016 determination period. These costs include, amongst others, the costs of bulk water purchases, labour, service contractors, energy, materials, plant and equipment.

In making our draft decisions on operating expenditure, we engaged Atkins Cardno to review the efficiency of Sydney Water's proposed operating expenditure over the 2016 determination period. We asked Atkins Cardno to recommend any further efficiency savings that it considered that Sydney Water should be able to achieve.

We have also decided to include a pass-through mechanism to account for uncertainties around Sydney Water's future bulk water costs from WaterNSW (arising from Shoalhaven transfers) and SDP (arising from different modes of operation or new prices from 2017-18). These pass-through mechanisms ensure that both Sydney Water and its customers pay for the efficient bulk-water costs, no more or less.

4.1 Operating expenditure

Draft decision

7 We have decided to set the efficient level of Sydney Water's operating expenditure as shown in Table 4.1.

Table 4.1 Draft efficient operating expenditure ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20	Total
Water services (excluding bulk water purchases)	343	341	334	333	**1,352**
Bulk water purchases[a]	384	387	391	393	**1,555**
Wastewater services	499	493	482	477	**1,952**
Stormwater drainage services	12	12	12	12	**49**
Total	**1,239**	**1,233**	**1,220**	**1,215**	**4,908**

[a] Operating expenditure associated with Sydney Water's BOO contracts at its water filtration plants has been included in water services rather than bulk water purchases.

Note: Operating costs exclude ring-fenced recycled water costs, including corporate overheads allocated to recycled water (see Chapter 10). Totals may not add due to rounding.

Source: IPART calculations.

4.1.1 Reasons for our draft decision

We set Sydney Water's allowance for operating expenditure at $4,908 million over the 2016 determination period. In doing so, we reduced Sydney Water's proposed operating expenditure by 1.9%, which included the following adjustments:

- core operating expenditure $81 million (2.3%) **lower** than Sydney Water's proposal, and
- bulk water costs $14 million (0.9%) **lower** than Sydney Water's proposal.

Sydney Water proposed operating expenditure of around $5 billion over the 4-year period to 2019-20. According to Sydney Water, it has carried over the efficiencies it realised in the 2012 determination period and, as a result, its forecast operating expenditure for the 2016 determination period is $393 million lower than it expects to spend in the 2012 determination period. It indicated that these efficiencies drive 24% of the expected average decrease in its residential customer bills over the 2016 determination period.[89]

Our draft decision reflects our assessment of the level of the efficient operating expenditure Sydney Water should be able to achieve, given its operating environment. In making our decision, we considered:

- Sydney Water's actual operating expenditure over the 2012 determination period
- the level of operating expenditure it forecast over the 2016 determination
- the steps it has taken to continually improve its efficiency and the level of services it delivers, and
- the additional efficiency savings we consider it could make over the four years of the new determination.

89 Sydney Water pricing proposal to IPART, June 2015, p 128.

Atkins Cardno recommended that Sydney Water's efficient level of core-operating expenditure should be around $81 million lower than Sydney Water proposed over the four years to 30 June 2020.[90] We accepted Atkins Cardno's recommendation.

We did not ask Atkins Cardno to make recommendations on Sydney Water's bulk water purchase costs, which account for about 32% of total operating costs. Sydney Water purchases bulk water services from two suppliers, namely:

- WaterNSW (formerly the Sydney Catchment Authority), and
- Sydney Desalination Plant Pty Ltd (SDP).

We are currently undertaking a concurrent review of the prices that WaterNSW can charge Sydney Water for bulk water services. We have included our draft decisions on those bulk water prices in Sydney Water's bulk water costs.

For SDP-related bulk water purchase costs, we have used SDP's 2016-17 prices in SDP's current price determination, which is due to expire on 30 June 2017. For 2017-18 to 2019-20, we have kept these prices constant in real terms. Any change in SDP's prices arising from the new SDP price determination, which will set prices for SDP to apply from 1 July 2017, will be passed through to Sydney Water's customers by an adjustment to water service charges in 2018-19 and 2019-20.

Our assessment of Sydney Water's actual operating expenditure over the 2012 determination period and decisions on core operating expenditure and bulk water purchase costs are discussed in the following two subsections. Table 4.2 below compares our draft decisions on Sydney Water's efficient operating expenditure over the 2016 determination period with Sydney Water's proposal.

Table 4.2 Draft operating expenditure compared with Sydney Water proposed ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20	Total
IPART draft decision	1,239	1,233	1,220	1,215	**4,908**
Sydney Water proposed	1,253	1,254	1,248	1,247	**5,002**
Difference	*14*	*21*	*28*	*32*	***95***
Difference %	*-1.1%*	*-1.7%*	*-2.2%*	*-2.5%*	***-1.9%***

Note: Totals may not add due to rounding.

Source: Sydney Water pricing proposal to IPART, June 2015, p 149.

[90] This excludes bulk water costs. Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 89.

Sydney Water's performance over the 2012 determination period

Sydney Water has made significant savings over the current 2012 determination period. It expects actual expenditure over this period will be $5.4 billion, which is $223 million (4%) less than the operating expenditure allowance we used to set prices for the 2012 determination period (see Table 4.3 below).

Sydney Water reported that the key drivers of its lower core operating expenditure over the 2012 determination period were savings related to its:[91]

- energy costs (-$121 million)
- contracting costs, including data management (-$53 million), and
- labour costs (-$49 million).

These savings were partly offset by higher costs related to:[92]

- redundancy payments (+$32 million), and
- asset provisioning (site remediation including safety and asbestos) (+43 million).

While some of the savings were the result of lower input costs such as energy prices, Sydney Water has taken a number of important steps to drive down its ongoing operating costs. Atkins Cardno stated that:

> We have seen positive changes in Sydney Water since our previous review in 2011. Two thirds of the efficiency savings have been due to management action…[93]

And:

> Efficiency initiatives have been promoted during the current price path including outsourcing electrical/mechanical maintenance work and driving productivity savings in civil works activities to match the best performers in the market. A proactive approach to materials costs has shown savings in chemical costs and more effective procurement.[94]

Furthermore, Atkins Cardno found that the reductions in operating expenditure achieved in the 2012 determination period has had no material impact on Sydney Water's performance relative to the requirements of its Operating Licence.[95] Atkins Cardno also considered that many of these cost savings should flow through to the 2016 determination period.[96]

91 Sydney Water pricing proposal to IPART, June 2015, p 133.
92 Sydney Water pricing proposal to IPART, June 2015, p 133.
93 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 15.
94 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 15.
95 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 15.
96 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 16.

Table 4.3 Sydney Water actual and IPART allowed operating expenditure over 2012 determination period ($millions, $2015-16)

	2012-13	2013-14	2014-15	2015-16[a]	Total
IPART allowed	1,416	1,408	1,401	1,393	**5,618**
Actual	1,411	1,321	1,326	1,337	**5,395**
Difference	*-5*	*-86*	*-75*	*-56*	***-223***
Difference %	*-0.4%*	*-6.1%*	*-5.4%*	*-4.0%*	***-4.0%***

a 2015-16 figures are forecasts.

Note: Totals may not add due to rounding.

Source: Sydney Water pricing proposal to IPART, June 2015, p 132.

Core operating expenditure

Core operating expenditure is the day-to-day operating, maintenance and administration costs Sydney Water incurs in delivering its water, wastewater and stormwater drainage services (ie, its total operating costs excluding bulk water purchase costs).

As part of the expenditure review, Atkins Cardno found that while Sydney Water had made significant improvements over the current determination period, there was scope to further reduce core operating expenditure below what Sydney Water has proposed. Atkins Cardno recommended savings of $81 million over four years relating to:

- Specific adjustments to energy costs and service delivery costs ($28 million).
- Continuing and catch-up efficiency savings ($53 million).

Atkins Cardno found that there was scope for Sydney Water to reduce expenditure on **energy**. It found that Sydney Water's proposal, based on an increase in the electricity price of 15% to 2020 and a slight increase in electricity demand, was structured and considered. However, it found that Sydney Water's methodology for forecasting energy costs is a:

> …low risk approach for Sydney Water to likely energy cost savings and does not [take] into account the likely reduction from network charges and the variability of the retail rates. We would also expect that the 2020 strategy will deliver further energy savings beyond those forecast following management action as in the current price path. Our view is that the risk of energy cost variance should be shared more equitably with customers.[97]

97 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 81.

As such, it recommended basing future energy costs on the current electricity price.[98] This reduced forecast energy costs over the four years of the 2016 determination period by $19.4 million.

Atkins Cardno also recommended reducing operating expenditure on **service delivery** by around $8.5 million over the 2016 determination period. This adjustment reflects Atkins Cardno's consideration that:

> …there is further scope to reduce costs as activities go through the risk based planned maintenance review.[99]

In addition to these specific adjustments, Atkins Cardno has recommended that **continuing and catch-up efficiency savings** be applied to Sydney Water's forecast core operating expenditure. Continuing efficiency represents the scope for a top performing or 'frontier' company to continue to improve their efficiency. Catch-up efficiency relates to the improvements in systems and processes to achieve the performance of the frontier company over time.

Atkins Cardno recommended a continuing efficiency factor of 0.25% per annum, to reflect what a frontier company competing in an open market with strong commercial pressures would be implementing. This means that the frontier company would shave 0.25% off its controllable core-operating expenditure each year. In total, continuing efficiencies represent around $17 million in savings over 4-years.[100] Atkins Cardno noted that these efficiencies are challenging, but Sydney Water has the capacity to deliver.[101]

Atkins Cardno recommended that catch-up efficiency targets be set at 0.5% in 2016-17, rising to 2.0% in 2018-19 and 2019-20.[102] This reflects Atkins Cardno's view that there are further savings to be made in the 2016 determination period through:[103]

- the procurement strategy currently being implemented
- business improvement initiatives being implemented, and
- the planned Enterprise Resource Planning (ERP) platform, which is likely to bring improvements in the latter half of the 2016 determination period.

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98 In February 2016, the Australian Competition Tribunal (ACT) overturned parts of the determination of prices by the Australian Energy Regulator (AER) for the NSW electricity network businesses. The ACT directed the AER to remake constituent decisions on operating expenditure and elements of the WACC. See http://www.competitiontribunal.gov.au/decisions

99 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 82.

100 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 86 and IPART calculations.

101 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 17.

102 Atkins Cardo adjusted the level of catch-up following representations from Sydney Water to reflect the full impact of the initiatives implemented in the current price path and the impact of the procurement strategy currently being implemented. Atkins Cardno had originally proposed a higher level of continuing efficiency, increasing to 3% in 2019-20. Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 16.

103 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 16.

In total, catch-up efficiencies represent $36 million in savings over four years. Atkins Cardno noted that the adjusted level of catch-up efficiency does not assume that Sydney Water should be at the frontier by 2020, but reflects the achievability of delivering further cost reductions over the future price path.[104] In particular, Atkins Cardno's benchmarked comparisons of totex (combined operating and capital expenditure) show that Sydney Water has further efficiencies to make to approach a frontier company or the average of the UK companies using the UK Competition and Markets Authority (CMA) analysis.

We have considered Atkins Cardno's review of operating expenditure and its recommendations on efficient core-operating costs. Sydney Water has made significant savings in operating costs over the 2012 determination period. We acknowledge that Atkins Cardno's proposed efficiency savings over the 2016 determination period are challenging. However, our draft decision is to accept Atkins Cardno's recommendations.

Given Sydney Water's proposal and Atkins Cardno's recommended savings, the total level of efficient core operating expenditure over the 2016 determination period is shown in Table 4.4 below. The savings to forecast operating expenditure are spread roughly proportionately between water, wastewater and stormwater.

Table 4.4 Draft core operating expenditure ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20	Total
Sydney Water proposed	864.8	865.2	858.4	853.8	3,442
IPART draft decision	856.5	848.9	831.4	824.6	3,361
Difference	*-8.3*	*-16.3*	*-27.0*	*-29.2*	*-81*
Difference %	*-1.0%*	*-1.9%*	*-3.1%*	*-3.4%*	*-2.3%*

Note: Totals may not add due to rounding. Excludes bulk water costs, but includes all expenditure related to Rosehill-Camellia recycled water scheme and all pure operating costs associated with Sydney Water's finance leased WFPs.

Source: Sydney Water pricing proposal to IPART, June 2015, p 149; Atkins Cardno, *Expenditure Review – Sydney Water*, December 2015, p 89; IPART calculations.

BOO water filtration costs

Sydney Water has Build Own Operate (BOO) agreements for water filtration services at its four largest water filtration plants (WFPs) – Prospect, Woronora, Illawarra and Macarthur.

We have accepted that Sydney Water's proposed operating costs associated with these BOO filtration plants are efficient (see Table 4.5). Sydney Water indicated that BOO water filtration operating costs are largely dependent on outside factors, such as demand for water or the operation of the SDP.[105]

[104] Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 16.

[105] Water produced by SDP is a direct substitute for water filtered at some of Sydney Water's BOO plants.

We have not applied ongoing efficiency or catch-up efficiency targets to BOO related operating expenditure, as Atkins Cardno found that Sydney Water's forecasts of operating expenditure at these BOO plants was sound.[106] Sydney Water's BOO expenditure relates to pure operating costs only. Interest and principal payments associated with finance lease agreements are no longer included in operating expenditure, but are recovered though an allowance for a return on capital and regulatory depreciation of these assets (see Chapter 6).

Table 4.5 Draft BOO filtration costs ($millions, $2015-16)

	2015-16	2016-17	2017-18	2018-19	2019-20	Total
BOO filtration costs[a]	88.3	89.2	89.3	87.7	88.1	**354.3**

[a] Excludes interest and principal payments associated with finance lease agreements.

Source: Sydney Water pricing proposal to IPART, June 2015, p 149; and IPART analysis.

Bulk water costs

Sydney Water purchases most of the bulk water it needs to supply its customers from WaterNSW.[107] It also purchases bulk water from the SDP when this plant is operating, and pays a fixed charge when it is in water security shut down mode.[108] Therefore, its bulk water costs depend on a range of factors, including:

- the volume of water it needs to purchase to meet its customers' demand
- WaterNSW's and SDP's prices, which are regulated by IPART, and
- SDP's mode of operation, which is governed by the operating rules set out in the Metropolitan Water Plan.[109]

Our draft findings on the bulk water costs to be included in Sydney Water's prices are set out in Table 4.6 below.

106 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 169.

107 Sydney Water pricing proposal to IPART, June 2015, p ii.

108 Sydney Water pricing proposal to IPART, June 2015, p 157.

109 Under its operating rules SDP must operate at full production and supply Sydney Water's area of operations when the total dam storage level is below 70%, and continue to do so until the total dam storage level reaches 80%. NSW Government, *2010 Metropolitan Water Plan*, August 2010, p 36.

Table 4.6 Draft bulk water related operating expenditure ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20	Total
IPART draft decision					
WaterNSW[a]	*192.6*	*195.1*	*199.5*	*201.5*	*788.9*
SDP[b]	*191.5*	*191.5*	*191.5*	*191.5*	*765.9*
Total	**384.1**	**386.6**	**391.0**	**393.0**	**1554.8**
Sydney Water Proposed					
WaterNSW	*197.2*	*199.8*	*203.8*	*209.9*	*810.7*
SDP	*194.0*	*190.9*	*187.8*	*185.2*	*757.9*
Total	**391.2**	**390.7**	**391.6**	**395.1**	**1,568.6**
Difference	*-7.1*	*-4.0*	*-0.5*	*-2.1*	*-13.8*
Difference %	*-1.8%*	*-1.0%*	*-0.1%*	*-0.5%*	*-0.9%*

a Additional costs associated with any Shoalhaven transfers will be passed through to Sydney Water customers in the following year.

b Based on SDP's determined prices for 2016-17. Any change in SDP's prices from the 2017 Determination will be passed through to Sydney Water customers.

Note: Totals may not add due to rounding.

Source: Sydney Water pricing proposal to IPART, June 2015, p 149.

We have allowed Sydney Water to recover **WaterNSW-related bulk water costs** in accordance with our draft determination of WaterNSW's maximum prices. We are currently undertaking a review of WaterNSW's prices, with the new prices to apply from 1 July 2016. As part of that review, we have considered WaterNSW's pricing proposal and made decisions regarding its efficient expenditure.

Sydney Water based its bulk water expenditure for WaterNSW's services on the proposed notional revenue requirement WaterNSW included in its pricing proposal to IPART.[110] Our draft decision reduces Sydney Water's bulk water costs from WaterNSW by around $20 million over the four years of the 2016 determination period, compared to Sydney Water's pricing proposal.

We have not included any costs associated with Shoalhaven transfers in our decision on bulk water expenditure to be included in Sydney Water's prices to customers. The regulatory treatment of Sydney Water's costs associated with Shoalhaven transfers is discussed further below. We will adjust Sydney Water's bulk water costs in our final determination for any changes we make to WaterNSW's water prices during that time.

[110] Sydney Water pricing proposal to IPART, June 2015, p 156.

Our draft decision is to maintain **SDP-related bulk water costs** constant in real terms using SDP's determined 2016-17 prices.[111] We have also assumed that SDP remains in water security shut-down mode for Sydney Water's entire determination period. We have decided to maintain a pass-through mechanism to account for uncertainties around SDP's future costs and prices to Sydney Water, which is discussed in further detail below.

Our draft decision leads to total SDP-related bulk water costs of $766 million. This is around $8 million higher than Sydney Water's proposal because Sydney Water based its forecast on SDP's Regulatory Asset Base (RAB) diminishing over 2016-17 to 2019-20.[112] SDP costs represent about $94 (9%) of a typical annual residential bill.

4.2 Bulk water pass-through costs

Draft decision

8 We have decided to:

- continue to enable Sydney Water to pass through into water service charges (after a 1-year lag) the difference between its actual and forecast SDP-related bulk water costs over the 2016 determination period
- apply the current cost pass-through mechanism in the first year of the 2016 Determination and pass through into 2016-17 water service charges the actual 2015-16 SDP costs incurred by Sydney Water above those included in 2015-16 prices, and
- introduce a pass through of the annual actual Shoalhaven transfer costs that Sydney Water incurs into the water service charges at a one year lag.

4.2.1 Reasons for our draft decision

Service charge pass-through of SDP costs

We have decided to maintain the cost pass-through mechanism included in the 2012 Determination. This is because there is considerable uncertainty over the 2016 determination period surrounding SDP's operating environment, its costs of operation and therefore its impact on Sydney Water's costs and prices.

111 SDP's current price determination sets prices to 30 June 2017, with a new determination scheduled to take effect from 1 July 2017. As such, the base prices which Sydney Water will pay for bulk water services from SDP are known for the first year of Sydney Water's 2016 Determination only and not beyond 2016-17.

112 Sydney Water pricing proposal to IPART, June 2015, p 157.

Currently, under the 2012 Determination, Sydney Water's prices are calculated on the basis that SDP is in shutdown mode and not supplying water to Sydney Water. If SDP moves into operation mode, all additional costs Sydney Water incurs from purchasing desalinated water would be passed through to customers in their **fixed water service** charges in the following year. For the 2016 Determination, Sydney Water proposed that additional fixed costs continue to be passed through in this way, but that additional variable costs (ie, the additional costs incurred by Sydney Water when SDP is supplying it water), be passed through to customers as these costs are incurred in their **water usage** charges.[113] We have accepted Sydney Water's proposal to make drought-response costs more transparent to end-use customers by varying (retail) water usage charges to reflect the per kL cost of desalinated water if SDP is activated (see Chapter 8).

The service charge pass-through mechanism will, therefore, capture differences in SDP's service charges (fixed costs) due to:

- SDP operating in different modes of operation over the 2016 determination period than the assumed water security shutdown mode factored in base operating costs
- new fixed charges resulting from our 2017 SDP price review, including adjustments to SDP's fixed charges resulting from the application of the energy and efficiency adjustment mechanisms, or
- network electricity costs, which are treated as a pass through in SDP's determination.

In addition, the service charge pass-through mechanism will account for any forecast error in our estimate of the water usage charge adjustment. The existing SDP Determination has prices calculated on a 6.7% pre-tax WACC. Without a significant increase in the cost of capital in the next 15 months, we expect that this pass-through is likely to be negative if SDP remains in water security shutdown mode.[114]

The formula used to determine the pass through of SDP costs to service charges is outlined in Appendix F.

[113] Sydney Water pricing proposal to IPART, June 2015, p 241.

[114] Forecast SDP costs based on existing prices and a 6.7% pre-tax WACC may lead to an overestimate of the SDP expenditure forecast from 2017-18 onwards (ie, unless operation of the plant is triggered, negative pass-throughs would therefore occur in 2018-19 and 2019-20).

Application of the current cost pass-through mechanism and implications for 2016-17 prices

The 2012 cost pass-through mechanism applies only **within** the current determination period. That is, our current determination only allows Sydney Water to adjust water service charges up to 30 June 2016 (ie, adjust 2015-16 prices) to reflect actual charges paid to SDP at a year lag (ie, covering actual costs incurred in 2014-15).

For the final report, we will apply the cost pass-through mechanism in the first year of the 2016 determination period and pass through into 2016-17 prices the actual SDP costs incurred by Sydney Water in 2015-16 (ie, any costs above those included in 2015-16 prices).[115]

Pass through of Shoalhaven transfer costs

We are introducing a service charge cost pass-through mechanism to compensate Sydney Water for actual bulk water costs incurred from WaterNSW for transfers from Shoalhaven. This approach is consistent with Sydney Water's proposal.[116]

Shoalhaven transfers represent uncertain bulk water operating costs to Sydney Water in terms of volume and price risk.[117] Under the 2010 Metropolitan Water Plan, WaterNSW must start pumping from the Shoalhaven system when Sydney's dam levels fall to 75% and continue until they rise above 80%.[118]

In the 2012 Determination, we decided to allow for the cost recovery of Shoalhaven pumping on an **expected** costs basis (rather than through a cost pass-through mechanism). The WATHNET model was used to estimate Shoalhaven transfers under varying climatic conditions, given the current operating rules. We included around $2.1 million per year in Sydney Water's operating costs to account for Shoalhaven transfers.

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[115] We note that in any year, a 1 July price change will pass through 10 months of SDP's actual costs at a year lag, and two months of forecasts – ie, for example, 2015-16 prices are finalised in June 2015, which means we do not have SDP's actual costs for May and June 2015.

[116] For the 2016 determination period, Sydney Water has requested that we adopt the same treatment for Shoalhaven transfers for both Sydney Water and WaterNSW (either an ex-ante probabilistic approach or the alternative cost pass-through methodology consistent with the approach used for SDP costs). Sydney Water submission to IPART Issues Paper, October 2015, p xi.

[117] Volume risk refers to the amount of water potentially pumped from the Shoalhaven system given the operating rules set out in the 2010 Metropolitan Water Plan. Price risk refers to the electricity price estimates over the 2012 Determination.

[118] There are also other constraints; for example, the water level in Tallowa Dam has to be within 1 metre of the top water level of the dam. NSW Government, *2010 Metropolitan Water Plan*, August 2010, p 24.

However, for the 2016 determination period, we are of the view that a cost pass-through mechanism is appropriate for Shoalhaven transfers. This is because we have allowed WaterNSW to charge Sydney Water on a "fee for service" basis for these transfers – ie, charge Sydney Water as Shoalhaven transfers occur (this is consistent with our criteria for applying cost pass-throughs – see Chapter 2).

Under this cost pass-through mechanism, the difference between Sydney Water's forecast bulk water costs and its actual bulk water costs from WaterNSW as a result of Shoalhaven transfers will be passed through to Sydney Water's customers. This will occur at a year's lag via Sydney Water's water service charge to its customers.[119] We have set Sydney Water's revenue requirement on the basis that there will be no Shoalhaven transfers for the whole 2016 determination period to not double count these costs.

Appendix F provides details of the formula used for the service charge pass-through of Shoalhaven transfer costs.

[119] We decided not to pass Shoalhaven transfer costs through to Sydney Water's water usage charge, as the uplift would be negligible at times and difficult for customer's to understand – unlike SDP which is a well understood drought response measure.

5 Capital expenditure

This chapter sets out our draft decisions on Sydney Water's prudent and efficient capital expenditure. As with operating expenditure, we engaged Atkins Cardno to review Sydney Water's historical and forecast capital expenditure and make recommendations on the amount of capital expenditure that should be included in the RAB.

Under the building block method, there is no explicit allowance for capital expenditure in the notional revenue requirement. Instead, the prudent and efficient capital expenditure is added to the RAB and recovered through the allowances for a return on assets and regulatory depreciation (discussed in Chapter 6).

To decide how much capital expenditure is added to the RAB, we review Sydney Water's proposals and apply:

- a prudence test to its actual capital expenditure over the 2012 determination period (past capital expenditure) and to its proposed capital expenditure for the 2016 determination period (forecast capital expenditure), and also
- an efficiency test to its past and forecast capital expenditure.

The prudence test assesses whether, in the circumstances that existed at the time, the decision to invest in the asset is one that the utility, acting prudently, would be expected to make. The test assesses both:

- the prudence of how the decision was made to invest, and
- the prudence of how the investment was executed (ie, the construction or delivery of the asset), having regard to information available at the time.

The efficiency test examines whether the proposed capital expenditure represents (over the life of the asset) the best way of meeting customers' needs, subject to the utility's regulatory requirements.

5.1 Capital expenditure

Draft decision

9 We have decided to set the prudent and efficient level of Sydney Water's capital expenditure to be included in the RAB as shown in Table 5.1 and Table 5.2.

Table 5.1 Draft efficient and prudent past capital expenditure ($millions, $2015-16)

	2012-13	2013-14	2014-15	2015-16[a]	Total
IPART draft decision	653	576	638	718	**2,584**
Sydney Water proposed	653	576	638	718	**2,584**

a 2015-16 figures are forecasts.

Source: Sydney Water Annual Information Return, September 2015; IPART calculations.

Table 5.2 Draft efficient and prudent forecast capital expenditure ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20	Total
Sydney Water proposed	715	733	708	617	**2,773**
Less project specific adjustments					
Wastewater treatment plant renewals	*-23*	*-23*	*-26*	*-30*	***-101***
Avoid fail sewer renewals	*-8*	*-7*	*-8*	*-11*	***-34***
Water system renewals[a]	*-18*	*-19*	*-15*	*-15*	***-68***
North West Growth Centre deferrals	*-*	*-19*	*-7*	*+13*	***-13***
North Head biosolids	*-*	*-13*	*-*	*-*	***-13***
Other	*-5*	*-15*	*-10*	*-4*	***-35***
Less efficiency adjustments	-20	-38	-47	-50	**-155**
Total adjustments	-75	-133	-114	-97	**-420**
IPART draft decision	641	599	594	520	**2,353**

a Water system renewals includes: Critical water mains; reticulation water mains; water pumping stations and reservoir renewals and reliability.

Note: Totals may not add due to rounding.

Source: Sydney Water pricing proposal to IPART, June 2015, p 189; Sydney Water Annual Information Return, September 2015; IPART calculations.

5.1.1 Reasons for our draft decisions

We set Sydney Water's allowance for capital expenditure at $2,353 million over the 2016 determination period. In doing so, we reduced Sydney Water's proposed capital expenditure by $420 million (15.1%), which included the following adjustments:

- $265 million (or 9.5%) of reductions to specific capital programs, and
- $155 million (or 5.6%) in efficiency savings.

We accepted Sydney Water's actual capital expenditure over the 2012 determination period as prudent and efficient.[120]

[120] However, we did remove an additional $24.8 million from the RAB in 2017-18 for stranded IT assets (Customer Management System 'CMS'), arising from investment in a new IT billing system and enterprise resource planning suite (ERP). Our discussion of this adjustment to the RAB is in Chapter 6.

Our draft decisions on capital expenditure reflect our assessment of the efficient and prudent expenditure on capital works that should be included in the RAB, and hence recovered through prices.

In making our draft decisions, we considered Sydney Water's historical capital expenditure and the savings it achieved in capital expenditure over the 2012 determination period. We then considered the capital programs it has proposed for the 2016 determination period, whether that proposed expenditure was fully justified and any potential further savings it could achieve through greater efficiencies in delivering its capital program.

In its review of Sydney Water's expenditure, we asked Atkins Cardno to look at both historical and forecast capital expenditure. Atkins Cardno also undertook a strategic review of Sydney Water's long-term investment plans and asset management systems and practices. Our decisions on prudent and efficient capital expenditure reflect Atkins Cardno's recommendations.

Our assessment of Sydney Water's capital expenditure over the 2012 determination period and reductions made to Sydney Water's capital program over the 2016 determination period are discussed in the sections that follow.

Capital expenditure over the 2012 determination period

Our draft decision on historical capital expenditure is to accept Sydney Water's proposal and include all $2.58 billion in capital expenditure between 2012-13 and 2015-16[121] in the RAB.

Sydney Water has spent $242 million less on capital works over the 2012 determination period[122] than forecast. In our 2012 Determination, we forecast that Sydney Water would need to spend around $2.83 billion over the four years of the 2012 determination period.

Table 5.3 below sets out the difference between the amount of capital expenditure we allowed at the 2012 Determination and Sydney Water's actual expenditure over that period.

Table 5.3 Sydney Water actual and IPART allowed capital expenditure over the 2012 determination period ($millions, $2015-16)

	2012-13	2013-14	2014-15	2015-16[a]	Total
IPART allowed	766	778	684	598	2,827
Actual	653	576	638	718	2,584
Difference	*-113*	*-202*	*-47*	*120*	*-242*
Difference %	*-15%*	*-26%*	*-7%*	*20%*	*-9%*

a 2015-16 figures are forecasts.
Note: Totals may not add due to rounding.
Source: Sydney Water pricing proposal to IPART, June 2015, p 86; Sydney Water Annual Information Return, September 2015; Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 20.

121 Including Sydney Water's expected $718 million capital expenditure in 2015-16.
122 Including its forecast expenditure of $718 million in 2015-16.

Our draft decision reflects Atkins Cardno's recommendation that all of Sydney Water's expenditure between 2011-12[123] and 2015-16 should be included in the RAB calculation. Atkins Cardno's findings are based on its assessment of Sydney Water's capital planning, procurement and delivery and include:

- **Strategic planning –** an increasing focus on Strategic System Integrated Planning (SSIP) and the adoption of regional strategies. The combination of these two frameworks appear to be resulting in more effective project and program assessments.[124]
- **Timing –** Sydney Water demonstrated a move towards optimisation of timing of expenditure. In particular, Sydney Water:

  …demonstrated examples of using interim solutions to delay capital investment, which appear to have been applied in a number of instances and represent a welcome development and approach to using "just in time" infrastructure where possible.[125]
- **Procurement –** including the development of standard procurement guidelines and strategy. Sydney Water has also evolved its alliance delivery model, which has transitioned into more effective models.[126]

Sydney Water indicated that the profile of its capital investment program differed from the forecast program used in making the 2012 Determination. In particular, its capital expenditure was higher than forecast in the final two years due to:[127]

- its decision to restrict IT expenditure while it restructured its IT function early in the period
- the deferral of some growth and renewal projects through improved planning, and
- the acceleration of major works at the Malabar Wastewater Treatment Plant into the 2012 period.

Table 5.4 compares Sydney Water's actual capital expenditure over the whole determination period with the forecast efficient capital expenditure used to make the 2012 Determination, broken down by product area. Sydney Water's $242 million saving in total capital expenditure came primarily from lower than forecast spending on water assets (-$272 million) and wastewater assets (-$34 million). This saving was partly offset by higher than forecast capital expenditure on stormwater assets (+$61 million).

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123 Sydney Water's actual capital expenditure for 2011-12 was $687 million. Our 2012 Determination was based on forecast capital expenditure for 2011-12 of $729 million ($2015-16). IPART, *Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 – Final Report*, June 2012, p 70; IPART calculations.

124 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 153.

125 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 153.

126 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 153.

127 Sydney Water pricing proposal to IPART, June 2015, p 167.

Table 5.4 Sydney Water actual and IPART allowed capital expenditure over 2012 determination period, by product ($millions, $2015-16)

Product	IPART allowed	Actual/ Forecast	Difference	Difference (%)
Water	964	692	-272	-28%
Wastewater	1,501	1,467	-34	-2%
Corporate	333	335	2	1%
Stormwater	28	89	61	219%
Recycled water[a]	0	1	1	-
Total	**2,827**	**2,584**	**-242**	**-9%**

[a] Recycled water expenditure represents capital expenditure on the St Marys Recycled Water Scheme. This scheme is subject to a NSW Government direction under s16(A) of the IPART Act. Costs are recovered from water charges.

Note: Actual/forecast capital expenditure set out in Sydney Water's proposal deducts $48 million received from the NSW Government's Housing Acceleration Fund (HAF). We have reversed this deduction to enable comparison with our 2012 Determination which did not deduct forecast grants. Totals may not add due to rounding.

Source: Sydney Water pricing proposal to IPART, June 2015, p 187; Sydney Water Annual Information Return, September 2015; and IPART analysis.

Atkins Cardno accepted Sydney Water's reasons for the variance between its actual and IPART determined capital expenditure by product, which include:

- **Water capital expenditure (- 28% variance)** due to:
  - lower renewals expenditure (-$171 million) resulting from better targeted asset management practices and favourable weather conditions,[128] and
  - lower growth expenditure (-$70 million)[129] resulting from improving its risk management strategy, including maximising existing capacity.[130]
- **Wastewater expenditure (-2% variance)** due to:
  - higher renewals expenditure (+$83 million) resulting from more accurate asset and risk data and from compliance with dry weather overflow licence requirements[131], and
  - lower expenditure to meet EPA-mandated standards (-$104 million) resulting from lower expenditure on the wet weather overflow abatement and deferred expenditure on the Vaucluse/Diamond Bay project.[132]

[128] Sydney Water pricing proposal to IPART, June 2015, p 170.

[129] Sydney Water's direct expenditure on growth was $109 million lower than what we allowed at the 2012 Determination. Offsetting this, however, are its purchase of assets from developers in growth areas of $42 million higher than forecast in 2012 (See Sydney Water pricing proposal to IPART, June 2015, pp 179-184; Sydney Water Annual Information Return, September 2015).

[130] Sydney Water pricing proposal to IPART, June 2015, p 180; Sydney Water Annual Information Return, September 2015.

[131] Sydney Water pricing proposal to IPART, June 2015, p 173.

[132] Sydney Water pricing proposal to IPART, June 2015, p 185.

- **Stormwater capital expenditure (219% variance)**[133] due to:
  - higher renewals and reliability expenditure (+$22 million),[134] and
  - higher growth expenditure (+$18 million) for the Green Square development in Sydney's south (one of the projects subject to Government direction under section 16A of the IPART Act).[135]

Capital expenditure over the 2016 determination period

Our draft decision is to include $2,353 million in forecast capital expenditure over the 2016 determination period. This is $420 million (15%) below Sydney Water's proposed capital expenditure over the same period.

Our draft decision on Sydney Water's prudent and efficient capital expenditure over the 2016 determination period reflects Atkins Cardno's recommendations.

Sydney Water proposed capital expenditure over the 2016 determination period of $2,773 million, which is:

- $54 million (or 2%) lower than we used to set prices in our 2012 Determination.
- $189 million (or 7%) higher than actual capital expenditure over the 2012 determination period.

In relation to its proposed capital expenditure, Sydney Water reported that:

- Its forecast costs are subject to uncertainty in some areas, but it has considered these and considers it can prudently manage them.[136]
- Forecast stormwater capital expenditure is significantly greater than the 2012 determination period, because a number of assets built before 1910 need renewal.[137]
- Forecast corporate costs of $328 million represent investments in information technology, including a new billing system and Enterprise Resource Planning (ERP) platform.[138]

Table 5.5 compares Sydney Water's actual and forecast capital expenditure for the 2012 and 2016 determination periods, by product.

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133 Sydney Water reported a 150% variance in stormwater expenditure, because it deducts from total stormwater expenditure funding received from the NSW Government's Housing Acceleration Fund. (See Sydney Water pricing proposal to IPART, June 2015, p 187.) We have reversed this deduction to enable comparison with our 2012 Determination which did not deduct forecast grants.

134 Sydney Water pricing proposal to IPART, June 2015, p 177.

135 Sydney Water pricing proposal to IPART, June 2015, p 304.

136 Sydney Water pricing proposal to IPART, June 2015, p 161.

137 Sydney Water pricing proposal to IPART, June 2015, p 198.

138 Sydney Water pricing proposal to IPART, June 2015, p 161.

Table 5.5 Sydney Water actual and forecast capital expenditure, by product ($millions, $2015-16)

Product	Actual, 2012 period[a]	Forecast, 2016 period	Difference	Difference (%)
Water	693	731	38	5.4%
Wastewater	1,467	1,500	33	2.3%
Stormwater	89	159	70	78.5%
Corporate	335	383	47	14.1%
Total	**2,584**	**2,773**	**189**	**7.3%**

[a] Water capital expenditure includes $1 million capital expenditure on recycled water.

Note: Actual/forecast capital expenditure set out in Sydney Water's proposal deducts $48 million received from the NSW Government's Housing Acceleration Fund (HAF).

Source: Sydney Water Annual Information Return, September 2015; and IPART analysis.

Atkins Cardno assessed Sydney Water's planning, procurement and cost-estimation practices as well as the business cases supporting its proposed capital program. Following its investigations, Atkins Cardno made a number of **reductions to specific projects and programs** over the 2016 determination period.

In addition to these project specific adjustments, Atkins Cardno also applied **continuing and catch-up efficiency savings** for Sydney Water's capital expenditure program. In total Atkins, recommended over the 2016 determination period:

- $265 million of reductions to specific projects and programs, and
- $155 million in reductions for continuing and catch-up efficiency targets.

Atkins Cardno's findings and recommendations are discussed further below.

Wastewater project and program specific adjustments

Atkins Cardno recommended a reduction in **Wastewater Treatment Plant Renewals** of **$102 million** (35% of Sydney Water's proposed expenditure on this program).[139] Sydney Water proposed a 54% increase in this program above the 2012 determination period, to a total of $290 million capital expenditure over the 2016 determination period.[140]

[139] Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 163.
[140] Sydney Water Annual Information Return, September 2015.

Sydney Water's proposed increase was based on an expected shift in the asset condition profile into the poor or very poor condition range, which represents an unacceptable performance risk. However, Atkins Cardno found that there was no consideration of how different levels of renewals expenditure may affect the overall condition and risk profile:

> In our view there was insufficient evidence provided to demonstrate a significant shift in performance against service levels…that would assist in justifying such a significant increase in expenditure.[141]

Atkins has also recommended a reduction of **$13 million** on Sydney Water's proposed upgrade and augmentation of **biosolids management facilities at North Head** wastewater treatment plant.[142]

Sydney Water proposed to add an additional two digesters in order to increase capacity for growth, and to upgrade existing facilities. Atkins Cardno found that Sydney Water:

> …has not made a strong enough case that a single additional digester would not be sufficient to cope with anticipated demand in the medium term (eg. next price path + 5 years).[143]

Atkins Cardno considered that the construction of one extra digester at North Head in 2017-18 would meet the load required to beyond 2020. As such, it has recommended that the cost of Sydney Water's proposed second digester be excluded from our decision on the efficient and prudent capital expenditure.

Atkins Cardno has recommended a reduction of **$2.2 million** (18.0%) to Sydney Water's proposed $12.2 million capital expenditure on its **energy management** program, including biogas cogeneration facilities at some wastewater treatment plants.

Sydney Water expects to spend a total of around $8 million on its energy management program over the 2012 determination period.

Atkins Cardno found that while specific projects and expected costs and savings have been identified, detailed investigations have not yet been completed for the 2016 determination period.[144] As such, it has recommended reducing expenditure on the program to $10 million, and rephrasing the expenditure with less expenditure in the first two years and more in the last two years of the 2016 determination period.

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141 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 120.
142 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 126-127.
143 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 126-127.
144 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 104-105.

Atkins Cardno has recommended reducing capital expenditure by **$8 million** on new wastewater assets for **growth in Sydney's North West Growth Centre** over the 2016 determination period. This represents about 17% of Sydney Water's $48 million proposed expenditure over the 4-year period.

Sydney Water's proposed program occurs entirely over the first three years of the 2016 determination period, with no expenditure in 2019-20. Atkins Cardno found that proposed expenditure on Riverstone Wastewater treatment plant was prudent and efficient. However, it has recommended phasing Sydney Water's proposed expenditure on other wastewater assets in the North West Growth Corridor over five years instead of Sydney Water's proposed three years. This means that some expenditure has been deferred to 2019-20 ($7.3 million) and 2020-21 ($7.8 million).[145]

Water project and program specific adjustments

Atkins Cardno recommended a reduction in **Water System Renewals** of **$68 million** (17% of Sydney Water's proposed expenditure on this program). Sydney Water proposed a total of $405 million[146] capital expenditure over the 2016 determination period on water system renewals, including renewals of:

- $116 million on critical water mains
- $134 million on reticulation water mains
- $97 million on reservoirs, and
- $58 million on water pumping stations.

Atkins Cardno found that for **critical water mains** and **reticulation water mains renewals**, Sydney Water has demonstrated significant reduction in costs in delivering this program over the 2012 determination period. However, it found that despite a significant decrease in expenditure, levels of service and performance had been:

> …quite stable over a period of greater than 10 years. This and Sydney Water's continuing trend of excellent performance against Operating Licence targets supports the case for further reductions in renewals expenditure.[147]

Sydney Water argues that all asset renewal programs are subject to an approved business case. With respect to renewals of water and wastewater mains, a financial evaluation is done in each case to determine whether repairs or asset renewals is the most efficient long-term option, and that:

> …a renewal will not proceed if it is not cost-effective.[148]

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145 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 125-126.
146 Sydney Water Annual Information Return, September 2015.
147 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 102-103.
148 Sydney Water pricing proposal to IPART, June 2015, p 192.

Sydney Water's position infers that reducing renewals capital expenditure to a level which brings Sydney Water's performance against operating licence targets may actually increase overall expenditure, even if renewals capital expenditure is reduced. This could be the result of increased repairs or maintenance.

While we have considered the premise of Sydney Water's argument, our draft decision is to accept the recommendations made by Atkins Cardno. We consider that given the decreasing unit costs of mains renewals and the headroom under the operating licence, the recommended program adjustment represents the efficient expenditure over the 2016 determination period.

For **reservoir renewals program,** Atkins Cardno found that there was around a 75% proposed increase in expenditure on this program over the 2016 determination period. Sydney Water argued that this increased program will:

> ..reduce current safety risks and maintain the structural integrity of these reservoirs. Expenditure on rechlorination plants is to ensure their continued reliability to achieve water quality targets.[149]

Atkins Cardno found that while there was some justification for an increase in expenditure on this program, it had concerns regarding the scale of the increased program and the high conversion rate of reservoir condition inspections to forecast expenditure on those reservoirs.[150] It recommended higher expenditure on the program than the 2012 Determination, but lower than Sydney Water proposed.

Atkins also recommended adjusting the **water pumping station renewals** program, to reflect potentially lower unit rates of expenditure, the exclusion of some expenditure included in 2015-16 to avoid double counting and further potential savings from possible decommissioning or downsizing.[151]

In total, Atkins Cardno has recommended the following reductions in expenditure on water system renewals:

- $8 million (-6.9%) on critical water mains
- $26 million (-19.4%) on reticulation water mains
- $21 million (-21.2%) on reservoirs, and
- $13 million (-22.7%) on water pumping stations.

Atkins Cardno has also recommended a **$7 million** (17%) reduction in Sydney Water's proposed $42 million **meter replacement program** over the 2016 determination period.

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[149] Sydney Water pricing proposal to IPART, June 2015, p 194.
[150] Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 103-104.
[151] Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 104.

Sydney Water aims to replace water meters based on an upper limit of either meter age, volume of throughput. Atkins Cardno considers that the age profile of the entire current meter stock, combined with an average annual consumption per meter of around 210 kilolitres leads to a total of around 390,000 new meters, including growth and unplanned replacement meters. This is 80,000 less new meters than Sydney Water proposed.[152]

Atkins Cardno has recommended reducing capital expenditure by **$6 million** on new water assets for **growth in Sydney's North West Growth Centre** over the 2016 determination period. This represents about 18% of Sydney Water's $30 million proposed expenditure over the 4-year period.

As with its recommended reduction in wastewater capital expenditure on growth in the North West Growth Centre, this reduction is a result of Atkins Cardno's phasing the proposed expenditure from 2017-18 over four years rather than over two years, as Sydney Water proposed.[153]

Stormwater project and program specific adjustments

Atkins Cardno's total reductions of $14 million to stormwater capital expenditure represent about 9.4% of Sydney Water's proposed $159 million capital expenditure on stormwater assets over the 2016 determination period.[154] Atkins Cardno recommended a number of adjustments to Sydney Water's proposed expenditure programs on stormwater services.[155]

Atkins Cardno recommended reducing proposed capital expenditure in **Elizabeth Macarthur Creek** in the Rouse Hill development area by **$7.5 million** over the 2016 determination period.

Sydney Water proposed to spend $20 million on civil works and land purchases over the four years of the determination period.[156] Atkins Cardno found that the level of planning and solution definition for works on Elizabeth Macarthur Creek is not yet well advanced. As such, Atkins Cardno has re-phased this expenditure over six years rather than four years. This pushes some expenditure on this project to beyond 2019-20 and therefore out of the 2016 determination period.

Sydney Water is undertaking a program of asset inspections on its stormwater assets. It has based its forecast stormwater renewals expenditure of $58 million over the next four years on the assets at risk of imminent failure.[157]

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152 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 150-151.
153 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 111-112.
154 Sydney Water Annual Information Return, September 2015.
155 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 128-131.
156 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 135.
157 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 131.

Atkins Cardno has recommended reducing the **minor stormwater renewals program** by **$5 million** over the 2016 determination period. Given the time taken and difficulty in moving through the condition survey process, it has recommended deferring some of Sydney Water's proposed capital expenditure on this program to beyond 2020. Atkins Cardno considers that it is difficult to robustly establish the remaining useful asset life based on condition surveys. However, ongoing condition surveys over 2016 determination period will uncover further assets requiring renewals expenditure beyond 2020.[158]

Corporate project and program specific adjustments

Sydney Water has proposed $383 million in corporate capital expenditure over the 2016 determination period. Of this, $328 million (86%) is on information technology (IT) programs. This significant increase in IT capital expenditure over the 2016 determination period includes:

- a new customer billing system (T2020), and
- an Enterprise Resource Planning (ERP) platform.

Sydney Water's current customer billing system is 28 years old. Sydney Water proposed to replace it with a more up-to-date system. Atkins Cardno found that the proposed expenditure on the billing system was largely justified and efficient. It found that:

> …there is a full and detailed audit trail dating back at least 10 years to support the replacement of the ACCESS billing system. There is no doubt about the need and overall the costs are built up in a robust way…[159]

And:

> By far the biggest benefit [of the proposed new T2020 billing system] is the avoided cost of a catastrophic IT failure of not implementing a replacement for ACCESS.[160]

Atkins Cardno found that the business cases for the proposed billing system were strong and have recommended no capital expenditure adjustment.

The ERP is business management software – typically a suite of integrated applications – that a company can use to collect, store, manage and interpret data from many business activities. It provides an integrated view of core business processes, often in real time, using common databases.[161]

158 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 131.
159 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 145.
160 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 146.
161 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 142-143.

Atkins Cardno supported the principle of an ERP:

> …there is broad consensus in the world's leading corporations that an ERP is a vital organisational tool…[162]

Atkins Cardno has recommended reducing Sydney Water's proposed capital expenditure on **the Enterprise Resource Planning (ERP) platform by $8 million** across the 2016 determination period.[163] This reflects Atkins Cardno's assessment that $8 million in identified capital savings arising from the ERP have not been included in Sydney Water's proposed expenditure.

Atkins Cardno's view is that the proposed T2020 billing system and ERP platform are closely linked, and should be jointly considered by Sydney Water.

> Crucially, we believe that T2020 and ERP should be jointly approved, which is not currently envisaged.[164]

These significant IT capital programs are scheduled to be rolled out to 2019-20. As part of our next scheduled review of Sydney Water's prices in 2019-20, we will investigate the implementation and roll-out of these projects and assess the actual expenditure and benefits at that time.

Atkins has also recommended **removing $24.8 million from the RAB** in 2017-18 for **stranded IT assets** arising from replacing the existing Customer Management System (CMS), which it deems will be made prematurely redundant by Sydney Water's proposed IT expenditure. This is discussed further in Chapter 6.

Atkins Cardno also recommends that **$3 million** in expenditure **relating to the upgrade of SIRIUS** for IT - field services management can be pushed back into the following (2020) determination period.[165]

Continuing and catch-up efficiency targets

As with operating expenditure, Atkins Cardno recommended a continuing efficiency factor of 0.25% per annum. Continuing efficiency represents the scope for a top performing or 'frontier' company to continue to improve their efficiency. It justified the application of continuing efficiencies to capex on the grounds that an efficient frontier company would continue to improve its efficiency in delivering its capital program. In total, continuing efficiencies represent around $15 million in savings over four years.[166]

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[162] Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 147.
[163] Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 161.
[164] Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 146.
[165] Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 145, 161.
[166] Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 163.

Atkins Cardno has also identified four areas where Sydney Water should be able to make material improvement in its processes in the 2016 price path to bring it up to the level of the frontier company (ie, catch-up efficiencies).[167] These are:

- **Capital program management and optimisation** – this adjustment recognises that Atkins Cardno considers that Sydney Water can improve the way it delivers its capital program.
- **Value engineering** – this provides an adjustment which allows for value engineering to become more wide spread, to ensure that schemes are delivered at an efficient cost.
- **Cost estimation –** Atkins Cardno found that Sydney Water's approach to cost estimation is at an early stage of maturity. This catch-up efficiency reflects the potential for Sydney Water's cost-estimates to fail to capture recent efficiency improvements and for estimates to routinely include conservative assumptions.
- **Procurement** – this reflects the potential for Sydney Water's efforts to improve procurement efficiencies.

These catch-up efficiencies are over and above other specific adjustments made to capital projects and programs. They represent the ground that Sydney Water can make up in these fields to match the efficient frontier company. In total, catch-up efficiencies represent $142 million in savings over four years. Table 5.6 below sets out Atkins Cardo's derivation of the efficiency targets applied to Sydney Water's capital program.

Table 5.6 Atkins Cardno cumulative efficiency targets

	2016-17	2017-18	2018-19	2019-20
Continuing efficiency at frontier	**0.25%**	**0.5%**	**0.75%**	**1.00%**
Catch-up: program mgt	*0.5%*	*1.0%*	*1.5%*	*2.0%*
Catch-up: value engineering	*0.4%*	*0.8%*	*1.2%*	*1.6%*
Catch-up: cost estimating	*0.0*	*0.0*	*0.5%*	*1.0%*
Catch-up: procurement	*2.0%*	*4.0%*	*4.0%*	*4.0%*
Catch-up efficiency	**2.9%**	**5.8%**	**7.2%**	**8.6%**
Total efficiency	**3.15%**	**6.30%**	**7.95%**	**9.60%**

Source: Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 157.

[167] Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 156-157.

6 Allowances for a return on assets regulatory depreciation and tax liabilities

To calculate the allowances for a return on assets and regulatory depreciation[168] in the revenue requirement, we need to determine three key inputs:

- the value of Sydney Water's regulatory asset base (RAB), which represents the economic value of the assets used to deliver the monopoly services
- the appropriate asset lives and depreciation method for Sydney Water's RAB, and
- the appropriate rate of return (eg, using the WACC) on Sydney Water's RAB.

The sections below provide an overview of our decisions on these issues and their impact on the value of the RAB.

We also discuss our draft decisions on factors affecting the regulatory tax allowance and set out our findings on that tax allowance over the 2016 determination period.

6.1 The value of the RAB

The RAB represents the value of Sydney Water's assets on which we consider it should earn a return on capital and an allowance for regulatory depreciation. In determining the value of the RAB over the 2016 determination period, we have calculated:

- the opening RAB at 1 July 2016 by rolling the RAB forward from 2011-12 to 2015-16, and
- the value of the RAB in each year of the 2016 Determination.

Draft decision

10 We have decided to:

- set the opening RAB at 1 July 2016 by rolling the RAB forward from 2011-12 to 2015-16 as shown in Table 6.1
- adopt the value of the RAB in each year of the 2016 Determination as shown in Table 6.2.

[168] Regulatory depreciation is also known as 'return of assets', as the regulatory depreciation allowance returns the value of assets over their lives.

6.1.1 Reasons for our draft decision

Calculating the opening RAB

In calculating the opening RAB, we rolled forward the RAB over the 2012 determination period. This involved using the determined RAB at 1 July 2011[169] and making the following adjustments:

- adding prudent and efficient capital expenditure (see Chapter 5)
- deducting cash capital contributions
- deducting the regulatory value of assets disposals
- deducting the regulatory depreciation we allowed at the 2012 determination, and
- adding the annual indexation of the RAB.[170]

This determines the opening RAB for the 2016 determination period. The calculation of the opening RAB is set out in Table 6.1 below. Our decisions regarding the treatment of cash contributions and asset disposal are discussed in this chapter.

Table 6.1 Draft opening RAB for 2016 determination period ($millions, $nominal)

	2011-12	2012-13	2013-14	2014-15	2015-16[a]
Opening RAB	12,190	12,874	13,557	14,264	14,826
Plus: Actual prudent and efficient capex	612	597	548	621	704
Less: Cash capital contributions	-3	-1	0	-8	0
Less: Asset disposals	-4	-6	-12	-8	-38
Less: Allowed regulatory depreciation	-208	-223	-244	-262	-281
Plus: Indexation[b]	287	316	415	219	379
Closing RAB	**12,874**	**13,557**	**14,264**	**14,826**	**15,591**

a Figures for 2015-16 are forecasts.

b Inflation figures used are sourced from ABS All Capitals Consumer Price Index, 6401.0.: 2011-12, 2.3%; 2012-13, 2.4%; 2013-14, 3.0%; 2014-15, 1.5%; 2015-16, 2.5%.

Note: Totals may not add due to rounding.

169 When we set the RAB at our 2012 determination, the figures we used for 2011-12 were forecasts. Therefore, we need to adjust the 2011-12 figures for our actual figures including our decisions on capital expenditure for 2011-12.

170 Sydney Water's pricing proposal was due by June 30 2015. This meant that Sydney Water was unable to include actual inflation for 2014-15 in its RAB calculations. Instead, we directed Sydney Water to use the Bloomberg Mean Consensus inflation forecast (as at 10 October 2014) of 2.4% for 2014-15. We have updated inflation for this year to the actual 2014-15 inflation figure of 1.5%. The impact of adopting the actual inflation figure in the RAB roll-forward is a reduction in the typical annual residential bill of between $3 and $4.

Calculating the RAB over the 2016 determination period

To calculate the RAB in each year of the 2016 determination period, we rolled forward the RAB to 2019-20 by:

- adding $2,353 million of prudent and efficient forecast capital expenditure over the period (discussed in Chapter 5)
- adding $578 million to the opening RAB for the value of Sydney Water's assets subject to finance leases
- adding $26 million to the opening RAB for capital expenditure in Rouse Hill (discussed in Chapter 9)
- deducting:
  - $54 million for the regulatory value of asset disposals
  - $13 million for capital contributions
  - $25 million in 2017-18 for redundant IT assets, and
  - $1,269 million for regulatory depreciation.

This gives the forecast RAB for each year of the 2016 period we have used to generate the return on capital and allowance for depreciation.

The RAB roll-forward over the 2016 determination period is shown in Table 6.2 below. With the exception of prudent and efficient forecast capital expenditure (discussed in Chapter 5), we discuss our decisions on the various RAB adjustments in further detail in the sections below.

Table 6.2 Draft RAB for 2016 determination period ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20
Opening RAB	**15,591**	**16,507**	**16,788**	**17,033**
Plus Adjustment for Rouse Hill capex	26	-	-	-
Plus Adjustment for finance leases	578	-	-	-
Plus: Efficient capital expenditure	633	624	580	506
Less: Asset write-offs	-	-25	-	-
Less: Asset disposals[a]	-29	-9	-9	-9
Less: Regulatory depreciation	-292	-309	-326	-342
Closing RAB	**16,507**	**16,788**	**17,033**	**17,188**

[a] All asset disposals are sales of land.

Note: Totals may not add due to rounding.

Our calculation of the RAB for the 2016 determination results in the RAB being $537 million (or 3%) lower at the end of the determination period than Sydney Water proposed. Table 6.3 below compares our finding on the RAB to Sydney Water's proposal.

Table 6.3 IPART draft and Sydney Water proposed RAB ($millions, $2015-16)

	2015-16	2016-17	2017-18	2018-19	2019-20
IPART draft decision	15,591	16,507	16,788	17,033	17,188
Sydney Water Proposed	15,677	16,762	17,159	17,497	17,725
Difference	*-86*	*-255*	*-371*	*-464*	*-537*
Difference %	*-0.6%*	*-1.5%*	*-2.2%*	*-2.7%*	*-3.0%*

Note: Sydney Water's proposed RAB includes forecast inflation for 2014-15 of 2.4%. The outturn inflation for 2014-15 was 1.5%. Totals may not add due to rounding.

Source: Sydney Water pricing proposal to IPART, June 2015, p 87.

The main differences leading to a lower RAB than Sydney Water proposed are:

- our draft decisions to reduce Sydney Water's forecast capital expenditure by $420 million
- our draft decision to use a $106 million lower value for Sydney Water's finance leased assets, and
- the use of actual inflation for 2014-15 in the RAB roll-forward, which decreased the RAB by around $130 million.

6.2 Asset disposals

The value of any regulatory assets Sydney Water disposes of during the 2012 determination period and proposes to dispose of during the 2016 determination period are deducted from the RAB. This ensures customers are not charged a return on assets or regulatory depreciation for assets that are no longer used to provide the regulated services.

Disposals can include asset sales, write-offs and write-downs. We regard disposals as significant if they attract capital gains tax or account for more than 0.5% of the RAB.

Draft decision

11 We have decided to:

- deduct the regulatory value of actual and forecast asset disposals from the RAB, where the regulatory value is determined as:
  a. for significant sales of assets purchased before the RAB line-in-the-sand: Asset sales revenue x RAB/DRC at the time the RAB was established
  b. for significant sales of assets purchased post RAB line-in-the-sand: purchase price + capital expenditure – depreciation + indexation
  c. for significant asset write-offs: Determined on a case-by-case basis
  d. for non-significant write-offs: Zero unless determined by exception on a case- by-case basis
  e. for non-significant asset sales: Receipts from asset sales
- not to deduct the sale of the Central Workshops land parcel from Sydney Water's RAB.

6.2.1 Reasons for our decision

We have changed the way we treat asset disposals from our 2012 Determination.

Our approach to asset disposals reflects our view that the asset's identifiable **regulatory value** should be removed from the RAB. This is the value of the asset as it entered the RAB (if known), adjusted for the effect of depreciation and indexation. We also consider that the business should pay any tax obligations from the regulatory profit it retains.

This approach means the business bears the risk of any profits or losses arising from the sale of an asset, and customers are not affected. We consider this to be appropriate because the benefit customers received came from consuming the service, not from ownership of the asset. We consider that the impact of any profit or loss should lie entirely with the business (or shareholder).

Our policy on the regulatory treatment of asset disposals is set out in detail in Appendix H.

Our treatment of Sydney Water's proposed land sales

In its pricing proposal, Sydney Water proposed to sell around $455 million of land between 2012 and 2020. In November 2015, Sydney Water provided IPART with a revised estimate totalling $324 million over the same period.[171]

[171] Email to IPART, Sydney Water, 27 November 2015.

As set out in Appendix H, where the value of an asset as it entered the RAB is unknown, and this asset entered the RAB before the 2000 'line-in-the-sand' (like most of Sydney Water's surplus land[172]), we will estimate its regulatory value based on:

- the ratio of the RAB to the depreciated replacement cost (DRC) of Sydney Water's assets at the time the RAB was established *multiplied by*
- the sale value of the asset.

For Sydney Water, the DRC of its noncurrent assets in 2000 was $12.5 billion,[173] while the economic value (the RAB) was calculated by IPART at $5.3 billion.[174] Therefore, at the time of the line-in-the-sand, all assets were included in the RAB at 42% ($5.3 billion/$12.5 billion=42%) of their DRC (ie, book value).

In its pricing proposal, Sydney Water proposed that 50% of the proceeds from asset sales be deducted from the RAB; with an adjustment to the regulatory tax allowance which reflected the 50% of its tax obligations.[175]

Our proposed approach for estimating the regulatory value of assets where their value as they entered the RAB is unknown will provide consistent and fair treatment of all assets acquired pre-2000. This approach will allow Sydney Water to retain a significant proportion of the proceeds from the sale of such assets, and thus remove any disincentive to sell non-productive assets.

We have applied this approach both in establishing the opening value of the RAB for the 2016 determination period, and in rolling forward this value over the determination period.

In its submission to our Issues Paper, Sydney Water supported our proposed approach in principle.[176] However, it argued that using the RAB:DRC ratio (42%) overstated the fair regulatory value.[177] It argued:

- land values had increased an average 4.80% per annum,[178] and
- using 42% to calculate the regulatory value to be removed from the RAB included a regulatory profit component.[179]

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172 Sydney Water notes that 99% of its land assets in its fixed asset register were held pre-2000. See Sydney Water pricing proposal to IPART, June 2015, p 280.

173 Sydney Water, *Annual Report*, 2000, p 39.

174 IPART, *Sydney Water Corporation - Prices of water supply, sewerage and drainage services – Medium-term price path – Final Report,* October 2000, Attachment 5.

175 Sydney Water pricing proposal to IPART, June 2015, p 282.

176 Sydney Water submission to IPART Issues Paper, October 2015, p 40.

177 As land prices had increased a greater rate than CPI since 2000.

178 Sydney Water submission to IPART Issues Paper, October 2015, p 40.

179 Sydney Water sought an increase in the regulatory tax allowance to reflect the tax liability of the profit component deducted from the RAB. Sydney Water submission to IPART Issues Paper, October 2015, p 40.

We agree that land values have increased at a greater rate than general inflation since 2000. Nonetheless, we consider that different types and classes of assets will have appreciated at different rates, some higher than inflation (such as land), some potentially lower than inflation. We consider that maintaining our 42% ratio for all asset sales, including land, ensures that the RAB as a whole is treated consistently. As such, for consistency we consider it reasonable to maintain our preferred regulatory treatment.

Under our approach, only the regulatory value is removed from the RAB and Sydney Water retains the full regulatory profit. Accordingly, it would fund any capital gains tax (CGT) obligations from its retained profits and as such we have not included any CGT component in the regulatory tax allowance (see section below on tax allowance).

Excluding the sale of the Central workshops land parcel from the RAB

Sydney Water has requested that the sale of 'Central Workshops' land parcel not be deducted from the RAB, as it was non-operational at the RAB line-in-the-sand.[180] Sydney Water sold the parcel for $40.3 million in 2014-15.[181]

Our policy on asset disposals (outlined in Appendix H) states that if an asset was demonstrably non-operational at the line-in-the-sand then, on an exception basis, we would not deduct its sale from the RAB. On this basis, and the evidence presented to us, we have decided not to deduct the sale of the Central Workshops land parcel from the RAB.

With the exclusion of the Central Workshops land parcel sale, we have deducted $119 million[182] from Sydney Water's RAB for asset sales between 2012-13 and 2019-20.

Treatment of asset write-offs

We have accepted Sydney Water's concerns regarding our proposed treatment of asset write-offs.[183] Sydney Water argued that using the accounting treatment of write-offs to calculate a RAB deduction potentially double counts write-offs and will disadvantage the utility because of differences between regulatory and book asset lives (because regulatory lives are more aggregated).[184]

We consider that asset write-offs should be addressed through adjustments to the capital program and RAB for prudency and efficiency. As such, we have adopted a default assumption that **non-significant** asset write-offs have no regulatory value (because they have reached the end of their regulatory lives) unless a regulatory value is identified, by exception, on a case-by-case basis.

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[180] Sydney Water email to IPART, 14 December 2015.
[181] Sydney Water email to IPART, 27 November 2015.
[182] $119m = 42% x ($324m – $40.3m).
[183] Sydney Water submission to IPART Issues Paper, October 2015, p 42.
[184] Sydney Water submission to IPART Issues Paper, October 2015, pp 42, 83.

However, we have decided to treat all **significant** asset write-offs on a case by case basis. This is consistent with our approach outlined in the Issues Paper.

Write-off of $24.8 million in IT assets

In its review of Sydney Water's expenditure, Atkins Cardno found that Sydney Water's investment in its IT program of $328 million over the four years of the 2016 determination period would lead to a redundancy in its existing Customer Management System (CMS).

Atkins Cardno recommended writing down $24.8 million of electronic assets in 2017-18. We have accepted Atkins Cardno's recommendation and have accordingly reduced the RAB by $24.8 million in 2017-18.

6.3 Adjustments for finance leases

A lease is classified as a finance lease if it transfers substantially all the risks and rewards incidental to ownership of an asset.[185] Assets subject to finance leases typically have three components – interest payments, principal payments, and payments covering the operating costs incurred in delivering the services associated with the asset.

Sydney Water currently has two contracts with finance lease components, namely:

- Blue Mountains Tunnel Sewage Transfer Agreement (BMT), and
- The Macarthur Water Filtration Agreement (WFA).[186]

It is also in the final stages of renegotiating two other WFAs which, once completed, will give rise to agreements with finance lease components:

- Prospect WFA (covering the Prospect water filtration plant), and
- Wyuna WFA (covering the Woronora and Illawarra water filtration plants).[187]

Draft decision

12 We have decided to value Sydney Water's finance leased assets by:

- discounting all future principal and interest payments associated with each lease over the life of the lease agreement
- using the implied interest rate in each lease agreement as the discount rate
- adding $558.9 million to the RAB as the value of Sydney Water's assets subject to finance leases (instead of passing through finance lease payments as operating expenditure), and

[185] Australian Government, Australian Accounting Standard AASB 117.
[186] Sydney Water pricing proposal to IPART, June 2015, p 284.
[187] Sydney Water pricing proposal to IPART, June 2015, p 284.

– adding a further $18.7 million to the RAB as the capitalised value of Sydney Water's risk premium.

6.3.1 Reasons for our draft decision

We have decided to value Sydney Water's finance lease assets at $558.9 million, which is the current value of the lease agreements. Our valuation is based on discounting each lease's future interest and principal payments, over the life of each lease.

We will also add a further $18.7 million to the opening RAB for the 2016 determination period. This sum represents the present value of Sydney Water's efficient risk premium payments for risks related to asset performance and condition. We have calculated this by:

- discounting each lease's future median expenditure on asset related costs, and
- taking 50% of that value, being an estimate of the efficient outsourcing of those avoided costs.[188]

The discount rate used is the full interest rate implied in each lease agreement.

This approach differs from that taken in the 2012 Determination, where we passed through all finance lease payments as operating expenditure. However, we consider our revised approach results in the operating expenditure cost block better reflecting pure operating costs, as interest and principal payments are removed. Similarly, the inclusion of the residual value of the assets in the RAB means that Sydney Water can earn an appropriate rate of return on the asset, and a depreciation allowance that reflects the economic value and life of the asset.

Value of the underlying assets

Sydney Water proposed to value its finance lease assets at **$683.2 million** and used a slightly different methodology to us.[189] While it valued the finance lease assets by discounting all future interest and principal payments associated with each lease, it used the WACC rather than the interest rate in the lease as the discount rate.[190]

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[188] We note that Sydney Water's proposed costs represents what it would have spent had the assets been its full responsibility. It does not represent the most efficient actual median risk, as the lessor may be willing to accept that risk at significantly less. As such, subject to any further information, we consider that a fair share of that additional $37.3 million customers should bear is 50%, or $18.7 million.

[189] In its pricing proposal in June 2015, Sydney Water reiterated that its preferred regulatory treatment of finance leases is to pass through annual lease payments as operating expenditure. This would include an upward adjustment of the regulatory tax allowance. However, in its proposal Sydney Water acknowledged that IPART's preferred methodology was to add the value of the underlying asset(s) to the RAB. Its pricing proposal was based on this methodology. Sydney Water pricing proposal to IPART, June 2015, pp 287-288.

[190] By discounting all future payments by the WACC, Sydney Water's proposed value of assets to be added to the RAB ($683.2 million) generates a return on assets that is revenue neutral when compared to the actual principal and interest payments.

However, we consider that for the purpose of valuing the underlying assets, the use of the WACC is not the most appropriate discount rate. We consider that using the actual or implied interest rates in Sydney Water's finance leases will generate a more accurate asset value when discounting future lease payments.

In our view, the interest rates used in Sydney Water's financial statements with respect to finance leases provides the best available estimate of its actual interest rate. Based on these discount rates, we calculate that the total value of Sydney Water's underlying assets subject to finance leases is **$558.9 million.**

We have added this amount to the opening RAB, upon which Sydney Water earns a return on capital and depreciation allowance.

Value of the risk premium

Sydney Water argued in its proposal that the interest component of its finance lease payments included a risk premium.[191] This risk premium outsources a portion of the risks associated with the maintenance and performance of the assets to the lessor.

We consider that **some** of the annual lease payments efficiently manage the risks associated with these assets. One of the potential drawbacks of using the implied interest rates approach to value finance lease assets (outlined above) is that it may not recognise any additional risk premium that Sydney Water pays to the lessor. In the absence of these payments, Sydney Water would need to undertake additional operating and capital expenditure to maintain the assets in a satisfactory condition.[192] Sydney Water argues that as well as the assets themselves, the lessor takes on additional risks associated with owning, operating and maintaining the asset.[193]

We agree with Sydney Water that its current lease payments for its finance leased assets contain a risk premium component. The risks included in the payments under the agreements may include:

- interest rate risk
- asset price transfer risk, and
- asset condition and performance risk.

[191] Sydney Water pricing proposal to IPART, June 2015, pp 283-287.
[192] Sydney Water pricing proposal to IPART, June 2015, p 284.
[193] Sydney Water pricing proposal to IPART, June 2015, p 284.

We consider that the only risk which Sydney Water should be compensated through customer prices is that of asset condition and performance. Our draft finding is that Sydney Water has efficiently outsourced a portion of the maintenance and renewals expenditure associated with its finance leased assets. We have discounted future payments for the maintenance and renewals activities we consider to be efficient. Using this method, we have added, in addition to the $558.9 million for the underlying assets, a further $18.7 million to the opening RAB in recognition of Sydney Water's finance lease related risk premium.

6.4 Return on capital

We include an allowance for a return on assets in the revenue requirement. This represents our assessment of the opportunity cost of the capital invested to provide the regulated services. Our approach ensures that the business can continue to make efficient capital investments in the future.

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

Draft decision

13 We have decided to:

- apply a real post-tax WACC of 4.8% for the purposes of calculating an appropriate rate of return on Sydney Water's assets, and
- set an allowance for return on capital as shown in Table 6.5 below.

Rate of return

We have developed our current approach to setting the WACC in consultation with stakeholders in a number of reviews.[194] Our draft decision is to use our standard methodology for all parameters. We have selected the midpoint WACC value of 4.8%.

The WACC is based on market data (risk free rate, debt margin and inflation) sampled to 20 January 2016. The market-based parameters and the resulting WACC will be updated before we make our final decision. Our draft decisions on parameters are shown in Table 6.4.

[194] IPART completed a major review of the WACC in 2013 (IPART, *Review of WACC Methodology – Final Report*, December 2013). More recently, it has developed the method of estimating the debt margin and the inflation adjustment (IPART, *WACC - IPART's New Approach to Estimating the Cost of Debt – Fact Sheet*, April 2014; IPART, *New approach to forecasting the WACC inflation adjustment – Fact Sheet*, March 2015).

Table 6.4 WACC for draft decisions (sampled to 20 Jan 2016)

	WACC: current data			WACC: long-term			WACC range		
	Low	Mid	High	Low	Mid	High	Low	Mid	High
Nominal risk free rate		2.8%			4.6%				
Inflation		2.5%			2.5%				
Debt margin		2.8%			2.9%				
Gearing		60%			60%				
Market risk premium	7.0%	8.5%	10.0%	5.5%	6.0%	6.5%			
Equity beta	0.6	0.7	0.8	0.6	0.7	0.8			
Cost of debt (nominal pre-tax)		5.6%			7.5%				
Nominal Vanilla WACC	6.2%	6.9%	7.7%	7.7%	8.0%	8.4%	6.9%	7.4%	8.0%
Post-tax real WACC	3.6%	4.3%	5.1%	5.0%	5.4%	5.8%	4.3%	**4.8%**	5.4%

Source: Bloomberg, RBA, IPART calculations.

Sydney Water's initial proposal was for a WACC of 4.6%.[195] It updated its proposed WACC to 4.97% in its response to our Issues Paper.[196] Sydney Water calculated its proposed WACC values using our standard approach and industry-specific parameters for all aspects of the WACC except for one: it did not propose the midpoint WACC. Instead, it has placed a 60% weighting on the long-term (10-year) WACC estimate and a 40% weighting on the current WACC estimate.[197]

Generally, both of Sydney Water's submissions (the pricing proposal and the response to the Issues Paper) support our approach to estimating the WACC, and our objective of setting a WACC that reflects the efficient cost of capital for a **benchmark entity** that operates in a competitive market and faces similar risks to the regulated business.[198] However, Sydney Water raised concerns with the following aspects of our approach:

- **50:50 weighting on long term and current WACC estimates:** Sydney Water proposed a 60:40 weighting between the long-term and current WACC.[199]
- **Equity beta**: Sydney Water proposed an equity beta value for the water industry of 0.7 in its pricing proposal. This is the midpoint of IPART's standard range for the water industry. However, Sydney Water submits that there is evidence to support a range of 0.7 to 0.8.[200]

[195] Sydney Water pricing proposal to IPART, June 2015, p 218.
[196] Sydney Water response to IPART Issues Paper, October 2015, p 44.
[197] Sydney Water's updated WACC value is based on parameters from IPART's *WACC Biannual Update*, August 2015 (reweighted to 60% long-term and 40% current data).
[198] Sydney Water response to IPART Issues Paper, October 2015, p xi.
[199] Sydney Water response to IPART Issues Paper, October 2015, pp xi, 44.
[200] Sydney Water pricing proposal to IPART, June 2015, p 223.

- **Market volatility**: Sydney Water has requested early warning if market volatility requires us to consider selecting a point other than the midpoint WACC value.[201] It is also concerned that the threshold for IPART's uncertainty index may be too high.[202]

We have retained our standard valuation for the industry-specific parameters. In coming to this position, we conducted analysis of comparator companies and regulatory practice in Australia to ensure that our typical industry-specific parameters for the water industry remain appropriate.

As market uncertainty is currently within one standard deviation of the long term average, we have selected the midpoint WACC value. This accords with our decision rule for selecting a point within our range of WACC values established as part of our 2013 review of the WACC.[203]

Our detailed consideration of Sydney Water's views on the WACC are presented in Appendix I.

Allowance for return on capital

Based on the RAB values set out in section 6.1 and our draft decision to apply a WACC of 4.8%, the resulting return on capital (WACC% x RAB) is shown in Table 6.5 below.

Our allowance for a return on capital is higher than proposed by Sydney Water in its June 2015 pricing proposal. This is the result of the higher WACC more than offsetting lower RAB values due to our efficiency and prudency adjustments to capital expenditure.

Table 6.5 Draft return on capital ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20	Total
IPART draft decision	773	788	801	810	3,172
Sydney Water Proposed	752	770	787	800	3,109
Difference	*21*	*18*	*14*	*10*	*63*
Difference %	*2.9%*	*2.3%*	*1.7%*	*1.3%*	*2.0%*

Source: Sydney Water pricing proposal to IPART, June 2015, p 83.

[201] Sydney Water response to IPART Issues Paper, October 2015, p 45.
[202] Sydney Water pricing proposal to IPART, June 2015, p 222.
[203] IPART, *Review of WACC Methodology – Final Report*, December 2013, p 4.

6.5 Regulatory depreciation

An allowance for regulatory depreciation is included in the revenue requirement (and used in calculating the value of the RAB, as discussed above). This is intended to ensure that the capital invested in the regulatory assets is returned over the useful life of each asset.

To calculate this allowance, we determine the appropriate lives for the assets in Sydney Water's RAB, and the appropriate depreciation method to use.

Draft decision

14 We have decided to adopt:

- a straight-line depreciation method for the 2016 determination period
- new and existing asset lives as set out in Table 6.6, and
- asset lives for assets subject to finance leases as set out in Table 6.7.

6.5.1 Reasons for our draft decision

Adopting Sydney Water's asset lives and straight-line depreciation method

We have accepted Sydney Water's straight-line approach to depreciation. This is consistent with our approach in previous reviews.[204] We consider this method is superior to alternatives in terms of simplicity, consistency and transparency.

We have also accepted Sydney Water's asset lives (see Table 6.6). In its pricing proposal, Sydney Water set asset lives in-line with the 2012 Determination (using its CEMELND[205] asset classes). Our consultant, Atkins Cardno, reviewed the asset lives for the 2016 Determination and considered them to be appropriate.[206]

[204] Under this method, the assets in the RAB are depreciated by an equal value in each year of their economic life, so that their real written down value follows a straight line over time, from the initial value of the asset to zero at the end of the asset's life.

[205] We classify assets into civil, electrical, mechanical, electronic, and non-depreciating components to calculate the allowance for regulatory depreciation.

[206] Atkins Cardno, *Sydney Water Corporation – Expenditure Review*, December 2015, pp 165-166.

Table 6.6 Draft asset lives for the existing RAB

		Existing asset lives	New asset lives
Corporate	Civil	62.7	67.6
	Electronic	6.4	10.0
	Mechanical	5.0	8.0
	Electrical	-	10.0
Water	Civil	93.2	140.0
	Electronic	9.3	15.0
	Mechanical	29.7	40.0
	Electrical	20.5	30.0
Wastewater	Civil	80.9	90.0
	Electronic	9.3	15.0
	Mechanical	16.5	25.0
	Electrical	16.9	25.0
Stormwater	Civil	116.6	150.0
	Electronic	-	15.0
	Mechanical	-	25.0
	Electrical	-	25.0

Source: Sydney Water Annual Information Return, September 2015.

Adopting new asset lives for finance leases

We have adopted asset lives for Sydney Water's finance leases following review by our consultant, Atkins Cardno. These differ from Sydney Water's forecast because of our concerns with:

- The relatively low asset life for **civil** assets for the water finance leases.[207]
- The **electrical** and **mechanical** asset lives for Macarthur WFA.[208]

Sydney Water proposed adding two separate RABs, one for water and a second for wastewater, related to assets being converted to finance leases.[209] Table 6.7 provides details of our asset lives for Sydney Water's finance leases and Sydney Water's proposal.

[207] Atkins Cardno suggested a 100-year asset life from the date of commissioning as appropriate. Atkins Cardno, *Sydney Water Corporation – Expenditure Review*, December 2015, p 169.

[208] Unless this is due to poor asset condition, Atkins Cardno suggested these should be the same as the other two water finance leases. Atkins Cardno, *Sydney Water Corporation – Expenditure Review*, December 2015, p 169.

[209] Sydney Water pricing proposal to IPART, June 2015, pp 89-90.

Table 6.7 Asset lives for assets subject to finance leases (years)

		Sydney Water asset lives	IPART asset lives[a]
Macarthur	Civil	70.0	80.0
	Electronic	14.0	14.0
	Mechanical	19.0	21.0
	Electrical	14.0	21.0
Prospect	Civil	50.0	80.0
	Electronic	20.0	20.0
	Mechanical	21.0	21.0
	Electrical	22.0	21.0
Wyuna	Civil	51.0	80.0
	Electronic	21.0	21.0
	Mechanical	21.0	21.0
	Electrical	21.0	21.0
Blue Mountains Tunnel	Civil	80.0	80.0
	Electronic	-	-
	Mechanical	-	-
	Electrical	-	-

a The lives of civil assets from the Water Filtration Agreements have been set at 80 years. This represents the difference between Atkins Cardno's recommended 100-year life of new civil assets, and the age of the treatment plants.

Source: Sydney Water Annual Information Return, September 2015.

The comparison between our allowance for regulatory depreciation (a return of capital) is compared to Sydney Water's proposed allowance in Table 6.8 below. Our lower depreciation allowance is due to our prudency and efficiency adjustments to Sydney Water's proposed capital expenditure program, and hence lower RAB.

Table 6.8 Draft allowance for regulatory depreciation (return of capital) ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20	Total
IPART draft decision	285	302	319	334	1,239
Sydney Water Proposed	293	313	332	351	1,289
Difference	*-9*	*-11*	*-14*	*-17*	*-50*
Difference %	*-2.9%*	*-3.4%*	*-4.1%*	*-4.8%*	*-3.9%*

Note: Totals may not add due to rounding.

Source: Sydney Water pricing proposal to IPART, June 2015, p 83.

6.6 Allowance for tax

We include an explicit allowance for tax, because we use a post-tax WACC to estimate the allowance for a return on assets in the revenue requirement. This allowance reflects the regulated business' forecast tax liabilities.

We calculate the tax allowance for each year by applying a 30% statutory corporate tax rate adjusted for franking credits to the business's (nominal) taxable income.[210] For this purpose, taxable income is the notional revenue requirement (excluding tax allowance) less operating cost allowances, tax depreciation, and interest expenses. As part of calculating the appropriate tax allowance, the business is required to provide forecast tax depreciation for the determination period. Other items such as interest expenses are based on the parameters used for the WACC, and the value of the RAB.[211]

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.

Draft decision

15 We have decided to:

- make no adjustment to the regulatory tax allowance for capital gains tax on land sales
- make no adjustment to the regulatory tax allowance for revenue from grants and cash capital contributions
- adopt Sydney Water's forecasts for assets free of charge, and
- adopt the regulatory tax allowance shown in Table 6.9 below.

6.6.1 Reasons for our draft decision

We have provided a regulatory tax allowance for Sydney Water as detailed in Table A.1. This is much lower than that proposed by Sydney Water, largely as a result of our treatment of asset disposals and grants. Our decisions around these and assets free of charge are outlined in detail below.

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

[211] The nominal cost of debt is the sum of the nominal risk free rate and nominal debt margin.

Table 6.9 Draft regulatory tax allowance ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20	Total
IPART decision	55.0	55.6	53.2	58.1	222.0
Sydney Water Proposed	57.0	59.8	65.4	78.3	260.4
Difference	*-1.9*	*-4.2*	*-12.1*	*-20.1*	*-38.4*
Difference %	*-3.4%*	*-7.0%*	*-18.6%*	*-25.7%*	*-14.7%*

Note: Totals may vary due to rounding.

Source: Sydney Water pricing proposal to IPART, June 2015, p 95.

Excluding revenue from grants and capital contributions from the regulatory tax allowance

We have decided to exclude the revenue from grants and capital contributions from the regulatory tax allowance. Instead, we have decided to deduct grants and cash contributions net of tax from capital expenditure. This better reflects the impact of tax for these contributions.

Cash contributions[212] Sydney Water receives from third parties towards its capital expenditure are typically deducted from the RAB. This ensures customers do not pay for a return on assets or regulatory depreciation for capital expenditure that Sydney Water has not funded.

However, forecast cash contributions have previously been included as income in the tax allowance calculation to provide an agency an allocation of tax against that contribution. There was no tax adjustment for differences in actual historical cash contributions compared to those forecasts.

Under current ATO rules,[213] an agency is required to pay tax on cash contributions and grants. This means that only the amount net of tax can be applied to capital expenditure. Deducting the full amount of the cash contribution from capital expenditure and providing the agency a tax allowance for that cash contribution effectively converts a proportion of the RAB into cash. As a result, we have decided to deduct only the cash contribution amount net of tax from capital expenditure (ie, the RAB) and not include the cash contribution in the tax allowance calculation.

For the 2012 Determination, cash contributions were forecast as zero and therefore there were no deductions from capital expenditure and no tax allowance attributed for cash contributions. Therefore, we consider it reasonable to apply our new approach to both actual and forecast capital contributions (2011-12 to 2019-20).

[212] Cash capital contributions also include grants.

[213] Section 21A, *Income Tax Assessment Act 1936*.

Under our approach, Sydney Water's gross cash contributions set out in Table 6.10 for the period of 2011-12 to 2015-16 and Table 6.11 for the period of 2016-17 to 2019-20 will be deducted from the RAB at 70%.[214] This has further reduced the tax allowance by around $5 million over the four years of the 2016 determination period.

Table 6.10 Sydney Water's cash contributions for the 2012 determination period ($'000, nominal)

	2011-12	2012-13	2013-14	2014-15	2015-16
Water	533	-	-	-	-
Wastewater	3,254	888	-	1,825	-
Stormwater	31	988	-	10,000	-
Total	**3,818**	**1,875**	**-**	**11,825**	**-**

Note: Cash contributions for 2011-12 are updated because at the time of the previous determination, these values were forecasts. Cash contributions for 2015-16 are forecasts.

Source: Sydney Water Annual Information Return, September 2015.

Table 6.11 Sydney Water's cash contributions for the 2016 determination period ($'000, $2015-16)

	2016-17	2017-18	2018-19	2019-20
Water	147	147	147	147
Wastewater	1,608	1,608	1,608	1,608
Stormwater	2,838	2,838	2,838	2,838
Total	**4,594**	**4,594**	**4,594**	**4,594**

Source: Sydney Water Annual Information Return, September 2015

Sydney Water received $14.1 million[215] in grants and cash contributions over the 2012 determination period. Of which, $10 million was a grant provided by the NSW Government from the Housing Acceleration Fund (HAF)[216] for stormwater works at Green Square.[217] Sydney Water indicated in its pricing proposal that only $7 million of the Green Square grant would be used to fund the project and the remaining $3 million was used to pay tax. This outcome is reflected under our new approach.

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214 We have adopted Sydney Water's historical cash contributions and used a 4-year historical average to forecast cash contributions over the 2016 determination period (similar to Sydney Water's proposed treatment of cash contributions for the tax calculation). The 4-year period uses actual data from 2011-12 to 2014-15, so that it coincides with the length of the regulatory period and is consistent with the approach for asset contributions.

215 Sydney Water Annual Information Return, September 2015.

216 Sydney Water also received an additional $38 million from the HAF for other projects during the 2012 period. However, these were equity injections rather than grants, and thus require a return. The full amount of this $38 million is therefore included in the RAB.

217 In October 2013, Sydney Water was directed by the NSW Government under Section 20N(1) of the *State Owned Corporations Act 1989* (NSW) to construct and amplify stormwater infrastructure for the Green Square development. In February 2014, the works were subject to a Ministerial direction to IPART under Section 16A of the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW).

Excluding a provision for Capital Gains Tax on land sales

We have made no allowance in the regulatory tax calculation for capital gains tax. As discussed, we have deducted our estimate of the **regulatory value** of assets subjected to capital gains tax from the RAB (ie, 42% of Sydney Water's forecast land sales from the RAB). Sydney Water, therefore, keeps the regulatory profit/loss from the sale of assets (ie, land) and can fund any capital gains tax obligations from those proceeds. This differs from Sydney Water's proposed 50:50 sharing arrangement on asset disposals, where 50% of the tax on capital gains on asset sales would be included in the tax calculation.[218]

Our treatment of asset disposals has reduced the tax allowance by around $29 million over the 2016 determination period compared to Sydney Water's proposal.

Sydney Water incurred significant capital gains tax liabilities over the 2012 determination period. Given the difficulty in forecasting asset disposals and the resulting capital gains tax, Sydney Water has proposed to recover its actual capital gains tax incurred over the 2012 determination period in the 2016 period.[219] It indicated that this approach will ensure that the impact of asset sales volatility is minimised, and the appropriate tax is allowed for in the regulatory building block framework over the long term.[220] Sydney Water also proposed that we consider adopting a 'true-up' process for regulatory tax adjustments to avoid potentially high regulatory tax losses or gains in any given year, and difficult-to-forecast taxable items.

Our view is that the regulatory tax allowance is not intended to match an agency's actual tax liability. It is derived using our assessment of efficient expenditure, the notional gearing ratio and the WACC. The actual tax liabilities an agency will incur in a given year will vary from our regulatory tax allowance due to differences in:

- interest expenses, arising from a different gearing ratio from our regulatory ratio (60:40 debt:equity) and a different cost of debt
- operating expenditure, and
- sales volumes and customer numbers.

We further consider that conducting a true-up of the tax allowance is broadly inconsistent with our treatment of other cash flows, such as the return on capital and operating expenditure.

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[218] In its June 2015 pricing proposal, Sydney Water proposed using the actual capital gains from asset disposals between 2012-13 and 2015-16 for the purpose of calculating the tax allowance over the 2016 determination period. Sydney Water pricing proposal to IPART, June 2015, p 275.

[219] Sydney Water pricing proposal to IPART, June 2015, p 275.

[220] Sydney Water pricing proposal to IPART, June 2015, p 275.

Adopting Sydney Water's forecasts for assets free of charge

Assets free of charge (AFOC) are assets that utilities receive, usually from developers, for free. AFOC does not affect the RAB, and utilities do not earn a return on or of those assets. Utilities are required to pay tax equivalents on the value of AFOC. As such, we include forecast AFOC as revenue in the calculation of the regulatory tax allowance building block.

In its submission to the 2012 price review, Sydney Water proposed adopting an average of the previous five years of actual AFOC. We accepted this methodology when calculating the regulatory tax allowance for the final determination.[221]

Sydney Water has since changed its approach to forecast AFOC, which we have accepted:[222]

- For **AFOC associated with urban development**, Sydney Water's forecasts are based on the predicted AFOC for each dwelling and the forecast development rate.
- For **AFOC associated with major infrastructure**, Sydney Water's forecasts are based on available information on scheduled projects by private companies and government agencies.

We consider this approach may provide a more accurate forecast of AFOC, particularly in light of the comparison of actual and forecast AFOC over the 2012 determination period presented in Table 6.12.

Table 6.12 Comparison of forecast and actual AFOC between 2011-12 and 2014-15 ($millions, $2015-16)

	2011-12[a]	2012-13	2013-14	2014-15
IPART forecast	102.7	102.7	102.7	102.7
Actual	97.9	111.9	114.7	134.4
Difference	*-4.8*	*9.3*	*12.0*	*31.7*

Notes: Totals may not add due to rounding.

a 2011-12 was the final year of the 2008 determination, but at the time of the 2012 price review, was forecast data. It is shown for comparison purposes.

Source: Sydney Water Financial Model, 2012 Final Report and Determination; Sydney Water Annual Information Return, September 2015.

However, we note that Sydney Water's forecast for AFOC over the 2016 period is considerably higher than actual AFOC over the 2012 period (see Table 6.13 below). This is based on its analysis of forecast new developments and major infrastructure projects over the 2016 determination period.

221 IPART, *Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 – Final Report,* June 2012, p 8.

222 Sydney Water pricing proposal to IPART, June 2015, p 93.

While we have adopted Sydney Water's forecasts regarding its AFOC, we will consider the implications of those forecasts between the draft and final reports. Also, at the next determination, we will undertake a review of Sydney Water's forecasts and compare its 2016 forecasts to its actual AFOC over this determination period. We note that Sydney Water's AFOC forecasts represent around $20 of a residential customer bill.

Our draft decision on AFOC forecasts is the same as Sydney Water's and is set out in Table 6.13 below.

Table 6.13 Draft AFOC forecast ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20
IPART draft decision	145.4	150.2	141.4	143.9
Sydney Water proposed	145.4	150.2	141.4	143.9

Source: Sydney Water Annual Information Return, September 2015.

7 Forecast water sales and customer numbers

Once we have determined the revenue requirement for the 2016 determination period, the next step in our approach is to decide on Sydney Water's forecast water demand and customer numbers, and its forecast chargeable wastewater volumes. These forecasts are used in calculating the water and wastewater price levels required to recover the required revenue.

It is important that the forecasts are reasonable. If they differ markedly from Sydney Water's actual water sales, customer numbers and chargeable wastewater 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, customers will pay too much. If they are higher than actual sales, Sydney Water may not earn sufficient revenue to recover its efficient costs.

7.1 Forecast water demand

Sydney Water's total water demand includes three components:

- billed metered demand, which is the volume of water used by residential and non-residential customers who have a water meter
- billed unmetered demand, which is the (estimated) volume of water used by the small number of customers who do not have a water meter, and
- non-revenue water, which includes (among other items), water associated with real system losses (ie, leakage), unauthorised consumption, and unbilled unmetered consumption (eg, for firefighting).[223]

The costs associated with both billed metered demand and non-revenue water are recovered through the water prices paid by billed metered customers. The costs associated with billed unmetered demand are deemed, and recovered through the higher water service charges paid by unmetered customers (discussed in Chapter 9).

[223] Sydney Water pricing proposal to IPART, June 2015, pp 309-310.

Draft decision

16 We have decided to:

- adopt Sydney Water's revised estimate of -0.264 for the price elasticity of demand for non-residential customers, for the purpose of forecasting water sales
- use a 25% reduction in both residential and non-residential elasticity estimates in forecasting water sales, to account for the perceived asymmetry in demand responses to price increases and price decreases, and
- adopt the residential and non-residential water demand forecasts in Table 7.3 for the purpose of setting Sydney Water's draft maximum water prices.

7.1.1 Reasons for our draft decision

We conducted an extensive review of Sydney Water's demand forecasting model for the 2012 Determination.[224] Sydney Water has since updated its approach in 2014, which was reviewed and endorsed by Sapere Research Group.[225] We undertook a high level review of the updated methodology and key assumptions underpinning Sydney Water's customer numbers and demand forecasts.[226] We found that Sydney Water's demand forecasting approach is sophisticated and generally robust.

However, we identified some potential issues which, if they materialise, could result in an under estimate of demand. In particular, we questioned the following demand elasticity assumptions Sydney Water adopted to derive its forecasts:[227]

- non-residential customers exhibit perfect price inelasticity (ie, elasticity of 0), and
- a demand response to a price fall would only be **half** that of a price increase.

We discuss the adjustments we made to Sydney Water's forecasts below, in light of these concerns.

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[224] We accepted Sydney Water's approach to demand forecasting in the 2012 Determination, as it represented an improvement from previous approaches and was supported by an expert consultant's report. We also held a workshop to discuss Sydney Water's proposed approach to demand forecasting, and the use of possible alternative approaches. External expert stakeholders at our demand forecasting workshop agreed that Sydney Water's model was likely to be the best approach to forecast water demand. IPART, *Review of Sydney Water Corporation's water, sewerage, stormwater drainage and other services – Final Report*, June 2012, pp 92-93.

[225] Tooth, R., *Peer Review of Sydney Water Short Term Demand Forecast*, Sapere Research Group, Report for Sydney Water, January 2015.

[226] We engaged a consultant, Jacobs, to assist with our review of Sydney Water's demand forecasts. Much of the supplementary information used in our analysis was provided to us by Sydney Water on a commercial-in-confidence basis. Jacobs, *Review of Demand Forecasts – Sydney Water*, January 2016 (Commercial-in-Confidence).

[227] Sydney Water pricing proposal to IPART, June 2015, p 322.

Actual water sales over 2012 determination period

We consider that Sydney Water's model performed reasonably well over the 2012 determination period, although there were some variations between forecast and actual demand.

Table 7.1 compares Sydney Water's actual water sales (billed metered demand) over the 2012 determination period to the forecast sales used to set prices for this period. It shows that, to date, its actual sales were higher than forecast in each year, and therefore that Sydney Water has over-recovered its revenue requirement for this period.

Table 7.1 Sydney Water's actual and forecast water sales over the 2012 determination period (ML)

	2012-13	2013-14	2014-15[a]	2015-16
Residential				
Forecast	320,391	322,899	325,309	328,673
Actual	339,013	350,670	340,420	347,451[b]
Non-residential				
Forecast	111,585	111,146	110,835	110,843
Actual	101,968	116,503	115,554	115,693[b]
Total				
IPART Determined	487,202	489,313	491,457	495,013
Sydney Water Actual/Projected	515,661	527,343	514,832	522,292[b]
% Variation	5.84%	7.77%	4.76%	5.51%

a Based on actual demand from July 2014 to May 2015 and forecast demand for June 2015.

b Forecast figures.

Note: Totals include non-revenue water usage.

Source: Actuals sourced from Sydney Water Annual Information Return, June 2015. Forecasts sourced from IPART's, final modelling for the 2012 Determination.

In making the 2012 Determination, we noted that consumer behaviour may change in response to the lifting of drought restrictions and their replacement with the Water Wise rules, and as a result, Sydney Water's forecast sales could be too low.[228] However, in its proposal to the current review Sydney Water indicated that in updating its demand model for this review, it found no evidence of this kind of 'bounce back' in water demand over the 2012 period.[229]

[228] IPART, *Review of Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 – Final Report*, June 2012, p 92.

[229] Sydney Water pricing proposal to IPART, June 2015, p 319.

Instead, Sydney Water attributed it's higher than forecast water sales to the weather conditions over the 2012 determination period, which deviated from the average conditions on which its forecasts were based.[230] For example, Sydney Water noted that during 2012-13 and 2013-14, maximum temperatures were above average almost every month while rainfall was below average in most months (with the exception of a few spikes).[231]

Sydney Water reports that its updated model's prediction of residential demand in 2014-15, the model's first out of sample prediction, was within 0.2% of actual demand.[232] Nonetheless, we observe that forecast demand over the 2016 Determination continues to be based on average weather conditions. Therefore, variations between forecast and actual demand remain likely. The demand volatility mechanism that we have adopted acts as a safety net for customers should these variations eventuate and prove to be material (see Section 7.4 Demand volatility adjustment mechanism).

Overall, Sydney Water reported a decline in its customers' total water use since the early 2000s of about 100 GL a year (or 16%).[233] Over the same period, it's customer numbers increased by about 15% to about 4.8 million people.[234] Therefore, on a per person basis, total water use has decreased by more than a quarter to about 307 litres per person a day.

The price elasticity of demand for non-residential customers

We considered Sydney Water's demand forecasts and assessed the assumptions used to derive these forecasts. One assumption we questioned was Sydney Water's assumed zero price elasticity of demand for non-residential customers.[235]

Sydney Water agreed with us that the price elasticity of demand for non-residential customers is unlikely to be zero.[236] In response, Sydney Water submitted a survey of non-residential water demand elasticity studies that was published in 2010.[237] From the results reported in this survey, Sydney Water averaged commercial and industrial estimates to arrive at a non-residential estimate of -0.264. We consider Sydney Water's revised estimate to reasonably reflect the available evidence.

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230 Sydney Water pricing proposal to IPART, June 2015, p 315.
231 Sydney Water pricing proposal to IPART, June 2015, p 316.
232 Email to IPART, Sydney Water, 2 October 2015.
233 Sydney Water pricing proposal to IPART, June 2015, p 310.
234 Sydney Water pricing proposal to IPART, June 2015, p 310.
235 Sydney Water pricing proposal to IPART, June 2015, p 322.
236 Email to IPART, Sydney Water, 2 December 2015.
237 Worthington, *Commercial and industrial water demand estimation: Theoretical and methodological guidelines for applied economics research, Griffith Business School, Discussion Papers*, September 2010.

Asymmetry assumption in the price elasticity of demand

In our assessment of the assumptions used to derive Sydney Water's demand forecasts, we also questioned Sydney Water's assumed 50% reduction in price elasticity estimates to account for the perceived asymmetry in demand responses to price increases versus price decreases. That is, that the expected demand response to a price decrease is assumed to be half that of the expected demand response to a price increase.

We agree with Sydney Water's rationale that price increases could result in structural changes that will not necessarily be reversed when prices fall (at least over the price path). Therefore, price decreases could result in smaller demand responses compared to when prices increase.

In response to our review, Sydney Water submitted further analysis of the same evidence it included in its pricing proposal to support its view that the 50% assumption is reasonable.[238] However, we continue to have concerns about the relevance and strength of the evidence provided by Sydney Water, specifically:

- None of the evidence relates to water. The studies provided by Sydney Water relate to oil, petrol, natural gas, energy, electricity, and aviation. We are not aware of available evidence for water.
- There is a very wide range in the evidence provided. That is, the ratios of the elasticity of a price decrease over the elasticity of a price increase range from 0.0 to 3.1. This provides a low level of confidence that the average ratio of 0.5 is a statistically robust estimate of asymmetry. A ratio of 1.0 (ie, symmetry), comfortably lies within one standard deviation from the average 0.5.

On balance, we have decided to reduce the asymmetry adjustment from Sydney Water's proposed 50% to 25%. This means that we assume the demand response to a price decrease is 75% that of a price increase. This smaller asymmetry adjustment is applied to both residential and non-residential elasticity estimates.

Table 7.2 summarises the impacts of Sydney Water's price elasticity of demand assumptions applied to its proposed 13.5% price decrease from \$2.276/kL to \$1.970/kL.

[238] Sydney Water pricing proposal to IPART - Appendices, June 2015, p 171-172 and email to IPART, Sydney Water, 2 December 2015.

Table 7.2 Indicative impact of elasticity assumptions over four years ($millions, $2015-16)

Component	Elasticity for price increase	Asymmetry adjustment	Elasticity for price decrease	Demand impact	Revenue impact
Sydney Water's revised proposal					
Single residential	-0.249	50%	-0.124	+0.8%	$33.1
Multi residential	-0.049	50%	-0.025		
Non-residential	-0.264	50%	-0.132	+0.4%	$15.2
Total				**+1.1%**	**$48.2**
IPART draft decision					
Single residential	-0.249	75%	-0.186	+1.2%	$49.6
Multi residential	-0.049	75%	-0.037		
Non-residential	-0.264	75%	-0.198	+0.5%	$22.8
Total				**+1.7%**	**$72.3**

Note: Demand impact: calculated as the expected percentage change in total forecast demand. Revenue impact: calculated as the expected kL change in demand * $1.97/kL usage price.

Source: IPART analysis.

Residential and non-residential water demand forecasts for the 2016 determination period

We have decided to adopt the residential and non-residential water demand forecasts in Table 7.3 for the purpose of setting Sydney Water's draft maximum water prices for the 2016 determination period. These water demand forecasts reflect:

- The revised non-residential elasticity estimate. This change has increased the non-residential demand forecast by 0.4% or 7.7 GL over the four years (as compared to the zero elasticity assumption in Sydney Water's pricing proposal).
- Our 25% reduction in elasticity for both residential and non-residential demand (compared to Sydney Water's proposed 50% reduction). This increases forecast demand by a further 0.6% or 12.2 GL over the four years.

Table 7.3 compares our forecasts with Sydney Water's water demand forecasts. It shows that Sydney Water expects its total water demand to increase from about 523 GL (in 2015-16)[239] to 544 GL (in 2019-20), while we expect total water demand to increase to 550 GL (in 2019-20) and total about 1% more per annum. At a usage charge of $1.97, this higher demand forecast would result in a one-off reduction in the 20mm meter water service charge of about $5 per customer.

[239] Note that 2015-16 is a forecast. Total water demand in 2014-15, the last year of actual data, was 515 GL.

Table 7.3 Residential and non-residential water demand forecasts over the 2016 determination period (GL)

Demand component	2015-16[b] (current)	2016–17	2017–18	2018–19	2019–20
Sydney Water pricing proposal					
Residential	347	353	358	362	367
Non-residential[a]	115	115	115	115	116
Total billed metered	**463**	**468**	**473**	**477**	**483**
Total billed unmetered and non-revenue	**60**	**60**	**60**	**61**	**61**
Total demand	**523**	**528**	**533**	**538**	**544**
IPART draft decision					
Residential	347	355	361	365	370
Non-residential[a]	115	117	118	118	118
Total billed metered	**462**	**471**	**477**	**482**	**487**
Total billed unmetered and non-revenue	**60**	**61**	**61**	**61**	**62**
Total demand	**522**	**532**	**539**	**544**	**550**

a Includes unfiltered water demand.

b 2015-16 is included for comparison.

Note: Total metered water sales is the sum of the residential and non-residential metered water sales less the recycled water top-up. This is the figure that is multiplied by the water usage charge and then deducted from the target revenue requirement.

Source: Sydney Water pricing proposal, June 2015, p 312 and IPART analysis.

7.2 Forecast customer numbers

Forecasts of customer numbers are used in calculating the water, wastewater and stormwater drainage service charges as part of setting prices to recover the required revenue for each service.

Draft decision

17 We have decided to adopt for the purpose of setting Sydney Water's draft maximum prices:

- the forecast residential customer numbers in Table 7.4, and
- the forecast non-residential customer numbers in Table 7.5.

7.2.1 Reasons for our draft decision

Forecast residential customer numbers

We consider that Sydney Water's forecasts of residential customer numbers are reasonable:

- Forecast residential water customer growth rates appear to be consistent with historical trends and are in line with forecast population growth.
- Forecast residential wastewater and stormwater customer growth rates are reasonable and in line with forecast population trends.

We made one change to the customer numbers for water and wastewater as a result of our decision regarding the billing treatment of dual occupancies (discussed in Chapter 8). This has resulted in an additional 4,085 shared meter customers for water and wastewater.

Table 7.4 compares Sydney Water's forecast residential customer numbers (ie, the number of residential dwellings connected to its systems) to our forecast residential customer numbers over the 2016 determination period.

Table 7.4 Forecast residential customer numbers over the 2016 determination period

	2015-16	2016-17	2017-18	2018-19	2019-20
Sydney water proposed					
Water					
Individual meters[a]	1,183,347	1,202,718	1,224,378	1,247,698	1,271,952
Share meters[b]	590,678	581,522	583,774	584,939	585,576
Unmetered	13,775	13,775	13,775	13,775	13,775
Total residential water customers	**1,787,800**	**1,798,015**	**1,821,927**	**1,846,412**	**1,871,303**
Wastewater					
Individual meters[a]	1,150,968	1,170,334	1,191,978	1,215,276	1,239,503
Share meters[b]	586,923	577,725	579,956	581,110	581,741
Unmetered	2,792	2,792	2,792	2,792	2,792
Total residential wastewater customers	**1,740,683**	**1,750,851**	**1,774,726**	**1,799,178**	**1,824,036**
Stormwater					
Non-multi premise[a]	199,976	203,598	203,971	204,341	204,702
Multi premise[b]	287,964	288,437	295,473	302,545	309,761
Mixed multi premise	8,021	8,096	8,133	8,152	8,162
Total residential stormwater customers	**495,961**	**500,131**	**507,577**	**515,038**	**522,625**

	2015-16	2016-17	2017-18	2018-19	2019-20
IPART draft decision					
Water					
Individual meters[a]	1,183,347	1,202,718	1,224,378	1,247,698	1,271,952
Share meters[b]	590,678	585,607	587,859	589,024	589,661
Unmetered	13,775	13,775	13,775	13,775	13,775
Total residential water customers	**1,787,800**	**1,802,100**	**1,826,012**	**1,850,497**	**1,875,388**
Wastewater					
Individual meters[a]	1,150,968	1,170,334	1,191,978	1,215,276	1,239,503
Share meters[b]	586,923	581,810	584,041	585,195	585,826
Unmetered	2,792	2,792	2,792	2,792	2,792
Total residential wastewater customers	**1,740,683**	**1,754,936**	**1,778,811**	**1,803,263**	**1,828,121**
Stormwater					
Non-multi premise[a]	199,976	203,598	203,971	204,341	204,702
Multi premise[b]	287,964	288,437	295,473	302,545	309,761
Mixed multi premise	8,021	8,096	8,133	8,152	8,162
Total residential stormwater customers	**495,961**	**500,131**	**507,577**	**515,038**	**522,625**

Note: 2015-16 is included for comparison. Given our decision to rebase water and wastewater service charges, each residential customer has been deemed to have a 20mm meter for pricing purposes.

a Such as houses.

b That is, multi-premise properties, such as apartments, flats and (for water and wastewater) mixed development.

Source: Sydney Water pricing proposal to IPART - Appendices, June 2015, p 48-51; and Sydney Water Annual Information Return, September 2015.

In relation to residential customer numbers, Sydney Water noted that the Metropolitan Development Plan had forecast growth of 66,230 dwellings over the 2012 determination period, but that actual growth during this period was higher.[240]

Over the 2016 determination period, Sydney Water has forecast growth of around 96,000 dwellings.[241] It attributed this growth mainly to government funding and housing acceleration programs.

[240] Sydney Water pricing proposal to IPART - Appendices, June 2015, p 184.
[241] Sydney Water pricing proposal to IPART - Appendices, June 2015, p 184.

Forecast non-residential customer numbers

On balance, we have decided to adopt Sydney Water's forecast non-residential customer meter numbers. We note that Sydney Water's forecast growth rate for non-residential customers is lower than the population growth rate, despite actual growth in the non-residential stock being above population growth historically.

In its pricing proposal, Sydney Water reported that while growth of 6,810 properties (or an average of about 1,700 properties per year) was forecast for the 2012 determination period, actual growth was half of this due to billing simplification, property consolidations, and residential redevelopment.[242] As a result, Sydney Water has forecast a more modest non-residential growth of about 1,042 properties per year[243] (3,610 properties in total) over the 2016 determination period.

We acknowledge that forecasting a growth rate for non-residential customers is more difficult than for residential customers due to the diverse nature of the non-residential customer base. It is also a smaller set of customers, particularly because they are represented by meter size, rather than actual number of customers connected to the system. Any discrepancy between forecast and actual non-residential customer growth can have a relatively large impact on the total number of non-residential customers. We will review the outcome of actual non-residential customer numbers at the next price review.

We made one change to the non-residential customer meter numbers for water and wastewater as a result of our decision regarding the billing treatment of joint services properties (discussed in Chapter 8). Relative to Sydney Water's proposal, the number of non-residential meters for water and wastewater is 544 lower for each year of the determination.

Table 7.5 compares Sydney Water's forecast non-residential meter and customer numbers (ie, the number of non-residential properties and customers connected to its systems) to our forecast non-residential meter and customer numbers over the 2016 determination period.

[242] Sydney Water pricing proposal to IPART - Appendices, June 2015, p 184.
[243] Sydney Water pricing proposal to IPART - Appendices, June 2015, p 184.

Table 7.5 Forecast non-residential meter and customer numbers over the 2016 determination period

	2015-16	2016-17	2017-18	2018-19	2019-20
Sydney water proposed					
Water					
20 mm individual meter	46,052	46,668	47,372	48,087	48,778
All other meters	52,033	52,233	52,461	52,692	52,916
Total water meters	**98,085**	**98,901**	**99,833**	**100,779**	**101,694**
Wastewater					
20 mm individual meter	39,128	39,744	40,448	41,163	41,855
All other meters	43,483	43,683	43,911	44,142	44,366
Total wastewater meters	**82,611**	**83,427**	**84,359**	**85,305**	**86,221**
Stormwater					
Very small & strata (<200 sq m)	8,783	8,799	8,815	8,831	8,847
Small (201-1,000 sq m)	14,973	15,005	15,037	15,069	15,101
Medium (1,001 - 10,000 sq m)	5,296	5,304	5,312	5,320	5,328
Large (10,001 - 45,000 sq m)	752	752	752	752	752
Very Large (>45,000 sq m)	134	134	134	134	134
Multi premise	19,985	20,535	21,098	21,645	22,164
Total stormwater customers	**49,923**	**50,529**	**51,148**	**51,751**	**52,326**
IPART draft decision					
Water					
20 mm individual meter	46,052	46,668	47,372	48,087	48,778
All other meters	52,033	51,689	51,917	52,148	52,372
Total water meters	**98,085**	**98,357**	**99,289**	**100,235**	**101,150**
Wastewater					
20 mm individual meter	39,128	39,744	40,448	41,163	41,855
All other meters	43,483	43,139	43,367	43,598	43,822
Total wastewater meters	**82,611**	**82,883**	**83,815**	**84,761**	**85,677**
Stormwater					
Very small & strata (<200 sq m)	8,783	8,799	8,815	8,831	8,847
Small (201-1,000 sq m)	14,973	15,005	15,037	15,069	15,101
Medium (1,001 - 10,000 sq m)	5,296	5,304	5,312	5,320	5,328
Large (10,001 - 45,000 sq m)	752	752	752	752	752
Very Large (>45,000 sq m)	134	134	134	134	134
Multi premise	19,985	20,535	21,098	21,645	22,164
Total stormwater customers	**49,923**	**50,529**	**51,148**	**51,751**	**52,326**

Note: 2015-16 is included for comparison. The figures for water and wastewater are for the number of non-residential customer meters and not the number of non-residential customers, as presented by Sydney Water in Sydney Water pricing proposal to IPART - Appendices, June 2015, pp 48-49.

Source: Sydney Water Annual Information Return, June 2015.

7.3 Forecast chargeable wastewater volumes

Some non-residential properties connected to Sydney Water's wastewater network are liable for a wastewater usage charge, if the volume of wastewater discharged is above a certain allowance (the discharge allowance). The volume above the allowance is called the chargeable wastewater volume. The chargeable wastewater volume for a non-residential property is calculated by multiplying the metered water consumption by a property-specific discharge factor.[244]

Draft decision

18 We have decided to adopt the forecasts for wastewater chargeable volumes as shown in Table 7.6.

7.3.1 Reasons for our draft decision

We have adopted Sydney Water's forecasts for wastewater chargeable volumes with a decreasing discharge allowance profile as shown in Table 7.6.[245] We consider that Sydney Water's bottom-up approach of modelling chargeable wastewater volumes is comprehensive. We agree with Sydney Water that a more aggregated approach would introduce error, given customers' different discharge factors, usage pattern over different quarters, and timing of meter readings.

Sydney Water forecast that chargeable wastewater volumes will remain relatively constant at about 66.4 GL per year over the 2016 determination period.[246] To develop this forecast, Sydney Water used an updated version of the model it used for its 2012 pricing proposal. This model:

- Used a database of quarterly metered water consumption of non-residential properties and other relevant data (eg, discharge factors for each property).[247]
- Used four years of historical meter readings from 2010-11 to 2013-14, whereas the previous model relied on one year of meter readings.[248] To allow for property growth, the model averages the results for the existing properties and applies them to the expected number of new properties.[249]
- Assumed that there will be no further changes to the discharge allowance or the discharge factors over the 2016 period. In particular, it assumed that the discharge allowance will be fixed at 300 kL a year over the period.

[244] A discharge factor is the estimated percentage of incoming water used by a property (as measured by the property's water meter) which is discharged to the sewer.
[245] We have decided to reduce the non-residential discharge allowance from 300 kL to 150 kL per year, with a 50 kL per year transition from 2016-17 onwards. See Chapter 8.
[246] Sydney Water pricing proposal to IPART, June 2015, p 325.
[247] Sydney Water pricing proposal to IPART, June 2015, p 324.
[248] Sydney Water pricing proposal to IPART, June 2015, p 324.
[249] Sydney Water pricing proposal to IPART, June 2015, p 324.

Sydney Water provided figures based upon a declining discharge allowance.[250] We have adopted these volumes except for 2019-20 where we will keep the discharge allowance at 150 kL per year (instead of 100 kL per year as in Sydney Water's impact analysis). The differences between our estimates and Sydney Water's estimates are outlined in Table 7.6 below.

Table 7.6 Non-residential chargeable wastewater volumes

	2015-16	2016-17	2017-18	2018-19	2019-20
Sydney Water's volumes					
Discharge allowance (kL)	300	300	300	300	300
Total chargeable wastewater volumes (ML)	66,430	66,435	66,437	66,440	66,442
IPART draft decision					
Discharge allowance (kL)	300	250	200	150	150
Total chargeable wastewater volumes (ML)	66,430	67,650	68,918	70,472	70,474

Note: 2015-16 is included for comparison.

Source: Sydney Water pricing proposal to IPART June 2015, p 114.

7.4 Demand volatility adjustment mechanism

Draft decision

19 We have decided to consider at the next determination of Sydney Water's prices:

- an adjustment to the revenue requirement and prices to address any over- or under-recovery of revenue over the 2016 determination period due to material differences between the level of water sales over the period and the forecast water sales used in making this determination:
  a. unlike previous determinations, we have not specified a 'deadband' of water sales variability within which such an adjustment would not be considered
  b. at the 2020 Determination, we will consider whether and how best to make a revenue adjustment based on the circumstances at the time.

[250] Sydney Water pricing proposal to IPART, June 2015, p 114.

7.4.1 Reasons for our draft decision

We recognise there is some uncertainty around Sydney Water's water sales forecasts. Therefore, there is merit in applying a demand volatility adjustment at the next (2020) determination of Sydney Water's prices if necessary. This is important for both protecting customers from potential over-recovery over the 2016 determination period, resulting from excess sales, and protecting Sydney Water from under-recovery if it sells less than expected over this period.

While our decisions in this 2016 Determination cannot bind a future Tribunal, this demand volatility adjustment could be implemented by comparing the forecast and actual water demand over the 2016 determination period and adjusting the revenue requirement over the next determination period, as decided by the Tribunal at that time.

The key difference between the mechanism flagged in previous price reviews and our draft decision here is that we have not defined a material variation in sales to be 10% (+ or -). The 2012 Determination included a mechanism to adjust Sydney Water's revenue to address the risk to the business and its customers of a material variation between the net level of actual water demand over the 2012 determination period and the forecast demand used in making the determination. In 2012, we defined a material variation as more than 10% (+ or -) over the whole determination period and noted that only the impact of variation outside of this 10% variation level could be adjusted for.[251]

We now consider there is merit in allowing IPART to consider whether and how best to make a revenue adjustment based on the circumstances at the time. This mechanism accords with our approach taken to the determination of Essential Energy's water prices in Broken Hill,[252] where we did not define the materiality threshold, but rather left this open to our discretion at the next price review to allow us to take into account the circumstances around any significant discrepancy between forecast and actual sales volumes.

[251] IPART, *Review of Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 – Final Report*, June 2012, p 38.

[252] IPART, *Essential Energy's water and sewerage services in Broken Hill – Final Report,* June 2014, pp 43-46.

Sydney Water proposed to retain the demand volatility adjustment mechanism with a reduction in the deadband from +or- 10% to +or- 5%.[253] Sydney Water considers this threshold would only be triggered if high level water restrictions are imposed in the next two or three years.[254] According to Sydney Water, non-average weather conditions and more frequent weather extremes will be the key risks to the accuracy of its demand forecast.[255] Deviations from average weather conditions could cause differences between forecast and actual annual water use of up to +/-5%.[256]

Under the mechanism flagged at the 2012 Determination, the business needs to manage all under- or over- recovery risks within the deadband range. Removing reference to a specific deadband allows us to consider the specific reasons for relevant and material variation, and could effectively decrease or increase the 'deadband'. That is, under our draft decision, the volatility mechanism can be more targeted and effective, which addresses Sydney Water's concerns that the current deadband is too insensitive.

253 Sydney Water submission to IPART Issues Paper, October 2015, p vii.
254 Sydney Water submission to IPART Issues Paper, October 2015, p vii.
255 Sydney Water pricing proposal to IPART, June 2015, p 323.
256 Sydney Water pricing proposal to IPART, June 2015, p 308.

8 Prices for water, wastewater and stormwater services

Currently, Sydney Water's residential customers pay the following charges for water, wastewater and stormwater services:

- **Water –** a per kL consumption-based water usage charge, and a standard (fixed) water service charge.
- **Wastewater –** a standard (fixed) wastewater service charge.
- **Stormwater –** a fixed stormwater service charge that differs for standalone and multi-premises customers (ie, houses and apartments).

Non-residential customers pay the following charges for these services:

- **Water –** a per kL consumption-based water usage charge (that is the same as for residential customers) and a meter-based fixed water service charge.[257]
- **Wastewater**[258] **–** a per kL consumption-based wastewater usage charge that only applies to discharge amounts above a 300 kL discharge allowance, and a meter-based fixed wastewater service charge.
- **Stormwater –** a fixed stormwater service charge that differs based on the size of the property.

Our draft prices for the major services over the 2016 determination period are summarised in Chapter 1. In the sections below, we outline our draft decisions underpinning each price.

[257] Standalone 20mm meter non-residential customers and non-residential customers in mixed developments pay the same standard (fixed) water service charge as residential customers.

[258] Some non-residential customers also face load-based trade waste charges. We outline these charges in Chapter 9.

8.1 Water usage charges

Draft decision

20 We have decided to:

- set Sydney Water's maximum water usage charge at $1.97 per kL in real terms over the 2016 determination period
- pass through the per kL cost of desalinated water into Sydney Water's water usage charges if the Sydney Desalination Plant (SDP) is operating and supplying water to Sydney Water:
  a. the water usage charge is increased by $0.12 per kL in real terms over the 2016 determination period if SDP is operating
  b. this uplift to the water usage charge is triggered if SDP is required to operate the plant under the conditions of its licence or operational approval (as in force at the relevant time) granted under the *Water Industry Competition Act 2006*.

8.1.1 Reasons for our draft decision

Water usage charges

We have accepted Sydney Water's proposed water usage charge of $1.97 per kL over the 2016 determination period. This represents a decrease of $0.31 per kL (or 13.6%) compared with the current usage charge.[259]

Table 8.1 Draft water usage charge ($2015-16)

	2015-16[a]	2016-17	2017-18	2018-19	2019-20
Sydney Water proposed					
Usage charge ($/kL)	2.28	1.97	1.97	1.97	1.97
Annual change		*-13.6%*	*0.0%*	*0.0%*	*0.0%*
IPART draft decision					
Usage charge ($/kL)	2.28	1.97	1.97	1.97	1.97
Annual change		*-13.6%*	*0.0%*	*0.0%*	*0.0%*

[a] 2015-16 prices were not available when Sydney Water finalised its pricing proposal. The prices for 2015-16 have been updated to reflect actual inflation and prices.

Note: Prices are presented to the nearest cent so calculations may be different due to rounding.

Source: Annual Information Return, June 2015; and IPART analysis.

[259] This differs from the changes stated in Sydney Water's pricing proposal to IPART, June 2015, p 100. This is because 2015-16 prices were not available when Sydney Water finalised its proposal so changes were based on forecast prices.

Our decision to accept Sydney Water's proposed water usage charge balances a number of competing considerations. Notably, the usage charge of $1.97 per kL is close to the average price selected by stakeholders in a survey undertaken by Sydney Water.[260] Retaining a higher usage charge enables customers to have greater control over bills, a recurrent theme in stakeholder submissions and Sydney Water's customer research.[261]

Stakeholders considered that higher usage charges, and, as a corollary, lower fixed charges, are more equitable and enabled customers to have greater control over their bills.[262] However, in a declining cost environment over the next four years, increasing the usage charge would require a significant reduction to the service charge (as a balancing item) and a misalignment with fixed system costs. Sydney Water's proposed water usage charge of $1.97 ensures price stability for customers and is close to the current ratio of fixed to variable water charges.

We acknowledge that accepting Sydney Water's proposed usage charge departs from our estimate of the long run marginal cost (LRMC) of water supply. Our best estimate of LMRC is $1.27 per kL, a reduction of 44% from current prices. However, we note the inherent uncertainty in this calculation, particularly with respect to the overall system yield and what the next augmentation is likely to be.[263] Moreover, such a significant reduction in usage charges would have a significant impact on the structure of customers' bills and may lead to unexpected behavioural changes.[264]

Relative to the current water usage charge of $2.28 per kL, our draft decision to set the water usage charge at $1.97 per kL is a move towards our best estimate of the current LRMC of water supply, while balancing the issues outlined above.

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260 To inform its pricing proposal, Sydney Water surveyed approximately 1,700 customers online to assess whether they preferred greater bill certainty (ie, a higher fixed water service charge) or greater bill control (ie, a higher water usage price). Customers preferred three distinct water usage prices – $1.20, $1.90 and $2.60 per kL – and a substantial proportion preferred usage prices in the range of $1.90 to $2.30 per kL. We estimate the average water usage price from the survey results was $1.98 per kL. Sydney Water pricing proposal to IPART, June 2015, pp xxi-xxii.

261 Sydney Water pricing proposal to IPART, June 2015, Chapter 3.

262 For example, see P. Stanbury submission to IPART Issues Paper, July 2015; G. Clipsham submission to IPART Issues Paper, June 2015; P. O'Neill submission to IPART Issues Paper, July 2015; H. Flaherty submission to IPART Issues Paper, July 2015; C. Hurst submission to IPART Issues Paper, July 2015; Total Environment Centre submission to IPART Issues Paper, October 2015, p 4.

263 This is particularly so given the ongoing Metropolitan Water Plan Review and Hawkesbury-Nepean Valley Flood Management Review.

264 This view was echoed in submissions. For instance, see Council of the City of Sydney submission to IPART Issues Paper, October 2015, p 4; and Sydney Coastal Councils Group Incorporated submission to IPART Issues Paper, October 2015, p 4.

Uplift usage charges for activation of Sydney Desalination Plant

We have accepted Sydney Water's proposal to pass through the per kL cost of desalinated water into Sydney Water's water usage charges if the Sydney Desalination Plant (SDP) is operating.

SDP's operation is currently tied to water scarcity.[265] This means that the usage charge pass-through will signal to consumers the additional cost of water supply in times of relative scarcity and make drought response costs more transparent.

The usage charge pass-through is revenue neutral. Under current arrangements, the additional costs to Sydney Water of purchasing desalinated water, if SDP is required to operate, would be passed through to water consumer's fixed service charges at a one year lag.[266] The usage charge pass-through will simply allow Sydney Water to recoup its costs of purchasing desalinated water from its usage charge to customers, as these costs are incurred.

Sydney Water used feedback from customers and its Customer Council to develop its proposal for a usage charge pass-through.[267] Most stakeholders that commented on the pass-through supported Sydney Water's proposal.[268]

There are some challenges to varying Sydney Water's usage price to reflect the cost of desalinated water over the 2016 determination period. This is because we only have one year of determined prices for SDP (ie, 2016-17 prices) on which to base the uplift to Sydney Water's usage charge.[269] From 2016-17 onwards, we do not have a determined price for SDP.

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265 SDP is instructed to operate at full production capacity and supply desalinated water to Sydney Water's area of operations when total WaterNSW dam storage level is below 70% and will continue to do so until the total dam storage level reaches 80%. The cost pass-through mechanism allows Sydney Water to pass the resulting SDP costs on to customers through its water charges. NSW Government, *2010 Metropolitan Water Plan*, August 2010, p 36.

266 In the 2012 Determination, SDP is assumed to be in a water security shutdown mode. When Sydney Water incurs additional costs from SDP operating or from variations in electricity costs, it is allowed to recover these costs the following year through a variation to the fixed service charge to its customers. IPART, *Review of Sydney Water Corporation's water, sewerage, stormwater drainage and other services From 1 July 2012 to 30 June 2016 – Final Report*, June 2012, p 2.

267 Sydney Water pricing proposal to IPART, June 2015, p xxii.

268 Council of the City of Sydney submission to IPART Issues Paper, October 2015, p 5; Total Environment Centre submission to IPART Issues Paper, October 2015, p 2; Sydney Coastal Councils Group Incorporated submission to IPART Issues Paper, October 2015, p 6; and Department of Primary Industries Water submission to IPART Issues Paper, October 2015, p 6. We note that the Public Interest Advocacy Centre cautioned about the impact upon renters of the cost pass-through (Public Interest Advocacy Centre, submission to IPART Issues Paper, October 2015, p 4). Permeate Partners and the Institute for Sustainable Futures were concerned about the different treatment of recycled water and desalinated water (the former being ringfenced while the latter costs were borne across all customers). Permeate Partners submission to IPART Issues Paper, October 2015, p 1 and the Institute for Sustainable Futures, University of Technology, Sydney submission to IPART Issues Paper, October 2015, p 5.

269 SDP's current price determination is due to expire on 30 June 2017. From June 2016, IPART will commence a review of SDP's prices, to set new prices to apply from 1 July 2017.

As a result, we have decided to add a hard coded estimate of SDP's water usage charge onto Sydney Water's water usage charge based on SDP's determined charges for 2016-17.[270] This approach allows us to set a specific price for SDP and therefore provide customers with a clear usage signal.[271] We will use the cost pass-through mechanism to Sydney Water's service charge, which will remain in place as a true-up mechanism, to account for any forecast errors.[272]

We have calculated the usage charge pass-through at $0.12 per kL using the following formula:

$$\text{Usage charge adjustment} = \frac{90{,}000 \times (\text{SDP usage charge - avoided water filtration costs/ML})}{\text{Total volume of treated water sold by Sydney Water}}$$

Where:

- *90,000 ML is SDP's current production capacity*
- *SDP usage charge for 2016-17 is $677.20 per ML (or $0.68 per kL)*[273]
- *avoided water filtration cost are based on the $0.06 per kL adjustment for treatment costs used in the current SDP cost pass-through mechanism*[274]
- *the total volume of treated water sold for 2016-17 is 471,008 ML, based on IPART's revised forecasts for Sydney Water.*[275]

This formula reflects the average additional cost per kL of water when SDP is at full production (suppling about 20% of total treated water sales).[276] Avoided filtration costs are deducted, given that Sydney Water purchases less water from WaterNSW, and avoids water filtration costs as SDP's water is already treated.

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270 The alternative option is to use a formula to uplift Sydney Water's usage price that refers to a future SDP determination.

271 Our preference is to assume SDP is operating at full production. If SDP were to operate at less than full production, Sydney Water would have to pass through any over-recovery of revenue into service charges through the cost pass-through mechanism at a year's lag. Alternatively, to cater for potentially different production levels through the usage charge only we would need to use a formula.

272 That is, the cost pass-through mechanism would pass through at a one-year lag actual differences in SDP's usage charges (positive or negative) into Sydney Water's fixed service charges. This excludes electricity network charges which SDP passes through to Sydney Water. As noted, the service charge pass-through will operate as a true-up mechanism.

273 We have inflated the $623.57/ML price for 2016-17 in SDP's Determination from $2011-12 to $2015-16 using $\Delta CPI_4 = \left(\frac{CPI_{Mar2015}}{CPI_{Mar2011}}\right)$-1 (ie, 8.6%). IPART, *Prices for Sydney Desalination Plant Pty Limited's Water Supply Services*, Determination No. 2, December 2011, p 35 (Table 6).

274 Sydney Water, *Letter to IPART for September 2015 regarding the update to the Annual Information Return,* 18 September 2015, Appendix 4.

275 We use treated water sales, because SDP does not contribute to unfiltered water. The volume of treated water is based on our forecast water sales.

276 SDP has an annual production capacity of about 90,000 ML. This supplies approximately a fifth of total metered demand.

Defining the trigger for the usage charge uplift

The rational for the 'uplift' to the water usage price is to make SDP's drought-response costs more transparent. Therefore, we have decided that the uplift to the usage price is triggered at times when SDP is required to operate the desalination plant under the conditions of its licence or operational approval (as in force at the relevant time) granted under the *Water Industry Competition Act 2006* (WIC Act). SDP's network operator's licence granted under the WIC Act is subject to the following condition:

> *When Available Storage falls below 70%, the Licence Holder must, until the Available Storage*[277] *rises to 80%, operate and maintain the Water Industry Infrastructure with the objective of maximising the production of drinking water for the exclusive supply into the Corporation's area of operation (as defined in Sydney Water's Operating Licence).*[278]

8.2 Wastewater usage charge

We set a wastewater usage charge and discharge allowance for Sydney Water's non-residential customers. The wastewater usage charge applies to non-residential customers who are deemed[279] to have discharged more than the discharge allowance to the sewerage network. The discharge allowance is currently set at 300 kL per year.

Draft decision

21 We have decided to:

- set a maximum non-residential wastewater usage charge of $1.10 per kL in real terms over the 2016 determination period
- reduce the non-residential discharge allowance from 300 kL to 150 kL per year, with a 50 kL per year transition from 2016-17 onwards, and
- not introduce an explicit residential wastewater usage charge.

277 Available Storage is defined in Sydney Desalination Plant's Network Operator's Licence as: *"the available storage in Sydney's water supply reservoirs as published on a weekly basis on the website of the Sydney Catchment Authority. If for any reason the Sydney Catchment Authority is unable to calculate or publish the available storage, the available storage is the amount of water as calculated and notified from time to time by such other authority as is nominated by the Minister."*

278 Sydney Desalination Plant *Network Operator's Licence 2010-16, Schedule A, A2(b).*

279 Sydney Water applies discharge factors to estimate each customer's discharge volume; with reference to the customer's metered water consumption. For example, if a customer consumes 400 kL of water per annum and Sydney Water applies a discharge factor of 78%, they are deemed to have discharged 312 kL of wastewater to the sewerage network (0.78 x 400 kL = 312 kL).

8.2.1 Reasons for our draft decision

Non-residential wastewater usage charge

We have accepted Sydney Water's proposal to maintain the wastewater usage charge at $1.10 per kL.[280] We consider this provides some stability in pricing for customers, particularly given Sydney Water's evidence that wastewater pricing is not well understood by customers.[281]

Table 8.2 Draft wastewater usage charge ($2015-16)

	2015-16[a]	2016-17	2017-18	2018-19	2019-20
Sydney Water proposed					
Usage charge ($/kL)	1.10	1.10	1.10	1.10	1.10
Annual change		*0.0%*	*0.0%*	*0.0%*	*0.0%*
IPART draft decision					
Usage charge ($/kL)	1.10	1.10	1.10	1.10	1.10
Annual change		*0.0%*	*0.0%*	*0.0%*	*0.0%*

a 2015-16 prices were not available when Sydney Water finalised its pricing proposal. The prices for 2015-16 have been updated to reflect actual inflation and prices.

Source: Annual Information Return, June 2015.

In the 2012 Determination, we stated that it was our intention to reduce wastewater usage charges to reflect the short run marginal cost (SRMC) of collecting, transporting, treating and disposing of effluent.[282] We estimated this cost at about $0.25 per kL ($2015-16).[283] Therefore, we phased in a decrease in the wastewater usage charge from $1.49 per kL in 2011-12 (nominal) to $1.10 per kL (nominal) by 2015-16.

Sydney Water, however, has put forward a preference to move towards long run marginal cost (LRMC) pricing and is seeking an in-depth review of the issue before 2020. Sydney Water notes the importance of LRMC, given the uncertainty around additional investments in wastewater services required to service growth over the next 50 years.[284] Sydney Water also notes these costs are potentially significant, particularly as the Environment Protection Authority (EPA) is currently considering tightening Environment Protection Licence (EPL) load requirements for wastewater systems in the Hawkesbury Nepean catchment to 2014-15 levels.[285]

[280] Sydney Water pricing proposal to IPART, June 2015, p 240.
[281] Sydney Water pricing proposal to IPART, June 2015, p 236.
[282] IPART, *Review of prices for Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 - Final Report*, June 2012, p 103.
[283] IPART, *Review of prices for Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 - Final Report*, June 2012, p 103.
[284] Sydney Water submission to IPART Issues Paper, October 2015, p 54.
[285] Sydney Water submission to IPART Issues Paper, October 2015, p 54.

We acknowledge the various arguments for and against SRMC versus LRMC pricing. We consider that maintaining the current wastewater usage price is a satisfactory holding position.

Non-residential discharge allowance

We have reduced the non-residential discharge allowance from 300 kL to 150 kL per year, with a 50 kL per year transition from 2016-17 onwards. This reflects the approach taken in the 2012 Determination, where we reduced this discharge allowance by 50 kL per year over the 4-year determination period and proposed to continue this reduction until the allowance reached 150 kL per year.[286]

Our decision aligns the non-residential customer discharge allowance with residential customers' average annual discharge (which is implicit in their service charges). In 2015-16, the non-residential discharge allowance is 300 kL per year (or 0.822 kL per day).

Our approach removes cross-subsidies between small and medium to large businesses and ensures a consistent approach across residential and non-residential customers. In particular, it:

- removes cross subsidies where small businesses (discharging up to 150 kL)[287] will no longer be subsidising medium to large businesses (discharging above 150 kL), and
- ensures small businesses will be charged on a consistent basis with residential customers.

In its submission to our Issues Paper, Sydney Water agreed with the transition to 150 kL per year over the 2016 determination period.[288] Stakeholders supported the move to a 150 kL discharge allowance.[289] We estimate that reducing the wastewater discharge allowance to 150 kL per year will:

- Increase chargeable wastewater volumes by about 4 GL in total by 2018-19 (from an additional 12,400 customers).
- Increase wastewater usage charge revenue by about $4.4 million in total by 2018-19.
- Decrease wastewater service charges by, on average, about $3.00 per customer (residential and non-residential).[290]

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286 IPART, *Review of prices for Corporation's water, sewerage, stormwater drainage and other services - From 1 July 2012 to 30 June 2016 - Final Report*, June 2012, p 120.

287 Most non-residential customers (about 56% of non-residential customers) discharge less than 150 kL per year.

288 Sydney Water submission to IPART Issues Paper, October 2015, p xiii.

289 Council of the City of Sydney submission to IPART Issues Paper, October 2015, p 4; Total Environment Centre submission to IPART Issues Paper, October 2015, p 5; and Sydney Coastal Councils Group Incorporated submission to IPART Issues Paper, October 2015, p 8.

290 It represents a $2.30 reduction in wastewater service charges with the 75% residential discharge factor.

Residential wastewater usage charge

We have decided not to introduce an explicit residential wastewater usage charge at this determination. Currently, residential customers pay a fixed one-part tariff for wastewater.

Our approach reflects feedback received from Sydney Water that implementation of an explicit residential wastewater usage would require detailed consideration, given discharges are not metered, as well as appropriate community consultation.[291]

However, we acknowledge that a residential wastewater usage charge would give residential customers more control of their bills and more closely reflect the impactor pays principle. For these and other reasons, a number of submissions supported or commented on a wastewater usage charge.[292]

8.3 Price structures: water and wastewater service charges

Draft decision

22 We have decided to:

- set water and wastewater service charges for residential and non-residential customers on a 20mm meter equivalent basis, where residential dwellings are deemed to each be one 20mm meter equivalent customer
- separate the implicit connection and usage components of the wastewater service charge, and
- apply a 75% discharge factor to the connection portion of the residential wastewater service charge.

[291] Sydney Water, submission to IPART Issues Paper, October 2015, p 56.

[292] See, for example, B. Hope submission to IPART Issues Paper, July 2015; G. Carrard submission to IPART Issues Paper, July 2015; B. Slaughter submission to IPART Issues Paper, June 2015; Sydney Coastal Councils Group Incorporated submission to IPART Issues Paper, October 2015, p 7. Council of the City of Sydney supported this approach, while noting the practical difficulties in introducing a wastewater usage charge and the need for consultation (Council of the City of Sydney, submission to IPART Issues Paper, October 2015, p 4). Permeate Partners considered it impractical to implement a wastewater usage charge (Permeate Partners, submission to IPART Issues Paper, October 2015, p 2). The Energy & Water Ombudsman NSW and the Public Interest Advocacy Centre supported such a charge if the impact on low income earners was successfully managed (Energy & Water Ombudsman NSW submission to IPART Issues Paper, October 2015, p 5; Public Interest Advocacy Centre submission to IPART Issues Paper, October 2015, p 5).

8.3.1 Reasons for our draft decision

Rebasing water and wastewater service charges on a 20mm meter scale

We have accepted Sydney Water's proposal to rebase water and wastewater service charges for residential and non-residential customers on a scale referenced to a 20mm meter service charge. This involves:

- changing the current base on which non-residential meter-based charges are set from a 25mm meter to a 20mm meter equivalence, and
- deeming all residential dwellings (regardless of type) to have a 20mm meter to ensure that flats and houses are still charged at the same rate.[293]

This approach corrects a current pricing anomaly between 20mm non-residential customers, which is outlined in Table 8.3.[294] It also simplifies price structures and results in a large reduction in service charges for non-residential customers. A more modest service charge reduction will also occur for residential customers.

Table 8.3 Differences in 20mm non-residential service charges in 2015-16 ($2015-16)

	Standalone 20mm	Multiple 20mm	*Variation*
Water	$102.53	$129.83	*26.6%*
Wastewater (100% discharge factor)	$609.14	$1,042.67	*71.2%*
Wastewater (78% discharge factor)	$609.14	$813.28	*33.5%*

Note: Under our draft decision, all of the above customers would pay the 20mm meter based service charges for water and wastewater, and discharge factors would apply to the service charges.

Actual 2015-16 prices were not available when Sydney Water finalised its Annual Information Return. The prices have been updated to reflect actual inflation and prices.

Source: Annual Information Return, June 2015; and IPART analysis.

Among stakeholders, views on rebasing were mixed. The NSW Business Chamber supported lower water and wastewater charges, largely as a result of rebasing charges.[295] The Energy & Water Ombudsman NSW supported rebasing if it provides clearer and more comprehensible price structures.[296] The Public Interest Advocacy Centre opposed rebasing on the grounds that it may increase confusion among customers and change the relative cross-subsidy between small non-residential and residential consumers.[297]

[293] Non-residential occupancies in mixed multi-developments are also deemed to have a 20mm meter to ensure that they are charged the same as residential dwellings.

[294] Currently, non-residential customers with a 20mm standalone connection are charged the same as residential customers. However, an otherwise identical non-residential customer, with a shared or multiple 20mm connections, is charged on a different basis (that is, not the same as residential customers but on the same basis as other non-residential customers).

[295] NSW Business Chamber submission to IPART Issues Paper, October 2015.

[296] Energy & Water Ombudsman NSW submission to IPART Issues Paper, October 2015, p 2.

[297] Public Interest Advocacy Centre submission to IPART Issues Paper, October 2015, p 5.

We consider rebasing is consistent with our price structure principles and current charging regime:

- All residential customers would continue to pay a common water and wastewater service charge – ie, apartments and houses would continue to be charged at the same rate (however, the charge would reference a 20mm meter).
- Standalone non-residential customers with a single 20mm meter or mixed multi-developments would continue to pay the same service charges as all residential customers (however, the charge would reference a 20mm meter).
- All other non-residential customers would continue to pay water and wastewater service charges according to their meter size (non-residential occupancies within a common metered property would still share the meter-based service charge).

Separation of the implicit connection and usage components of the wastewater service charge

Residential and non-residential wastewater service charges must include some allowance for wastewater discharge to the sewerage network:

- all residential discharge is included in the service charges (about 150 kL per year on average), and
- each non-residential customer's discharge up to the discharge allowance is included in the service charge.[298]

We have decided to separate out the implicit usage charge for residential and non-residential customers. This removes the anomaly in usage charging where non-residential customers with large meters pay too much for wastewater discharge, as a result of the multiplication of the wastewater service charge per meter.[299] An example of this is provided in Box 8.1.

Under our draft decision, the costs associated with 150 kL of implicit wastewater usage will be explicitly added to the wastewater service charges as the final step in calculating these charges. We do this by:

- removing the 150 kL per year from the 20mm service charge (ie, removing 150 kL at $1.10/kL from the 20mm service charge)
- calculating meter based service charges for larger meter sizes on the remaining service charge, and

[298] This is the same for every non-residential customer eg, 150kL in 2018-19.

[299] This anomaly will only be removed in 2018-19 when the discharge allowance is reduced to 150 kL, matching the 150 kL implicit wastewater usage in the service charge. Prior to this point, the discharge allowance will be 250 kL in 2016-17 and 200 kL in 2017-18. As a result, there will be a difference between the implicit wastewater usage in the service charge and the actual discharge allowance of 100 kL in 2016-17 and 50 kL in 2017-18. This will continue to result in non-residential customers with large meters paying too much for wastewater discharge for this 2-year period.

- adding back 150 kL year to all meter based service charges (ie, adding 150 kL at $1.10/kL to the meter based service charges).

Formulaically, our approach to calculating service charges is:

$$\text{service charge} = \frac{\text{meter size}^2}{20\text{mm}^2} \times (20\text{mm meter charge}) \times \text{df} + \text{implicit usage}$$

$$\text{where implicit usage} = 150\text{kL discharge x } \$1.10/\text{kL}$$

This change will increase service charges to residential and 20mm non-residential customers, and decrease service charges for customers with large meters (the larger a customer's meter, the greater the decrease to their service charge).

Box 8.2 Implicit discharge component included in non-residential wastewater service charges

Sydney Water identified six significant segments within its non-residential market. We have used one of these segments – high use commercial – to illustrate why the costs of 150 kL per year wastewater usage should be deemed and explicitly added to wastewater service charges.

We have assumed the high use commercial has a 80mm water connection, high water usage of 21,000 kL per year and a discharge factor of 82% (ie, it would discharge 82% or 17,220 kL of its water usage as wastewater each year).

The wastewater service charge implicitly recovers the costs of the 150 kL of discharge not recovered through the wastewater usage charge. However, under current arrangements, this level of wastewater usage is scaled up according to the customer's meter size:

$$\text{service charge} = \text{df} \times \left(\frac{\text{meter size}}{20}\right)^2 \times (20\text{mm connection} + 150\text{ kL})$$

$$= 0.82 \times \left(\frac{80}{20}\right)^2 \times (20\text{mm meter charge} + 150\text{ kL x } \$1.10)$$

$$= 0.82 \times [(16 \times 20\text{mm meter charge}) + (16 \times 150\text{ kL x } \$1.10)]$$

$$= 0.82 \times [(16 \times 20\text{mm meter charge}) + 2{,}400\text{ kL x } \$1.10]$$

$$= 0.82 \times 16 \times 20\text{mm meter charge} + 1{,}968\text{ kL x } \$1.10$$

Therefore, in this example, the high use commercial property implicitly pays for 1,968 kL of wastewater usage through the service charge after the discharge factor is applied. In total, this customer pays for 19,038 kL (17,220 kL–150 kL+1,968 kL) of wastewater usage, which is 1,818 kL more than it actually discharges.

Source: Data sourced from Sydney Water pricing proposal to IPART, June 2015, p 105.

Apply a 75% discharge factor to the connection portion of the residential wastewater service charge

We have decided that a discharge factor of 75% will be applied to residential service charges. This ensures consistency in the treatment of residential and non-residential customers, where the latter have a discharge factor applied to their wastewater service charges (where their connections are greater than 20mm).

On average, residential customers use 200 kL of water per year[300] and discharge 150 kL of wastewater per year. However, residential customers do not receive a discharge factor on their service charges. While this was not an issue when residential and non-residential bills were set on different bases, it would be inequitable to continue this approach following the rebasing of water and wastewater service charges on a 20mm meter scale. This approach will result in a reduction in residential wastewater service charges.[301]

8.4 Price levels: water and wastewater service charges

We have made changes across Sydney Water's price structures to ensure that water and wastewater service charges are more cost reflective so that customers groups imposing similar costs on the system are treated consistently. Each of our decisions has associated impacts:

- **Rebasing service charges** – shifts costs from non-residential customers to residential (and 20mm standalone non-residential) customers.
- **150 kL usage charge implicit in wastewater service charges** – shifts costs from non-residential customers with larger meters to non-residential customers with smaller meters and residential customers.
- **Residential discharge factor in wastewater service charges** – shifts costs from residential (and 20mm standalone non-residential) customers to non-residential customers.

The impact of these decisions is discussed below.

Draft decision

23 We have decided to

- set the maximum water service charges as shown in Table 8.4, and
- set the maximum wastewater service charges as shown in Table 8.5.

[300] Sydney Water pricing proposal to IPART, June 2015, p 314.

[301] It will also reduce the service charge for 20mm non-residential customers as they face the minimum of either the 20mm equivalent charge multiplied by their own discharge factor or the residential service charge with a 75% discharge factor.

8.4.1 Reasons for our draft decision

Our draft water service charges are outlined in Table 8.4 below. These are based on the analysis undertaken in the preceding sections and the impacts are as follows:

- Residential and non-residential 20mm customers on a stand-alone meter will experience a decrease of 18.1% in their water service charge.
- Other non-residential customers will see a 35.3% decrease in their water service charge.

Table 8.4 Draft water service charge ($/year, $2015-16)

	2015-16[a]	2016-17	2017-18	2018-19	2019-20	% Change 2016-20
Sydney Water proposed						
Residential	102.53	98.52	98.52	98.52	98.52	-3.9%
Non-residential						
- 20mm individual meter [b]	103	99	99	99	99	-3.9%
- 20mm shared meter	130[c]	99	99	99	99	-24.1%
- 25mm meter	203	154	154	154	154	-24.1%
- 32mm meter	332	252	252	252	252	-24.1%
- 40mm meter	519	394	394	394	394	-24.1%
- 50mm meter	811	616	616	616	616	-24.1%
- 80mm meter	2,077	1,576	1,576	1,576	1,576	-24.1%
- 100mm meter	3,246	2,463	2,463	2,463	2,463	-24.1%
- 150mm meter	7,303	5,542	5,542	5,542	5,542	-24.1%
- 200mm meter	12,984	9,852	9,852	9,852	9,852	-24.1%
IPART draft decision						
Residential	102.53	84.02	84.02	84.02	84.02	-18.1%
Non-residential						
- 20mm individual meter [b]	103	84	84	84	84	-18.1%
- 20mm shared meter	130[c]	84	84	84	84	-35.3%
- 25mm meter	203	131	131	131	131	-35.3%
- 32mm meter	332	215	215	215	215	-35.3%
- 40mm meter	519	336	336	336	336	-35.3%
- 50mm meter	811	525	525	525	525	-35.3%
- 80mm meter	2,077	1,344	1,344	1,344	1,344	-35.3%
- 100mm meter	3,246	2,101	2,101	2,101	2,101	-35.3%
- 150mm meter	7,303	4,726	4,726	4,726	4,726	-35.3%
- 200mm meter	12,984	8,402	8,402	8,402	8,402	-35.3%

a 2015-16 prices were not available when Sydney Water finalised its pricing proposal. The prices for 2015-16 have been updated to reflect actual inflation and prices.

b Under the 2012 Determination 20 mm standalone non-residential customers paid the residential service charge. From 2016-17 these customers will be charged the same as other non-residential customers with 20mm meters.

c This service charge applied to non-residential customers on a shared or with multiple 20mm meter only and not to non-residential customers on an individual 20mm meter.

Source: Annual Information Return, June 2015; and IPART analysis.

Our draft wastewater service charges are outlined in Table 8.5 below. These are based on the analysis undertaken in the preceding sections and the impacts are as follows:

- There is a 6.4% decrease in wastewater service charges for residential customers.
- Non-residential customers (except customers on a 20mm standalone meter) will see a minimum decrease of 32.4% in their wastewater service charge (assuming a 100% discharge factor).

Table 8.5 Draft wastewater service charge ($/year $2015-16)

	2015-16[a]	2016-17	2017-18	2018-19	2019-20	% Change 2016-20
Sydney Water proposed						
Residential	609.14	582.34	582.34	582.34	582.34	-4.4%
Non-residential						
- 20mm individual meter [b]	609	582	582	582	582	-4.4%
- 20mm shared meter	1,043[c]	582	582	582	582	-44.1%
- 25mm meter	1,629	910	910	910	910	-44.1%
- 32mm meter	2,669	1,491	1,491	1,491	1,491	-44.1%
- 40mm meter	4,171	2,329	2,329	2,329	2,329	-44.1%
- 50mm meter	6,517	3,640	3,640	3,640	3,640	-44.1%
- 80mm meter	16,683	9,317	9,317	9,317	9,317	-44.1%
- 100mm meter	26,067	14,559	14,559	14,559	14,559	-44.1%
- 150mm meter	58,650	32,757	32,757	32,757	32,757	-44.1%
- 200mm meter	104,267	58,234	58,234	58,234	58,234	-44.1%
IPART draft decision						
Residential[d]	609.14	569.95	569.95	569.95	569.95	-6.4%
Non-residential[e]						
- 20mm individual meter [b]	609	705	705	705	705	15.7%
- 20mm shared meter	1,043[c]	705	705	705	705	-32.4%
- 25mm meter	1,629	1,009	1,009	1,009	1,009	-38.1%
- 32mm meter	2,669	1,547	1,547	1,547	1,547	-42.0%
- 40mm meter	4,171	2,325	2,325	2,325	2,325	-44.3%
- 50mm meter	6,517	3,540	3,540	3,540	3,540	-45.7%
- 80mm meter	16,683	8,804	8,804	8,804	8,804	-47.2%
- 100mm meter	26,067	13,663	13,663	13,663	13,663	-47.6%
- 150mm meter	58,650	30,536	30,536	30,536	30,536	-47.9%
- 200mm meter	104,267	54,158	54,158	54,158	54,158	-48.1%

a 2015-16 prices were not available when Sydney Water finalised its pricing proposal. The prices for 2015-16 have been updated to reflect actual inflation and prices.

b Under the 2012 Determination 20 mm standalone non-residential customers paid the residential service charge. From 2016-17 these customers will be charged the same as other non-residential customers with 20mm meters.

c This service charge applied to non-residential customers on a shared or with multiple 20mm meter only and not to non-residential customers on an individual 20mm meter.

d Residential service charge has the 75% residential discharge factor applied and the 150 kL deemed usage of $165 added to it.

e The 20mm non-residential service charge assumes a 100% discharge factor and has the 150 kL deemed usage of $165 added to it.

Source: Annual Information Return, June 2015; and IPART analysis.

8.5 Joint service arrangements

A joint service occurs where a single connection to Sydney Water's network serves more than one unrelated property.[302] The first property typically has a water meter that is connected to Sydney Water's network (metered property), and the dependent properties use a private pipe connected to the first property's connection (unmetered properties).[303] Sydney Water proposed a change to how **non-residential multi-premise joint service** customers are charged to simplify the way the unmetered property is charged.

Draft decision

24 We have decided to:

- maintain the current charging regime for non-residential multi-premise joint service customers, and
- specify in the 2016 Determination that all instances of joint services should be considered a form of multi-premise customer.

8.5.1 Reasons for our decision

Non-residential multi-premise joint service customers

We consider joint service customers should continue to be charged based on their meter connection size. Under current arrangements, and our draft decision for the 2016 Determination, these **non-residential multi-premise** joint service customers are charged on the common connection/meter size to Sydney Water's network. A meter based charge reflects the system capacity required to service the property and is consistent with how all non-residential customers are charged (with the exception of non-residential customers in a mixed purpose complex).

[302] Sydney Water, *Maintaining your service,* accessed 6 July 2015: http://www.sydneywater.com.au/SW/your-business/meeting-your-responsibilities/connections-and-disconnections/Maintaining_your_service/index.htm.

[303] Note that this is a simplified description of a joint service arrangement. Joint services can exist as single dwellings, town houses, units, flats, non-residential properties within multi-premises or as mixed multi-premises. The properties can be metered, partially metered (some of the properties have their own sub-meter) or unmetered. See Sydney Water pricing proposal to IPART, June 2015, p 110.

Sydney Water proposed to change the treatment of joint services of unrelated **non-residential multi-premises**.[304] This proposal is to charge a meter based water and wastewater service charge to the first non-residential multi-premise complex. The **residential** water and wastewater service charge would then be applied for each property within the subsequent second unmetered (or dependent) non-residential multi-premises. Sydney Water considers its proposed approach would simplify pricing arrangements, reduce costs to its billing system[305] and recover an additional $0.4 million a year.[306]

However, Sydney Water's approach does not appear to be simpler than the current pricing arrangement, nor is it clear that the existing pricing arrangement will impose costs on the proposed new billing system. In addition, Sydney Water has not demonstrated that it has consulted with its customers on these joint service arrangements. In it submission, the Energy & Water Ombudsman NSW (EWON) noted that it considers that any changes to the pricing structure needs to be clear, easy to understand and communicated well to affected customers to minimise customer complaints.[307] We agree with EWON. For the reasons outlined above, we have decided to maintain the current pricing arrangement.

Clarification of joint services in the 2016 Determination

We consider the 2016 Determination needs to be clear about how Sydney Water is to charge joint service customers. The 2012 Determination does not reference joint services. As such, the 2016 Determination will identify all instances of joint services as a form of multi-premise customer. This means that:

- non-residential joint services are charged on a meter basis
- residential joint services are charged on a dwelling basis, and
- mixed development joint services on a dwelling basis.

8.6 Dual occupancy arrangements

A dual occupancy is where the property owner has a second dwelling on that property. The secondary dwelling typically has its own entrance, kitchen facilities, bathroom and laundry facilities (eg, like a 'granny flat'). The two dwellings are linked by the owner (the property owner owns the main dwelling and the secondary dwelling) and cannot be independently sold.[308]

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304 Sydney Water pricing proposal to IPART, June 2015, p 110. Note that each dwelling (flat/unit) in a residential joint service arrangement would receive a standard service charge.

305 Sydney Water stated in its submission to our Issues Paper that maintaining the current approach to price structures would add $0.5 million to the cost of its new billing system. Sydney Water submission to IPART Issues Paper, October 2015, p 96.

306 Sydney Water pricing proposal to IPART, June 2015, p 111.

307 Energy & Water Ombudsman NSW submission to IPART Issues Paper, October 2015, p 3.

308 Sydney Water pricing proposal to IPART, June 2015, p 112.

Currently, dual occupancies are charged as two separate properties.[309] That is, under the 2012 Determination, the main dwelling and the secondary dwelling each attract a water service charge and a wastewater service charge.[310] However, Sydney Water has experienced difficulty in identifying dual occupancies, in particular since changes to planning requirements in 2011.[311] These changes enabled the expedited approval of dual occupancies and so Sydney Water no longer receives notification when dual occupancies occur.[312]

Draft decision

25 We have decided to charge dual occupancies based on the number of meters connected to Sydney Water's network.

8.6.1 Reasons for our draft decision

Our decision is based on recognising Sydney Water's difficulty in identifying dual occupancies, while seeking to maintain consistency with our pricing principles. The Energy & Water Ombudsman NSW supported this approach in its submission.[313]

Sydney Water's proposal seeks for dual occupancies to be priced as a standalone, single residential property. However, we consider this approach to be inconsistent with our pricing principle to charge each **dwelling** as a single customer. Under our approach, each dwelling will be charged individually where multiple meters or connections occur. Where a single meter or connection exists, dual occupancies will be charged as single dwellings.[314]

The impact of our approach to dual occupancies on the base 20mm meter service charge to all non-residential and residential customers is:

- around a 35 cent increase to the water service charge and a $2.40 increase to the wastewater service charge, compared to current charging arrangements; and
- about a 15 cent reduction to the water service charge and a $1 reduction to the wastewater service charge, compared to Sydney Water's proposal.

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[309] To attract a charge from Sydney Water, apartments do not need to have kitchen or laundry facilities.

[310] IPART, *Prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services, Determination No. 1,* June 2012, pp 5, 22.

[311] Sydney Water pricing proposal to IPART, June 2015, pp 112-113.

[312] Sydney Water pricing proposal to IPART, June 2015, pp 112-113.

[313] Energy & Water Ombudsman NSW submission to IPART Issues Paper, October 2015, p 3. We note the Public Interest Advocacy Centre (PIAC) acknowledged the difficulty in identifying dual occupancies. PIAC supports further analysis of the issues to better understand the cost associated with accurately identifying these properties, while cautioning against any rises in bills for residential customers. Public Interest Advocacy Centre submission to IPART Issues Paper, October 2015, p 6.

[314] This occurs even if the dual occupancy was previously charged as two dwellings.

8.7 Stormwater drainage charges

Only some of Sydney Water's residential and non-residential water and wastewater customers are within its stormwater area (and are therefore also its stormwater customers).[315] Currently, Sydney Water's stormwater customers are levied a stormwater charge based on their property area size. Local councils, rather than Sydney Water, are the main provider of stormwater services in the Sydney Area.

Draft decision

26 We have decided to:

- set stormwater drainage charges on a constrained area basis, as outlined in Table 8.6
- introduce a low-impact customer category for residential customers equal to the charge for apartments, and
- set the maximum stormwater drainage charges outlined in Table 8.7.

8.7.1 Reasons for draft pricing decision

Constrained area base pricing

We have decided to set stormwater charges on a constrained area basis, continuing the approach taken in the 2012 Determination. In the 2012 Determination, we introduced property-area-based stormwater pricing (ie, $ per m^2 of a property) and transitioned to the new price levels over the period. We consider area-based charging is the most equitable charging approach across customer categories and best reflects the impactor pays principle. A property's area is a reasonable and readily available indicator of its contribution to Sydney Water's stormwater costs.

Sydney Water proposed to maintain the current price relativities between different customer categories. It does not consider that a stricter application of area-based charging will lead to better cost reflectivity, given the number of factors that impact the costs of providing stormwater services over and above property size.[316] It has proposed prices for **all dwelling types** to decrease by 2.9% a year over the 2016 period (ie, spread its proposed reduction in required revenue for stormwater evenly across customers).[317]

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315 According to Sydney Water, this area covers 30 Local Government areas, and generally includes the central business district and inner west of Sydney. It provides stormwater drainage services to around 548,000 residential and non-residential properties (2015-16), which we estimate to represent around 28.6% of the 1.9 million properties that it supplies water services to (2015-16). Sydney water pricing proposal to IPART, June 2015, p 52 and Sydney water pricing proposal to IPART - Appendices, June 2015, p 48.

316 Sydney Water submission to IPART Issues Paper, October 2015, p 57.

317 Sydney Water submission to IPART Issues Paper, October 2015, p 115.

However, our analysis suggest that apartments and small non-residential customers may currently be paying more than their share of these costs, while large non-residential customers may be paying less, on a strict billable area basis (see Table 8.6 below).[318] That is, on average each property should be charged $16 per 100m2, if total stormwater revenue were recovered on a strict billable area basis (ie, this is represented as the 'pure' area based charge in Table 8.6 below).

As a result, we have decided to continue the transition toward area-based stormwater drainage charges by:

- allocating the reduction in required revenue to residential and small non-residential customers, and
- maintaining prices at current levels (in real terms) for large non-residential customers.

Table 8.6 Comparison of stormwater drainage pricing approaches (per customer annual charge, $2015-16)

	Current prices[a]	Based on current approach	Pure area based	IPART draft prices
Residential				
Apartments and low impact	31.55 ($37/100m^2)	26.55 ($32/100m^2)	13.30 ($16/100m^2)	23.61 ($28/100m^2)
Houses	86.02 ($18/100m^2)	72.41 ($15/100m^2)	74.40 ($16/100m^2)	74.40 ($16/100m^2)
Non-residential				
Small (0-200m^2) and multi-premise	31.55 ($37/100m^2)	26.55 ($32/100m^2)	13.30 ($16/100m^2)	23.61 ($28/100m^2)
Medium (201-1,000m^2) and low impact[b]	86.02 ($18/100m^2)	72.41 ($15/100m^2)	74.40 ($16/100m^2)	74.40 ($16/100m^2)
Large (1,001-10,000m^2)	430.12 ($14/100m^2)	362.09 ($11/100m^2)	501.44 ($16/100m^2)	430.12 ($14/100m^2)
Very large (10,001-45,000m^2)	1,911.67 ($10/100m^2)	1,609.30 ($18/100m^2)	3,061.53 ($16/100m^2)	1,911.67 ($10/100m^2)
Largest (>45,000m^2)	4779.19 ($4/100m^2)	4,023.26 ($3/100m^2)	20,382.79 ($16/100m^2)	4779.19 ($4/100m^2)

a 2015-16 prices were not available when Sydney Water finalised its pricing proposal. The prices have been updated to reflect actual inflation and prices.

b Sydney Water may assess a non-residential property as low impact having regard to relevant factors, including the impermeable surface area.

Note: The bracketed terms represent the stormwater charges on a 100m^2 basis given the total billable area within each category. Land size refers to the total size of the land (in m^2) on which the property is located.

Source: Annual Information Return, June 2015; and IPART analysis.

[318] This is based on a comparison of the percentage of revenue each customer category currently contributes to Sydney Water's stormwater costs to the percentage of the total billable area it represents.

The Public Interest Advocacy Centre and the Total Environment Centre broadly supported this approach in their submissions.[319]

One of Sydney Water's concerns was the practicality of disaggregating the current charging bands further.[320] Our proposed price structures do not change the bands. We have not adopted a 'pure' area based price structure across all categories. Rather, our constrained area based charge has:

- maintained the large, very large and largest customer charges constant in real terms
- reduced the house and medium non-residential charge to a 'pure' area based charge (ie, \$16 per 100m^2), and
- reduced the multi-premise residential, small non-residential and multi-premise non-residential customers charges towards a 'pure' area based charged, by allocating the residual reduction in revenue requirement to these customer groups.

Low-impact customer category

While we consider area (m^2) to be generally the best available proxy for determining and allocating stormwater costs, there are instances where the contribution to costs of each property could be quite different (as also noted by Sydney Water[321]). For instance, factors such as the proportion of impervious surface can determine the amount of stormwater discharged from a property.

In the 2012 Determination, we included a low impact customer class for non-residential properties that could allow customers to apply for a lower charge by demonstrating to Sydney Water (upon application) that their property made a relatively small contribution to stormwater load (and therefore the need for stormwater assets and infrastructure).

[319] The Public Interest Advocacy Centre similarly supported equitable charging so that apartments are not paying more than their cost of stormwater. Public Interest Advocacy Centre submission to IPART Issues Paper, October 2015, pp 7-8. The Total Environment Centre supported a transition towards strict area-based charges. Total Environment Centre submission to IPART Issues Paper, October 2015, pp 5-6.

[320] Sydney Water submission to IPART Issues Paper, October 2015, p 58.

[321] Sydney Water submission to IPART Issues Paper, October 2015, p 57.

For the 2016 Determination, our draft decision is to introduce a low-impact customer category for residential customers equal to the charge for apartments. This could accommodate, for example, a situation where a customer invests in significant on-site water retention facilities. Many stakeholders support this change to stormwater prices.[322] Sydney Water currently requires non-residential customers to apply for the low impact discount: there is a simple two page form, which is followed by Sydney Water's assessment (at Sydney Water's cost). We consider that this process should be extended to residential customers.

Draft stormwater drainage prices

Draft stormwater prices are outlined in Table 8.7. This shows that, in real terms (ie, excluding the effects of inflation):

- Non-residential customers that are in the large to largest area category will face constant prices.
- Stand-alone residential and small non-residential customers will experience a 13.5% fall in stormwater charges.
- Customers in multi-premise properties will see a 25.2% decrease in stormwater charges.

[322] For example, Mr Michael Mobbs proposed that properties which do not contribute to stormwater should not be charged and an incentive should be provided for landowners to reduce their stormwater run-off. M. Mobbs submission to IPART Issues Paper, August 2015, pp 2-3. The Sydney Coastal Councils Group Incorporated advocated for pricing based on impervious area, as this considerably affects the volume of stormwater entering the drainage network. Sydney Coastal Councils Group Incorporated, submission to IPART Issues Paper, October 2015, p 9. The Total Environment Centre advocated for allowances to be made for properties with a low ratio of impervious services to encourage water sensitive urban design. Total Environment Centre submission to IPART Issues Paper, October 2015, p 6.

Table 8.7 Draft prices for stormwater drainage services ($2015-16)

	2015-16[a]	2016-17	2017-18	2018-19	2019-20
Sydney Water proposed					
Multi premise residential, small and multi premise non-residential ($/year)	31.55	30.75	29.84	28.95	28.08
Annual change		*-2.5%*	*-3.0%*	*-3.0%*	*-3.0%*
Standalone residential and medium non-residential ($/year)	86.02	83.86	81.36	78.93	76.57
Annual change		*-2.5%*	*-3.0%*	*-3.0%*	*-3.0%*
Large non-residential ($/year)	430.12	419.32	406.81	394.67	382.89
Annual change		*-2.5%*	*-3.0%*	*-3.0%*	*-3.0%*
IPART draft decision					
Multi premise and low impact residential, and small and multi premise non-residential ($/year)	31.55	23.61	23.61	23.61	23.61
Annual change		*-25.2%*	*0.0%*	*0.0%*	*0.0%*
Standalone residential and medium and low-impact non-residential ($/year)	86.02	74.40	74.40	74.40	74.40
Annual change		*-13.5%*	*0.0%*	*0.0%*	*0.0%*
Large non-residential ($/year)	430.12	430.12	430.12	430.12	430.12
Annual change		*0.0%*	*0.0%*	*0.0%*	*0.0%*
Very large non-residential ($/year)	1,911.67	1,911.67	1,911.67	1,911.67	1,911.67
Annual change		*0.0%*	*0.0%*	*0.0%*	*0.0%*
Largest non-residential ($/year)	4,779.19	4,779.19	4,779.19	4,779.19	4,779.19
Annual change		*0.0%*	*0.0%*	*0.0%*	*0.0%*

a 2015-16 prices were not available when Sydney Water finalised its pricing proposal. The prices for 2015-16 have been updated to reflect actual inflation and prices.

Note: Sydney Water's proposed prices for very large and the largest non-residential property bands also decreased by 2.5% in the first year and 3.0% every subsequent year.

Source: Sydney Water submission to IPART Issues Paper, October 2015, p 115 and IPART analysis.

Sydney Water proposed that its stormwater prices over the 2016-17 to 2019-20 period recover slightly more revenue in total than required to provide these services. It indicated that this over-recovery in revenue will mitigate future bill shocks for customers. It expects its stormwater capital expenditure to increase significantly between 2020 and 2024, as a number of assets built before 1910 require renewal.[323] In the interest of price stability, Sydney Water proposed to under-recover revenue over the 2020–24 period, and therefore that stormwater prices be set on an NPV-neutral basis over the next eight years.[324]

[323] Sydney Water pricing proposal to IPART, June 2015, p 198.
[324] Sydney Water pricing proposal to IPART, June 2015, p 82.

In their submissions, both the NSW Business Chamber and StormWater NSW identified that Sydney Water's proposed stormwater revenue exceeds its expected costs.[325]

We have reviewed the proposed capital expenditure on stormwater assets and the efficient profile for this expenditure. Our draft prices ensure that revenue from stormwater charges will match expenditure on an NPV basis over four years.

What is the appropriate stormwater customer base?

Sydney Water's longer-term proposal is to broaden the stormwater customer base, to appeal to direct beneficiary pays pricing. In particular, it is investigating broadening the stormwater customer base in the future so that water and wastewater customers pay a proportion of stormwater costs. This reflects the wider community benefits generated from stormwater services (eg, cleaner waterways) and that most customers travel to city hubs for work or entertainment that are serviced by Sydney Water's stormwater infrastructure (eg, Sydney's central business district and Parramatta).[326]

In its research, Sydney Water has commenced testing customers' attitudes towards alternative charging scenarios for stormwater infrastructure. To date, its stormwater consultation has been conducted using focus groups.[327] However, we consider that this proposal is fundamentally flawed, as properties outside of Sydney Water's stormwater catchment pay for all stormwater costs in their local government areas to councils through their local government rates or stormwater levies. Accordingly, we do not support spreading stormwater infrastructure costs across water and wastewater customers.

Nonetheless, our view is that Sydney Water should continue to engage with relevant stakeholders[328] over the next four years to determine other options to improve the management of stormwater.

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[325] StormWater NSW argued for greater transparency in Sydney Water's budgeting and increased expenditure on stormwater. StormWater NSW, submission to IPART Issues Paper, October 2015, pp 2-3. The Sydney Coastal Councils Group Incorporated also supported increased expenditure on stormwater to account for ageing infrastructure and the anticipated environmental costs. Sydney Coastal Councils Group Incorporated submission to IPART Issues Paper, October 2015, p 8. The NSW Business Chamber did not support the increase in stormwater revenue in excess of expected costs. NSW Business Chamber Limited submission to IPART Issues Paper, October 2015, p 1.

[326] Sydney Water pricing proposal to IPART, June 2015, p 52.

[327] Sydney Water pricing proposal to IPART - Appendices, June 2015, p 85.

[328] Stakeholders include councils, as they typically own and operate the stormwater collection infrastructure. At our Public Hearing, representatives of councils were strong proponents of integrated water cycle management and liveability. See, for example, Public Hearing Transcript, 10 November 2015, pp 20-21 outlining the views of the Cooks River Alliance, the Parramatta River Catchment Group, the Sydney Coastal Councils Group and the Georges River Combined Councils Committee.

9 Prices for other services

Sydney Water provides a range of services other than water, sewerage and stormwater services for which we regulate its prices. These include:

- non-residential trade waste charges
- miscellaneous and ancillary charges
- charges for the Rouse Hill Area
- unfiltered water charges
- unmetered water charges, and
- minor service extension charges.

This chapter explains our draft decisions on these charges.

9.1 Non-residential trade waste charges

Trade waste is defined as wastewater from commercial and industrial customers in which the concentrations of pollutants exceed a domestic equivalent.[329] Sydney Water currently levies three types of trade waste charges:

- **pollutant charges,** which recover the costs of the transport, treatment and disposal of trade waste, as well as the corrosion costs of high strength wastes
- **ancillary and agreement charges,** which recover the cost of administering trade waste agreements and conducting inspections, and
- **wastesafe charges,** which recover the cost of monitoring liquid waste pits.

[329] A domestic equivalent is a concentration or level that is the same as would be found in household wastewater.

Draft decision

27 We have decided to:

- set the maximum trade waste prices as listed in Appendix K, which include an allowance for corporate overheads
- amend the trade waste pricing principles to clarify that charges should recover efficient costs, including corporate overheads
- deduct the trade waste revenue as set out in Table 9.1 from the notional revenue requirement
- change the trade waste price structure as proposed by Sydney Water as follows:
  a. reclassify shopping centres with centralised onsite pre-treatment as industrial customers (under Risk Index 6), and
  b. include "pre-treatment not maintained in accordance with requirements" as an explicit commercial activity code.

9.1.1 Reasons for draft pricing decision

Trade waste prices and pricing principles

We have accepted Sydney Water's proposed trade waste prices, except for amending them to allow for recovery of a share of Sydney Water's corporate overheads.[330] We consider it important to allocate costs consistently across the business to encourage the benefits from any economies of scope to be shared with all regulated customers. In addition, we consider our approach may provide positive incentives towards competition. When common costs are not allocated to potentially contestable services, the price of these services can be below the market-clearing price (thus preventing competition from emerging).

As a result, we have amended the trade waste pricing principles to clarify that charges should recover all efficient costs, including corporate costs. These principles are shown below in Box 9.1.

[330] Sydney Water proposed to keep these charges flat in real terms throughout the 2016 determination period. However, due to the lower than expected inflation rate used to forecast 2015-16 prices, the proposed price level for 2016-17 is around 0.5% higher than current prices. Sydney Water pricing proposal to IPART - Appendices, June 2015, p 16.

Box 9.1 Principles for Trade Waste Charges

The application of appropriate pricing principles to trade waste requires that:

- Standards for acceptance should be set on the basis of the capacity of current systems to transport, treat and dispose of the wastes, having regard to the health and safety of wastewater workers.
- Trade waste charges should cover the efficient costs to the water supplier of handling these wastes, including an allocation of corporate overheads.
- Charges should vary to reflect differences in the cost of treating waste to the required standards at particular locations.
- Water suppliers should set charges and standards in a manner that is transparent and accurate. The method of measurement should be reliable and the basis for setting charges should reflect costs incurred as far as possible.

Where environmental reasons are made for variations from the pricing principles detailed above, then sufficient evidence needs to be available to justify these variations. The basis for calculating greater than cost charges where environmental justifications exist should also be justified.

To avoid price shock to customers, prices include the recovery of half the efficient corporate costs (ie, $2.4 million of $4.9 million) for trade waste services by 1 July 2020, with an intention to achieve full cost-recovery in the future. This means trade waste prices will increase by 1.9% in real terms each year over the 2016 determination period (ie, a 7.8% cumulative increase). If corporate costs were re-allocated in full, trade waste prices would increase by 15.6% in 2016-17 (or 3.7% each year if they were phased in over 2016-19).[331]

In its submission, the Council of the City of Sydney indicated trade waste charges are too low compared to multi-premise residential charges.[332] However, we note that multi-premise non-residential and residential service charges are currently set on a different basis and so are not comparable. In addition, as part of the 2012 Determination, we conducted an extensive review of trade waste charges and set maximum prices for Sydney Water's trade waste charges at cost-reflective levels.[333] Given this review, and the relatively minor nature of Sydney Water's proposed changes to these charges over the 2016 determination period, we consider that these charges continue to reflect costs.

No other stakeholders commented on trade waste charges. The full list of trade waste prices is outlined in Appendix K.

[331] We note that this would not result in a windfall gain to Sydney Water, as forecast trade waste revenue is deducted from the notional revenue requirement.

[332] Council of the City of Sydney submission to IPART Issues Paper, October 2015, p 3.

[333] As part of the 2012 review, we conducted detailed stakeholder consultations, including two workshops with Sydney Water and key trade waste stakeholders to discuss proposed changes to charges. IPART, *Review of Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 - Final Report*, June 2012, p 135.

Trade waste revenue

We deduct the trade waste revenue from the notional revenue requirement.

Based on maintaining prices, Sydney Water forecasts that its trade waste revenue would increase from $30.5 million to $31.2 million in 2016-17, and then remain constant in real terms until 2019-20.[334] We undertook a high-level review of Sydney Water's proposal and concluded that the forecast was reasonable, given it was broadly commensurate with historical revenue.[335]

We have adjusted forecast revenue to reflect re-allocated corporate costs (as outlined above). These are shown in Table 9.1.

Table 9.1 Forecast trade waste revenue ($millions, $2015-16)

	2016-17	2017-18	2018-19	2019-20
Sydney Water proposed	31.2	31.2	31.2	31.2
IPART draft decision	31.8	32.4	33.0	33.6

Source: Sydney Water pricing proposal to IPART, June 2015, p 97; and IPART analysis.

Trade waste pricing structure

We have accepted Sydney Water's proposal to reclassify shopping centres with centralised onsite pre-treatment as industrial customers (Risk Index 6) and include "pre-treatment not maintained in accordance with requirements" as an explicit commercial activity code.[336] This latter charge was previously incorporated in the 2012 Determination as a footnote to the table of pollutant charges for commercial customers.

There are currently five shopping centres with centralised pre-treatment of trade waste. Managing these shopping centres as industrial customers would allow them to gain some control over their trade waste charges (through the quality of wastewater discharged).[337]

[334] This increase is due to a small expected rise in pollutant charge revenue in 2016–17.

[335] We engaged a consultant, Synergies, to assist with our review of Sydney Water's trade waste prices. Much of the supplementary information on costs used in our analysis was provided to us by Sydney Water on a commercial-in-confidence basis. Synergies, *Trade waste charge review – Sydney Water*, December 2015 (Commercial-in-Confidence).

[336] Sydney Water pricing proposal to IPART - Appendices, June 2015, pp 16-17.

[337] We note that in accepting Sydney Water's proposal, those sites that allow their pollutants to deteriorate will attract increased charges.

9.2 Miscellaneous and ancillary charges

Sydney Water levies miscellaneous and ancillary service charges for a number of non-contestable one-off services. These charges account for a small proportion of Sydney Water's total revenue – approximately 2.1% of the $9.7 billion it seeks to recover over 2016-20.[338]

For the 2012 price review, Sydney Water conducted a comprehensive review of its miscellaneous and ancillary charges. As a result, its number of chargeable services decreased from 55 to 23.[339]

For the 2016 price review, Sydney Water proposed to introduce a number of new charges – including a late payment fee and a credit card payment fee – and to make a range of adjustments to its existing miscellaneous and ancillary service charges.

Draft decision

28 We have decided to:

- set the maximum prices for miscellaneous and ancillary services to apply from 1 July 2016 as set out in Appendix L
- not regulate the credit card payment fee
- not set maximum prices for hot water metering services at this stage, and
- deduct the revenue from miscellaneous and ancillary services from the notional revenue requirement as set out in Table 9.3.

9.2.1 Reasons for our draft decision

For most miscellaneous and ancillary services, we have adopted Sydney Water's proposed prices, but with an upwards real adjustment of 1.9% each year over the determination period to account for corporate costs (ie, a 7.8% cumulative increase).

The inclusion of corporate costs is consistent with our approach on trade waste fees. We have decided to transition to half the efficient corporate costs by 1 July 2020 (ie, $0.9 million of $1.8 million per annum) to avoid price shocks to customers.

[338] Sydney Water pricing proposal to IPART, June 2015, p 20; and IPART calculations.
[339] Sydney Water pricing proposal to IPART - Appendices, June 2015, pp 20-21.

In 2012, IPART conducted an extensive review of charges against our miscellaneous pricing principles. As a result of this review, we reduced miscellaneous prices by an average of 15%.[340] For this reason, Sydney Water has proposed to apply a CPI increase to most charges for the 2016 Determination.[341]

The full list of miscellaneous and ancillary charges under our 2016 Draft Determination is shown in Appendix L.

New fees

Remote meter read fees

Under its Operating Licence Sydney Water can charge customers with inaccessible meters for installation of a remote meter reading device in certain circumstances.[342] We note there is no impediment to customers requesting the service, which incurs a fee.[343]

Sydney Water proposed the following fees for customers receiving the remote meter reading service:[344]

- $225.50 for new properties and existing properties with a 20mm meter
- $298.42 for existing properties with a 25mm to 40mm meter, and
- $463.64 for existing properties with a 50mm to 100mm meter.

It said its intent is to recover costs from the customers responsible for inaccessibility.[345]

[340] IPART, *Review of Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 - Final Report*, June 2012, p 150.

[341] We engaged a consultant, Synergies, to assist with our review of Sydney Water's miscellaneous and ancillary prices. Much of the supplementary information on costs used in our analysis was provided to us by Sydney Water on a commercial-in-confidence basis. Synergies, *Miscellaneous and ancillary charges review – Sydney Water*, December 2015 (Commercial-in-Confidence).

[342] Sydney Water must wait until the customer's existing meter has been inaccessible on two or more occasions **and** the customer has granted permission for installation. Consistent with the customer contract, Sydney Water can charge a remote meter read fee in these circumstances. IPART, *Sydney Water Corporation Operating Licence 2015-20,* Schedule 4: Customer Contract, July 2015, p 35.

[343] This service may also be available to large commercial and industrial customers, who may have security or safety reasons for wanting to have their meter read remotely.

[344] Email to IPART, Sydney Water, 3 December 2015.

[345] Email to IPART, Sydney Water, 3 December 2015.

We have revised Sydney Water's proposed remote meter read fees downwards, to cost-reflective levels outlined in Table 9.2. These adopt the balance of Sydney Water's assumptions, but exclude costs related to recovering the remaining value of the existing meter (which would need to be removed).[346] Our prices also include an upwards real adjustment of 1.9% each year, to allow for recovery of a share of corporate costs.

Table 9.2 Draft calculated remote read meter fee ($2015-16)

Charge	Price
Remote read meter	
20mm	$184.21
25mm	$194.09
32mm, 40mm, 50mm (light)	$213.02
50mm (heavy), 80mm, 100mm	$373.69

Source: IPART analysis. These prices are for 2016-17. Subsequent years will increase by an upwards real adjustment of 1.9% to account for corporate costs.

Inaccessible meter read fee

We accept Sydney Water's proposal to charge an inaccessible meter fee, however with an adjustment for corporate overheads. This brings the fee to $8.56, per quarter.[347]. The inaccessible meter charge is designed to recover Sydney Water's costs of attempting meter reading and managing estimated accounts.

A key question is the interpretation of the scope of costs included in the attempted meter reading. Sydney Water proposed to limit the inaccessible meter charge to properties that have received four consecutive estimated bills and have not responded to other contact, including asking the customer to:[348]

- relocate the meter at their cost
- install a remote reading device, which may incur a fee, and
- read the meter and provide it with the reading (ie, self-reading).[349]

We consider the charge should only be levied to customers on this basis.[350]

[346] In order to avoid double-recovery of costs, existing meters need to be either (1) treated as a disposal (with costs included in the charge), or (2) retained in the RAB and depreciated. The latter option is simpler to implement and what occurs in practice.

[347] Email to Sydney Water, 13 November 2015.

[348] Email to IPART, Sydney Water, 21 December 2015.

[349] These options are available to Sydney Water under its Operating Licence. IPART, *Sydney Water Corporation Operating Licence 2015-20,* Schedule 4: Customer Contract, July 2015, p 35.

[350] To meet the requirements imposed under its customer contract, Sydney Water may only levy the proposed fee once a customer has denied reasonable and safe access to their meter on two occasions. This is because the proposed fee has been calculated to recover the costs of property inspections and customer meter readings.

Sydney Water has indicated there are approximately 5,500 properties with chronically inaccessible meters (ie, not read in four quarters or more) in its area of operation.[351] However, under the conditions outlined above, it anticipated the charge would be applied to:[352]

- less than 200 customers per year with newly inaccessible meters, and
- a maximum of 500 existing customers per year (for two quarters, on average).

Unregulated fees

Credit card payment fee

We have decided not to regulate the credit card payment fee, as customers currently have a choice of payment methods. Sydney Water seeks to charge a credit card payment fee of 0.4% from 1 July 2016.[353]

In its submission, the Public Interest Advocacy Centre (PIAC) recommended the credit card fee be subject to similar hardship protections as the late payment fee (discussed below), as some low-income households may have no choice but to use a credit card to pay their water bill.[354] However, we consider this is unnecessary, as customers experiencing financial hardship have the right under the Customer Contract to defer payment and to negotiate an instalment plan.

Hot water metering service fees

We have decided not to set the fee for Sydney Water's proposed hot water metering services at this stage. Sydney Water has proposed to introduce a hot water meter reading service, conditional on this service being unregulated by IPART.

Under this service, developers or Owners Corporations would be able to install individual hot water meters for each apartment in a multi-level individually metered (MLIM) building. Sydney Water would maintain, operate and renew each meter, and provide apartment residents with a direct bill for all of their actual water consumption, inclusive of hot water.[355]

We consider that there is scope for hot water metering to be a contestable service. In addition, we would expect that the general contract provisions offered by Sydney Water would include an option for parties to opt out.

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351 Email to IPART, Sydney Water, 21 December 2015.

352 Email to IPART, Sydney Water, 20 November 2015.

353 Sydney Water noted that the fee is set by NSW Treasury based on the normal cost of merchant interchange fees. The fee is currently set at 0.4% and will be reviewed periodically by NSW Treasury. Sydney Water pricing proposal to IPART, June 2015, p 160.

354 PIAC submission to IPART Issues Paper, October 2015, pp 9-10.

355 Sydney Water pricing proposal to IPART - Appendices, June 2015, pp 25-26.

Sewer service diagram fees

We have set the maximum fees for sewer service diagrams. Sydney Water has proposed to supply sewerage service diagrams as an unregulated product from 1 July 2016, as there is no statutory obligation for it to provide the diagrams. Sewerage service diagrams are currently a 'high volume' product, constituting around 36% of all miscellaneous products sold in a given year.

We are of the view this service should continue to remain regulated and have set the maximum price, including an allowance for a share of the cost of corporate overheads, as stipulated in Appendix L. Sydney Water is the monopoly provider of the sewerage service diagrams in its area of operation.[356]

We consider Sydney Water could provide a 'premium' service (ie, a sewerage service diagram with additional information added) as a commercial, unregulated service. This could provide an incentive for Sydney Water to innovate to meet potential customer demand, while still preserving a cost-reflective product for those interested in the basic, regulated service.

Revenue from miscellaneous and ancillary services

We deduct the miscellaneous revenue in Table 9.3 from the notional revenue requirement. We have upwardly adjusted Sydney Water's proposed revenue over the 2016 period to:

- match the 2015-16 forecast revenue for existing services, given that most of Sydney Water's proposed prices remained constant in real terms and demand for miscellaneous services is expected to remain constant at 350,000 pa (as opposed to 330,000 over 2012-16)
- reflect higher miscellaneous prices from re-allocating corporate costs
- reflect the removal of $76,000 of remote meter read fees that were not included in the cost base, and[357]
- reflect Sydney Water's estimate of about 500 existing customers per year subject to the new inaccessible meter fee.

[356] As listed in the 2012 Determination, government monopoly services supplied by Sydney Water for which IPART is to determine prices include: *Ancillary and miscellaneous customer services for which no alternative supply exists and which relate to the supply of services of a kind referred to in paragraphs (a)-(e)*. The kind of services referred to in paragraphs (a) to (e) include sewerage services. As the diagrams show where private sewerage infrastructure is located, we consider they relate to the supply of sewerage services. IPART, *Prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services – Determination*, June 2012, p 1.

[357] Synergies identified that Sydney Water's forecasts for revenue included around $76,000 for remote read meter fees that was not included in the cost base for the notional revenue requirement. Therefore, there should be no revenue offset. This amount was removed.

Table 9.3 Forecast revenue miscellaneous and ancillary services ($millions, $2015-16)

	2015-16[a]	2016-17	2017-18	2018-19	2019-20
Sydney Water					
- existing services	10.5	9.7	9.7	9.7	9.7
- late payment fee		1.9	1.7	1.6	1.6
Total		11.6	11.4	11.3	11.3
IPART draft decision					
- demand adjustment		0.8	0.8	0.8	0.8
- corporate costs		0.2	0.5	0.7	0.9
- remote meter read		-0.1	-0.1	-0.1	-0.1
- inaccessible meter fee[b]		0.0	0.0	0.0	0.0
Total		**12.6**	**12.6**	**12.7**	**12.9**

a 2015-16 revenue is a forecast amount.

b The revenue forecast from the inaccessible fee is minor – about $8,805 per annum –which reflects Sydney Water's estimate of about 500 existing customers per year which will now be charged an inaccessible meter fee.

Source: Sydney Water proposal and September AIR; IPART analysis.

9.3 Dishonoured or declined payment and late payment fees - Section 12A Review

Sydney Water has proposed to:

- introduce a cost-reflective fee for overdue bills (late payment fee),[358] and
- maintain a fee for payment reversal processing, where a financial institution has declined a payment to Sydney Water (the dishonoured or declined payment fee).[359]

Sydney Water's Customer Contract, which is tied to its Operating Licence, currently states that it may charge its customers:

- interest on their overdue account balance, or
- a late payment fee, but only if maximum late payment fee is specified by IPART as part of a **review** conducted by IPART under the IPART Act.

It also states that any late payment fee will be charged in accordance with any terms and conditions specified by IPART as part of the above-mentioned review.[360]

[358] This is proposed to be $4.08 or interest accrued to the overdue bill (whichever is greater). Email to IPART, Sydney Water, 9 November 2015. This email updates the fee specified on p 26 of the Sydney Water pricing proposal to IPART - Appendices, June 2015.

[359] This is proposed to be $12.27. Email to IPART, Sydney Water, 9 November 2015. This email updates the fee specified on p 32 of the Sydney Water pricing proposal to IPART - Appendices, June 2015.

[360] IPART, *Sydney Water Operating Licence 2015-2020*, Schedule 4, Customer Contract, section 4.4.5.

Under the Customer Contract, Sydney Water may also charge a dishonoured or declined payment fee in an amount not exceeding the amount specified on its website, as amended from time to time.[361]

In order to undertake a review of the late payment and dishonoured or declined payment fees, we required a referral under section 12A of the IPART Act. We are not able to determine either fee under section 11 of the IPART Act (unlike all other prices in this Draft Report). Section 11 only enables us to determine maximum prices for "government monopoly services". A late payment fee[362] and a dishonoured or declined payment fee are not fees for the provision of a monopoly service.

We received the referral under section 12A and the terms of reference for review of both fees on 7 December 2015 (see Appendix C). The following sections present our draft recommendations of our review of these fees for Sydney Water.

Draft recommendation

2 In accordance with our Terms of Reference, we:

- recommend the maximum price for the existing dishonoured or declined payment fee as set out in Table 9.4, and
- specify a late payment fee as set out in Table 9.4 and the terms and conditions in charging that fee as set out in Appendix M.

Table 9.4 Draft charges for late payment and dishonoured or declined payment fees ($2015-16)

	2015-16	2016-17	2017-18	2018-19	2019-20
Dishonoured or Declined Payment Fee	12.27	12.50	12.74	12.98	13.23
Late payment fee	N/A	4.16	4.24	4.32	4.40

[361] Under clause 4.11.1 of its customer contract, Sydney Water may charge a dishonoured or declined payment fee in an amount not exceeding the amount specified on its website, as amended from time to time.

[362] Under clause 4.4.5 of its customer contract, Sydney Water may charge a late payment fee, but only if IPART has specified the maximum late payment fee as part of a review conducted under the IPART Act. Any late payment fee charged by Sydney Water must not exceed the maximum late payment fee specified by IPART (clause 4.4.5).

9.3.1 Reasons for our draft recommendation

Dishonoured or declined payment fee

We have recommended[363] Sydney Water maintain the dishonoured or declined payment fee at $12.27, with an upwards real adjustment of 1.9% each year to account for corporate costs. This is consistent with Sydney Water's proposed fee, but with our amendment to include corporate costs.[364]

Our analysis indicates this fee remains broadly cost reflective and based on detailed and robust calculations in 2012 to determine the charge.[365] Since that time, the only cost element that may have changed materially is the cost for the agency fee. However, we have no information to conclude that this fee is no longer appropriate.

Late payment fee

We have adopted Sydney Water's proposed price, with an adjustment for corporate costs. Our recommended late payment fee is $4.16 in 2016-17 increasing to $4.40 in real terms by 2019-20, the end of the determination period.

Sydney Water reported that late payment increases its operating costs, including borrowing costs. Currently, late payments attract interest,[366] but there is no explicit charge to recover its other costs of late payment. Sydney Water contended that this is not enough of a deterrent, with around 15% of customers allowing their bills to become seven days overdue.[367] It also noted the proposed fee is smaller than that charged by many other utilities (see Table 9.5).

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363 Under the terms of reference, we can only recommend the dishonoured or declined payment fee. This is because the fee cannot be specified by IPART under Sydney Water's customer contract. Rather, Sydney Water may charge a dishonoured or declined fee in an amount not exceeding that specified on its website (as amended from time to time).

364 Email to IPART, Sydney Water, 9 November 2015. This email updates the fee specified on p 32 of the Sydney Water pricing proposal to IPART - Appendices, June 2015.

365 We engaged a consultant, Synergies, to assist with our review of Sydney Water's miscellaneous and ancillary prices, including the dishonoured or declined payment fee. Much of the supplementary information on costs used in our analysis was provided to us by Sydney Water on a commercial-in-confidence basis. Synergies, *Miscellaneous and ancillary charges review – Sydney Water*, December 2015 (Commercial-in-Confidence).

366 In its Customer Policy, Sydney Water states it uses the prejudgment interest section of the *Uniform Civil Procedure Rules 2005* to calculate interest. This is stated to be at the RBA cash target rate plus 4%. Sydney Water, *Customer policy: Overdue payments and disconnections for non-payment*, 1 October 2012.

367 Residential bills are currently due for payment 21 days after issue. However, Sydney Water has indicated that it will not charge the late payment fee until a bill is 28 days overdue. Sydney Water pricing proposal to IPART - Appendices, June 2015, p 29.

Table 9.5 Late payment fees levied by other utilities ($2015-16)

Company	Late payment fee
AGL – electricity	$14.00 (including GST)
AGL – gas	$13.12 (including GST)
Origin/Integral	$7.00 (no GST applied)
Energy Australia	$12.00
Optus – more than $50 but less than $100	$15.00 (no GST applied)
Optus – $100 or more	$15.00 plus 2% above the prime lending rate charged to Optus, calculated daily

Source: Sydney Water pricing proposal to IPART - Appendices, June 2015, p 26.

We consider that Sydney Water's proposed fee is reasonable, simple to understand, and below that charged by other service providers. The fee reflects the combined interest and debt recovery costs across a range of plausible customer scenarios. However, we note that any fixed late fee will have the weakness of not being precisely cost reflective.

Sydney Water has proposed terms and conditions for its late payment fee, including exemptions for certain customers. These are in accordance with its customer contract.[368] We have adopted Sydney Water's terms and conditions, with an added provision that the fee only be levied:

- if the customer has been notified in advance of the late payment fee and the circumstances in which it may be levied, and
- at least 7 business days after the due date.

This recommendation is consistent with Sydney Water's proposal. It is also consistent with how IPART used to regulate late payment fees in electricity.[369]

Stakeholders were generally supportive of Sydney Water's proposed fee and exemptions.[370] The terms and conditions for late payment fees as well as the proposed exemptions are included in Appendix M.

[368] Sydney Water's operating licence provides that, at a minimum, Sydney Water must not charge a late payment fee if it has already agreed with a customer a deferred payment date, or an arrangement to pay by instalments with respect to the overdue account balance, or it has entered into a payment assistance arrangement with the customer. IPART, *Sydney Water Corporation Operating Licence 2015-20,* Schedule 4 - Customer Contract, July 2015, p 14.

[369] Until 2013, IPART specified a similar provision for customers on regulated retail electricity tariffs.

[370] The Public Interest Advocacy Centre (PIAC) was supportive of the proposed fee as long as it does not negatively impact those who are facing hardship: PIAC submission to IPART Issues Paper, October 2015, p 9. The Energy Water Ombudsman NSW (EWON) was supportive of this fee and the exemptions, noting they could be extended to pensioners: EWON submission to IPART Issues Paper, October 2015, pp 6-7.

9.4 Charges for the Rouse Hill Area

The stormwater drainage system in Rouse Hill consists of large areas of open space to accommodate flood flows, natural creeks and grass lined channels, and artificial wetlands. At present, Sydney Water owns and manages the trunk drainage services in the area as well as a large amount of flood-prone land.[371]

There are currently two charges for the Rouse Hill stormwater catchment area:

- **Rouse Hill stormwater drainage charge,** which recovers the operating costs of the drainage system, including for activities such as cleaning out trash racks, bush regeneration and weed and ground management.
- **Rouse Hill land charge,** which recovers a portion of Sydney Water's capital expenses for the same system.

Under the current determination, both charges are to be levied upon properties within the Rouse Hill stormwater catchment area (defined in Schedule 8 and the map in Attachment A of the 2012 Determination).[372] In its pricing proposal, Sydney Water has raised issue with the current boundary of the Rouse Hill stormwater catchment area (outlined below).

Sydney Water also noted that the price for stormwater services in Rouse Hill is more than for stormwater services in a declared stormwater drainage area, reflecting the difference in costs to build, operate and maintain the Rouse Hill system.[373]

Draft decision

29 We have decided to:

- set the Rouse Hill land charge at $432.89 per year in real terms
  a. apply the land charge, for a period of five years, to new properties that connect (or have connected) to Sydney Water's water system between 1 July 2012 and 30 June 2026
  b. set the land charge to recover 50% of Sydney Water's efficient capital costs in Rouse Hill over 2012-13 to 2025-26, with the remaining 50% to be recovered through the wastewater RAB
- maintain the Rouse Hill stormwater drainage charge at:
  a. $139.65 per year in real terms for residential properties and non-residential properties less than or equal to 1000m^2
  b. $139.65 per year x land area in m^2/1000 in real terms for non-residential properties greater than 1000m^2
- include the Rouse Hill Area map in the 2016 Determination.

[371] It also manages flood-prone land owned by other parties. IPART, *Review of Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 - Final Report*, June 2012, p 124.

[372] They are not stormwater drainage charges for the purposes of s65 of the *Sydney Water Act 1994.*

[373] Sydney Water pricing proposal to IPART, June 2015, p 289.

9.4.1 Reasons for draft pricing decision

Rouse Hill land charges

The current Rouse Hill land charge is $248.85 per annum, which is set below cost reflective levels. This follows the Government's direction to Sydney Water in 2013 to reduce the charge from $969 to $237 per annum.[374] The charge has subsequently been increased in line with inflation.

Sydney Water proposed that the land charge should remain at $248.85 per year in real terms over the 2016 determination period. [375] In its proposal, Sydney Water argued that all additional land purchase costs in the Rouse Hill area should be allocated to the wastewater RAB in 2016-17 (to be recovered from wastewater customers). In principle, Sydney Water asserted wastewater customers should pay for the costs of the stormwater system.

We have not accepted Sydney Water's proposal. Our view is that its approach is not consistent with the impactor pays principle and does not send an appropriate price signal to Rouse Hill residents. In addition, Sydney Water's approach would mean that wastewater customers bear 70% of the total costs.

We consider costs should be shared equally between wastewater and stormwater because the integrated water management system in Rouse Hill means that civil works and land perform a dual function. It would be a difficult and imprecise exercise to untangle which capital expenditure items relate to stormwater or wastewater functions (and which relate to both).

As a result, we have decided to set the Rouse Hill land charge to $432.89 per year in real terms to recover 50% of the efficient forecast capital costs in Rouse Hill from 2012-13 to 2025-26. For a period of five years, the land charge is to apply to new properties that connect (or have connected) to Sydney Water's water system in the Rouse Hill Area between 1 July 2012 and 30 June 2026. We have added the remaining 50% of efficient capital costs to Sydney Water's wastewater RAB, to be recovered from all of Sydney Water's customers through wastewater prices.

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374 On 8 August 2013, the Treasurer directed Sydney Water to reduce the charge from $969.21 per annum to $237 per annum pursuant to section 18(2) of the IPART Act following a reconsideration, and reduction, of the amount of land needed in Rouse Hill. The charge was reduced to $237 per year to ensure the savings from the reduction in land acquisition were passed on in full to customers.

375 In its June submission, Sydney Water forecast the 2015-16 price as $249.97, based on a CPI of 2.5%. Sydney Water pricing proposal to IPART - Appendices, June 2015, p 15. The actual price for customers in 2015-16 is $248.85, based on actual inflation.

Our decision is based on pragmatic grounds that half of the prudent capital expenditure for Rouse Hill should be considered as relating to stormwater activities (eg, protecting residents' properties from flooding). The other half should be considered as relating to wastewater (eg, improving the quality of water entering the Hawkesbury-Nepean River system).

Consequently, new Rouse Hill customers will continue to fund (in principle) stormwater expenditure through the land charge, reflecting the impactor pays principle. New Rouse Hill residents will be given appropriate signals regarding the costs of providing and operating infrastructure in the area. Sydney Water's broader customer base will fund (in principle) wastewater expenditure through wastewater prices. This is consistent with the postage stamp pricing approach for water and wastewater services.[376]

We have also set the land charge to recover capital costs from Rouse Hill properties that connect to Sydney Water between July 2012 and June 2026. This is in line with Sydney Water's proposal and constitutes an extension of the cost recovery period by four years. We consider this extension appropriate, as Sydney Water expects the Rouse Hill Area to be largely developed (ie, with little capacity for new greenfield projects) by 2025-26.

Table 9.6 Draft Rouse Hill land charge ($2015-16)

	2015-16	2016-17	2017-18	2018-19	2019-20
IPART draft decision	248.85	432.89	432.89	432.89	432.89
Sydney Water proposed	248.85	248.85	248.85	248.85	248.85

Note: The land charge applies for a five year period to properties within the Rouse Hill area that are connected to Sydney Water's water supply system on or after 1 July 2012.

The Rouse Hill land charge is based on our calculation of the prudent and efficient capital costs (land acquisition and civil works) over this period, as identified by our consultant, Atkins Cardno.[377] These are shown in Table 9.7 below.

Atkins Cardno found that historic expenditure was prudent. In terms of future expenditure, Atkins Cardno concluded that the urgency of project completion at Elizabeth Macarthur Creek was not clear (see Chapter 5).[378] As such, Atkins Cardno re-profiled land acquisition and civil costs out to 2021-22, to allow time for Sydney Water's strategy to be refined and detailed designs to be developed. These re-profiled costs are incorporated in our modelling below for the Rouse Hill land charge. Catch-up and continuing efficiency challenges have also been

[376] We note other water and wastewater expenditure historically recovered through developer charges has since been funded through general price increases for such services.

[377] Atkins Cardno, *Sydney Water Corporation -Expenditure Review*, December 2015.

[378] Sydney Water's proposed timescale saw no expenditure for stormwater civil works beyond 2018-19 and no expenditure for land acquisition beyond 2019-20. Atkins Cardno, *Sydney Water Corporation -Expenditure Review*, December 2015, p 135.

applied to this expenditure (see Chapter 4 for the rationale for efficiency targets).[379]

Table 9.7 Profile of Rouse Hill stormwater capital expenditure to 2022 ($millions, $2015-16)

	12-13	13-14	14-15	15-16	16-17	17-18	18-19	19-20	20-21	21-22	**Total**
Civil	0.4	0.2	0.3	1.6	7.5	6.2	2.3	2.2	2.2	2.2	**25.2**
Land purchase	5.8	1.1	0.6	15.1	1.0	1.2	1.2	1.2	1.2	1.2	**29.6**

Note: Totals may not add due to rounding.

Source: Atkins Cardno, *Sydney Water Corporation -Expenditure Review*, December 2015, pp 134, 136.

Rouse Hill stormwater drainage charges

We have accepted Sydney Water's proposal to maintain the stormwater drainage charge for Rouse Hill in real terms at $139.65 per year for residential and non-residential properties less or equal to 1,000 m^2.[380] For non-residential properties greater than 1,000 m2, the charge is levied as $139.65 per year multiplied by the land area in m2/1000 (in real terms). This enables Sydney Water to recover its cumulative operating expenditure.[381]

Sydney Water's most recent modelling suggests a delay in recovery of cumulative operating expenditure from 2022-23 to 2024-25 due to an increase in contractor costs. This is the result of additional degraded and weed-infested land coming under Sydney Water's management.[382] Sydney Water should continue to review the cumulative financial position of the Rouse Hill stormwater system (ie, operating costs against revenue) to ensure that the level of this charge remains appropriate in the future.

379 Atkins Cardno, *Sydney Water Corporation -Expenditure Review*, December 2015, pp 134-136.

380 In its June submission, Sydney Water forecasted the 2015-16 prices as $140.33, based on a CPI of 2.5%. Sydney Water pricing proposal to IPART - Appendices, June 2015, p 15. The subsequent actual price was $139.65, based on an annual CPI of 2%.

381 Sydney Water pricing proposal to IPART, June 2015, p 101.

382 To a lesser extent, revenue has also increased. This reflects a higher (actual and forecast) customer growth rate each year over 2012-19 than was previously forecast (excepting 2012-13 and 2015-16). Email to IPART, Sydney Water, 11 August 2015.

Table 9.8 Draft Rouse Hill stormwater drainage charge ($2015-16)

	2015-16	2016-17	2017-18	2018-19	2019-20
Rouse Hill stormwater drainage charge for Residential Properties, Vacant Land and Non-Residential Properties with Land Size[a] ≤ 1000m^2	139.65	139.65	139.65	139.65	139.65
Rouse Hill stormwater drainage charge for Non-Residential Properties with Land Size[a] > 1000m^2	139.65 x (land area in m^2/1,000)	139.65 x (land area in m^2/1,000)	139.65 x (land area in m^2/1,000)	139.65 x (land area in m^2/1,000)	139.65 x (land area in m^2/1,000)

[a] Land Size refers to the total size of the land (in m^2) on which the premises is located.

Rouse Hill Area boundary

We have decided to continue to include a Rouse Hill Area boundary map in the Determination. This defines the area for which the two stormwater charges apply, in order to ensure customer certainty and transparency. In addition, this meets the obligation contained in Sydney Water's current operating licence for us to identify the area of land located in the Rouse Hill stormwater catchment.[383]

In doing so, we have accepted Sydney Water's proposal to ensure the map in the 2016 Determination accurately reflects the actual stormwater catchment. This would correct the discrepancy between the map supplied by Sydney Water and published in Attachment A of the 2012 Determination and the actual stormwater catchment in Rouse Hill. It also enables Sydney Water to charge the approximately 2,300 customers who were inside the catchment (but outside the map). This is consistent with the intent of our previous determination.

The Rouse Hill stormwater charges do not apply to the Kellyville village area until such time as that area is redeveloped to form part of the Rouse Hill Stormwater Catchment Area. We note that the Kellyville village area is also not subject to Sydney Water's standard stormwater charges. Currently, the Governor declares each area subject to stormwater charges through a separate order.[384]

[383] The current operating licence defines the Rouse Hill stormwater catchment area as "the area of land located in the Rouse Hill stormwater catchment **as identified in any determination made by IPART** of maximum prices that may be levied by Sydney Water for stormwater services, as in force from time to time." IPART, *Sydney Water Corporation Operating Licence 2015-20,* Schedule 4 - Customer Contract, July 2015, p 45.

[384] See Schedule 1 of *Sydney Water (Stormwater Drainage Areas) Order 2011*.

9.5 Unfiltered water charges

Unfiltered water is water that has chemical treatment, but not at a water filtration plant. The unfiltered water charge is set to reflect an avoided cost. That is, an unfiltered water customer receives a discount to reflect the reduced water filtration costs Sydney Water incurs in providing unfiltered water.

Sydney Water currently only sells a small amount of unfiltered water to BlueScope Steel's Port Kembla plant in Wollongong.[385]

Draft decision

30 We have decided to set the maximum unfiltered usage charge at the potable water usage charge less $0.30 per kL.

9.5.1 Reasons for draft pricing decision

Our decision is consistent with Sydney Water's proposal and is broadly cost-reflective. The average forecast filtration cost for 2012-16 is $0.27 per kL ($2015-16),[386] only marginally lower than the current discount of $0.32 per kL. However, filtration costs can vary widely across Sydney Water's nine water filtration plants (WFPs).[387] For example, Illawarra WFP (which supplies Sydney Water's one unfiltered water customer) has a relatively high cost.[388]

The current structure of unfiltered water charges will remain, which includes a fixed service charge set at the same level as the fixed service charge for potable water, based on meter size.[389]

9.6 Unmetered water charges

Some residential and non-residential properties do not have water meters. Therefore, these customers do not pay an explicit water usage charge. Rather, they are charged a deemed usage component that is added to their fixed water service charge. Sydney Water reports that billed unmetered demand accounts for about 1% of total demand.[390]

Draft decision

31 We have decided to maintain the current approach to charging unmetered properties, which includes:
- a water service charge equal to the residential service charge, and
- 180 kL of deemed water usage per year (ie, 180 kL x the water usage price).

[385] Sydney Water pricing proposal to IPART, June 2015, p 100.
[386] Sydney Water submission to IPART Issues Paper, June 2015, p 105.
[387] Sydney Water submission to IPART Issues Paper, June 2015, p 105.
[388] Sydney Water submission to IPART Issues Paper, June 2015, p 105.
[389] Sydney Water pricing proposal to IPART, June 2015, p 100.
[390] Sydney Water pricing proposal to IPART, June 2015, p 310.

9.6.1 Reasons for draft pricing decision

Our decision is consistent with Sydney Water's proposal.[391] We consider that unmetered customers should continue to pay a water service charge that reflects the residential service charge.

Our view is that it is appropriate to include a deemed usage component for unmetered customers, as this accords with the impactor pays principle. Sydney Water noted that 80% of unmetered customers are either small inner-city terraces or small non-residential shops.[392] On this basis, we consider that the proposed usage of 180 kL per year (slightly above average apartment usage of 160 kL per year) remains valid.[393] This is lower than the average residential consumption of 200 kL or the 220 kL per year for metered single houses.[394]

One submission expressed concern that the deemed usage charge is not tied directly to actual usage.[395] However, we note that customers are at liberty to have a meter installed if they believe they are consuming less than the deemed amount. Sydney Water will provide the meter free of charge. The customer is responsible for the cost of installation.

Table 9.9 Draft unmetered water charges (per annum, $2015-16)

	Unmetered water charge	% change from 2015-16[a]
2015-16 charge	512.39	
IPART draft decision[a]	438.62	-14.4%

[a] This charge is comprised of a deemed water usage component (180 kL x $1.97 kL) plus the standard residential water service charge ($84.02 per customer).

Source: IPART analysis.

9.7 Minor service extension charges

Minor service extensions are a service provided by Sydney Water to extend the sewerage system and the water supply to properties which are not connected. Owners of those properties must request to be connected.

Draft decision

32 We have decided to maintain the existing methodology for setting minor service extension charges, with the exception of:

- updating the discount rate to be based on Sydney Water's pre-tax weighted average cost of capital.

391 Sydney Water submission to IPART Issues Paper, October 2015, p 105.
392 Sydney Water submission to IPART Issues Paper, October 2015, p 105.
393 Sydney Water pricing proposal to IPART, September 2015 AIR/SIR Update.
394 Sydney Water pricing proposal to IPART, September 2015 AIR/SIR Update.
395 P. O'Neill submission to IPART Issues Paper, July 2015.

9.7.1 Reasons for draft pricing decision

We have decided to maintain the existing methodology for setting minor service extension charges:

a) minor service extension charge = $\frac{\text{PV(capital expenditure) - PV(revenues - costs)}}{\text{PV(equivalent tenements)}}$

b) where PV stands for the present value, and the capital expenditure, revenues and costs are those attributable to the minor service extension.

We have consistently applied the same methodology to the minor service extension charge since our 2003 Determination. This is the same as that used for calculating developer charges and reflects the impactor pays principle. Sydney Water's proposal does not address the minor service extension charge.

The existing formula uses a seven per cent discount rate. We have updated the discount rate to the pre-tax WACC. This is consistent with the 2013 decision to update the discount rate used in Gosford Council's and Wyong Council's developer charges determinations from 7% to equal to the pre-tax WACC.[396] Seven per cent was the pre-tax WACC in 2000, when the previous developer charges determination was completed.

[396] IPART, *Gosford City Council and Wyong Shire Council: Review of calculation parameters for developer charges – Final Report,* May 2013, p 3.

10 Recycled water prices

In this chapter, we outline our approach to determining prices for Sydney Water's recycled water schemes over the 2016 determination period.

Under our 2006 *Pricing arrangements for recycled water and sewer mining* (2006 Guidelines)[397], the starting point for pricing recycled water is that the full direct cost of each recycled water scheme should be recovered from users of that scheme – ie, we apply a **'user pays' principle**. The direct costs of the recycled water scheme include direct operating and capital costs and a share of any joint costs, such as corporate overheads. Therefore, recycled water costs should not generally be recovered from water and wastewater postage-stamp price customers.

The exception to the application of the user pays principle is where a recycled water scheme may enable costs to be avoided or deferred elsewhere in the system or generate broader community benefits; or the where Government formally directs IPART to allow a portion of recycled water costs to be passed on to a water agency's broader customer base (through a direction under section 16A of the IPART Act).

10.1 Determining recycled water prices

Sydney Water currently supplies about 13,000 ML of recycled water from a number of recycled water schemes to residential and industrial customers and for environmental flows.[398] These are funded in a number of ways:

- schemes delivered pursuant to Government direction are funded from the general Sydney Water customer base (ie, under section 16A of the *Independent Pricing and Regulatory Tribunal Act 1992* (IPART Act))
- schemes to service new development in growth areas of Sydney Water are generally funded through contributions from developers (developer charges)[399] and by recycled water usage charges (**mandated schemes**), and

[397] IPART, *Pricing arrangements for recycled water and sewer mining – Sydney Water Corporation, Hunter Water Corporation, Gosford City Council and Wyong Shire Council - Final Report*, September 2006, pp 63-64.

[398] Sydney Water pricing proposal to IPART, June 2015, p 295.

[399] Unlike water and wastewater developer charges, recycled water developer charges are not currently set to zero in Sydney and the Hunter. Sydney Water pricing proposal to IPART, June 2015, p 296.

- commercial schemes are funded by scheme customers under contractual arrangements (**voluntary schemes**).[400]

Table 10.1 shows the recycled water systems that Sydney Water operates.

Table 10.1 Sydney Water's recycled water schemes

Section 16A	Mandated schemes	Voluntary schemes
Rosehill/Camellia	Rouse Hill	Wollongong
St Marys – Western Sydney Replacement Flows	Hoxton Park	6 schemes at golf courses
	Oran Park and Turner Road	2 irrigation schemes
	Colebee	4 other voluntary schemes
	Ropes Crossing	

Note: Sydney Water is currently reviewing the servicing options and pricing arrangements for Oran Park and Turner Road in the South West Growth Centre; Colebee in the North West Growth Centre; Ropes Crossing in western Sydney. Sydney Water provides treated effluent (re-use water) to a number of small irrigation schemes such as parks and golf courses that are located close to wastewater treatment plants.

Source: Sydney Water pricing proposal to IPART, June 2015, pp 296-298; and Sydney Water Annual Information Return, June 2015.

Draft decision

33 We have decided to:

- defer regulation of recycled water prices for all schemes apart from Rouse Hill until we have completed a broader review of our approach to regulating recycled water prices
- set a maximum usage charge of $1.77 per kL in real terms over the 2016 determination period for recycled water supplied as part of the Rouse Hill recycled water scheme, and
- reallocate a proportional share of Sydney Water's corporate costs from its water and wastewater business to its recycled water business.

10.1.1 Reasons for our draft decision

Our approach to the pricing of recycled water differs from that outlined in our Issues Paper. Under our legislative framework, we are required to determine pricing for all Sydney Water's recycled water services (both voluntary and mandated schemes).

[400] Sydney Water pricing proposal to IPART, June 2015, p 296.

Prices for all Sydney Water's recycled water services are to be determined

Section 11(1) of the IPART Act requires us to determine maximum prices for government monopoly services supplied by Sydney Water and other specified government agencies. The *Independent Pricing and Regulatory Tribunal (Water, Sewerage and Drainage Services) Order 1997* (Order) lists the services declared by the NSW Premier to be government monopoly services. Recycled water services are government monopoly services under paragraph 3(a) of the Order as they are "water supply services".

Sydney Water currently has five mandated schemes, one large voluntary scheme and twelve small voluntary schemes. We have only ever set prices for one scheme: Rouse Hill, a mandated scheme in Sydney.

In our 2012 Determination, we decided to set prices for the Rouse Hill recycled water scheme, but not for other mandated schemes because "they are not sufficiently established".[401] This decision is consistent with our legal framework. However, we noted that "[it] is our intention for this to be the last time we set prices for recycled water schemes."[402]

In our 2006 Guidelines, we decided that we would not regulate prices for voluntary recycled water schemes because "users have alternative options to recycled water,"[403] as every recycled water customer is also supplied with drinking (potable) water and/or unfiltered water. However, we have now reconsidered this position as recycled water services are government monopoly services.

Price determination may be deferred on reasonable grounds

We have decided to defer regulation of recycled water prices for all schemes apart from Rouse Hill until we have completed a broader review of our approach to regulating recycled water prices. This approach accords with that taken in 2012, where we decided to set prices for the Rouse Hill recycled water scheme, but not for other mandated schemes because "they are not sufficiently established."[404]

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401 IPART, *Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 - Final Report*, June 2012, p 131.

402 IPART, *Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 - Final Report*, June 2012, p 131.

403 IPART, *Pricing arrangements for recycled water and sewer mining – Sydney Water Corporation, Hunter Water Corporation, Gosford City Council and Wyong Shire Council - Final Report*, September 2006, p 63.

404 IPART, *Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 - Final Report*, June 2012, p 131.

We have discretion as to the timing of our determinations, subject to limits. As a result, we can defer our determination for Sydney Water's recycled water services if we have a reasonable basis for doing so.[405]

We continue to hold the view that pricing for the other recycled water schemes should be deferred. This is because we do not have sufficient information for the other schemes. Unlike Rouse Hill, the other mandated schemes are 100% potable top up and we do not know when they will commence supplying recycled water.[406] We have also decided to defer determining prices for Sydney Water's other recycled water schemes as we intend to conduct a full review of our approach to recycled water pricing in 2017-18 (see below).

Sydney Water's proposed prices for the mandated recycled water schemes are outlined in Table 10.2 below. Even though we are not determining these prices, we consider Sydney Water's proposed prices are reasonable. Sydney Water's proposed prices are below those that would be consistent with the 2006 Guidelines. However, as its recycled water business is ring-fenced, any losses from this lower price would not be paid for by the wider customer base.

Table 10.2 Sydney Water recycled water prices, ($/kL, $2015-16)

Mandated Scheme	Sydney Water proposed	IPART Guidelines[b]
Hoxton Park	1.77	1.97
St Marys/Ropes Crossing	1.77	1.97
Colebee	1.77	1.97
South-West Growth Corridor	1.77	1.97
Wollongong	Not provided	1.17[a]
Other voluntary schemes	Not provided	Insufficient information

b This is based on dividing expected revenue from Wollongong recycled water scheme by expected sales volume from the annual information return.

c IPART's 2006 Guidelines tie the recycled water usage price to the percentage of potable water used by the scheme. Given, the volume of potable water expected to be used in these schemes over the 2016 determination period, the Guidelines suggest the recycled water prices for these schemes should equal the potable water price for the period.

Source: Sydney Water Annual Information Return, June 2015.

Rouse Hill

We have decided that prices for Rouse Hill recycled water should not be deferred on the basis that:

- we have sufficient information as we have set these prices in the past, and
- we propose to review prices for all recycled water schemes in 2017-18.

405 In addition, section 13(6) of the IPART Act enables us to limit our determination of the price for a government monopoly service to a part or category of that service.

406 Typically, a scheme has 100% potable top-up because Sydney Water's construction and connection of a recycled water plant to the scheme is expected to be completed after this Determination period.

We have accepted Sydney Water's proposed Rouse Hill prices as these prices are consistent with our 2006 Guidelines.[407] In particular, Sydney Water proposed a recycled water usage charge of $1.77 per kL for Rouse Hill, set at 90% of the potable water usage charge.[408] This accords with our 2006 Guidelines, where the recycled water usage charge is to be calculated as a percentage of the potable water price according to the level of potable water 'top-up' of the recycled water supply.

Sydney Water has not proposed reintroducing a fixed recycled water service charge for Rouse Hill. Sydney Water has not charged a fixed recycled water service charge since 1 July 2012. We consider this is also likely to be consistent with our 2006 Guidelines.

The methodology used to determine the Rouse Hill recycled water price is detailed in Appendix N.

Table 10.3 Rouse Hill recycled water prices

Scheme	Current prices (2015-16)	Sydney Water's proposed prices	Price under our 2006 Guidelines	Forecast potable top-up volume 2016-2020
Rouse Hill	$1.82/kL[a]	$1.77/kL	$1.77/kL	18.7%

[d] This is set at 80% of the potable water price. Our decision in the 2016 determination period is for the recycled water price in Rouse Hill to be set at 90% of the potable water price, which has decreased from $2.28 per kL to $1.97 per kL. Appendix N provides more details on how this is calculated.

Source: Sydney Water pricing proposal to IPART, June 2015, pp 296-298; and Sydney Water Annual Information Return, June 2015.

Review of recycled water pricing

We intend to conduct a full review of recycled water developer charges, avoided costs and recycled water pricing guidelines in 2017-18 in conjunction with our planned review of water and wastewater developer charges.

[407] IPART, *Pricing arrangements for recycled water and sewer mining - Final Report*, September 2006, p 58.

[408] Sydney Water pricing proposal to IPART, June 2015, p 101.

As part of our consultation on this review, many stakeholders commented on a range of pricing and regulatory issues around recycled water.[409] The following emerged as key themes in consultation:

- Liveable cities: stakeholders emphasised the importance of recycled water in the concept of liveable cities, where the focus is upon living sustainably and with better use of natural resources.[410]
- Integrated water cycle management: stakeholders stated that recycled water was a key component of integrated water cycle management, where local water utilities manage urban water services collectively, not as individual components, saving resources and improving services to ratepayers.[411]
- Avoided costs: stakeholders identified a discrepancy in the recovery of avoided costs between public utilities and *Water Industry Competition Act 2006* utilities in that the latter do not have the ability to claim avoided costs. Stakeholders argued this does not promote competition, innovation and investment in recycled water infrastructure.[412]

We consider that our upcoming review of recycled water is the most appropriate review to reconsider our approach to recycled water pricing, including consideration of the above stakeholder views.

Ring-fencing recycled water costs

As part of a price review, we require that recycled water costs (and revenues) are ring-fenced from the water agencies' regulated business. This is to ensure that recycled water costs are not recovered from other water and wastewater customers.[413]

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409 E2Design Lab and Permeate Partners called for recycled water to be priced at parity with potable water, while City of Sydney called for a level playing field between Sydney Water and other recycled water businesses. E2Designlab submission to IPART Issues Paper, October 2015, p 2; Permeate Partners submission to IPART Issues Paper, October 2015, p 2; and Council of the City of Sydney submission to IPART Issues Paper, October 2015, p 7. We note the Total Environment Centre opposed Sydney Water's proposed relative increase in the recycled water price. Total Environment Centre submission to IPART Issues Paper, October 2015, p 6.

410 Comments were made to this effect by representatives from Ms Lisa Mclean from Flow Systems and Mr Chris Derksema from the Council of the City of Sydney at the public hearing on wholesale prices. Transcript, 8 December 2015, pp 42, 58.

411 See, for example, Institute for Sustainable Futures submission to IPART Issues Paper, October 2015, p 6; Flow Systems submission to IPART Issues Paper, October 2015; and CRC for Water Sensitive Cities submission to IPART Issues Paper, October 2015.

412 See, for example, Council of the City of Sydney submission to IPART Issues Paper, October 2015, pp 6-7 and Flow Systems submission to IPART Issues Paper, October 2015, pp 4-5.

413 There are two exceptions where we allow water agencies to recover recycled water costs from the broader customer base:
1. The agency claims (and we approve) avoided costs - costs that potable water and wastewater customers would have otherwise incurred, had the recycled water scheme not proceeded.
2. The Government formally directs IPART to allow a portion of recycled water costs to be passed on to a water agency's broader customer base (s16A Direction).

We are satisfied that Sydney Water's recycled water businesses are adequately ring-fenced, with the exception of corporate costs. Our expenditure consultants, Atkins Cardno found:

- the efficient level of operating expenditure for the recycled water business to be $106 million over the four years of 2016-17 to 2019-20, which is about 3.5% of Sydney Water's total efficient operating expenditure (less bulk water costs)[414] and
- Sydney Water does not currently include corporate costs for its recycled water business and has proposed not to allocate corporate costs to its recycled water businesses over the 2016 determination period.[415]

We have allocated corporate costs to recycled water for two reasons:

1. The recycled water business requires administration, billing and other corporate support.
2. Sydney Water's recycled water competitors all have corporate overheads that they need to fund. It is important for competitive neutrality that Sydney Water allocates corporate costs to recycled water.

We have allocated 1.1% of Sydney Water's total corporate costs (about $2 million per annum) from the general customer base to recycled water.[416] This means for the purpose of setting water, wastewater and stormwater prices, the efficient operating expenditure allowances set in Chapter 4 are net of this amount (ie, they exclude all ring-fenced recycled water costs, including our allocation of corporate cost).

414 Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 76.
415 Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 45.
416 At our request, Sydney Water estimated an allocation of corporate costs across all services, including recycled water, in proportion to direct operating costs. Email to IPART, Sydney Water, 11 January 2016.

11 Implications of pricing decision

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

- Sydney Water's service standards
- Sydney Water's financial viability and shareholders
- general inflation, and
- the environment.

We are satisfied that our 2016 Draft Determination achieves an appropriate balance between these matters.

11.1 Bill structure and terminology

In our Issues Paper, we acknowledged customer confusion with the term 'service charge'[417] as identified by Sydney Water in its customer engagement.[418] The service charge is intended to recover the fixed costs associated with making the water, stormwater and wastewater services available to customers.

We sought submissions about a new name for this charge. Sydney Water indicated a preference for the term 'availability charge,'[419] which was our suggestion in the Issues Paper.[420] PIAC recommended replacing 'service charge' with 'fixed', 'network' or 'distribution' charge and commented that community consultation is needed for a billing terminology change.[421] EWON suggested the term 'daily supply charge' to encourage consistency across the energy and water sectors.[422]

We consider Sydney Water is best placed to engage with its customers to determine the term that best captures customer understanding of the purpose of the service charge.

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417 IPART, *Review of prices for Sydney Water Corporation – Issues Paper*, September 2015, p 133.
418 Sydney Water pricing proposal to IPART - Appendices, June 2015, p 80.
419 Sydney Water submission to IPART Issues Paper, October 2015, p xii.
420 IPART, *Review of prices for Sydney Water Corporation – Issues Paper*, September 2015, p 133.
421 Public Interest Advocacy Centre submission to IPART Issues Paper, October 2015, p 10.
422 Energy and Water Ombudsman NSW submission to IPART Issues Paper, October 2015, pp 3-4.

11.2 Implications for customer bills

Customers of Sydney Water currently receive bills which are composed of:

- Fixed charges:
  - **Water service charge**: this is a fixed charge that is paid by customers for being connected to Sydney Water's water supply.[423]
  - **Wastewater[424] service charge: this is a fixed charge that is paid by** customers for being connected to Sydney Water's wastewater (sewerage) system.[425]
- Usage charges:
  - **Water usage charge**: this charge reflects the amount of water customers use (if they have a meter) or are deemed to use (if they do not have a meter).[426]
  - **Wastewater usage charge**: this charge applies to non-residential customers who are deemed to have discharged more than the discharge allowance.[427]

In addition, some customers pay:

- **Stormwater drainage charge:** this is a fixed charge paid by customers if they are located in one of the stormwater drainage areas. This is to maintain the large trunk drains in Sydney Water's stormwater system.[428]

As part of this review, bills for residential and non-residential customers will change because we have changed the structure for some prices. As Chapter 8 explains, these changes do not aim to increase the total revenue Sydney Water recovers from its customer base. Rather, they are intended to ensure that customers who receive similar services in Sydney Water's network pay similar charges.

[423] Sydney Water, http://www.sydneywater.com.au/SW/accounts-billing/understanding-your-bill/our-prices/index.htm, accessed on 10 February 2016.

[424] In our Issues Paper, we used the term sewerage. We have amended this to wastewater in response to Sydney Water's preference to use this term. Sydney Water submission to IPART Issues Paper, October 2015, p 98. However, our 2016 Determination will use the term 'sewerage' as our IPART Act specifies that we are to price sewerage services.

[425] Sydney Water, http://www.sydneywater.com.au/SW/accounts-billing/understanding-your-bill/our-prices/index.htm, accessed on 10 February 2016.

[426] Sydney Water, http://www.sydneywater.com.au/SW/accounts-billing/understanding-your-bill/our-prices/index.htm, accessed on 10 February 2016.

[427] The discharge is calculated through the application of a discharge factor by Sydney Water to their water consumption.

[428] Sydney Water, http://www.sydneywater.com.au/SW/accounts-billing/understanding-your-bill/our-prices/index.htm, accessed on 10 February 2016.

Box 11.1 Understanding why bills have changed

Reducing the water usage charge. We have accepted Sydney Water's proposed water usage charge of $1.97 per kL over the 2016 determination period. This represents a decrease of $0.31 per kL (or 13.5%) compared with the current usage charge. This particularly benefits large users of water.

Reducing the wastewater discharge allowance for non-residential customers. For non-residents, we are reducing the annual discharge allowance over the 2016 determination period by 50 kL per year to 150 kL in 2018-19, after which it will remain at this level. This ensures consistent treatment between residential and non-residential customers and within categories of non-residential customers (eg, industrial customers and commercial customers). We estimate that reducing the discharge allowance will decrease wastewater service charges by about $2 per customer (residential and non-residential) for most customers.

Rebasing water and wastewater service charges. We are simplifying water and wastewater service charges so that they are all referenced to a 20mm meter. This results in a large reduction in service charges for non-residential customers and a modest reduction for residential customers.

Changing the calculation of the wastewater service charges. We are separating out the implicit discharge allowance in the wastewater service charge for residential and non-residential customers. This will correct the existing discrepancy in usage charging, where non-residential customers with large meters pay too much for wastewater discharge. We are also applying a discharge factor to residential customers. This has previously only applied to non-residential customers. This ensures consistent treatment between residential and non-residential customers and a reduction in residential wastewater service charges.

Altering the way we charge dual occupancies. We are charging dual occupancies based on the number of connections and/or meters to Sydney Water's network. This will result in a modest increase to service charges for these properties.

Stormwater charges. We have made changes to the charging of properties to reflect the contribution that each property makes to stormwater. As a result, stormwater charges are based on a constrained area basis and we have introduced a new low impact customer category for residential customers. This results in a reduction to stormwater charges for stand-alone residential and small non-residential customers and customers in multi-premise properties.

11.2.1 Residential customers

Houses and apartments

All residential customers' water and wastewater bills will fall under our draft prices in 2016-17 and then increase at the rate of inflation thereafter (estimated to be about 2.5% per year). Sydney Water's proposal would mean most households experience a nominal increase in their annual water and wastewater bill by the end of the 4-year period.

Under our draft prices:

- A **typical household** consuming 220 kL per year will see its annual bill decrease by $103 (or 8.5%) in 2016-17 from $1,213 to $1,109. This is $33 lower than under Sydney Water's proposed prices. By 2019-20, a typical household will pay $1,194, which represents a reduction of $18 in nominal terms over the 4-year period. Sydney Water proposed a nominal increase of $17 over this same period.
- A **typical apartment** consuming 160 kL per year will see its annual bill decrease by $87 (or 8.1%) in 2016-17 from $1,076 to $989. This is $32 lower than under Sydney Water's proposed prices. By 2019-20, a typical apartment will pay $1,065, which represents a reduction of $11 in nominal terms over the 4-year period. Sydney Water proposed a nominal increase of $23 over this same period.

Customers which pay **stormwater drainage** charges will also have a reduction in bills.[429] Households will see stormwater service charges decrease from $86.02 in 2015-16 to $75.89[430] in 2016-17. Sydney Water proposed a service charge of $85.54 in 2016-17. Residents in apartments which pay stormwater will see stormwater service charges decrease from $31.55 in 2015-16 to $24.08 in 2016-17. Sydney Water proposed a service charge of $31.37 in 2016-17.

Table 11.1 shows the residential bills under our draft prices and Sydney Water's proposed prices.

[429] Residential dwellings in Sydney Water's stormwater catchments pay Sydney Water stormwater charges in addition to wastewater and water charges. Customers in other areas pay these fees to local councils.

[430] Including 2% inflation.

Table 11.1 Residential bills ($ nominal) – with inflation

	2015-16[a]	2016-17	2017-18	2018-19	2019-20	Change 2015-20
Using Sydney Water's proposed prices						
160 kL/year	1,076	1,021	1,046	1,073	1,099	23
Annual change		*-5.1%*	*2.5%*	*2.5%*	*2.5%*	2.2%
200 kL/year	1,167	1,102	1,129	1,158	1,186	19
Annual change		*-5.6%*	*2.5%*	*2.5%*	*2.5%*	1.7%
220 kL/year	1,213	1,142	1,171	1,200	1,230	17
Annual change		*-5. 8%*	*2.5%*	*2.5%*	*2.5%*	1.4%
160 kL/year unit with stormwater[b]	1,108	1,052	1,078	1,104	1,131	23
Annual change		*-5.0%*	*2.4%*	*2.4%*	*2.4%*	2.1%
220 kL/year house with stormwater[a]	1,299	1,228	1,256	1,285	1,315	16
Annual change		*-5.4%*	*2.3%*	*2.3%*	*2.3%*	1.2%
Using IPART's draft prices						
160 kL/year	1,076	989	1,013	1,039	1,065	-11
Annual change		-8.1%	2.5%	2.5%	2.5%	-1.1%
200 kL/year	1,167	1,069	1,096	1,123	1,151	-16
Annual change		-8.4%	2.5%	2.5%	2.5%	-1.4%
220 kL/year	1,213	1,109	1,137	1,165	1,194	-18
Annual change		-8.5%	2.5%	2.5%	2.5%	-1.5%
160 kL/year unit with stormwater[a]	1,108	1,013	1,038	1,064	1,090	-17
Annual change		-8.6%	2.5%	2.5%	2.5%	-1.5%
220 kL/year house w stormwater[a]	1,299	1,185	1,215	1,245	1,276	-23
Annual change		-8.7%	2.5%	2.5%	2.5%	-1.7%

a 2015-16 prices were not available when Sydney Water finalised its pricing proposal. The bills for 2015-16 have been updated to reflect actual inflation and prices.

b These figures were not included in Sydney Water's proposal, and have been calculated by IPART.

Note: Inflation is estimated to be 2% in 2016-17 and 2.5% per annum over the rest of the 2016 period. 160 kL/year is average usage for a unit, 220 kL/year is average for a house and 200 kL/year is average for residential.

Source: Sydney Water pricing proposal to IPART, June 2015, p 103; Sydney Water Annual Information Return, June 2015; and IPART's analysis.

Pensioners

Sydney Water provides rebates for service charges to pensioners. The concessions are:

- 100% of the service charge for water
- 83% of the service charge for wastewater, and
- 50% of the service charge for stormwater drainage.[431]

Eligible pensioners will experience larger bill reductions under our draft prices. This is because pensioners receive a concession of 83% of the wastewater service charge and are consequently largely unaffected by our decision to restructure this charge.

Table 11.2 shows that their annual water and wastewater bills will decrease between $8 and $22 over the 2016 determination period, depending on water consumption. This means that a pensioner's bill in 2019-20 should be lower than their current bill, including the effect of inflation.

Table 11.2 Water and wastewater bills for pensioners ($ nominal) – with inflation

	2015-16	2016-17	2017-18	2018-19	2019-20	Change 2015-20
100 kL/year	331	300	307	315	323	-8
Annual change		*-9.5%*	*2.5%*	*2.5%*	*2.5%*	*-2.5%*
160 kL/year	468	420	431	442	453	-15
Annual change		*-10.2%*	*2.5%*	*2.5%*	*2.5%*	*-3.3%*
200 kL/year	559	501	513	526	539	-20
Annual change		*-10.4%*	*2.5%*	*2.5%*	*2.5%*	*-3.5%*
220 kL/year	604	541	554	568	582	-22
Annual change		*-10.5%*	*2.5%*	*2.5%*	*2.5%*	*-3.6%*

Note: Inflation is estimated to be 2% in 2016-17 and 2.5% per annum over the rest of the 2016 period.
Source: IPART analysis

11.2.2 Non-residential customers

Under our draft prices, almost all non-residential customers will experience decreases in their water and wastewater bill from 2016-17 onwards.

[431] http://www.sydneywater.com.au/SW/accounts-billing/paying-your-bill/pension-rebates/index.htm

In general, non-residential customers will see their annual water and wastewater bills fall between 5.1% and 15.7% in 2016-17. Small businesses with a discharge factor of 75% will face the same bill reductions as residential customers. A typical small business consuming 200 kL per year (similar to an average residential property), will see its annual bill decrease by $98 (or 8.4%) in 2016-17 from $1,167 to $1,069. By 2019-20, it will pay $1,151, which represents a reduction of $16 in nominal terms over the 4-year period.

Large non-residential customers will see their bill decrease by up to $11,164 (or 8.4%) over the 4-year period to 2019-20. Notably, this reflects our decision to no longer implicitly recover the 150 kL of discharge (not recovered through the wastewater usage charges) through wastewater service charges – ie, large meters paid too much for wastewater discharge, as a result of the multiplication of the wastewater service charge per meter.

However, non-residential customers' bill impacts depend on their meter size and discharge factors, as well as their water and wastewater usage. By 2019-20, some non-residential customers will experience bill increases in nominal terms over the 4-year period. In particular, customers who have a standalone 20mm connection may see an increase in their bill over the 4-year period because of our decision to:

- Rebase service charges, which means some of these customers may no longer be charged the same wastewater service charge as residential customers if they are deemed to have a discharge factor that exceeds the 75%discharge factor applied to residential service charges.
- Lower the discharge allowance to 150 kL per annum, which means some of these customers will now also pay wastewater usage charges within the 2016 determination period.

Notably, small businesses with discharge factors above 75% will face slightly higher bills than residential customers in each year. For example:

- Small businesses consuming 200 kL per year (similar to an average residential property), will face nominal bill increases of between $9 (or 0.8%) to $42 (or 3.6%) over the 4-year period.[432]

Businesses that discharge above 150 kL per year will also face bill increases, as they will now pay for discharges between 150 kL and 300 kL that were previously cross-subsidised. For example:

- Commercial businesses consuming 310 kL per year, will face nominal bill increases of about $149 (or 10.5%) over the 4-year period.

[432] Based on discharge factors of between 78% and 82%.

However, our price structure changes have been implemented to remove existing cross-subsidies (see Chapter 8). Before we rebased service charges, non-residential customers with shared or multiple 20mm meters were paying too much. As too were small non-residential customers discharging up to 150 kL, before we reduced the non-residential discharge allowance from 300 kL to 150 kL.

We outline non-residential bill impacts in further detail below.

Small businesses

As discussed in Chapter 8, we have decided to rebase service charges. This means that non-residential customers that were paying residential water and wastewater service charges[433] will now be paying the service charge relevant to their meter size.

Non-residential customers with a 20mm connection will still face the same base service charges as a residential customer.[434] This is because all residential customers, under our draft price structures, are deemed to have a 20mm connection.

However, non-residential bills are also influenced by discharge factors applied to the meter based wastewater service charges. Sydney Water assigns discharge factors for non-residential customers, but not residential customers.[435] Where a discharge factor has not been previously assigned to a non-residential customer, Sydney Water applies a default discharge factor of 78%.[436]

We have applied a discharge factor of 75% to residential customers, which reflects their average discharge of 150 kL of wastewater per year given their average consumption of 200 kL of water per year. Therefore, where the discharge factor is greater than 75% for non-residential customers with a 20mm connection, they will be billed more than a residential customer (see Box 11.2).

[433] As part of our 2012 Determination, we decided that a standalone non-residential customer with a 20mm meter should pay the residential service charge for both water and wastewater. IPART, *Review of price structures for metropolitan water utilities – Final Report*, March 2012, pp 29, 34.

[434] That is, excluding the discharge factor.

[435] IPART conducted a review of discharge factors in 2014. In it, we decided to "maintain our current approach of using the discharge factors as set by the water utilities", IPART, *Discharge factors for non-residential customers*, December 2014, p 3.

[436] Sydney Water Policy, *Sewerage usage charging for non-residential customers*, p 3, Sydney Water website.

Box 11.2 Setting discharge factors

The amount of wastewater that a customer discharges into the wastewater system is calculated by multiplying the customer's water consumption by a discharge factor.

Sydney Water assigns discharge factors for non-residential customers, but not residential customers. Where a discharge factor has not been previously assigned to a non-residential customer, Sydney Water states it will apply a default discharge factor of 78% in its policies.

In 2014, we undertook a review of non-residential discharge factors. We decided to continue to allow regulated water utilities to determine the discharge factors. However, we recommended that water utilities be transparent in the process of setting discharge factors and communicate with customers via their websites:

- how the discharge factor affects customers' bills
- a list of discharge factors used for different businesses, industries or customer types, and
- the process, cost and information required for customers to seek assessment.

For the 2016 determination period, we have introduced discharge factors for residential customers of 75%. In light of this decision, we consider it important that Sydney Water clearly communicate where the discharge factor is greater than 75% for non-residential customers with a 20mm connection (ie, small businesses).

Details of the changes we have made to wastewater charges including discharge factors are included in Chapter 8.

Sources: IPART conducted a review of discharge factors in 2014. In it, we decided to "maintain our current approach of using the discharge factors as set by the water utilities" IPART, *Discharge factors for non-residential customers,* December 2014, p 3; Sydney Water, *Customer Policy - Sewerage usage charging for non-residential customers*, Sydney Water website, Last updated 8 March 2013, p 3.

Table 11.3 shows the bills under our draft prices for small businesses (assuming that these customers are on a standalone 20mm meter and consuming 200 kL water) using different discharge factors. All small businesses will face bill reductions in 2016-17. As noted, non-residential customers with a discharge factor of 75% will have the same water and wastewater bill as a residential customer (compared to Table 1.2 above). These customers will see their annual bill decrease by $98 (or 8.4%) in 2016-17 from $1,167 to $1,069. For the following years, prices will increase at the rate of inflation (estimated to be about 2.5% per year). By 2019-20, these customers will pay $1,151, which represents a reduction of $16 in nominal terms over the 4-year period.

For discharge factor above 75%, the water and wastewater bills will be slightly higher than for a residential bill in each year. In particular, small businesses:

- With a discharge factor of 78% (Sydney Water's default discharge factor), will face nominal bill increases of about $9 (or 0.8%) over the 4-year period.

- With a discharge factor of 82% (example of a different discharge factor), will face nominal bill increases of about $42 (or 3.6%) over the 4-year period.

Small businesses which discharge 150 kL or less of wastewater per annum will not be affected by the decrease in the discharge allowance and subjected to a wastewater usage charge.

Table 11.3 Small business water and wastewater bills – standalone 20mm meter with 200 kL water consumption per annum ($ nominal) – with inflation

	2015-16	2016-17	2017-18	2018-19	2019-20	Change 2015-20
75% discharge factor	1,167	1,069	1,096	1,123	1,151	-16
Annual change		*-8.4%*	*2.5%*	*2.5%*	*2.5%*	*-1.4%*
78% discharge factor	1,167	1,085	1,113	1,147	1,176	9
Annual change		*-7.0%*	*2.5%*	*3.1%*	*2.5%*	*0.8%*
82% discharge factor	1,167	1,107	1,135	1,180	1,210	42
Annual change		*-5.1%*	*2.5%*	*4.0%*	*2.5%*	*3.6%*

Note: Inflation is estimated to be 2% in 2016-17 and 2.5% per annum over the rest of the 2016 period.
Source: IPART analysis.

Other small non-residential customers

We have used the segments identified by Sydney Water to illustrate the impact of our pricing decisions on the water and wastewater bills of non-residential customers.[437] These segments are outlined in Table 11.4 below. Taken together, these segments cover about 74% of total non-residential revenue and 76% of the non-residential customer base.[438]

[437] Sydney Water pricing proposal to IPART, June 2015, p 104.
[438] Sydney Water pricing proposal to IPART, June 2015, p 104.

Table 11.4 Sydney Water's significant non-residential segments

Customer segment	Type	Meter size (mm)	Average annual usage (kL)	Discharge factor (%)
Industrial	Low	20	200	82
	Medium	40	5,800	77
	High	80	26,000	69
Commercial	Low	20	310	83
	Medium	50	6,700	82
	High	80	21,000	82
Public hospital	Medium	80	20,000	89
	High	100	33,000	89
Private school	Low	50	7,700	84
	Medium	80	24,000	85
	High	100	35,000	83
Commercial strata unit	Low	20	130	80
	Medium	25	180	81
	High	40	2,100	88
Industrial strata unit	Low	20	75	80
	Medium	25	90	80
	High	50	32,000	69

Source: Sydney Water pricing proposal to IPART, June 2015, p 105.

Whilst almost all non-residential bills will decrease from 2016-17 onwards, non-residential customers who have a standalone 20mm connection may see increases in their bill. For reasons outlined above, the level of increase in the water and wastewater bill for these customers will depend on the customer's water consumption and their discharge factor. For example, a non-residential customer with a standalone 20mm meter, consumption of 200 kL per year and a discharge factor of 82%, will see an increase in their bill of $42 (or 3.6%) by 2019-20 in nominal terms.

Given our decision to lower the discharge allowance to 150 kL per annum, some of these customers will now also face wastewater usage charges within the 2016 determination period. For example, a non-residential customer with a standalone 20mm meter, consumption of 310 kL per year and a discharge factor of 83%, will see an increase in their bill of $149 (or 10.5%) by 2019-20 in nominal terms.

Table 11.5 shows the non-residential water and wastewater bills by different customer segments under our draft prices.

Table 11.5 Non-residential water and wastewater bills ($ nominal) – with inflation

	2015-16	2016-17	2017-18	2018-19	2019-20	Change 2015-20
Industrial						
Low	1,167	1,107	1,135	1,180	1,210	42
Annual change		*-5.1%*	*2.5%*	*4.0%*	*2.5%*	*3.6%*
Medium	21,520	18,592	19,115	19,651	20,143	-1,377
Annual change		*-13.6%*	*2.8%*	*2.8%*	*2.5%*	*-6.4%*
High	92,194	79,714	81,764	83,867	85,964	-6,231
Annual change		*-13.5%*	*2.6%*	*2.6%*	*2.5%*	*-6.8%*
Commercial						
Low	1,418	1,342	1,433	1,528	1,566	149
Annual change		*-5.3%*	*6.8%*	*6.6%*	*2.5%*	*10.5%*
Medium	27,124	22,873	23,502	24,149	24,753	-2,372
Annual change		*-15.7%*	*2.8%*	*2.8%*	*2.5%*	*-8.7%*
High	82,186	70,003	71,810	73,665	75,506	-6,680
Annual change		*-14.8%*	*2.6%*	*2.6%*	*2.5%*	*-8.1%*
Public hospital						
Medium	81,715	69,261	71,050	72,885	74,707	-7,008
Annual change		*-15.2%*	*2.6%*	*2.6%*	*2.5%*	*-8.6%*
High	133,563	113,547	116,444	119,414	122,399	-11,164
Annual change		*-15.0%*	*2.6%*	*2.6%*	*2.5%*	*-8.4%*
Private school						
Low	30,603	26,044	26,753	27,481	28,168	-2,436
Annual change		*-14.9%*	*2.7%*	*2.7%*	*2.5%*	*-8.0%*
Medium	93,016	79,863	81,917	84,024	86,125	-6,891
Annual change		*-14.1%*	*2.6%*	*2.6%*	*2.5%*	*-7.4%*
High	136,201	116,381	119,348	122,391	125,450	-10,751
Annual change		*-14.6%*	*2.5%*	*2.5%*	*2.5%*	*-7.9%*

Note: Inflation is estimated to be 2% in 2016-17 and 2.5% per annum over the rest of the 2016 period. Actual bills may vary from these figures depending on a customer's discharge factor.

Source: IPART's analysis.

Medium to large non-residential customers

All non-residential customers that have large meters and are large users of water will see a reduction in their bills. Customers in this category include public hospitals, private schools and medium to large commercial and industrial customers.

As large users of water, these customers realise the benefits from the reduction in the water usage charge. In addition, these customers will be the most significant beneficiaries of the rebasing of service charges and our altered approach to calculating wastewater discharge. For example, public hospitals with medium

usage (on average 20,000 kL per annum) will see a reduction in their bills of $12,454 (or 15.2%) in 2016-17 from $81,715 to $69,261. Sydney Water proposed a nominal decrease of $11,501 (or 14.1%) for the same customer type. Similarly, commercial customers with high water usage (averaging 21,000 kL per annum) will see a reduction in their bills of $12,183 (or 14.8%) in 2016-17 from $82,186 to $70,003. Sydney Water proposed a nominal decrease of $11,277 (or 13.7%) for the same customer type.

Non-residential common meter customers

As for most other non-residential customers, common metered non-residential customers with low to medium usage will see large reductions in their water and wastewater bills. For example, customers in commercial strata units with medium usage (ie, 180 kL per annum) will see a significant reduction in their bills of $571 (or 29.6%) in 2016-17 from $1,932 to $1,361.

The reduction in water and wastewater bills is a result of our rebasing water and wastewater charges so that they are all referenced to a 20mm meter, which removes an historical anomaly in charges between 20mm meter standalone and common meter non-residential customers.

Table 11.6 shows the non-residential water and wastewater bills under our draft prices for common meter customers.

Table 11.6 Non-residential common meter customer water and wastewater bills ($ nominal) – with inflation

	2015-16	2016-17	2017-18	2018-19	2019-20	Change 2015-20
Commercial strata unit						
Low	1,260	956	980	1,004	1,029	-231
Annual change		*-24.1%*	*2.5%*	*2.5%*	*2.5%*	*-18.3%*
Medium	1,932	1,361	1,395	1,430	1,466	-467
Annual change		*-29.6%*	*2.5%*	*2.5%*	*2.5%*	*-24.2%*
High	10,674	8,462	8,731	9,009	9,234	-1,440
Annual change		*-20.7%*	*3.2%*	*3.2%*	*2.5%*	*-13.5%*
Industrial strata unit						
Low	1,135	845	867	888	910	-224
Annual change		*-25.5%*	*2.5%*	*2.5%*	*2.5%*	*-19.8%*
Medium	1,711	1,172	1,201	1,231	1,262	-450
Annual change		*-31.5%*	*2.5%*	*2.5%*	*2.5%*	*-26.3%*
High	102,130	91,873	94,227	96,642	99,058	-3,072
Annual change		*-10.0%*	*2.6%*	*2.6%*	*2.5%*	*-3.0%*

Note: Inflation is estimated to be 2% in 2016-17 and 2.5% per annum over the rest of the 2016 period.
Source: IPART's analysis.

11.3 Additional costs of transfers from the Shoalhaven and Sydney Desalination Plant

It is important to note that the prices reported in the bill impact tables and analysis do not reflect the costs Sydney Water will incur for:

- transfers from Shoalhaven, or
- the purchase of potable water from the Sydney Desalination Plant.

Pass through of Shoalhaven transfer costs

We are introducing a service charge cost pass-through mechanism to compensate Sydney Water for actual bulk water costs incurred from WaterNSW for transfers from Shoalhaven (see Chapter 4). This differs from the 2012 Determination, where we decided to allow for the cost recovery of Shoalhaven pumping on **expected** costs basis (rather than through a cost pass-through mechanism).[439]

The size of these costs and their impact on customers will depend on the transfers from the Shoalhaven. Under the 2010 Metropolitan Water Plan, WaterNSW must start pumping from the Shoalhaven system when Sydney's dam levels fall to 75% and continue until they rise above 80%.[440]

Pass through of SDP costs

We have decided to pass through the per kilolitre (kL) cost of desalinated water into water usage charges if the SDP is operating. Specifically, our decision is to increase the water usage charge by $0.12 per kL over the 2016 determination period if SDP is operating to recover the variable costs associated with it supplying potable water.

For a typical household consuming 220 kL per year, this will add a further $26.40 to their annual bill. For a typical apartment consuming 160 kL per year, this would add a further $19.20 to their annual bill. Large users of water (ie, large non-residential customers) would pay proportionately more.

11.4 Implications for Sydney Water's service standards

Under our draft determination, we expect Sydney Water to achieve both operating and capital efficiency savings. We are satisfied that Sydney Water can achieve these efficiency savings and thus can generate sufficient revenue to achieve service standards at or above those expected by customers and required under its operating licence.

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439 IPART, *Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services - From 1 July 2012 to 30 June 2016 - Final Report,* June 2012, p 67.

440 Under the 2010 Metropolitan Water Plan, pumping from the Shoalhaven River commences when dam levels fall to 75% and continue until they rise above 80%. There are also other constraints; for example, the water level in Tallowa Dam has to be within 1 metre of the top water level of the dam. NSW Government, *2010 Metropolitan Water Plan*, August 2010, p 24.

Sydney Water is licensed under the *Sydney Water Act 1994*. The Act requires Sydney Water to hold an operating licence that is issued by the Minister and reviewed annually by IPART. This licence contains a number of standards that Sydney Water must meet, or risk facing penalties associated with a breach of licence conditions. Sydney Water's pricing submission identified the expenditure required for it to meet its obligations under both its operating and environmental licences. The operating licence also includes performance indicators against which Sydney Water's performance is reviewed as part of the annual audit of its compliance with the licence. During 2014-15, IPART reviewed Sydney Water's operating licence. The new licence commenced on 1 July 2015, and applies to 30 June 2020.

In its review of Sydney Water's operating and capital expenditure for this determination, Atkins Cardno noted that Sydney Water performed well over the 2012 determination period. It maintained its service standards related to water pressure, continuity, water leakage and sewage chokes and sewer overflows.[441] Atkins Cardno found that Sydney Water's performance showed that:

> Good performance has been maintained against the [Operating] Licence performance parameters, with clear headroom against the targets set. Sydney Water has performed well against the EPA licence criteria and has demonstrated good performance in customer service measures when compared with other Australian water agencies. [442]

However, Atkins Cardno notes that Sydney Water's environmental compliance shows an increase in dry weather overflows from 190 in 2012 to 280 in 2014. It found that this suggests there may be some deterioration in performance for dry weather overflow incidents.[443]

We have revised the output measures introduced in the 2012 determination to reflect the nature of the capital program over the 2016 determination period. These will assist us to identify how expenditure proposals will enable Sydney Water to meet its regulatory requirements. A list of output measures for Sydney Water (along with targets) is set out in Appendix G.

11.5 Implications for Sydney Water's financial viability and shareholders

We are satisfied our determination will not adversely affect the ability of Sydney Water to operate, maintain, renew and develop the assets required to deliver its regulated services over the 2016 determination period. Further, we are satisfied that this determination will enable Sydney Water to earn a reasonable rate of return on its assets.

441 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, pp 38-40.
442 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 14.
443 Atkins Cardno, *Expenditure Review – Sydney Water,* December 2015, p 40.

11.5.1 Rate of return

Our pricing decisions mean that Sydney Water is able to achieve at least the total notional revenue requirement over the 2016 determination period. Therefore, we expect that it will earn a real post-tax rate of return on its RAB of at least the target rate of 4.8% in each year of the determination period (see Chapter 3). This calculation is based on the assumptions we used in our modelling of the financial impacts of its pricing decisions, and depends on Sydney Water achieving the efficiency targets we have set.

11.5.2 Financeability

Since the 2012 Determination, we have established a financeability test that we use to consider the effect of our regulated prices on the utility's financial sustainability.[444] We assess whether our decisions would enable the utility to raise finance consistent with an investment grade rated (Baa2) firm, over the regulatory period. We have also reviewed our approach to calculating the credit ratios we use in our financeability test, including Funds From Operations (FFO), Debt Gearing and FFO over debt.[445]

Table 11.7 shows Sydney Water's financial ratios based on draft prices presented in Chapter 8. Table 11.8 shows our benchmark financial ratios.

Table 11.7 Sydney Water's financial ratios (based on RAB values)

Financial year ending 30 June	2015-16	2016-17	2017-18	2018-19	2019-20
1. FFO Interest Cover	2.52	1.89	1.94	2.02	2.10
2. Debt / RAB	54%	53%	53%	52%	51%
3. FFO / Debt	9.8%	5.4%	5.7%	6.1%	6.6%

Source: IPART analysis.

Table 11.8 Financial Ratio Benchmarks (for water utilities)

	Credit Rating Range				
	A3	Baa1	Baa2	Baa3	Ba1
1. FFO Interest Cover	>2.9	2.3 - 2.9	1.7 - 2.5	1.4 / 1.5 - 1.7	<1.4 / 1.5
2. Debt / RAB	<60%	80-85%	60-91%	90-100%	>100%
3. FFO / Debt	>10%	>10%	6-10%	5-8%	<4%

Source: Kanangra Ratings Advisory Services advice to IPART, see IPART, *Financeability tests in price regulation Research — Final Decision*, December 2013, p10.

444 Our financeability test requires us to: construct financial statements for the regulated utility; use the utility's actual cost of debt and gearing levels to compute the financial ratios; compare the financial ratios against our Baa2 benchmark levels; make an overall assessment taking into account the financial ratios, financial statements and other relevant information which could affect financial sustainability. IPART, *Financeability tests in price regulation – Final Decision,* December 2013.

445 IPART, *Financeability ratios – Final Decision*, April 2015.

Sydney Water's actual financial ratios in 2015-16 are significantly stronger than we forecast in setting prices at the 2012 Determination. This is due to higher profits arising from:

- Lower operating costs than we forecast in 2012, and
- Higher revenue (from higher sales volumes) than we forecast in 2012.

As such, the forecast deterioration (step-down) in the ratios in 2016-17 is in large part due to Sydney Water's higher than expected profits in the base year (2015-16), rather than overly-constrained financial performance and position arising from our recommended prices.

Sydney Water's credit metrics also drop in 2016-17 due to the fall in the notional revenue requirement and target revenue, in particular the reduction in the WACC from 5.6% to 4.8%. As the RAB increases throughout the determination period, due to capital investment and indexation, the credit ratios are projected to be consistent with a credit rating of Baa2 by 2019-20. This is shown in Table 11.7 above.

Based on our analysis of Sydney Water's credit metrics, and the improvement of these credit metrics over the 2016 determination period, we consider Sydney Water to be financially sustainable. Our policy provides that more weight should be placed on the first two ratios, and that we do not expect a utility will meet every benchmark in every year of a determination period. In addition, these credit metrics are in line with the forecast ratios calculated for the 2012 determination period.

In its pricing proposal, Sydney Water stated that "based on our pricing proposal and the key credit rating metrics, in the worst case, we will maintain our current credit rating."[446] Sydney Water commented that there is no need for any financeability adjustment by IPART. We note that our recommended target revenue is $9,570 million over 4 years, which is $125 million lower than proposed by Sydney Water.

11.5.3 Impact on the Consolidated Fund

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

[446] Sydney Water pricing proposal to IPART, June 2015, p 127.

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

11.6 Implications for general inflation

Under section 15 of the IPART Act, we are required to consider the effect of our determinations on general price inflation. Currently, water and wastewater costs in Sydney, contribute 0.26% towards the consumer price index (all groups, 8 capital cities).[447] Under our draft prices, the annual average increase of a water and wastewater bill for a customer consuming 200 kL per annum is -2.7% (in real terms). Therefore, the approximate annual impact on general price inflation is -0.007% points (above the change in the CPI).[448]

11.7 Implications for the environment

The NSW Government is responsible for determining any negative environmental impacts associated with Sydney Water's activities, and for imposing standards or requirements on Sydney Water to address these impacts.

The Environmental Protection Authority (EPA) is responsible for monitoring and regulating Sydney Water's environmental performance by issuing Environment Protection Licences (EPLs)[449], which it reviews every five years. Sydney Water's EPLs are a key driver of its capital and operating expenditure on water and wastewater services and assets. In total, Sydney Water has 27 EPLs:

- 23 for wastewater treatment systems
- two for water filtration plants
- one for an advanced recycled water filtration plant, and
- one to transport waste.[450]

Sydney Water's EPLs are currently being reviewed by the EPA.[451] This has implications for Sydney Water's costs in the areas of wet weather overflow abatement and the Winmalee sewage treatment plant. It submitted a proposal to the EPA in December 2015 with alternative licence requirements.[452] It noted that its proposed capital expenditure of $158 million to meet EPL requirements over

[447] Australian Bureau of Statistics, *Consumer Price Index 16th Series Weighting Pattern* (cat. no. 6471.0).
[448] -0.007% = -2.7%x0.26%.
[449] The EPA issues EPLs under the *Protection of the Environment Operations Act 1997* (NSW).
[450] Sydney Water pricing proposal to IPART, June 2015, p 12.
[451] Unlike the Operating Licence, the EPLs do not have a defined start and end date and the EPA can vary them at any time.
[452] Sydney Water pricing proposal to IPART, June 2015, p 205.

the 2016 determination period assumes the EPA accepts its proposed licence variation, and is therefore framed in an uncertain regulatory environment.[453]

In meeting its environmental obligations, Sydney Water has undertaken, and plans to continue to undertake, a number of environment-specific projects. These include:

- **Wet Weather Overflow Abatement Program** – this program is designed to prevent repeat wet weather overflows to customer properties and sensitive environmental sites. Atkins Cardno found that Sydney Water's proactive engagement with the EPA on this long-running program has produced significant savings and efficient outcomes.[454]
- **Winmalee Wastewater Treatment Plant upgrade** – this project aims to reduce the nutrient load discharged from Winmalee WWTP into receiving waters.
- **Avoid fail sewer program** – which aims to renew high risk sewer mains before they reach the end of their life.

We have assessed the reasonableness of Sydney Water's proposed EPL expenditure and the basis upon which it has developed this proposal. We are satisfied that our determination will not negatively affect Sydney Water's ability to implement these programs.

[453] Sydney Water pricing proposal to IPART, June 2015, pp 204-05.
[454] Atkins Cardno, *Sydney Water Corporation – Expenditure Review*, December 2015, p 121.

Appendices

A Matters to be considered under section 15 of the IPART Act

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).

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

Table A.1 Consideration of section 15 matters by IPART

Section 15(1)	Report Reference
a) the cost of providing the services	Section 3.2 and 3.3 and Chapters 4 and 5 generally
b) the protection of consumers from abuses of monopoly power	Chapter 2
c) the appropriate rate of return and dividends	Chapter 6, Appendix I, Section 11.5
d) the effect on general price inflation	Section 11.6
e) the need for greater efficiency in the supply of services	Chapters 4 and 5
f) ecologically sustainable development	Chapters 5, 8 and 10 and section 11.7
g) the impact on borrowing, capital and dividend requirements	Section 11.6
h) impact on pricing policies of any arrangements that the government agency concerned has entered into for the exercise of its functions by some other person or body	Not applicable
i) need to promote competition	Chapters 2, 8, 9, and 10
j) considerations of demand management and least cost planning	Chapters 7 and 8
k) the social impact	Chapter 3 and 11
l) standards of quality, reliability and safety	Section 11.4

B Section 16A directions

New South Wales

The Hon Nathan Rees MP
Minister for Emergency Services
Minister for Water Utilities

RECEIVED
23 AUG 2007
INDEPENDENT PRICING

SW Ref: SD 002243

Dr Michael Keating AC
Chairman
Independent Pricing and Regulatory Tribunal
PO BOX Q290
QVB POST OFFICE NSW 1230

17 AUG 2007

Dear Dr Keating

I refer to the Premier's request under section 12 of the *Independent Pricing and Regulatory Tribunal Act 1992* (IPART Act) that the Tribunal make a new pricing determination for Sydney Water Corporation.

As you are aware, the Government's intention is that the new determination will consider a range of projects that Sydney Water is undertaking to address the ongoing drought conditions and to secure Sydney's long term water supply.

I have directed Sydney Water, under section 20P of the *State Owned Corporations Act 1989*, to construct, operate and undertake the Western Sydney Recycled Water Initiative Replacement Flows Project. The project consists of;

- an Advanced Water Treatment Plant with interconnecting systems from Penrith, St Marys and Quakers Hill Sewage Treatment Plants;
- associated infrastructure and a pipeline from the treatment plant; and
- a pilot plant at St Mary's Sewage Treatment Plant and associated infrastructure.

Pursuant to section 16A of the IPART Act, I direct the Tribunal, when it determines the maximum price for Government monopoly services provided by Sydney Water, to include in that price an amount representing the efficient cost of complying with the Direction, including the ongoing operating costs of the project.

As you are aware, it is also the Government's intention for costs relating to the Camellia Recycled Water scheme be included in the Tribunal's determination. Sydney Water is finalising the tenders for this project and once this process has concluded I intend to issue a direction to Sydney Water under section 20P of the SOC Act and to the Tribunal under section 16A of the IPART Act.

Yours sincerely

Nathan Rees MP
Minister for Water Utilities
Minister for Emergency Services

Level 25, 9 Castlereagh Street, Sydney NSW 2000
Telephone (02) 9228 5050 Facsimile (02) 9228 5099
reception@rees.minister.nsw.gov.au

New South Wales

The Hon Nathan Rees MP
Minister for Emergency Services
Minister for Water Utilities

SW Ref: 003187

Dr Michael Keating AC
Chairman
Independent Pricing and Regulatory Tribunal
PO Box Q290
QVB POST OFFICE NSW 1230

12 MAR 2008

Dear Dr Keating

My letter to the Tribunal directing it to include the efficient costs of the desalination plant in Sydney Water's prices foreshadowed a similar direction in relation to the Rosehill (Camellia) Recycled Water Project.

The Government's intention is that potable water prices should include some of the costs incurred by Sydney Water in undertaking the Rosehill (Camellia) Recycled Water Project. The costs to be included in potable water charges represent the difference between the charges paid by Sydney Water to the owner of the Rosehill (Camellia) Recycled Water infrastructure and distribution pipelines, and the revenue received by Sydney Water from the sale of recycled water to customers.

I have directed Sydney Water, under section 20P of the *State Owned Corporations Act 1989*, to undertake the Rosehill (Camellia) Recycled Water Project. Pursuant to section 16A of the *Independent Pricing and Regulatory Tribunal Act 1992*, I direct the Tribunal, when it determines the maximum price for government monopoly services provided by Sydney Water, to include in that price an amount representing the efficient cost of complying with the requirements imposed on Sydney Water to undertake the Rosehill (Camellia) Recycled Water Project, which includes:

- entering into agreements for the supply of recycled water to foundation customers;
- purchasing recycled water from a private recycled water supplier for supply to customers; and
- arranging for the private recycled water supplier to finance, construct, operate and maintain recycled water infrastructure, initially capable of supplying around 4.3 billion litres of recycled water per year, and the necessary distribution pipelines

Yours sincerely

Nathan Rees MP
Minister for Water Utilities
Minister for Emergency Services

Level 25, 9 Castlereagh Street, Sydney NSW 2000
Telephone (02) 9228 5050 Facsimile (02) 9228 5099
Email : reception@rees.minister.nsw.gov.au

INDEPENDENT PRICING AND REGULATORY TRIBUNAL ACT 1992

DIRECTION UNDER SECTION 16A

TO: Dr Peter J Boxall AO
Chairman
Independent Pricing and Regulatory Tribunal
PO BOX Q290
QVB POST OFFICE NSW 1230

Dear Dr Boxall

Following the Treasurer's approval, I have directed Sydney Water Corporation under section 20N of the *State Owned Corporations Act 1989* to undertake stormwater amplification works of Sydney Water Corporation's existing Victoria Park branch of the Sheas Creek stormwater system and the construction of interconnected stormwater infrastructure (and associated infrastructure, and including stormwater infrastructure constructed by Sydney Water on behalf of the City of Sydney) to provide a drainage system to accommodate the Green Square development. A copy of the Treasurer's approval and my Direction to Sydney Water Corporation are attached.

Given that, pursuant to section 16A of the *Independent Pricing and Regulatory Tribunal Act 1992*, I, with the approval of the Premier, hereby direct the Tribunal, when it next determines the maximum price for Government monopoly services provided by Sydney Water Corporation, to include in that price an amount representing the efficient costs of complying with the requirements imposed on Sydney Water Corporation to undertake stormwater amplification works and construct interconnected stormwater infrastructure in connection with the Green Square development. A copy of the Premier's approval is attached.

It is the Government's intention that Sydney Water Corporation's prices for stormwater services should include the efficient costs incurred by Sydney Water Corporation in undertaking the amplification works and construction of interconnected stormwater infrastructure for the Green Square development. The amount of the efficient costs to be passed through to maximum prices is to exclude any costs that Sydney Water is entitled to recover from the Housing Acceleration Fund (Round 2) or the City of Sydney Council in respect of the stormwater works.

Yours sincerely

21/1/14

The Hon. Andrew James Constance, MP
Minister for Finance and Services

Dated:

C Terms of reference for late payment, dishonoured or declined payment fees

Premier of New South Wales

NSW GOVERNMENT

IPART
Doc No
File No

RECEIVED
10 DEC 2015
INDEPENDENT PRICING & REGULATORY TRIBUNAL

Reference: A1349407

Dr Peter Boxall
Chair
Independent Pricing and Regulatory Tribunal
PO Box K35
HAYMARKET POSTSHOP NSW 1240

Dear Dr Boxall

Pursuant to section 12A of the Independent Pricing and Regulatory Tribunal Act 1992, I am writing to refer a periodic investigation and report on:

- the maximum late payment fee and dishonoured and declined payment fee to be charged by Sydney Water, and
- maximum dishonoured or declined payment fee to be charged by Hunter Water.

Each periodic review is to be conducted in accordance with the attached Terms of Reference. It is intended that, where possible, each review be conducted concurrent to IPART's investigation of Sydney Water's and Hunter Water's maximum prices for its water and sewerage services. Any late maximum payment fee or maximum dishonoured or declined payment fee specified by IPART is to apply from the commencement of the next determination period, anticipated to be commencing 1 July 2016, and for such other periods as determined by IPART.

If you require further information, please contact Laura Eadie, Director, Department of Premier and Cabinet, on 9228 5546.

Thank you for your assistance in this matter.

Yours sincerely

MIKE BAIRD MP
Premier

- 7 DEC 2015

GPO Box 5341, Sydney NSW 2001 ▪ P: (02) 9228 5239 ▪ F: (02) 9228 3935 ▪ www.premier.nsw.gov.au

Periodic review of a maximum late payment fee and dishonoured or declined payment fee for Sydney Water and dishonoured or declined payment fee for Hunter Water

Terms of Reference

I, Mike Baird, Premier of New South Wales, under section 12A of the *Independent Pricing and Regulatory Tribunal Act 1992* (IPART Act), refer the following matter to the Independent Pricing and Regulatory Tribunal (IPART) for investigation and report:

- the maximum late payment and dishonoured or declined payment fee for Sydney Water Corporation (Sydney Water),
- the appropriate terms and conditions under which a late payment fee should apply under Sydney Water's customer contract, and
- the maximum dishonoured or declined payment fee for Hunter Water Corporation (Hunter Water).

In conducting each review under these terms of reference, IPART is to specify:

1. the maximum late payment fee that Sydney Water may charge under its customer contract;
2. the maximum dishonoured or declined payment fee recommended to be charged by Sydney Water;
3. the maximum dishonoured or declined payment fee that Hunter Water may charge under its customer contract; and
4. the terms and conditions to apply to the charging of the late payment fee under Sydney Water's customer contract.

Background

Sydney Water

By clause 4.4.5 of the customer contract contained in Sydney Water's Operating Licence 2015-2020, Sydney Water has the provision to charge:

> "...a late payment fee, but only if a maximum late payment fee amount is specified by *IPART* as part of a review conducted by *IPART* under the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW) ("IPART Act")."

IPART may specify the terms and conditions under which the late payment fee applies as part of the review, noting that Sydney Water cannot charge a late payment fee if:

- it has already agreed to a deferred payment date with a customer, or an arrangement to pay by instalments with respect to the overdue account balance; or
- the customer has entered into a payment arrangement with Sydney Water.

Under clause 4.11.1 of its customer contract, Sydney Water may charge a dishonoured or declined fee in an amount not exceeding the amount specified on its website, as amended from time to time.

Hunter Water

Clause 4.9.1 of the customer contract contained in Hunter Water's Operating Licence 2012-2017, provides that:

"If payment of your account is dishonoured or declined, we will charge you the relevant administrative fee set by IPART."

Matters for consideration

In undertaking an investigation under this referral, IPART should take into account the following considerations:

When reviewing the maximum late payment fee and associated terms and conditions for charging:

1. The maximum late fee should reflect the efficient costs associated with the late payment of bills.
2. The impact on different customer groups of any terms and conditions for the charging of the late payment fee under the customer contract.

In addition, IPART may take into account any other matters it considers relevant.

When reviewing the maximum dishonoured or declined payment fee:

1. The maximum dishonoured or declined fee should reflect the efficient costs incurred by the utility for dishonoured or declined payments.

In addition, IPART may take into account any other matters it considers relevant.

Consultation

In conducting a review under this referral, IPART will invite submissions from stakeholders.

Timing of periodic review

1. IPART is to conduct the investigation and report under this referral either:
    a. concurrently with its investigation of Sydney Water's and Hunter Water's maximum prices for the provision of water, sewerage, stormwater, trade waste (price review); or
    b. separately from a price review.

2. Where an investigation and report under this referral is conducted concurrently with a price review:
    a. the specified maximum fees are to apply from the date the determination commences in respect of that price review; and
    b. IPART must specify the relevant maximum fee(s) in the report prepared for the purposes of the price review (a copy of which is to be provided to the Premier).

3. Where an investigation and report under this referral is conducted separately from a price review, IPART must:
    a. set out the period during which the fees are to apply; and
    b. submit a report to the Premier once the review is completed.

D Context for the review

To provide the context for this review, the sections below outline Sydney Water's regulatory framework and the key developments in its regulatory environment since our 2012 Determination. These developments will affect our decisions and inputs into this review, and include other recent or ongoing water pricing reviews, developments in Sydney Water's operating licence and regulatory environment, the Metropolitan Water Plan, and the Government directions that currently apply to Sydney Water.

D.1 Sydney Water's regulatory framework

Sydney Water is a State Owned Corporation (SOC), wholly owned by the NSW Government.[455] Sydney Water's roles and responsibilities are prescribed by the *Sydney Water Act 1994* (NSW) (the Sydney Water Act), the *State Owned Corporations Act 1989* (NSW) (SOC Act) and the operating licence issued to Sydney Water under Part 5 of the Sydney Water Act.

Under Section 21 of the Sydney Water Act, Sydney Water is required to fulfil three equally weighted objectives:

- to be a successful business
- to protect the environment, and
- to protect public health.

According to Sydney Water, the equal importance of each objective provides a safeguard against adverse outcomes and acknowledges that Sydney Water was predominantly self-regulated before 1994.[456]

[455] Sydney Water transitioned from a government department to a monopoly SOC under the *Sydney Water Act 1994* (NSW) and (an amendment to) the *State Owned Corporations Act 1989* (NSW).

[456] Sydney Water pricing proposal to IPART, June 2015, p 67.

Since 1994, the safeguards to protect society against public health risks and major pollution events have subsequently evolved through explicit legislative and regulatory arrangements and licensing regimes. Sydney Water's primary regulators are:

- **IPART (pricing)**. We are responsible for setting the maximum prices that Sydney Water can charge for its monopoly services, as well as the maximum prices for bulk water services supplied to Sydney Water by WaterNSW and Sydney Desalination Plant (SDP).
- **IPART (licensing)**. We are also responsible for monitoring and reporting on Sydney Water's compliance with its operating licence, including its obligations in relation to customer service, water quality, and system performance.[457]
- **NSW Environment Protection Authority (EPA).** The EPA is responsible for monitoring and regulating Sydney Water's environmental performance. It issues Environment Protection Licences (EPLs) under *the Protection of the Environment Operations Act 1997* (NSW) for Sydney Water's wastewater treatment systems and water filtration plants.
- **NSW Health.** NSW Health is responsible for regulating the quality and safety of Sydney Water's drinking water.
- **DPI Water**. DPI water regulates Sydney Water's extractions from the Hawkesbury-Nepean River. These extractions are used by the North Richmond water filtration plant to provide a drinking water supply for the Hawkesbury area. The Metropolitan Water Directorate (part of DPI Water) leads a whole-of-government approach to water planning for greater Sydney and the lower Hunter.

D.2 Other IPART water pricing reviews

We have recently completed or are concurrently conducting a number of reviews that will affect inputs to our calculations of Sydney Water's costs and prices. These include reviews related to Sydney Water's:

- bulk water costs
- price structures, and
- financing costs and tax allowance.

[457] IPART also grants licences to water infrastructure operators, and has granted the Sydney Desalination Plant a *Water Industry Competition Act 2006* (NSW) licence.

D.2.1 Reviews related to Sydney Water's bulk water costs

Sydney Water purchases most of the bulk water it needs to supply its customers from WaterNSW.[458] We are concurrently conducting a review to determine WaterNSW's maximum prices from 1 July 2016. Therefore, we can use our decisions on these prices in determining Sydney Water's bulk water costs.

Sydney Water also purchases bulk water from SDP which operates under a regime set out in the Government's Metropolitan Water Plan:[459]

> …the plant will operate at full production capacity and supply desalinated water to Sydney Water's area of operations when the total dam storage level is below 70 percent and will continue to do so until the total dam storage level reaches 80 percent.

We set the maximum prices that SDP can charge Sydney Water in each of its modes of operation. SDP's current price determination is due to expire on 30 June 2017.[460] SDP's next price review is due to commence next year, with new prices to apply from 1 July 2017.

This means we can use SDP's prices in determining Sydney Water's bulk water costs for the first year of the 2016 determination period (ie, 2016-17) only. The timing of SDP's next price review (and other factors) means that there will be uncertainty about Sydney Water's SDP bulk water costs for the remaining years of the 2016 period. This differs from Sydney Water's 2012 Determination where we knew all of SDP's costs and prices for each mode of operation.

This issue is discussed further in Chapter 4.

458 Sydney Water pricing proposal to IPART, June 2015, p ii.
459 NSW Government, *2010 Metropolitan Water Plan*, August 2010, p 36.
460 IPART, *Review of water prices for Sydney Desalination Plant Pty Limited from 1 July 2012 – Final Report*, November 2011.

D.2.2 Reviews related to Sydney Water's price structures

We reviewed the structure of prices for Sydney Water and the other metropolitan water utilities we regulate in 2012.[461] As a result of this review, we established some general pricing principles to further improve the cost reflectivity of these prices, and to increase equity between customer groups. These principles were:[462]

- The water usage charge should be a standard charge for all customers based on the Long Run Marginal Cost (LRMC) of water supply.
- Residential water and wastewater service charges should be standard for all customers, unless there are material cost differences.
- The wastewater usage charge should apply to non-residential customers over a particular consumption threshold, and be set with reference to the Short Run Marginal Cost (SRMC) of supply.
- The total revenue collected from non-residential customers should reflect the costs incurred in servicing them, and customers imposing similar costs should pay similar charges.

In the 2012 Determination, we restructured Sydney Water's prices in line with these principles. For the 2016 Determination, we have considered whether there is any further need to restructure Sydney Water's prices, particularly in relation to some of the outstanding issues on wastewater charges from the 2012 Determination.[463]

Since the 2012 Determination, we undertook a further investigation related to the cost of providing water and wastewater services. We circulated a discussion paper to the metropolitan water utilities in November 2014 for comment, and held a workshop in December 2014, which was attended by Sydney Water, Hunter Water Corporation (Hunter Water), and Gosford City Council. In the discussion paper, we outlined a number of possible options for rebasing water and wastewater service charges to improve the cost reflectivity of these charges and address some current pricing anomalies.

In addition, we conducted a related review of the discharge factors used in determining sewerage prices for non-residential customers. We decided to maintain our current practice of adopting the discharge factors proposed by the regulated water utilities unless we identify a strong case to do otherwise during the price review process.[464]

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461 IPART, *Review of Price Structures for Metropolitan Water Utilities – Final Report*, March 2012.

462 IPART, *Review of Price Structures for Metropolitan Water Utilities – Final Report*, March 2012, p 3 and 29.

463 For example, we stated that we would consider in subsequent determinations whether the wastewater usage charge should be further reduced towards SRMC and the free discharge allowance to 150 kL. See IPART, *Review of Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 - Final Report*, June 2012, p 103.

464 IPART, *Discharge factors for non-residential customers – Final Report*, December 2014.

Chapter 8 and 9 discuss our draft prices in the context of these reviews.

D.2.3 Reviews related to Sydney Water's financing costs and financeability

Since the 2012 Determination, we have conducted several reviews that affect the way we determine a utility's financing costs and assess its financeability. These include reviews on our approach to:

- determining the WACC,[465] including the approach for estimating the cost of debt, the cost of equity, and the decision rule for choosing the WACC point estimate
- estimating the inflation adjustment used in determining the real post-tax WACC[466]
- estimating the debt margin parameter of the WACC[467]
- assessing the short-term financial sustainability of regulated utilities and elements of our financeability test,[468] and
- calculating the credit ratios we use in our financeability test, including Funds From Operations (FFO), Debt Gearing and FFO over debt.[469]

Sydney Water submitted that these reviews have increased the transparency of the regulatory process and provided more certainty for regulated businesses.[470] It noted that Moody's highlighted the importance of the improved WACC methodology in its recent decision to increase Sydney Water's baseline credit assessment from Baa2 to Baa1.[471] However, it also raised some issues with the methodology by exception for this review.[472]

In addition, we have recently reviewed how we treat finance leases in our regulatory decisions. We decided that our preferred approach is to include the efficient value of the underlying asset in the RAB, and to account for the efficient operating costs required to deliver the services associated with the asset in the allowance for operating expenditure.[473]

Our draft decisions on the WACC methodology and treatment of financial leases are discussed in Chapter 6.

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465 IPART, *Review of WACC Methodology – Final Report*, December 2013.
466 IPART, *New approach to forecasting the WACC inflation adjustment – Fact Sheet*, March 2015.
467 IPART, *WACC - IPART's New Approach to estimating the cost of debt*, April 2014.
468 IPART, *Financeability tests in price regulation – Final Decision*, December 2013.
469 IPART, *Financeability ratios – Final Decision*, April 2015
470 Sydney Water pricing proposal to IPART, June 2015, p xxiii.
471 Sydney Water pricing proposal to IPART, June 2015, p xxiii.
472 Sydney Water pricing proposal to IPART, June 2015, p 218.
473 IPART, *Regulatory treatment of finance leases – Fact Sheet*, January 2015.

D.3 Sydney Water's Operating Licence

Sydney Water's primary regulatory instrument is its Operating Licence. The objective of the licence is to enable and require Sydney Water to provide services within its area of operations.

Consistent with this objective, the licence sets out the obligations on Sydney Water to meet legislative requirements, comply with quality and performance standards, recognise the rights given to customers and consumers, and be subject to operational audits.[474]

Sydney Water's new licence started on 1 July 2015 and will end on 30 June 2020.[475] It contains similar standards to the 2010–2015 licence, which expired on 30 June 2015. The follow changes to the licence are relevant for this pricing review:

- Sydney Water must develop a new methodology for determining its 'Economic Level of Water Conservation', which must be approved by IPART by 31 December 2016. This replaces the prescriptive water use and water leakage targets in the previous licence.
- Sydney Water must use its best endeavours to develop and agree a protocol with the Metropolitan Water Directorate on roles and responsibilities for developing and implementing the Metropolitan Water Plan. It must then maintain and comply with the agreed protocol.
- Sydney Water must use its best endeavours to co-operate with network operators and retail suppliers licensed under the WIC Act within its area of operation that seek to establish a code of conduct. This obligation mirrors similar obligations where the Minister can establish a code of conduct for WICA licensees (referred to in clause 25 of the *Water Industry Competition (General) Regulation 2008*).
- If required by the Minister, Sydney Water must implement and comply with any outcomes (including timeframes) of a Government review of the Priority Sewerage Program.
- Sydney Water is allowed to charge a fee for late payment of customer bills, subject to a maximum amount and terms and conditions set by IPART.
- Sydney Water must include in its customer contract a definition of the Rouse Hill stormwater catchment area identified in IPART's pricing determination. This extends the protections of the customer contract to customers in this area and clarifies their rights and obligations under the customer contract.[476]

474 IPART, *Sydney Water Corporation Operating Licence – Report to the Minister*, May 2015, p 4.
475 IPART, *Sydney Water Corporation Operating Licence 2015-2020*, July 2015, p 2.
476 IPART, *Sydney Water Corporation Operating Licence – Report to the Minister*, May 2015, clause 3.2, clause 3.1, clause 5.8, clause 4.4, schedule 4 Customer Contract.

In undertaking Sydney Water's licence review (which recommended these changes to Sydney Water's licence),[477] we drew on best practice regulatory principles. That is, the licence conditions should regulate Sydney Water to ensure it achieves the desired outcomes without imposing unnecessary compliance and administrative costs. This approach is consistent with the evolution of good regulatory practice for public water utilities.[478]

D.4 Sydney Water's environmental regulations

The EPA regulates Sydney Water's environmental performance by issuing EPLs, which it reviews every five years. Sydney Water's EPLs are a key driver of its capital and operating expenditure on water and wastewater services and assets. In total, Sydney Water has 27 EPLs:

- 23 for wastewater treatment systems
- two for water filtration plants
- one for an advanced recycled water filtration plant, and
- one to transport waste.[479]

Sydney Water's EPLs are currently being reviewed by the EPA.[480] This has implications for Sydney Water's costs in the areas of wet weather overflow abatement and the Winmalee sewage treatment plant.

In its pricing proposal, Sydney Water noted that the EPA has no explicit legislative requirement to consider efficiency when introducing licence requirements.[481] It also noted that the EPA can vary the EPLs outside the price determination period and that variations occur regularly. Sydney Water's costs may increase substantially from such variations, which may be unfunded depending on the time of the variation and the price submission.[482]

Sydney Water indicated that it is actively engaging with the EPA on the current licensing of wet weather overflows.[483] It is developing an risk-based approach to wet weather overflow abatement as a possible alternative to the current frequency-based licensing regime. This risk-based approach aims to lower costs, while achieving the same overall environmental outcomes as frequency targets for individual wastewater treatment systems.

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477 We completed an end of term review of Sydney Water's operating licence in May 2015. The Minister administering the Sydney Water Act may accept or reject our recommendations, before endorsing a new licence for approval by the Governor of NSW and subsequent gazettal. See IPART, *Sydney Water Corporation Operating Licence – Report to the Minister*, May 2015, p 1.

478 IPART, *Sydney Water Corporation Operating Licence – Report to the Minister*, May 2015, p 10.

479 Sydney Water pricing proposal to IPART, June 2015, p 12.

480 Unlike the Operating Licence, the EPLs do not have a defined start and end date and the EPA can vary them at any time.

481 Sydney Water pricing proposal to IPART, June 2015, p 69.

482 Sydney Water pricing proposal to IPART, June 2015, p 12.

483 Sydney Water pricing proposal to IPART, June 2015, p 27.

Sydney Water estimated that under the terms of the current EPLs, full compliance with regard to wet weather overflows would require expenditure of about $5.5 billion ($2011-12) and increase wastewater bills by about 20% over the long-term.[484] It submitted a proposal to the EPA in December 2015 with alternative licence requirements.[485] It noted that its proposed capital expenditure of $158 million to meet EPL requirements over the 2016 determination period assumes the EPA accepts its proposed licence variation, and is therefore framed in an uncertain regulatory environment.[486]

We have assessed the reasonableness of Sydney Water's proposed EPL expenditure and the basis upon which it has developed this proposal. In our submission to the EPA's review of Sydney Water's EPLs, we expressed the view that:[487]

- the utility has a role in participating in the regulatory process and working together with the regulator to develop the best possible outcome
- if the costs of complying with an inefficient environmental regulation are simply passed through to customers by a monopoly utility, the utility may not have the incentive to engage in a meaningful manner with the environmental regulator in the standard setting process, and
- in relation to selective regulations that are costly and material, if inefficient regulation is implemented, the price regulator could determine that only a portion of costs be passed through to customers via prices.

Our consultant, Atkins Cardno, considered Sydney Water's proposed EPL expenditure as part of its expenditure assessment. We have considered this expenditure when drawing our conclusions in Chapter 4 and Chapter 5.[488]

D.5 Metropolitan Water Plan

The NSW Government's Metropolitan Water Plan outlines the mix of supply augmentation and demand management measures that ensure Sydney, the Illawarra and the Blue Mountains have enough water now and for the future. The Metropolitan Water Plan is reviewed periodically. It was first developed in 2004 in response to indications a drought was taking hold, updated in 2006 due to deepening drought, and updated again in 2010 as part of the review cycle.[489]

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484 Sydney Water pricing proposal to IPART, June 2015, p 27.
485 Sydney Water pricing proposal to IPART, June 2015, p 205.
486 Sydney Water pricing proposal to IPART, June 2015, pp 204-05.
487 IPART Submission to the Environment Protection Authority review of Sydney Water Corporation's environmental protection licences, May 2015.
488 Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 171.
489 NSW Government, Metropolitan Water Directorate, *Updating the Plan*, accessed on 12 June 2015 from http://www.metrowater.nsw.gov.au/planning-sydney/updating-plan

The 2010 Metropolitan Water Plan is currently being reviewed to take account of changes in water demand and supply, and new data and research. The Metropolitan Water Directorate (responsible for developing the plan) has adopted a phased approach to the review of the 2010 Plan, with reports to the NSW Government at the end of each phase:[490]

- **Phase 1** – scoping, research and investigations and community engagement (complete).
- **Phase 2** – portfolio development and assessment, including hydro-economic modelling; review of options for future water conservation and recycling; preliminary business case for releasing environmental-flows from Warragamba Dam; community engagement; development of a monitoring, evaluation, reporting and improvement plan (commenced).
- **Phase 3** – further hydro-economic modelling and community engagement before finalising the preferred portfolio of measures for securing water supply.
- **Phase 4** – Government consideration and endorsement of the revised plan.

Currently, the Metropolitan Water Plan has no statutory force. However, as noted above, Sydney Water is required to maintain and comply with an agreed roles and responsibility protocol regarding the development and implementation of the Metropolitan Water Plan under its Operating Licence.

Of particular relevance to our current review of Sydney Water's prices will be:

- the operating environment and rules prescribed for SDP
- the impact of the Metropolitan Water Plan on estimates of the Long Run Marginal Cost (LRMC) of water supply (ie, our benchmark for setting water usage prices in past water price reviews), and
- possible cost implications for WaterNSW and flow through to Sydney Water's long-term bulk water costs.

The Metropolitan Water Plan has strong links with the Government's Hawkesbury-Nepean Valley Flood Management Review, which considers options for managing flooding downstream of Warragamba Dam.[491] This review may impact the timing of the Metropolitan Water Plan.

[490] NSW Government, Metropolitan Water Directorate, *Updating the Plan*, accessed on 12 June 2015 from http://www.metrowater.nsw.gov.au/planning-sydney/updating-plan/current-review

[491] NSW Government, Department of Primary Industries, *Hawkesbury-Nepean Valley Flood Management Review*, accessed on 12 June 2015 from http://www.water.nsw.gov.au/water-management/water-availability/flood-management/hawkesbury-nepean-valley-flood-management-review

In the 2012 Determination, we passed through the prudent and efficient costs related to the Metropolitan Water Plan. The 2010 Metropolitan Water Plan set the following goals for 2015:[492]

- 70 GL per year of recycled water in Sydney (these projects are mostly delivered by Sydney Water).
- Up to 90 GL per year of desalinated water.
- Saving 145 GL per year through water efficiency (Sydney Water has had a large role in implementing these measures).[493]

D.6 Government directions under section 16A of the IPART Act

The Government (ie, the portfolio Minister) can issue directions for Sydney Water to complete projects in the public interest, which may not be in the shareholders' interests.[494] To ensure this investment is not deemed imprudent, the Minister can direct IPART (with the Premier's approval) under section 16A of the IPART Act to include the efficient costs of complying with the specified requirement in Sydney Water's prices.[495] This can take the form of either:

- a 'standing direction' (which applies whenever IPART makes a determination in relation to a particular government monopoly service), or
- a 'one-off direction' (which applies when IPART makes a particular pricing determination).

For this review, three Ministerial directions pursuant to section 16A of the IPART Act (section 16A directions) apply. These relate to:

- **Stormwater works at Green Square.** We are directed to pass through in prices Sydney Water's efficient costs of complying with requirements to undertake stormwater amplification works and construct interconnected stormwater infrastructure in connection with the Green Square development.
- **The Rosehill (Camellia) Recycled Water Project**. We are directed to pass through the difference between the charges paid by Sydney Water to the owner of the Rosehill (Camellia) Recycled Water infrastructure and distribution pipelines, and the revenue received by Sydney Water for the sale of recycled water to customers.

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492 NSW Government, NSW Office of Water, *2010 Metropolitan Water Plan,* August 2010, p 7.

493 We note total demand for water in the greater Sydney area is around 500 GL each year.

494 Typically through a direction given under section 20P of the SOC Act. See Sydney Water pricing proposal to IPART, June 2015, p 68.

495 Under Section 16A(3) of the IPART Act a specified requirement may only be a requirement imposed by or under a licence or authorisation, a requirement imposed by a ministerial direction under an Act, or some other requirement imposed by or under an Act or statutory instrument.

- **The Replacement Flows Project**. We are directed to pass through the efficient costs of construction and ongoing operation of the Replacement Flows Project.[496]

The direction related to stormwater works at Green Square was issued to IPART in January 2014, and is therefore a new direction for this review.[497] The directions related to the Replacement Flows project and the Rosehill (Camellia) project were issued in August 2007 and March 2008, respectively.[498]

Each of these section 16A directions can be found at Appendix B. Sydney Water's proposed costs related to these section 16A directions are discussed in Chapter 3 and 5.

[496] All these directions appear to be 'standing directions'. Those related to Rosehill (Camellia) and Replacement Flows project are stated to apply "when (IPART) determines the maximum price for government monopoly services provided by Sydney Water." The wording strongly indicates that the directions are 'standing directions' which apply each time we determine prices for Sydney Water's services.

[497] IPART received the Ministerial direction in January 2014. The underlying direction (to Sydney Water) is under s20N of the *State Owned Corporations Act 1989* (s20N direction).

[498] At the time, we also received a direction relating to SDP. Since then, SDP has transferred ownership (ie, from Sydney Water) and is now regulated by us through a separate price determination.

E Efficiency carryover mechanism

E.1 Current form of regulation

In its pricing proposal, Sydney Water identified and discussed a shortcoming with the current form of regulation. Under the current form of regulation, the financial reward for making permanent efficiency savings deteriorates over the regulatory period.[499] A saving made in year 1 can be held for four years whereas a saving made in year 3 can be held for just two years.

This can result in an incentive for businesses to delay revealing efficiency savings from the end of one regulatory period until the beginning of the next regulatory period. Figure E.1 illustrates the problem.

Figure E.1 Problem identified with the current form of regulation

	Present Value 5%	Regulatory Period 1				Regulatory Period 2				Regulatory Period 3				Terminal Value
Panel 1 - Making a saving in year 3 results in the business receiving two years of benefit														
Year		1	2	3	4	5	6	7	8	9	10	11	12	
Opex allowance		100	100	100	100	90	90	90	90	90	90	90	90	
Actual opex		100	100	90	90	90	90	90	90	90	90	90	90	
Profit	$16.87	-	-	10	10	-	-	-	-	-	-	-	-	
Benefit to customers	$159.24	-	-	-	-	10	10	10	10	10	10	10	10	200
	$176.10													
Panel 2 - The business has an incentive to delay making the saving until year 5 so that it can receive four years of benefit														
Year		1	2	3	4	5	6	7	8	9	10	11	12	
Opex allowance		100	100	100	100	100	100	100	100	90	90	90	90	
Actual opex		100	100	100	100	90	90	90	90	90	90	90	90	
Profit	$29.17	-	-	-	-	10	10	10	10	-	-	-	-	
Benefit to customers	$130.06	-	-	-	-	-	-	-	-	10	10	10	10	200
	$159.24													
Panel 3 - Under an Efficiency Carryover Mechanism, efficiencies are held for four years before being passed to customers														
Year		1	2	3	4	5	6	7	8	9	10	11	12	
Opex allowance		100	100	100	100	100	100	90	90	90	90	90	90	
Actual opex		100	100	90	90	90	90	90	90	90	90	90	90	
Profit to firm	$32.16	-	-	10	10	10	10	-	-	-	-	-	-	
Benefit to customers	$143.94	-	-	-	-	-	-	10	10	10	10	10	10	200
	$176.10													

Note: Terminal Value is the present value of the annual benefit to customers into perpetuity (ie, $10 / WACC).
Data source: IPART analysis.

[499] Sydney Water pricing proposal to IPART, June 2015, p 255.

- Panel 1: if the business makes a permanent efficiency saving in year 3, it can retain this benefit for two years before it is passed to customers in year 5 through a lower allowance leading to lower prices..
  - The present value of this to the business is $16.87.
  - The present value to customers is $159.24.
  - While this would be the best outcome for customers, the business may have an incentive to delay the saving in order to hold onto it for longer.
- Panel 2: if the business decides to delay this efficiency saving until year 5, it retains the benefit for four years before it is passed to customers in year 9.
  - The present value of this to the business is $29.17 (ie, greater than $16.87). Therefore the business has an incentive to delay this saving.
  - Delaying the saving results in waste (ie, it is inefficient because the total present value falls from $176.10 in panel 1 to $159.24 in panel 2).
  - Delaying the saving makes customers worse off (ie, the present value to customers falls from $159.24 in panel 1 to $130.06 in panel 2).
- Panel 3: With an ECM in place, the business retains the benefit from an efficiency saving for four years regardless of when the saving is made. In theory, the business will then have an incentive to deliver any known efficiency saving as soon as possible.
  - The key difference in panel 3 (compared to panel 1) is the allowance remains at $100 in years 5 and 6, allowing the business to retain the saving for four years before it is passed on to customers.
  - The present value to the business is $32.16 (ie, greater than $29.17). With an ECM, the business has an incentive to make the saving as soon as possible.
  - Bringing savings forward makes customers better off (ie, the present value to customers increases from $130.06 in panel 2 to $143.94 in panel 3).
  - Note that under the ECM the total present value ($176.10) is the same as in panel 1. Therefore, removing the incentive to delay savings results in a more efficient outcome.

E.2 CEPA's efficiency carryover mechanism

We engaged Cambridge Economic Policy Associates (CEPA) to review Sydney Water's proposed EBSS, our modified EBSS and other options in light of experiences in other jurisdictions and the particular circumstances in NSW's urban water sector.[500]

[500] CEPA, Advice on Efficiency Carryover Mechanisms, February 2016. Available online: http://www.ipart.nsw.gov.au/Home/Industries/Water/Reviews/Metro_Pricing/Review_of_prices_for_Sydney_Water_Corporation_from_1_July_2016.

CEPA considered both symmetric and asymmetric options and recommended that we adopt an asymmetric approach. Key features of CEPA's recommended Efficiency Carryover Mechanism (ECM) include:

- It applies to controllable operating expenditure (ie, total operating expenditure less bulk water costs). This is consistent with Sydney Water's proposal.
- It does not apply to capex. Although CEPA supports an ECM for capital expenditure in principle, it did not consider there to be evidence of significant substitutability between operating and capital expenditure.[501] Given the additional costs and complexity involved in extending the ECM to include capex, the risk of unintended consequences (ie, over forecasting and inefficient deferral of capex), and the limited potential for substitutability between operating and capital expenditure, CEPA recommended that we not apply the ECM to capex at this time.
- It is an asymmetric mechanism that rewards permanent cost reductions and does not additionally penalise permanent cost increases. A feature of symmetric schemes is that permanent cost increases are retained by the business for a fixed number of years before being passed on to customers. CEPA considers that the regulator should retain discretion to reset expenditure allowances, which would include reviewing permanent cost increases to ensure they are efficient before passing them on to customers. Sydney Water expressed that it is open to the regulator retaining discretion to reset the allowance. We consider this view is more consistent with an asymmetric approach rather than a symmetric approach.
- It ensures permanent efficiency savings are held for four years. Although the ECM would be simplified by allowing savings to be held for five years as per Sydney Water's proposal, CEPA considers that a 4-year holding period provides sufficient incentive for the business to find and deliver cost savings.
- Temporary over and under spends are retained by the business. This is the major difference between the ECM and the modified EBSS and directly addresses Sydney Water's concern with the modified EBSS.

E.3 Design and operation of the efficiency carryover mechanism

The following three examples show how the ECM is built up from a simple concept to a more complex model capable of handling the fact that we will implement the ECM during year 4 of the determination when we do not know the actual expenditure for that year. Each step builds on the last.

In this section, we also make it clear where we have clarified or extended CEPA's recommended ECM.

[501] Evidenced by Sydney Water's proposal to limit the capital expenditure EBSS to about 9.5% of capital expenditure which it considers to be more recurrent and clearly substitutable with operating expenditure.

Figure E.2 provides a simple worked example. If a permanent saving is made in year 3, the ECM ensures that the business will carry the benefit over into the next regulatory period so that the business gets to retain the benefit for four years.

Figure E.2 Simple example of how the ECM works

	Regulatory Period 1				Regulatory Period 2			
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
Under (over)	-	-	20	20	-	-	-	-
Outperformance	-	-	20	20	-	-	-	-
Permanent gain	-	-	20	20				
Incremental gain	-	-	20	-				
ECM calc								
- year 1	-	-	-	-				
- year 2		-	-	-	-			
- year 3			20	20	20	20		
- year 4				-	-	-	-	
ECM benefit					20	20	-	-
Total allowance	100	100	100	100	100	100	80	80
Total gain (loss)	-	-	20	20	20	20	-	-

Data source: IPART analysis.

The ECM involves the following steps:

- Under (over): this gives the difference between the base allowance and actual expenditure.
- Outperformance: is the same as the under (over) when this is an under-spend. Is set to zero when the under (over) is an over-spend.
- Permanent gain: working backwards from year 4 to year 1, this calculates how much of the outperformance in year 4 also occurred in year 3; how much of the outperformance that occurred in both years 4 and 3 also occurred in year 2; and how much of this outperformance that occurred in years 4, 3, and 2 also occurred in year 1.
- Incremental gain: working forwards from year 1 to 4, this calculates the first year that a permanent saving occurred. It is the 'incremental gain' that the ECM ensures is carried forward for four years.
- ECM calculations: ensures that any incremental gain is held for four years.
- The regulator retains discretion to reset the base allowance in regulatory period 2. The permanent reduction in expenditure of $20 is factored into the next period's base allowance. In this example, there are no other adjustments to the base allowance in regulatory period 2.

Figure E.3 shows how the ECM is lagged one year to account for the fact that we do not know actual expenditure in year 4 when the ECM is implemented.

Figure E.3 ECM is lagged one year so that it is based on actuals

		Regulatory Period 1				Regulatory Period 2			
	ECM1				ECM2				
Year	0	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	-	-	-	-	-
Outperformance	-	-	-	20	-	-	-	-	-
Permanent gain	-	-	-	20					
Incremental gain	-	-	-	20					
ECM1 calc									
- year 0	-	-	-	-	-				
- year 1		-	-	-	-	-			
- year 2			-	-	-	-	-		
- year 3				20	20	20	20	-	
ECM benefit						20	20	-	-
Total allowance		100	100	100	100	100	100	80	80
Total gain (loss)		-	-	20	20	20	20	-	-

Data source: IPART analysis.

In practice, there is a complicating factor. That is, we do not know year 4 actual expenditure when we implement the ECM during the price review (which occurs during year 4). The solution to this problem involves **looking back at four years of actual data**.

- When we implement ECM1 in year 4, we look at the four previous years of actual data (ie, years 0, 1, 2, and 3). This is implicit in CEPA's model. Our presentation of the ECM makes this explicit.
- Figure E.3 shows what happens when a permanent efficiency saving is made in year 3, the benefit is assumed to be held in both years 3 and 4. The ECM ensures that the benefit is carried forward a further two years (years 5 and 6).
- Any further saving made in year 4 will be captured by ECM2. That is, ECM2 will calculate the under (over) spend in year 4 as the lesser of:
  - The base allowance in year 4 minus actual spend in year 4, or
  - The actual spend in year 3 minus the actual spend in year 4.

Figure E.4 shows how the ECM has an adjustment factor to ensure permanent savings made in the last year of the previous determination are only held for four (not five) years.

Figure E.4 Simple example of how the ECM works

Real WACC		Regulatory Period 1				Regulatory Period 2			
5%	ECM1				ECM2				
Year	0	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	-	-	-	-	-
Permanent 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	-	-	-

Data source: IPART analysis.

In this example, a permanent efficiency saving of $20 is made in year 0. Without an adjustment factor, the business would be able to retain this saving for five years.

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 in order to maximise returns.[502]

ECM1 has an adjustment term ('year 0 adjustment') which, in this case, 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). We have adjusted the formula used by CEPA to be clear that the adjustment factor only applies when a permanent efficient saving made in year 0. This is consistent with the intent of CEPA's adjustment factor.

Note that we are inflating this adjustment term by the WACC[503] in order to ensure incentives are fully equalised (assuming the WACC represents whatever benefit the business receives from getting the additional 5th year cash flow in year 4). This is an extension to CEPA's model. CEPA recognised and discussed the effect of the time value of money, but, for simplicity, did not include time value of money adjustments in its recommended model.

[502] This incentive already exists under the current form of regulation and is precisely the incentive the ECM is designed to remove.

[503] If cash flows are assumed to occur at the end of each year, this should be the nominal WACC calculated for regulatory period 2.

The adjustment term recognises when a permanent efficiency saving is made in year 0. Because the business receives this benefit for five years (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 in to customers in year 5.

Given permanent savings made in year 4 are not observed by the regulator and consequently could be held for five years, we include an adjustment to the carryover calculation that claws back 1-year worth of benefit for savings made in year 4 of the previous determination period.

E.4 Reasons for not applying the efficiency carryover mechanism to capex

A potential side-effect of introducing a rolling incentive mechanism is that it can change the relationship between operating and capital expenditure. On the face of it, there is an argument to introduce ECMs for both operating and capital expenditure on the grounds that this will balance incentives and trade-offs between operating and capital expenditure. However, we have decided to limit the ECM to apply only to operating expenditure at this time for the following reasons:

- The rationale behind rolling incentive mechanisms like the EBSS and ECM is that businesses have an incentive to delay cost savings because, once revealed, this information will be used to reduce the allowance in the next period. It is clear how this rationale applies to operating expenditure which is relatively stable over time. It is less clear how this rationale applies to capital expenditure which can vary over time as capex plans are delayed or accelerated. A reduction in capex could be a deferral or an efficiency saving, it is difficult to know.
- Applying the ECM to a small portion of capital expenditure is problematic because it could result in inefficient cost shifting for the purpose of generating benefits through the mechanism.
- We consider that introducing an ECM for capital expenditure would strengthen the incentive to over forecast and inefficiently defer capital expenditure. Due to asymmetric information, it is difficult to distinguish between efficiency savings and deferrals. Due to the lag between capital expenditure deferral and the resulting deterioration in service standards, it can be difficult to distinguish between efficient and inefficient deferrals.

- The relationship between operating and capital expenditure is influenced by a range of factors.[504] The premise that operating and capital expenditure incentives will be balanced by applying the same mechanisms to both may not hold in practice and there may be better approaches available to achieve this outcome. For example, balancing incentives for operating and capital expenditure solutions was a major reason in Ofwat's decision to move away from separate operating and capital expenditure allowances (and rolling incentive mechanisms) and to adopt a total expenditure approach.[505]
- The potential risk of introducing an operating expenditure ECM and not a capital expenditure ECM is that businesses could have an incentive to increase capital expenditure in order to reduce operating expenditure late in the determination period. We consider this risk is limited by ex-post capital expenditure reviews that assess whether increases in capex are prudent and efficient.

E.5 Examples of how the efficiency carryover mechanism would apply under various scenarios

[504] Including the extent of substitutability between opex and capex, the actual cost of capital relative to the allowed WACC, governance frameworks, and management incentives.

[505] Ofwat, *Setting price controls for 2015-20 – Final methodology and expectations for companies' business plans*, July 2013, pp 18-19. http://www.ofwat.gov.uk/wp-content/uploads/2015/11/pap_pos201307finalapproach.pdf

Example 1 of 6: When a permanent saving is made in year 1 (2016-17)

The saving is in year 1 of the regulatory period. There is no additional carryover under the ECM. The business keeps the saving for the four years.

INPUT VALUES	
WACC	5%
Base allowance RP1	100
Base allowance RP2	90
Base allowance RP3	90

	ROW	Regulatory Periods	RP2012				RP2016				RP2020				RP2024			
		Efficiency Carryover Mechanisms					ECM2016				ECM2020				ECM2024			
			2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
	1	Base allowance	100	100	100	100	100	100	100	100	90	90	90	90	90	90	90	90
	2	Actual expenditure	100	100	100	100	90	90	90	90	90	90	90	90	90	90	90	90
ECM1	3	Gain (loss)				0	10	10	10									
ECM1	4	Out performance				0	10	10	10									
ECM1	5	Permanent gain				0	10	10	10									
ECM1	6	Incremental gain				0	10	0	0									
ECM1	7	ECM calc																
ECM1	8	- 2015-16				0	0	0	0	0								
ECM1	9	- 2016-17					10	10	10	10								
ECM1	10	- 2017-18						0	0	0	0							
ECM1	11	- 2018-19							0	0	0	0						
ECM1	12	- 2019-20 adjustment									0							
ECM1	13	**ECM1 benefit**									**0**	**0**	**0**					
ECM2	14	Gain (loss)								0	0	0	0					
ECM2	15	Out performance								0	0	0	0					
ECM2	16	Permanent gain								0	0	0	0					
ECM2	17	Incremental gain								0	0	0	0					
ECM2	18	ECM calc																
ECM2	19	- 2019-20								0	0	0	0	0				
ECM2	20	- 2020-21									0	0	0	0				
ECM2	21	- 2021-22										0	0	0	0			
ECM2	22	- 2022-23											0	0	0	0		
ECM2	23	- 2023-24 adjustment													0			
ECM2	24	**ECM2 benefit**													**0**	**0**	**0**	
	25	Total allowance			100	100	100	100	100	100	90	90	90	90	90	90	90	90
	26	Total gain / loss			0	0	10	10	10	10	0	0	0	0	0	0	0	0

Source: IPART analysis.

Example 2 of 6: When a saving is made in year 2 (2017-18)

- The saving is in year 2 of the regulatory period. The ECM carries the benefit = LH forward one year into the next regulatory period. The business keeps the saving for four years.

INPUT VALUES	
WACC	5%
Base allowance RP1	100
Base allowance RP2	90
Base allowance RP3	90

		Regulatory Periods	RP2012				RP2016				RP2020				RP2024			
		Efficiency Carryover Mechanisms					ECM2016				ECM2020				ECM2024			
ROW			2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
1		Base allowance	100	100	100	100	100	100	100	100	90	90	90	90	90	90	90	90
2		Actual expenditure	100	100	100	100	100	90	90	90	90	90	90	90	90	90	90	90
3	ECM1	Gain (loss)				0	0	10	10									
4	ECM1	Out performance				0	0	10	10									
5	ECM1	Permanent gain				0	0	10	10									
6	ECM1	Incremental gain				0	0	10	0									
7	ECM1	ECM calc																
8	ECM1	- 2015-16				0	0	0	0	0								
9	ECM1	- 2016-17					0	0	0	0								
10	ECM1	- 2017-18						10	10	10	10							
11	ECM1	- 2018-19							0	0	0	0						
12	ECM1	- 2019-20 adjustment									0							
13	ECM1	**ECM1 benefit**									**10**	**0**	**0**					
14	ECM2	Gain (loss)								0	0	0	0					
15	ECM2	Out performance								0	0	0	0					
16	ECM2	Permanent gain								0	0	0	0					
17	ECM2	Incremental gain								0	0	0	0					
18	ECM2	ECM calc																
19	ECM2	- 2019-20								0	0	0	0	0				
20	ECM2	- 2020-21									0	0	0	0				
21	ECM2	- 2021-22										0	0	0	0			
22	ECM2	- 2022-23											0	0	0	0		
23	ECM2	- 2023-24 adjustment													0			
24	ECM2	**ECM2 benefit**													**0**	**0**	**0**	
25		Total allowance			100	100	100	100	100	100	100	90	90	90	90	90	90	90
26		Total gain / loss			0	0	0	10	10	10	10	0	0	0	0	0	0	0

Source: IPART analysis.

Example 3 of 6: When a saving is made in year 3 (2018-19)

- The saving is in year 3 of the regulatory period. The ECM carries the benefit over two years into the next regulatory period. The business keeps the saving for four years.

INPUT VALUES	
WACC	5%
Base allowance RP1	100
Base allowance RP2	90
Base allowance RP3	90

	Regulatory Periods	RP2012				RP2016				RP2020				RP2024			
	Efficiency Carryover Mechanisms					ECM2016				ECM2020				ECM2024			
ROW		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
1	Base allowance	100	100	100	100	100	100	100	100	90	90	90	90	90	90	90	90
2	Actual expenditure	100	100	100	100	100	100	90	90	90	90	90	90	90	90	90	90
3	ECM1 Gain (loss)				0	0	0	10									
4	ECM1 Out performance				0	0	0	10									
5	ECM1 Permanent gain				0	0	0	10									
6	ECM1 Incremental gain				0	0	0	10									
7	ECM1 ECM calc																
8	ECM1 - 2015-16				0	0	0	0	0								
9	ECM1 - 2016-17					0	0	0	0								
10	ECM1 - 2017-18						0	0	0	0							
11	ECM1 - 2018-19							10	10	10	10						
12	ECM1 - 2019-20 adjustment									0							
13	**ECM1 benefit**									**10**	**10**	**0**					
14	ECM2 Gain (loss)								0	0	0	0					
15	ECM2 Out performance								0	0	0	0					
16	ECM2 Permanent gain								0	0	0	0					
17	ECM2 Incremental gain								0	0	0	0					
18	ECM2 ECM calc																
19	ECM2 - 2019-20								0	0	0	0	0				
20	ECM2 - 2020-21									0	0	0	0				
21	ECM2 - 2021-22										0	0	0	0			
22	ECM2 - 2022-23											0	0	0	0		
23	ECM2 - 2023-24 adjustment													0			
24	**ECM2 benefit**													**0**	**0**	**0**	
25	Total allowance			100	100	100	100	100	100	100	100	90	90	90	90	90	90
26	Total gain / loss			0	0	0	0	10	10	10	10	0	0	0	0	0	0

Source: IPART analysis.

Example 4 of 6: When a saving is made in year 4 (2019-20)

- The saving is in year 4 of the regulatory period. The business keeps this saving for five years. However, ECM2020 returns the fifth year of saving (after adjusting this amount by the WACC) to customers in year 1 of the next determination period (ie, 2024-25).

INPUT VALUES	
WACC	5%
Base allowance RP1	100
Base allowance RP2	100
Base allowance RP3	90

	Regulatory Periods	RP2012				RP2016				RP2020				RP2024			
	Efficiency Carryover Mechanisms				ECM2016				ECM2020				ECM2024				
ROW		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
1	Base allowance	100	100	100	100	100	100	100	100	100	100	100	100	90	90	90	90
2	Actual expenditure	100	100	100	100	100	100	100	90	90	90	90	90	90	90	90	90
3	ECM1 Gain (loss)				0	0	0	0									
4	ECM1 Out performance				0	0	0	0									
5	ECM1 Permanent gain				0	0	0	0									
6	ECM1 Incremental gain				0	0	0	0									
7	ECM1 ECM calc																
8	ECM1 - 2015-16				0	0	0	0	0								
9	ECM1 - 2016-17					0	0	0	0								
10	ECM1 - 2017-18						0	0	0	0							
11	ECM1 - 2018-19							0	0	0	0						
12	ECM1 - 2019-20 adjustment									0							
13	**ECM1 benefit**									**0**	**0**	**0**					
14	ECM2 Gain (loss)								10	10	10	10					
15	ECM2 Out performance								10	10	10	10					
16	ECM2 Permanent gain								10	10	10	10					
17	ECM2 Incremental gain								10	0	0	0					
18	ECM2 ECM calc																
19	ECM2 - 2019-20								10	10	10	10	10				
20	ECM2 - 2020-21									0	0	0	0				
21	ECM2 - 2021-22										0	0	0	0			
22	ECM2 - 2022-23											0	0	0	0		
23	ECM2 - 2023-24 adjustment													-10.5			
24	**ECM2 benefit**													**-10.5**	**0**	**0**	
25	Total allowance			100	100	100	100	100	100	100	100	100	100	79.5	90	90	90
26	Total gain / loss			0	0	0	0	0	10	10	10	10	10	-10.5	0	0	0

Source: IPART analysis.

Example 5 of 6: When there are temporary over and under spends

- Temporary over and under spends are retained by the business (ie, symmetric treatment of temporary over and under spends).

		INPUT VALUES	
		WACC	5%
		Base allowance RP1	100
		Base allowance RP2	100
		Base allowance RP3	100

		Regulatory Periods	RP2012				RP2016				RP2020				RP2024			
		Efficiency Carryover Mechanisms					ECM2016				ECM2020				ECM2024			
ROW			2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
1		Base allowance	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100
2		Actual expenditure	100	100	100	100	90	110	100	100	100	100	100	100	100	100	100	100
3	ECM1	Gain (loss)				0	10	-10	0									
4	ECM1	Out performance				0	10	0	0									
5	ECM1	Permanent gain				0	0	0	0									
6	ECM1	Incremental gain				0	0	0	0									
7	ECM1	ECM calc																
8	ECM1	- 2015-16				0	0	0	0	0								
9	ECM1	- 2016-17					0	0	0	0								
10	ECM1	- 2017-18						0	0	0	0							
11	ECM1	- 2018-19							0	0	0	0						
12	ECM1	- 2019-20 adjustment									0							
13	ECM1	**ECM1 benefit**									**0**	**0**	**0**					
14	ECM2	Gain (loss)								0	0	0	0					
15	ECM2	Out performance								0	0	0	0					
16	ECM2	Permanent gain								0	0	0	0					
17	ECM2	Incremental gain								0	0	0	0					
18	ECM2	ECM calc																
19	ECM2	- 2019-20								0	0	0	0	0				
20	ECM2	- 2020-21									0	0	0	0				
21	ECM2	- 2021-22										0	0	0	0			
22	ECM2	- 2022-23											0	0	0	0		
23	ECM2	- 2023-24 adjustment													0			
24	ECM2	**ECM2 benefit**													**0**	**0**	**0**	
25		Total allowance			100	100	100	100	100	100	100	100	100	100	100	100	100	100
26		Total gain / loss			0	0	10	-10	0	0	0	0	0	0	0	0	0	0

Source: IPART analysis.

Example 6 of 6: The ECM should not apply to temporary under spends in year 3

- If a temporary under spend in year 3 is mistaken for a permanent saving under the ECM, this could result in a loss for the business in the next determination period. This would not be an intended outcome of the ECM. If there is doubt whether the saving is permanent, we consider the business is unlikely to apply for a carryover under the ECM. We will continue to look at the pattern of historical expenditure when resetting of the allowance.

INPUT VALUES	
WACC	5%
Base allowance RP1	100
Base allowance RP2	90
Base allowance RP3	100

	Regulatory Periods	RP2012				RP2016				RP2020				RP2024			
	Efficiency Carryover Mechanisms					ECM2016				ECM2020				ECM2024			
ROW		2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28
1	Base allowance	100	100	100	100	100	100	100	100	90	90	90	90	100	100	100	100
2	Actual expenditure	100	100	100	100	100	100	90	100	100	100	100	100	100	100	100	100
3	ECM1 Gain (loss)				0	0	0	10									
4	ECM1 Out performance				0	0	0	10									
5	ECM1 Permanent gain				0	0	0	10									
6	ECM1 Incremental gain				0	0	0	10									
7	ECM1 ECM calc																
8	ECM1 - 2015-16				0	0	0	0	0								
9	ECM1 - 2016-17					0	0	0	0								
10	ECM1 - 2017-18						0	0	0	0							
11	ECM1 - 2018-19							10	10	10	10						
12	ECM1 - 2019-20 adjustment									0							
13	**ECM1 benefit**									**10**	**10**	**0**					
14	ECM2 Gain (loss)								-10	-10	-10	-10					
15	ECM2 Out performance								0	0	0	0					
16	ECM2 Permanent gain								0	0	0	0					
17	ECM2 Incremental gain								0	0	0	0					
18	ECM2 ECM calc																
19	ECM2 - 2019-20								0	0	0	0	0				
20	ECM2 - 2020-21									0	0	0	0				
21	ECM2 - 2021-22										0	0	0	0			
22	ECM2 - 2022-23											0	0	0	0		
23	ECM2 - 2023-24 adjustment													0			
24	**ECM2 benefit**													**0**	**0**	**0**	
25	Total allowance			100	100	100	100	100	100	100	100	90	90	100	100	100	100
26	Total gain / loss			0	0	0	0	10	0	0	0	-10	-10	0	0	0	0

Source: IPART analysis.

F Formulae for bulk water pass throughs

Formula for pass through of SDP service charge

The 2012 cost pass-through mechanism applies only **within** the current determination period. That is, our current determination only allows Sydney Water to adjust water service charges up to 30 June 2016 (ie, adjust 2015-16 prices) to reflect actual charges paid to SDP at a year lag (ie, covering actual costs incurred in 2014-15).

For the final report, we will apply the cost pass-through mechanism in the first year of the upcoming determination and pass through into 2016-17 prices the actual SDP costs incurred by Sydney Water in 2015-16 (ie, costs above those included in 2015-16 prices).[506]

The formula is:

$$\Delta\text{Water service charge}_t^{SDP} = \frac{\frac{\alpha_{t-1}-\varepsilon_{t-1}}{\mu_{t-1}}-\beta_{t-1}-(\gamma_{t-1}\times\sigma_{t-1})}{\rho_t}\times\frac{\pi^2}{400}\times\mu_t\times(1+\theta_t)$$

Table F.1 Variables in SDP service charge pass-through formula ($2015-16)

Where t =	2016-17	2017-18	2018-19	2019-20
β_t	$191,486,496	$191,486,496	$191,486,496	n/a
γ_t	$61.88	$62.07	$61.94	n/a
θ_t	n/a	0.058	0.058	0.058
μ_t	1	$1+\Delta CPI_1$	$1+\Delta CPI_2$	$1+\Delta CPI_3$
ρ_t	n/a	2,025,634	2,050,906	2,076,659

Note: β_t is based on the current SDP Determination for 2016-17. These costs do not include electricity network costs, which are passed through to Sydney Water. Electricity network costs are capture at a year lag through α_t. Avoided filtration costs, γ_t, are provided by Sydney Water. Customer Numbers, ρ_t, are calculated by IPART based on Sydney Water's pricing proposal and our analysis.

Source: IPART, *Prices for Sydney Desalination Plant Pty Limited's Water Supply Services, Determination No. 2*, December 2011, p 35. Sydney Water, *Letter to IPART for September 2015 regarding the update to the Annual Information Return*, 18 September 2015, Appendix 4.

[506] We note that in any year, a 1 July price change will pass through 10 months of SDP's actual costs at a year lag, and two months of forecasts – ie, for example, 2015-16 prices are finalised in June 2015, which means we do not have SDP's actual costs for May and June 2015.

Where:

t = the current financial year

α_t = total regulated payments from Sydney Water to SDP in year t, payments will be made in $year t (ie, nominal)

ε_t = total revenue recovered from the usage charge uplift in year t, revenue will be recovered in $year t (ie, nominal)

σ_t = total quantity of water (in ML) Sydney Water purchased from SDP in year t

π = 20 for residential customers, properties within mixed-multi premises., boarding houses with 10 rooms or fewer and unmetered properties, and the size of all other customer's water meter (in mm)

β_t = base SDP costs included in revenue requirement (ie, SDP costs in water security mode) in year t, these costs are in $2016-17 (in the determination)

γ_t = avoided water filtration costs per ML from SDP water production in year t, these costs are in $2016-17 (in the determination)

θ_t = Sydney Water's real pre-tax weighted average cost of capital in year t

μ_t = the change in the CPI to be applied to the determination in year t

$\Delta CPI_1 = \frac{CPI_{March2017}}{CPI_{March\ 2016}} - 1$ as defined in the determination

$\Delta CPI_2 = \frac{CPI_{March2018}}{CPI_{March\ 2016}} - 1$ as defined in the determination

$\Delta CPI_3 = \frac{CPI_{March2019}}{CPI_{March\ 2016}} - 1$ as defined in the determination

ρ_t = the number of 20mm equivalent customers in year t

F.1 Formula for service charge pass-through of Shoalhaven transfer costs

We are introducing a service charge cost pass-through mechanism to compensate Sydney Water for actual bulk water costs incurred from WaterNSW for transfers from Shoalhaven. Shoalhaven transfers represent uncertain bulk water operating costs to Sydney Water in terms of volume and price risk.[507] Under the 2010 Metropolitan Water Plan, WaterNSW must start pumping from the Shoalhaven system when Sydney's dam levels fall to 75% and continue until they rise above 80%.[508]

Under this cost pass-through mechanism the difference between Sydney Water's forecast bulk water costs from WaterNSW and its actual bulk water costs from WaterNSW will be passed through to Sydney Water's customers at a year's lag via the water service charge.[509]

The formula is:

$$\Delta\text{Water service charge}_t^{\text{Shoalhaven}} = \frac{\omega_{t-1}}{\rho_t} \times \frac{\pi^2}{400} \times \frac{\mu_t}{\mu_{t-1}} \times (1+\theta_t)$$

Table F.2 Variables in Shoalhaven transfer service charge pass-through formula

Where t =	2016-17	2017-18	2018-19	2019-20
θ_t	n/a	0.058	0.058	0.058
μ_t	1	$1+\Delta CPI_1$	$1+\Delta CPI_2$	$1+\Delta CPI_3$
ρ_t	n/a	2,025,634	2,050,906	2,076,659

Note: Customer Numbers, ρ_t, are calculated by IPART based on Sydney Water's pricing proposal and our analysis.

Where:

t = the current financial year

ω_t = total WaterNSW Shoalhaven Transfer costs from the pass-through mechanism, as defined by the WaterNSW determination, (see Chapter 8 of our Draft Report for WaterNSW), in year t

[507] Volume risk refers to the amount of water potentially pumped from the Shoalhaven system given the operating rules set out in the 2010 Metropolitan Water Plan. Price risk refers to the electricity price estimates over the 2012 determination.

[508] Under the 2010 Metropolitan Water Plan, pumping from the Shoalhaven River commences when dam levels fall to 75% and continue until they rise above 80%. There are also other constraints; for example, the water level in Tallowa Dam has to be within 1 metre of the top water level of the dam. NSW Government, *2010 Metropolitan Water Plan*, August 2010, p 24.

[509] We decided not to pass Shoalhaven transfer costs through to Sydney Water's water usage charge, as the uplift would be negligible at times and difficult for customer's to understand – unlike SDP which is a well understood drought response measure.

π = 20 for residential customers, properties within mixed-multi premises, boarding houses with 10 rooms or fewer and unmetered properties, and the size of all other customer's water meter (in mm)

θ_t = Sydney Water's real pre-tax weighted average cost of capital in year t

μ_t = the change in the CPI to be applied to the determination in year t

$\Delta CPI_1 = \frac{CPI_{March2017}}{CPI_{March\ 2016}} - 1$ as defined in the determination

$\Delta CPI_2 = \frac{CPI_{March2018}}{CPI_{March\ 2016}} - 1$ as defined in the determination

$\Delta CPI_3 = \frac{CPI_{March2019}}{CPI_{March\ 2016}} - 1$ as defined in the determination

ρ_t = the number of 20mm equivalent customers in year t

G Output measures

We set output measures for the water agencies we regulate to determine whether they are delivering on their planned capital expenditure. This is important because we set prices to enable them to recover the forecast costs of those plans.

While meeting output measure targets is important, conclusions about an agency's performance should not be drawn wholly on the basis of whether or not it has met or even exceeded these targets. There may be reasonable explanations why it does not meet targets. In fact, as circumstances evolve over a determination period, changing a target may result in a better outcome for stakeholders.

However, ongoing inability to meet output measure targets may also indicate that the required levels of service, to which we have linked our prices, are not being met and there is a deficiency in the planning and delivery of capital projects.

G.1 Output measures - 2012 determination period

Sydney Water has reported on the output measures that were set in the 2008 Determination to track the delivery of its capital program from 2008 to 2012. Sydney Water reports that 47% of the target measures have been or will be met, 11% have been exceeded and 42% of the targets were not met.[510]

Our consultant, Atkins Cardno, notes that there may be reasonable explanations for each of these responses to the target measure.[511] Further, Atkins Cardno states that several of the measures show reduced asset renewal activity as result of the application of new risk-based methodologies.[512] This is particularly the case when original planning decisions were based on asset lives and these have been extended, resulting in a reduction in required asset renewals over the 2008-2012 timeframe.[513]

Details of each measure and Sydney Water's performance is provided in Table G.1 below.

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510 Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 55.
511 Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 55.
512 Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 56.
513 Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 56.

Table G.1 Activity against output measures 2008-2012

Output or activity measure	Description of indicator of activity	Progress
Water services		
1. Renewal of critical water mains	51km	45km (6km decommissioned)
2. Renewal/reliability of distribution mains	287km	198 km (5km decommissioned)
3. Reservoir reliability program	13 reservoirs re-roofed 24 reservoirs re-lined	Marginally less than 13 re-roofed 7 re-lined[a]
4. Water Pumping Station Renewals	24 pumping stations renewed	19 pumping stations renewed[b]
5. System Reliability	At least 3 projects in construction phase	All projects deferred beyond 2016
6. Renewal of customer water meters	384,400 meters	309,000[c]
Wastewater services		
7. Avoid fail sewers	64 km	54 km[d]
8. Dry weather flows	137 km	112 km[e]
9. Wastewater treatment plant renewals	11 HV renewals Major renewals completed at Cronulla, North Head and Malabar	3 HV renewals deferred[f] Cronulla and Malabar completed by 2016 North Head substantially completed and finalised by 2017
10. Wet weather overflow abatement	Northern Beaches, Illawarra and Southern catchments completed	3 schemes at Northern Beaches, Illawarra and Southern catchments completed
Stormwater services		
11. Stormwater renewals	3.5 km including Birds Gully (770 metres)	3.6 km
12. Stormwater condition assessment	91.76 km	174 km

a There has been a deferral of planned relining through an improved risk based approach and better understanding of both condition assessments results and failure modes. Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 55.

b Some pumping stations planned for renewal have been decommissioned. Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 55.

c This is due to the revision to a revised approach to calculating asset life. Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 56.

d The variance was due to a risk based approach to renewals, access constraints and use of magnesium hydroxide coating to defer renewals. Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 56.

e Lower quantity of renewals required as a result of CCTV survey. Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 56.

f This is as a result of condition assessments and some planning issues. Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 56.

Source: Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, pp 55-56.

G.2 Output measures – 2016 determination period

Sydney Water proposed an additional 31 output measures to be applied in the future price path.[514] Our consultant, Atkins Cardno, reduced these to 11, which are outlined in Table G.2, to focus on key asset renewal activity and to bring these in line with the outputs from previous determinations.

Table G.2 Output Measures over 2016 determination period

Output (or activity) Measure	Description of indicator of activity
Water services	
Critical water mains renewal	47 km
Large valve renewals	120
Reticulation water mains	180 km
Reservoir reliability program	33 reservoirs renewed
System reliability	15 pumping stations renewed 16 HV upgrades
Renewal of customer water meters	471,500 meters
Wastewater services	
Large wastewater mains	34 km 80 deep maintenance hole and vent stacks 4 km pressure mains
Dry weather flows	112 km
Wastewater treatment plant renewals	163 wastewater treatment 41 chemical system renewals 11 odour control 82 solids treatment
Wastewater pumping stations	19 major renewals 37 pump renewals
Stormwater services	
Stormwater assets	7 km conduit renewal 3 km open channel renewal 160 km condition assessment

Source: Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, pp 56-57.

[514] Atkins Cardno, *Sydney Water Corporation - Expenditure Review*, December 2015, p 56.

H Regulatory treatment of asset disposals

The purpose of this appendix is to outline our policy or framework for asset disposals.

The primary issues we considered in relation to asset disposals are:

- how and when to remove an asset from the RAB, given that it is no longer used to provide regulated services to customers, and
- whether the business should be provided an allowance in the revenue requirement to pay any capital gains tax resulting from the sale of an asset subject to capital gains tax.

From first principles, we consider the asset's identifiable **regulatory value** should be removed from the RAB. This is the value of the asset as it entered the RAB (if known), adjusted for the effect of depreciation and indexation. We also consider that the business should pay any tax obligations from the regulatory profit it retains.

This approach means the business bears the risk of any profits or losses arising from the sale of an asset, and customers are not affected. We consider this appropriate because although the asset was purchased by the business to provide regulated services to customers, the benefit customers received came from consuming the service, not owning the asset. Therefore, the impact of any profit or loss should lie entirely with the business (or shareholder).

However, data on the value of individual assets in the RAB and their original cost may be limited. This means that, in many cases, when an asset is sold we will be required to estimate its regulatory value.

We use different methods for estimating the regulatory value of assets when the original cost is unknown, depending on when the asset being disposed entered the RAB (ie, whether it is a pre or post line-in-the-sand[515] asset). We also distinguish between significant and non-significant assets.

[515] The year of Sydney Water's regulatory line-in-the-sand is 2000.

H.1 Significant asset write-offs

Definition: Assets that are not sold and where the book value of the disposed asset or class of assets accounts for more than 0.5% of the opening value of the RAB in the year in which the asset is disposed.

Treatment: These disposals will be dealt with separately, as and when the need arises.

H.2 Significant asset sales

Definition: (a) Assets that incur capital gains tax (ie, this includes all land sales), or (b) those where the receipts from sale from the asset or class of assets accounts for more than 0.5% of the opening value of the RAB in the year in which the asset is sold.

Treatment pre line-in-the-sand: Where the regulatory value of the asset as it entered the RAB is unknown, we will estimate its regulatory value based on:

- the ratio of the RAB to the depreciated replacement cost (DRC) at the time the RAB was established *multiplied by*
- the sale value of the asset.

We consider the RAB to DRC ratio is a good proxy for an asset's regulatory value because it represents the average value at which all assets were entered into the RAB at the line-in-the-sand (the DRC reflected the business' actual cost of the individual assets).

The RAB to DRC ratio is also used to determine the regulatory profit from which the business would pay any tax obligation.[516] Our treatment of pre-line-in-the sand assets will allow the businesses to retain a significant proportion of the proceeds from the sale of their assets, removing potential disincentives to sell assets surplus to requirements. It will also mean that customers will not continue to provide the business with a return on or of assets that have been sold, which will be reflected in lower prices.

Given the difficulty of unravelling what assets were operational (and therefore included in the RAB) and what were non-operational at the time the line-in-the-sand was drawn (and the initial RABs established), we consider that we should apply the RAB to DRC ratio to sales values of all pre line-in-the-sand assets.

[516] The regulatory profit would be calculated as 'sale value of asset x (1-RAB/DRC)'.

We first set Sydney Water's RAB in 2000, the "line-in-the-sand".[517] To set the RAB at the 2000 line-in-the-sand, we calculated the economic value of Sydney Water's assets. This was based on the operating profit that Sydney Water was expected to achieve, and our estimate of the appropriate rate of return (the WACC).[518] In subsequent price determinations, we have rolled this RAB forward by adding all prudent and efficient capital expenditure, indexing for inflation, and deducting depreciation and asset disposals.

As the RAB at this point estimated the value of the business as a whole, it is not possible to identify which specific assets contributed to that RAB and in what proportion. However, 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.

Table H.1 sets out the RAB to DRC ratio for each metropolitan water business. These are the ratios that would be used to determine the regulatory value of assets acquired pre line-in-the-sand to be removed from the RAB.

Table H.1 RAB to DRC ratio for each metropolitan water business as at line-in-the-sand (2000)

	RAB at line-in-the-sand ($billion)	DRC value at line-in-the-sand ($billion)	RAB to DRC ratio
Sydney Water	5.3	12.5	0.42
Hunter Water	0.8	1.9	0.42
Gosford Council	0.2	0.5	0.42
Wyong Council	0.2	0.4	0.43
WaterNSW (formerly SCA)	0.6	1.7	0.39

Note: The RAB to DRC ratio has been calculated using unrounded numbers. In 2000, the book value was the DRC for each of the businesses, except for WaterNSW where we have used an estimated DRC. This is because the 2000 book value for SCA was based on an optimised deprival value rather than a DRC.

Sources: IPART, *Sydney Water Corporation, Prices of water supply, sewerage and drainage services, Medium-term price path from 1 October 2000, p 20*; Sydney Water Annual Report 2000, p 39; IPART, *Hunter Water Corporation, Prices of water supply, sewerage and drainage services, Medium-term price path from 1 July 2000*, June 2000, p 11; Hunter Water Corporation, Annual Report 1999-2000, p 53; IPART, *Gosford City Council, Prices of water supply, sewerage and drainage services, Medium-term price path from 1 July 2000,* June 2000, p 10; IPART, *Wyong Shire Council, Prices of water supply, sewerage and drainage services, Medium-term price path from 1 July 2000,* June 2000, p 11; IPART, *Sydney Catchment Authority, Prices of water supply services, Medium-term price path from 1 October 2000, p 17.*

[517] IPART, *Sydney Water Corporation - Prices of water supply, sewerage and drainage services, Medium-term price path from 1 October 2000 – Determination and Final Report*, September 2000, pp 20-22.

[518] It did not represent the accounting value of its physical assets. As the calculation used revenue from prices at the time, this ensured that there would be no price shocks to customers resulting from a return on capital calculation using a RAB based on physical asset values multiplied by WACC. See IPART, *Sydney Water Corporation - Prices of water supply, sewerage and drainage services - Medium-term price path from 1 October 2000 – Determination and Final Report*, September 2000, pp 20-22.

Treatment post line-in-the-sand: If an asset was acquired after the line-in-the-sand was drawn, then in principle it should be possible to estimate the value of the asset in the RAB (taking into account the effects of depreciation and indexation).

In practice, the available information will differ depending on the type of asset sold and when it was purchased. For example, the purchase cost of a parcel of land may be readily available. On the other hand, the cost of purchasing an old building, converting it to the required standard and maintaining it, may not be available.

We treat these disposals on a case-by-case basis, adopting the underlying principle that we will use our best estimate of the regulatory value of the asset. Some of the options that may be available to us include:

- tracking actual capex (actual purchase costs and improvements), where possible and practical to do so, and calculating the appropriate depreciation and indexation
- using an indexed tax value, or
- using an indexed book value, which may be appropriate for example for plant and equipment, where the book value is generally the depreciated historical cost.

H.3 Non-significant asset disposals (sales and write-offs)

Definition: Assets that do not incur capital gains tax (ie, this excludes all land assets) and where the book value of the disposed asset or class of assets accounts for 0.5% or less of the opening value of the RAB in the year in which the asset is disposed.

Treatment: Businesses regularly dispose of assets that have not reached the end of their book lives, for example computer equipment, vehicles or water meters. Some of these assets have market value and are sold, while others are simply written off and discarded. These 'normal' disposals are usually very small and have very little impact on the RAB.

We will treat these disposals differently, depending on whether they are sales or write-offs.

For **asset sales**, we will remove the receipt from sales from the RAB. We consider that this approach is simple to administer, particularly for disposals that represent a relatively small proportion of the utility's RAB (ie, less than 0.5%).

For **asset write-offs,** we will not deduct any value from the RAB, except as deemed necessary on a case-by-case basis. This reflects that our decisions on efficient and prudent capital expenditure will take into account the expected asset lives of classes of assets. Where an expenditure review has been undertaken, further adjusting the RAB by using the accounting treatment of asset write-offs risks double counting RAB deductions.

I Weighted Average Cost of Capital

This appendix provides our consideration of the views submitted by Sydney Water on the WACC. In particular, Sydney Water raised the following concerns with aspects of our approach to calculating the WACC:

- **50:50 weighting on long term and current WACC estimates:** Sydney Water proposed a 60:40 weighting between the long-term and current WACC.[519]
- **Equity beta**: Sydney Water proposed an equity beta value for the water industry of 0.7 in its pricing proposal. This is the midpoint of IPART's standard range for the water industry. However, Sydney Water submits that there is evidence to support a range of 0.7 to 0.8.[520]
- **Market volatility**: Sydney Water has requested early warning if market volatility requires us to consider selecting a point other than the midpoint WACC value.[521] It is also concerned that the threshold for selecting a point other than the midpoint may be too high.[522]

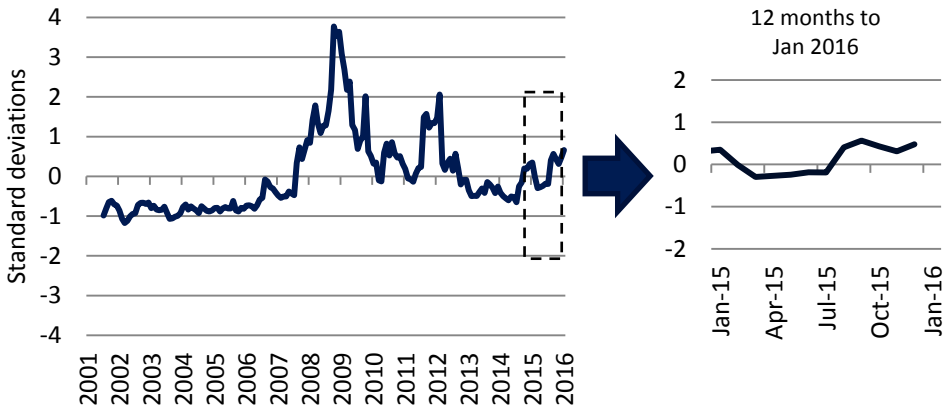
I.1 50:50 weighting on long term and current WACC estimates

Our draft decision is to retain the existing 50:50 weighting of the long-term and current WACC estimates.

In accordance with our 2013 WACC methodology decision rule for selecting the WACC point estimate,[523] we have selected the midpoint WACC value within our range because the current uncertainty index threshold has not been exceeded (see Figure I.1). This has the effect of weighting the long-term and current WACC estimates to 50:50. We have consistently applied this decision rule in all of our WACC decisions since establishing the methodology.

[519] Sydney Water response to IPART Issues Paper, October 2015, p xi, 44.
[520] Sydney Water pricing proposal to IPART, June 2015, p 223.
[521] Sydney Water response to IPART Issues Paper, October 2015, p 45.
[522] Sydney Water pricing proposal to IPART,, June 2015, p 224.
[523] IPART, *Review of WACC Methodology - Final Report*, December 2013, p 23.

Figure I.1 IPART's uncertainty index



Source: Thompson Reuters, Bloomberg, IPART analysis.

We conducted a major review of our WACC methodology in 2013. An important reform of the WACC review was to address the fall in the yield on 10-year Commonwealth Government bonds, which is the basis for our measure of the risk free rate.

As shown in Figure I.2, five years ago, yields were around 5% to 6%. Current levels are around 2% to 3%. We developed a WACC methodology that estimated the WACC using both 10-year averages and 40-day averages of market data, including the risk free rate. We also specified that if market conditions are relatively stable,[524] we would select the midpoint estimate. On the other hand, if market uncertainty exceeds our pre-defined threshold, we would consider whether we should depart from the midpoint of our WACC range.[525]

Figure I.2 Yield on 10-year Commonwealth Government bonds

Data source: Bloomberg.

[524] That is, when the uncertainty index is within one standard deviation of long term averages.
[525] IPART, *Review of WACC Methodology – Final Report*, December 2013, pp 2, 4.

We also consider that pre-defining a WACC methodology enhances the transparency of our regulatory approach. Sydney Water's submission recognises the importance of consistency and transparency in regulatory decisions:

> The importance of the improved WACC methodology was highlighted by Moody's in its recent decision to increase Sydney Water's baseline credit assessment from Baa2 to Baa1. Moody's stated that (press release on 4 March 2015) the upgrade reflected an 'expectation of improved transparency in the regulatory framework'.[526]

Sydney Water noted that its recent credit rating upgrade "demonstrates the importance of consistency in decision-making by the regulator".[527]

Although generally supporting our approach to estimating the WACC, Sydney Water proposed a 60:40 weighting for the long-term to current WACC.[528] Sydney Water considers that the 50:50 weighting inherent in our midpoint rule risks under-compensating investors for the expected rate of return on investments. Sydney Water considers that the weighting of long-term and current estimates should reflect the ratio between current debt financing requirements (that is, the amount to be refinanced in the current period or flow requirements) and the total notional debt in the capital structure (that is, the stock requirements).[529]

Sydney Water's pricing proposal also cited opinions in support of the view that owners of infrastructure assets typically issue long-term debt.[530] It noted the maturity matching principle from the finance literature: that long-term assets should be financed with long-term debt.[531]

In our 2013 final decision on our WACC methodology, we defined our objective when setting the WACC: "Our objective in determining the WACC for a regulated business will be to set a WACC that reflects the efficient cost of capital for a benchmark firm operating in a competitive market and facing similar risks to the regulated business."[532] Our approach is not aimed at replicating the actual cost of capital of any particular regulated utility. We therefore do not consider that the weighting should be adjusted for the purpose of better aligning the regulatory WACC with Sydney Water's actual cost of capital or financing strategy. This framework allows regulated utilities to pursue financing strategies of their choosing. It also ensures that customers do not pay for inefficient financing strategies.

526 Sydney Water pricing proposal to IPART, June 2015, p xxiii.
527 Sydney Water pricing proposal to IPART, June 2015, p 223.
528 Sydney Water response to IPART Issues Paper, October 2015, p xi, 44.
529 Sydney Water pricing proposal to IPART, June 2015, p 222.
530 Sydney Water pricing proposal to IPART, June 2015, p 224.
531 Sydney Water pricing proposal to IPART, June 2015, p 225.
532 IPART, *Review of WACC Methodology - Final Report,* December 2013, p 1.

Further, Sydney Water's, observation that our approach implies that the benchmark firm finances with both long and short term debt[533] suggests a misunderstanding of our methodology. While our approach calculates two WACC values (one based on 10 years of market data and one based on 40 days of market data), both use a target term-to-maturity of 10 years.[534] We do not combine short-term and long-term bond rates. We decided to adopt a 10-year term-to-maturity in the 2013 review of the WACC after considering evidence that firms operating in a competitive market with long-lived assets would seek to raise debt with a maturity of 10 years or longer.[535] Our 10-year term-to-maturity assumption recognises the maturity matching principle, consistent with finance theory.

Sydney Water also submitted a paper prepared by the RBA to support its position.[536] Sydney Water claims that the Reserve Bank of Australia (RBA) paper "implies that in the Australian private sector, adjustments to the hurdle rate of return occur with a lag and in-step changes that do not adjust fully for the current market interest rates."[537] Sydney Water considers that this supports greater weight being placed on the long-term average WACC rather than the current estimates.

We have reviewed the RBA's article. We consider that the article is not relevant when estimating the WACC for regulatory decisions. This is because the RBA's paper relates to the hurdle rate set by managers for capital expenditure, rather than the cost of capital.[538] Critically, the paper highlights the divergence between hurdle rates required by managers to invest in new business investment opportunities and the cost of capital of the firm.

The paper states that:

> The hurdle rate is often set above the cost of capital to account for uncertainty about the cash flow projections…setting a hurdle rate above the cost of capital is likely to improve the chances that investments add value to the firm on a risk-adjusted basis.[539]

It also finds that hurdle rates are reviewed less frequently than the WACC:

> Many liaison contacts also report that hurdle rates are not changed very often and in some instances have not been altered for at least several years. These observations are also reflected in the recent survey by Deloitte; two-thirds of corporations indicated

[533] Sydney Water pricing proposal to IPART, June 2015, p 224.
[534] IPART, *Review of WACC Methodology - Final Report,* December 2013, p 2.
[535] Ibid, p 13.
[536] K. Lane and T. Rosewall, *Firms' investment decisions and interest rates*, Reserve Bank of Australia Bulletin, June Quarter 2015.
[537] Sydney Water response to IPART Issues Paper, October 2015, p 44.
[538] K. Lane and T. Rosewall, *Firms' investment decisions and interest rates*, Reserve Bank of Australia Bulletin, June Quarter 2015, 2.
[539] Ibid., p 3.

their hurdle rate was updated less frequently than their formal review of the WACC, and nearly half reported the level of their hurdle rate was changed 'very rarely'.[540]

I.2 Equity beta

We have maintained our standard equity beta range of 0.6 to 0.8. Our decision implies that Sydney Water faces the same level of systematic risk as a typical water agency.

Our current standard equity beta range for the water industry was developed on the basis of expert advice. For the 2011 price review for the Sydney Desalination Plant, we sought advice on a suitable equity beta value for the Australian water industry from SFG.[541] We commissioned a peer review of SFG's analysis by Professor Kevin Davis.[542] Based on this advice we revised our equity beta range for the water industry to 0.6 to 0.8 (midpoint value of 0.7). We have consistently applied this range (or midpoint value) in all subsequent water pricing reviews.

Sydney Water has proposed an equity beta of 0.7, consistent with the midpoint of IPART's standard value of a range from 0.6 to 0.8 for the water industry. However, it submits that there is evidence to support a range of 0.7 to 0.8.[543] In support of its position, it has provided us with analysis on beta values of water utilities in the UK and North America conducted by HoustonKemp.[544]

HoustonKemp concluded that "our study is strongly supportive of the 0.6 to 0.8 equity beta range previously found by IPART".[545] HoustonKemp also submits that we should select the top of the plausible range when selecting an equity beta value for Sydney Water.

In the sections that follow, we provide reasons for why our range remains appropriate by investigating:

- empirical evidence of comparator companies, and
- decisions of other Australian regulators for the water industry equity beta.

I.2.1 Empirical evidence

We have reviewed evidence from comparator companies prepared by HoustonKemp. We have also conducted our own analysis of the beta, gearing level and credit rating of comparators.

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[540] Ibid.

[541] Strategic Finance Group, *Cost of capital parameters for Sydney Desalination Plant*, August 2011.

[542] Davis, K., *Cost of capital parameters for Sydney Desalination Plant: by SFG Consulting: An initial review for IPART*, August 2011.

[543] Sydney Water pricing proposal to IPART,, June 2015, p 223.

[544] HoustonKemp, *Equity Beta for a Benchmark Australian Water Network Service Provider*, June 2015.

[545] HoustonKemp, *Equity Beta for a Benchmark Australian Water Network Service Provider*, June 2015, p v, 15.

Both the evidence prepared by HoustonKemp and our own analysis of comparator companies lend limited support for an equity beta within the range of 0.6 to 0.7. However, we have interpreted the findings cautiously.

Beta analyses are particularly fraught with uncertainty. As noted by SFG:

> There is substantial imprecision in the OLS estimates such that even if, on average, these estimates were reliable measures of systematic risk, there is the possibility that the sample of returns we observe give us a misleading answer.[546]

Further, there are no similar companies listed on the Australian stock exchange, and any empirical evidence must be derived from companies listed on overseas stock exchanges. Beta estimates from overseas proxy firms measure the risk of the company relative to the country of issue, rather than the Australian market. Despite limitations, we have used empirical results as a crosscheck when setting the industry-specific parameters.

HoustonKemp finds that IPART's range is well-supported by data from water utilities in the UK and North America.[547] However, we have methodological concerns about aspects of this analysis, and we question the applicability of inferences from the practices in overseas jurisdictions.

HoustonKemp's analysis on the equity beta estimates a possible range of the equity beta from 0.59 to 0.88. Given the lack of precision in such analyses, we consider that these results equally well support our range of 0.6 to 0.8. Reflecting this point, HoustonKemp notes "that our study is strongly supportive of the 0.6 to 0.8 equity beta range previously found by IPART".[548]

As well as advising on the equity beta range, HoustonKemp has presented a case for selecting the upper bound of our equity beta range. It states that "we believe there is substantial, credible evidence for IPART to adopt an equity beta value at the top of its equity beta range."[549]

In support of its views, it notes that IPART selected the upper bound of the WACC range in its previous decision for Sydney Water. It is important to note that in the previous decision HoustonKemp is referring to, we had not completed our review of the WACC methodology. We adopted the upper bound WACC as an interim approach to recognise falling yields on Commonwealth Government bonds. We have since formalised our approach and use both long-term and current WACC calculations to recognise the reduction in the risk free rate. We consider that it would be duplicative to estimate the WACC with reference to long-term and current data as well as applying the upper bound equity beta.

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546 SFG, *Systematic risk and leverage for energy firms,* January 2013, p 2.

547 HoustonKemp, *Equity Beta for a Benchmark Australian Water Network Service Provider*, June 2015, p 15.

548 Ibid.

549 HoustonKemp, *Equity Beta for a Benchmark Australian Water Network Service Provider*, June 2015, p 16.

HoustonKemp also considers that the upper bound should be used as the capital asset pricing model (CAPM) underestimates the required return on low beta assets. We prefer to ascribe our best estimate to each parameter, including the equity beta, through either a point estimate or a range of values. We consider that our approach of calculating a long-term and a current WACC is preferable to applying arbitrary premiums and adjustments at the parameter level as our framework provides transparency and predictability for stakeholders.

HoustonKemp has also noted that US regulators routinely adopt allowed returns on equity for water utilities above that which the CAPM would generally estimate. We consider that the practice of Australian regulators is more relevant to our decision. Evidence from Australian regulators when determining the equity beta for water utilities is provided later in this appendix.

We have also considered our own analysis of comparator companies. We considered the two-year equity beta of comparator companies using Bloomberg's equity beta regression calculator (Table I.1). We have considered this analysis in conjunction with the evidence prepared by HoustonKemp, submitted by Sydney Water.[550]

Bloomberg calculates equity beta estimates from the regression of stock returns on market returns. As there are no suitable proxies for the water agencies listed on the Australian stock exchange, we have investigated comparator companies listed on overseas exchanges. Our sample is similar to the analysis conducted by HoustonKemp as we also selected companies that were listed on North American and UK stock exchanges that are classified as a water utility and we reviewed each company in the sample to ensure that it was a suitable comparator for the water agencies.

The two-year unadjusted measures of equity beta range from 0.28 to 0.89. The median and mean of the samples were 0.67 and 0.61, respectively. Table I.1 sets out the gearing level, equity beta and credit rating (where applicable) of suitable overseas proxies.

Our analysis suggests that overseas water utilities have:

- wide-ranging equity beta values
- a median equity beta value of 0.67
- a slightly lower level of gearing than our benchmark firm, and
- a higher credit rating than our BBB assumption.

[550] HoustonKemp, *Equity Beta for a Benchmark Australian Water Network Service Provider*, June 2015.

Table I.1 Gearing, equity beta and credit rating of water proxies

Company	Country	Gearing	Equity beta	Credit rating
American States Water	US	23%	0.67	A+
American Water Works	US	60%	0.35	A
Aqua America	US	34%	0.56	Not rated
Artesian Resources Corp	US	49%	0.38	Not rated
California Water Service Group	US	50%	0.69	A+
Connecticut Water Service	US	44%	0.74	A
Dee Valley Group	UK	82%	0.28	NR
Dee Valley Group (non-voting)	UK	82%	0.44	NR
Middlesex Water	US	38%	0.77	A
Severn Trent	UK	97%	0.62	BBB-
SJW Corp	US	68%	0.78	Not rated
United Utilities	UK	112%	0.75	Not rated
York Water	US	28%	0.89	A-
Median		50%	0.67	
Mean		59%	0.61	
Min		23%	0.28	
Max		112%	0.89	

Note: The equity beta is the 2-year unadjusted beta.
Source: Bloomberg.

I.2.2 Australian regulatory decisions for the water industry

Due to the limitations of empirical evidence on the beta, we have also investigated the equity beta, gearing and credit rating assumption of regulators in Australia. While empirical evidence is inconclusive, the practice of other regulators in Australia strongly supports the parameters we adopt for the water industry.

Table I.2 shows the practice of other Australian regulators for water industry decisions. Australian regulators typically adopt an equity beta value of around 0.7. This is the midpoint of our standard range of 0.6 to 0.8. Some regulators use a slightly lower beta value of 0.65.

Australian regulators generally assume a 60% gearing level and a credit rating in the range of BBB- to BBB+.

Table I.2 Past regulatory decisions

Regulator	Regulated entity	Decision date	Gearing	Equity beta	Credit rating assumption
ACCC	State Water Corporation	June 2014	60%	0.7	BBB+
ESC	Greater metropolitan water businesses	June 2013	60%	0.65	BBB- to BBB+
	Regional urban water businesses	June 2013	60%	0.65	BBB- to BBB+
	Rural water businesses	June 2013	60%	0.65 for Southern rural water; and 0.70 for Goulburn-Murray Water and Lower Murray Water	BBB- to BBB+ for Southern rural water BBB+ for Goulburn-Murray Water and Lower Murray Water
QCA	Seqwater Irrigation	April 2013	60%	0.55	BBB+
ESCOSA	SA Water	See Note 2.	60%	0.7	BBB
Industry panel	Actew	April 2015	60%	0.7	BBB
ERA	Water Corporation, Water Boards	March 2013	60%	0.65	A for Water Corp, BBB/BBB+ for Water Boards

Notes: QCA decision was for the irrigation industry, rather than a water utility.

ESCOSA has not yet released its final decision for water prices from 1 July 2016. It has presented its parameter valuation in a report to the Treasurer.

Source: ACCC, *ACCC Final decision on State Water pricing application: 2014-15 – 2016-17*, June 2014; ESC, *Price review 2013: Greater metropolitan water businesess final decision*, June 2013; ESC; *Price review: Regional urban water businesses final decision,* June 2013; ESC*, Price review 2013; Rural water businesses final decision,* June 2013; ESCOSA, *SA Water Regulatory Rate of Return 2016 - 2020: Report to the Treasurer,* April 2015; Industry Panel, *Review of the Independent Competition and Regulatory Commission's 2013 Price Direction for Regulated Water and Sewerage Services in the ACT – Final Report*, April 2015; QCA, *Final report Seqwater irrigation price review 2013-17 Volume 1*, April 2013; ERA, *Inquiry into the efficient costs and tariffs of the Water Corporation, Aqwest and the Busselton Water Board: Revised Final Report*, March 2013.

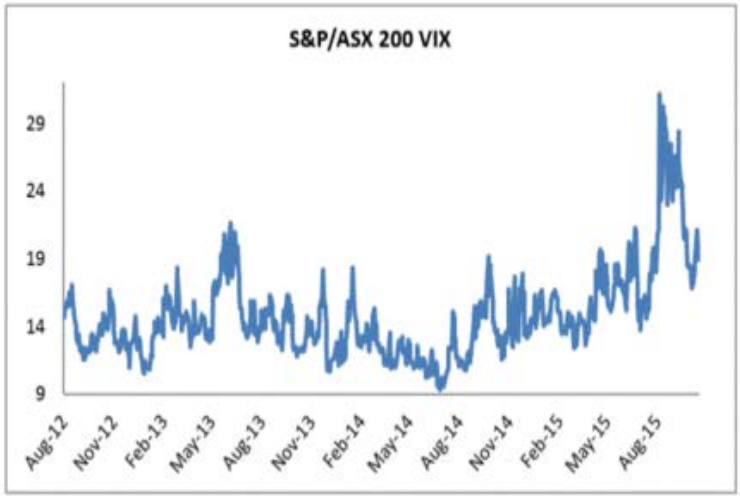
I.3 Market volatility

Sydney Water states that the market is currently experiencing higher volatility.[551] Figure I.3 is a chart from Sydney Water's submission showing the ASX 200 volatility index (A-VIX). This analysis shows that volatility in the Australian equities market has risen in recent times.

[551] Sydney Water response to IPART Issues Paper, October 2015, p 45.

Sydney Water requests us to notify them if the uncertainty index meets our threshold for departing from the midpoint. It requests monthly updates of the uncertainty index in the lead up to the price determination.[552]

Figure I.3 ASX 200 VIX from August 2012 to August 2015



S&P/ASX 200 VIX	
6-Nov-15	18.902
One Week Ago	19.189
One Month Ago	20.527
52 Week High	31.185
52 Week Low	11.571

Source: http://www.asx.com.au/products/sp-asx200-vix-index.htm, reproduced in Sydney Water, *Response to Issues Paper*, p 45.

We have developed a measure of uncertainty and a decision rule to use this input when selecting a WACC point estimate. Figure I.4 shows our uncertainty index is currently within one standard deviation of the long term average value of zero.[553] According to our decision rule, we select the midpoint WACC estimate in these circumstances (ie, we place 50% weight on the long-term WACC estimate and 50% weight on the current WACC estimate).

We inform stakeholders twice a year of our measure of financial market uncertainty in our bi-annual market updates. We have published our uncertainty index calculator on our website to allow stakeholders to monitor the level of the index.

Sydney Water expressed concern that the threshold for IPART's uncertainty index may be too high.[554] A key motivator for us to adopt our decision rule was the high market volatility that occurred immediately after the GFC. That experience showed the importance of identifying exceptional market conditions, in case standard rules for estimating WACC needed to be modified.

[552] Sydney Water response to IPART Issues Paper, October 2015, p xi.
[553] The current value is 0.66.
[554] Sydney Water pricing proposal to IPART, June 2015, p 222.

In historical terms, the recent rises in uncertainty are relatively modest. We have extended Sydney Water's analysis on the A-VIX to show current market volatility in the context of the GFC (Figure I.4). Compared to volatility between 2008 to 2012, current market conditions are relatively stable.

Figure I.4 ASX 200 VIX from January 2008 to January 2016

Source: Thompson Reuters, 10 February 2016.

Further, the A-VIX is one input into our measure of uncertainty. Our uncertainty index combines four variables as a proxy for economic uncertainty:

1. S&P/ASX 200 VIX Index.
2. Dispersion in analysts' forecasts for companies in the S&P/ASX200 Index.
3. Credit spreads, which are calculated as the difference between the UBS Australian all maturities credit yield and UBS Australian Treasury all maturities yield on a monthly basis.
4. Bills-overnight index swap spreads.

J Long-run marginal cost

The long-run marginal cost (LRMC) is the additional cost of a permanent additional unit of demand. The aim of setting usage charges at LRMC is to encourage an efficient allocation of resources, by signalling to customers the costs of their decisions to consume an extra unit of water. This is seen as ensuring an economically efficient outcome, whereby users consume water only to the point where the value placed on more water justifies the cost of its provision.

LRMC is typically dominated by required augmentations to bulk water supply. However, a LRMC model should also include the LRMC of all stages of the supply chain, including any capacity augmentations.

The ongoing Metropolitan Water Plan Review and Hawkesbury-Nepean Valley Flood Management Review may have a significant impact on annual system yield. As such, we have presented all estimates of LRMC based on a range of system yields from 610 GL (the current system yield) to 565 GL.

J.1 Estimates of LRMC for Sydney Water

Sydney Water and IPART have developed different estimates of the LRMC. Sydney Water has used the average incremental cost (AIC) method and we have used the AIC and perturbation approach. In the Table J.1, we have shown Sydney Water's and IPART's preliminary estimates of the LRMC of water in Sydney LRMC based on IPART's discount rate of 4.8%.

Sydney Water's best estimate is $1.16 per kL[555] (based on a discount rate of 5.3%) and IPART's best estimate ranges from $1.11 per kL to $1.27 per kL (shown in Table J.1).

[555] Sydney Water proposal to IPART - Appendices, June 2015, p 115.

Table J.1 LRMC estimates with demand based on $2.00 per kL and IPART's 4.8% discount rate ($/kL)

System yield	Adapted from Sydney Water's model		IPART	
	SDP matches demand	SDP at full output	AIC	Perturbation
610 GL	1.18	1.62	1.11	1.27
595 GL	1.52	2.04	1.23	1.38
580 GL	1.90	2.33	1.44	1.27
565 GL	2.25	2.67	1.61	1.25

Note: Sydney Water's estimates are based on its base case unless otherwise identified. Sydney Water's proposal did not include an estimate using a 4.8% discount rate. The figures have been calculated by IPART using Sydney Water's model.

Source: Sydney Water's long-run marginal cost model and IPART's long-run marginal cost model.

J.1.1 Key differences in Sydney Water's and IPART's LRMC estimates

Sydney Water and IPART have both, independently, updated and developed LRMC models for this price review. The main differences between Sydney Water's model and IPART's model are summarised in Table J.2 below.

Table J.2 Main differences between Sydney Water's model and IPART's model

Assumption	Sydney Water	IPART
Method	AIC	AIC and perturbation (5% positive shock)
System operation	540 GL from WaterNSW remainder from SDP (either to match demand or at full operation)	Simulated inflow data with Shoalhaven transfers operating on 75/80 rule and SDP operating on 70/80 rule
Components	Existing bulk water costs and bulk water augmentations	Existing bulk water, treatment, distribution and retail costs, bulk water augmentations, supplementary supplies and water restrictions (demand impacts not costs)
Augmentations[a]	When demand exceeds system yield the desalination plant is expanded if demand exceed yield again a new desalination plant is built.	When demand exceeds yield a Tunnel from Burrawang to Avon Dam is constructed, and if demand exceeds yield again there is a generic augmentation. When storages fall below 30% the desalination plant is expanded.
Discount rate	5.3%	4.8%
Demand	Sydney Water's demand forecast	Sydney Water's demand forecast
Modelling period	50 years	20, 30, 40 or 50 years

[e] The timing of augmentation is endogenously determined through the model.

Source: Sydney Water pricing proposal to IPART- Appendices, June 2015, pp 114-122.

For more information regarding Sydney Water's LRMC model see Sydney Water's proposal to IPART – Appendix 5, section 5.1.

J.2 IPART's LRMC model

In this section, we outline our LRMC model, including the key assumptions that we have made.

J.2.1 Approach to calculating LRMC

There are two main methods to estimate the LRMC:

- **Average Incremental Cost approach (AIC)**. This approach involves estimating the (average) per unit cost of meeting all growth in demand over the period. The present value of all operating and capital expenditure generated by demand growth over the forward period (including both the costs of utilising existing capacity and of new augmentations) is divided by the present values of the benefit (ie, the growth in water demand).[556]
- **Perturbation approach (also known as the Turvey approach).** This approach involves estimating the change in costs over the period associated with a marginal change in demand. The difference between the costs associated with the revised capacity curve and the base capacity curve are divided by the difference between the shocked demand curve and the base demand curve to indicate the cost impact of the marginal increase in demand. [557]

Sydney Water has used the AIC approach to estimate LRMC. We have estimated LRMC using both methods.

J.2.2 Long-run costs

LRMC estimates should include all costs incurred to service demand growth over a defined period. This includes the costs of:

- augmenting current capacity to meet future growth
- servicing growth demand within the existing capacity.

In Figure J.1, we show a simplified water utility where expenditure increases with growth demand, under an AIC approach. Initially, demand growth is met by current capacity, represented by area B.

However, when the system yield is exceeded by demand, an augmentation in supply is triggered. Demand growth above system yield is serviced by the capital expenditure program and further operating costs needed to augment the system, which is represented by the area A.

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[556] Houston G., Graham T., *An Economic Framework for Estimating Long Run Marginal Costs in the Victorian Water Industry*, Final Report, Nera Consulting, 24 January 2012, pp 20-26.

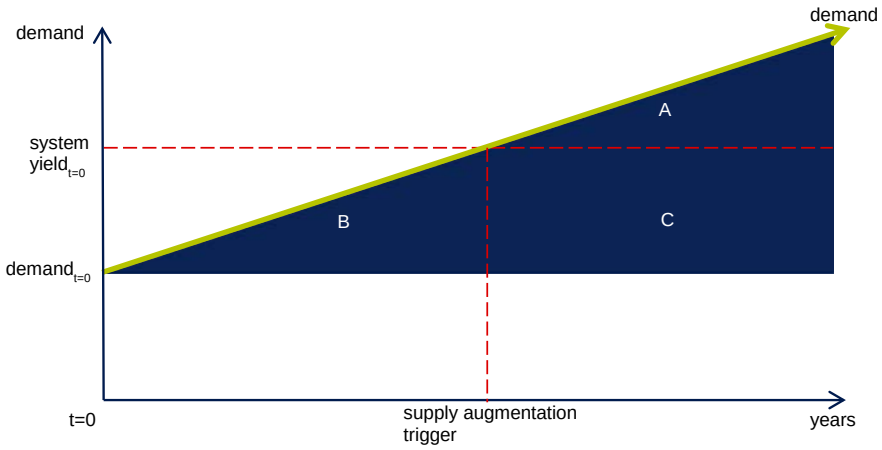
[557] Houston G., Graham T., *An Economic Framework for Estimating Long Run Marginal Costs in the Victorian Water Industry*, Final Report, Nera Consulting, 24 January 2012, pp 18-20.

Demand growth under system yield continues to be serviced by current capacity, which is represented by area C.

The AIC model we used for Sydney Water in the 2012 review included only the expenditure relating to the next supply augmentation, and the demand growth it would service (ie, area A in Figure J.1).[558] Our model did not include the incremental costs of servicing demand within the existing capacity (ie, areas B and C). By ignoring existing capacity, which typically costs less per unit of water supplied, our model systematically overestimated the LRMC.

We have updated our LRMC model to incorporate both existing capacity costs and augmentations. This ensures that all the expenditure to service demand growth is accounted for. This is particularly important in modern water supply systems, where this may mean "switching on" supply sources that are currently unused, such as Shoalhaven water transfers and the SDP.

Figure J.1 AIC approach taking into account all demand growth



[558] IPART, *Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 - Final Report*, June 2012, p 216.

Types of long-run costs

Modern water planning, such as that performed by the Metropolitan Water Directorate in preparing the Metropolitan Water Plan, focuses as much on drought response as it does on the long-term supply and demand balance. Therefore, it is appropriate that a LRMC model includes all efficient long-run costs.[559] Our LRMC model includes:

- **Augmentations** – the capacity costs of increasing the system yield in response to demand growth.[560]
- **Drought response** – the costs of responding to a supply deficit.
- **Water restrictions** – the water restrictions imposed on customers in response to drought.[561]

Our LRMC model does not include the costs of complying with other Government requirements, such as BASIX, or the externalities of water use, such as carbon costs.

J.2.3 Augmentations

Augmentations to system capacity costs are the costs of increasing the capacity of the system in response to demand exceeding the sustainable level (ie, area A in Figure J.1). The key modelling decisions to make include:

- the types of augmentation
- the timing of augmentations

We have only included capacity costs of bulk water in our LRMC estimate; we are not currently in a position to make similar estimates for the other stages of the water supply chain.

Types of augmentation

Capital expenditure for bulk water supply augmentations will typically be the largest influence on any LRMC estimate. Ideally, we would align our estimate of LRMC with the next Metropolitan Water Plan, but our ability to do so will depend on the timing of its release.

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[559] Our model considered uncertainty in water inflows to WaterNSW's dams, however it does not model any uncertainty in other inputs, such as costs. The estimates could possibly be improved through modelling cost uncertainty.

[560] While demand growth potentially encompasses augmentations to bulk water supply, water filtration, distribution and retail, our LRMC model only includes capacity constraints for bulk water supply. We currently have insufficient information to estimate capacity constraints on the other stages of the supply chain or the likely augmentations.

[561] Our LRMC model includes the demand impacts of water restrictions to Sydney Water and its suppliers. We have not included the costs of complying with water restrictions for Sydney Water or its customers as we do not have access to robust estimates of these costs.

At present, our LRMC model includes the augmentations included in Table J.3 below.[562]

Table J.3 Supply augmentations in IPART's LRMC model

Augmentation	Trigger
Burrawang to Avon Dam Tunnel[a]	Demand exceeds yield
Generic augmentation (could be dam or desalination plant)	Demand exceeds yield after first augmentation
Second stage of the desalination plant[b]	Storages fall below 30%

a The 2010 Metropolitan Water Plan identified the Burrawang to Avon Dam Tunnel as the first supply augmentation, see NSW Government, *2010 Metropolitan Water Plan,* August 2010, p 24.

b WaterNSW's yield estimates from 2012 includes the second stage of the desalination plant to operate when storages fall below 20%, we have therefore estimated that construction would need to begin around 30%, see Sydney Catchment Authority, *Greater Sydney's Sustainable Water Supply - Yield*, 2012, run 18, p 15.

Timing of augmentations

The timing of capital and operating expenditure for future augmentations is critical to estimating the LRMC. It is endogenously determined by our model when forecast demand exceeds the sustainable system yield. We are using our demand estimates.

The system yield for Greater Sydney has not been formally updated since 2012 (ie, currently at 610 GL). The system yield may be updated following the release of the next Metropolitan Water Plan and the Hawkesbury-Nepean flood review.

We have prepared LRMC estimates using a range of system yields.

J.2.4 Drought response measures

To include the costs of demand met by current capacity (ie, costs within areas B and C in Figure J.1), we should factor in drought response costs, which presents a number of modelling challenges, including:

- the number of drought response measures to include in the model (ie, the granularity of the model), and
- the need to simulate inflows into the system (ie, WaterNSW's main dams) to estimate storage levels and triggers for the use of supplementary sources.

[562] Our model is not an optimisation model. The estimate could possibly be improved through the use of optimisation within the model.

Ideally, the inclusion of drought response costs should be guided by the Government's water plans. The drought response measures costed in our LRMC model are based on the current 2010 Metropolitan Water Plan[563] and include:

- operation of Shoalhaven Pumping on the 75%/80% rule
- operation of the SDP on the 70%/80% rule
- two stages of water restrictions – stage 1 restrictions at 50% and stage 2 restrictions at 40%, and
- the second stage of the desalination plant triggered at 20% dam levels (we have estimated that construction of the plant is triggered at 30% dam levels).[564]

However, the update to the Metropolitan Water Plan may change the operating rules for Sydney's water system. We do not have information that allows us to pre-empt the next Metropolitan Water Plan.

To trigger the drought measures based on the above operating rules, we simulate variable inflows to the system to estimate dam levels in each year. We do this by using a statistical distribution of annual inflows based on historical storage data from WaterNSW's annual information return. We calculate the level of storage at the end of each of the next 50 years using synthetically generated inflows, based on the probability distribution. We repeat this calculation 5,000 times to estimate the LRMC.

We have used a log-normal distribution to simulate inflows into WaterNSW's storages. We have decided to use a log-normal distribution because that type of distribution provides a reasonable match to historic WaterNSW/Sydney Catchment Authority data on storage and consumption from 2000 to 2014 from the annual information returns to IPART. The probability density function generated from that data suggests that the upper tail is much thicker than the lower tail of the distribution. This observation is consistent with the conclusion of an academic study of rainfall distributions[565] that annual rainfall tends to be best approximated by either a lognormal or Pearson type 5 distribution, both of which are skewed to the right. This means that there is greater probability of large inflows (eg, flood years) than under a normal distribution.

563 NSW Office of Water, *2010 Metropolitan Water Plan,* August 2010, pp 56-58.

564 Sydney Catchment Authority, *Greater Sydney's Sustainable Water Supply - Yield*, 2012, run 18, p 15.

565 Sharma, M. A., Singh, J. B., *Use of Probability Distribution in Rainfall Analysis,* New York Science Journal 2010;3(9).

For comparison, we have also modelled inflows based on four other distributions:

- an autoregressive model (AR1) where the previous year's inflows influence current inflows, based on data from 1910 to 2007. This is similar to the approach used by WaterNSW in the WATHNET model[566]
- historical inflows from 51 years to 2007
- a low flow version of the historical distribution, where inflows are 50% lower than actuals, and
- a high flow version of the historical distribution, where inflows are 50% higher than actuals.

Table J.4 shows our modelling under each of the distributions. The LRMC estimates based on the AR1 and historic inflows modelling are relatively close to the base lognormal LRMC estimates. We consider that this supports our finding that the lognormal distribution is a reasonable match to actual inflows.

Table J.4 LRMC estimates from alternative approaches to inflow modelling ($/kL)

Inflow modelling approach	610 GL		595 GL		580 GL	
	AIC	Perturbation	AIC	Perturbation	AIC	Perturbation
Lognormal	1.11	1.27	1.23	1.39	1.44	1.27
Autoregressive model	0.97	1.37	1.16	1.46	1.42	1.34
Historical inflows	0.92	1.35	1.11	1.56	1.42	1.42
Low inflow - historical	0.90	1.69	1.08	1.63	1.35	1.58
High inflow - historical	0.91	1.38	0.91	1.38	1.11	1.56

Note: We have omitted results for a system yield of 565GL due to space restrictions.
Source: IPART's long-run marginal cost model.

J.2.5 Method of calculating LRMC

Our model estimates the LRMC using both the AIC approach and the perturbation approach.

By focusing on the cost impact of an increment (or decrement) in demand, the perturbation approach is relatively more consistent with the concept of marginality and thus more economically robust. The AIC approach is the average cost of supplying all demand growth. It is most useful with relatively small augmentations.

[566] Sydney Catchment Authority, *Water Supply System Model and Yield Review 2009/2010, Appendix A: Historical Inflow Review, Annex C WATHNET Input Historical Inflow Series 1909-2007*, Volume 2, June 2011, pp 118-161.

The perturbation approach is a more complex model. It also tends to be sensitive to demand assumptions compared to AIC, both base demand and the shock imposed.

In past price reviews, we have set water usage charges with reference to estimates of the LRMC calculated on an AIC basis. The debate surrounding the most appropriate estimation of marginal costs is contentious. Both methodologies have their supporters (see Box J.1 for recent views on the two approaches by economic regulators and consultants).

We consider that there is merit in presenting a range of LRMC estimates using both approaches, and not ruling out either approach at this stage. We note that this philosophy was adopted recently by Sapere Research Group when estimating the LRMC for SA Water on behalf of ESCOSA.[567]

Box J.1 Current views on methodologies for estimating long-run marginal cost

Economics consultants have reviewed the theoretical and practical issues involved in defining LRMC for pricing of water services in Australia and have reached different conclusions about the merits of using either the perturbation or AIC methodologies. In particular:

- Marsden Jacobs (2004) recommended the AIC approach as it easy to understand and is computationally straight forward; it is consistent with infrastructure planning; and produces stable results.
- Frontier Economics (2014) concluded that the perturbation methodology is the preferred in-principle approach, as it is generally seen as the most economically robust, most reflective of actual outcomes, and avoids allocation of costs to demand.
- NERA (2012) recommends that the approach used to estimate the LRMC depends on the nature of the capital expenditure profile. For example, the perturbation approach should be used when there is a `lumpy' capital expenditure profile and the AIC approach when there is a `smooth' profile.

Source: Marsden Jacob Associates, *Estimation of Long Run Marginal Cos (LRMC), A report prepared for the Queensland Competition Authority*, November 2004, pp 32-33; Frontier Economics, *Estimating and using the Long Run Marginal Cost (LRMC) of water, A Final Report prepared for Sydney Water*, October 2014, p 42; NERA Economic Consulting, *An Economic Framework for Estimating Long Run Marginal Costs in the Victorian Water Industry*, 24 January 2012, p 32.

[567] Tooth, R., Hefter, H., *LRMC – Drinking Water services in SA – Final Report,* Sapere Research Group, Report for the Essential Services Commission of South Australia, March 2013, p ix.

J.2.6 Discount rates

LRMC is used to signal to water consumers the future cost of their consumption. Future consumption levels, in turn, create an incentive and a need for water businesses to invest in additional capacity. Therefore, it is reasonable that the discount rate should be the business's cost of capital.

Our draft decision is to use IPART's current midpoint WACC estimate of 4.8% to model the business's cost of capital. This will be updated when we decide on the WACC for the Final Report.

J.2.7 Time period for the model

Precisely defining the long run in years is difficult. Generally, the longer the timeframe used for modelling, the less accurate the demand forecasts. The shorter the timeframe, the more volatile the estimate. For the perturbation estimate, it is important that large capital expenditures are included in both the base case and the shocked demand case, otherwise LRMC may be overestimated.

Sydney Water's model extends over a 50-year period, while ESCOSA's estimate of the LRMC for SA Water was calculated over a 35-year period.[568] Our previous LRMC estimate for Sydney Water used a period of 53 years.[569]

We consider that we should use a 40-year estimate, because in our base case the major supply augmentations are completed by year 40 of the model. This avoids an overestimation of LRMC under the perturbation approach as augmentations appear in both the shocked and base case demand. It also balances the long-run nature of costs with the uncertainty of demand forecasts.[570] We show the sensitivity of our LRMC estimate to changes in the length of the period below in Table J.5.

[568] Tooth, R., Hefter, H., *LRMC – Drinking Water services in SA – Final Report,* Sapere Research Group, Report for the Essential Services Commission of South Australia, March 2013, p ix.

[569] IPART, *Review of prices for Sydney Water Corporation's water, sewerage, stormwater drainage and other services – From 1 July 2012 to 30 June 2016 - Final Report*, June 2012, p 222.

[570] Alternatively, we could represent capital costs in our model on an annualised or annuity basis.

Table J.5 Impact of time period on LRMC estimates ($/kL)

System yield	20 years	30 years	40 years	50 years
AIC method				
610 GL	0.79	1.09	1.11	1.02
595 GL	1.32	1.42	1.23	1.12
580 GL	2.29	1.70	1.44	1.31
565 GL	2.64	1.90	1.61	1.45
Perturbation method				
610 GL	2.98	1.79	1.27	1.23
595 GL	2.84	1.54	1.39	1.34
580 GL	1.65	1.35	1.27	1.23
565 GL	1.52	1.33	1.25	1.77

J.2.8 Size of the perturbation shock

In perturbation models the estimates are sensitive to the size of the shock to demand. In general, we consider that we should use the smallest shock that gives a reliable estimate. We found that a 5% estimate is a relatively small shock, but large enough to create a stable estimate. We have also presented a perturbation estimate using a 2.5% and 10% shock.

Table J.6 below estimates the LRMC for Sydney Water with different sized shocks on demand.

Table J.6 LRMC estimates under different perturbation shocks ($/kL)

System yield	2.5%	5%	10%
610 GL	1.16	1.27	1.28
595 GL	1.44	1.39	1.28
580 GL	1.30	1.27	1.15
565 GL	1.31	1.25	1.42

K Non-residential trade waste prices

The draft maximum charge that Sydney Water may levy for each trade waste service in Table K.1 to Table K.7.

Table K.1 Trade waste ancillary charges ($2015-16)

Service	Units	2016-17	2017-18	2018-19	2019-20
Additional inspection charge	Per inspection	192.46	196.10	199.82	203.60
Trade waste application fee for Industrial Customers – standard	Per application	464.58	473.37	482.34	491.47
Trade waste application fee for Industrial Customers – non-standard	Per hour	142.32	145.01	147.76	150.56
Trade waste application fee for Industrial Customers - variation	Per application	558.56	569.14	579.92	590.90
Sale of trade waste data	Per hour	138.69	141.31	143.99	146.72

Table K.2 Pollutant charges for Industrial Customers ($2015-16)

Pollutant[a]	Units	Acceptance standard (mg/L)[b]	Domestic equivalent	2016-17	2017-18	2018-19	2019-20
BOD – primary WWTPs	Per kg of mass above domestic strength	See note 1	230	0.281 + [0.121 x (BOD mg/L) /600]	0.287 + [0.124 x (BOD mg/L) /600]	0.292 + [0.126 x (BOD mg/L) /600]	0.298 + [0.128 x (BOD mg/L) /600]
BOD – secondary and tertiary WWTPs	Per kg of mass above domestic strength	See note 1	230	1.827 + [0.121 x (BOD mg/L) /600]	1.862 + [0.124 x (BOD mg/L) /600]	1.897 + [0.126 x (BOD mg/L) /600]	1.933 + [0.128 x (BOD mg/L) /600]
Suspended solids - primary WWTPs	Per kg of mass above domestic strength	600	200	0.510	0.520	0.530	0.540
Suspended solids - secondary and tertiary WWTPs	Per kg of mass above domestic strength	600	200	1.478	1.506	1.535	1.564
Grease - primary WWTPs	Per kg of mass above domestic strength	110	50	0.461	0.469	0.478	0.487
Grease – secondary and tertiary WWTPs	Per kg of mass above domestic strength	200	50	1.412	1.439	1.466	1.494
Nitrogen[c] - secondary/ tertiary inland WWTP	Per kg of mass above domestic strength	150	50	1.675	1.707	1.739	1.772
Phosphorous[c] - secondary/ tertiary inland WWTP	Per kg of mass above domestic strength	50	10	6.007	6.120	6.236	6.354

a The charges for all other pollutants (including ammonia, sulphate (SO4), total dissolved solids and non-domestic pollutants) are nil.
b The mass of any substance discharged at a concentration which exceeds the nominated acceptance standard (as determined under the Trade Waste Policy) will be charged at double the rate for the mass in excess of the domestic equivalent. Concentration is determined by daily composite sampling by either the customer or Sydney Water.
c Nitrogen and phosphorus limits do not apply where a wastewater treatment plant (to which the customer's wastewater system is connected) discharges directly to the ocean.
Note 1: BOD acceptance standards will be set only for wastewater systems declared as being affected by accelerated odour and corrosion. Where a customer is committed to and complying with an effluent improvement program, the customer will not incur doubling of the BOD charging rate.
The oxygen demand of effluent is specified in terms of BOD_5. Acceptance standards for BOD are to be determined by the transportation and treatment capacity of the receiving system and the end use of sewage treatment products.

Table K.3 Corrosive substance charges for Industrial Customers – corrosion impacted catchment ($2015-16)

Pollutant	Units	2016-17	2017-18	2018-19	2019-20
pH	Per ML of wastewater of pH <7.0[a]	63.640	64.845	66.073	67.325
Temperature	Per ML of wastewater with temperature >25°C[b]	7.046	7.179	7.315	7.454

a The charge is applied for each pH1 by which the pH per ML of wastewater is less than pH7, eg, if the pH per ML is pH5 then the charge will be multiplied by 2. Where the pH is a number that includes a decimal number then, for charging purposes, the pH will be rounded up where the decimal number is 0.5 or more and rounded down where the decimal number is less than 0.5, eg, a pH6.5 will be rounded up to pH7 and a pH6.3 will be rounded down to pH6.

b The charge is applied for each 1°C by which the temperature per ML of wastewater is greater than 25°C, eg, if the temperature per ML is 27°C then the charge will be multiplied by 2. Where the temperature is a number that includes a decimal number then, for charging purposes, the temperature will be rounded up where the decimal number is more than 0.5 and rounded down where the decimal number is 0.5 or less, eg, a temperature of 25.7°C will be rounded up to 26°C and a temperature of 25.5°C will be rounded down to 25°C.

Note: Where Sydney Water declares a wastewater system to be affected by accelerated odour and corrosion, the temperature and pH charge will only apply if the customer is not committed to or not complying with an effluent improvement program.

Table K.4 Trade waste industrial agreement charges for Industrial Customers by risk index ($2015-16)

Risk level	Units	Commencement date to 30 June 2017	2016-17	2017-18	2018-19
1	Per quarter	1,998.76	2,036.62	2,075.19	2,114.49
2	Per quarter	1,998.76	2,036.62	2,075.19	2,114.49
3	Per quarter	1,998.76	2,036.62	2,075.19	2,114.49
4	Per quarter	922.59	940.06	957.86	976.01
5	Per quarter	615.42	627.07	638.95	651.05
6	Per quarter	307.71	313.54	319.48	325.53
7	Per quarter	153.85	156.77	159.74	162.76

Table K.5 Wastesafe charges for Commercial Customers ($2015-16)

Service	Units	2016-17	2017-18	2018-19	2019-20
Fixed $/ liquid waste trap charge	Per liquid waste trap	25.68	26.16	26.66	27.16
Missed service (pump-out) inspection charge for liquid waste traps – 2 kL or less	Per event	283.02	288.38	293.84	299.41
Missed service (pump-out) inspection charge for liquid waste traps – more than 2 kL	Per event	566.05	576.77	587.69	598.83

Table K.6 Commercial agreement charges for Commercial Customers ($2015-16)

Charge	Units	2016-17	2017-18	2018-19	2019-20
Commercial agreement charges for Commercial Customers – first process	Per each process	36.10	36.78	37.48	38.19
Commercial agreement charges for Commercial Customers – each additional process	Per each additional process	12.39	12.62	12.86	13.11

Table K.7 Substance charges for Commercial Customers ($2015-16)

Activity	Units[a]	Commencement date to 30 June 2017	1 July 2017 to 30 June 2018	1 July 2018 to 30 June 2019	1 July 2019 to 30 June 2020
Low strength BOD food	Per kL	2.168	2.209	2.251	2.294
Higher strength BOD food	Per kL	3.563	3.631	3.699	3.770
Automotive	Per kL	0.707	0.721	0.734	0.748
Laundry	Per kL	0.442	0.451	0.459	0.468
Lithographic	Per kL	0.340	0.347	0.353	0.360
Photographic	Per kL	Nil	Nil	Nil	Nil
Equipment hire wash	Per kL	3.231	3.292	3.355	3.418
Ship to shore	Per kL	Nil	Nil	Nil	Nil
Miscellaneous	Per kL	Nil	Nil	Nil	Nil
Other	Per kL	Nil	Nil	Nil	Nil
Charge for low and high strength BOD food if pre-treatment is not maintained in accordance with requirements[b]	Per kL	11.127	11.338	11.552	11.771

a Per kL of trade waste discharged into the wastewater system (as determined by Sydney Water in accordance with its Trade Waste Policy).

b This charge applies if pre-treatment is not maintained in line with Sydney Water's Trade Waste Policy.

Note: Shopping centres with centralised pre-treatment (DAF, biological treatment) will be managed as industrial customers (Risk Index 6) and receive site-specific substance charges.

L Miscellaneous and ancillary charges

The draft maximum charge that Sydney Water may levy for each miscellaneous service is in Table L.1.

Table L.1 Charges for ancillary and miscellaneous customer services ($2015-16)

No	Ancillary and miscellaneous customer services	Commencement date to 30 June 2017	1 July 2017 to 30 June 2018	1 July 2018 to 30 June 2019	1 July 2019 to 30 June 2020
1	Conveyancing Certificate – electronic	6.25	6.36	6.48	6.61
2	Property Sewerage Diagram – diagram showing the location of the private house service line				
(a)	Over the Counter	N/A	N/A	N/A	N/A
(b)	Electronic	10.29	10.49	10.68	10.89
(c)	Online	26.01	26.51	27.01	27.52
3	Service Location Diagram – diagram showing the location of Sydney Water's pipe and structures and property wastewater connection point				
(a)	Over the Counter	N/A	N/A	N/A	N/A
(b)	Electronic	6.25	6.36	6.48	6.61
(c)	Online	17.60	17.93	18.27	18.62
4	Special Meter Reading Statement	26.60	27.11	27.62	28.14
5	Billing Record Search Statement – up to and including five years	26.60	27.11	27.62	28.14
6	Building Over/Adjacent to Asset advice – a letter from Sydney Water regarding a building's compliance with Sydney Water's standards and regulations for building over or adjacent to its pipes or structures	44.71	45.56	46.42	47.30
7	Water reconnection – reconnection of water service at meter, following payment of overdue accounts	26.60	27.11	27.62	28.14

No	Ancillary and miscellaneous customer services	Commencement date to 30 June 2017	1 July 2017 to 30 June 2018	1 July 2018 to 30 June 2019	1 July 2019 to 30 June 2020
8	Workshop Test of Water Meter				
(a)	20, 25 & 32 mm meters	225.69	229.97	234.32	238.76
(b)	40 and 50 mm light meters	313.46	319.39	325.44	331.61
(c)	50, 80, 100 & 150 mm meters	512.94	522.66	532.56	542.64
(d)	200, 250 & 300 mm meters	1139.87	1161.45	1183.45	1205.86
9	Water Service Disconnection – application for the disconnection of an existing water service. This covers administration only. A separate charge will be payable to Sydney Water if it also performs the physical disconnection.	Nil	Nil	Nil	Nil
10	Water Service Connection Installation Application – application for an accredited supplier to install a new connection point into Sydney Water's water main. This covers administration only. A separate charge will be payable to Sydney Water if it also perform the physical connection.	Nil	Nil	Nil	Nil
11	Water Service Connection Approval Application (32 – 65 mm) – application for Sydney Water to approve a water service connection that requires detailed hydraulic assessment. This covers administration and system capacity analysis as required.	225.10	229.37	233.71	238.14
12	Water Service Connection Approval Application (80mm or greater) – application for Sydney Water to approve a water service connection that requires detailed hydraulic assessment. This covers administration, system capacity analysis as required, and time taken to determine cost of physical installation.	225.10	229.37	233.71	238.14
13	Application to Assess a Water Main Adjustment	N/A	N/A	N/A	N/A
14	Standpipe Hire – Security Bond	N/A	N/A	N/A	N/A
15	Standpipe Hire – Annual Fee	N/A	N/A	N/A	N/A
16	Standpipe Water Usage Fee	N/A	N/A	N/A	N/A
17	Backflow Prevention Device Application and Registration Fee	N/A	N/A	N/A	N/A

No	Ancillary and miscellaneous customer services	Commencement date to 30 June 2017	1 July 2017 to 30 June 2018	1 July 2018 to 30 June 2019	1 July 2019 to 30 June 2020
18	Backflow Prevention Device Annual Administration Fee	N/A	N/A	N/A	N/A
19	Major Works Inspection Fee	N/A	N/A	N/A	N/A
20	Statement of Available Pressure and Flow	127.07	129.48	131.93	134.43
21	Request for Asset Construction Details – detailed plans of Sydney Water's assets showing water, wastewater and drainage. Plans are also known as work orders, long sections or benchmarks.	44.12	44.96	45.81	46.67
22	Supply System Diagram – a large plan that shows Sydney Water's wastewater, water and stormwater assets. The information can be provided in hard copy or electronic format.	127.07	129.48	131.93	134.43
23	Building Plan Approval Application – application for approval of building plans, to determine if proposed building works will affect Sydney Water's pipes or structures.	17.62	17.95	18.29	18.64
24	Asset Adjustment Application – application for Sydney Water to investigate the feasibility of relocating a water, wastewater or stormwater asset.	248.18	252.88	257.67	262.55
25	Water Main Fitting Adjustment Application – Application for Sydney Water to investigate the feasibility of lowering or raising a water main fitting. This covers administration only. A separate charge will be payable to Sydney Water if it also performs the physical connection.	Nil	Nil	Nil	Nil
26	Water Pump Application – application for Sydney Water to assess the impact on its water assets, in regards to the installation of a pump on a private water service.	127.07	129.48	131.93	134.43
27	Extended Private Service Application – application for Sydney Water to approve a water service connection, for a property where a normal point of connection is not available.	Nil	Nil	Nil	Nil

No	Ancillary and miscellaneous customer services	Commencement date to 30 June 2017	1 July 2017 to 30 June 2018	1 July 2018 to 30 June 2019	1 July 2019 to 30 June 2020
28	Wastewater Connection Installation Application – application for an accredited supplier to insert a new point of connection into a Sydney Water wastewater pipe. This covers administration only. A separate charge will be payable to Sydney Water if it also performs the physical connection.	Nil	Nil	Nil	Nil
29	Wastewater Ventshaft Relocation Application – application for Sydney Water to investigate the feasibility of relocating or adjusting a wastewater ventshaft. This covers administration only and does not include design review or assessment.	Nil	Nil	Nil	Nil
30	Disuse of Wastewater pipe or structure – application for Sydney Water to investigate the feasibility of ceasing to use an existing wastewater pipe or structure. This covers administration only and does not include design review or assessment.	Nil	Nil	Nil	Nil
31	Stormwater Connection Approval Application – application for Sydney Water to determine the conditions of connecting to a Sydney Water stormwater pipe or channel > 300 mm.	Nil	Nil	Nil	Nil
32	Application for inspection of Stormwater Connection – application for an inspection of the connection to Sydney Water's stormwater pipe or channel > 300 mm	Nil	Nil	Nil	Nil

No	Ancillary and miscellaneous customer services	Commencement date to 30 June 2017	1 July 2017 to 30 June 2018	1 July 2018 to 30 June 2019	1 July 2019 to 30 June 2020
33	Development Requirements Application – application to determine the servicing requirements for a proposed development or subdivision (including development charges if applicable). Sydney Water will only issue a compliance certificate (Section 73 Certificate) if the development consent is submitted with the application, otherwise it will issue a letter of general requirements only. Sydney Water will determine its full requirements when an application is received with the development consent from the relevant planning authority.	N/A	N/A	N/A	N/A
(a)	Development requirements - complying development	170.96	174.20	177.49	180.86
(b)	Development requirements - other	452.09	460.66	469.38	478.27
34	Road Closure Application – application for a permanent road closure	Nil	Nil	Nil	Nil
35	Water and Sewer Extension Application – request for approval to expand reticulation systems, to provide a new point of connection.	452.09	460.66	469.38	478.27
36	Monthly Meter Reading Request by Customer – this monthly charge will cover the additional costs that Sydney Water will incur to process customer requests to have the water meter read and billed monthly	10.29	10.49	10.68	10.89
37	Replacement of Meter Damaged by Customer/Customer's Agent - this charge allows Sydney Water to recoup the cost of replacing meters that have been damaged other than by normal wear and tear. Sydney Water will continue to pay for the replacement of meters that are faulty or due to be replaced as part of the regular maintenance program.				
(a)	20 mm	127.65	130.07	132.53	135.04
(b)	25, 30 & 40 mm	272.68	277.84	283.10	288.47

No	Ancillary and miscellaneous customer services	Commencement date to 30 June 2017	1 July 2017 to 30 June 2018	1 July 2018 to 30 June 2019	1 July 2019 to 30 June 2020
38	Integrated Service Connection Application – this is a service that consolidates a number of existing services into a single application form. The charge will apply only to complex connections where detailed hydraulic assessment is required. Standard connections will not incur any application charges.	225.69	229.97	234.32	238.76
39	Sydney Water Hourly Rate – this hourly rate will apply across all divisions of Sydney Water, to allow. Sydney Water to recover the full cost of providing services for customers, where a designated charge otherwise does not apply.	128.80	131.24	133.73	136.26
40	Remote read meter (one-off fee) – this charge recovers the cost of fitting and servicing an automatic Meter reading device. Consistent with the Customer Contract, Sydney Water may only levy this charge where the customer's existing Meter has been inaccessible on two or more occasions after 1 July 2016 and the customer has granted permission for installation of the device. The fees for installing Meters of the following sizes are set out below:				
(a)	20mm	187.70	191.25	194.88	198.57
(b)	25mm	197.77	201.51	205.33	209.22
(c)	32mm, 40mm, 50mm light	217.05	221.17	225.35	229.62
(d)	50mm heavy, 80mm, 100mm	380.77	387.98	395.33	402.81

No	Ancillary and miscellaneous customer services	Commencement date to 30 June 2017	1 July 2017 to 30 June 2018	1 July 2018 to 30 June 2019	1 July 2019 to 30 June 2020
41	Inaccessible meter fee (quarterly charge) – this charge recovers the costs of attempted Meter readings and managing estimated accounts where a customer's Meter is inaccessible. Sydney Water may only levy this charge where: • a customer's Meter is inaccessible after 1 July 2016; • Sydney Water had provided that customer with four or more consecutive estimated bills; and • the customer has not responded to other contact from Sydney Water, including requests that the customer: • relocate the Meter at its cost • install a remote Meter reading device, and • read the Meter and provide Sydney with the reading (ie, self-reading).	8.56	8.72	8.89	9.05

"N/A" means that Sydney Water either does not provide the relevant service or the service has been combined with other services and recovered by one charge.

M Terms and conditions for late payment fee

Under Sydney Water's Customer Contract, any late payment fee of Sydney Water will be charged in accordance with any terms and conditions specified by IPART as part of this review.[571]

At a minimum, Sydney Water cannot charge the fee if it has already agreed to a deferred payment date or another payment arrangement with a customer.[572]

Sydney Water has proposed it would not charge a late payment fee where:

- there is a billing matter being considered by the Energy and Water Ombudsman NSW (EWON)
- the customer has made an arrangement with Sydney Water to pay by instalments or another payment plan
- part of the bill is being paid using Sydney Water's payment assistance scheme
- Sydney Water is aware that the customer has sought assistance from a community welfare organisation that is part of the payment assistance scheme
- the customer is registered with Sydney Water's BillAssist program
- the customer has been identified as being in hardship
- the customer pays by Direct debit, or
- EWON has asked Sydney Water to waive the fee.[573]

These provisions mostly mirror exemptions available in NSW under the *National Energy Consumer Framework* (NECF)[574] and were generally supported by stakeholders.[575]

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[571] IPART, *Sydney Water Corporation Operating Licence 2015-20*, Schedule 4, Customer Contract, section 4.4.5.

[572] IPART, *Sydney Water Corporation Operating Licence 2015-20*, Schedule 4 - Customer Contract, July 2015, p 14.

[573] Sydney Water pricing proposal to IPART - Appendices, June 2015, p 28.

[574] See Rule 73(2) of the *National Energy Retail Rules*, and clause 10 of the *National Energy Retail Law (Adoption) Regulation 2013*.

[575] The Energy Water Ombudsman NSW (EWON) was supportive of this fee and the exemptions, noting they could be extended to pensioners: EWON submission to IPART Issues Paper, October 2015, pp 6-7. The Public Interest Advocacy Centre (PIAC) was supportive of the proposed fee and its conditions as long as it does not negatively impact those who are facing hardship: PIAC submission to IPART Issues Paper, October 2015, p 9.

Our draft position is to adopt Sydney Water's proposed exemptions, with an added provision that the fee can only be levied:

- **if the customer has been notified in advance of the late payment fee and the circumstances in which it may be levied, and**
- **at least 7 business days after the due date.**

The above approach is consistent with how IPART used to regulate late payment fees in electricity.[576]

576 Until 2013, IPART specified a similar provision for customers on regulated retail electricity tariffs.

N Pricing guidelines for recycled water services

In this appendix we have included our pricing guidelines for mandated recycled water schemes, from our 2006 *Pricing arrangements for recycled water and sewer mining*.[577]

1. The maximum cost that can be recovered for a recycled water scheme is the efficient "total direct cost" of the scheme, given by formula **A** below:

   Total direct cost = $PV_r(K_i + OC_i + JC_i)$ for i years 1,....n: n = 30 (A)

   Where

   K is the total capital cost associated with the project, including recycled water treatment plants, other infrastructure and storage.

   OC is the annual operating cost of the scheme, including pumping, treatment, chemicals, labour, monitoring and any other costs of operating the system.

   JC is the share of joint costs allocated to the recycled water scheme

   n is the life of the project in years and for the purposes of calculating recycled water prices is equal to 30 years

   r is the cost of capital and should be equivalent to the WACC used to calculate the return on capital for water and sewerage prices

2. The retail price of potable water used to supplement the recycled water scheme is to be included as an operating cost of the scheme when calculating the total direct cost.

3. The maximum amount that a water agency can 'offset' against the cost of a recycled water scheme to be recovered from recycled water customers is to be calculated using formula **B** below:

   Cost Offset = PV_r ($Subsidy_i$ + $Avoided\ Cost_i$ + $Deferred\ Cost_i$ + Govt Directive[578]) (B)

4. Other than costs included in the 'cost offset' amount, all costs are to be recovered through recycled water usage, fixed and developer charges.

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577 IPART, *Pricing arrangements for recycled water and sewer mining - Final Report*, September 2006, p 58.

578 This means that the Government has directed the Tribunal to allow water agencies to recover a portion of costs from customers other than recycled water users.

5. Except as provided for in Clauses 7 and 8 below, the total revenue that the water agency can recover from recycled water customers is to be calculated using the formula: **A – B**

6. If the agency wishes to recover the avoided or deferred costs from water or sewerage customers, it will be required to demonstrate to the Tribunal that costs have been calculated and allocated in accordance with the *Guidelines for Calculation of Avoided and Deferred Costs of Recycled Water Schemes.*[579]

7. Recycled water prices are to include a usage component, which is to be set no greater than the potable water usage price prevailing from time to time unless the Tribunal's prior approval has been obtained. The usage charge is to be set at such a level that it sends appropriate consumption signals aimed at equating the demand for recycled water with the available supply.

8. If potable water 'top-up' of the recycled water supply exceeds more than 10% by volume on an annual basis,[580] the recycled water usage charge is to be calculated as a percentage of the potable water price as shown below:

Potable water top-up %	% of potable water price
>10% and ≤ 15%	80%
>15% and ≤ 20%	90%
>20%	100%

Water agencies may adopt an alternative pricing approach to that shown above where they can demonstrate to the Tribunal's satisfaction that the alternative approach will yield prices that are economically efficient and will balance demand for recycled water with supply and also, at a minimum, recover costs.

9. Prices may include a fixed component, which should not be so high as to act as an incentive for customers to disconnect from the recycled water scheme.

10. Where customers are subject to developer charges, the developer charge is to be calculated according to the Recycled Water Developer Charges Determination.

11. Where customers are not subject to developer charges, any residual cost not recovered through usage charges is to be recovered via an annual fixed charge or in the case of non-residential customers, may be recovered through a negotiated up-front capital contribution.

12. Agencies are to review recycled water prices at least once every 3 years. Between price reviews, recycled water prices may be indexed for inflation.

[579] See Appendix C of IPART, *Pricing arrangements for recycled water and sewer mining – Final Report,* September 2006.

[580] In calculating the annual recycled water volume the water agency may normalise seasonal fluctuations in demand.

13. Agencies are required to publish and publicly exhibit their calculations of recycled water prices. This exhibition process is to include information on the costs of the scheme, avoided or deferred costs and assumptions used to calculate the prices. The calculated recycled water prices must be made available to customers and published on the agencies' websites.
14. Costs and revenues from recycled water schemes are to be ring fenced from the regulated business.

Glossary

2008 Determination	*Review of prices for Sydney Water Corporation's water, sewerage, stormwater and other services from 1 July 2008*, June 2008 (Determination No 1, 2008)
2008 determination period	The period commencing 1 July 2008 to 30 June 2011
2012 Determination	*Review of prices for Sydney Water Corporation's water, sewerage, stormwater and other services from 1 July 2012*, June 2012 (Determination No 1, 2012)
2012 determination period	The period commencing 1 July 2012 to 30 June 2016
2016 Determination	*Review of prices for Sydney Water Corporation's water, sewerage, stormwater and other services from 1 July 2016*, June 2016 (Determination No 1, 2016)
2016 determination period	The period commencing 1 July 2016 to 30 June 2020.
70/80 rule	Under Government's 2010 Metropolitan Water Plan, SDP is to operate at full production and supply Sydney Water's area of operations when the total dam storage level is below 70% and continue to do so until the total dam storage level reaches 80%.
ACCC	Australian Consumer and Competition Commission
AFOC	Assets free of charge

Annual revenue requirement	The notional revenue requirement in each year of the determination period.
BOO	Build Own Operate
CAPM	Capital Asset Pricing Model
CEMELND	Assets are grouped into civil, electrical, mechanical, electronic, and non-depreciating components to calculate the allowance regulatory depreciation.
COAG	Council of Australian Governments
Current determination period	The period from 1 July 2012 to 30 June 2016, as set in the 2012 Determination.
CPI	Consumer Price Index
Determination period	Price limits (maximum prices) set by IPART for a given period.
DRC	Depreciated Replacement Cost
ECM	Efficiency Carryover Mechanism
EBSS	Efficiency Benefit Sharing Scheme
ELWC	Economic Level of Water Conservation
EPA	Environment Protection Authority
EPL	Environment Protection Licence
EWON	Energy and Water Ombudsman NSW
GL	Gigalitre
HAF	Housing Acceleration Fund
Hunter Water	Hunter Water Corporation
IPART	Independent Pricing and Regulatory Tribunal of NSW
IPART Act	*Independent Pricing and Regulatory Tribunal Act 1992* (NSW)

kL	Kilolitre
LGAs	Local Government Areas
LRMC	Long Run Marginal Cost (of supply)
ML	Megalitre
NECF	National Energy Consumer Framework
Notional revenue requirement	Revenue requirement set by IPART that represents the efficient costs of providing Sydney Water's monopoly services.
NPV	Net Present Value
PIAC	Public Interest Advocacy Centre
PSP	Priority Sewerage Program
RAB	Regulatory Asset Base
RBA	Reserve Bank of Australia
Rouse Hill Area	The area to which the Rouse Hill stormwater drainage charges apply.
RWSA	Raw Water Supply Agreement between Sydney Water and WaterNSW.
SCA	Sydney Catchment Authority (now part of WaterNSW)
SDP	Sydney Desalination Plant Pty Ltd
Section 16A directions	Ministerial directions pursuant to section 16A of the IPART Act.
SFG	Strategic Finance Group
SOC	State-owned corporation
SOC Act	*State Owned Corporations Act 1989* (NSW)
SRMC	Short Run Marginal Cost (of supply)
Sydney Water	Sydney Water Corporation
Sydney Water Act	*Sydney Water Act 1994* (NSW)

Target revenue	The revenue Sydney Water generates from maximum prices set by IPART for that year.
Upcoming determination period	The period commencing 1 July 2016 to 30 June 2020.
WACC	Weighted Average Cost of Capital
WAPC	Weighted Average Price Cap
WFA	Water Filtration Agreement
WFP	Water Filtration Plant
WIC Act	*Water Industry Competition Act 2006* (NSW)